

## Recommendation: PBN Instrument Procedure Design (STAR Speeds)

FAA Order 8260.58A, *United States Standard for Performance Based Navigation (PBN) Instrument procedure Design*, provides airspeed assumptions for evaluating a procedural turn's obstacle evaluation area (OEA). The order bases these airspeeds on MSL altitudes and aircraft categories to protect the stability and control of the aircraft. They are consolidated by procedure type and segment in Table 1-2-2 (see Figure 1 next page), and include explanatory notes, which ensure compliance with CFR 91.117.

However, FAA Order 8260.3D, *United States Standard for Terminal Instrument Procedures (TERPS)*, contains what appears to be contradictory airspeed standards for holding patterns above 10,000 FT MS. It establishes a holding airspeed of 230 KIAS (210 KIAS when "operationally necessary") between 6,000 and 14,000 FT MSL. This is an apparent contrast with the procedure design standards for a Standard Terminal Arrival (STAR) in Order 8260.58A. In this order, Note 3 of Table 1-2-2 requires a STAR above 10,000 FT MSL to use a minimum airspeed of 250 KIAS to support Category C and D aircraft, with no relief offered. At many locations, this limits flexibility in STAR design, resulting in less than optimum path length and location.

With this in mind, since Order 8260.3D permits use of a minimum airspeed as low as 210 KIAS at and below 14,000 FT MSL, there is no apparent reason why a STAR cannot use a minimum airspeed as low as 210 KIAS at the same altitudes when operationally necessary (see the STAR at Figure 2 below). Updating the STAR procedure design criteria to permit use of a minimum airspeed of 210 KIAS will offer more flexibility in STAR design and better optimize STAR paths, while also eliminating the need to justify a procedure design waiver when the STAR requires an airspeed below 250 KIAS as an operational necessity.

**Recommendation:** The PARC Navigation Working Group recommends the PARC Steering Group support a change to FAA Order 8260.58A, Table 1-2-2, Note 3, to read; "250 above 14,000 feet MSL".

**Rationale:** This change will reduce the number of waivers for STARs operationally requiring an airspeed less than 250 KIAS and will standardize the procedure design minimum airspeed standards by both Oder 8260.58A and Order 28260.3D for altitudes 10,000 to 14,000 FT MSL.

*Note: This recommendation does not alter or impact the procedure design criteria's support for CFR 91.117 as Table 1-2-2 requires in Note 1 and Note 4.*

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Figure 1

Table 1-2-2. Indicated Airspeeds (KIAS)

Flight Phase		Indicated Airspeed by CAT					
		Copter	A	B	C	D	E
At or Above 10000 feet MSL							
En route, STAR/Feeder/TAA, Initial, Intermediate, Missed, Departure		150	180	250	300	300	350
Below 10000 feet MSL							
En route, STAR/Feeder/TAA, Initial, Intermediate		150	150	180	250	250 <sup>1</sup>	310
Final		90	90	120	140	165	250
Missed Approach (MA), Departure		150	110	150	240	265	310
Minimum Airspeed Restriction							
Minimum Airspeed Restriction <sup>2</sup>	STAR/Feeder/TAA, Initial, Departure	70	110	140	200 <sup>3</sup>	210 <sup>3,4</sup>	310
	Intermediate	70	110	140	180	180	310
	Missed Approach	70	100	130	165	185	310
	Final	70	Not Authorized				

<sup>1</sup> Consider using 265 KIAS where heavy aircraft routinely exceed 250 KIAS under 14 CFR § 91.117.

<sup>2</sup> Airspeed restrictions may be established at a charted fix to reduce turn radius, avoid obstacles, accommodate ATC request, etc. Use the fewest number of restrictions possible on the same IFP. Especially avoid consecutive restrictions requiring speed changes of less than 20 KIAS in the same or adjoining segments. Flight Standards or military authority approval is required for missed approach restrictions for other than obstacle avoidance.

<sup>3</sup> 250 at or above 10000 feet MSL except for initial and/or STAR termination fix.

<sup>4</sup> 200 underlying Class B airspace per 14 CFR § 91.117(c).

Figure 2

