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NBAA

Charting of HILPT Maximum Holding Altitude

Richard Boll II, NBAA Access Committee

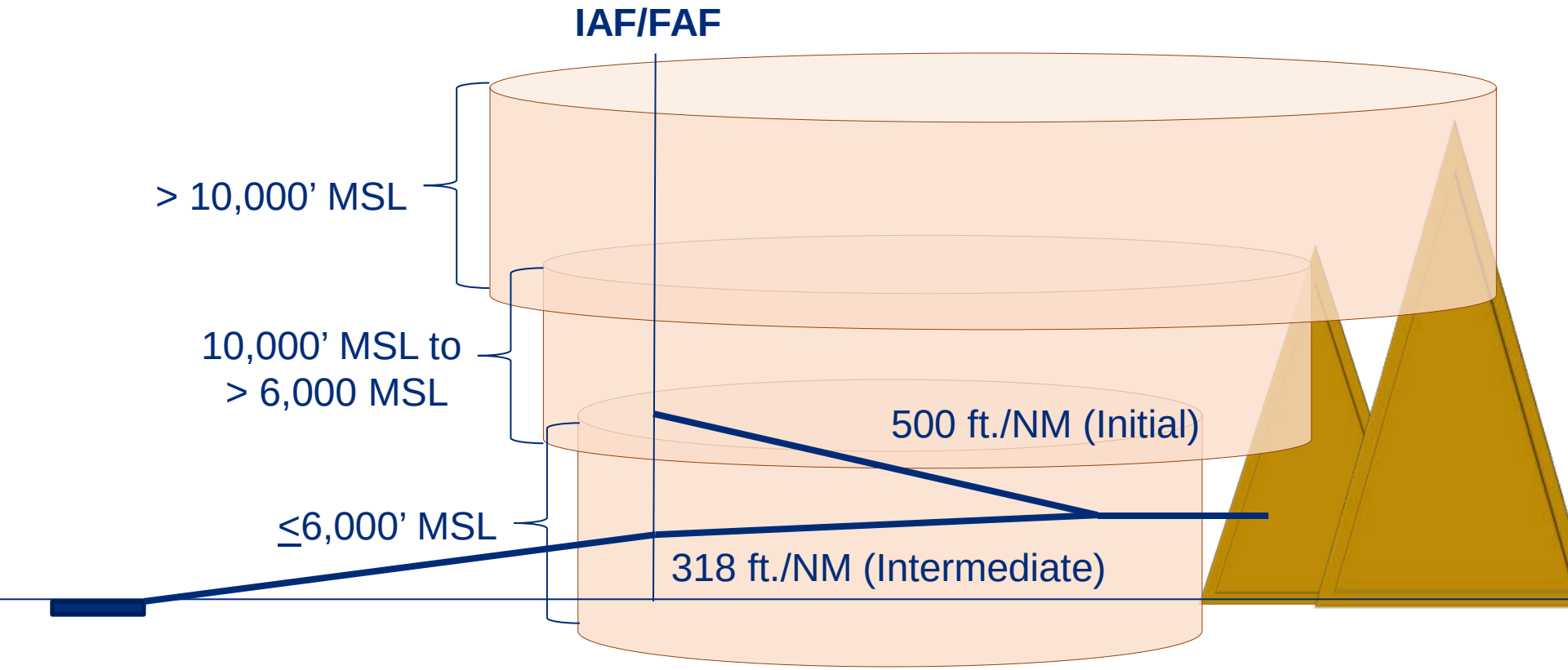
Washington, DC | October, 2015

Background

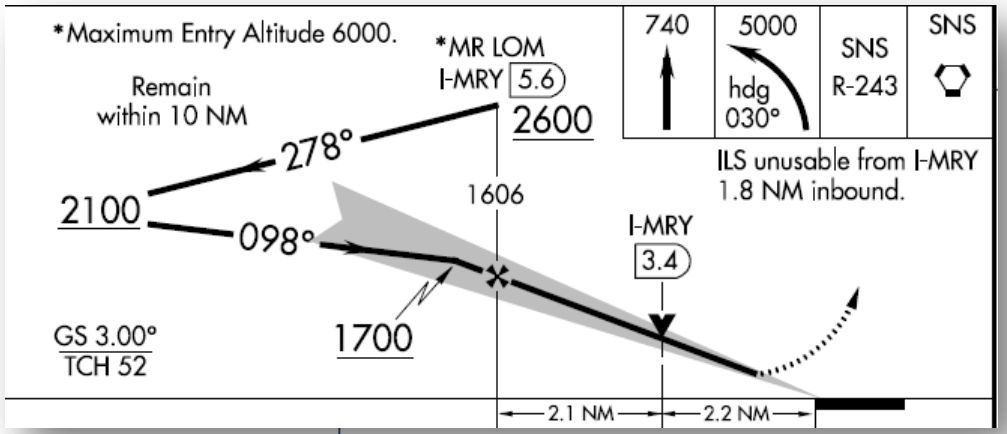
TERPS

- A Procedure Turn or a Holding in lieu of Procedure Turn (HILPT) is used to align the aircraft with the final approach course, permitting descent from the initial segment through the intermediate segment to the final approach fix (FAF)
- Maximum descent gradient in the initial and intermediate segments:
  - Optimum: 250 ft./NM (initial) & 150 ft./NM (intermediate)
  - Maximum: 500 ft./NM (initial) & 318 ft./NM (intermediate)
- Maximum descent angles in the final segment for vertically-guided approaches (LPV, LNAV/VNAV, etc.)
- These requirements combine to establish maximum altitudes for the initial segment (PT or HILPT) and the intermediate segment

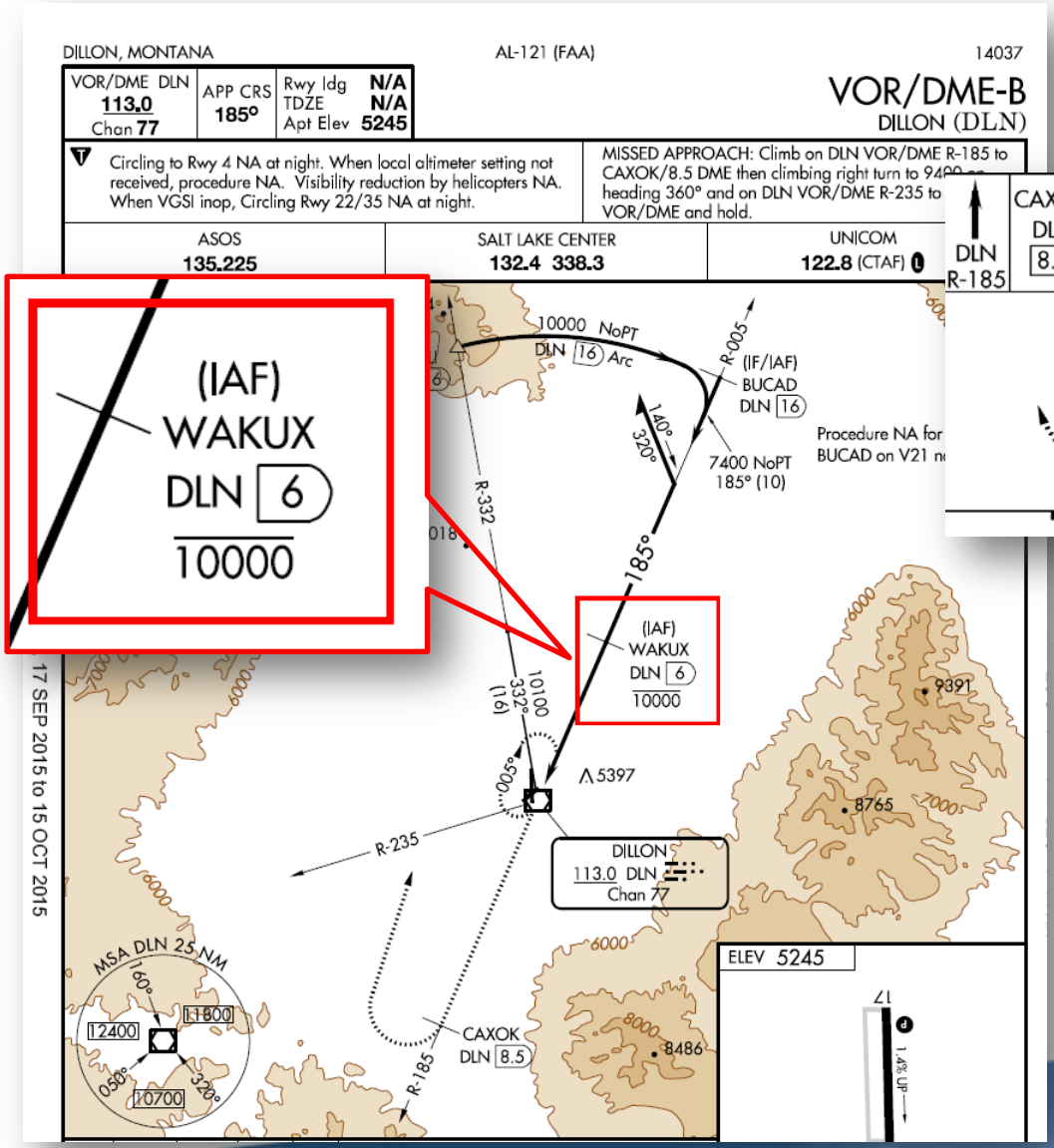
Procedure Turn Protected Airspace

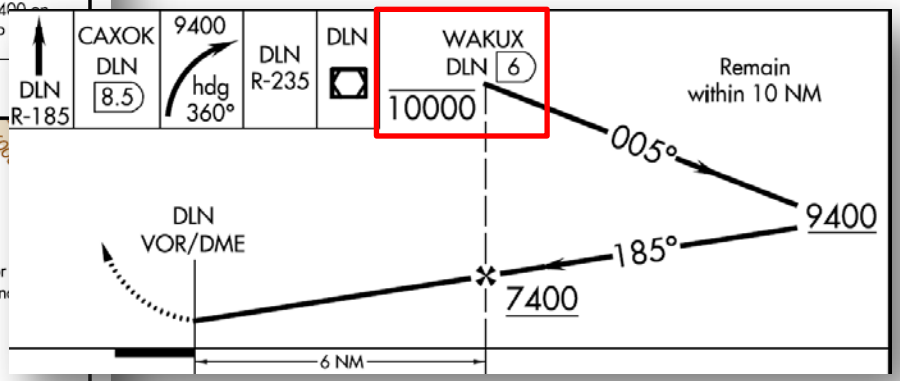


Procedure Turn Protected Airspace



Procedure Turn Protected Airspace

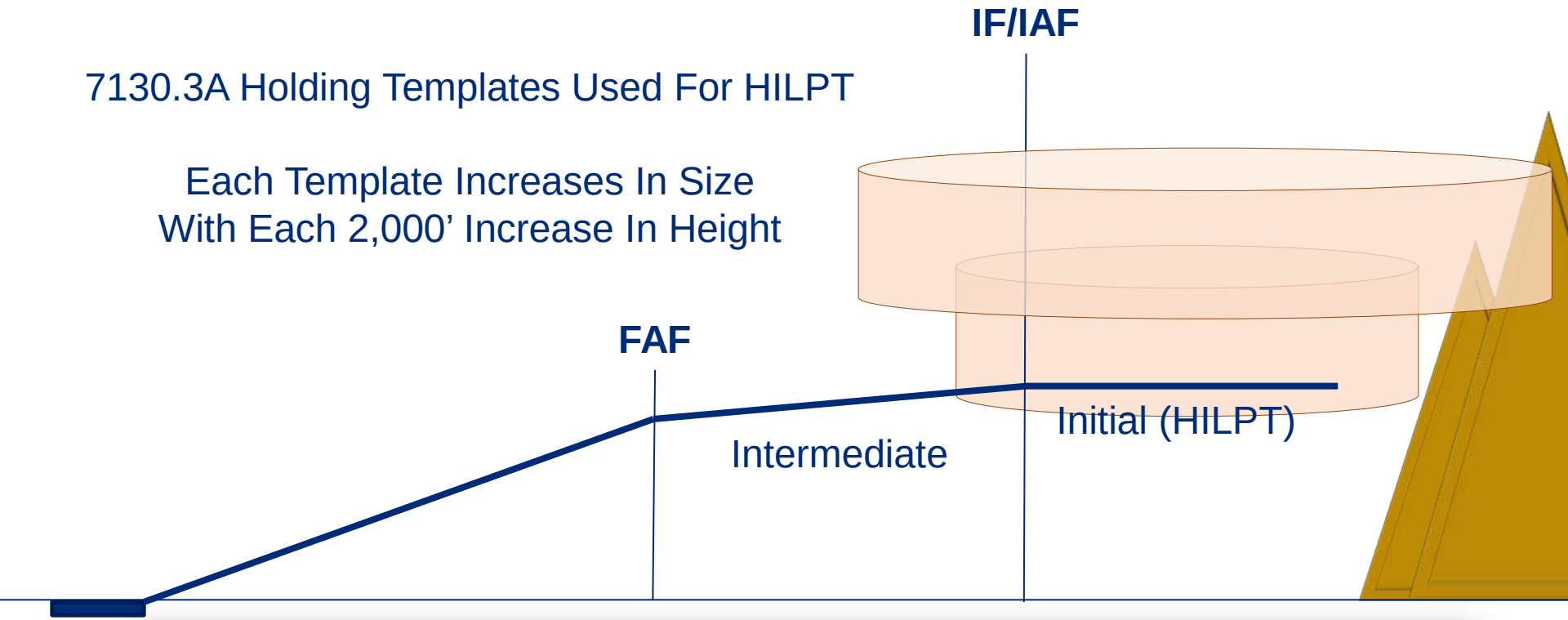




HILPT Protected Airspace

7130.3A Holding Templates Used For HILPT

Each Template Increases In Size
With Each 2,000’ Increase In Height



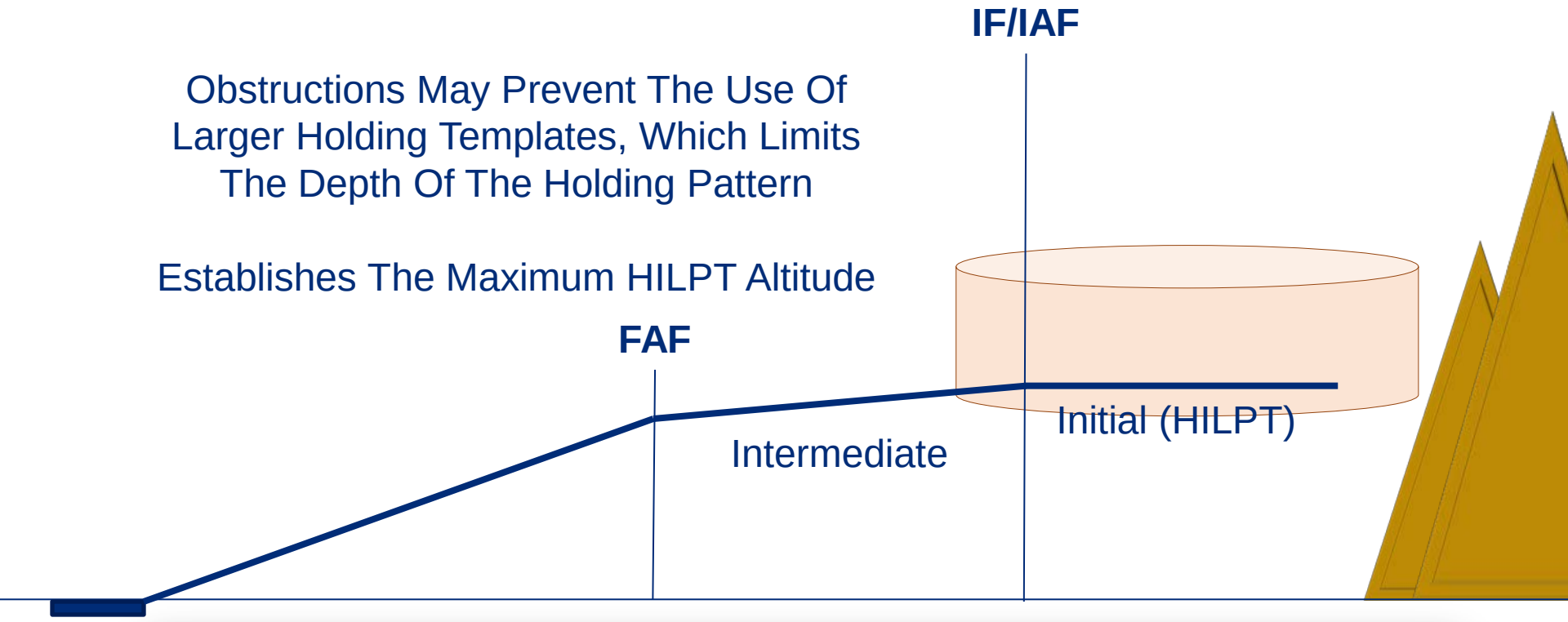
PATTERNS: PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	DME	HOLDING ALTITUDES MIN	MAX	TEMPLATES MIN	MAX
1	S		WP	186.35	006.35	R		4	2000	6000	4	6

FAA 8260-3 Form

HILPT Protected Airspace

Obstructions May Prevent The Use Of Larger Holding Templates, Which Limits The Depth Of The Holding Pattern

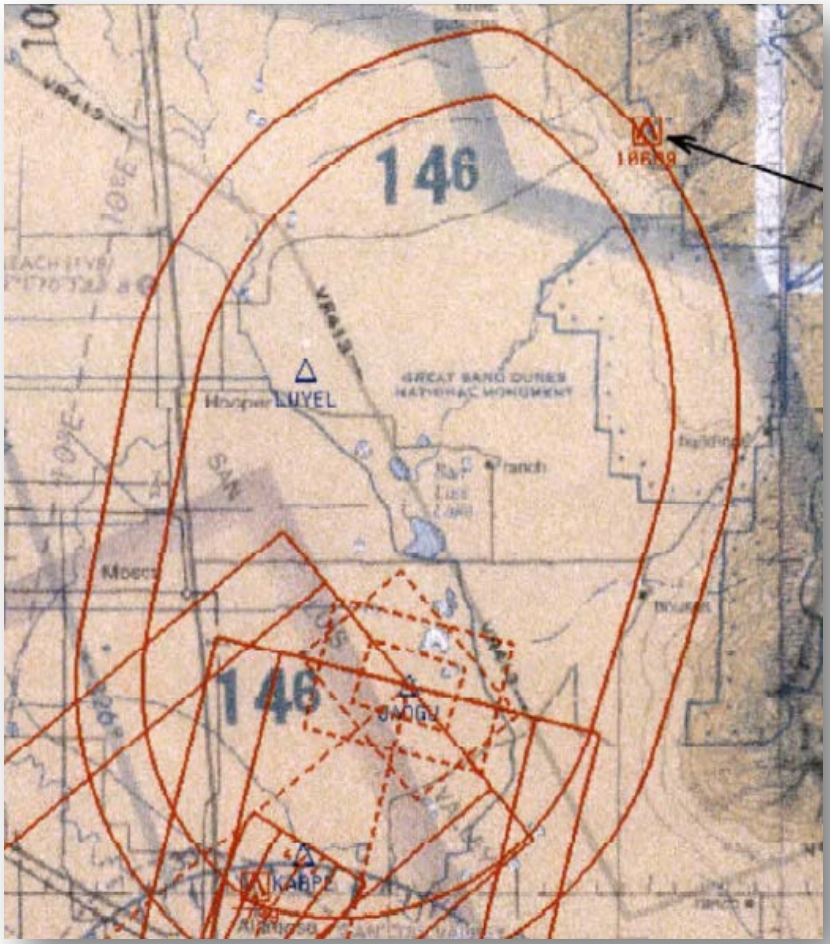
Establishes The Maximum HILPT Altitude

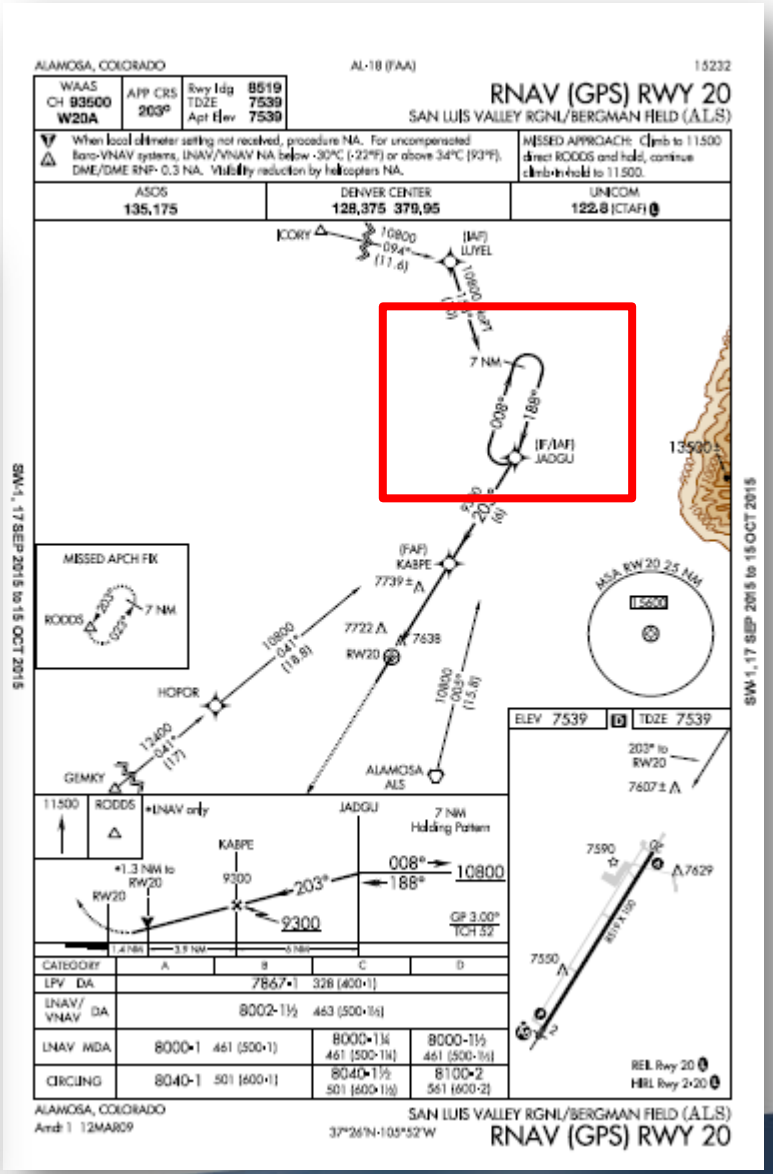


PATTERNS:

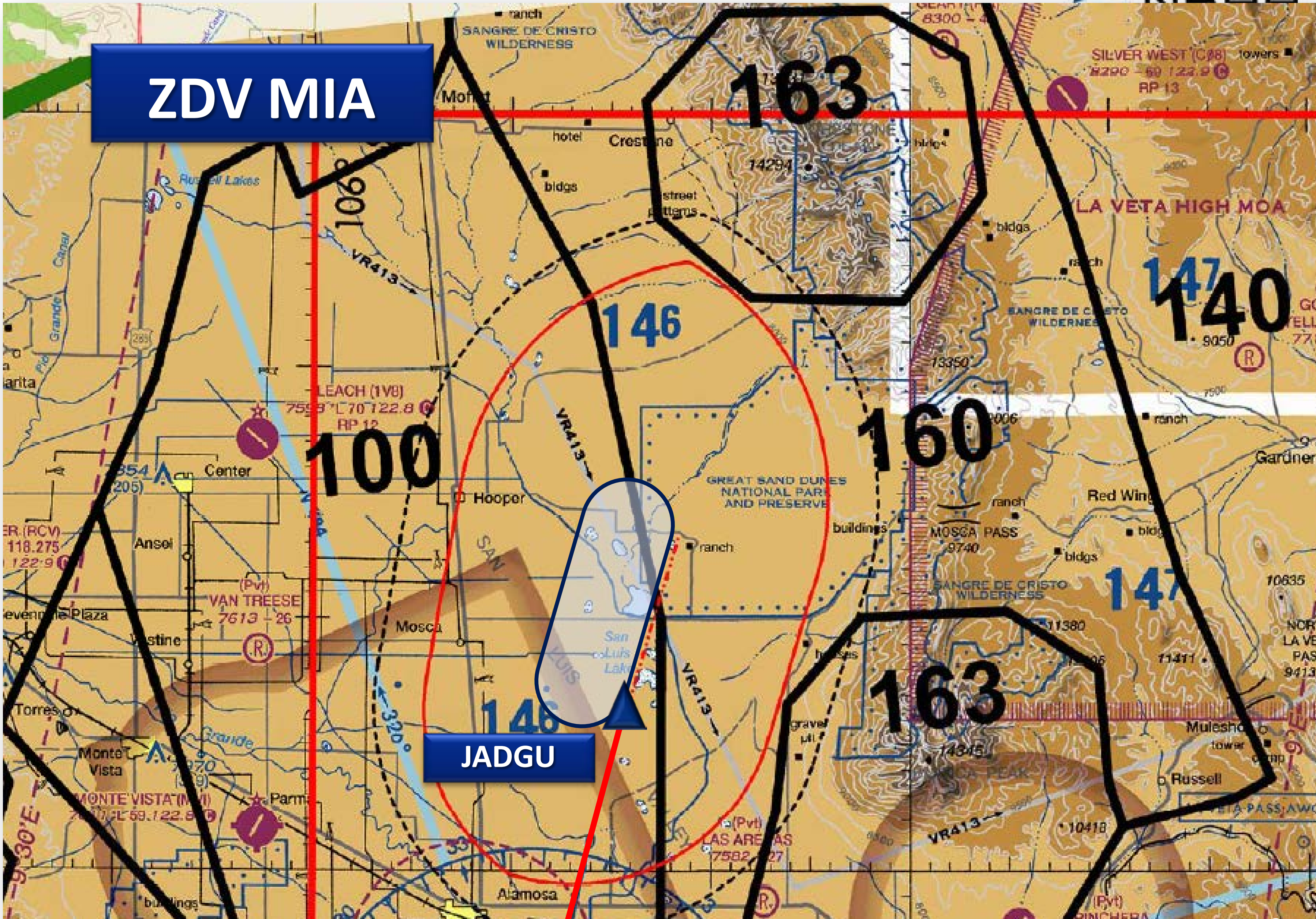
PAT	DIR	IDENT	TYPE	RAD/CRS/BRG	CRS INBOUND	TURN (L OR R)	LEG LENGTH TIME	LEG LENGTH DME	HOLDING ALTITUDES MIN	HOLDING ALTITUDES MAX	TEMPLATES MIN	TEMPLATES MAX
1	N		WP	007.85	187.85	R		7	10800	12000	10	10

Alamosa CO (ALS) RNAV (GPS) Rwy 20



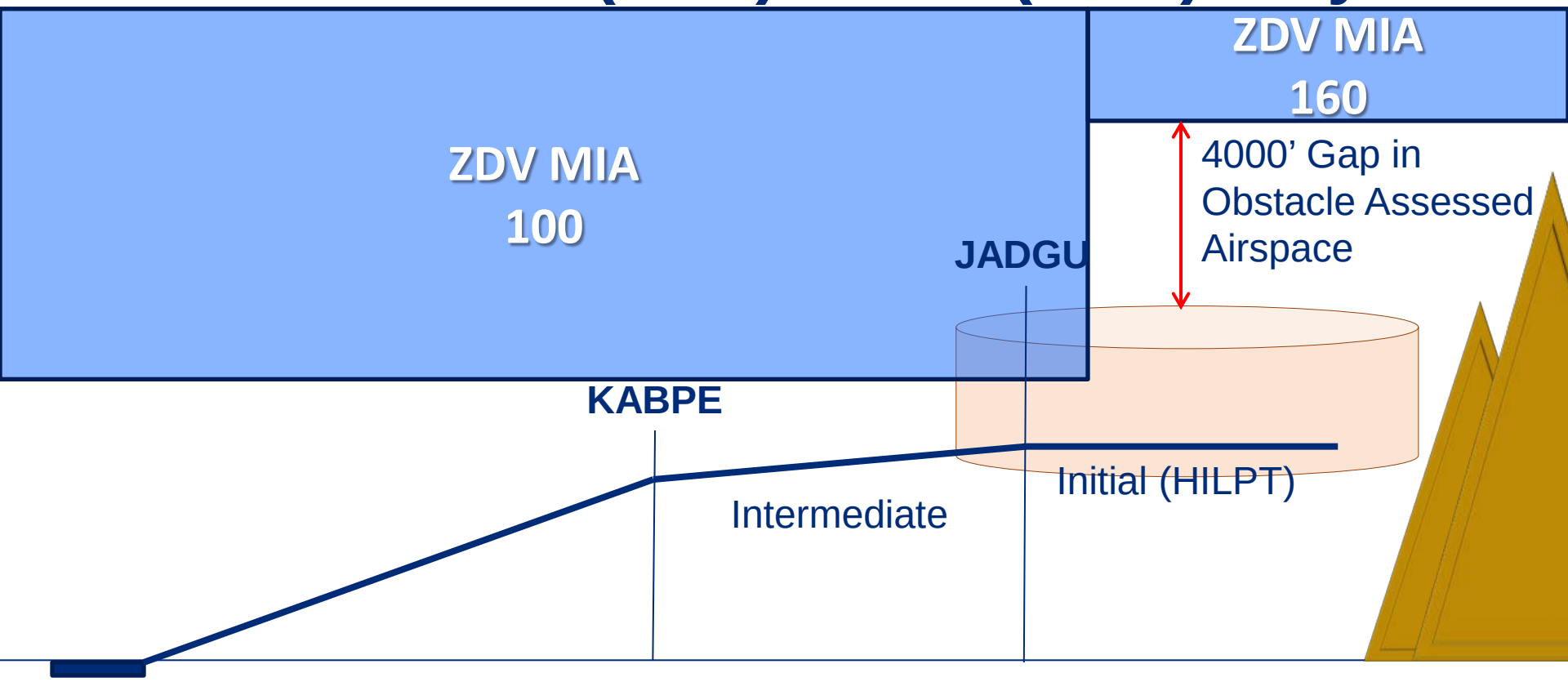


ZDV MIA



JADGU
163
160
146
100
140
147
SANGRE DE CRISTO WILDERNESS
LA VETA HIGH MOA
GREAT SAND DUNES NATIONAL PARK AND PRESERVE
Crestone
Hooper
Center
Mosca
Alamosa
MOSCA PASS
VR413

Alamosa CO (ALS) RNAV (GPS) Rwy 20



Alamosa CO (ALS) RNAV (GPS) Rwy 20

JADGU HILPT

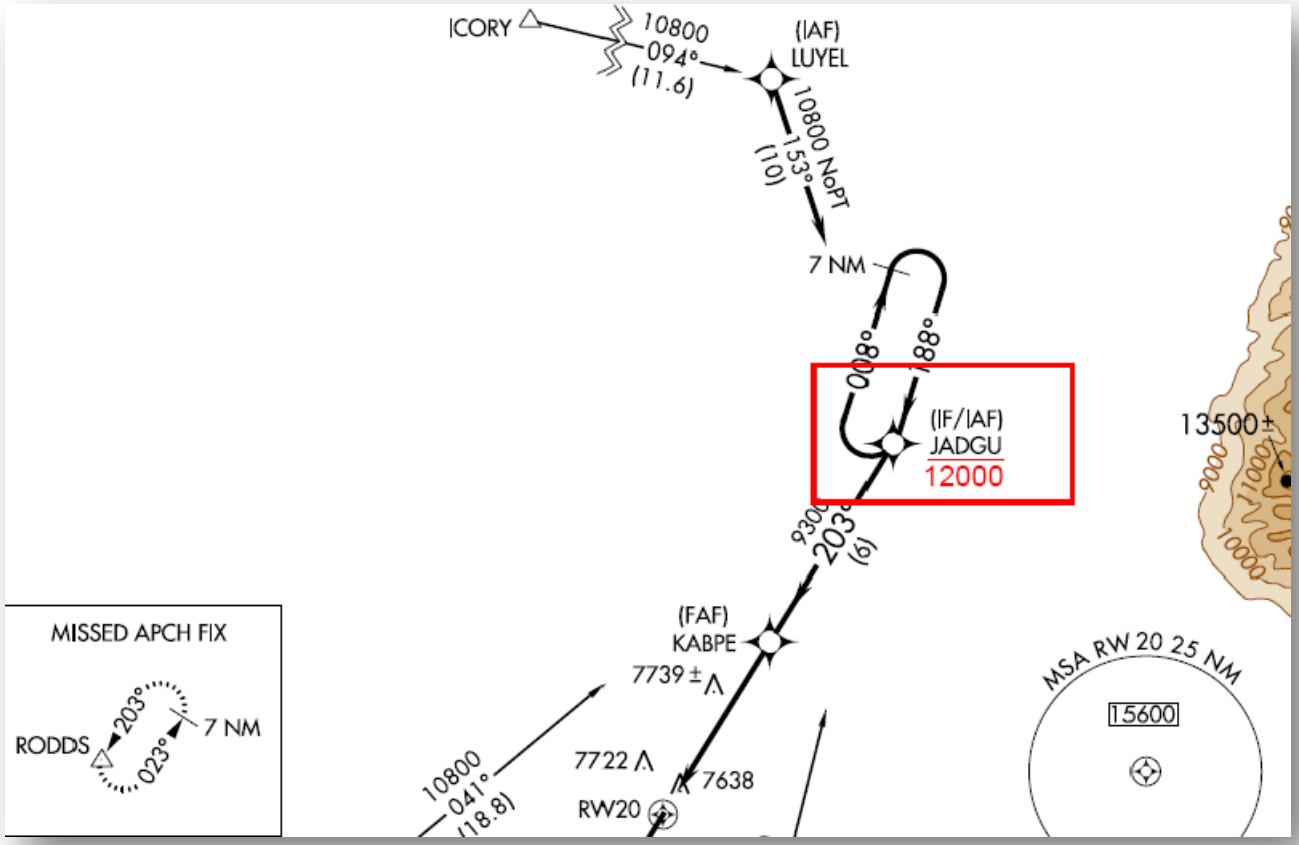
- Airspace assessed for obstacles clearance IAW 14 CFR part 97 ends at the upper limit of 12,000’ MSL
- Airspace assessed for obstacle clearance IAW14 CFR §91.177 Minimum altitudes for IFR operations, ends at 16,000’ MSL over one-half of the JADGU holding protected airspace
- 4,000’ gap in obstacle assessed airspace over that portion of the JADGU HILPT not covered by the ZDV 10,000’ MIA
- IFR aircraft operations within that 4,000’ gap gives rise to a regulatory non-compliance concern

Recommendations

- Apply the entry restrictions established for procedure turns to HILPT entry when maximum holding altitude is established on the 8260-3 Form
- Publish an “at or below” HILPT entry altitude at the IAF or IF/IAF
  - Alternatively: Publish an “at or below” HILPT entry when the HILPT maximum holding altitude is below the MVA or MIA applicable to the entire holding primary and secondary area protected airspace
- Do not published “at or below” HILPT entry altitude when maximum holding is established solely for ATC purposes

Planview Depiction

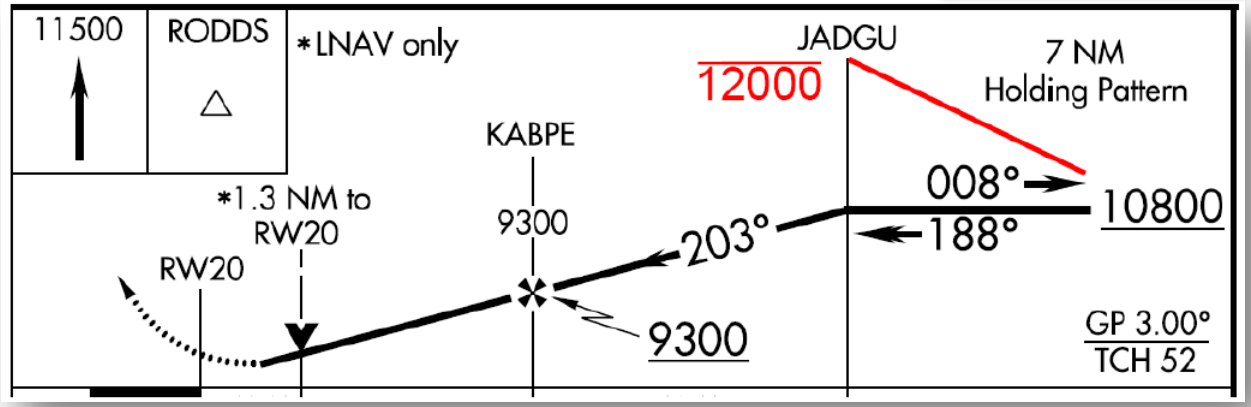
ALS RNAV (GPS) Rwy 20



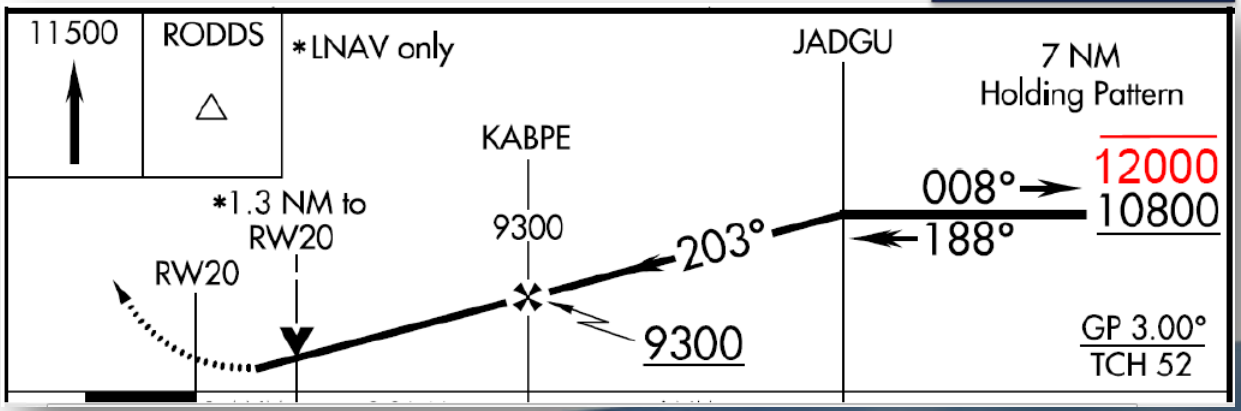
Profile Depiction

ALS RNAV (GPS) Rwy 20

Option #1



Option #2



Recommendations

- Evidence suggests that both pilots and controllers are not aware of the limitations of procedure turn or HILPT entry above the maximum altitude.
- Controllers may believe that if the aircraft enter the hold at or above the MVA or MIA, the aircraft is protected. This is not the case if the maximum assess holding altitude is below the MVA/MIA
- Pilots are not aware of the HILPT's maximum altitude since this information is not furnished. They may not be aware of the need to enter a procedure turn at or below the maximum charted altitude when ATC furnishes radar vectors to the IAF
- Issue exacerbated by non-radar RNAV direct-to clearance
- NBAA recommends additional guidance be furnished in the Aeronautical Information Manual (AIM), FAA Order 7110.65 Air Traffic Control, and in the Instrument Procedures Handbook on this subject

Questions?

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