

AERONAUTICAL CHARTING FORUM
Instrument Procedures Group
Meeting 16-02 October 25, 2016

RECOMMENDATION DOCUMENT

FAA Control # 16-02-327

Subject: Arrival Holding Patterns Required for Approach Entry

Background/Discussion: Recently, two RNAV IAPs were published with an arrival holding pattern that is required for procedure entry. One is a new RNAV Rwy 19R procedure at KRVS (attachment 1); the other is an amendment of the RNAV Rwy 30 procedure at KLRU (attachment 2). For reference also attached are the former KLRU RNAV Rwy 30 (attachment 3) and a snippet of the KLRU en route low-altitude area (attachment 4).

These are two examples of an arrival holding pattern being a de facto HILPT, which is contrary to the intent of criteria and specifically prohibited by implementation policy in Order 8260.19G. Based on input from NBAA, and follow-up by AFS-420, a NOTAM was issued prohibiting arrival on the KLRU RNAV Rwy 30 from V94 westbound or V611 southeast bound. The NOTAM removes some ambiguity to procedure entry but does not change the fact that the arrival holding pattern at MOLLY is a de facto HILPT. Note also the confusion at KLRU where straight-in on V94 from the west is permitted for the ILS Rwy 30 IAP even when RNAV navigation is used (attachment 5).

NBAA believes that neither pilots nor controllers understand the use of arrival holding patterns for entry into the instrument approach procedure. The Aeronautical Information Manual (AIM) does not discuss the use of arrival holding for procedure entry when turn angle limitations are exceeded. Further, NBAA notes that the current guidance furnished to air traffic controllers in Order JO 7110.65, Air Traffic Control, paragraph 4-8-1, does not address the use of arrival holding when required for procedure entry nor are there any intercept angle limitations prescribed for RNAV direct-to clearance to a feeder fix (Note: The Order does limit turn angle to 90 degrees or less at the IAF and IF). Because RNAV will be used to enter an RNAV approach, the 90 degree or less turn angle restrictions applied to airway-to-feeder turns using RNAV must also be applied when an RNAV direct-to clearance is issued to a feeder fix.

Recommendations: NBAA makes the following recommendations with respect to the use of arrival holding for instrument procedure entry and RNAV direct-to clearance to feeder fixes:

1. Criteria and policy should be revised to prohibit the use of an arrival holding pattern when a satisfactory HILPT can be placed at the intermediate fix. When that is not possible, then an arrival holding pattern may be used for procedure entry from an airway provided the holding pattern is coded in the nav-database as part of the applicable approach transition and a chart note is published informing the pilot that the arrival hold is mandatory for procedure entry. NBAA proposes the following Planview Note:

“Arrivals at <fix name> on <airway><direction>, arrival holding for approach entry mandatory”

Example:

“Arrivals at JOXIT on V343 northeast bound, arrival holding for approach entry mandatory”

See example in ATTACHMENT 6

2. Amend the AIM to provide guidance to pilots on the use of arrival holding:

5-4-9. Procedure Turn, and Hold-in-lieu of Procedure Turn, and Arrival Holding

7. Arrival Holding. Some approach charts have an arrival holding pattern depicted at an IAF or at a feeder fix located along an airway. The arrival hold is depicted using a “thin line” since it is not always a mandatory part of the instrument procedure.

(a) Arrival holding is charted where holding is frequently required prior to starting the approach procedure so that detailed holding instructions are not required. The arrival holding pattern is not authorized unless assigned by ATC. Holding at the same fix may also be depicted on the enroute chart.

(b) Arrival holding is also charted where it necessary to use a holding pattern to align the aircraft for procedure entry from an airway due to turn angle limitations imposed by procedure design standards. When the turn angle from an airway into the approach procedure exceeds 90 degrees, an arrival holding pattern is published along with a note on the procedure specifying the airway and arrival direction where use of the arrival hold for procedure entry is mandatory. Unlike a Hold-in-lieu of Procedure Turn, use of the arrival holding pattern is not authorized until assigned by ATC. Once ATC issues holding instructions and the aircraft reports entry into the hold, ATC will issue the approach clearance. The pilot may then exit the hold after the next passage over the holding fix and then continue with the published procedure.

3. Amend AIM regarding RNAV direct-to feeder fix turn angle limitations

5-4-6. Approach Clearance

6. In addition to the above, RNAV aircraft may be issued a clearance direct to a feeder fix or the IAF/IF at intercept angles not greater than 90 degrees for both conventional and RNAV instrument approaches. Controllers may issue a heading or a course direct to a fix between the IF and FAF at intercept angles not greater than 30 degrees for both conventional and RNAV instrument approaches. In all cases, controllers will assign altitudes that ensure obstacle clearance and will permit a normal descent to the FAF. When clearing aircraft direct to the IF, ATC will radar monitor the aircraft until the IF and will advise the pilot to expect clearance direct to the IF at least 5 miles from the fix. ATC must issue a straight-in approach clearance when clearing an aircraft direct to an IAF/IF with a procedure turn or hold-in-lieu of a procedure turn, and ATC does not want the aircraft to execute the course reversal.

4. Amend Order JO 7110.65, Air Traffic Control, Paragraph 4-8-1:

a. Add New Note 3 to **PHRASEOLOGY – CLEARED STRAIGHT-IN (type) APPROACH**

3. Arrival holding may be depicted at the IAF or at a feeder fix where use of the hold is mandatory for procedure entry from an airway. The approach procedure will publish a Note identifying the airway and arrival direction where the use of the arrival hold is mandatory. The arrival holding pattern is not authorized until ATC issues holding instructions; however, ATC must assign the hold before the aircraft can be cleared for the approach. Once the pilot reports established in the hold, the approach clearance may be issued.

b. Amend paragraph 4-8-1 h. 1:

h. For RNAV–equipped aircraft operating on unpublished routes, issue approach clearance for conventional or RNAV SIAP including approaches with RF legs only after the aircraft is: (See FIG 4–8–4).

1. Established on a heading or course direct to the IAF or a feeder fix at an intercept angle not greater than 90 degrees and is assigned an altitude in accordance with

b2. Radar monitoring is required to the IAF for RNAV (RNP) approaches when no hold–in–lieu of procedure turn is executed.

NBAA also recommends FAA explore an option that would permit the pilot to execute the arrival holding entry and then proceed inbound on the approach, without a specific ATC clearance to execute the arrival hold when procedure entry requires the use the arrival hold.

Comments: This affects Orders 8260.58A, 8260.3C, 8260.19G, JO 7110.65 and the AIM.

Submitted by: Richard J. Boll II

Organization: NBAA

Phone: 316-655-8856

E-mail: richard.boll@sbcglobal.net

Date: 10/4/2016

TULSA, OKLAHOMA

AL-5427 (FAA)

16203

WAAS CH 81939 W19A	APP CRS 187°	Rwy Idg TDZE Apt Elev	5102 638 638
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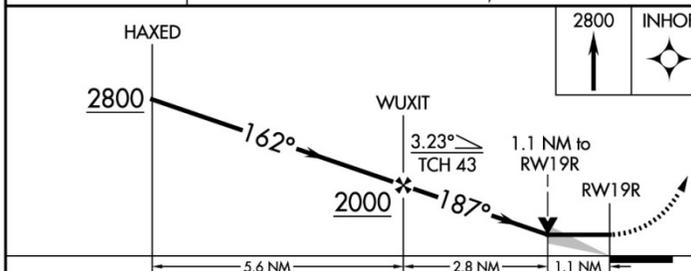
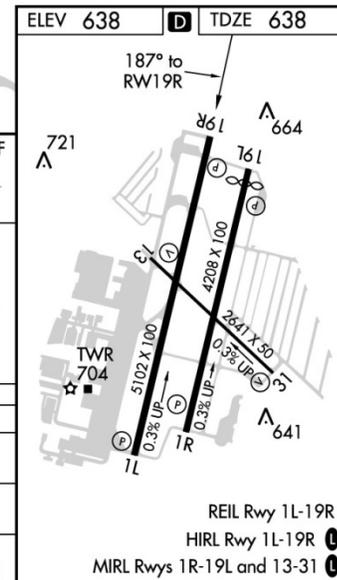
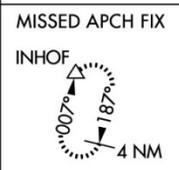
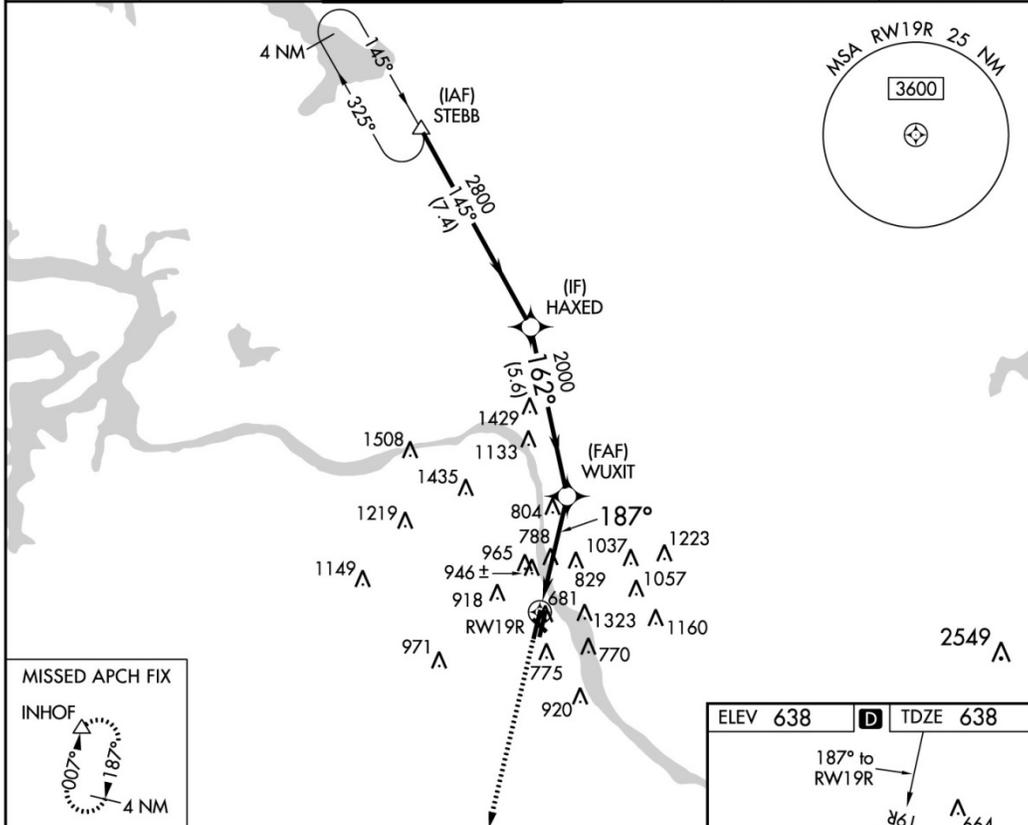
RNAV (GPS) RWY 19R

RICHARD LLOYD JONES JR (RVS)

▼ Night landing: Rwy 13 NA. Circling NA NE of Rws 31 and 19L. DME/DME RNP-0.3 NA.
 ▲ VDP NA when using Tulsa altimeter setting. When local altimeter setting not received, use Tulsa Intl altimeter setting and increase all MDAs 40 feet; increase LNAV Cat C and D visibility 1/8 mile and LP visibility Cat C and D 1/4 mile and Circling Cat C visibility 1/4 mile.

MISSED APPROACH:
 Climb to 2800 direct
 INHOF and hold.

ATIS 126.5	TULSA APP CON 134.7	RIVERSIDE TOWER * 120.3 (CTAF) 0	GND CON 121.7	CLNC DEL 124.5	UNICOM 122.95
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CATEGORY	A	B	C	D
LP MDA	1040-1	402 (500-1)	1040-1 1/8	402 (500-1 1/8)
LNAV MDA	1200-1	562 (600-1)	1200-1 5/8	562 (600-1 5/8)
C CIRCLING	1260-1 622 (700-1)	1280-1 642 (700-1)	1280-1 3/4 642 (700-1 3/4)	1380-2 1/2 742 (800-2 1/2)

TULSA, OKLAHOMA
 Orig-A 21JUL16

36°02'N-95°59'W

RICHARD LLOYD JONES JR (RVS)

RNAV (GPS) RWY 19R

LAS CRUCES, NEW MEXICO

AL-869 (FAA)

16231

WAAS CH 63136 W30A	APP CRS 307°	Rwy Idg TDZE Apt Elev	7499 4444 4457
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RNAV (GPS) RWY 30

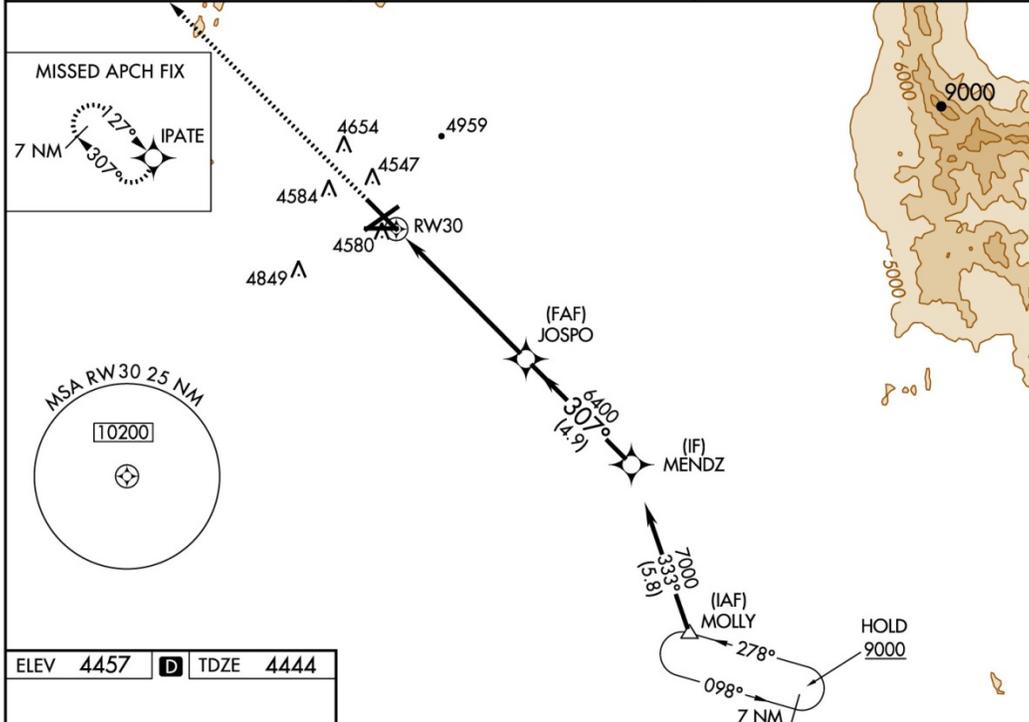
LAS CRUCES INTL (LRU)

⚠ For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -12°C (11°F) or above 51°C (124°F). DME/DME RNP-0.3 NA. Baro-VNAV and VDP NA when using Deming altimeter setting. When local altimeter setting not received, use Deming altimeter setting: increase LPV DA to 4758 feet, LNAV/VNAV DA to 4863 feet and all visibilities 3/8 mile; increase all MDA 120 feet and visibility Cat C and D 1/2 mile.

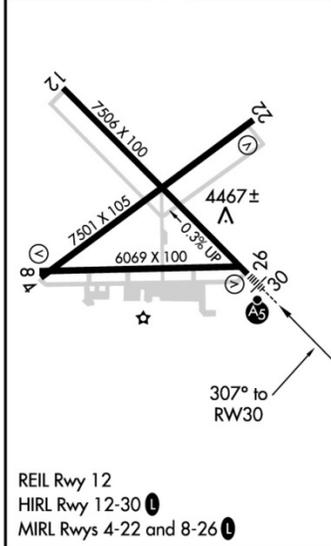


MISSED APPROACH: Climb to 9000 direct IPATE and hold, continue climb-in-hold to 9000.

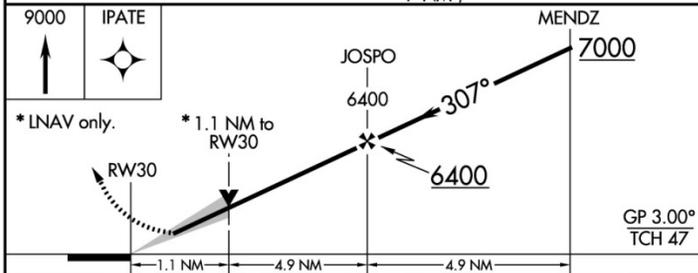
AWOS-3 119.025	ALBUQUERQUE CENTER 128.2 285.5	UNICOM 122.7(CTAF)
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ELEV 4457	D	TDZE 4444
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REIL Rwy 12
HIRL Rwy 12-30
MIRL Rwy 4-22 and 8-26



CATEGORY	A	B	C	D
LPV DA	4644-1/2		200 (200-1/2)	
LNAV/VNAV DA	4749-5/8		305 (300-5/8)	
LNAV MDA	4840-1/2 396 (400-1/2)		4840-5/8 396 (400-5/8)	
C CIRCLING	4900-1 443 (500-1)	5040-1 583 (600-1)	5320-2 1/2 863 (900-2 1/2)	5320-2 3/4 863 (900-2 3/4)

LAS CRUCES, NEW MEXICO
Amdt 2 18AUG16

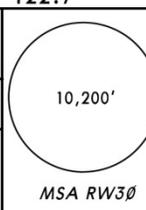
32°17'N-106°55'W

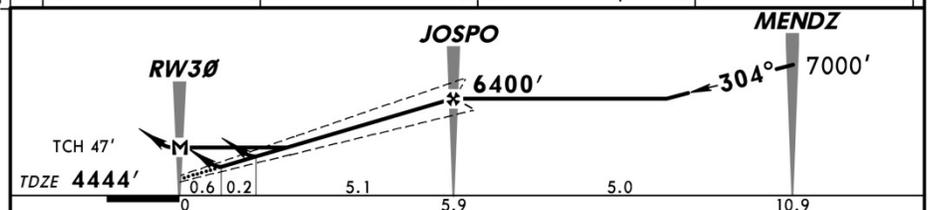
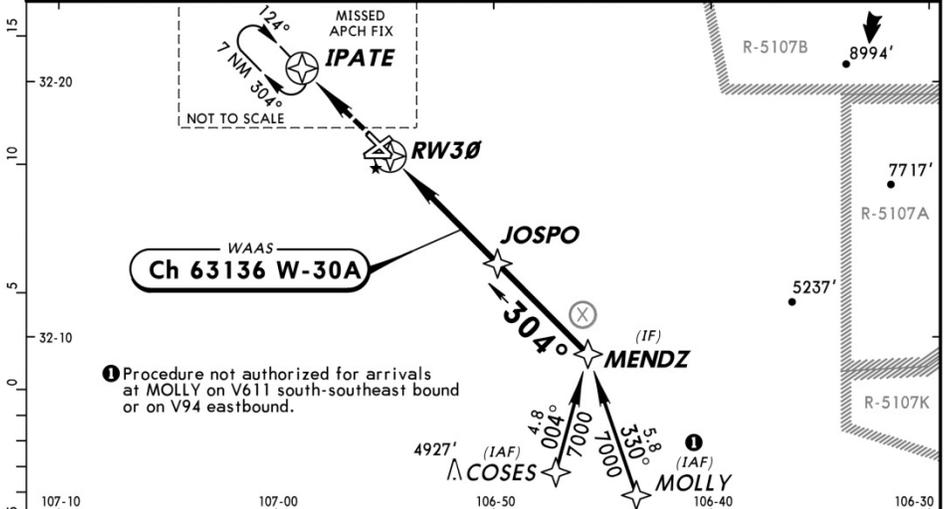
RNAV (GPS) RWY 30

KLRU/LRU
LAS CRUCES INTL

JEPPESEN
7 NOV 14 (12-2) Eff 13 Nov

LAS CRUCES, N MEX
RNAV (GPS) Rwy 30

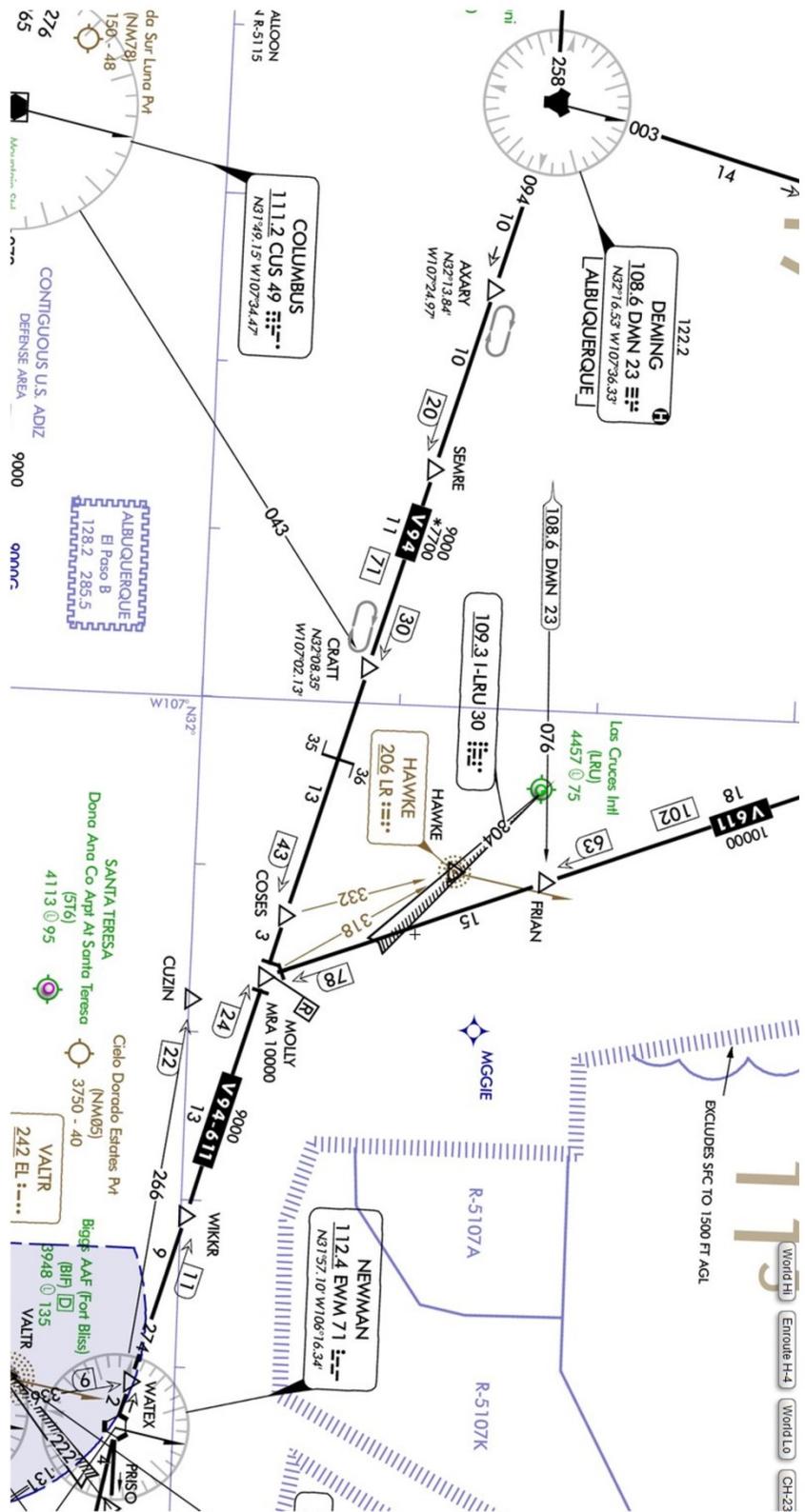
AWOS-3 119.02		ALBUQUERQUE Center (R) 128.2		LAS CRUCES INTL UNICOM CTAF 122.7	
WAAS Ch 63136 W-30A	Final Apch Crs 304°	Minimum Alt JOSPO 6400' (1956')	LPV DA(H) (CONDITIONAL) 4694' (250')	Apt Elev 4457' TDZE 4444'	
MISSED APCH: Climb to 9000' direct IPATE and hold, continue climb-in-hold to 9000'. Alt Set: INCHES Trans level: FL 180 Trans alt: 18000' 1. Use local altimeter setting; if not received, use Deming altimeter setting. 2. Baro-VNAV not authorized when using Deming altimeter setting. 3. For uncompensated Baro-VNAV systems, LNAV/VNAV not authorized below -11°C (13°F) or above 45°C (113°F). 4. DME/DME RNP-0.30 not authorized. 5. Pilot controlled lighting 122.7.					
					



Gnd speed-Kts	70	90	100	120	140	160	MALS	9000'	IPATE
Glide Path Angle	3.05°								
LPV, LNAV/VNAV: MAP at DA									
LNAV: MAP at RW30									

	1 STRAIGHT-IN LANDING RWY 30 With Local Altimeter Setting									1 CIRCLE-TO-LAND With Local Altimeter Setting		
	LPV DA(H) 4694' (250')		LNAV/VNAV DA(H) 4741' (297')			LNAV MDA(H) 4840' (396')				Max Kts	MDA(H)	
A	1/2	3/4	1/2	3/4	7/8	1/2	3/4	1	90		4900' (443') - 1	
B									120	4980' (523') - 1		
C	1		1			1		1 1/8	140	5320' (863') - 2 1/2		
D									165	5320' (863') - 2 3/4		
	With Deming Altimeter Setting									With Deming Altimeter Setting		
	LPV DA(H) 4808' (364')		LNAV/VNAV DA(H) 4855' (411')			LNAV MDA(H) 4960' (516')				Max Kts	MDA(H)	
A	5/8	3/4	1 1/8	3/4	1	1 1/4	1/2	3/4	1		90	5020' (563') - 1
B										120	5100' (643') - 1	
C	1		1			1		1 1/4	1 1/2	140	5440' (983') - 3	
D										165		

1 Night landing: Rwy 30 CAT C & D, Rwy 22 not authorized.
 CHANGES: Procedure © JEPPESEN, 2003, 2014. ALL RIGHTS RESERVED.



ATTACHMENT 4

DILLON, MONTANA

AL-121 (FAA)

16119

WAAS CH 93927 W17A	APP CRS 166°	Rwy ldg TDZE Apt Elev 6501 5202 5245
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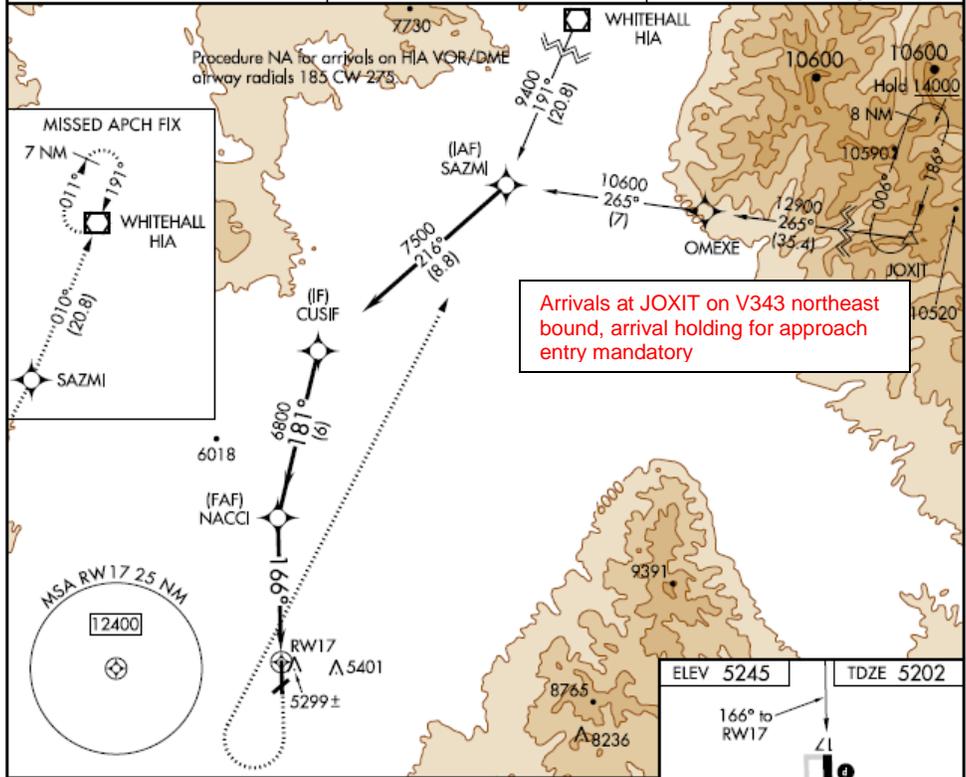
RNAV (GPS) RWY 17

DILLON (DLN)

When local altimeter setting not received, procedure NA.
 DME/DME RNP-0.3 NA. For uncompensated Baro-VNAV systems,
 LNAV/VNAV NA below -27°C (-16°F) or above 51°C (124°F).
 Night Landing: Rwy 4, 22, 35 NA.

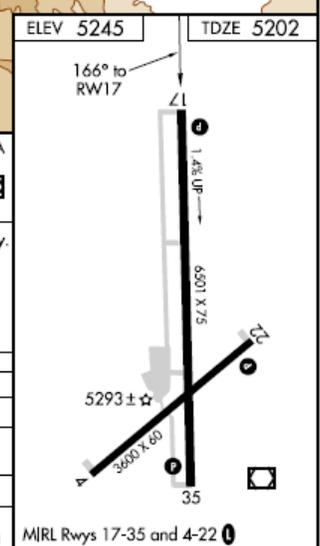
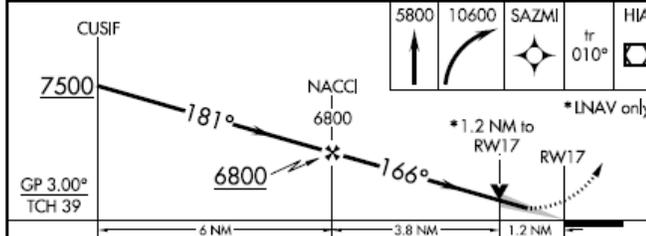
MISSED APPROACH: Climb to 5800 then climbing right turn to 10600 direct SAZMI and on track 010° to HIA VOR/DME and hold.

ASOS 135.225	SALT LAKE CENTER 132.4 338.3	UNICOM 122.8 (CTAF) 0
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NW-1, 15 SEP 2016 to 13 OCT 2016

NW-1, 15 SEP 2016 to 13 OCT 2016



CATEGORY	A	B	C	D
LPV DA		5452-7/8	250 (200-7/8)	
LNAV/VNAV DA		5525-1 1/8	323 (300-1 1/8)	
LNAV MDA	5560-1	358 (400-1)	5560-1 1/8	358 (400-1 1/8)
CIRCLING	5760-1 515 (600-1)	5860-1 615 (700-1)	5980-2 735 (800-2)	6300-3 1055 (1100-3)

DILLON, MONTANA
 Amdt 1B 28APR16

45°15'N-112°33'W

RNAV (GPS) RWY 17

DILLON (DLN)

INITIAL DISCUSSION – MEETING 16-02: Rich Boll, (NBAA) briefed ([VIEW](#)) from the attachment slides in the RD, showing two developed procedures. An arrival hold (on the airway) was put on the charts instead of a hold in-lieu-of PT (HILPT), and because of the 90-degree turn limitations, the pilot cannot turn in on the approach from the airway. Because of the 90-degree turn limitation, there is an increase in the use of arrival holds to execute the procedure. Rich voiced that an arrival hold is in effect just a parking spot and that they are used predominantly in non-radar locations. Rich discussed that aircraft arriving on the airways must be cleared by ATC to hold in the arrival pattern and then cleared for the approach. This explanation is not in the AIM. Rich requests: do not use arrival holds unless necessary; new additional phraseology in AIM paragraphs 4-8-1 & 5-4-6 as shown in the RD attachments (Gary Fiske is against changing the language as shown); changing the criteria note language to allow an arrival as long as the hold is utilized (in these specific examples). Russ Beatse (Memphis ARTCC) liked the new proposed note better than the current note and added that ATC typically vectors aircraft to avoid the 90 degree issue. Rich then explained the proposal to allow aircraft (via chart note) permission to do the arrival hold and then the approach without further ATC clearance. Tony said this sounds like HILPT, which is currently only at an IF or IF/IAF. Tom said the language in Order 8260.19 would have to be changed to support this. Rich said the last part of their request is to add arrival holding (currently not in database) as part of the coded procedure, so pilots will not have to build it inflight. Tom asked if ATC and flight ops concurred with these suggestions. Gary said ATC agrees with the new note but not the rest, since the original design utilized IF- and IAF-only on purpose. Gary believes that if the pilot needs to make a turn in holding prior to approach they need to ask ATC. Rich said the RNAV 90 degree turn limitation is causing the problem. Gary agreed that would help and then ATC would not have to revise Order JO 7110.65. The ACF decided a work group would need to be formed (sign-up sheet provided ([VIEW](#))) before a decision could be made on what exactly should be pursued. Revising policy to use an arrival holding pattern for a course reversal would reduce notes prohibiting use of the procedure from a certain direction.

Status: Rich Boll will chair the group and report back at next ACF. **Item open: NBAA (Rich Boll)**

MEETING 17-02: Rich Boll (NBAA) briefed the results of the working group meetings ([VIEW](#)), held over the past year. The working group concluded policy already prohibits use of arrival holding patterns in lieu of hold-in-lieu procedure turns, but the group did recommend an expanded use of arrival holding patterns where a hold-in-lieu is not possible (for example, at an initial or feeder fix). These recommendations will require changes to Order 8260.19, to which Rich displayed draft language that would be consistent with the recommendations. Rich noted the establishment of procedure turns is limited by the 14 CFR part 97.3 definition, indicating they are used for establishment on an intermediate or final segment only (therefore not a feeder or initial segment). The working group rejected the idea of coding arrival holding patterns as part of the procedure because it could be misconstrued as authorizing a pilot to fly the arrival holding pattern without specific authorization from ATC. Rich displayed draft AIM/AIP language that could be used to support the expanded use of arrival holding patterns. Rich stated the working group rejected the recommendation to allow an arrival holding pattern to be flown without specific ATC authorization. Rich presented two chart note examples that could be used to support the expanded use of arrival holding patterns and presented some examples of the notes on charts; Rich indicated the working group could not decide between the two notes. John suggested ACF-IPG participants review the slides and forward comments. Rich said if the 90/120-degree angle

issue is not addressed there will be more of these, and again requested input or any other ideas. John stated it would be a good idea to introduce these suggestions to the US-IFPP in January.

Action Items:

Rich Boll to collect comments received regarding the working group recommendations, particularly with the proposed AIM/IPH language and the two notes under consideration. John Bordy will introduce the recommendations to the US-IFPP in January 2018 and obtain feedback from that group.

Status: Item will remain open.

Meeting 18-01: John Bordy (Flight Procedure Standards Branch) informed the group that the proposal to allow arrival holding patterns be used for procedure entry was briefed to the January meeting of the US-IFPP and was generally well received. However, at the US-IFPP the representative from Aircraft Certification expressed some concerns regarding RNAV holding in general, and was hesitant to endorse a policy change that could be interpreted as a new certification requirement. John suggested convening a meeting with Rich Boll (NBAA) and Aircraft Certification representatives. John Bordy will set up the meeting for their concerns. Rich said he had requested feedback and only Rune Duke (AOPA) had provided any. Rich provided the two verbiage options ([VIEW](#)) for possible chart notes and placed them on the Instrument Procedures Group web site to solicit feedback.

Action Items:

- The two options, provided by Rich, are on the Instrument Procedures Group web site to solicit feedback.
- John Bordy will set up a meeting between Aircraft Certification and Rich Boll.

Status: Item open.

Meeting 18-02: Rich Boll (NBAA) provided ([slides](#)) a brief review of the issue. Rich briefed that a working group agreed on some recommendations and briefed those recommendations to the US-IFPP. The Aircraft Certification (AIR) representative to the US-IFPP expressed some concern that one of the recommendations related to a new chart note could be interpreted as a new equipment requirement. At subsequent meetings with AFS and AIR representatives, it was suggested to examine the proposed chart notes that were originally recommended and two options were produced. Rich showed examples of what these two notes would look like on example charts. Rich indicated most support at previous meetings was for option #1, but would like to know what note the attendees of the ACM-IPG prefer. Rich asked John Bordy if any changes are being pursued within the Order 8260.19. John stated policy is being added to encourage procedure design that would allow entry from an airway to a feeder route from both directions to avoid the need to eliminate arrival from one direction. Rich displayed four example chart notes and asked the audience for feedback; the audience appeared to prefer options #1

and #3. After some discussion, Valerie Watson (AJV-553) suggested a new option #5, as shown (added during the meeting) on [slide 10](#), which some members of the group also liked. These options will be posted on the web site for comment to back John Bordy. Rich stated AIM guidance will need to be changed depending upon which note is ultimately selected. John Bordy will report back.

Action Items:

- Steve Van Camp will post the five note options on the ACM-IPG website and request feedback for a preference.
- John Bordy will provide a status on the proposed change to Order 8260.19I.
- Rich Boll to develop preliminary AIM language to support the changes.

Status: Item open.

Meeting 19-01: John Bordy, Flight Procedures and Airspace Group, briefed the issue directly from the [slide](#): discussing a summary and current status. He indicated language has been added to draft Order 8260.19I to allow arrival holding patterns at feeder fixes, as well language to encourage designers to place fixes on airways that will allow entry from both arrival directions. Chart note options to accompany the arrival holding patterns were posted on the ACM-IPG website to solicit feedback; two individuals provided feedback to Rich Boll, NBAA. Rich Boll displayed [slides](#) showing five options for chart notes and asked for a show of hands indicating preference. The group voted for the option #5 example, which states: “**Proc NA via V343 northeast bound without holding at JOXIT. ATC CLNC REQD**”. This note will be referred to the US-IFPP 19-02 meeting as the preference of the ACM-IPG. Rich Boll indicated completion of draft AIM language to support this proposal is awaiting final determination of the note.

Action Item: John Bordy will refer the selection of the note to the US-IFPP in June to obtain concurrence and report back.

Status: Item open.

Meeting 19-02: John Bordy, FAA Flight Procedures and Airspace Group, briefed the issue summary and current status from the [slide](#). ACM 19-01 action item was to submit note language to US-IFPP 19-02. This was accomplished, and the US-IFPP was satisfied with the note language. John will add an example of the note to Order 8260.19I and will send the example note to Rich Boll, who will draft and submit an AIM language revision. There will be no concern with the publication of Order 8260.19I coming well before the AIM change since it will take some time to implement the order changes. John will report the status of the changes at the next meeting. Gary Fiske (CTR), FAA/AJV-P31 asked how many procedures would be impacted. John suggested that while it will affect several procedures, the impact should be small since the changes will only be required day-forward.

Action Items:

- John Bordy will forward the example note language to Rich Boll
- Rich Boll will submit AIM language changes based on the accepted note
- FAA Flight Procedures and Airspace Group will report on status of Order 8260.19I changes

Status: Item open

Meeting 20-02: Jeff Rawdon, FAA Flight Procedures and Airspace Group (FPAG), briefed the issue summary and current status from the [slide](#). Language was added in Order 8260.19I, and an example note was added and sent to Rich Boll, NBAA. Aeronautical Information Manual (AIM) revisions were drafted and forwarded to Doug Dixon, FAA Flight Operations Group (FOG), agreed to by the working group, and will be included in AIM paragraph 5-4-6. A DCP is in process with a target of summer 2021. Dan Wacker, FPAG, inquired if the Instrument Procedures Handbook (IPH) will need any updates, and Rich said yes, adding the Instrument Flying Handbook (IFH) would also need to be reviewed for potential changes. Doug Phifer, FOG, advised he is the point-of-contact for both. Rich added that ATC is open to the changes. Bruce Williams, Flight Instructor and FFAST Team Member, suggested the Chart Users Guide might also require a revision, and Jeff asked Doug Dixon and Doug Phifer to consider this also.

Action Items:

- Flight Operations Group (Doug Dixon) will report on status of AIM changes.
- Flight Operations Group (Doug Phifer) will advise on IPH and IFH updates and any necessary revisions to the Chart User's Guide.

Status: Item open.
