

# Appendix D: INSTRUMENT APPROACH PROCEDURES

Airport Master Plan Update

Aurora State Airport

(HELNS.HELNS4) 03135

# HELNS FOUR ARRIVAL

ST-330 (FAA)

PORTLAND, OREGON

PORTLAND APP CON  
124.35 299.2  
PORTLAND INTL ATIS  
128.35 269.9  
PORTLAND-HILLSBORO ATIS  
127.65

SEATTLE  
116.8 SEA  
Chan 115  
N47°26.12'-W122°18.58'  
L-1, H-1

10000  
\*9700  
161°  
(71)

HELNS  
N46°15.42'  
W122°18.58'

BATTLE GROUND  
116.6 BTG  
Chan 113  
N45°44.87'-W122°35.49'

KRATR  
N46° 05.39' - W122° 24.17'

NOTE: Maintain the last assigned altitude. Upon receipt of "Descend via the HELNS4": . . .  
PROP/TURBOPROP: Cross at and maintain 10,000'.  
TURBOJET: Cross at and maintain 12,000' at 300 K IAS or less.

10000  
180°  
(111)

7000  
(22)

280°

110°

PORTLAND-HILLSBORO

PORTLAND INTL

PORTLAND-TROUTDALE

AURORA STATE

NOTE: Chart not to scale.

NOTE: DME and RADAR required.

SEATTLE TRANSITION (SEA.HELNS4): From over SEA VORTAC via SEA R-161 to HELNS DME FIX. Thence....

.... From over HELNS DME FIX via BTG R-360 to BTG VORTAC. Thence....

LANDING EAST: Depart BTG VORTAC heading 280° for vectors to final approach course.

LANDING WEST: Depart BTG VORTAC heading 110° for vectors to final approach course.

# HELNS FOUR ARRIVAL

(HELNS.HELNS4) 03135

PORTLAND, OREGON

NW-1, 29 JUL 2010 to 26 AUG 2010

NW-1, 29 JUL 2010 to 26 AUG 2010



INSTRUMENT APPROACH PROCEDURE CHARTS

**A** IFR ALTERNATE AIRPORT MINIMUMS

Standard alternate minimums for non precision approaches are 800-2 (NDB, VOR, LOC, TACAN, LDA, VORTAC, VOR/DME, ASR or WAAS LNAV); for precision approaches 600-2 (ILS or PAR). Airports within this geographical area that require alternate minimums other than standard or alternate minimums with restrictions are listed below. NA - means alternate minimums are not authorized due to unmonitored facility or absence of weather reporting service. Civil pilots see FAR 91. IFR Alternate Airport Minimums: Ceiling and Visibility Minimums not applicable to USA/USN/USAF. Pilots must review the IFR Alternate Airport Minimums Notes for alternate airfield suitability.

NAME ALTERNATE MINIMUMS

**ALBANY, OR**

ALBANY MUNI ..... VOR/DME or GPS-A  
NA except for operators with approved weather reporting service.

**ARLINGTON, WA**

ARLINGTON MUNI ..... NDB or GPS Rwy 34  
Category D, 800-2½.  
NA when Paine Field control tower closed.

**ASTORIA, OR**

ASTORIA RGNL ..... RNAV (GPS) Rwy 26<sup>12</sup>  
VOR Rwy 8<sup>3</sup>

- <sup>1</sup>NA when local weather not available.
- <sup>2</sup>Categories A, B, 900-2; Category C, 900-2¾; Category D, 900-3.
- <sup>3</sup>Category C, 800-2¾; Category D, 900-3.

**AURORA, OR**

AURORA STATE ..... LOC Rwy 17<sup>1</sup>  
RNAV (GPS) Rwy 17<sup>23</sup>  
RNAV (GPS) Rwy 35<sup>2</sup>

- <sup>1</sup>Category D, 800-2¾.
- <sup>2</sup>NA when local weather not available.
- <sup>3</sup>Categories A, B, 900-2; Category C, 900-2½; Category D, 900-2¾.

**BAKER, MT**

BAKER MUNI ..... NDB Rwy 13<sup>1</sup>  
NDB Rwy 31<sup>2</sup>

- <sup>1</sup>Categories A,B, 1100-2; Categories C,D, 1100-3.
- <sup>2</sup>Categories A,B, 1000-2; Category C, 1000-2¾; Category D, 1000-3.

**BAKER CITY, OR**

BAKER CITY MUNI ..... RNAV (GPS) Rwy 13<sup>12</sup>  
VOR-A<sup>13</sup>  
VOR/DME Rwy 13<sup>24</sup>

- <sup>1</sup>NA when local weather not available.
- <sup>2</sup>Category D, 900-2¾.
- <sup>3</sup>Categories A,B, 1900-2; Categories C,D, 1900-3.
- <sup>4</sup>NA when control zone not in effect.

NAME ALTERNATE MINIMUMS

**BELLINGHAM, WA**

BELLINGHAM INTL ..... ILS or LOC Rwy 16  
RNAV (GPS) Rwy 16  
NA when local weather not available.

**BIG PINEY, WY**

MILEY MEMORIAL FIELD ..... VOR Rwy 31  
Category D, 800-2¼.

**BILLINGS, MT**

BILLINGS LOGAN  
INTL ..... NDB Rwy 10L<sup>1</sup>  
RNAV (GPS) Rwy 10L<sup>2</sup>  
RNAV (GPS) Rwy 28R<sup>3</sup>

- <sup>1</sup>Category D, 800-2¼.
- <sup>2</sup>Categories A,B,C,D, 800-2¼.
- <sup>3</sup>Categories A,B, 900-2; Categories C,D, 900-3.

**BOISE, ID**

BOISE AIR TERMINAL(GOWEN  
FIELD) ..... LOC BC Rwy 28L  
RNAV (GPS) Y Rwy 10R  
RNAV (GPS) Y Rwy 28L  
VOR/DME or TACAN Rwy 10L  
VOR/DME or TACAN Rwy 28L  
Category E, 1000-3.

**BOZEMAN, MT**

GALLATIN FIELD ..... RNAV (GPS)-A<sup>1</sup>  
VOR Rwy 12<sup>2</sup>

- <sup>1</sup>Categories A, B, 1900-2; Categories C, D, 1900-3.
- <sup>2</sup>Categories A, B, 900-2; Category C, 900-2¾; Category D, 900-3.

**BREMERTON, WA**

BREMERTON NATIONAL .. RNAV (GPS) Rwy 1  
RNAV (GPS) Rwy 19<sup>1</sup>

- NA when local weather not available.
- <sup>1</sup>Categories A,B, 1200-2; Categories C,D, 1200-3.

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# TAKE-OFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES

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## ARLINGTON, WA

### ARLINGTON MUNI

TAKE-OFF MINIMUMS: **Rwy 11**, 600-2 or std. with a min. climb of 350' per NM to 700. **Rwy 34**, 500-2 or std. with a min. climb of 260' per NM to 700.

DEPARTURE PROCEDURE: **Rwy 11**, turn right.

**Rwy 16**, climb direct to WATON LOM. **Rwys 29, 34**, turn left. All aircraft climb direct to WATON LOM. Aircraft departing WATON LOM on bearings 150° CW 200° and bearings 260° CW 340° from WATON LOM continue climb on course. Aircraft departing WATON LOM on bearings 340° CW 150° from WATON LOM climb in holding pattern (S, left turns, 339° inbound) to 4500 then continue climb on course. Aircraft departing WATON LOM on bearings 200° CW 260° from WATON LOM climb in holding pattern (S, left turns, 339° inbound) to 1500 then continue climb on course.

## ASTORIA, OR

### ASTORIA RGNL

TAKE-OFF MINIMUMS: **Rwy 8**, 800-3 or std. with a min. climb of 320' per NM to 900. **Rwy 13**, 700-2 or std. with a min. climb of 350' per NM to 800.

DEPARTURE PROCEDURE: **Rwys 8, 31**, turn left.

**Rwy 13**, climb runway heading to 800 then climbing right turn. **Rwy 26**, turn right. Aircraft departing northwestbound climb via AST R-290 on course.

All other aircraft climb to 1500 or above via AST R-290 then left turn to AST VOR/DME and continue climbing on course.

## AUBURN, WA

### AUBURN MUNI

DEPARTURE PROCEDURE: Use AUBURN DEPARTURE.

## AURORA, OR

### AURORA STATE

DEPARTURE PROCEDURE: **Rwy 17**, turn right, thence... **Rwy 35**, turn left, thence...

...Aircraft proceeding via V23 climb on course; All others climb in UBG VOR/DME holding pattern (hold south, left turn, 003° inbound) to cross UBG VOR/DME at or above MEA/MCA for direction of flight.

NOTE: **Rwy 17**, multiple trees 31' from departure end of runway, 273' right of centerline, up to 90' AGL/270' MSL. Multiple trees beginning 979' from departure end of runway, 247' right of centerline up to 113' AGL/316' MSL. Road 254' from departure end of runway, 350' left of centerline, 16' AGL/209' MSL. **Rwy 35**, multiple trees and road beginning 31' from departure end of runway, 163' left of centerline, up to 138' AGL/329' MSL. Multiple trees beginning 973' from departure end of runway, 281' right of centerline, up to 58' AGL/253' MSL.

## BAKER, MT

### BAKER MUNI

NOTE: **Rwy 13**, 51' derrick 2200' from departure end of runway on centerline. 100' trees south of airport, near runway, various locations. **Rwy 31**, 146' antenna on tower 4000' from departure end of runway, 1800' left of centerline. 114' rod on OL antenna 3800' from departure end of runway on centerline.

## BAKER CITY, OR

### BAKER CITY MUNI

TAKE-OFF MINIMUMS: **Rwy 8**, 900-2 or std. with a min. climb of 315' per NM to 6000, (788' per min. at 150K, 1050' per min. at 200K, 1313' per min. at 250K).

**Rwy 13**, 1400-2 or std. with a min. climb of 310' per NM to 6000 (775' per min. at 150K, 1033' per min. at 200K, 1292' per min. at 250K). **Rwy 17**, NA. **Rwy 31**, 1300-2 or std. with a min. climb of 240' per NM to 6000 (600' per min. at 150K, 800' per min. at 200K, 1000' per min. at 250K). **Rwy 35**, CAT C, D 1000-2; or std. with a min. climb of 240' per NM to 6000 (600' per min. at 150K, 800' per min. at 200K, 1000' per min. at 250K).

DEPARTURE PROCEDURE: **Rwys 8, 13**, turn left.

**Rwys 26, 31, 35**, turn right. All aircraft climb direct BKE VOR/DME. Continue climb in BKE holding pattern (SE, right turns, 298° inbound) to cross BKE VOR/DME at or above MCA or MEA for route of flight.

## BELLINGHAM, WA

### BELLINGHAM INTL

DEPARTURE PROCEDURE: **Rwy 16**, climb heading 160° to 600, then climbing right turn direct HUH VORTAC. Do not exceed 210 KIAS until established northbound. **Rwy 34**, climb heading 340° to 600, then climbing left turn to intercept HUH R-145 to HUH VORTAC, continue climb in holding pattern (northwest, right turn, 149° inbound) to MEA as appropriate for direction of flight.

NOTE: **Rwy 16**, lighted windsock 9' from departure end of runway, 259' right of centerline, 16' AGL/181' MSL. Multiple trees beginning 747' from departure end of runway, 405' right of centerline, up to 68' AGL/213' MSL. Multiple trees beginning 1128' from departure end of runway, 57' left of centerline, up to 104' AGL/249' MSL. **Rwy 34**, lighted windsock 93' from departure end of runway, 516' right of centerline, 27' AGL/169' MSL. Multiple trees beginning 1372' from departure end of runway, 619' right of centerline, up to 134' AGL/246' MSL.

## BEND, OR

### BEND MUNI (BDN)

#### AMDT 4 09183 (FAA)

DEPARTURE PROCEDURE: Use BEND DEPARTURE.

## BIG PINEY, WY

### MILEY MEMORIAL FIELD

TAKE-OFF MINIMUMS: **Rwys 8, 26**, NA. DEPARTURE PROCEDURE: **Rwy 13**, climb to 8400 via BPI R-124. **Rwy 31**, climb to 10800 via BPI R-320 thence all aircraft climb on course.

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# TAKE-OFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES

VOR/DME-A  
AURORA STATE (UAO)

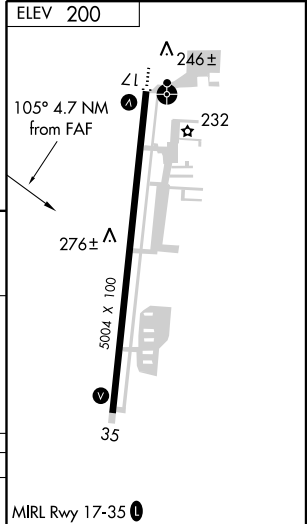
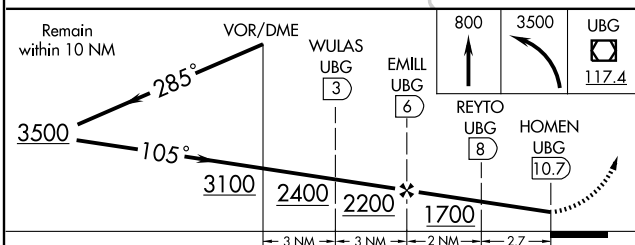
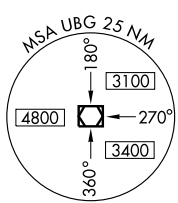
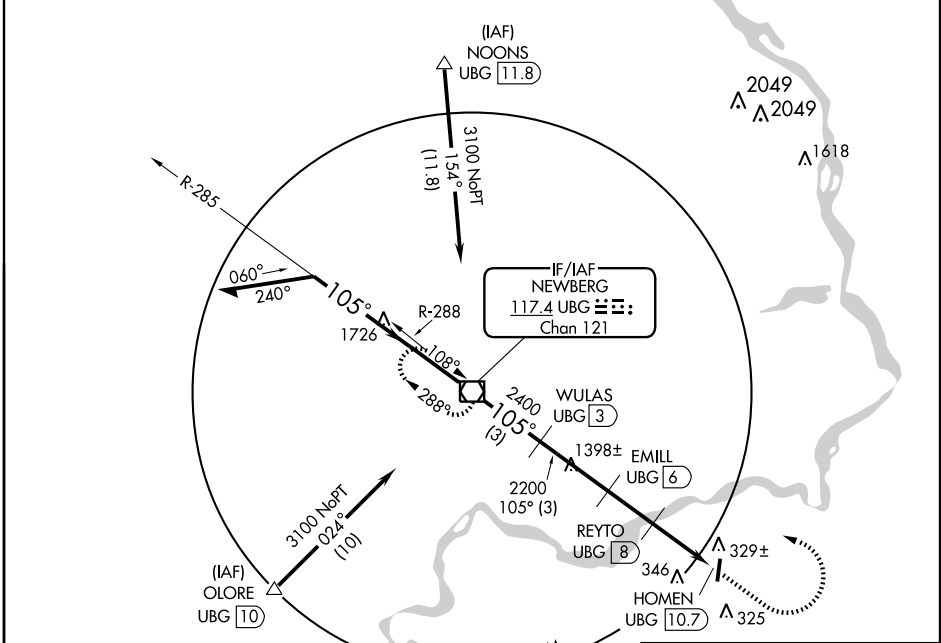
VOR/DME UBG <b>117.4</b> Chan <b>121</b>	APP CRS <b>105°</b>	Rwy Idg TDZE Apt Elev <b>N/A</b> <b>N/A</b> <b>200</b>
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MISSED APPROACH: Climb to 800 then climbing left turn to 3500 direct UBG VOR/DME and hold.

ASOS <b>118.525</b>	PORTLAND APP CON <b>126.0 284.6</b>	CLNC DEL <b>119.95</b>	UNICOM <b>122.7</b> (CTAF) <b>0</b>
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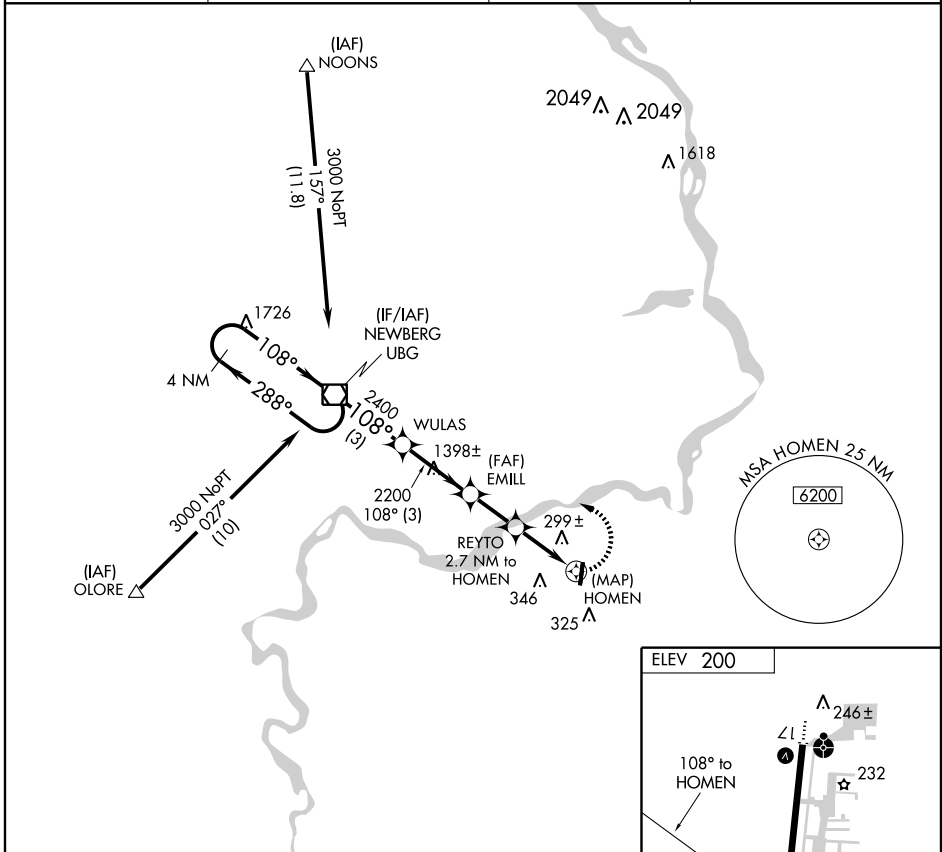
CATEGORY	A	B	C	D
CIRCLING	640-1 440 (500-1)	660-1 460 (500-1)	660-1½ 460 (500-1½)	760-2 560 (600-2)

**RNAV (GPS)-B**  
AURORA STATE (UAO)

APP CRS <b>108°</b>	Rwy Idg TDZE Apt Elev	<b>N/A</b> <b>N/A</b> <b>200</b>
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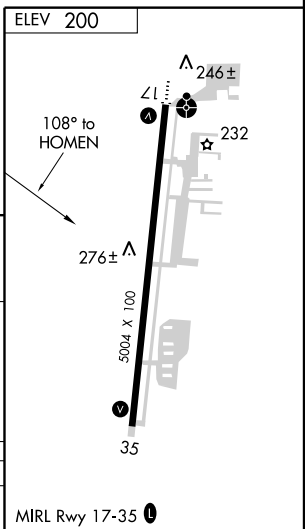
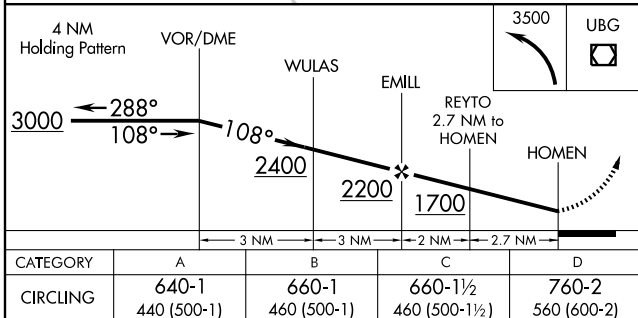
DME/DME RNP- 0.3 NA.		MISSED APPROACH: Climbing left turn to 3500 direct UBG VOR/DME and hold.	
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ASOS <b>118.525</b>	PORTLAND APP CON <b>126.0 284.6</b>	CLNC DEL <b>119.95</b>	UNICOM <b>122.7 (CTAF)</b>
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NW-1, 29 JUL 2010 to 26 AUG 2010

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# RNAV (GPS) RWY 35

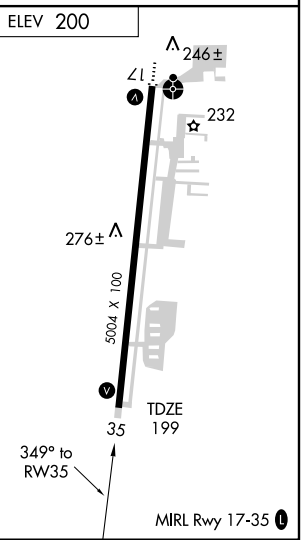
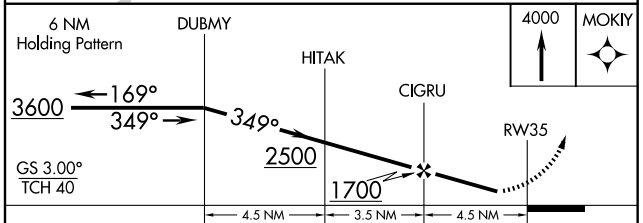
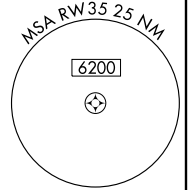
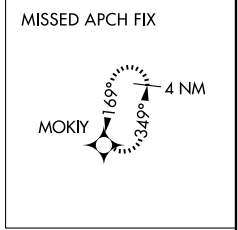
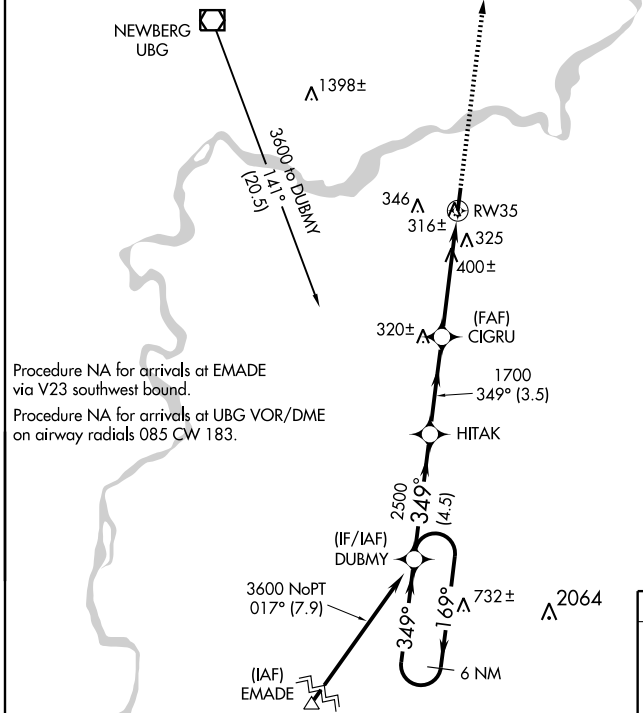
AURORA STATE (UAO)

WAAS CH <b>77508</b> W35A	APP CRS <b>349°</b>	Rwy Idg <b>5004</b> TDZE <b>199</b> Apt Elev <b>200</b>
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**⚠** DME/DME RNP-0.3 NA. For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -15°C (5°F) or above 48°C (118°F). When local altimeter setting not received, use Mc Minnville Muni altimeter setting and increase all DA 42 feet and MDA 60 feet; increase LPV, LNAV/VNAV visibilities ¼ mile all Cats, increase LNAV Cat D visibility to 1½. Visibility reduction by helicopters NA. Baro-VNAV NA when using Mc Minnville Muni altimeter setting.

**MISSED APPROACH:** Climb to 4000 direct MOKIY and hold, continue climb-in-hold to 4000.

ASOS <b>118.525</b>	PORTLAND APP CON <b>126.0 284.6</b>	CINC DEL <b>119.95</b>	UNICOM <b>122.7 (CTAF)</b> <b>0</b>
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CATEGORY	A	B	C	D
LPV DA	500-1 301 (300-1)			
LNAV/VNAV DA	604-1½ 405 (500-1½)			
LNAV MDA	700-1 501 (500-1)	700-1½ 501 (500-1½)		
CIRCLING	700-1 500 (500-1)	700-1½ 500 (500-1½)	760-2 560 (600-2)	

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# RNAV (GPS) RWY 17

AURORA STATE (UAO)

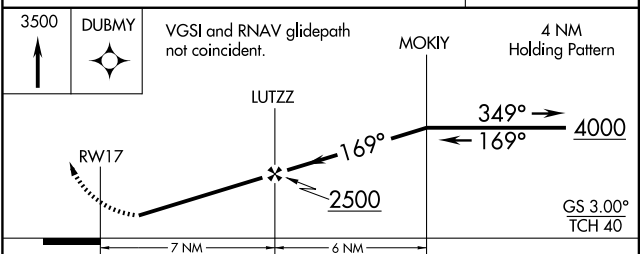
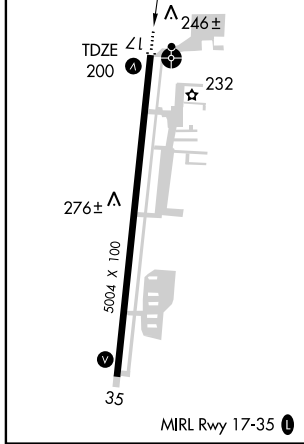
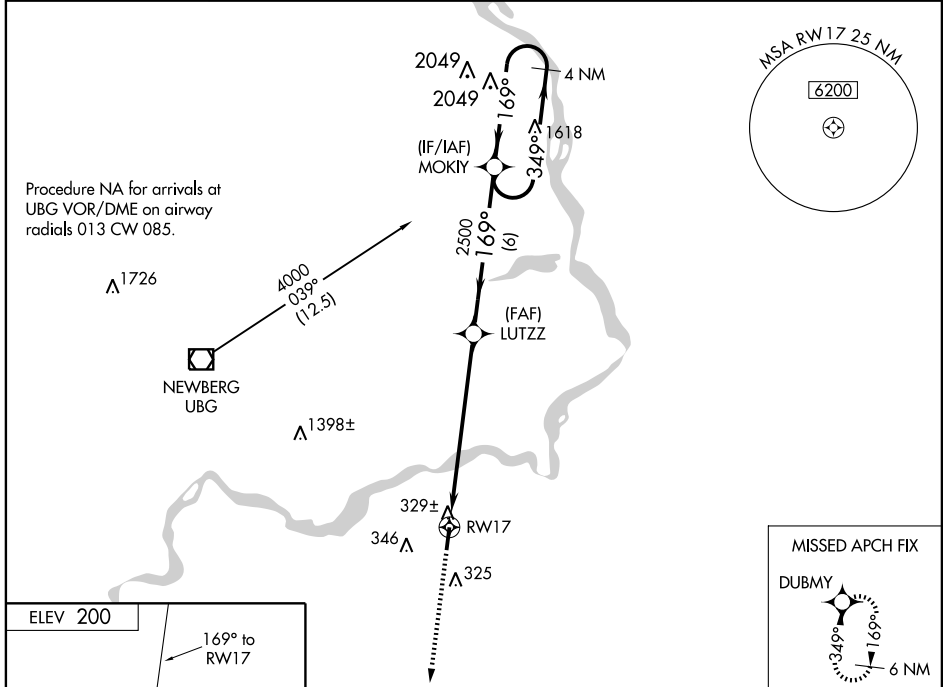
WAAS CH <b>70308</b> <b>W17A</b>	APP CRS <b>169°</b>	Rwy Idg TDZE <b>200</b> Apt Elev <b>200</b>	<b>5004</b>
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**▽** DME/DME RNP-0.3 NA. When local altimeter setting not received, use Mc Minville Muni altimeter setting and increase all DA 42 feet and all MDA 60 feet; increase LPV, LNAV/VNAV visibilities all Cats. ¼ mile, increase LNAV visibility Cats. A/C/D ¼ mile, increase Circling visibilities Cats. A/C/D ¼ mile. For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -15°C (5°F) or above 49°C (120°F). Inoperative table does not apply. Visibility reduction by helicopters NA.

**ODALS**

**MISSED APPROACH:**  
Climb to 3500 direct DUBMY and hold, continue climb-in-hold to 3500.

ASOS <b>118.525</b>	PORTLAND APP CON <b>126.0 284.6</b>	CLNC DEL <b>119.95</b>	UNICOM <b>122.7</b> (CTAF) <b>0</b>
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CATEGORY	A	B	C	D
LPV DA		550-1¼	350 (400-1¼)	
LNAV/VNAV DA		580-1¼	380 (400-1¼)	
LNAV MDA	1060-1 860 (900-1)	1060-1¼ 860 (900-1¼)	1060-2½ 860 (900-2½)	1060-2¾ 860 (900-2¾)
CIRCLING	1060-1 860 (900-1)	1060-1¼ 860 (900-1¼)	1060-2½ 860 (900-2½)	1060-2¾ 860 (900-2¾)

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NW-1, 29 JUL 2010 to 26 AUG 2010



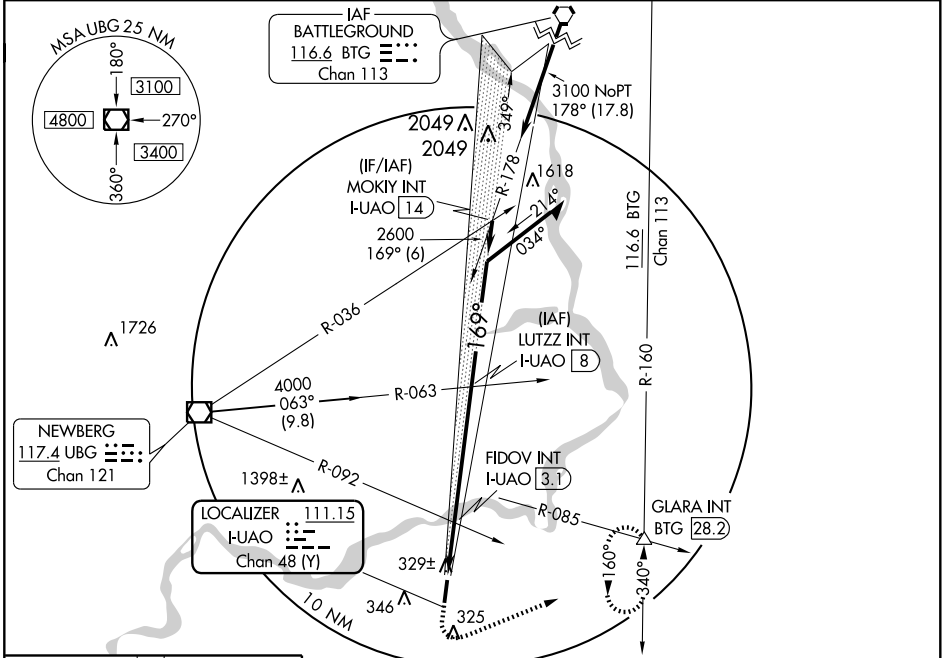
# LOC RWY 17

AURORA STATE (UAO)

LOC/DME I-UAO <b>111.15</b> Chan 48 (Y)	APP CRS <b>169°</b>	Rwy Idg TDZE Apt Elev	<b>5004</b> <b>200</b> <b>200</b>
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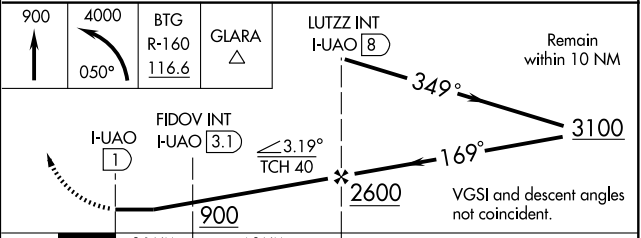
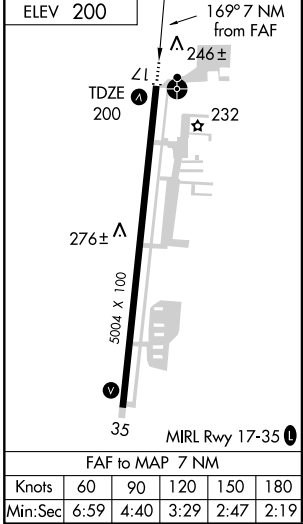
<p><b>▼</b> Inoperative table does not apply.</p> <p><b>▲</b></p>	<p>ODALS</p>	<p>MISSED APPROACH: Climb to 900 then climbing left turn to 4000 via heading 050° and BTG R-160 to GLARA Int/ BTG 28.2 DME and hold. Continue climb-in-hold to 4000.</p>
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ASOS <b>118.525</b>	PORTLAND APP CON <b>126.0 284.6</b>	CINC DEL <b>119.95</b>	UNICOM <b>122.7 (CTAF) 0</b>
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CATEGORY	A	B	C	D
S-17	900-1	700 (700-1)	900-2 700 (700-2)	900-2 1/4 700 (700-2 1/4)
CIRCLING	900-1	700 (700-1)	900-2 700 (700-2)	900-2 1/4 700 (700-2 1/4)
FIDOV FIX MINIMUMS				
S-17	580-1 380 (400-1)		580-1 1/4 380 (400-1 1/4)	
CIRCLING	640-1 440 (500-1)	660-1 460 (500-1)	660-1 1/2 460 (500-1 1/2)	760-2 560 (600-2)