Approach Charts and Procedures

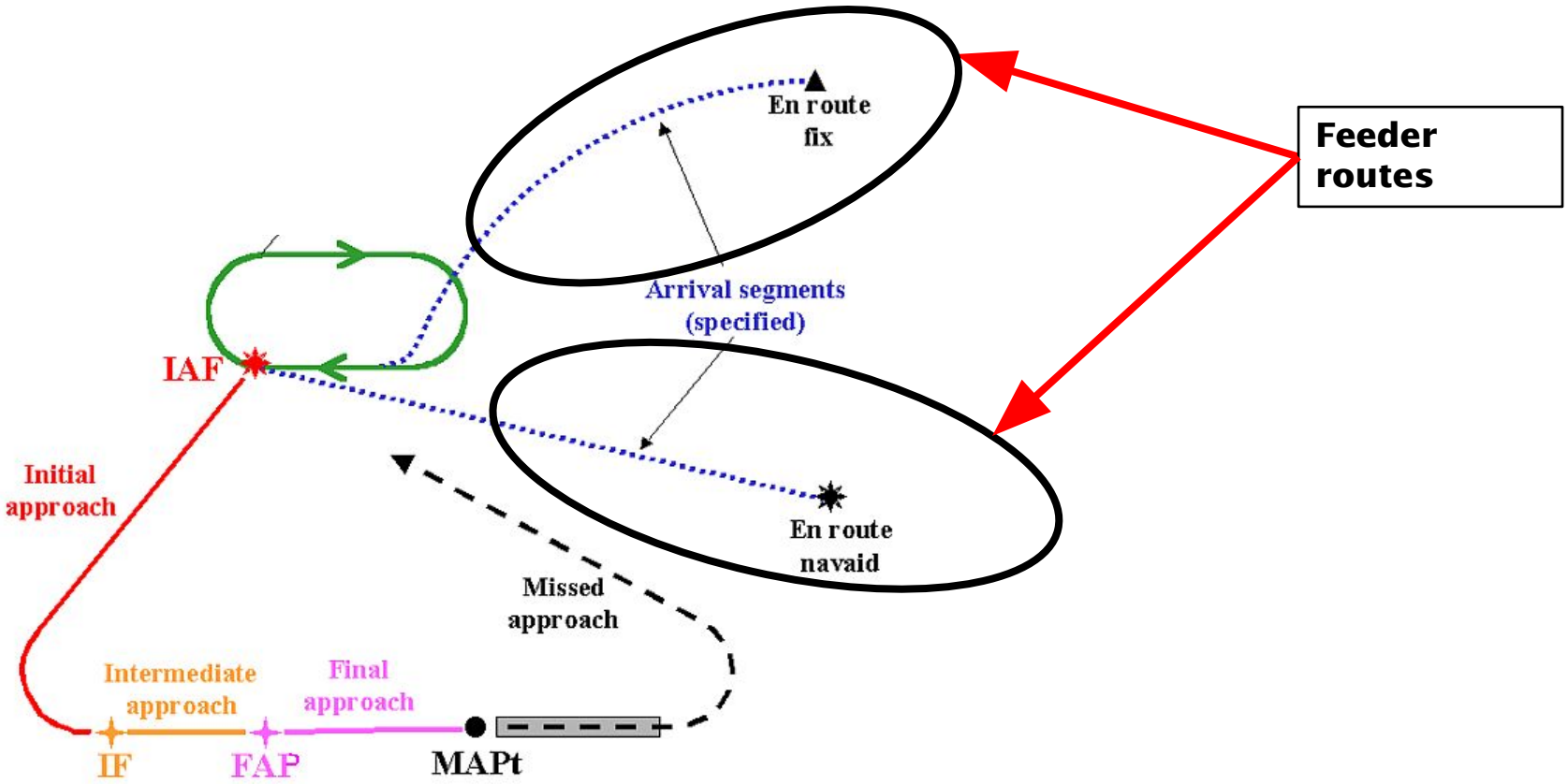
Updated APR2026


CAN YOU BELIEVE I'M FLYING THIS SUCKER ON MY IPAD?
LYNCH

Approach Charts

- Approach Charts
  - Approach Procedure Types
  - Approach Segments and Transition
  - IAF, FAF, Missed
  - Chart Layout (NOC vs Jeppesen)
- Approach Procedures
  - Preparing for the Approach
  - Performing the Approach
  - Straight-In vs Circling Approach
  - Use of ATC and Radar
  - Final Approach and Landing
  - Missed Approach

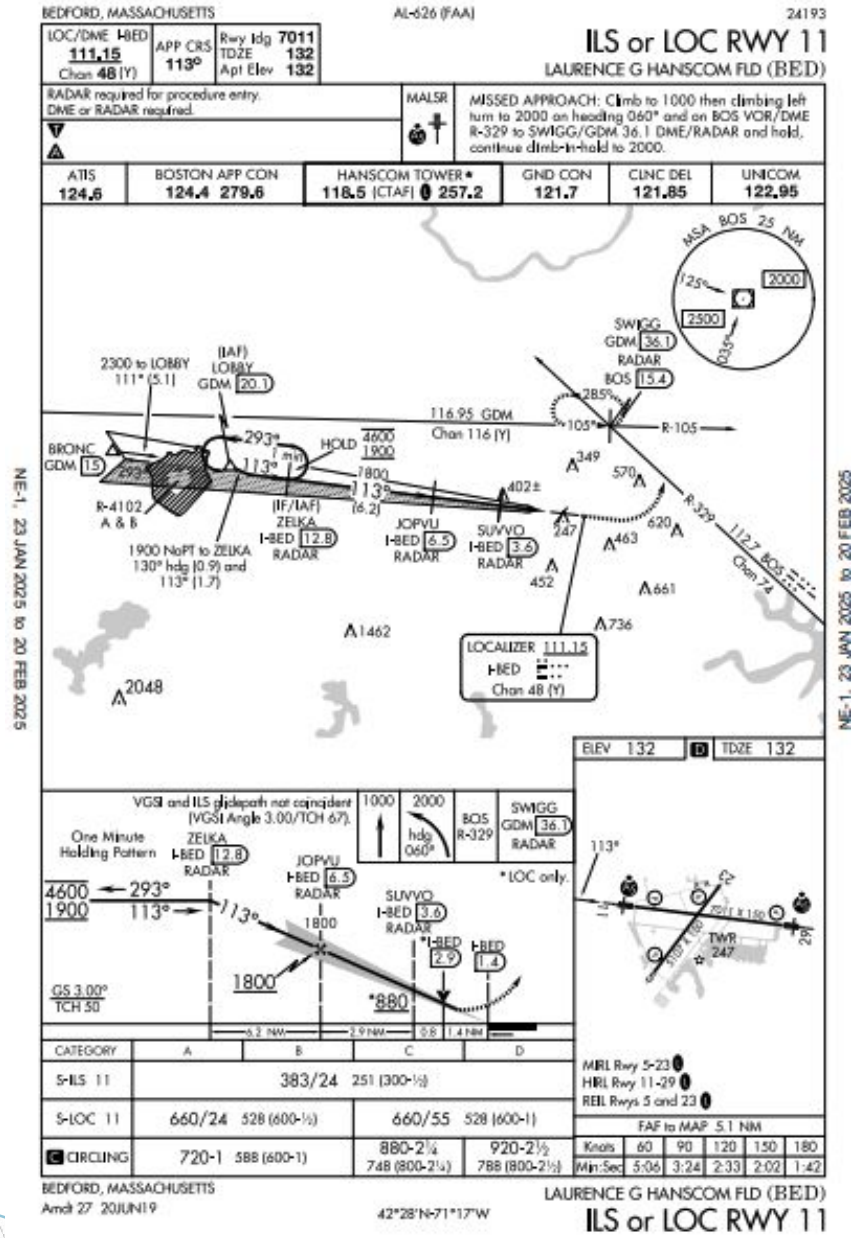
Approach Segments



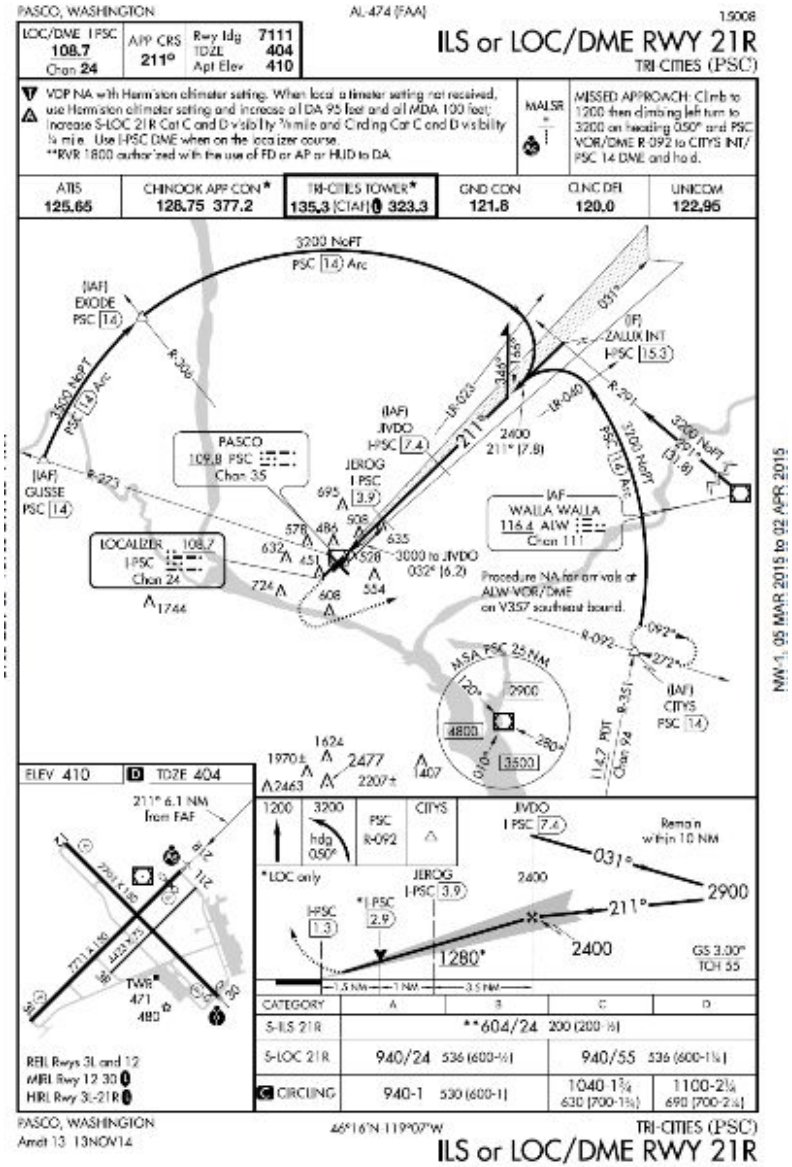
Approach Segments, explained

- “Feeder” routes
  - Not officially part of the instrument approach but exist on some approaches to aid transition from the enroute structure to an Initial Approach Fix (IAF)
- Initial Approach Segment
  - Starts at an IAF and terminates at an Intermediate Fix (IF)
- Intermediate Approach Segment
  - Starts at an IF and ends at the Final Approach Fix (FAF) or Final Approach Point (FAP)
- Final Approach Segment
  - Starts at the FAF/FAP and ends at the Missed Approach Point (MAP)
    - Determination of MAP is different for non-precision vs. precision approaches
- Missed Approach Segment
  - Starts at the MAP and ends at the holding fix – some approaches have alternate holding fixes

1. How many feeder/transition routes are there?
2. How many initial approach fixes (IAFs) are there?
3. Where is/are the intermediate fixes (IFs)?
    a. IFs are not always depicted explicitly
    b. Often absent on approaches that utilize a procedure turn
4. Where is the Final Approach Fix?
    a. FAF not depicted if primary navaid is located on airport
    b. Instead, a Final Approach “Point” exists



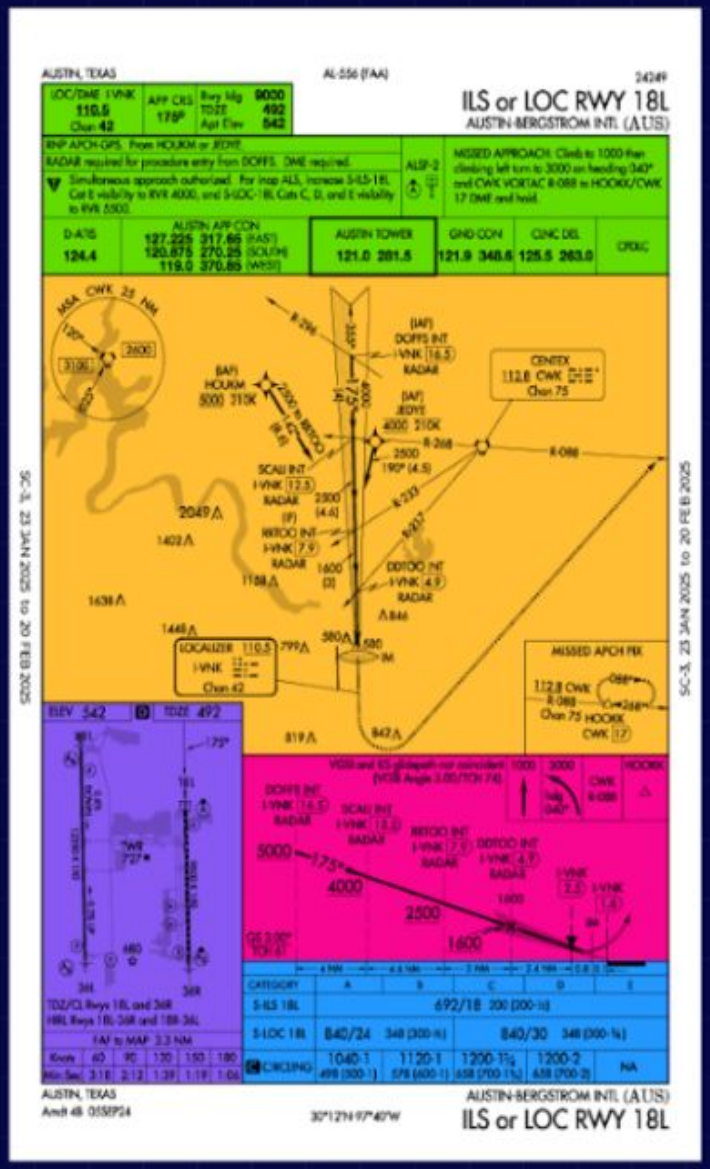
1. How many feeder or transition routes are there?
   1. Is the 111° radial from GDM a feeder route? How can you tell?
2. How many initial approach fixes (IAFs) are there?
3. Where is/are the intermediate fixes (IFs)?
4. Where is the Final Approach Fix? How is it depicted?



ILS 21R, KPSC

1. **How many feeder/transition routes are there?**
    1. **Is the route from ALW VOR/DME to ZALUX a feeder route?**
2. **How many initial approach fixes (IAFs) are there?**
3. **Where is/are the intermediate fixes (IFs)?**
4. **Where is the Final Approach Fix? How is it depicted?**
    a. **Remember that this approach procedure really contains two approaches on one page (ILS and LOC/DME. . .)**

Sections of the IFR Approach Cha

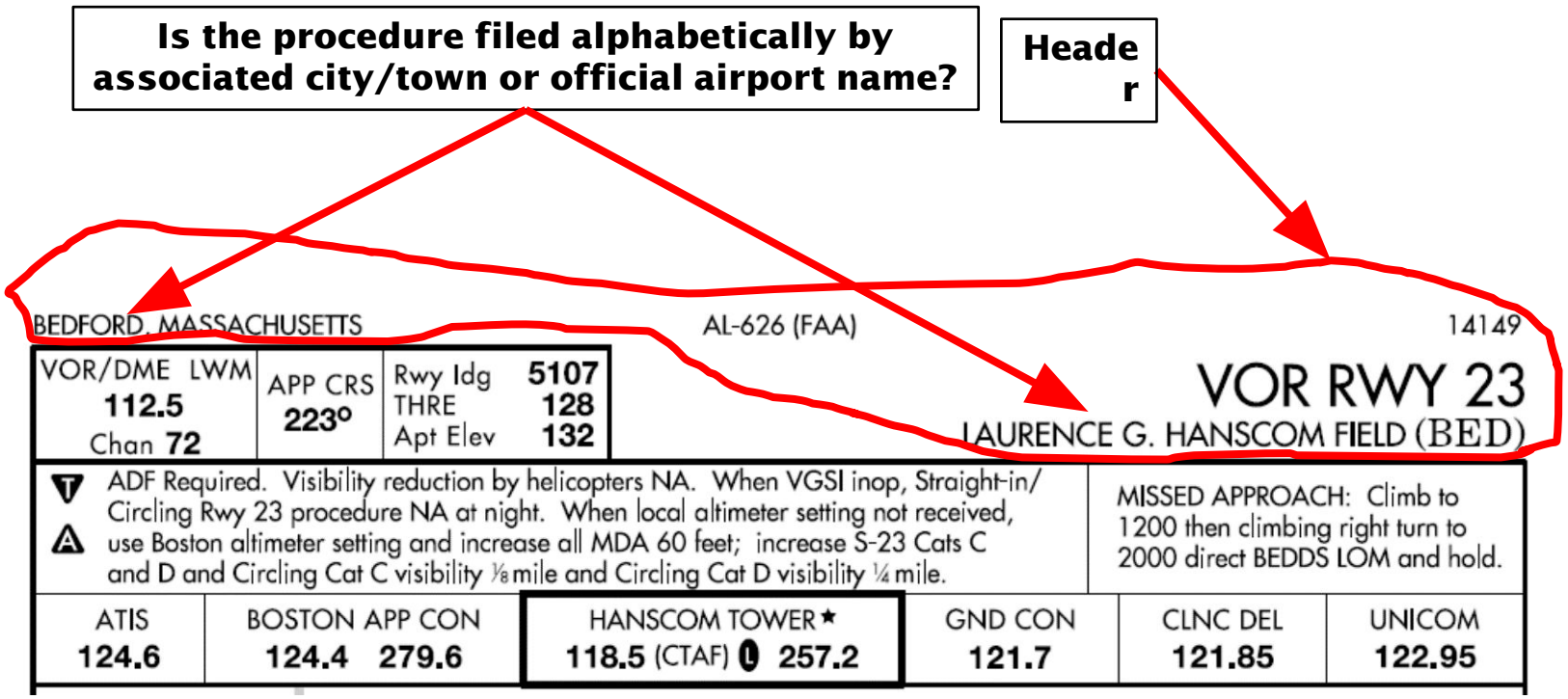


- Briefing Strip
- Plan View
- Airport Sketch
- Profile View
- Landing Minimums
- Margin Identification Infor

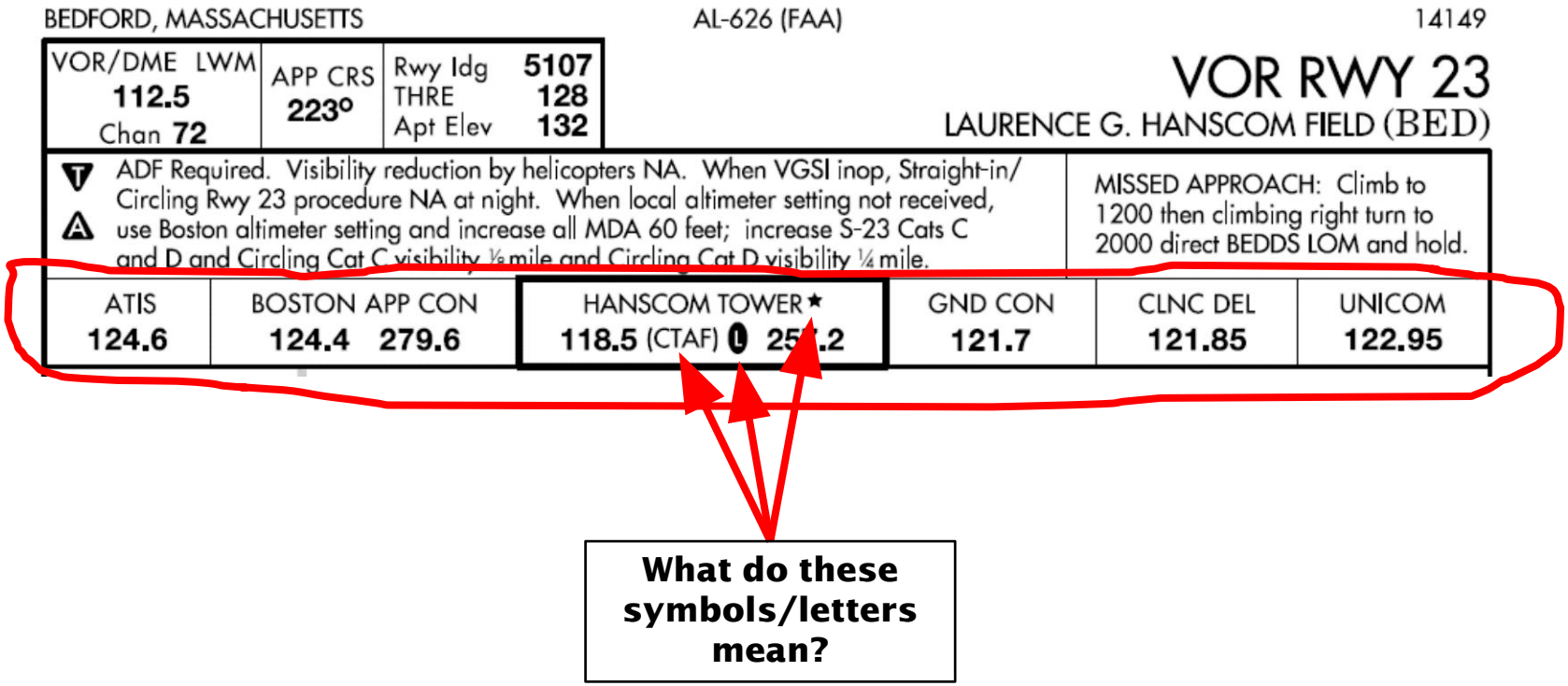
Header

Is the procedure filed alphabetically by associated city/town or official airport name?

Header



Communications Section



BEDFORD, MASSACHUSETTS AL-626 (FAA) 14149

VOR/DME LWM	APP CRS	Rwy Idg	5107
112.5	223°	THRE	128
Chan 72		Apt Elev	132

VOR RWY 23

LAURENCE G. HANSCOM FIELD (BED)

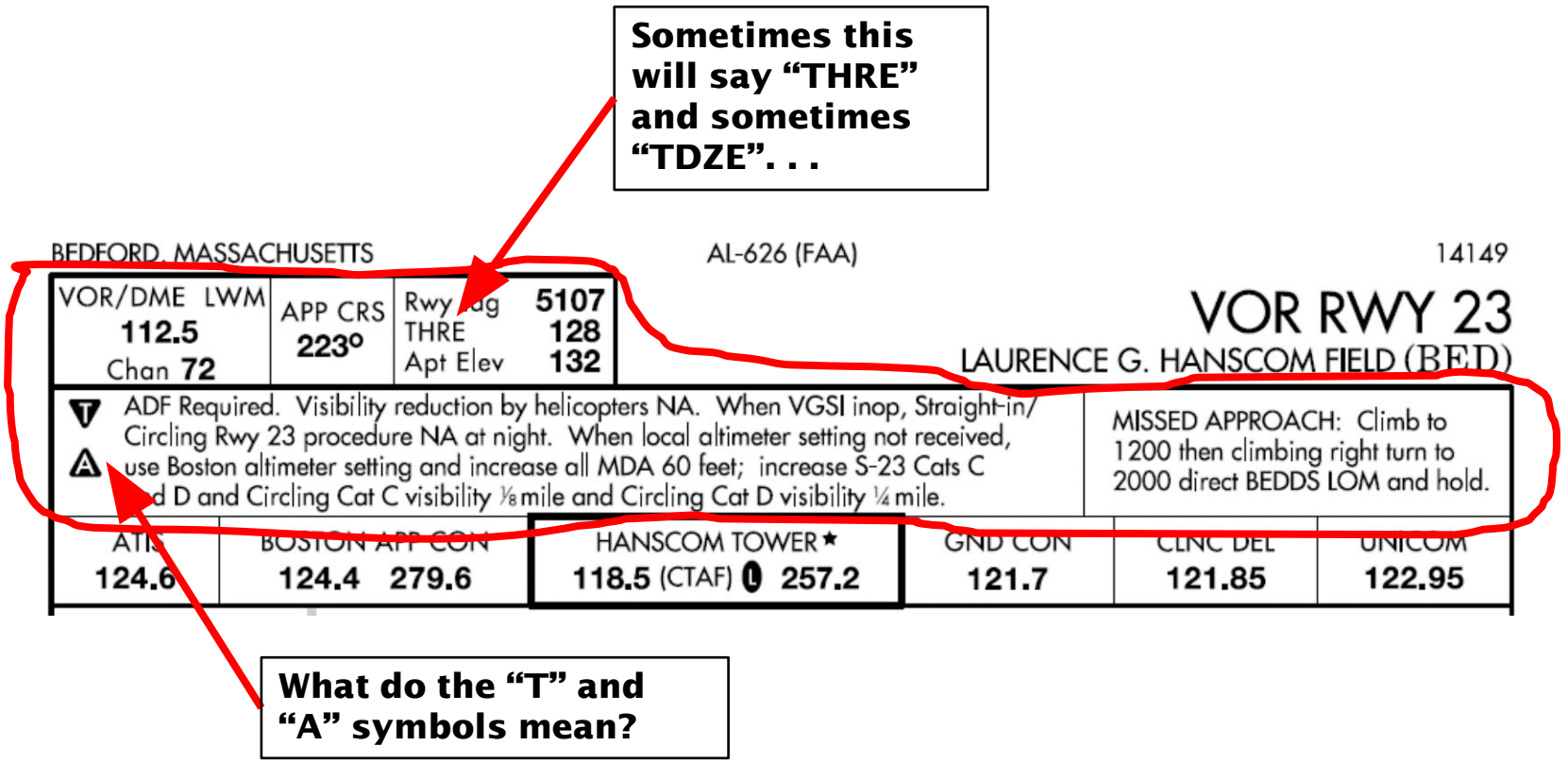
T A ADF Required. Visibility reduction by helicopters NA. When VGSI inop, Straight-in/ Circling Rwy 23 procedure NA at night. When local altimeter setting not received, use Boston altimeter setting and increase all MDA 60 feet; increase S-23 Cats C and D and Circling Cat C visibility ⅛ mile and Circling Cat D visibility ¼ mile.

MISSED APPROACH: Climb to 1200 then climbing right turn to 2000 direct BEDDS LOM and hold.

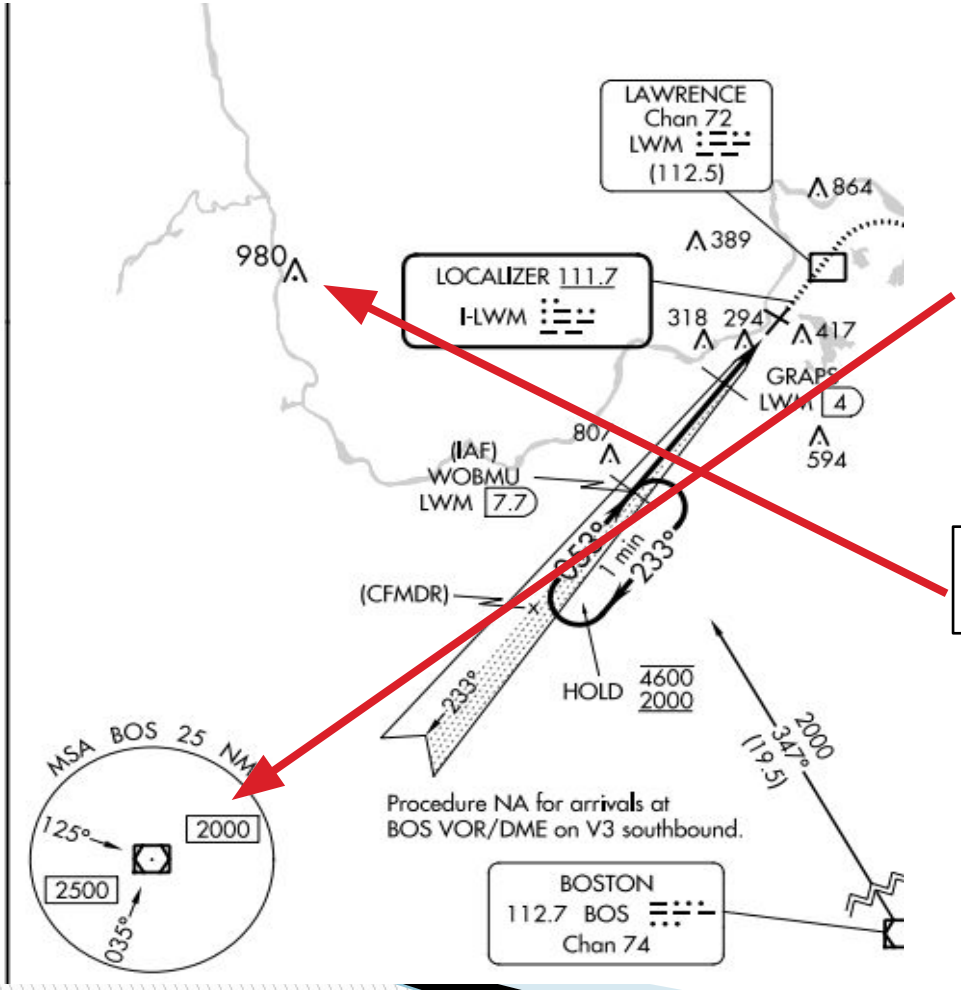
ATIS	BOSTON APP CON	HANSCOM TOWER ★	GND CON	CLNC DEL	UNICOM
124.6	124.4 279.6	118.5 (CTAF) L 25[illegible].2	121.7	121.85	122.95

What do these symbols/letters mean?

Briefing information



Minimum Safe Altitude (MSA) and Plan View (ILS 5 @ KLWM)

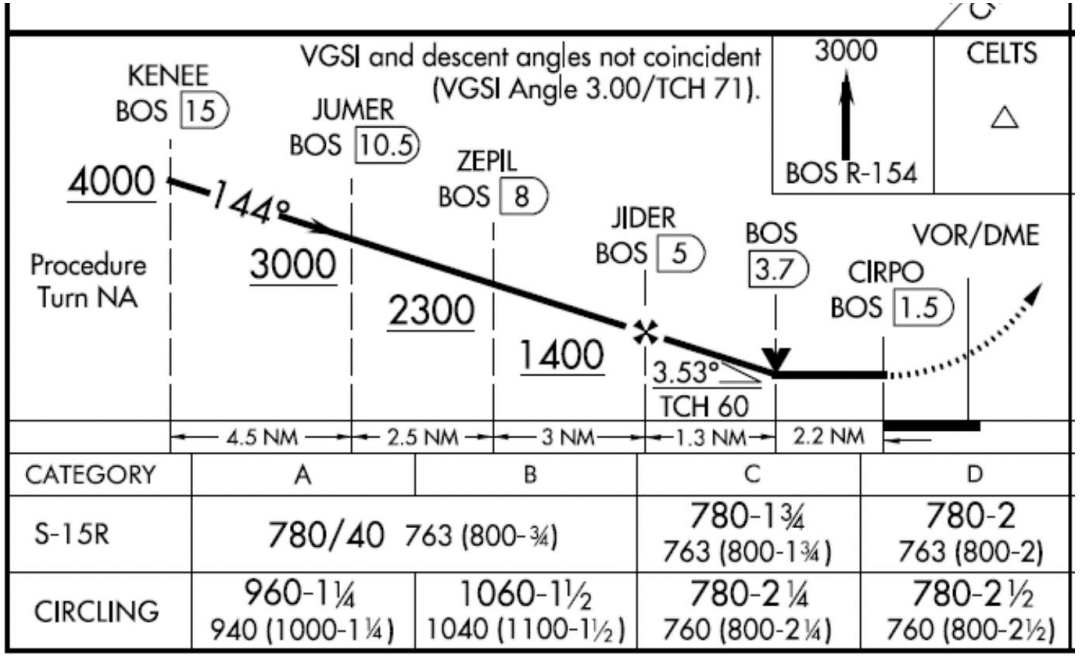


MSA depiction:

1. **Do the minimum altitudes depicted guarantee navigational, radar, or communications coverage in addition to obstacle clearance?**
   a. **How much obstacle clearance are you assured?**
   b. **Will there always be an MSA for every approach chart?**

Why is the elevation number bigger than the others and why is the dot bold?

Profile view (KBOS VOR/DME 15R)



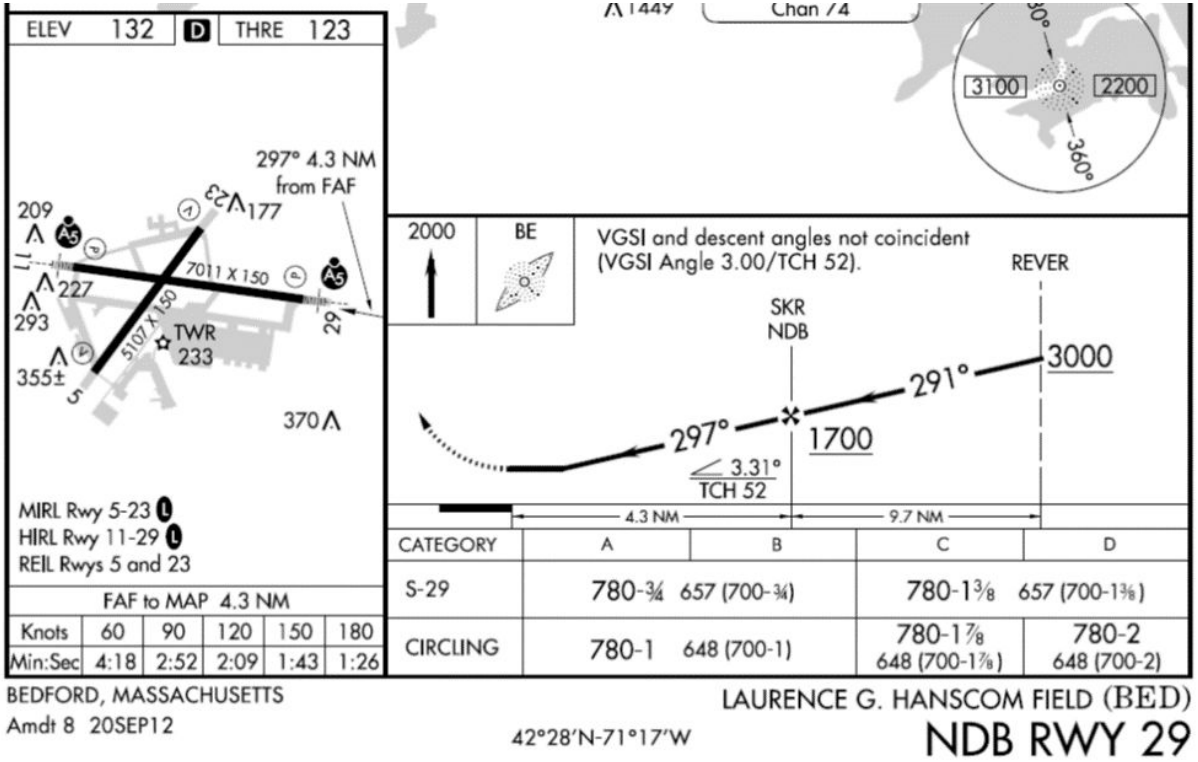
CATEGORY	A	B	C	D
S-15R	780/40 763 (800-¾)		780-1¾ 763 (800-1¾)	780-2 763 (800-2)
CIRCLING	960-1¼ 940 (1000-1¼)	1060-1½ 1040 (1100-1½)	780-2¼ 760 (800-2¼)	780-2½ 760 (800-2½)

BOSTON, MASSACHUSETTS
Amdt 2D 29MAY14

GENERAL EDWARD
42°22'N-71°00'W

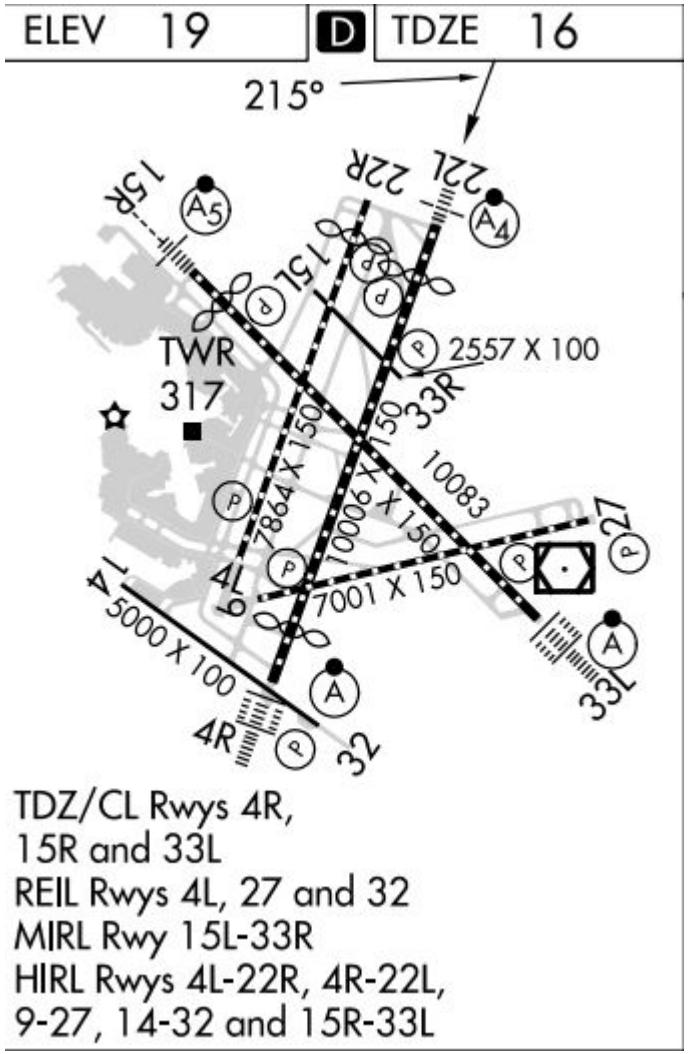
1. **Where are all the step-down fixes and what are the minimum descent requirements for each one?**
2. **Does this procedure have a Visual Descent Point?**
3. **What is the missed approach procedure and how is it depicted?**
4. **Where are the landing minimums and visibility requirements for different approach categories depicted?**
   a. **How are different approach categories defined? What if you decide to fly faster than normal?**
   b. **What do all the numbers mean? Are they all relevant to you?**
   c. **Are you allowed to *attempt* the approach under part 91 if the**

Conversion/Time and Speed Table

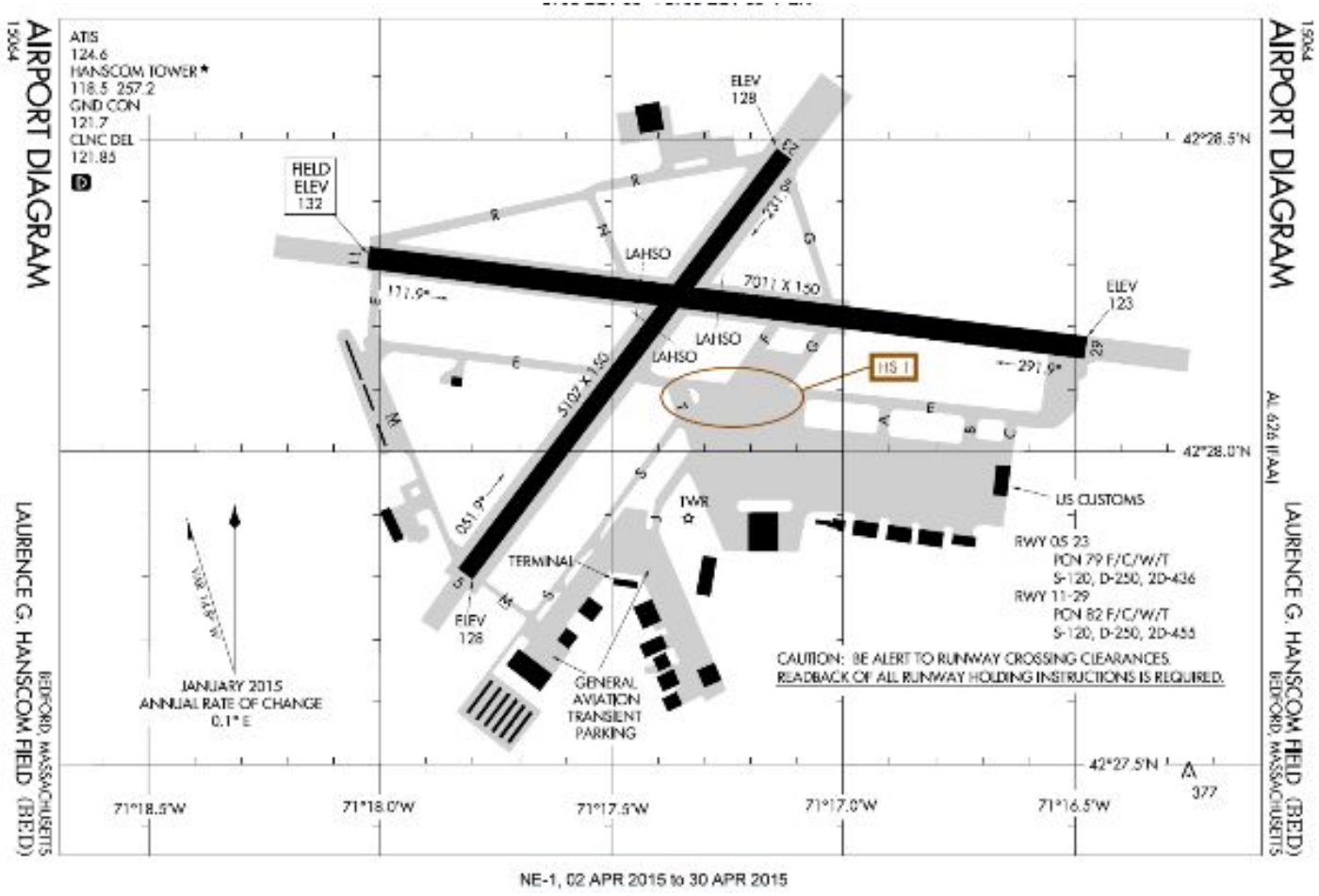


1. **Where is the MAP for this procedure?!?**
2. **How do you determine when you have reached the MAP?**
3. **I hope you started your stopwatch/timer when you crossed the FAF inbound. . .**

Airport sketch (KBOS, ILS LOC 22L)



Airport Diagram KBED



NE-1, 02 APR 2015 to 30 APR 2015

Inoperative components table

INOPERATIVE COMPONENTS OR VISUAL AIDS TABLE
(For Civil Use Only)

Straight-in and Sidestep landing minimums published on instrument approach procedure charts are based on full operation of all components and visual aids (see exception below for ALSF 1 & 2) associated with the particular approach chart being used. Higher minimums are required with inoperative components or visual aids as indicated below. If more than one component is inoperative, each minimum is raised to the highest minimum required by any single component that is inoperative. ILS glideslope inoperative minimums are published on the instrument approach charts as localizer minimums. This table applies to approach categories A thru D and is to be used unless amended by notes on the approach chart. Such notes apply only to the particular approach category(ies) as stated. Category E inoperative notes will be specified when published on civil charts. The inoperative table does not apply to Circling minimums. See legend page for description of components indicated below.

Full Operation Exception: For ALSF 1 & 2 operated as SSALR, or when the sequenced flashing lights are inoperative, there is no effect on visibility for ILS lines of minima.

(1) ILS, PAR, LPV, GLS minima

Inoperative Component or Visual Aid	Increase Visibility
All ALS types (except ODALS)	¼ mile

(2) ILS, LPV, GLS with visibility minima of RVR 1800†/2000*/2200*

Inoperative Component or Visual Aid	Increase Visibility
ALSF 1 & 2, MALSR, SSALR	To RVR 4000† To RVR 4500*
TDZL or RCLS	To RVR 2400#
RVR	To ½ mile

#For ILS, LPV, GLS procedures with a 200 foot HAT, RVR 1800 authorized with use of FD or AP or HUD to DA. For ILS procedures with a 200 foot HAT with a restriction on autopilot usage, RVR 1800 authorized with use of FD or HUD to DA.

(3) All Approach Types and all lines of minima other than (1) & (2) above

Inoperative Component or Visual Aid	Increase Visibility
ALSF 1 & 2, MALSR, SSALR	½ mile
MALSF, MALS, SSALF, SSALS, SALSF, SALS	¼ mile

(4) Sidestep minima (CAT C-D)

Inoperative Component or Visual Aid to Sidestep Runway	Increase Visibility
ALSF 1 & 2, MALSR, SSALR	½ mile

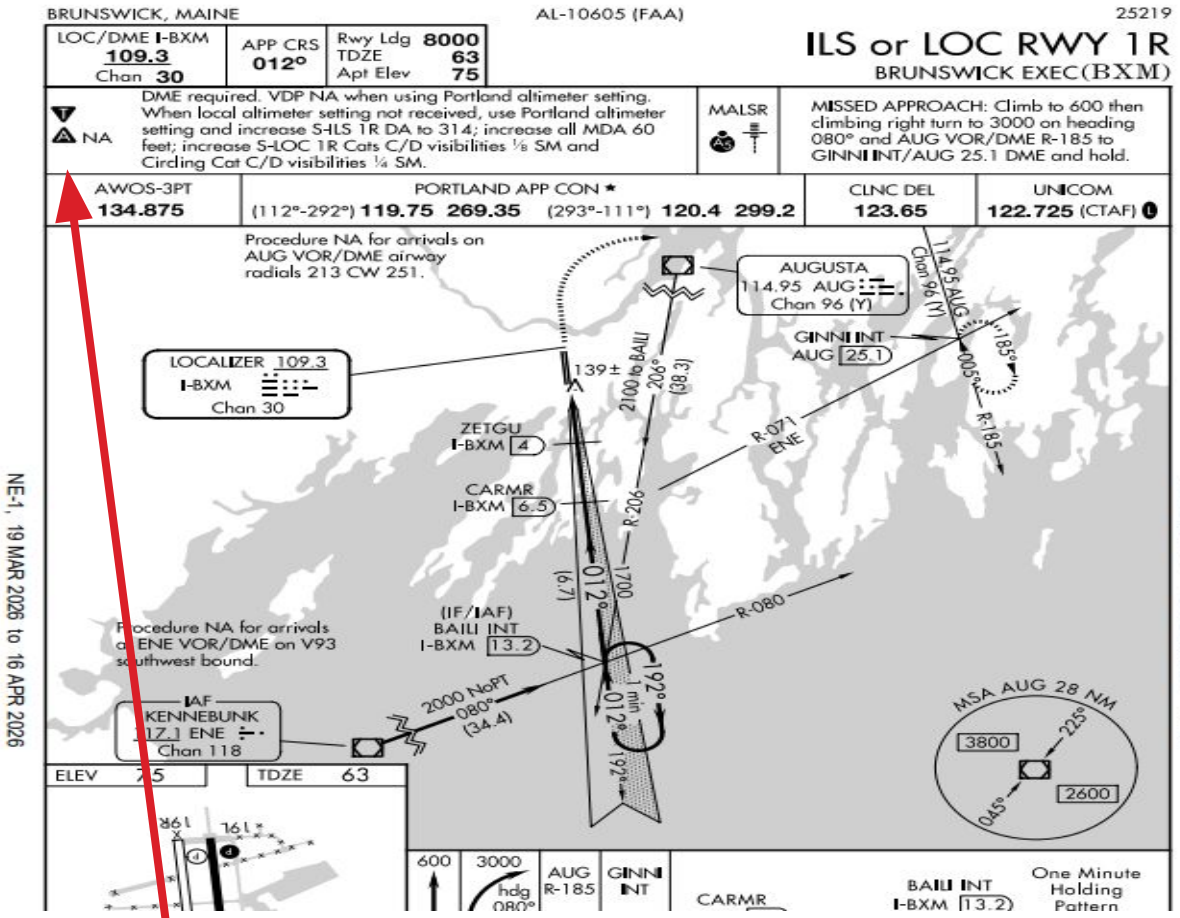
(5) All Approach Types, All lines of minima

Inoperative Component or Visual Aid	Increase Visibility
ODALS (CAT A-B)	¼ mile
ODALS (CAT C-D)	⅛ mile

19 MAR 2026 to 16 APR 2026

1. **These are the "default" requirements – they can be amended in the briefing section of the appropriate approach procedure.**
2. **ILS minimums become localizer minimums when the glideslope is inop by default.**

Takeoff and alternate minimums



1. What do these symbols mean?
2. Does the "N/A" mean that I can not use KBXM as an alternate airport under any circumstances?

Alternate Minimums and Takeoff Minimums/DP

IFR ALTERNATE AIRPORT MINIMUMS

Pilots must review the IFR Alternate Minimums Notes to determine alternate airport suitability. ⚠NA designation on the approach chart means that pilots may not use that approach as an alternate due to unmonitored facility, absence of weather reporting service, or lack of adequate navigation coverage. Approaches with the ⚠NA designation are not listed in this section. ⚠ designation on the approach chart indicates that the approach procedure has non-standard minimums (for aircraft other than helicopters) or restrictions (for all users) for its use as an alternate. A procedure is not authorized for alternate flight planning purposes when local weather is not available.

MILITARY USERS NOTE: For IFR alternate airport and minima planning, refer to appropriate service directives.

Alternate Minima (ref: 14 CFR 91.169)

	Precision Approach	Non-Precision Approach
Standard	**600-2**	**800-2**
⚠Non-Standard or restrictions	As indicated below	As indicated below
Helicopters	For the selected approach: Ceiling: 200' above published ceiling Visibility: the greater of 1 SM visibility or the published visibility	

Note: For alternate airport flight planning purposes, precision approach operations include: ILS, PAR, and GLS, and Non-Precision approach operations include: NDB, VOR, LOC, TACAN, LDA, SDF, ASR, RNAV (GPS) and RNAV (RNP).

NAME — ALTERNATE MINIMUMS

AUBURN/LEWISTON, ME
AUBURN/LEWISTON MUNI (LEW)……**ILS or LOC Rwy 4[13]**
RNAV (GPS) Rwy 4[2]
RNAV (GPS) Rwy 22[3]
[1]LOC Cat C 800-2½, Cat D 900-2¾.
[2]Cat C 800-2¼, Cat D 900-2¾.
[3]NA when local weather not available.

AUGUSTA, ME
AUGUSTA STATE (AUG)……**ILS or LOC Rwy 17[1]**
RNAV (GPS) Rwy 17[2]
RNAV (GPS) Rwy 35[2]
NA when local weather not available.
[1]ILS, LOC Cat D 900-2½.
[2]Cat D 900-2½.

BANGOR, ME
BANGOR INTL (BGR)……**ILS or LOC Rwy 33[1]**
ILS Y or LOC Y Rwy 15[2]
RADAR-1[3]
RNAV (GPS) Rwy 15[3]
RNAV (GPS) Rwy 33[3]
[1]ILS, LOC Cat A, B 1200-2, Cat C, D, E 1200-3.
[2]ILS Cat D 700-2, Cat E 700-2½; LOC Cat E 800-2½.
[3]Cat E 800-2½.

NAME — ALTERNATE MINIMUMS

BAR HARBOR, ME
HANCOCK COUNTY/ BAR HARBOR (BHB)……**ILS or LOC Rwy 22[1]**
RNAV (GPS) Rwy 4[2]
RNAV (GPS) Rwy 22[2]
[1]LOC Cat D 800-2½.
[2]Cat D 800-2½.

BARRE-MONTPELIER, VT
EDWARD F KNAPP STATE (MPV)……**RNAV (GPS) Rwy 17**
NA when local weather not available.
Cat A, B 900-2, Cat C 1600-3, Cat D 1800-3.

BEDFORD, MA
LAURENCE G HANSCOM FLD (BED)……**ILS or LOC Rwy 11[12]**
ILS or LOC Rwy 29[12]
RNAV (GPS) Rwy 11[34]
RNAV (GPS) Rwy 23[34]
RNAV (GPS) Rwy 29[34]
[1]NA when control tower closed.
[2]LOC Cat C 800-2¼, Cat D 800-2½.
[3]Cat C 800-2¼, Cat D 800-2½.
[4]NA when local weather not available.

BENNINGTON, VT
WILLIAM H MORSE STATE (DDH)……**RNAV (GPS) Rwy 13**
NA when local weather not available.
Cat A, B 1800-2, Cat C 1800-3.

NE-1, 19 MAR 2026 to 14 MAY 2026

L1

TAKEOFF MINS

26078

IFR TAKEOFF MINIMUMS, (OBSTACLE) DEPARTURE PROCEDURES, AND DIVERSE VECTOR AREA (RADAR VECTORS)

Civil Airports and Selected Military Airports

ALL USERS: Airports that have Departure Procedures (DPs) designed specifically to assist pilots in avoiding obstacles during the climb to the minimum enroute altitude, and/or airports that have civil IFR takeoff minimums other than standard, are listed below. Takeoff Minimums and Departure Procedures apply to all runways unless otherwise specified. An entry may also be listed that contains only Takeoff Obstacle Notes. Altitudes, unless otherwise indicated, are minimum altitudes in MSL.

DPs specifically designed for obstacle avoidance are referred to as Obstacle Departure Procedures (ODPs) and are textually described below, or published separately as a graphic procedure. If the ODP is published as a graphic procedure, its name will be listed below, and it can be found in either this volume (civil), or the applicable military volume, as appropriate. Users will recognize graphic obstacle DPs by the term "(OBSTACLE)" included in the procedure title; e.g., TETON TWO (OBSTACLE). If not specifically assigned an ODP, SID, or RADAR vector as part of an IFR clearance, an ODP may be required to be flown for obstacle clearance, even though not specifically stated in the IFR clearance. When doing so in this manner, ATC should be informed when the ODP being used contains a specified route to be flown, restrictions before turning, and/or altitude restrictions.

Some ODPs, which are established solely for obstacle avoidance, require a climb in visual conditions to cross the airport, a fix, or a NAVAID in a specified direction, at or above a specified altitude. These procedures are called Visual Climb Over Airport (VCOA). To ensure safe and efficient operations, the pilot must verbally request approval from ATC to fly the VCOA when requesting their IFR clearance.

At some locations where an ODP has been established, a diverse vector area (DVA) may be created to allow RADAR vectors to be used in lieu of an ODP. DVA information will state that headings will be as assigned by ATC and climb gradients, when applicable, will be published immediately following the specified departure procedure.

Graphic DPs designed by ATC to standardize traffic flows, ensure aircraft separation and enhance capacity are referred to as "Standard Instrument Departures (SIDs)". SIDs also provide obstacle clearance and are published under the appropriate airport section. ATC clearance must be received prior to flying a SID.

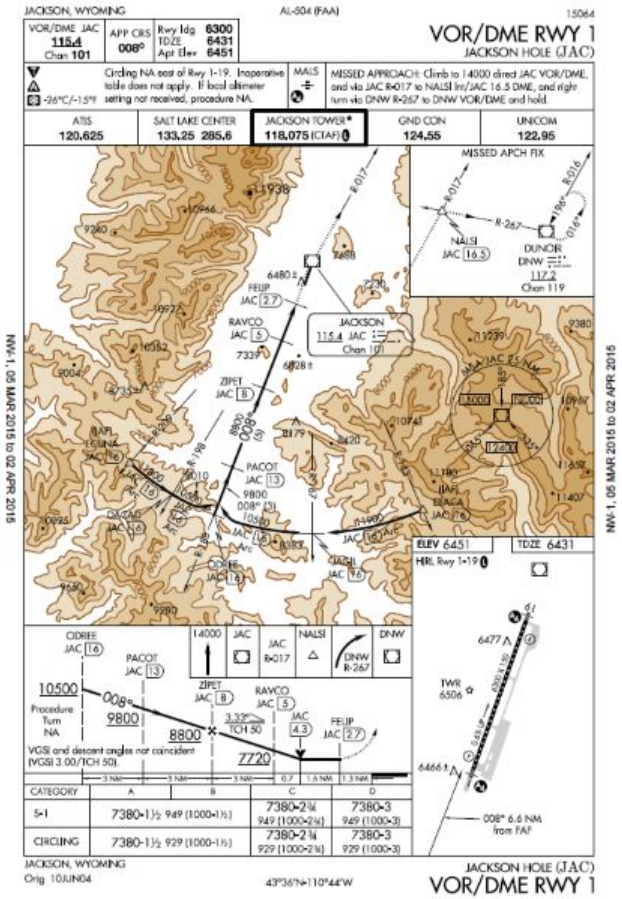
CIVIL USERS NOTE: Title 14 Code of Federal Regulations Part 91 prescribes standard takeoff rules and establishes takeoff minimums for certain operators as follows: (1) For aircraft, other than helicopters, having two engines or less – one statute mile visibility. (2) For aircraft having more than two engines – one-half statute mile visibility. (3) For helicopters – one-half statute mile visibility. These standard minima apply in the absence of any different minima listed below.

MILITARY USERS NOTE: Civil (nonstandard) takeoff minima are published below. For military takeoff minima, refer to appropriate service directives.

AUBURN/LEWISTON, ME
AUBURN/LEWISTON MUNI (LEW)
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES
AMDT 6 08SEP22 (22251) (FAA)
TAKEOFF MINIMUMS:
Rwy 17, 300-2¼ or std. w/min. climb of 220' per NM to 700.
Rwy 22, 300-1⅛ or std. w/min. climb of 320' per NM to 500.
DEPARTURE PROCEDURE:
Rwy 17, climb on heading 165° to 900 before turning left.
Rwy 22, climb on heading 221° to 2100 before turning right.
TAKEOFF OBSTACLE NOTES:
Rwy 4, pole 101' from DER, 386' left of centerline, 23' AGL/277' MSL.
Pole 145' from DER, 479' left of centerline, 30' AGL/279' MSL.
Tree 297' from DER, 519' right of centerline, 68' AGL/329' MSL.
Tree 540' from DER, 491' left of centerline, 69' AGL/311' MSL.
Tree 749' from DER, 547' left of centerline, 74' AGL/314' MSL.
Tree 753' from DER, 389' right of centerline, 68' AGL/335' MSL.
Trees beginning 762' from DER, 321' left of centerline, up to 75' AGL/319' MSL.
Tree, pole beginning 1273' from DER, 347' right of centerline, up to 81' AGL/385' MSL.
Trees beginning 1535' from DER, 194' right of centerline, up to 77' AGL/386' MSL.
Tree 1598' from DER, 277' left of centerline, 77' AGL/323' MSL.
Rwy 17, trees beginning 170' from DER, 390' right of centerline, up to 60' AGL/399' MSL.
Traverse way 531' from DER, 156' left of centerline, 305' MSL.
Tree 574' from DER, 174' left of centerline, 33' AGL/322' MSL.
Tree 1053' from DER, 251' left of centerline, 44' AGL/336' MSL.
Tree 1.6 NM from DER, 2410' left of centerline, 60' AGL/549' MSL.
Trees beginning 1.7 NM from DER, 246' left of centerline, up to 60' AGL/579' MSL.
CON'T

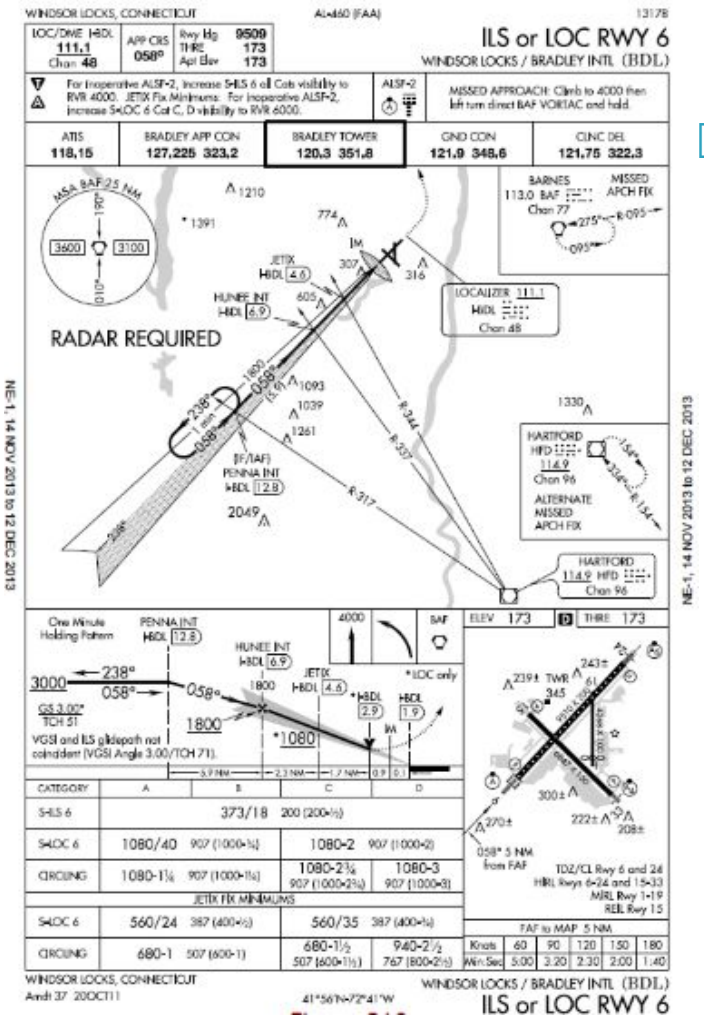
NE-1, 19 MAR 2026 to 14 MAY 2026

Instrument exam questions (approach charts)



- What lighting is indicated on the chart for Jackson Hole Airport?
  - A) Lights on prior request.
  - B) No lighting available.
  - C) Pilot controlled lighting.

Instrument exam questions (approach charts)



- What is the THRE elevation for RWY 6?
  - A) 173 feet MSL.
  - B) 200 feet AGL.
  - C) 270 feet MSL.

Approach procedures – types of approaches

- ILS
  - Cat I, II, IIIa/b/c
  - LOC, LOC/DME
  - LOC BC
  - LDA
  - SDF
- VOR, VOR/DME
- NDB, NDB/DME
- Radar approaches
  - PAR
  - ASR
- RNAV/GPS
  - LVAV
  - LNAV+V
  - LNAV/VNAV
  - LP
  - LP+V
  - LPV
- MLS
- Visual approach
- Contact approach

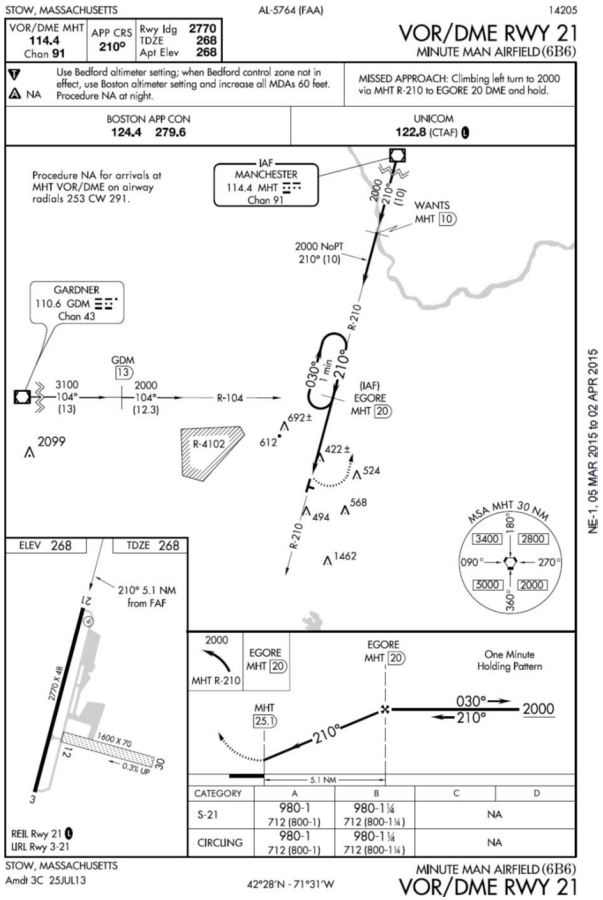
Approach Procedures

- Approach Procedures
  - Preparing for the Approach
  - Performing the Approach
  - Straight-In vs Circling Approach
  - Use of ATC and Radar
  - Final Approach and Landing
  - Missed Approach

Preparing for the approach

- Flight planning on the ground
  - Airport of intended landing: review all applicable IAPs
    - Check forecast Wx: is an alternate airport required?
    - Read the “fine print” in the briefing section of IAPs.
  - Alternate airports:
    - Check forecast Wx against standard alternate minimums OR alternate minimums if applicable
  - Check NOTAMs for inoperable components that are involved in IAPs
    - Are approved substitutes available?
    - IAP may be available with higher minimums
- Airborne phase
  - Approaching airport of intended landing
    - Obtain weather via ASOS/AWOS or ATIS as applicable
    - Advise ATC when Wx has been received and either request/accept a specific approach
    - Always be prepared to change plans

Approach chart review



1. When to conduct brief. . .
   a. Shortly after obtaining Wx and requesting an approach
   b. Prior to becoming established on a feeder route and prior to arriving at an IAF or receiving vectors to final
2. Information to explicitly brief on the chart:
   a. Procedure title
   b. Communications frequencies
   c. Primary navaid frequency (if applicable)
      a. Tune and *identify* on nav radio or ADF
      b. Tune and identify appropriate frequency on second nav radio
   d. Note inbound final approach course
   e. FAF minimum crossing altitude
   f. DA(H) or MDA(H) as appropriate – commit this to memory
   g. Touchdown zone or threshold elevation
   h. Missed Approach Instructions (consider memorizing first step)
   i. Landing considerations (runway, lighting, taxiway)
   j. Special Notes/Procedures

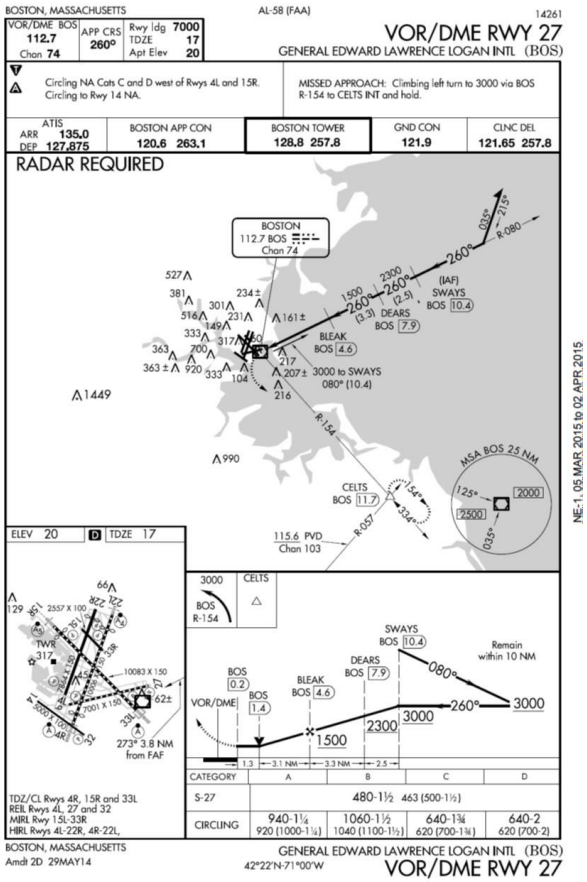
Approach Clearance

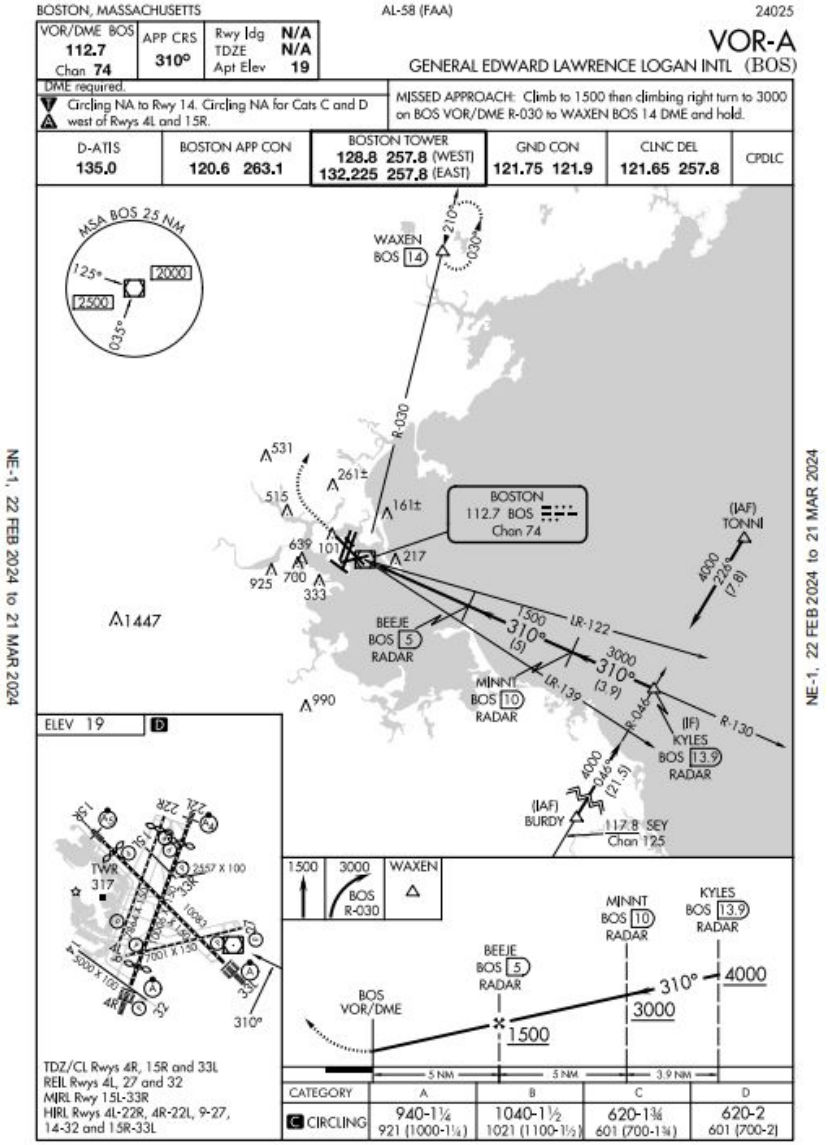
- Appropriate ATC facility shown in communications strip of approach chart will issue an approach clearance
  - Clearance usually will be for a particular approach
  - Textbook mentions the phrase ". . .*cleared for approach*" which means an authorization to conduct any published approach for that airport;
  - ATC will specify a particular "transition" or IAF for approaches with more than one IAF and/or feeder routes…
  - …Unless you are being radar vectored onto the final approach course
  - If not being vectored, you are expected the fly the entire published procedure, including any course reversals, if applicable
  - ATC clearance will take the form of PTAC:
    Position, Turn, Altitude, Clearance

Executing the approach

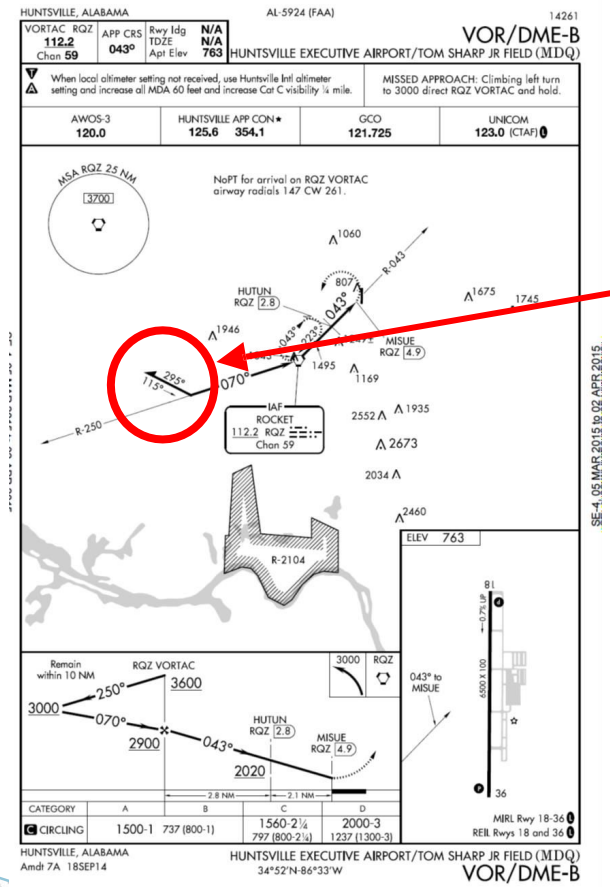
- "Straight-in" approaches
  - Implies that no published course reversal should be flown
  - Phrase "straight in" is not always explicitly stated in approach clearance if it is implied by context:
    - Clearance contains an initial approach segment with "NoPT" on it
    - Radar vectors to final approach course
      - Not always available due to lack of radar coverage for certain approaches
      - May receive vectors through final approach course, either intentionally or unintentionally
      - ATC may assign altitudes as low as the MVA for that sector
- "Straight-in" landings
  - Implies no "circling" maneuvers and thus, straight-in minimums apply
    - Straight-in landings possible if final approach course is aligned within 30° of runway and the descent angle is not excessive
    - Many approaches have both straight-in and circling minimums
    - Some approaches have *only* circling minimums (denoted with a "-A/B/C, etc." in procedure title)
  - Not directly related with "straight-in" approaches

Examples of approaches



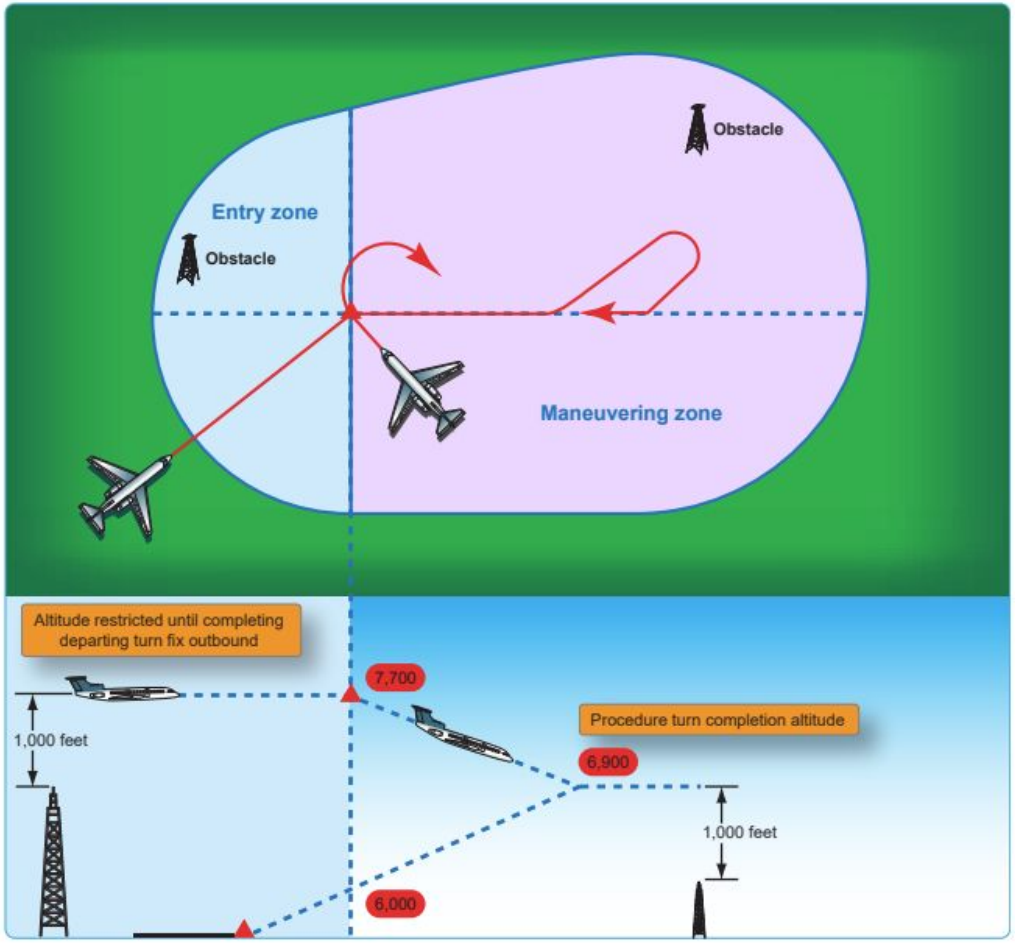


Approaches that require procedure turn (course reversal)

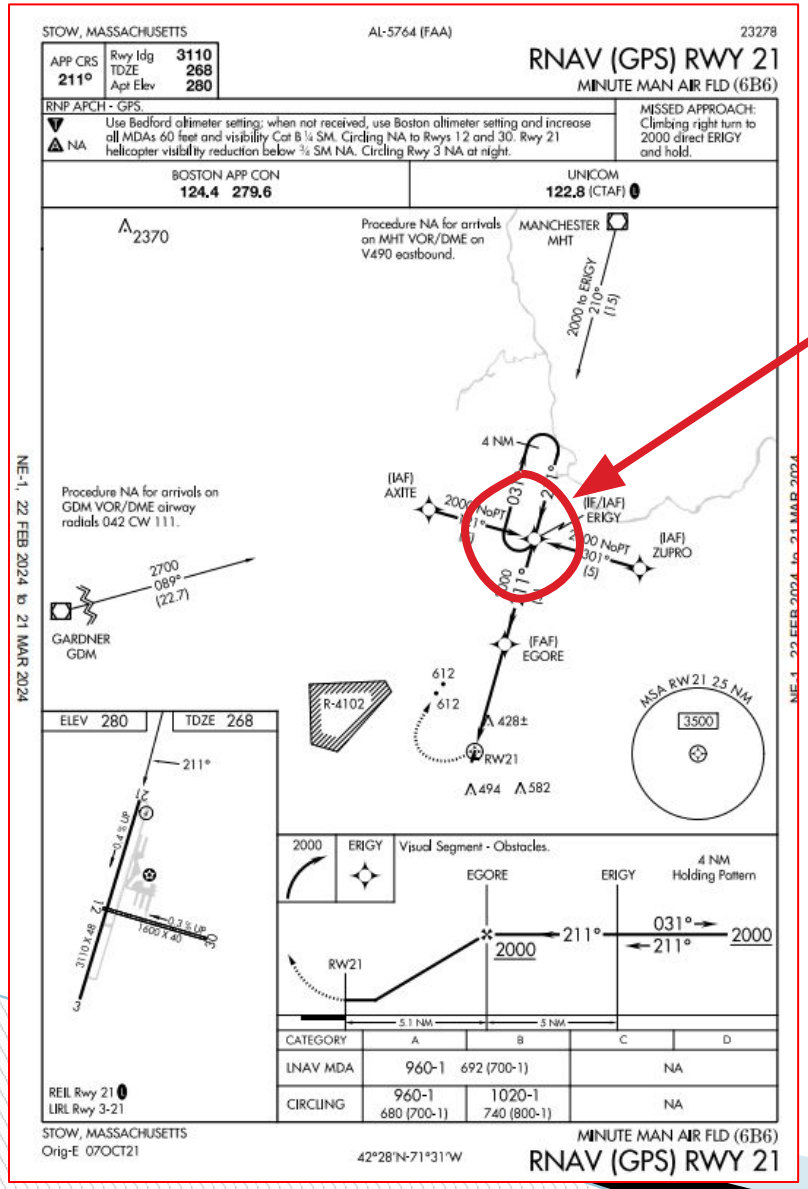


1. **Procedure turn/course reversal**
   a. **Must complete maneuver within distance specified in the profile view note.**
   b. **Must perform maneuver on the side of the course shown**
   c. **Maximum airspeed 200 KIAS unless otherwise noted to ensure that you remain in the protected area.**
   d. **May be done via 45/180, hold/racetrack, or a teardrop at pilot discretion**

Procedure turn obstacle clearance

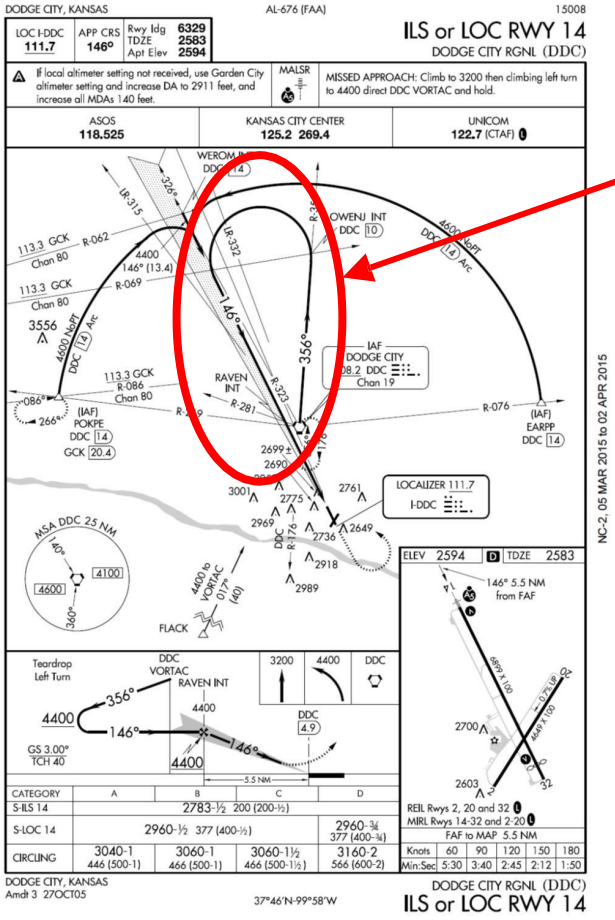


Hold in Lieu of Procedure Turn (HILPT)



1. **Holding pattern course reversal**
   a. **Same restrictions (airspeed, direction of turns, side of course to perform maneuver, leg length, etc.) that apply to any other holding pattern apply here**
   b. **Only a single circuit is authorized unless you advise and get permission from ATC**
      a. **Additional circuits may be requested to help lose altitude or help get better established on the final approach course**
   c. **Your entry (teardrop/parallel/direct) counts as your single circuit**
   d. **Hold length (time/distance) may be shortened**
   e. **Maximum airspeed 200 IAS**

Teardrop course reversal



1. **Teardrop**
   a. **Must fly the maneuver exactly as published**
   b. **Maximum airspeed 200 KIAS**

Timed Approaches From a Holding Fix

- Typically performed when radar sequencing is not available and numerous aircraft are waiting for an approach clearance
- Control tower must be operational at landing airport
- Direct communication must be maintained between aircraft and approach/center controller until instructed to contact the tower
- If there is more than one missed approach procedure for the approach, none may require a course reversal
- If only one missed approach is available, course reversal is not required, and reported ceiling and visibility must be greater than the highest circling minimums for the IAP
- When cleared for the approach, do not execute a procedure turn

Final Approach

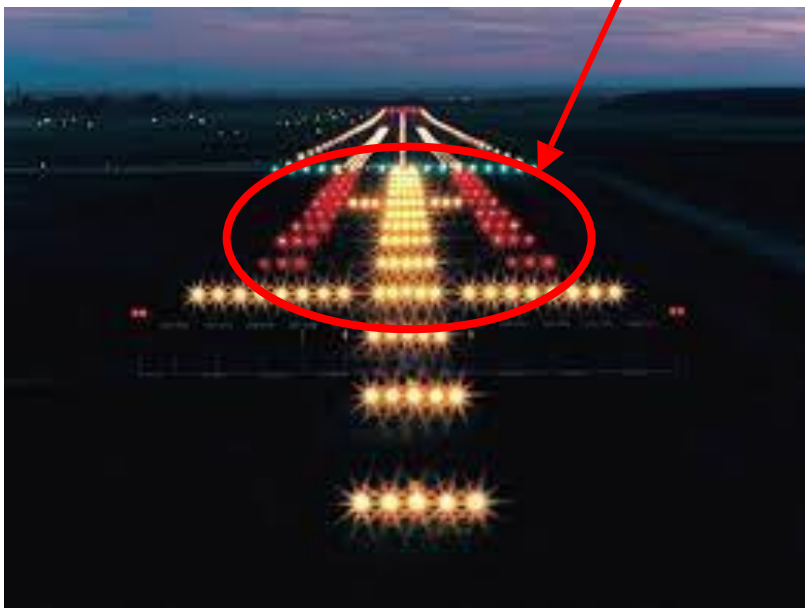
- How do you know if it is ok to descend below the DA (precision approach) or MDA (non-precision approach)?
  - Appropriate visual cues must be present when you arrive. . .
    - … at the DA for precision approaches
    - … before descending below MDA in a non-precision approach
      - Typically at VDP, if exists
      - Before MAP (do **not** plan to only get to MDA at MAP – you will not be able to land)
  - Must have required flight visibility at DA or before descending below MDA
  - Only descend below MDA at or past VDP – at normal rate using normal maneuvers
  - Visual cues
    - Threshold, threshold markings, threshold lights, REIL, VASI, touchdown zone or touchdown zone markings, touchdown zone lights, runway or runway markings, runway lights, approach light system*
- If using approach light system for reference, you may not descend below 100' feet above touchdown zone elevation unless…
  - ALSF-1: red terminating bars are visible, or
  - ALSF-2: red side row bars are visible

ALSF-1 and ALSF-2

Red terminating bars

ALSF-1

Red side row bars



ALSF-2

10 Key Visual References for Approach

1. Approach Lighting System **(ALS):** Helps identify the runway approach path.
2. Threshold**:** The beginning of the landing area.
3. Threshold Markings**:** Markings identifying the threshold.
4. Threshold Lights**:** Green lights indicating the runway start.
5. Runway End Identifier Lights **(REIL):** Flashing lights at the threshold.
6. Visual Approach Slope Indicator **(VASI/PAPI):** Indicates proper glide path.
7. Touchdown Zone **(TDZ):** The first 3,000 feet of the runway.
8. Touchdown Zone Markings**:** Markings indicating the touchdown area.
9. Touchdown Zone Lights**:** Lighting in the touchdown zone.
10. Runway / Runway Markings / Runway Lights**:** The runway itself and associated lighting/markings

About VDP

- Only applies to non-precision approaches
- Appears on some approach plates
- Does not carry the legal weight of 14 CFR 91.175
- If you cannot identify it, you may disregard it
- If the approach does not have one, you can make your own
  - How high is the MDA over the runway?
  - Apply 1 NM for every 300’.

Circling approaches

- When is a circling approach desirable or necessary?
  - When the approach only has circling minimums (-A, -B, etc. in the title)
  - When wind or other factors make it desirable to land on a runway other than the straight-in approach runway
- Upon arrival at the prescribed distance from the airport, you must maneuver the airplane appropriately to align it with the desired runway
  - Must maneuver airplane within the “protected area” for the applicable approach category
  - Must remain at MDA during maneuvering until the airplane is continuously in a position from which a descent to a landing on the intended runway can be made, using normal rate of descent and normal maneuvering.
  - Must have the minimum flight visibility that is stipulated in the minimums for the applicable approach category
  - Performing a “circling” approach does not prohibit a straight-in landing in and of itself
- Beware the “fine print” in the briefing/notes/amendments section of the approach procedure; it may restrict or prohibit circling under certain circumstances

Circling approaches – protected area

CIRCLING APPROACH OBSTACLE PROTECTED AIRSPACE

The circling MDA provides vertical obstacle clearance during a circle-to-land maneuver. The circling MDA protected area extends from the threshold of each runway authorized for landing following a circle-to-land maneuver for a distance as shown in the table below. The resultant arcs are then connected tangentially to define the protected area.

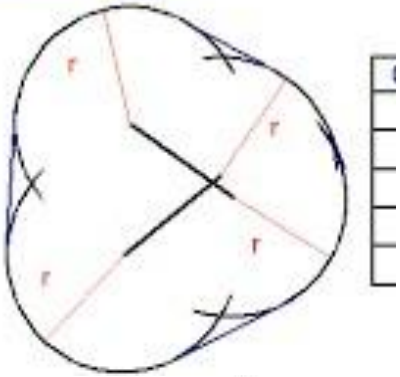
CIRCLING APPROACH MANEUVERING AIRSPACE RADIUS

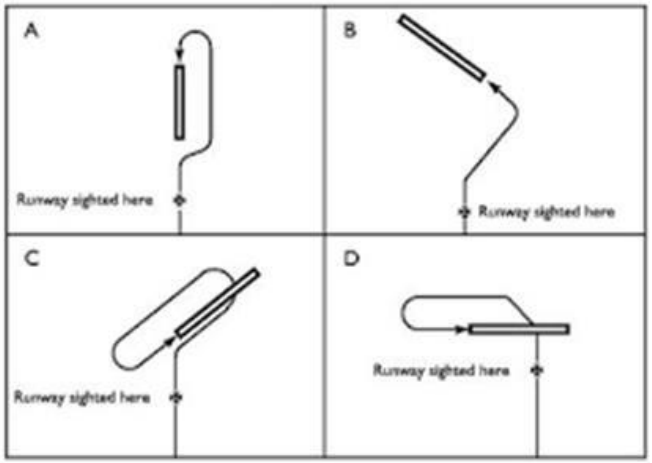
Circling MDA protected areas use the radius distance shown in the following table, expressed in nautical miles (NM), dependent on aircraft approach category, and the altitude of the circling MDA, which accounts for true airspeed increase with altitude.

Circling MDA in feet MSL	Approach Category and Circling Radius (NM)				
	CAT A	CAT B	CAT C	CAT D	CAT E
1000 or less	1.3	1.7	2.7	3.6	4.5
1001-3000	1.3	1.8	2.8	3.7	4.6
3001-5000	1.3	1.8	2.9	3.8	4.8
5001-7000	1.3	1.9	3.0	4.0	5.0
7001-9000	1.4	2.0	3.2	4.2	5.3
9001 and above	1.4	2.1	3.3	4.4	5.5

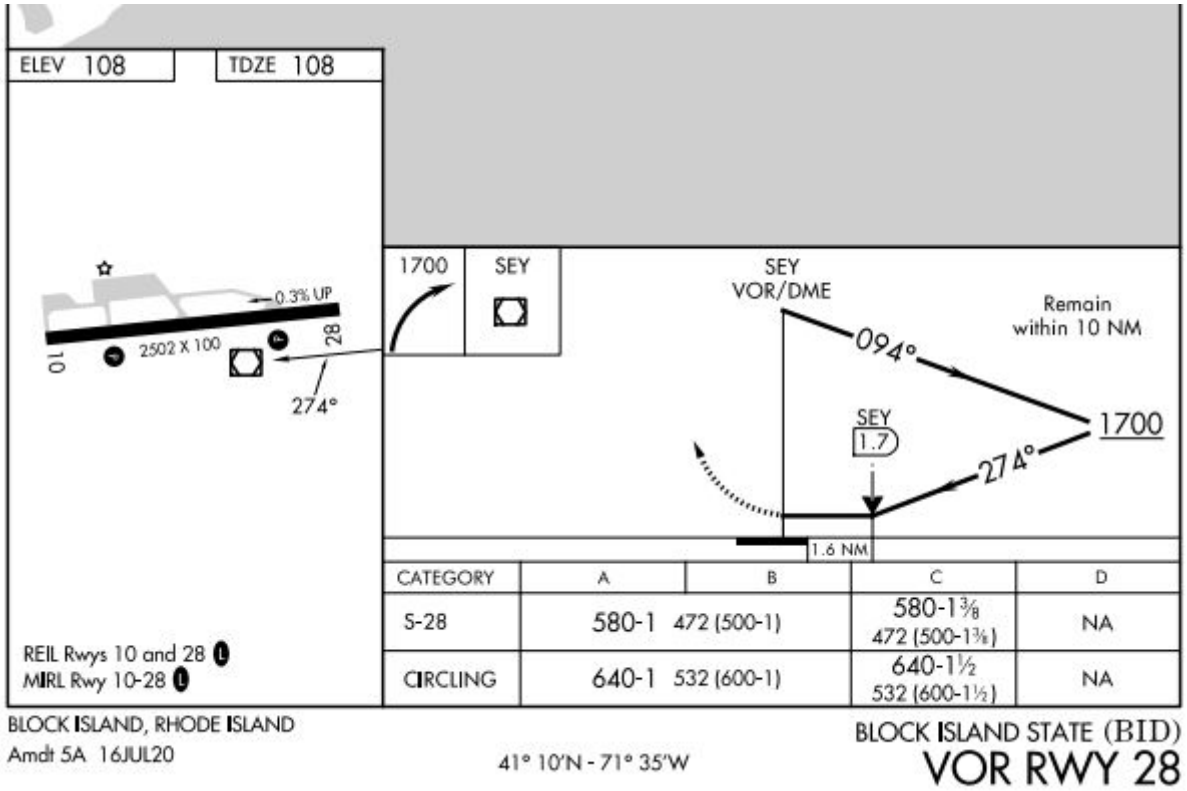
Users may ignore the presence of C symbols on charts which will be removed on a day-forward basis. All circling areas within this volume have been evaluated for the circling MDA protected area radius shown in the table above.

Circling Maneuvring Area

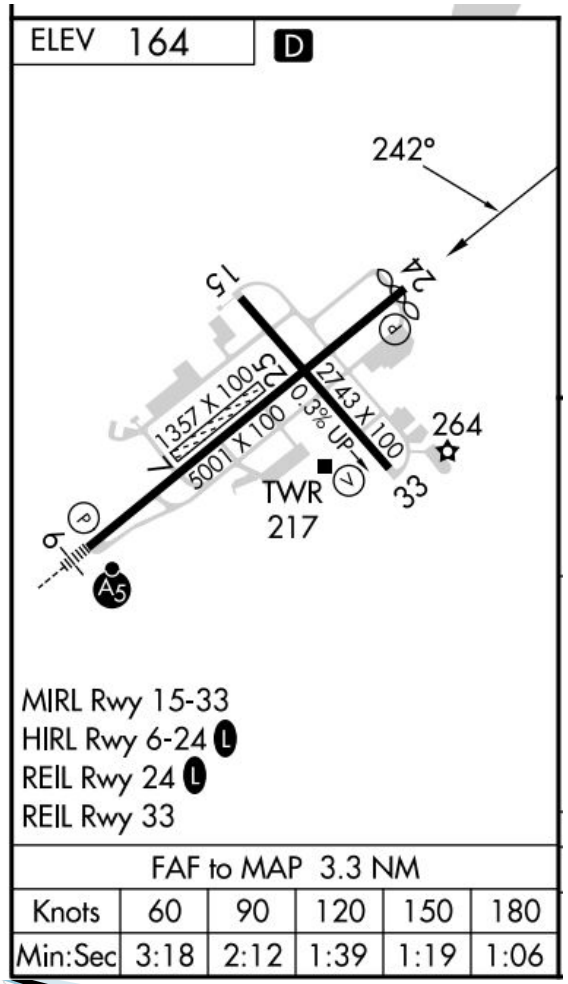




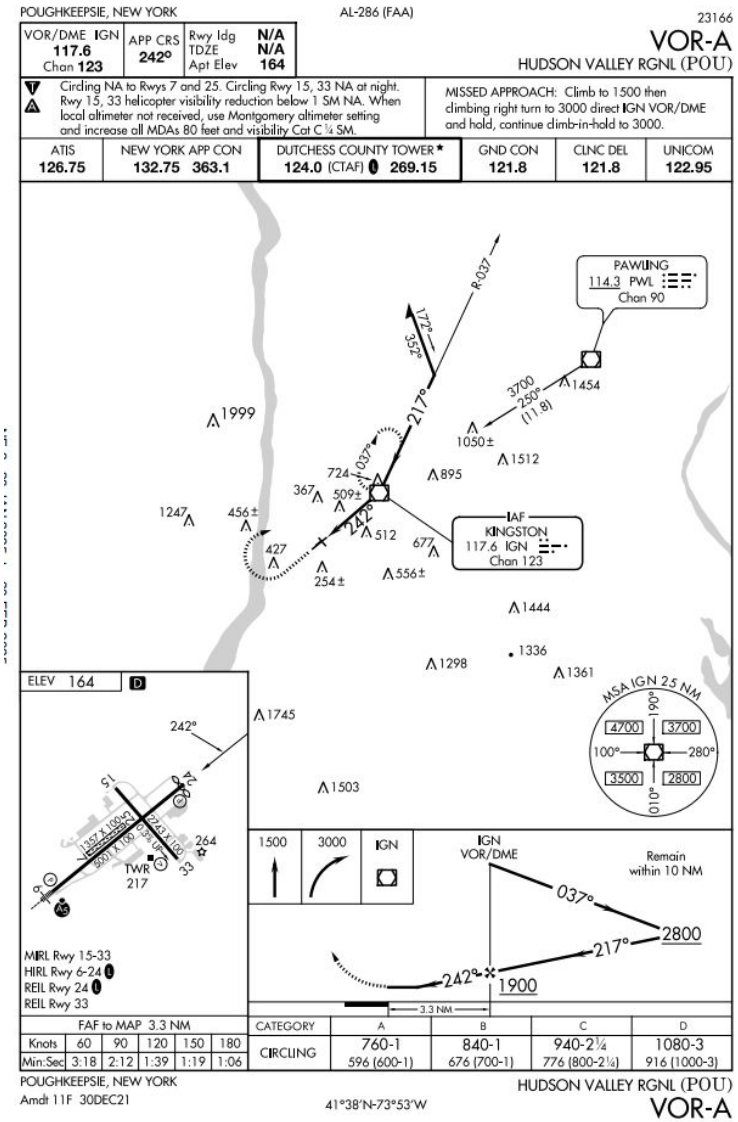
When can you start circling?



Circling approach could be straight in

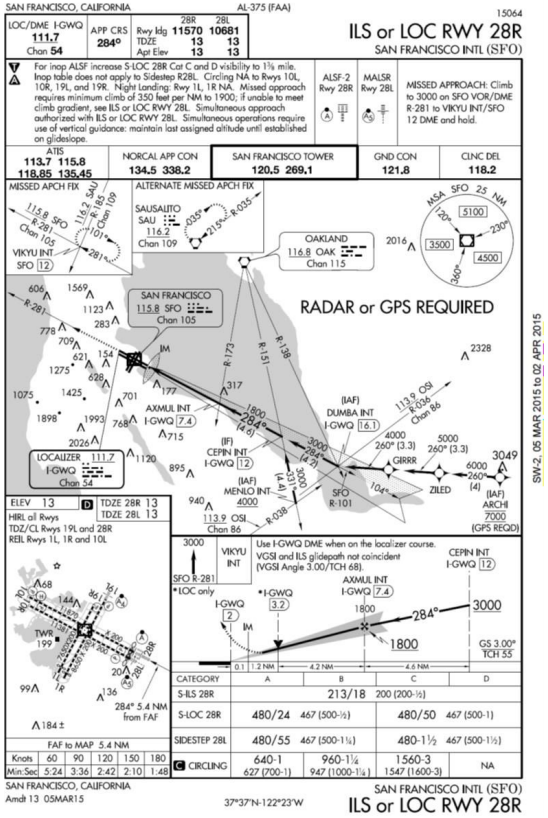


FAF to MAP 3.3 NM					
Knots	60	90	120	150	180
Min:Sec	3:18	2:12	1:39	1:19	1:06



Hanscom Instrument Ground Course

Sidestep approaches

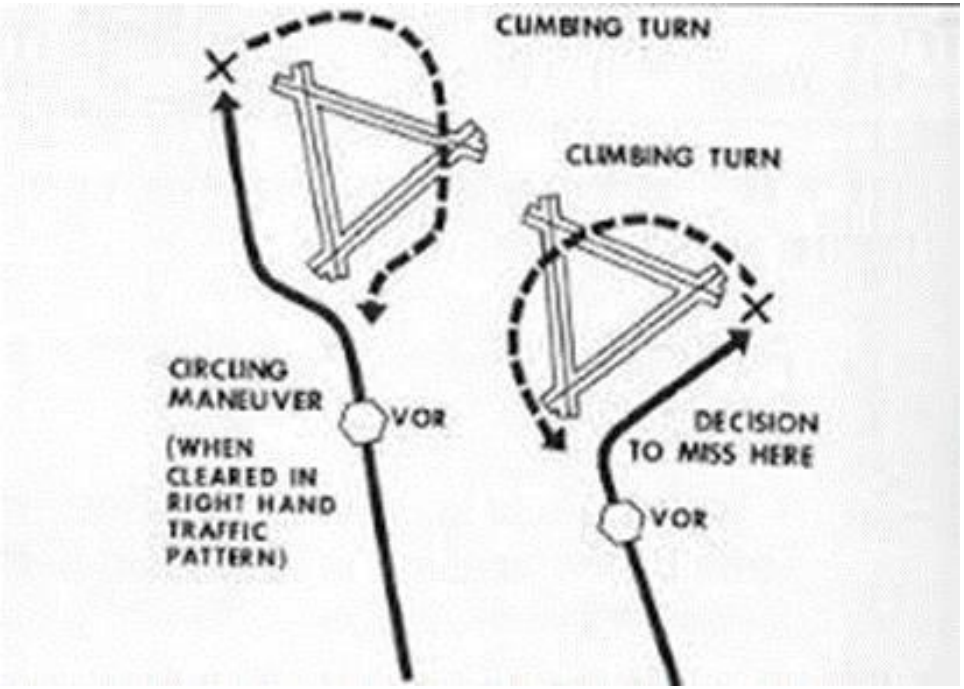


- Sidestep maneuver may be available at airports with parallel runways that are less than 1200 feet apart
- You will be cleared for an approach to one runway but will be expected to perform the sidestep maneuver as soon as the runway environment is in sight.
- Sidestep minimums are lower than circling minimums.
- Make sure you know how your autothrottle modes work if you're flying a 777-200ER and land at KSFO…

Missed approach procedures

- When should you execute a missed approach?
  - Upon arrival to the MAP or DA and lacking the required visual cues
  - Improper alignment/not established on final approach course
  - Inability to land safely due to runway obstruction(s)
  - Inoperative avionics/ground components
  - When instructed by ATC (towered airfields)
  - Anytime when the pilot feels, for any reason, that a safe landing is not possible
- Where are the missed approach instructions?
  - Textual portion is in the briefing section
  - Graphical icons on shown in the profile view
  - Consider memorizing the first step of the procedure before flying the approach. . .
- What if you decide (or are instructed) to execute a missed approach before arriving at the MAP or DA?
  - Fly directly to the MAP and do not initiate any turns until you cross it
  - Early climbing prior to arriving at the MAP is permissible

Missed approach – circling approaches

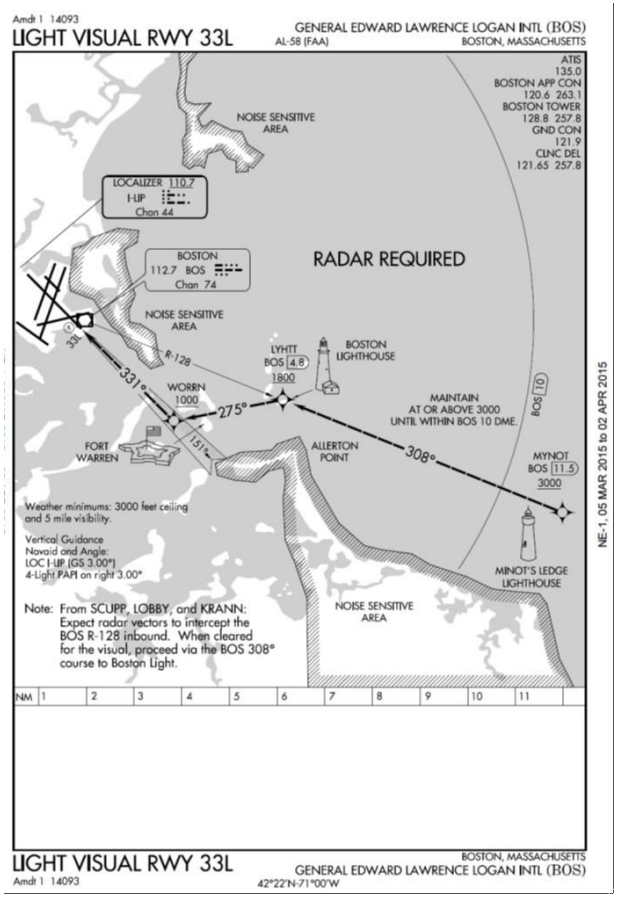


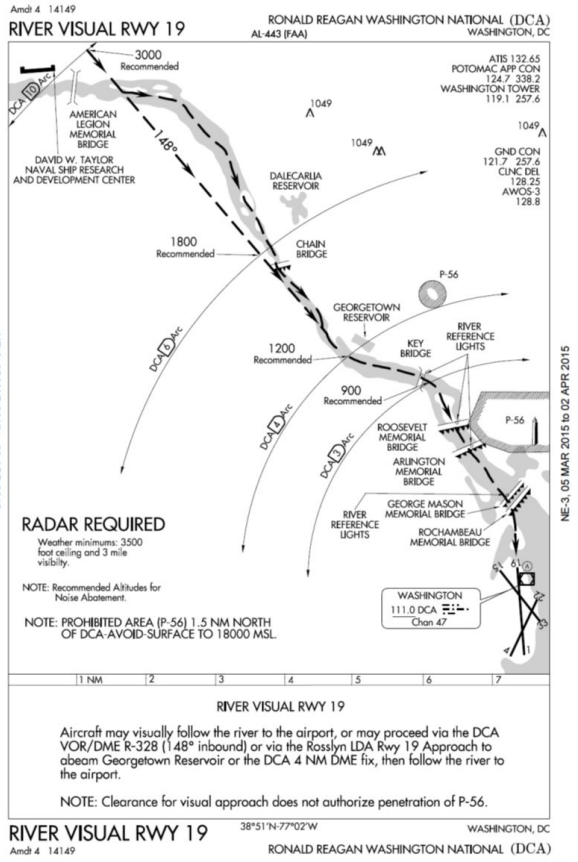
Perform climbing turn toward center of runway complex to maximum time in protected area before becoming established on the missed approach course

Visual and Contact approaches

- Visual and contact approaches eliminate need to fly the full IAP if the conditions allow it
- Visual approaches
  - Can be initiated by pilot or ATC
  - Must have (or expect) at least 3 SM visibility and 1000 ft ceiling at airport
  - Pilot must report airport or proceeding airplane in sight
    - Pilot is responsible for separation and wake turbulence avoidance when following another aircraft; otherwise, ATC will maintain separation
  - Pilot must remain clear of clouds
- Contact approaches
  - Is requested by pilot only
  - Reported ground visibility must be at least 1 SM at airport
  - Issued only for airports with published approach procedures
  - Pilot is responsible for terrain/obstruction clearance; ATC is responsible for separation from other IFR and SVFR traffic
  - Pilot must maintain at least 1 SM flight visibility and clear of the clouds at all times

Charted visual flight procedures





Radar Approaches

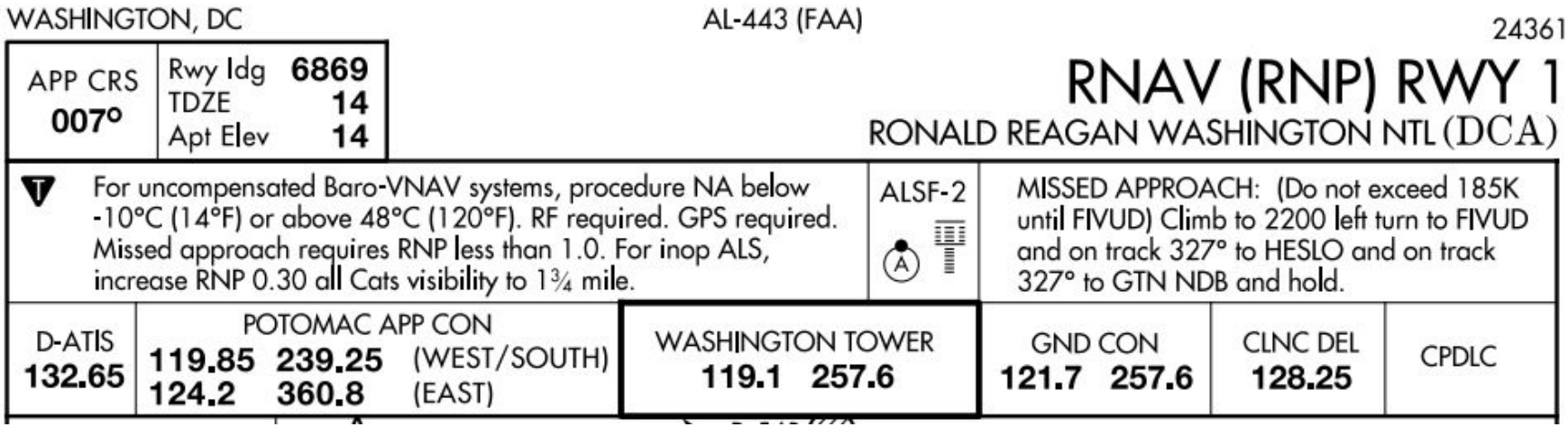
- PAR – Lateral + Vertical
- ASR – Lateral only
- Appearing in the TPP
- May be requested by a pilot
- May be offered by ATC during an emergency or to expedite traffic

PORTSMOUTH, NH Amdt 1B, 18APR24 (24109) (FAA) ELEV **100**
PORTSMOUTH INTL AT PEASE (PSM)
RADAR-1 125.05 269.4 NA

	RWY	GP/TCH/RPI	CAT	DA/ MDA-VIS	HAT/ HAA	CEIL-VIS
PAR	34	3.0°/64/1221	ABCDE	**284**/24	200	(200-½)
ASR	16		ABC	**520**/40	420	(500-¾)
			DE	**520**/50	420	(500-1)
	34		ABC	**560**/40	476	(500-¾)
			D	**560**/50	476	(500-1)
			E	**560**/60	476	(500-1¼)
CIRCLING	ALL RWY		AB	**560**-1¼	460	(500-1¼)
			C	**680**-1½	580	(600-1½)
			D	**780**-2¼	680	(700-2¼)
			E	**800**-2½	700	(700-2½)

Circling NA east of Rwy 16/34.
ASR Rwy 16; for inoperative MALSR increase CATs A/B visibility to RVR 5000, CATs C/D/E visibility to RVR 6000.
ASR Rwy 34; for inoperative MALSR increase CATs A/B visibility to RVR 5000, CATs C/D/E visibility to 1 ⅜ mile.

Temperature limitations



WASHINGTON, DC

AL-443 (FAA)

24361

RNAV (RNP) RWY 1

RONALD REAGAN WASHINGTON NTL (DCA)

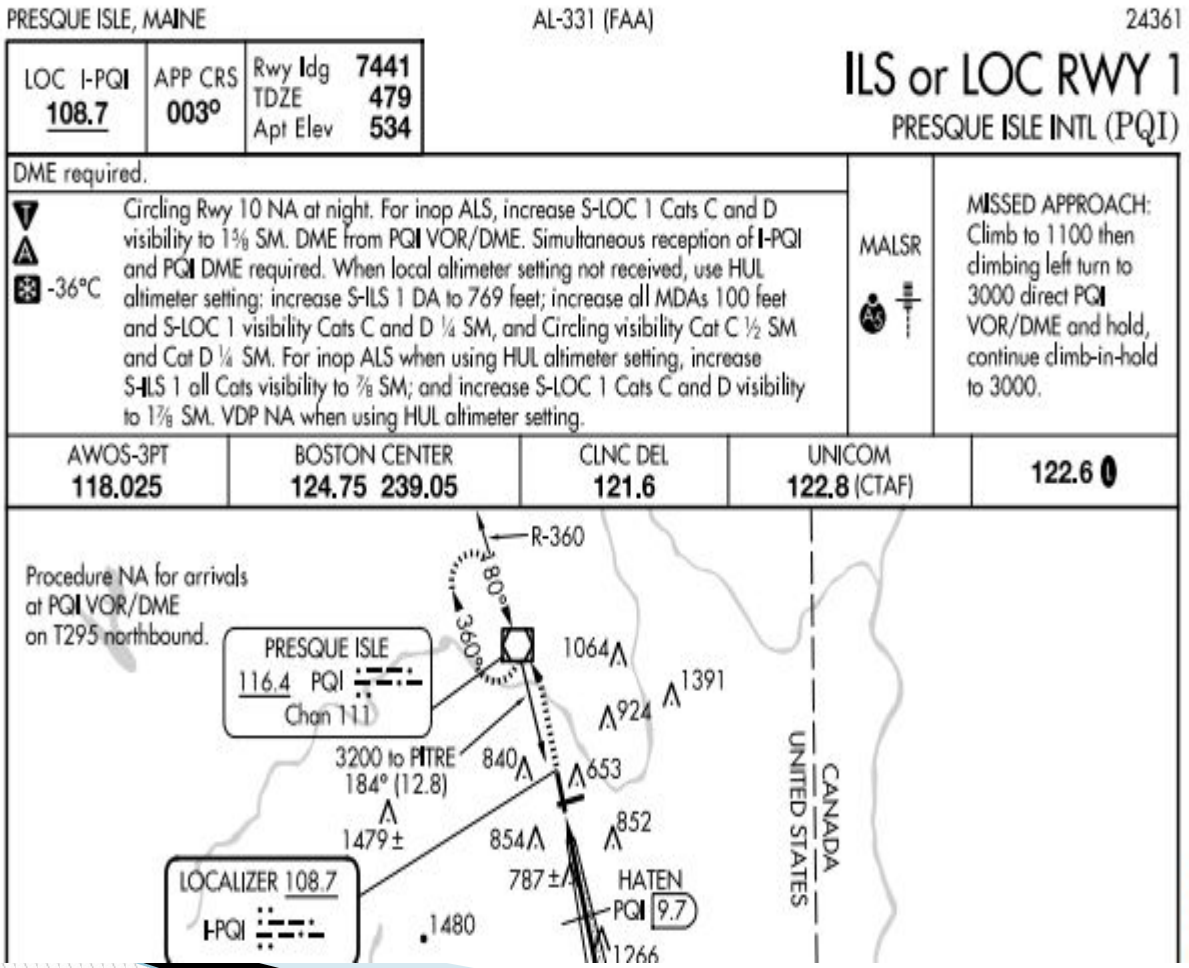
APP CRS	Rwy Idg	6869
007°	TDZE	14
	Apt Elev	14

For uncompensated Baro-VNAV systems, procedure NA below -10°C (14°F) or above 48°C (120°F). RF required. GPS required. Missed approach requires RNP less than 1.0. For inop ALS, increase RNP 0.30 all Cats visibility to 1¾ mile.

ALSF-2

MISSED APPROACH: (Do not exceed 185K until FIVUD) Climb to 2200 left turn to FIVUD and on track 327° to HESLO and on track 327° to GTN NDB and hold.

D-ATIS	POTOMAC APP CON	WASHINGTON TOWER	GND CON	CLNC DEL	CPDLC
132.65	119.85 239.25 (WEST/SOUTH) 124.2 360.8 (EAST)	119.1 257.6	121.7 257.6	128.25	


PRESQUE ISLE, MAINE
AL-331 (FAA)
24361
LOC I-PQI
108.7
APP CRS
003°
Rwy Idg 7441
TDZE 479
Apt Elev 534
ILS or LOC RWY 1
PRESQUE ISLE INTL (PQI)
DME required.
-36°C
Circling Rwy 10 NA at night. For inop ALS, increase S-LOC 1 Cats C and D visibility to 1⅜ SM. DME from PQI VOR/DME. Simultaneous reception of I-PQI and PQI DME required. When local altimeter setting not received, use HUL altimeter setting: increase S-ILS 1 DA to 769 feet; increase all MDAs 100 feet and S-LOC 1 visibility Cats C and D ¼ SM, and Circling visibility Cat C ½ SM and Cat D ¼ SM. For inop ALS when using HUL altimeter setting, increase S-ILS 1 all Cats visibility to ⅞ SM; and increase S-LOC 1 Cats C and D visibility to 1⅞ SM. VDP NA when using HUL altimeter setting.
MALSR
MISSED APPROACH: Climb to 1100 then climbing left turn to 3000 direct PQI VOR/DME and hold, continue climb-in-hold to 3000.
AWOS-3PT
118.025
BOSTON CENTER
124.75 239.05
CLNC DEL
121.6
UNICOM
122.8 (CTAF)
122.6
Procedure NA for arrivals at PQI VOR/DME on T295 northbound.
R-360
80°
360°
PRESQUE ISLE
116.4 PQI
Chan 111
3200 to PITRE
184° (12.8)
1479±
1064
1391
924
840
653
852
854
787±
HATEN
PQI 9.7
1266
1480
LOCALIZER 108.7
I-PQI
CANADA
UNITED STATES
NE-1.
R 2026

Low temp correction (AIM 7-3)

- When flying into CTA – **plan ahead**
- Correction is **not** applied for you by ATC
- Corrections only required only to IAP; not to SID, ODP or STARs
  - Use/interpolate value from table below.
  - Up to FAF – use FAF altitude over airport.
  - FAF to DA/MDA – use actual altitude over airport.
  - MA – use MA holding altitude over airport.
  - You are **required** to notify ATC of the change.
- Some systems do this automatically. Ours does not.

ICAO Cold Temperature Error Table

REPORTED TEMP °C	200	300	400	500	600	700	800	900	1000	1500	2000	3000	4000	5000
+10	10	10	10	10	20	20	20	20	20	30	40	60	80	90
0	20	20	30	30	40	40	50	50	60	90	120	170	230	280
-10	20	30	40	50	60	70	80	90	100	150	200	290	390	490
-20	30	50	60	70	90	100	120	130	140	210	280	420	570	710
-30	40	60	80	100	120	140	150	170	190	280	380	570	760	950
-40	50	80	100	120	150	170	190	220	240	360	480	720	970	1210
-50	60	90	120	150	180	210	240	270	300	450	590	890	1190	1500

Instrument exam questions (approach procedures)

- What is the rule for a pilot receiving a "Land and Hold Short Operation (LAHSO) clearance?"
  - A) The pilot is required to accept the controller`s clearance in visual meteorological conditions.
  - B) The pilot must accept the clearance if the pavement is dry and the stopping distance is adequate.
  - C) The pilot has the option to accept or reject all LAHSO clearances regardless of the meteorological conditions.
- Which type of runway lighting consists of a pair of synchronized flashing lights, one on each side of the runway threshold?
  - A) RAIL.
  - B) HIRL.
  - C) REIL.
- If you are performing a VFR practice instrument approach and Radar Approach Control assigns an altitude or heading that will cause you to enter the clouds, what action should you take?
  - A) Enter the clouds, since ATC authorization for practice approaches is considered an IFR clearance.
  - B) Avoid the clouds and inform ATC that altitude/heading will not permit VFR.
  - C) Abandon the approach and advise ATC of your intentions.

Instrument exam questions (approach procedures)

- How is your flight plan closed when your destination airport has IFR conditions and there is no control tower or flight service station (FSS) on the field?
  - A) The ARTCC controller will close your flight plan when you report the runway in sight.
  - B) You may close your flight plan any time after starting the approach by contacting any FSS or ATC facility.
  - C) Upon landing, you must close your flight plan by radio or by telephone to any FSS or ATC facility.
- When may a pilot cancel the IFR flight plan prior to completing the flight?
  - A) Any time.
  - B) Only if an emergency occurs.
  - C) Only in VFR conditions when not in Class A airspace.
- What does the absence of the procedure turn barb on the plan view on an approach chart indicate?
  - A) A procedure turn is not authorized.
  - B) Teardrop-type procedure turn is authorized.
  - C) Racetrack-type procedure turn is authorized.

Instrument exam questions (approach procedures)

- If the RVR equipment is inoperative for an IAP that requires a visibility of 2,400 RVR, how should the pilot expect the visibility requirement to be reported in lieu of the published RVR?
  - A) As a slant range visibility of 2,400 feet.
  - B) As an RVR of 2,400 feet.
  - C) As a ground visibility of 1/2 SM.
- What are the requirements for a contact approach to an airport that has an approved IAP, if the pilot is on an instrument flight plan and clear of clouds?
  - A) The controller must determine that the pilot can see the airport at the altitude flown and can remain clear of clouds.
  - B) The pilot must agree to the approach when given by ATC and the controller must have determined that the visibility was at least 1 mile and be reasonably sure the pilot can remain clear of clouds.
  - C) The pilot must request the approach, have at least 1 mile visibility, and be reasonably sure of remaining clear of clouds.

Disclaimer

Please note that information within this presentation comes from various sources which may or may not have been validated.

Always use official FAA materials and documents for current FARs and publications.

Refer to Certified Flight Instructors for clarification and questions, as needed.