Presented by:

REDBIRD FLIGHT SIMULATIONS

HARTZELL ENGINE TECHNOLOGIES
MONTGOMERY, ALABAMA USA

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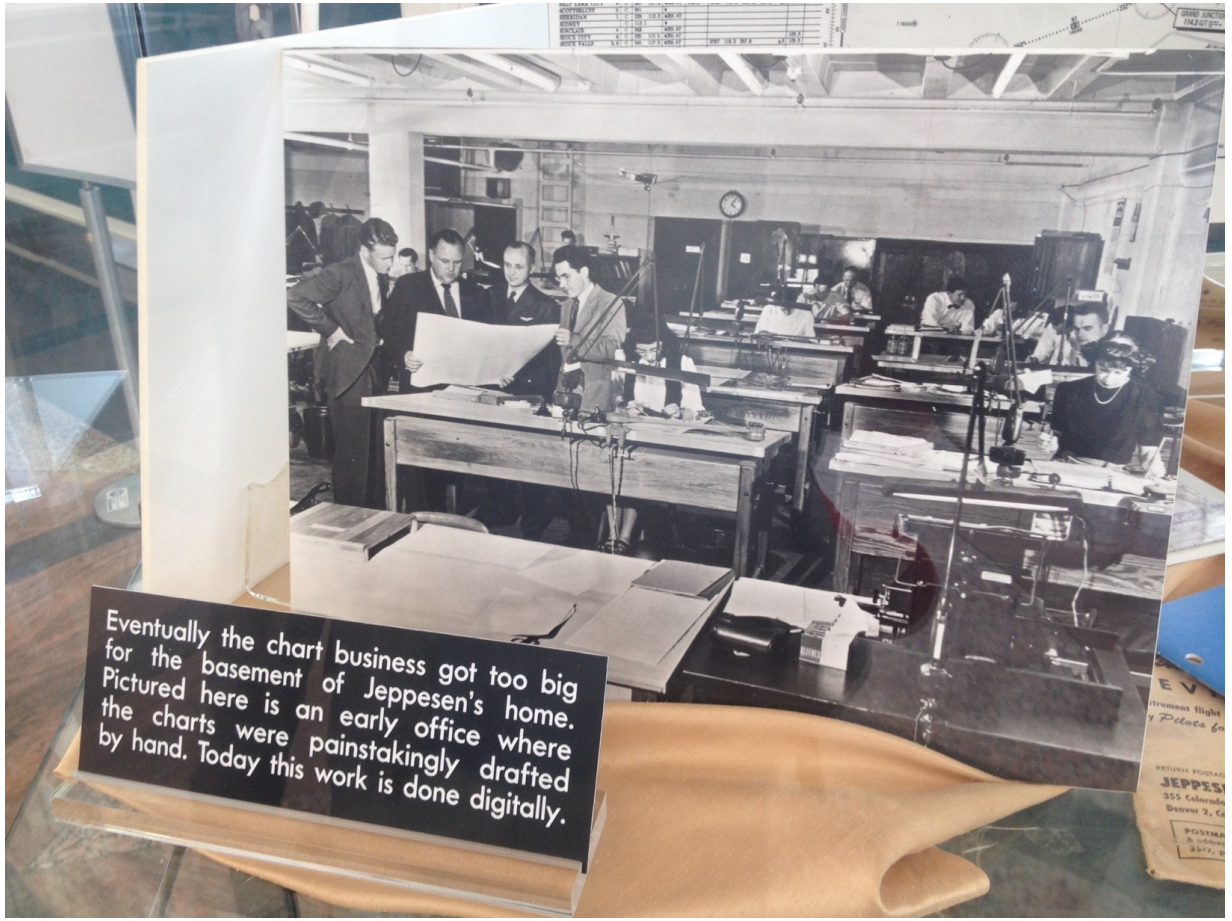
Choosing & Briefing the Approach

Why Brief

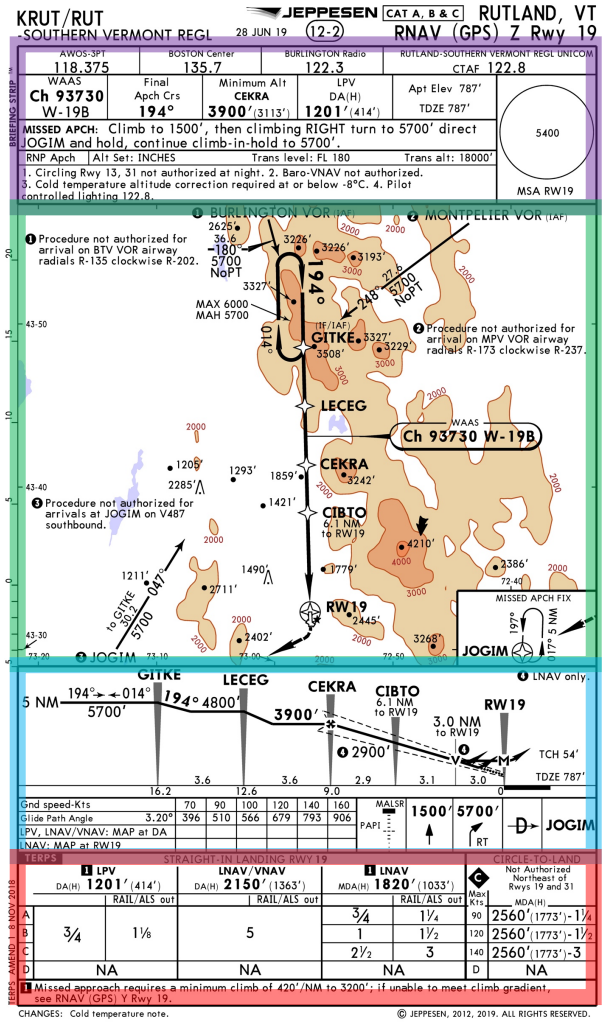
- Right mind set
- Catch mistakes
- Fix mistaken assumptions
- Transition
- Ritual

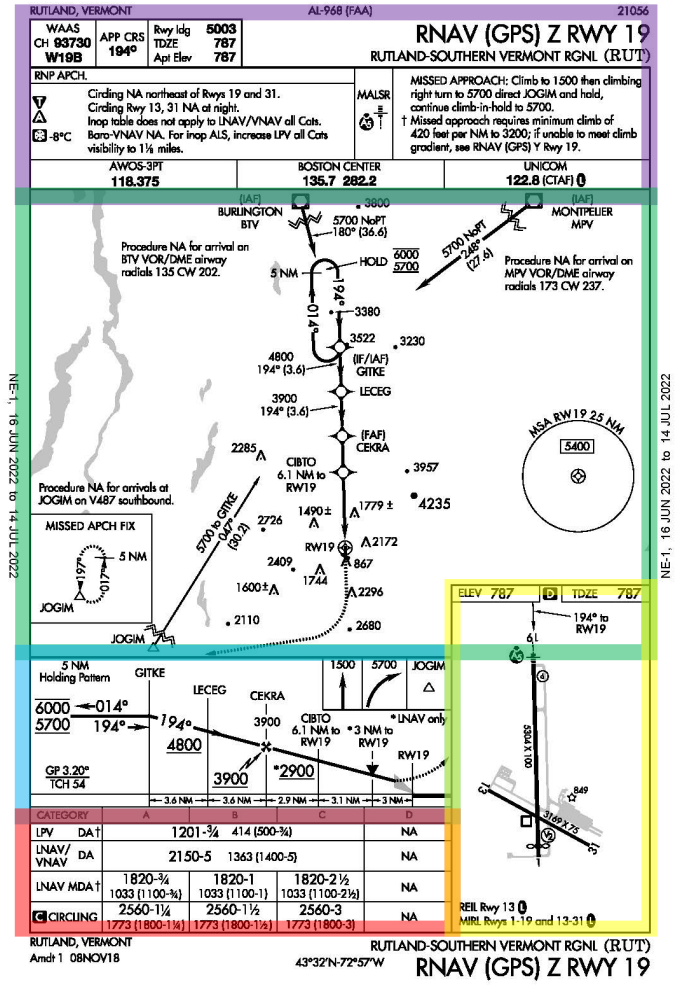
The Beginnings



Approach Plate Anatomy

- Briefing Strip
- Lateral PV
- Profile View
- Minimums
- Airport Diagram

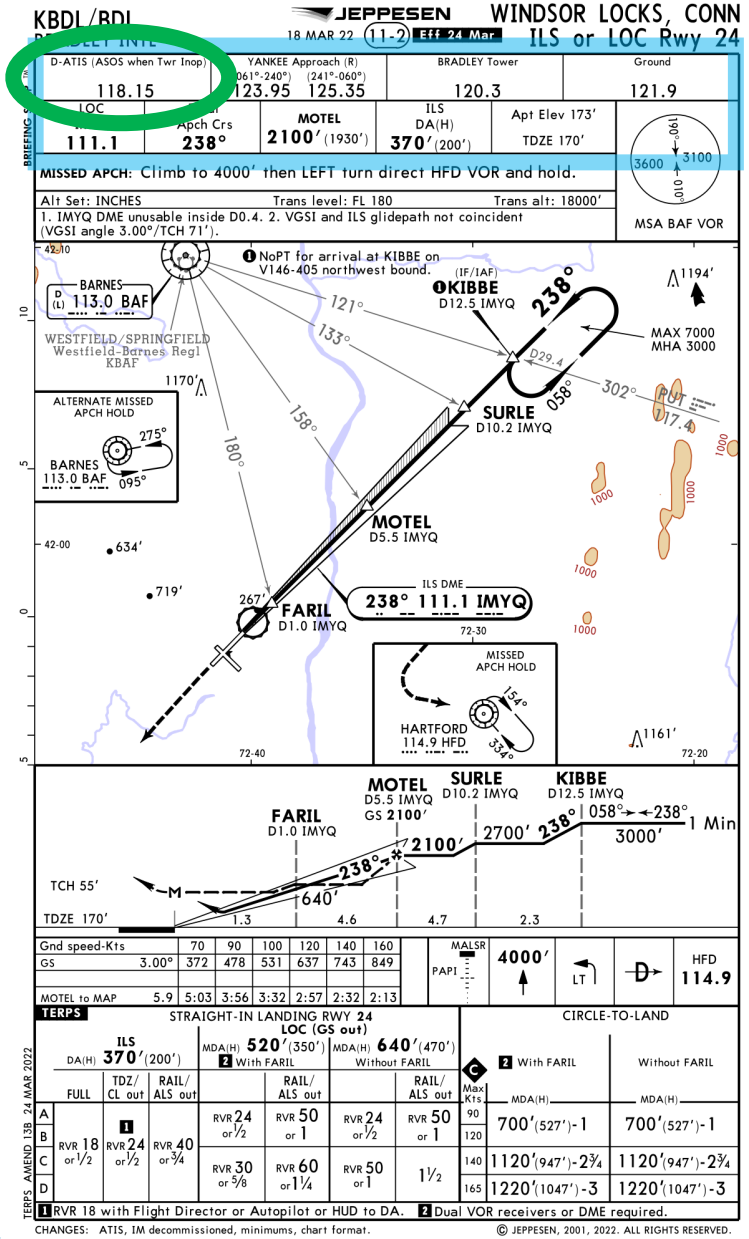




Briefing the Approach

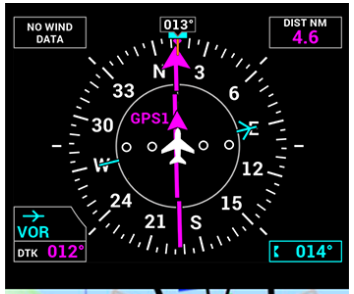
- **W**eather (ATIS, AWOS, ASOS)
  - What is the weather?
  - Where are the winds coming from?
  - What are the minimums?
  - Are you properly equipped?
  - Level of proficiency?
  - What is the terrain?
  - Time of day?
  - NOTAMs?

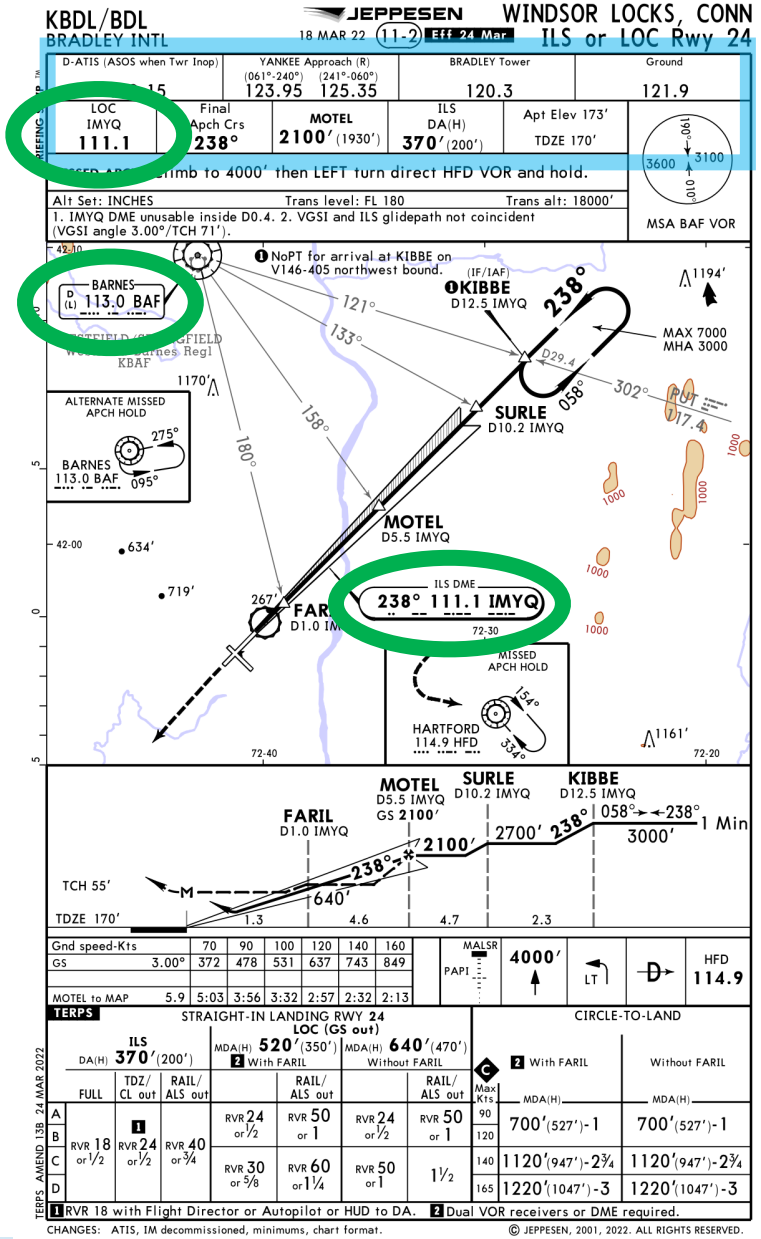
Select Approach!!!



Briefing the Approach

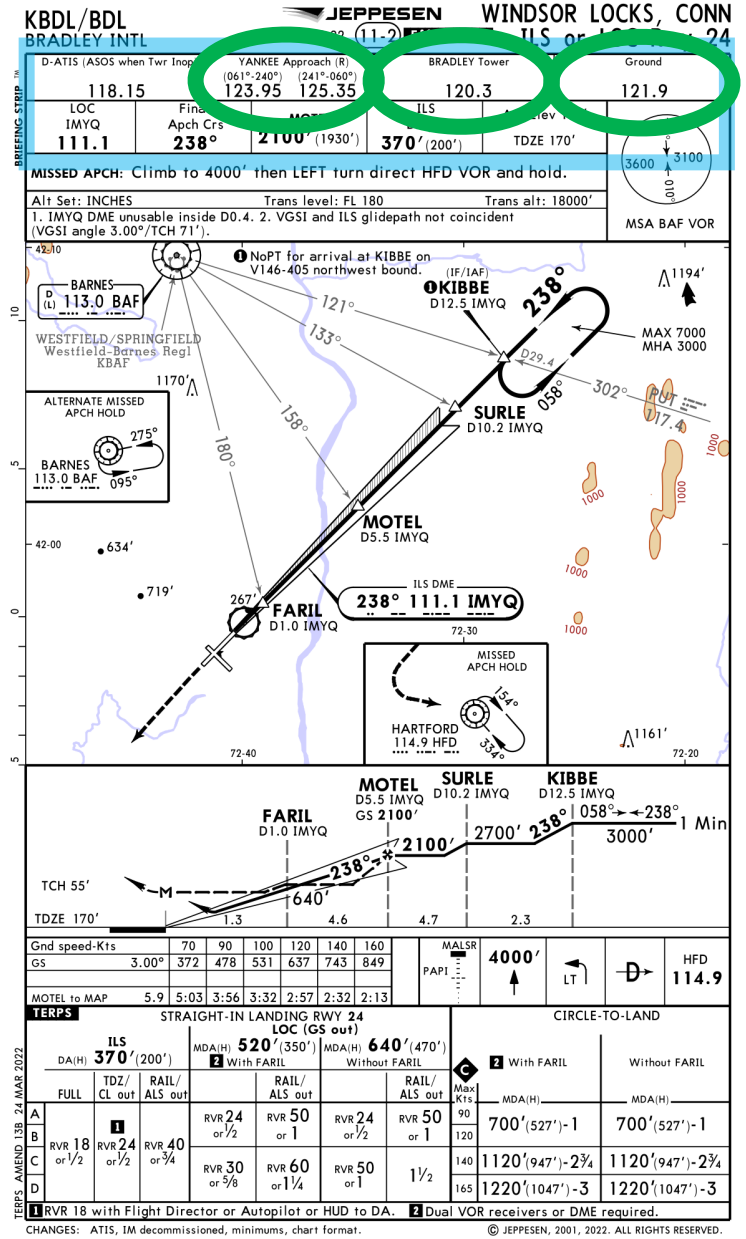
- **W**eather (ATIS, AWOS, ASOS)
- **I**nstruments
  - Load Approach
  - Tune & Identify Navaids
  - Set RAW data





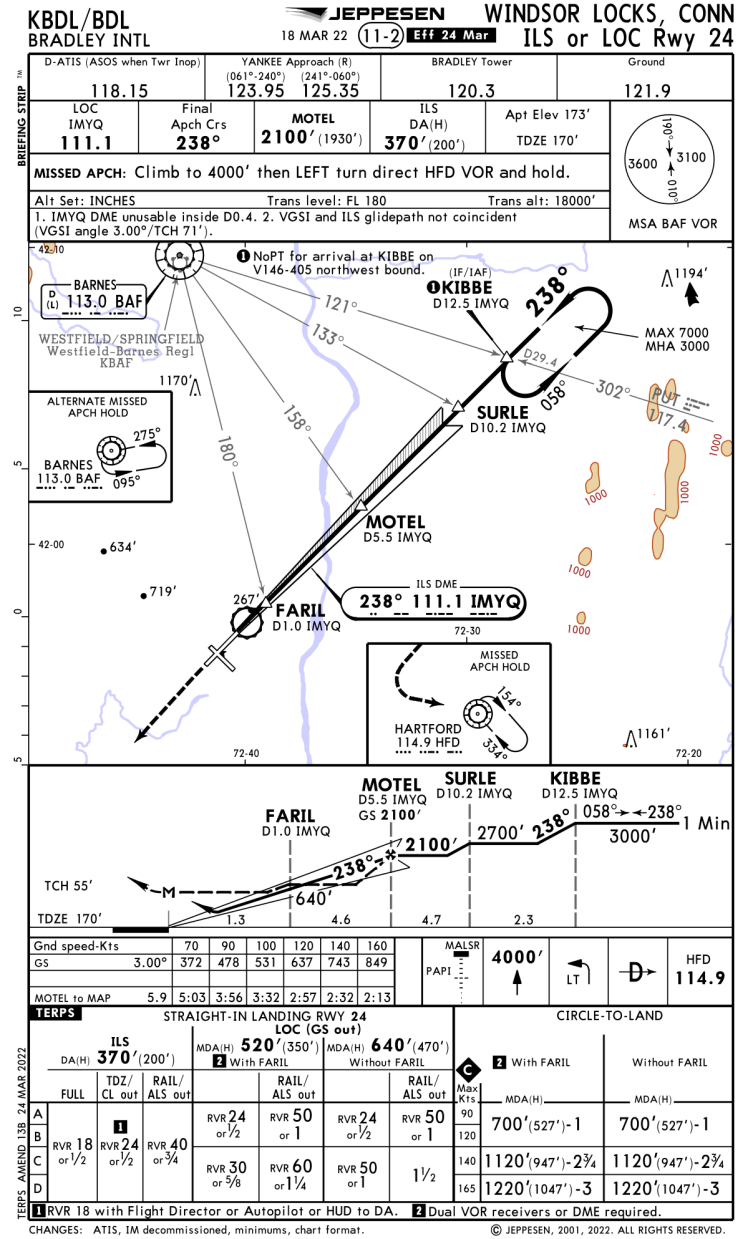
Briefing the Approach

- **W**eather (ATIS, AWOS, ASOS)
- **I**nstruments - Load Approach & Set RAW data
- **R**adios set COMM 1 & 2



Briefing the Approach

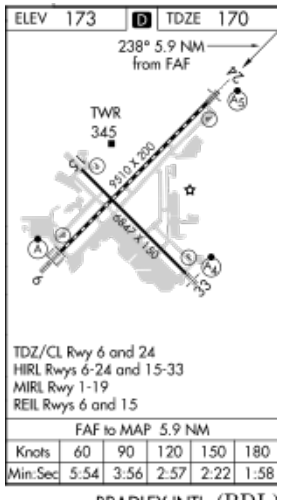
- **W**eather (ATIS, AWOS, ASOS)
- **I**nstruments - Load Approach & Set RAW data
- **R**adios set COMM 1 & 2
- **E**nvironment - brief approach

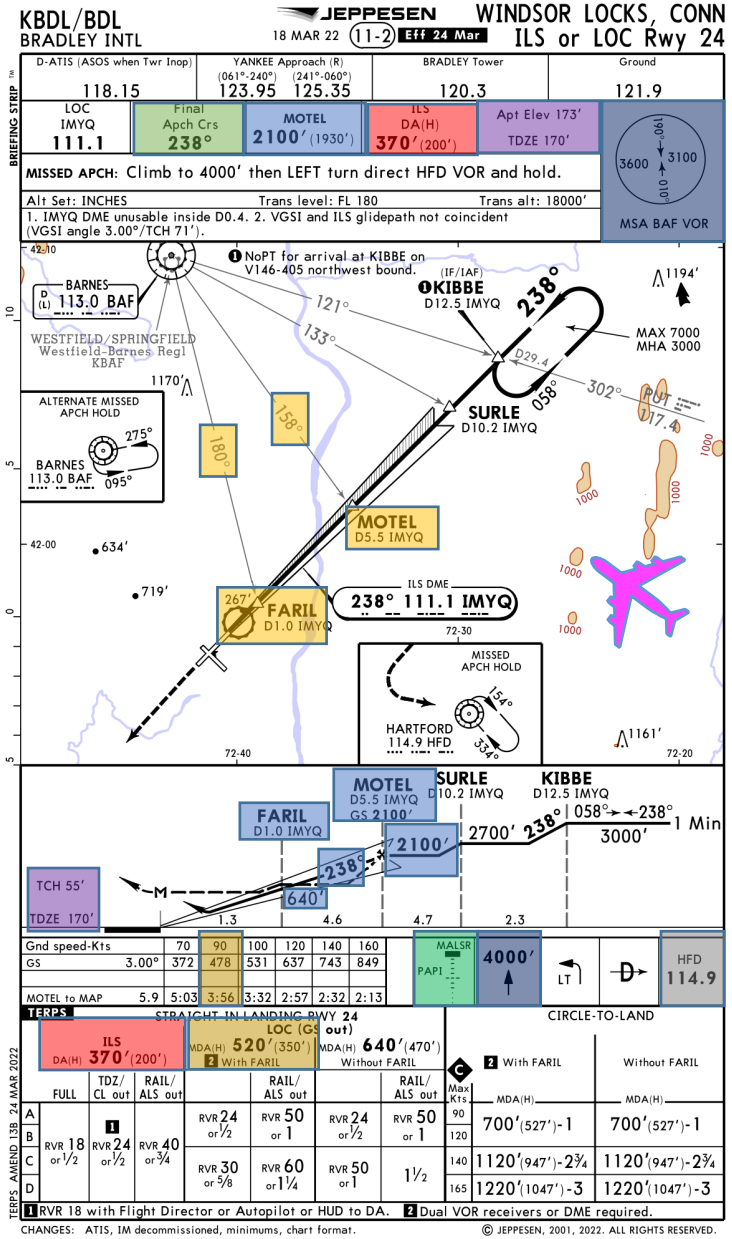


Briefing the Approach

Environment

- Start briefing right away!
- **Brief it like you fly it**
- What If's?
  - RAW Data
- Brief it lots!

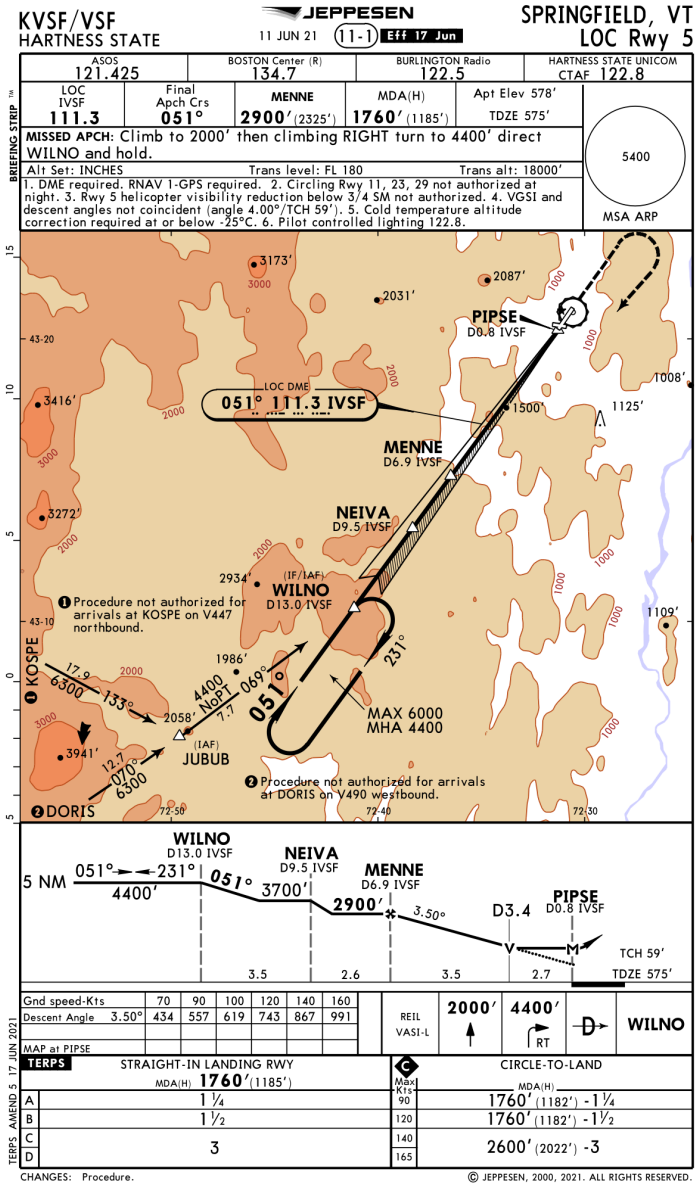


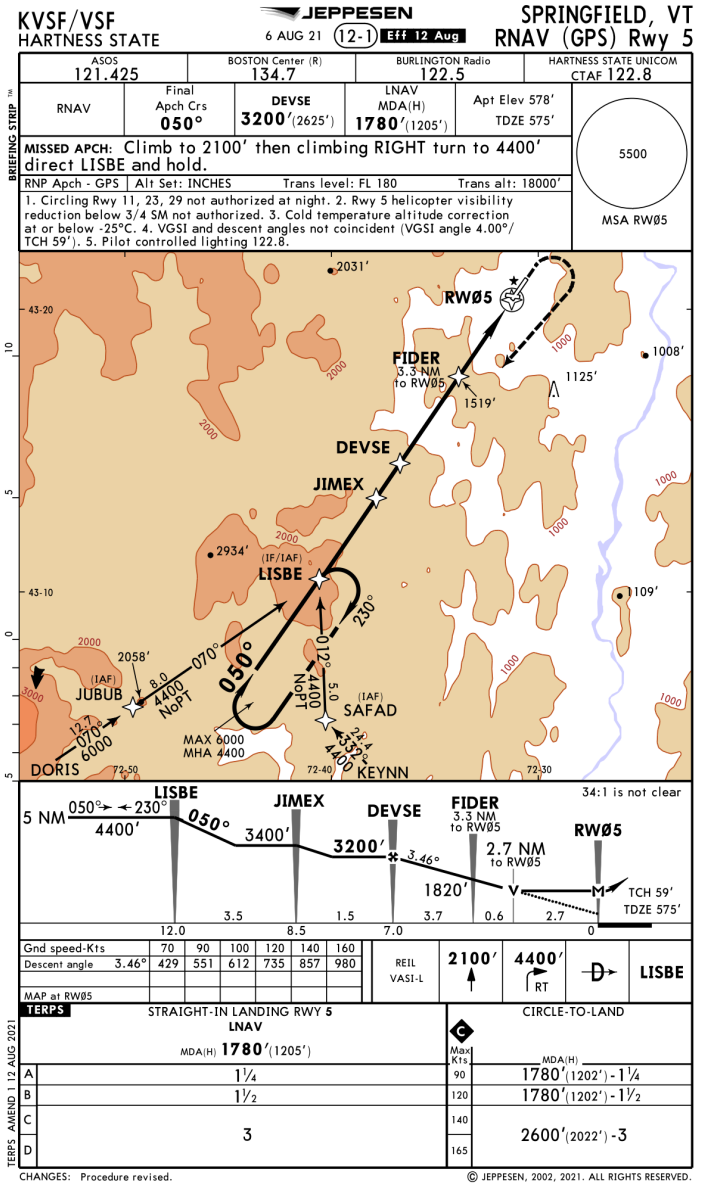


Briefing the Approach

Environment

- Vertical Plan
- Altimeter Setting





10 Miles - 10 Minutes Prior

- **W**eather (ATIS, AWOS, ASOS)
- **I**nstruments
- **R**adios set COMM 1 & 2
- **E**nvironment - brief approach

VOR/Localizer vs GPS

VOR vs. RNAV

Created by Jason T. Archer

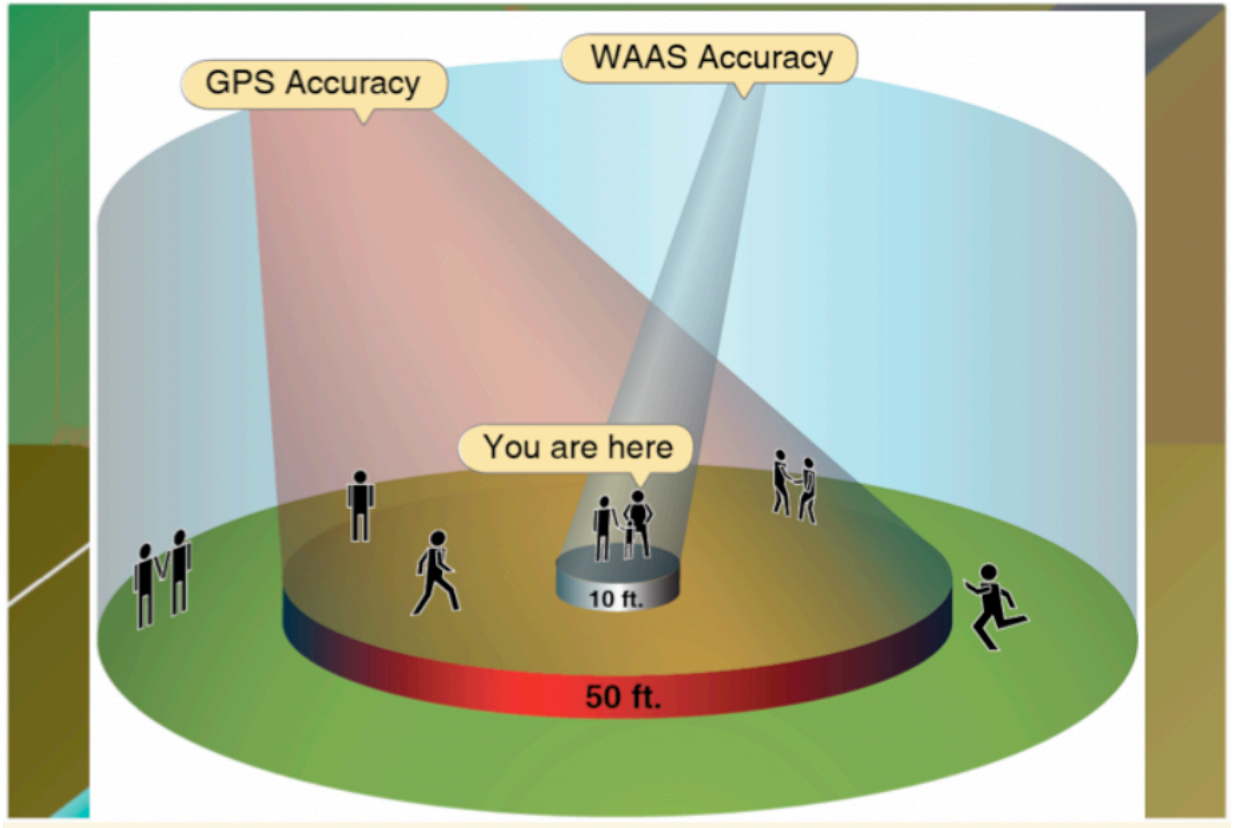
	VOR/VLOC	RNAV/GPS	
Location	Ground Based	Space Based (min 4 satellites)	
	Routing is between VORs	Allows for direct routing between waypoints (Lat./Long., degree/distance fixes or off sets)	
Guidance	Degrees and thus angular course width	Fixed or linear course width	
	Fly TO/FROM	Sequence (Fly) TO fixes	
	Victor Airways	Q- Routes (above FL180) & T-Routes	
	Resolver		
Vertical Dimension	1200'AGL upto but not including FL180	1200'AGL upto but not including FL180	
Horizontal Dimension	4NM either side (8 NM total)	Low level controlled fixed 4NM + 2NM of secondary coverage; T-Routes 10 NM each side of centerline.	
Changeover points	Yes	No	
Obstacle Protection	1000' non-mountainous; 2000' mountainous	If not on published route, PIC responsible for obstacle clearance (need radar coverage); for t-routes it's the published MEA.	
Separation	IFR 500	IFR 500	
Equipment	VOR	GPS or GPS/WAAS	
	30 Day check	Database Current or verify GPS database with the approach you are going to fly	
	Tune & ID	RAIM for non-WAAS	
CDI Sensitivity		non-WAAS.	WAAS
Enroute (+30 nm)		5 nm (1.0 nm)	2 nm (0.4 nm)
Terminal		1 nm (0.2 nm)	1 nm (0.2 nm)
Approach (2 nm prior to FAF)		0.3 nm (365 feet)	0.3 nm (365 feet)
MAP		1 nm (0.2 nm)	0.3 nm (365 feet)

Sensitivity

- VOR – each dot = 2 degrees
- LOC – each dot = 0.5 degrees

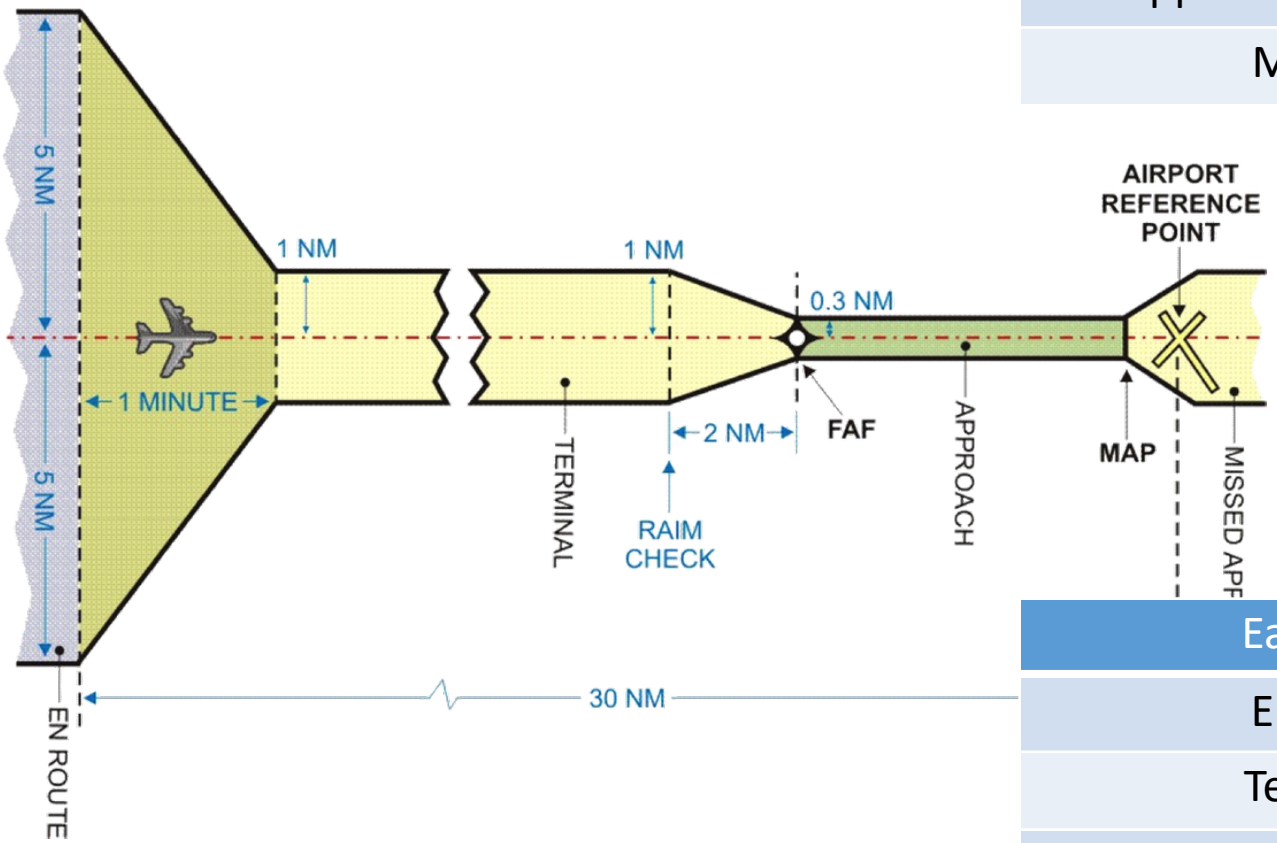
- At 60nm each degree = 1 mile apart
- At 30nm each degree = 0.5 miles apart
- At 15nm each degree = 0.25 miles apart

Sensitivity



Sensitivity

Mode	Non-WAAS	WAAS
Enroute (>30nm)	5 nm	2 nm
Terminal (30-2nm)	1 nm	1 nm
Approach (2nm-FAF)	0.3 nm	0.3 nm
Missed	1 nm	1 nm



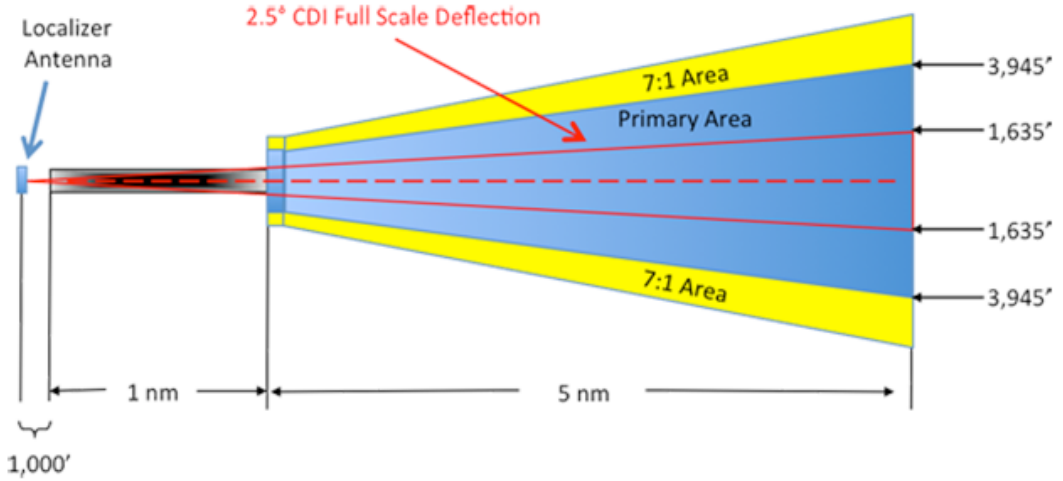
Each Dot	Non-WAAS	WAAS
Enroute	1.0 nm	0.4 nm
Terminal	0.2 nm	0.2 nm
Approach	365 feet	365 feet
MAP	0.2 nm	0.2 nm

RNAV Approach Matrix

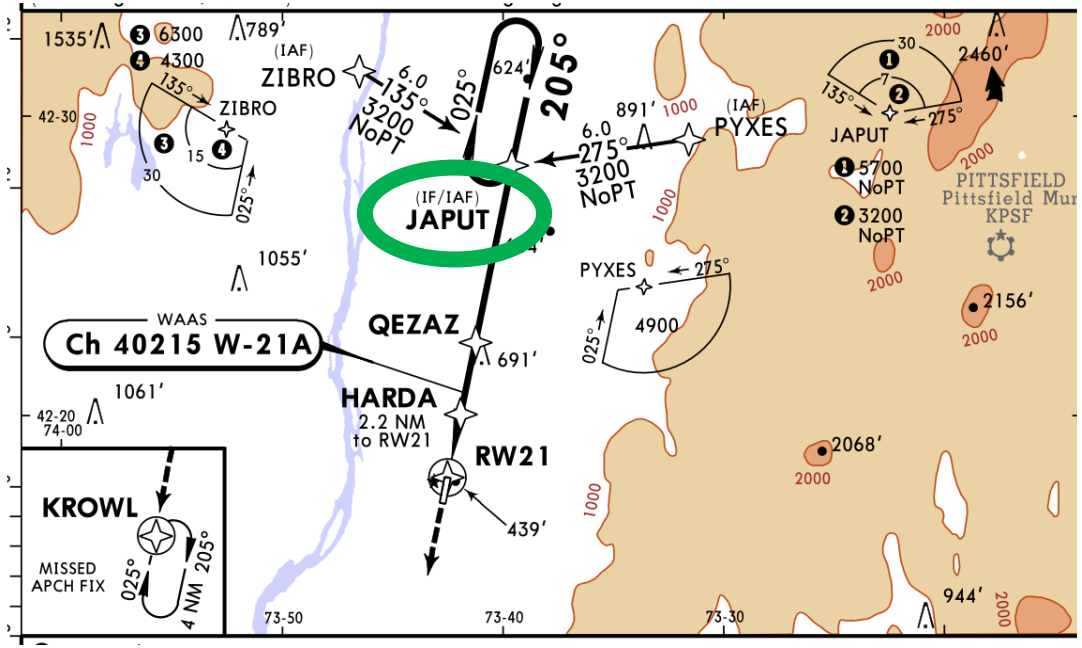
Definition	
Precision/non-Precision	
WAAS[1]/non-WAAS	
Flown to a:	
Guidance is:	
Course Width	
Annunciation of Approach Type Occurs:	
CDI Sensitivity is in:	
Equipment Checks[2]	
Alternate Selection	

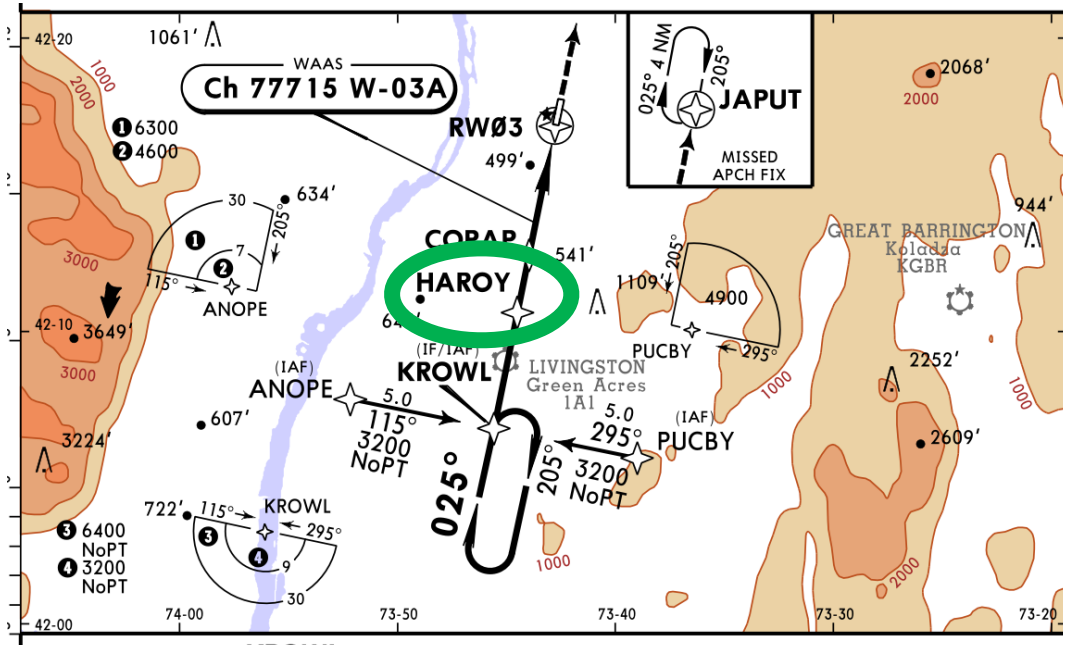
Localizer vs. LPV

- How wide at the Threshold?
  - LPV = 700’
  - LOC = 700’
    - (350’ center to full scale deflection)
- How wide at the Final Fix?
  - LPV = 0.6 nm (3168’)
    - .3 NM or 1584’ (center to full scale deflection)
  - LOC = depends on length of runway and distance from runway



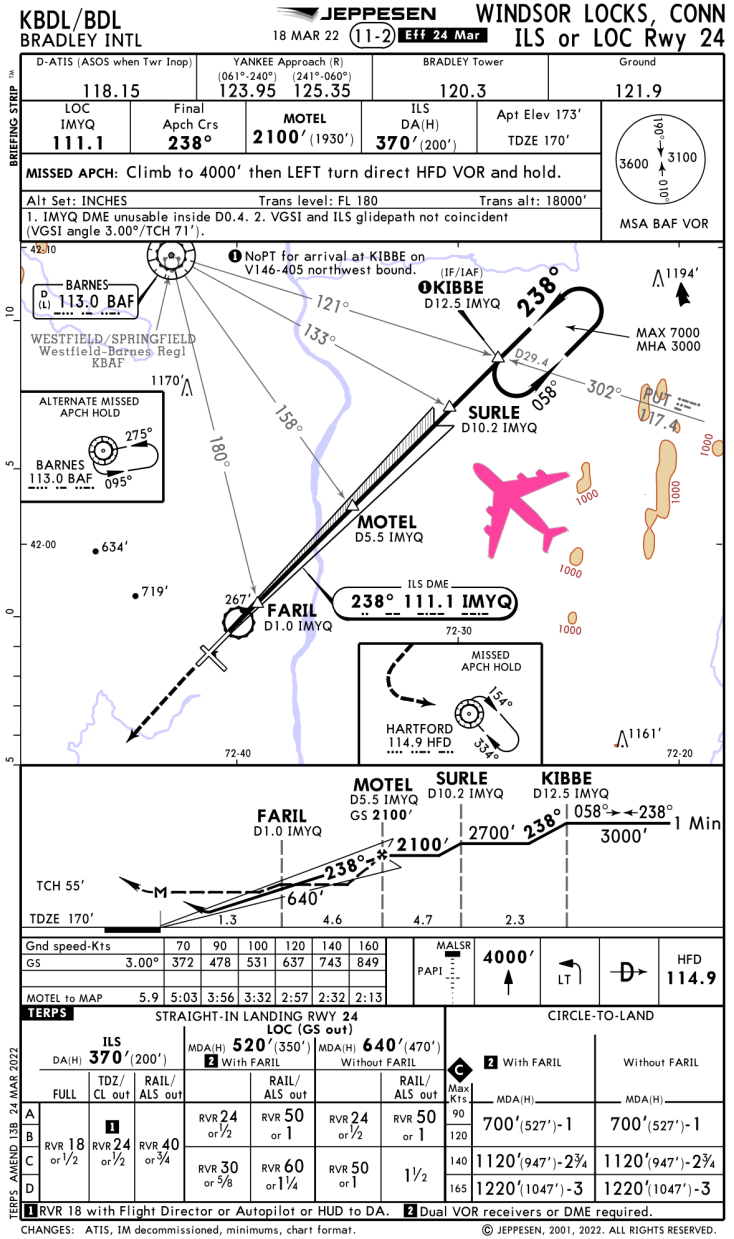
The Active Waypoint



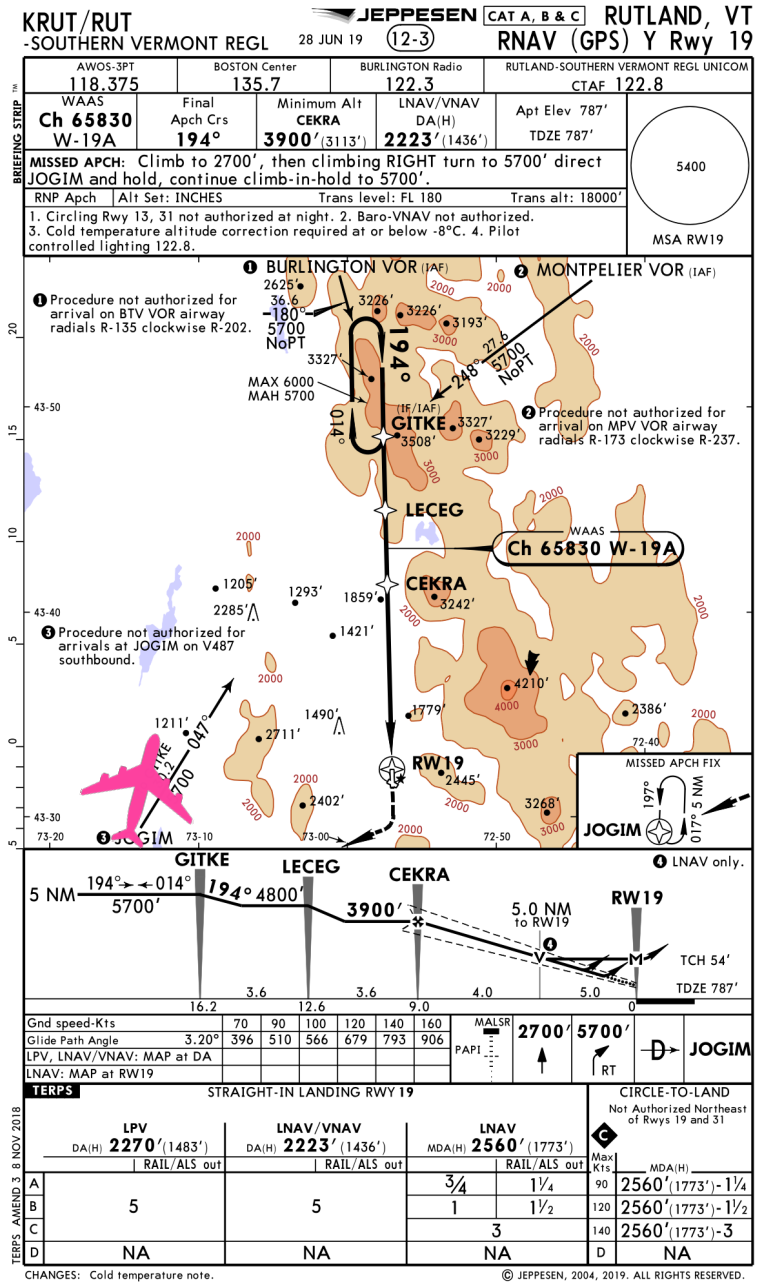


Know What to Expect

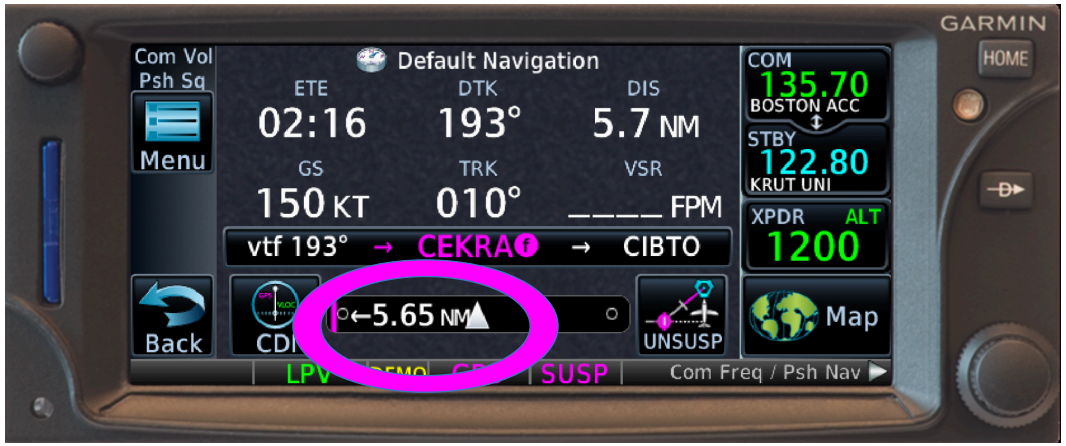
- Expect & Read Back “PTAC”
  - Your Position in Relation to the FAF
  - Turn
  - Altitude
  - Clearance

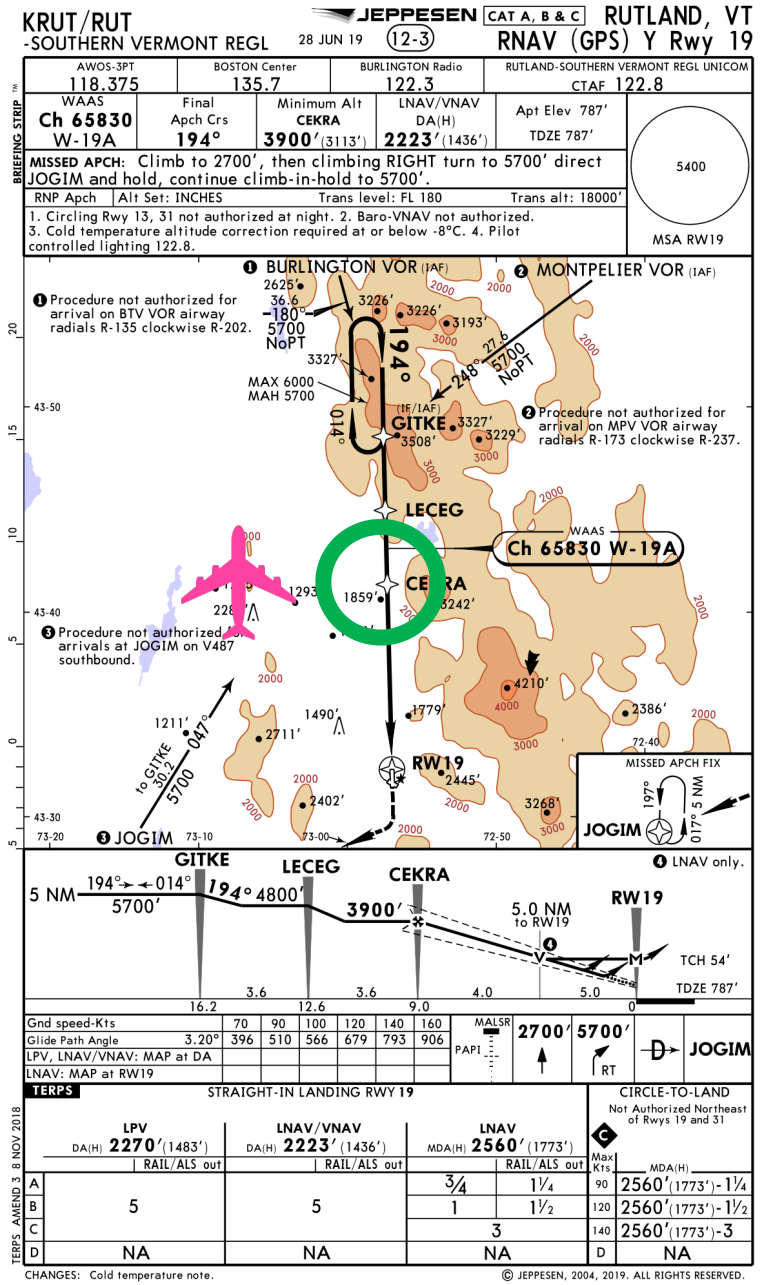


Know What to Expect

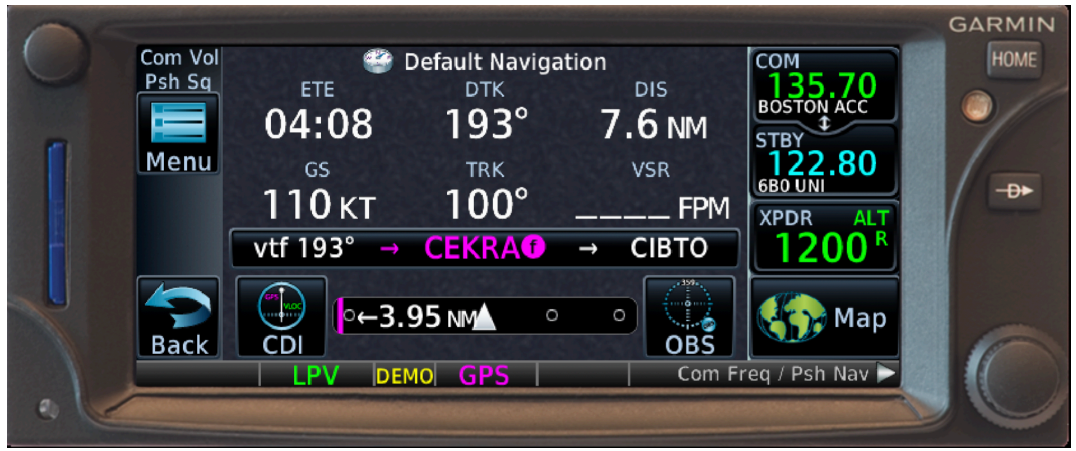


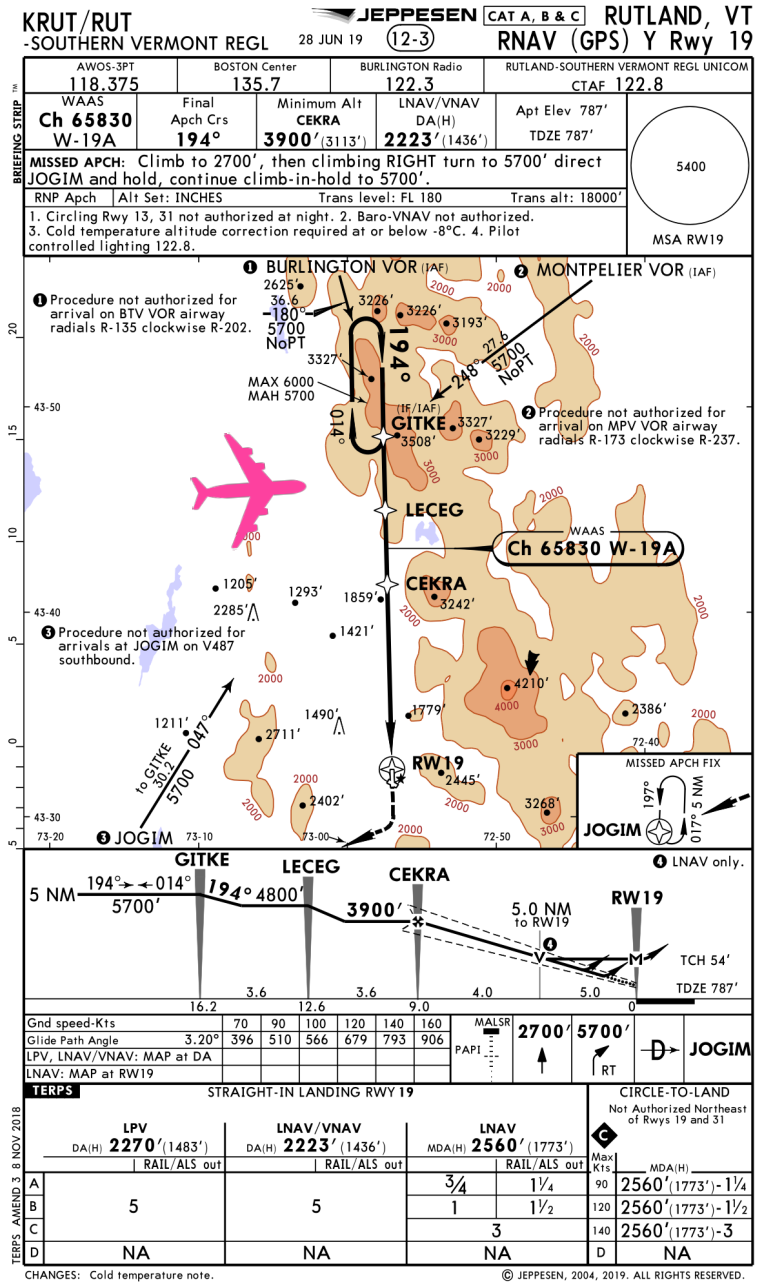
Know What to Expect



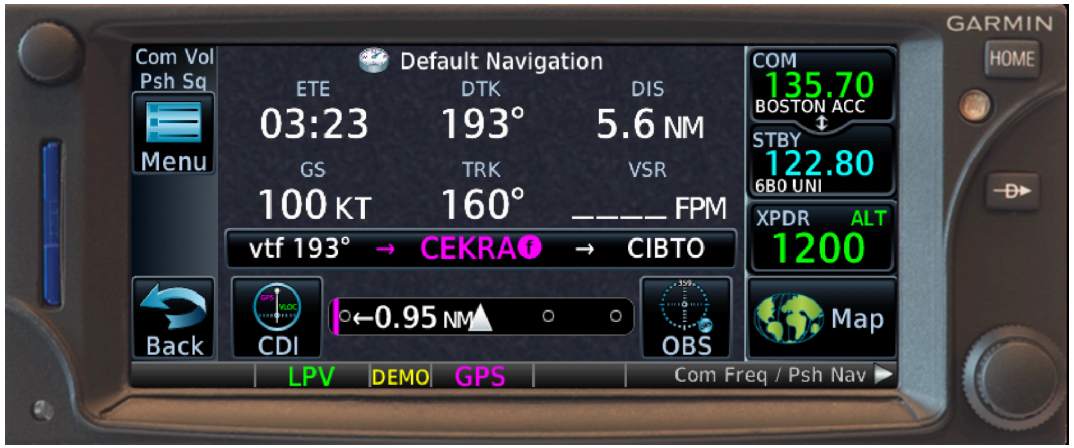


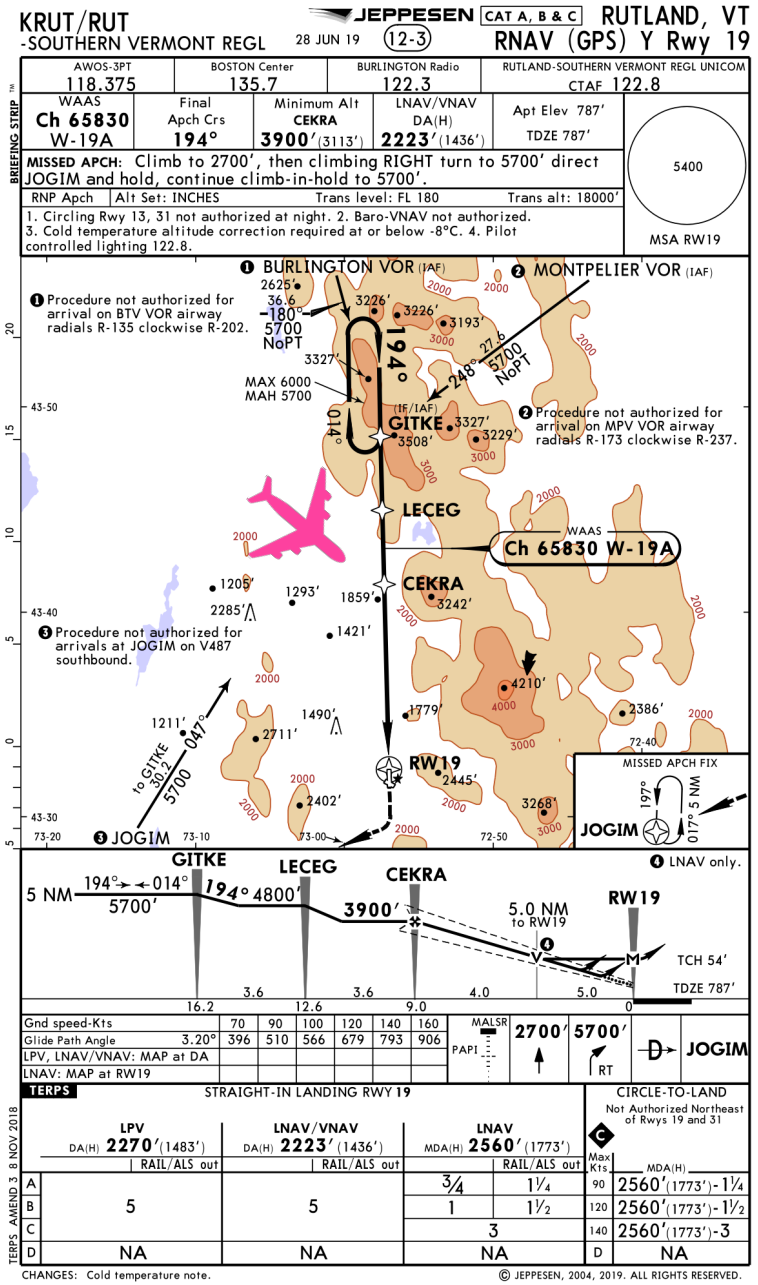
Know What to Expect





Know What to Expect



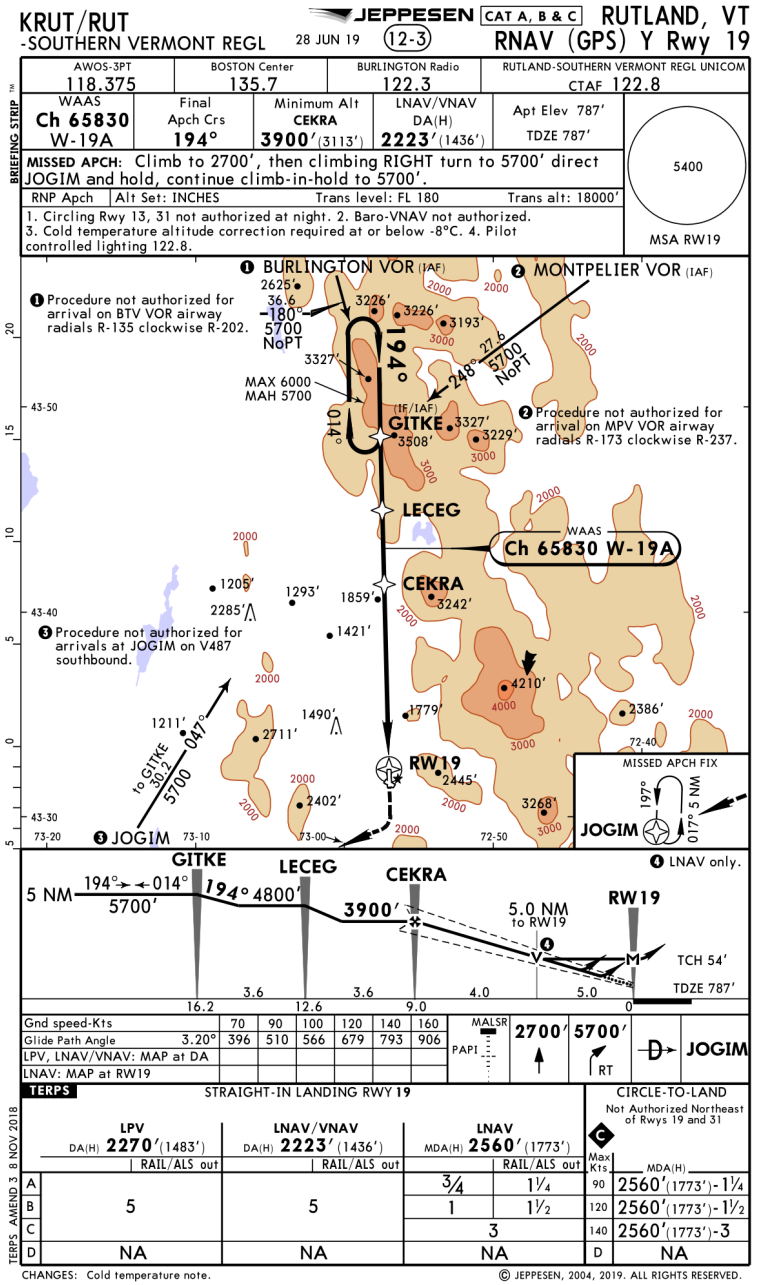


Know What to Expect

Activating Vectors to Final

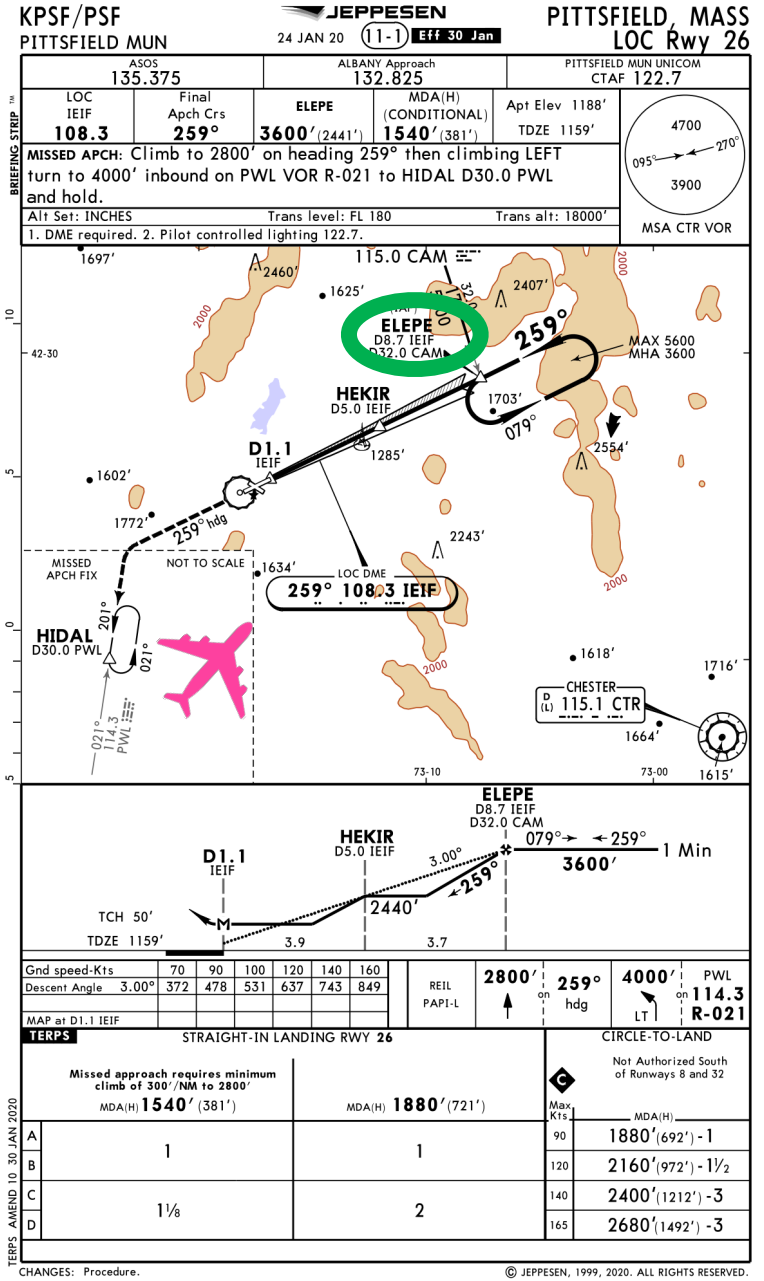
- If you are outside FAF = GPS will SUSPend
- Within 3 degrees of LOC = unsuspend

- Cross Track Error (XTE)
  - XTE = Distance to FIX = Abeam the fix

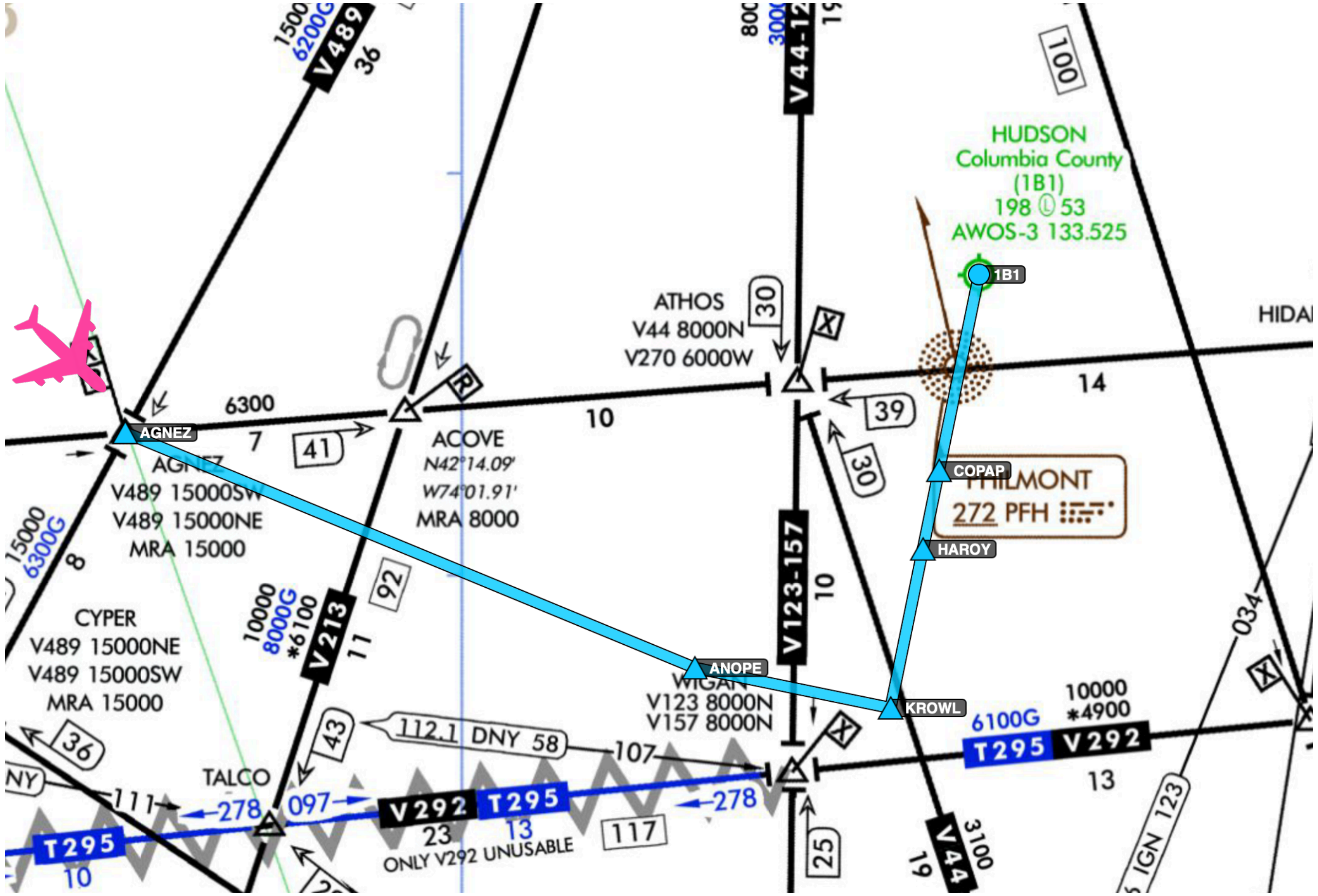


Suspension Gotchas

- When to Switch from GPS to VLOC?
  - Hold in lieu of a procedure turn = SUSPend
  - Procedure Turn in bound = VLOC

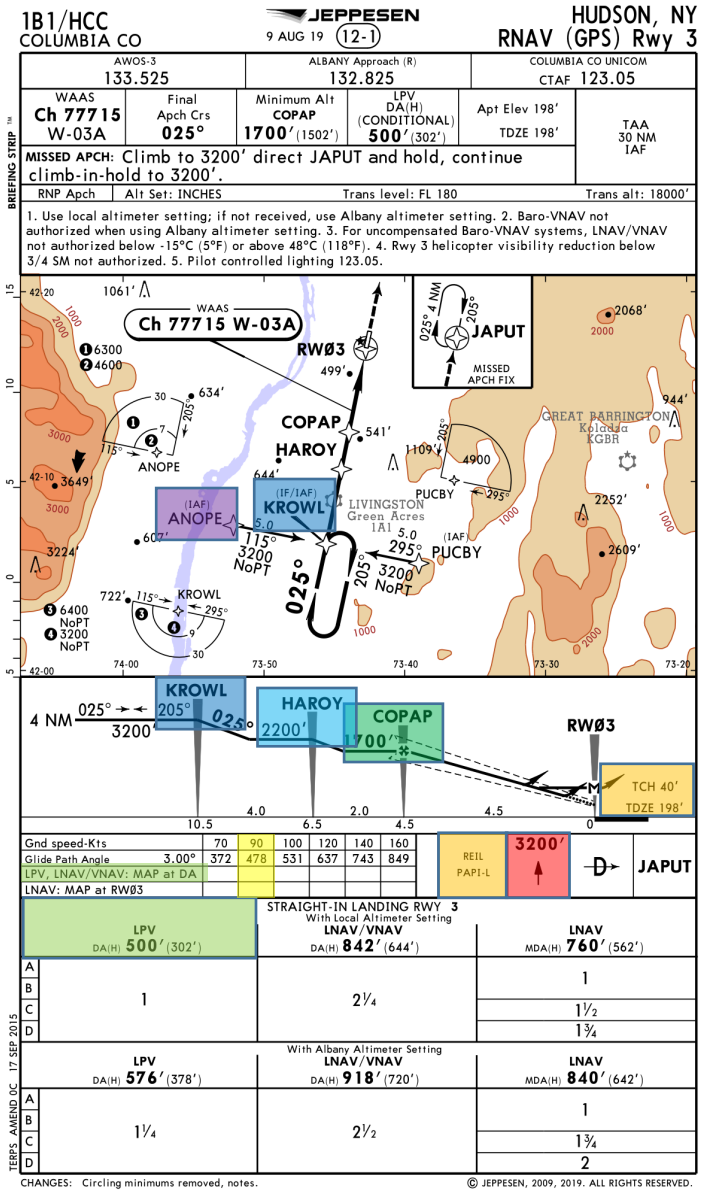


Scenario


HUDSON
Columbia County
(1B1)
AWOS-3 133.525
1B1
ATHOS
V44 8000N
V270 6000W
AGNEZ
ACOVE
MRA 8000
V489 15000SW
V489 15000NE
MRA 15000
CYPER
V489 15000NE
V489 15000SW
MRA 15000
COPAP
HAROY
PHILMONT
272 PFH
ANOPE
KROWL
WIGAN
V123 8000N
V157 8000N
TALCO
112.1 DNY 58
ONLY V292 UNUSABLE
HIDAI
V489
V213
V123-157
V44
V292
T295

Scenario

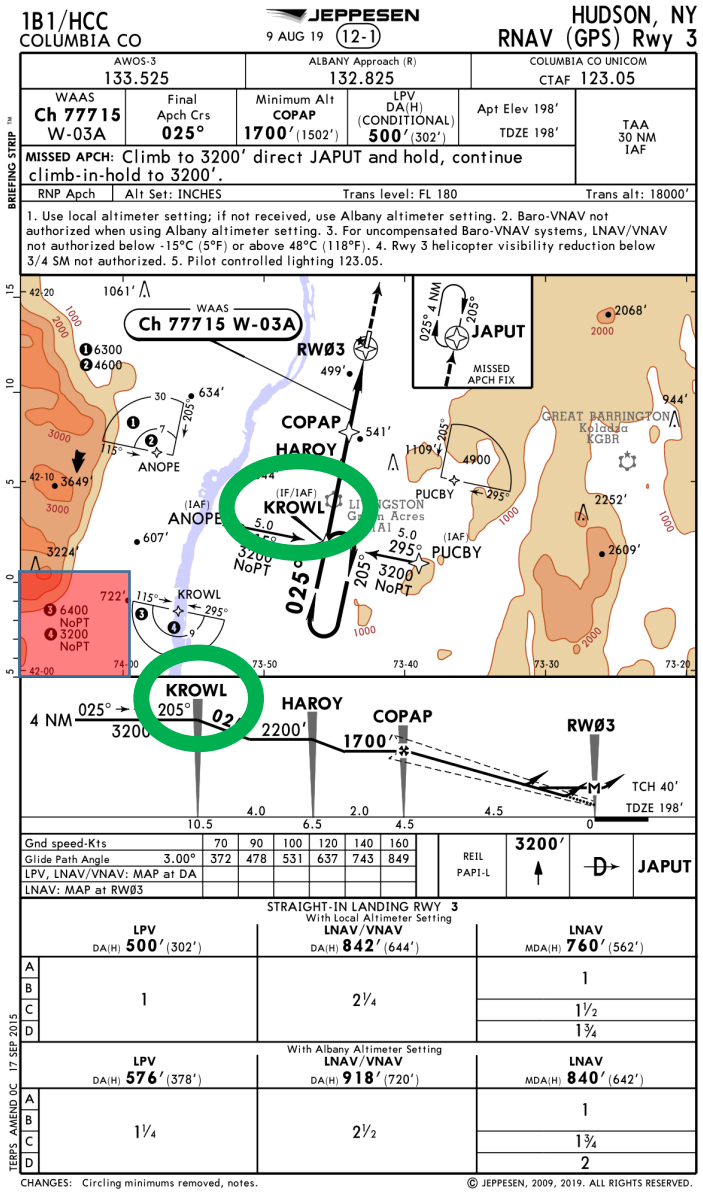
- **W**eather (ATIS, AWOS, ASOS)
- **I**nstruments
- **R**adios set COMM 1 & 2
- **E**nvironment - brief approach



Prior To Initial Approach Fix

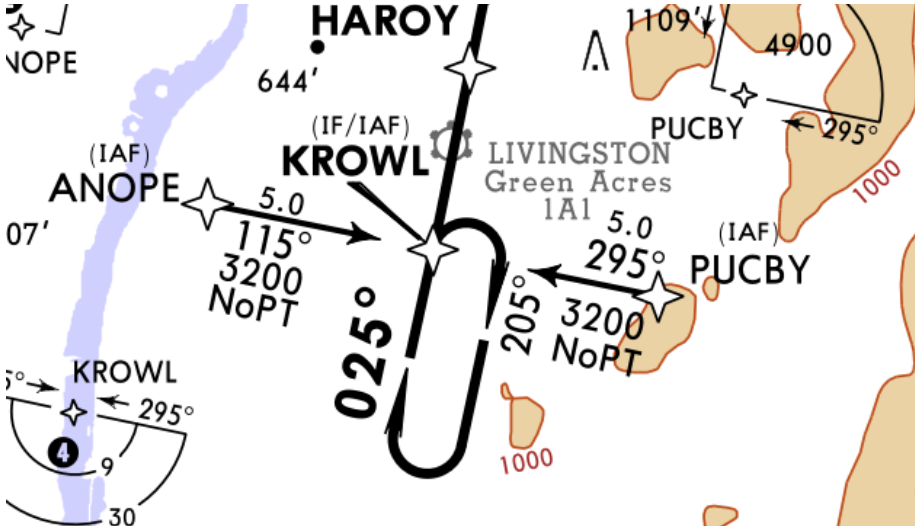
- WIRE
- Comply with ATC clearance
- Activate Approach WHEN CLEARED
- **Add alternate to flt. plan after MAP hold (430/530)**
- Confirm Approach fixes under Flight Plan page
- Reduce power to approach speed (3 min. ETE TO IAF)
- Crossing the IAF, complete the 5 "T”s (if full approach).
- Proceed outbound for hold, procedure turn (if full approach) or as vectored by ATC

To Hold or Not to Hold



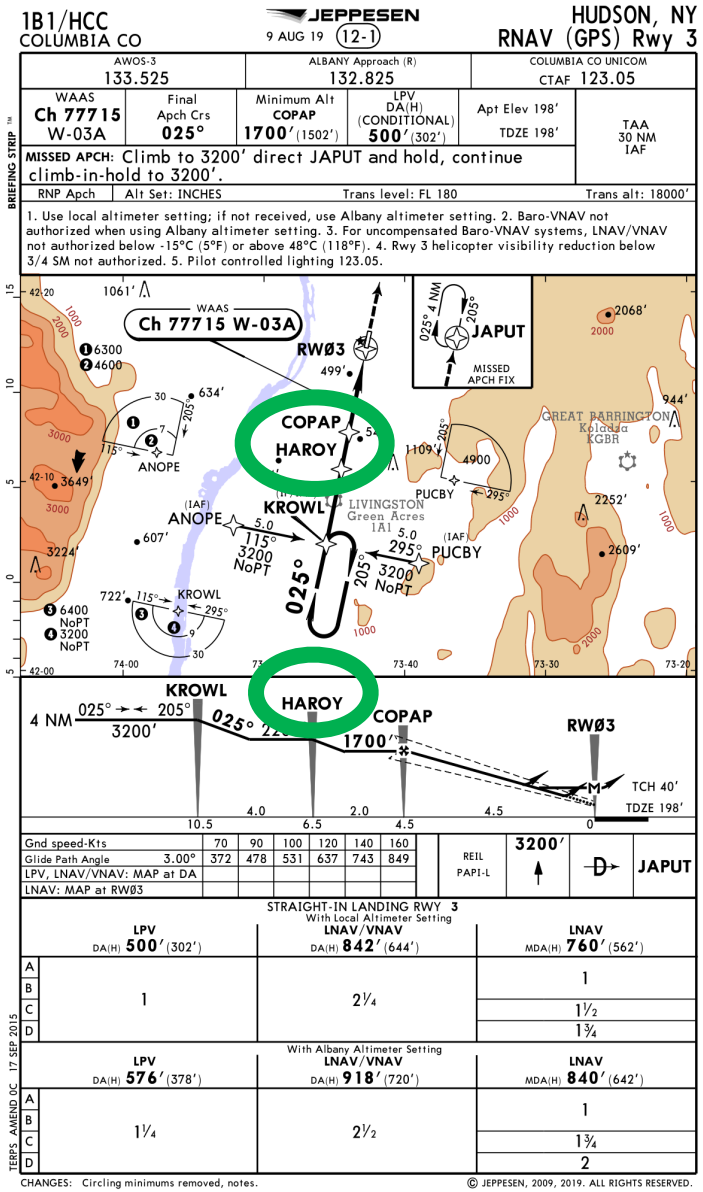
Fly the Numbers

- Standard Rate Ground Speed Bank Angle = GS/10 + 5
  - 120/10 – 12 + 5=17 degrees



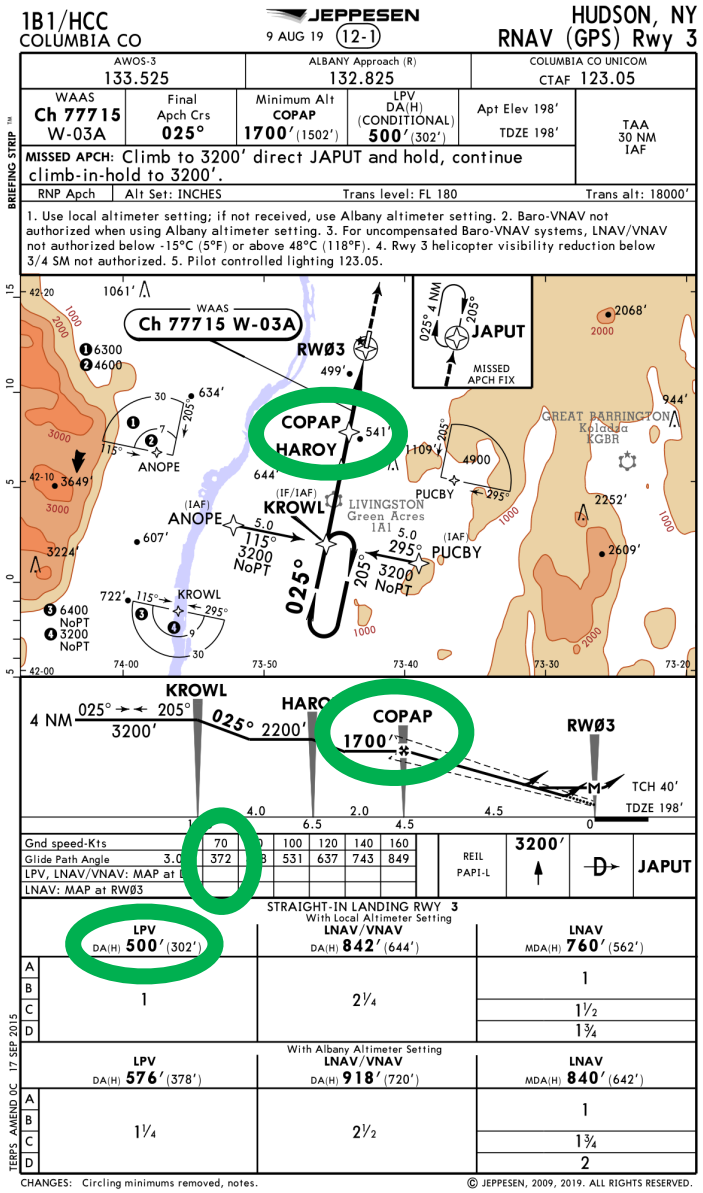
Localizer Intercept
(or Procedure Turn Inbound)

- CDI to GPS
- Confirm approach annunciation:
  - For LNAV, LNAV+V (w/in 2nm of FAF)
  - For LPV, LNAV/VNAV, LP, LP+V (when the FAF becomes the active waypoint)
- Confirm GPS is un-suspended
- Call out ”Localizer Alive”
- Call out “Glide Slope Alive” (if LPV)
- Set pitch/power/configuration
- Prepare for frequency change



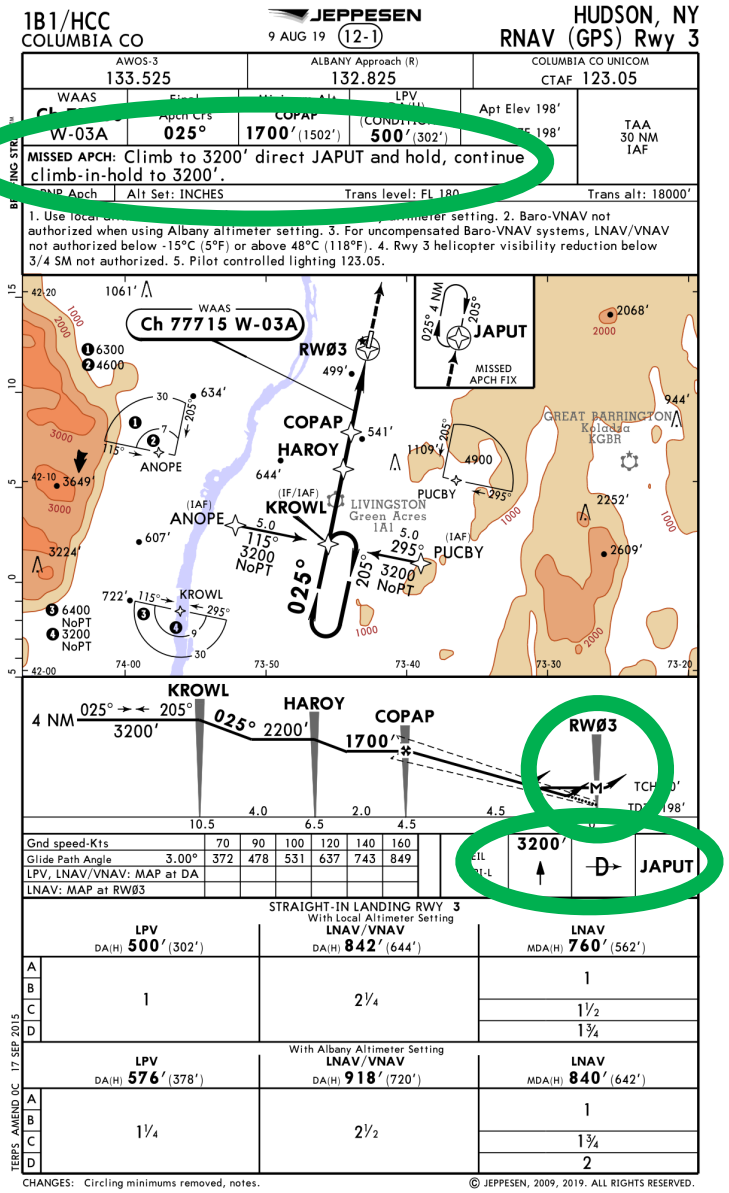
Final Approach Fix

- Call out “Final Fix” intercept and confirm altitude
- Head UP w/ memory items
  - FAC
  - DA
  - Initial MAP
  - Wind
- GUMPS check
- Power/Configuration
- WX Check
- @MAP transition to landing or execute the MAP via:
  - @DA execute the missed approach procedure
  - @MDA arrest descent, maintain MDA till MAP



Missed

- Autopilot Disconnect
- Power Up
- Pitch Up
- Clean Up (Gear, Flaps, Carb Heat Off, Cowl Flaps)
- **Trim Up**
- Button Up (OBS un-suspend)
- Advise ATC of missed and intentions



Missed

- Autopilot Disconnect
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- Clean Up (Gear, Flaps, Carb Heat Off, Cowl Flaps)
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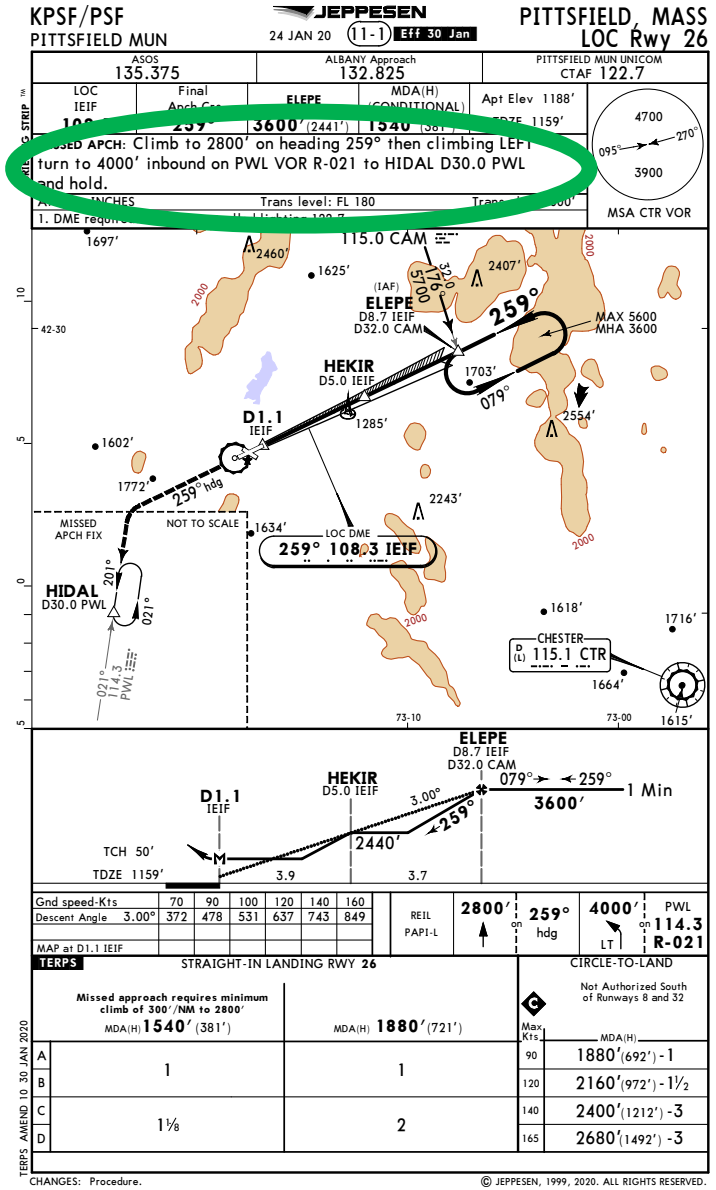

Risks and Hazards

- Correct Chart
- Weather
- Primary/Supporting Nav. Freq.
- Set Needles
- Hand-Fly or Coupled?
- Plan your Turns
- Confirm Altitudes
- Identify the FAF
- Anticipate the Descent Rate
- Anticipate the Weather
- Minimum Altitude
- Pilot Controlled Lighting
- I.D. the MAP
- Identify the VDP
- Circle to Land
- Obstacles

Take Aways

- Brief, re-brief and re-brief again
- Keep busy
- Think and plan ahead
- Talk to yourself
- Practice, Practice, Practice
- Visualize
- Aviate – Navigate - Communicate

Thank You!

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2021 CFI of the Year BDL FSDO
2021 AOPA Distinguished Flight Instructor
2018 FAASTeam Rep of the Year BDL FSDO