Pilot Initial

CRJ-550 Instructor Whiteboard

Session 5

Flight Number 4505

Briefing Items

- Hot and High
- WX Radar
- EGPWS
- Windshear
- Flight Control Malfunctions
  - PCU Runaway
  - Aileron System Jam
  - Elevator Jam
  - Stab Trim Runaway
- DME ARC
- LDA Approach

Hot and High

Extremely hot environments present operational problems of a different nature from those associated with cold weather operations. The main concerns focus primarily on passenger and crew comfort and the significant decrease in airplane performance, which high ground temperatures can affect.

SOP 1-10.7 and FCOM 2 Supplement 14

- Cabin
- Taxi
- Takeoff
- Landing

Limitations:

- Maximum airport pressure altitude for take-off and landing is 8,000 feet
- Maximum ambient air temperature approved for take-off and landing is ISA + 35°C
- Consider a hypothetical airport currently at a pressure altitude of 8,000 feet, what is the maximum temperature in Celsius you can depart or land?

WX Radar

SOP 2-28

The primary function of the WXR-840 weather radar system is to aid pilots in the detection and avoidance of areas of precipitation in and around thunderstorms.

The WXR-840 **cannot detect** clear air turbulence, windshear, clouds or lightning. However, rain, wet hail, moderate to heavy wet snow – and in some cases, possible icing conditions – can be detected by the system.

WXR-840 Color Levels				
Storm Category	**VIP* Level**	**Precipitation Rate**		**Color**
		In/hr	**mm/hr**	
------		Less than 0.03	Less than 0.8	Black
Weak[1]	1	0.03 to 0.07	0.8 to 1.8	Green
Moderate[2]	2	0.07 to 0.2	1.8 to 5.1	Yellow
Strong[3]	3	0.2 to 0.52	5.1 to 13.2	Red
Very Strong[4]	4			
Intense[5]	5	0.52 & greater	13.2 & greater	Magenta
Extreme[5]	6			

* Video Integrated Processor

1. Weak Storm – light to moderate turbulence, lightning possible
2. Moderate Storm – light to moderate turbulence
3. Strong Storm – severe turbulence, lightning possible
4. Very Strong Storm – severe turbulence, lightning likely
5. Intense Storm – severe turbulence, lightning, wind gusts, hail
6. Extreme Storm – severe turbulence, large hail, lightning, extensive wind gusts

EGPWS

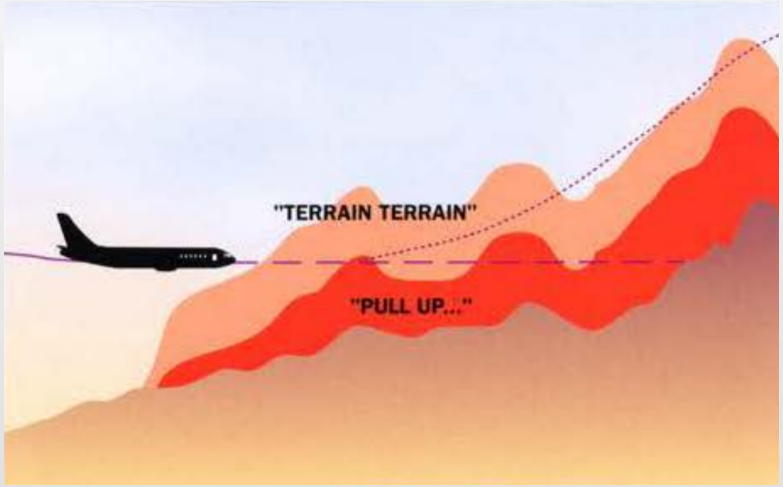
Airplane navigation must not be predicated upon the use of the terrain display.

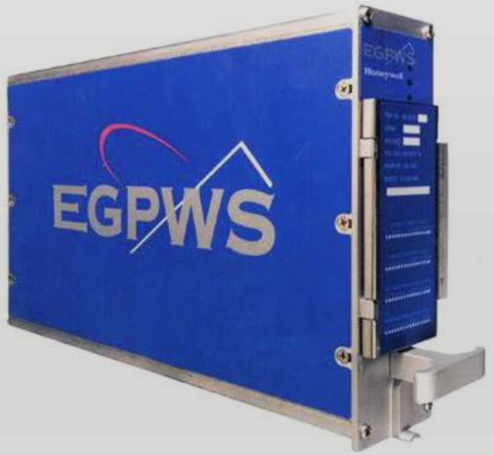
To avoid giving unwanted alerts, the terrain awareness alerting, and display functions must be inhibited on takeoff, approach or landing within 15 nm of an airport not contained in the EGPWS airport database.

If in doubt call dispatch, they can use https://ads.honeywell.com/search/egpwsSearch to verify.

The terrain database, terrain displays and alerting system do not account for man-made obstructions, except for all known man-made obstructions in Canada, the United States and Mexico.

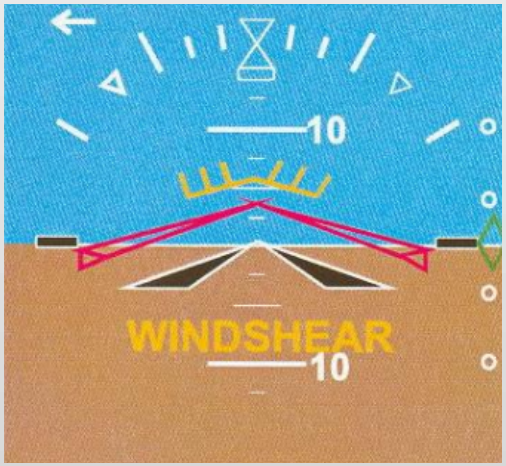
If GPS is inoperative (identified by NO GPS RAIM, GPS NOT AVAILABLE or GPS – FMS DISAGREE message on the FMS CDU), the EGPWS may fail to alert when a terrain threat exists, during ambient surface temperatures below ISA, during non-standard temperature lapse rates or if incorrect barometric settings are set on the altimeter.



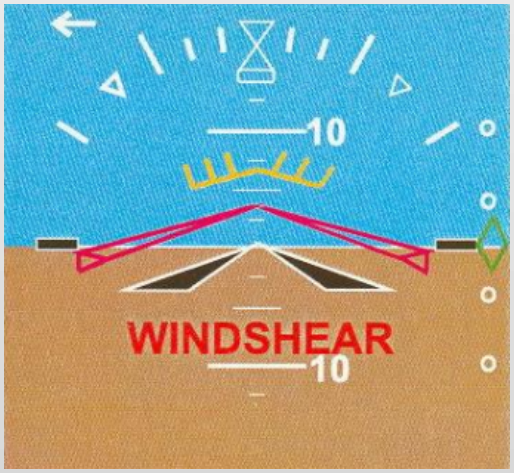


Windshear

Windshear is a weather phenomenon of sudden wind speed and/or direction changes over a short distance. The downburst is the most dangerous type of windshear and studies have confirmed the existence of a more hazardous, yet smaller-scale, form of downburst known as “microburst”. Please open your SOP to Section 1-10.3.5



Increasing performance windshear is annunciated on the PFD by a flashing amber “WINDSHEAR” message and the alpha margin indicator (AMI).

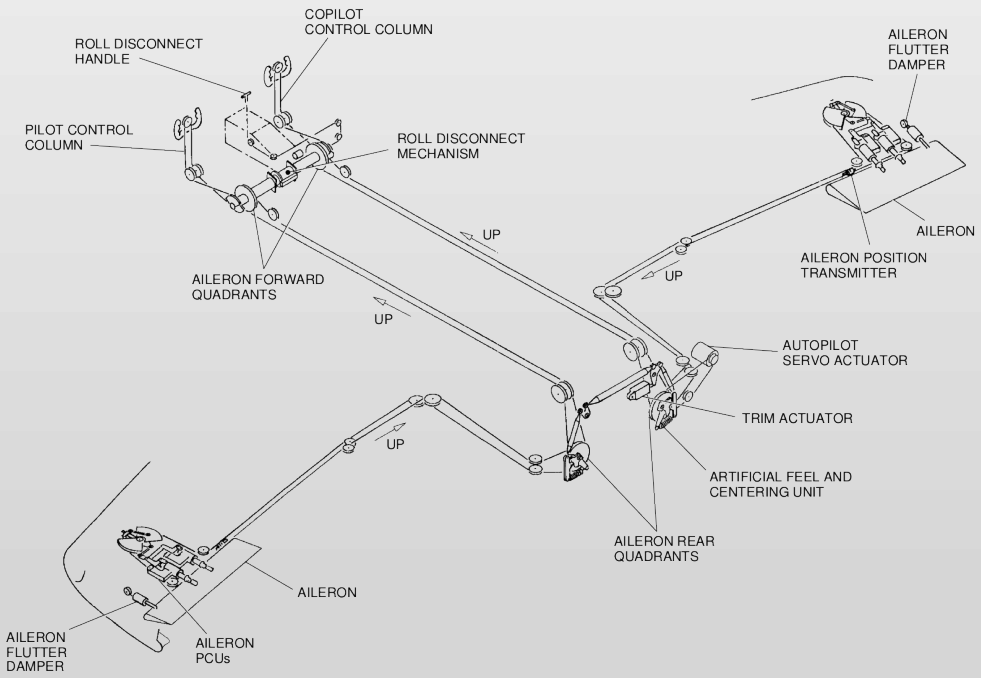


Decreasing performance windshear is annunciated on the PFD by a flashing red “WINDSHEAR” message and the alpha margin indicator (AMI)

Flight Control Malfunctions
PCU Runaway - ABNORM 8-8

Each aileron is hydraulically powered by two Power Control Units (PCUs) and mechanically-controlled by rotation of either control wheel. The left aileron PCUs are powered by hydraulic systems 1 and 3 and the right aileron PCUs are powered by hydraulic systems 2 and 3.

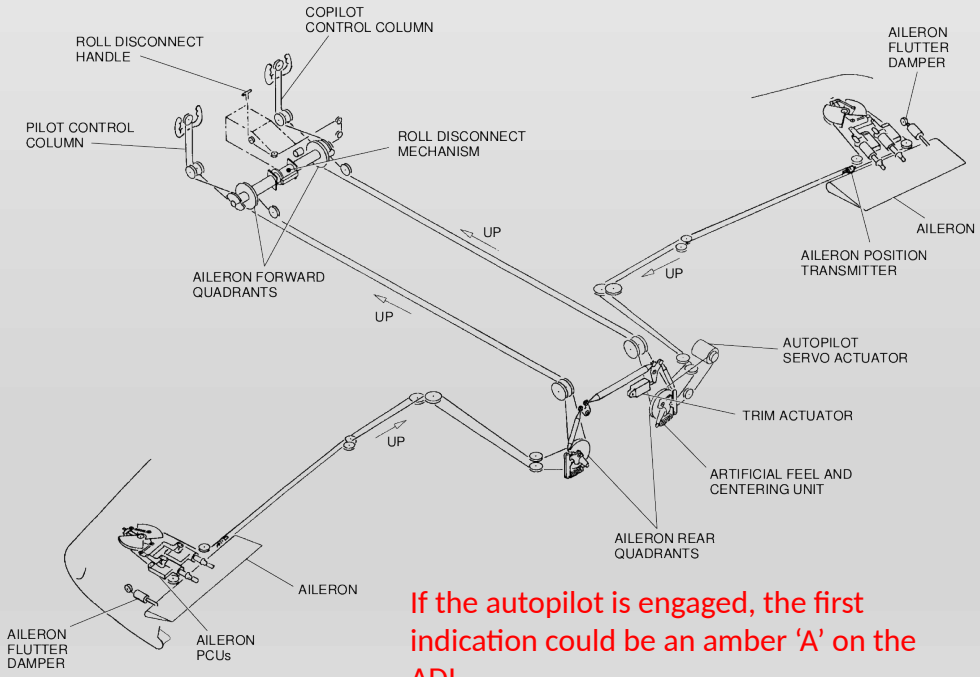
Spoileron control transfer is automatic in the event of a PCU runaway. The green PLT ROLL or CPLT ROLL light on the glareshield indicates the side with the operative aileron. Disconnecting the roll torque tube isolates the faulty aileron and prevents further mechanical damage.



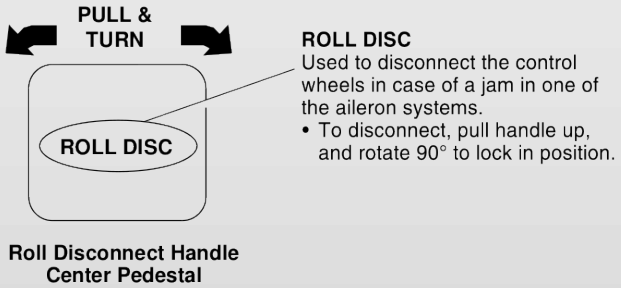
Flight Control Malfunctions

Aileron System Jam - IAC

In the event of an aileron control jam, the left and right systems can be mechanically separated by pulling a roll disconnect handle. The roll disconnect allows limited lateral control using the unaffected aileron control system and the opposite side spoilerons.



If the autopilot is engaged, the first indication could be an amber 'A' on the ADI.



Roll Disconnect Handle Center Pedestal

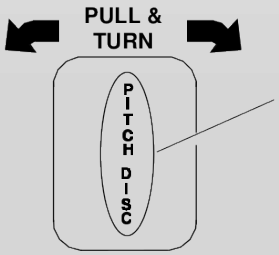
Twenty seconds after pulling the roll disconnect handle, two roll select lights illuminate on the glareshield. The flight crew must then select the roll priority on the operable side to obtain control of all spoilerons.

Flight Control Malfunctions

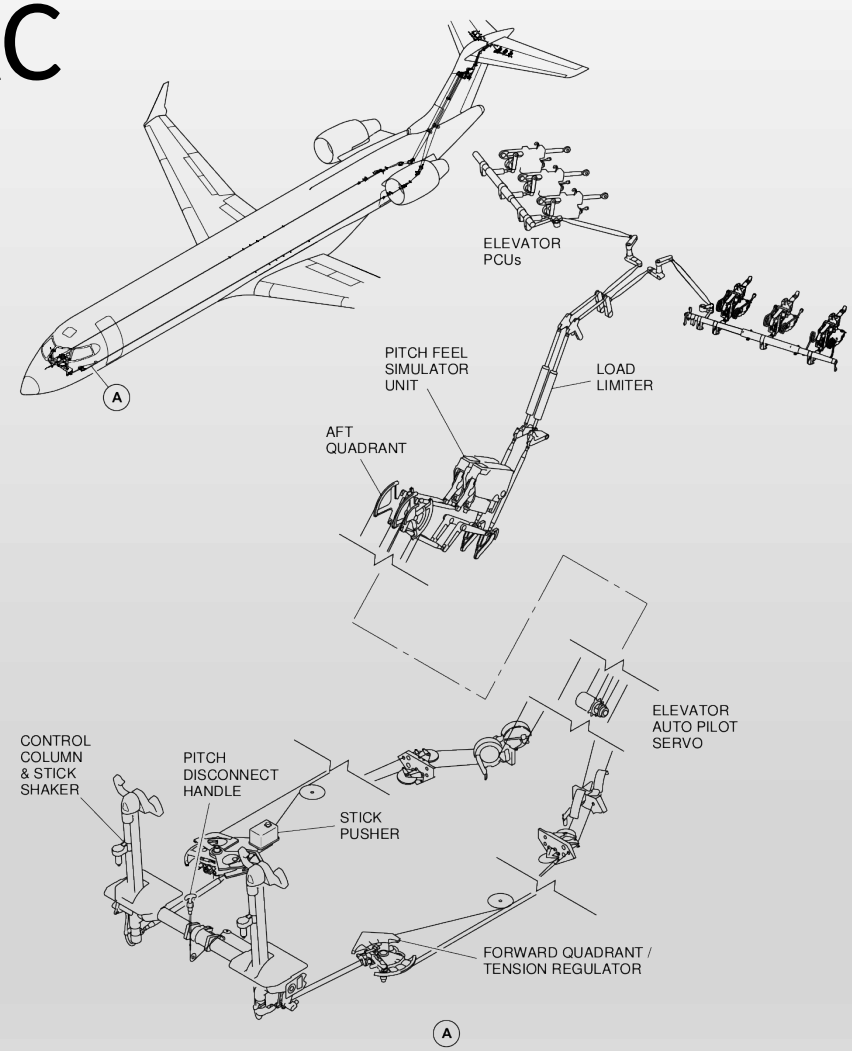
Elevator Jam - IAC

Two separate elevator control systems are provided. The left elevator system is controlled by the pilot and the right system is controlled by the copilot. Under normal conditions, the two systems are interconnected through a pitch disconnect mechanism.

If the autopilot is engaged, the first indication could be an amber 'E' on the ADI.



PITCH DISC
Used to disconnect the control columns in case of a jam in one of the elevator systems.
- To disconnect, pull handle up, and rotate 90° to lock in position.

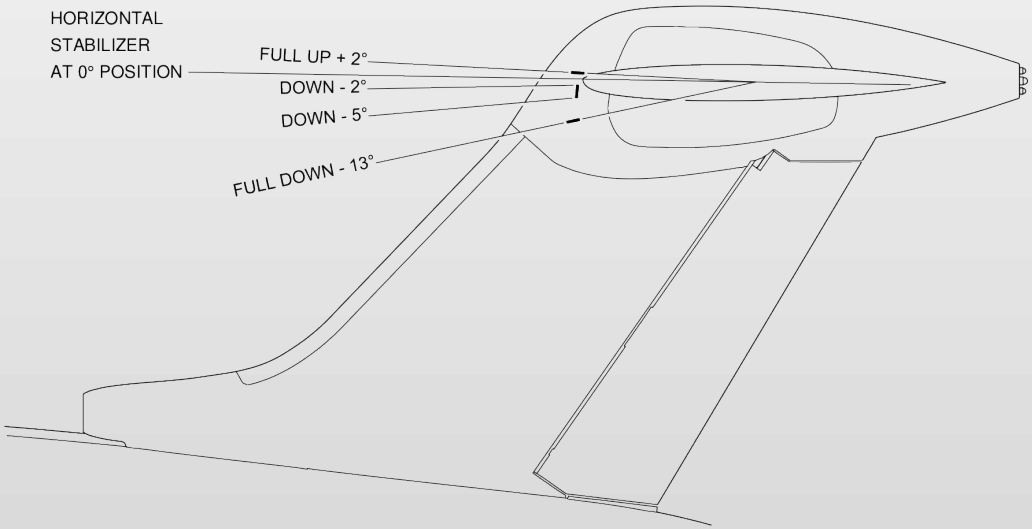


Flight Control Malfunctions
Stab Trim Runaway - IAC

Horizontal stabilizer trim system provides pitch trim by varying the angle of the horizontal stabilizer.

The horizontal stabilizer is positioned by a screw jack driven by two electric motors and controlled by the Spoiler and Stabilizer Control Units (SSCUs) through selection of the STAB TRIM ENGAGE switches.

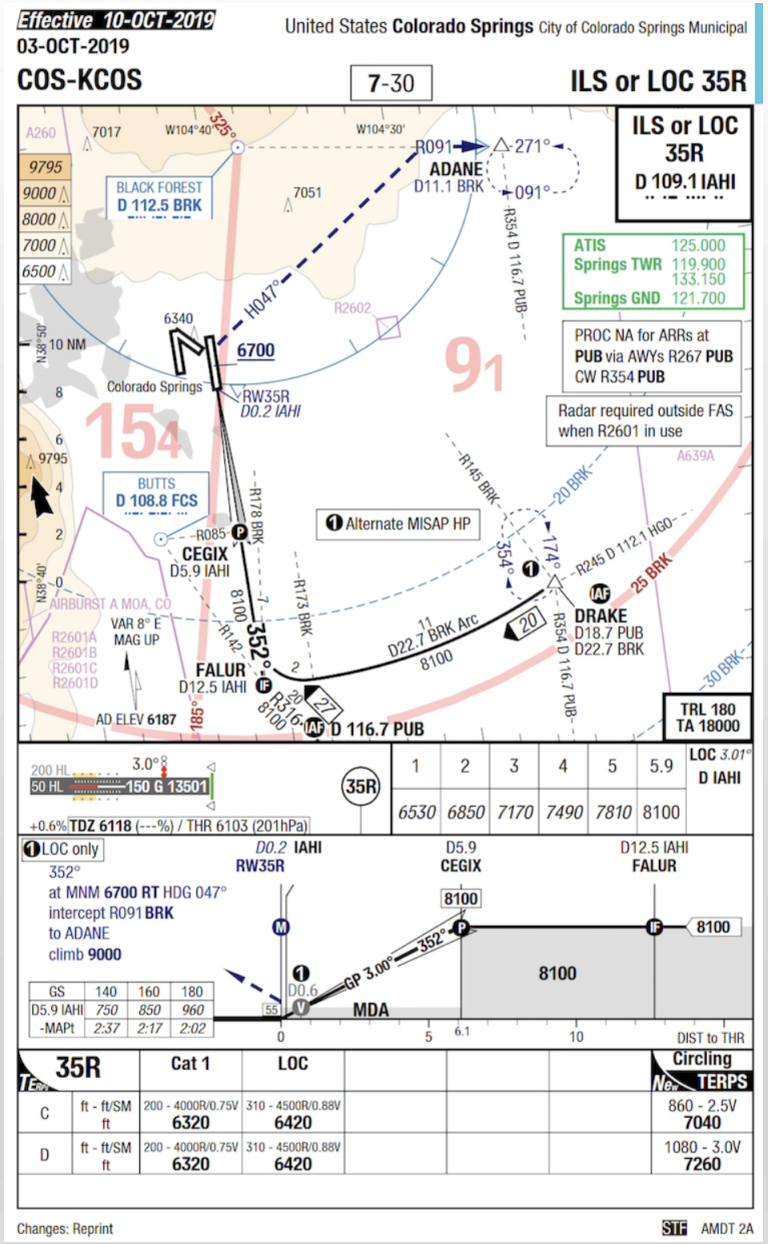
Each motor has a magnetic brake to prevent trim runaway. Trim range is from +2 degrees (leading edge up) to −13 degrees (leading edge down).



Avoid unintentionally pressing the STAB TRIM DISC switches. Briefly pressing these switches can result in disengaging one or both STAB TRIM channels. If this occurs, it may not be possible to re−engage the STAB TRIM channel(s) in flight.

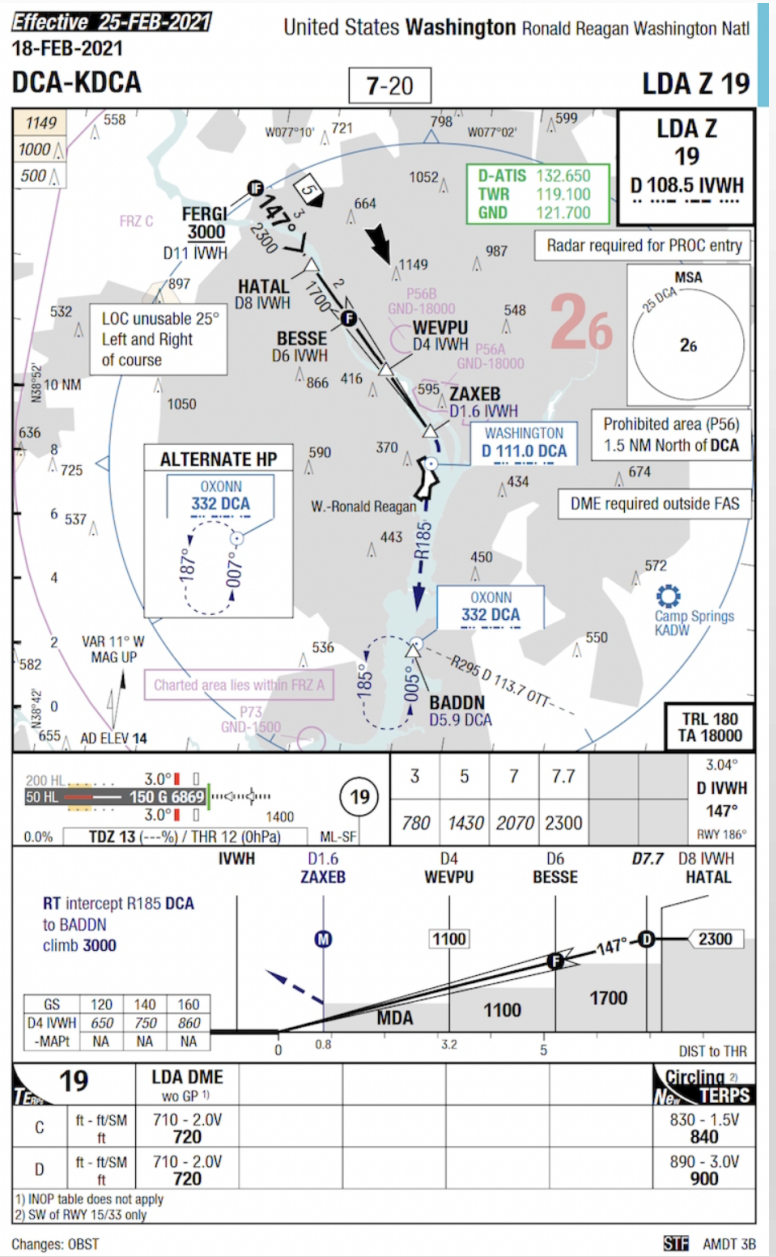
DME ARC
KCOS ILS 35R

Please review and brief this approach as if you were expecting to be cleared direct to DRAKE and cleared for the approach.



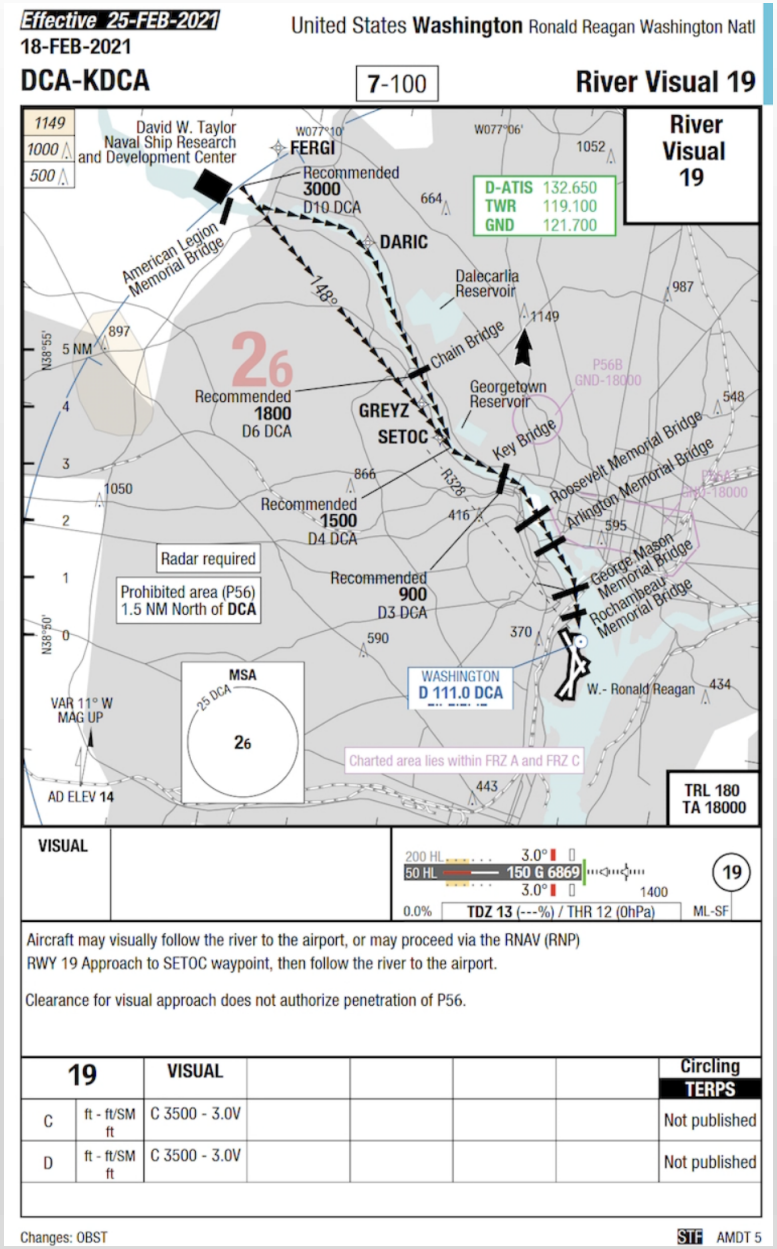
LDA Approach KDCA LDA Z 19

Please review and brief this approach as if you were expecting vectors.



LDA Approach KDCA River Visual 19

Please review and brief this approach as if you were expecting vectors.



Debrief

- ✓ How did you do as Pilot Flying?
- ✓ How did you do as Pilot Monitoring?
- ✓ Instructor Feedback
- ✓ Review and Initial Training Forms

Next Lesson – HOMEWORK!

- ❑ Review KORD. Set up your LIDO as KORD Direct KMEM and save the trip as KORD-KMEM Lesson 6.
- ❑ Do a chart review of KORD, what are the threats?
- ❑ Review the DAWGG arrival into KMEM
- ❑ Review Emergency Descent, Loss of Reliable Airspeed, Double Engine Failure and Emergency Evacuation.