Pilot CQ12 SPOT



CRJ-550 Instructor Whiteboard

Flight Number 4500



Introductions

- Names
- Exchange Telephone Numbers and/or Emails
- Hotel and Transportation Discussion

Success Tips

Maintain a Positive Mental Attitude!

Compartmentalize

Put life problems in a “mental box” one hour prior to show time.

Tell your instructor or management if you have unmanageable training distractors.

Work together chair flying profiles and rehearsing callouts

Plan your sleep periods

Turn off all distractions

Use the hour prior to going to sleep to study for your next lesson.

Eat sensibly

Avoid large meals immediately prior to scheduled simulator times.

Try to avoid sugar “rush” and “crash”, it’s a marathon – not a sprint.

Exercise daily

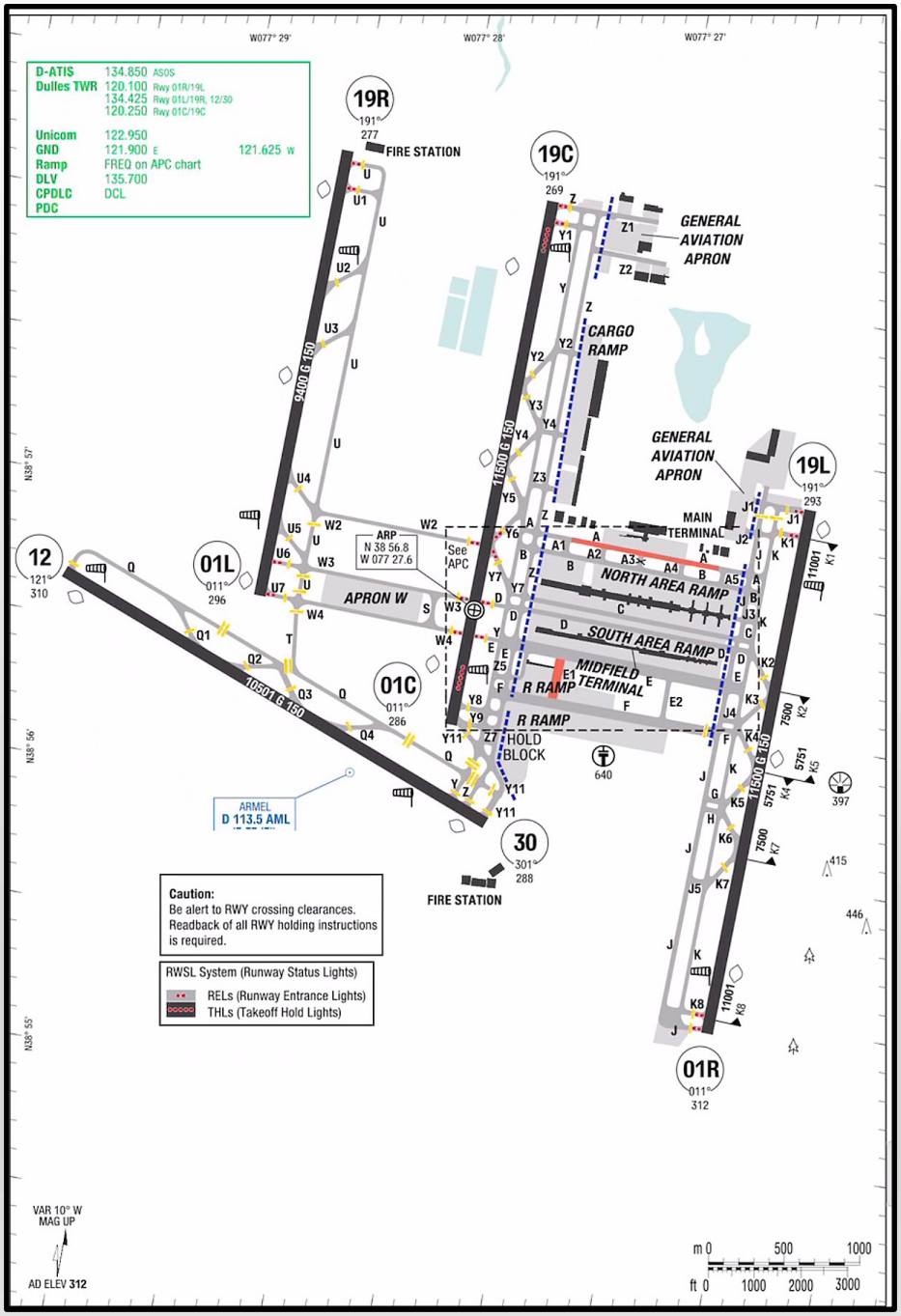
Briefing Items

- Normal Takeoff 01C
- BUNZZ# Manual Departure (SID)
- Aircraft Stability and Control Demonstration
- Manually Controlled Slow Flight
- Thrust Available Demonstration
- High Altitude Stalls
- Upset Recovery
- Loss of Reliable Airspeed
- GIBBZ# Manual Arrival (STAR)
- Landing Stall
- Bounced Landing
- Low Level Windshear
- Takeoff Stall
- Two Engine Landing with Crosswind
- High Speed Visual Approach



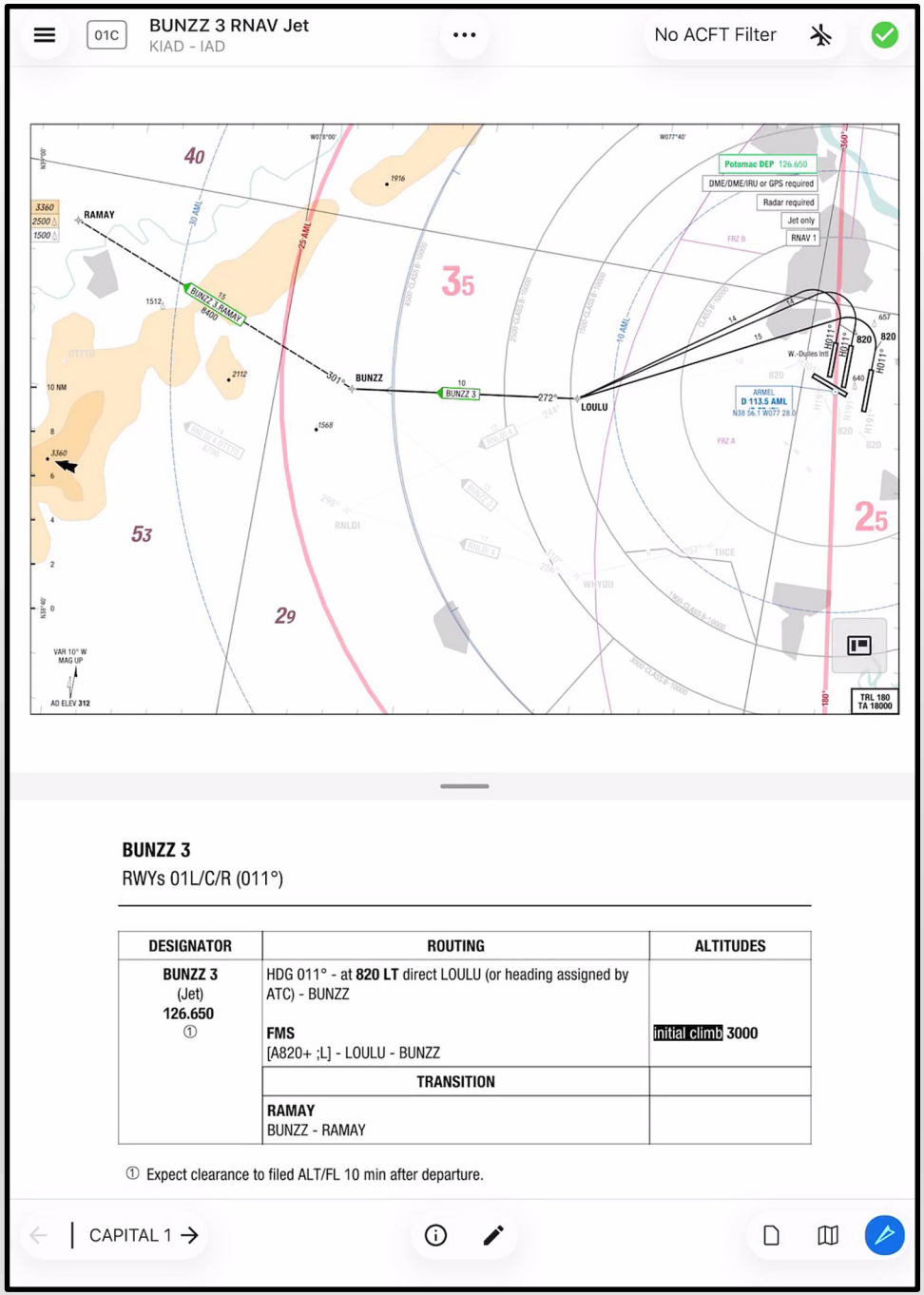
Normal Takeoff
IAD 01C

- 29015 1SM OVC005 15/14 A2992 DEP EXPECT 01C LDG 01R
- KIAD/01C BUNZZ# RAMAY RV IGGY GIBBZ# KIAD/01R



BUNZZ# Manual Departure (SID)

- Expect Altitude and Speed assignments.
- Review how to use the FMS to help with +/- ##NM from fixes.



Aircraft Stability and Control Demonstration

Element 2 – Discovering Aircraft Stability & Roll Control

OBJECTIVE:

This maneuver is intended to demonstrate the relative ease of roll control through normal inputs to the primary flight controls, the ailerons. Then, demonstrate how difficult roll control is with just the application of secondary or tertiary flight controls, like the rudder. This maneuver will not be "pretty", and that is the intended outcome. The knowledge gained from this maneuver is part of the Prevention, Recognition and Recovery skills for UPRT. It will be taught using the maneuver-based training methodology.

Note: The Instructor must ensure there are no un-intended consequences of "negative training" during this maneuver. Do not allow student make rudder inputs in a cyclic manor. The resultant moment can exceed the aircrafts structural design limits.

CL65 TYPE CHARACTERISTICS

1. The use of the Yaw Damper will be very effective in helping maintain aircraft stability. You may choose to disengage the Yaw Dampers to increase the effects of this maneuver.
2. Power setting necessary to maintain 200 knots is approximately 52% - 54% N1.
3. The CL-65 tends to roll well past 20° of bank using rudder input. (Normal)
4. The CL-65 is susceptible to Dutch Roll because of the wing sweep.

AREA OF EMPHASIS:

Roll control using aileron is the primary method for aircraft control along the longitudinal axis. Roll control using the rudder is the last option and should only be used when the ailerons are no longer effective. The primary use of the rudder is for conditions of asymmetric thrust, (engine failure), crosswind takeoffs and landings, and when the ailerons are inoperative or ineffective (malfunction). This exercise should stress the point that airline pilots operating large turbojet sweptwing aircraft should be inherently uncomfortable with full-scale control inputs to any primary flight control. This is especially true of the rudder due to its ineffectiveness and lateral load stress it imparts on the airframe.

QUESTIONS:

1. If Dutch roll is encountered during turbulence how will you respond?
2. If Dutch roll is encountered during an engine failure how will you respond?
3. Under what conditions or circumstances should rudder be used in a swept wing aircraft?

Manually Controlled Slow Flight

Element 7 – Manually Controlled Slow Flight at 5,000' at 61,000lbs.

OBJECTIVE:

This maneuver will enhance the pilot's knowledge of the aircraft's handling characteristics while operating at slow speeds. The aircraft will be operated at its Maximum Landing Weight and the maneuver will be flown without the aid of the flight director. The pilot will experience operations near or in the area of reverse command, "the back side of the power curve". Pilots will maintain positive control of the aircraft by ensuring adequate energy exists to allow operations within the aircrafts designed safety margins. This will be accomplished using interpretation of aircraft instrumentation and CRM skills. The pilots will reference all the available information on the flight deck. In this critical slow speed state, subtle and precise flight control inputs will be required to maintain positive control. The use and effects of pitch-trim, drag and lift coefficients, as well as thrust required vs. excess thrust available, will be emphasized during this maneuver. These hand flown maneuvers provide the pilot with the opportunity to identify the undesired effect that not using small and deliberate inputs have on maintaining adequate safety margins when maneuvering at slow speeds. This will be performed as maneuver-based training. The knowledge gained from this maneuver is directly related to Prevention, Recognition, and Recovery from stalls or upset events.

Note: The Instructor must ensure there are no un-intended consequences of "negative training" during this maneuver. The need to recover from a slow speed or impending stall condition happens:

> "At the first indication of a stall, i.e., aircraft buffet, uncommanded roll, stick shaker activation, or stall warbler (audible warning)."
>
> The need to Reinforce the point that this maneuver is for demonstration purposes only, cannot be overstated.
>
> All recoveries occur "at the first indication" of an impending stall.

AREA OF EMPHASIS:

Excessive bank angles, pitch attitudes, and abrupt control inputs increase the load factor placed on the aircraft. As a result, the margin between the aircraft's airspeed and the stall speed is reduced. Small and deliberate inputs are necessary to maintain adequate safety margins when maneuvering at slow speeds. Reducing the AOA is the single most important action when recovering from an impending stall or full stalled condition. Recognizing the aircrafts configuration, and operational environment are critical to ensure safe operations.

Thrust Available Demonstration

Element 3 – Discovering Thrust Available – Demonstration

OBJECTIVE:

This maneuver will provide the pilot the opportunity to understand the performance of the powerplants at low altitude, and the effect it has to safe aircraft operation.

During this maneuver pilots will acquire a practical understanding of powerplant performance. This includes the amount of chemical energy available, in the form of excess thrust, at low altitudes. Pilots will learn, at low altitudes, the engine performance is "good", and there is an immediate response from the powerplant to a pilot's request for more thrust. This recognition and understanding will be utilized throughout this training.

It will also serve as an opportunity for the Instructor to ensure the pilot understands the importance of the perception skills necessary to, correctly perceive and recognize the aircraft's energy state. This is satisfied with proper scanning techniques. It is further augmented by strong CRM skills with the PM. During this exercise the Instructor will reinforce to the pilot the need to maintain an appropriate airspeed (energy state) at all altitudes. This is a key area of understanding for the Prevention, Recognition and Recovery from aircraft slow speed or stall events. It will be demonstrated using the maneuver-based training methodology.

CL65 TYPE CHARACTERISTICS

1. The efficiency of the GE 8C5B1 axial flow compressor, and the FADEC unit is evident during this demonstration.

AREA OF EMPHASIS:

Sufficient amounts of excess thrust necessary to accelerate or avoid a stalled condition may not be available at all altitudes. Reducing the AOA is the single most important action when recovering from an impending stall, full stall, and most aircraft upsets.

Note: The intent of this element is to educate the pilots of the efficiencies of the powerplant, and its operational effectiveness and limitations in various density altitudes. This understanding can be gained by both PF and PM. Accordingly, this maneuver does not have to be demonstrated by each pilot.

High Altitude Stalls
High Altitude Aerodynamics

- High altitude is flight above FL250.
- The forces required to make a change to pitch attitude are much less at the high Mach numbers flown at high altitude because there's less aerodynamic damping.
- At a constant airspeed, a given (consider 3° for example) elevator deflection at 35,000 ft. will result in a significantly higher pitch rate than the same elevator deflection at 5,000 ft.. Therefore, the change creates more lift and a higher load factor.
- The angle of attack at which a wing stalls reduces (Smaller angle) with increasing Mach…. So that at high Mach (normally, high altitude), an airplane may enter an accelerated stall at an angle of attack that is less than (smaller) the angle of attack for stalling at lower Mach numbers.
- Smooth and precise control inputs are required at high altitude, you must be aware of this, and apply this knowledge when manually controlling the aircraft. Improper control inputs can result in high load factors, resulting in an inadvertent high-altitude stall.

High Altitude Stalls

Speeds

Climb:

Sea Level to 10,000’	250 KIAS
Above 10,000’	Long Range Climb is 250 KIAS / M 0.70 up to FL320 then transition to normal Climb by FL350
	Normal Climb is 290 KIAS / M 0.74 Above FL 350 climb at NO LESS than Mach 0.74
	High Speed Climb is 320 KIAS / M 0.77

Cruise:

At no time should the aircraft be flown at less than Mach .70 or driftdown speed, whichever is higher. The driftdown speed is based on the aircraft’s weight and altitude and may be found in the speed cards located in the CRJ QRH Volume 1. This will provide adequate protection from stall while maneuvering up to at least 1.3g.

High Altitude Stalls
Stall Recovery

The high-altitude clean stall is meant to simulate an approach to stall condition during the normal cruise phase of flight.

Aircraft buffet, un-commanded roll, stick shaker activated and/or stall warbler on:

1. Autopilot	Disengage, if required
2. Pitch attitude	Lower nose to reduce angle of attack (-15°)
3. Thrust levers	Advance to MAX POWER
4. Roll attitude	Wings level
5. FLIGHT SPOILER	RETRACT

After airspeed increases and stall warning goes out (at between 0.70 and 0.74 Mach, gently) :

6. Pitch attitude	Adjust to minimize altitude loss
7. Thrust levers and aircraft configuration	Adjust as required

Note 1: It is essential that the AOA be immediately reduced, even if this means a loss of altitude.

Note 2: Avoid abrupt or aggressive pitch control inputs during recovery. Inappropriate recovery inputs can result in a secondary stall.

Note 3: Height loss resulting from high AOA recovery, especially at cruise altitude and/or low initial thrust conditions, can be significant. (Don't worry about it – recover from the stall and let ATC know what altitude you think you can hold).

Stall Prevention and Recovery – Clean Configuration

Element 4 – Stall Prevention and Recovery – Clean Configuration

OBJECTIVE:

To ensure the pilot understands, for any slow speed or stall event, the first and most important step in Recovery is to reduce/lower the AOA.

During SPRT/UPRT, pilots must Recognize the fact that even at low altitude, with large amounts of excess thrust and quick response times, thrust alone is not sufficient when Recovering from a stalled condition. Only with the reduction of the AOA (potential energy) is a safe recovery assured. Altitude loss must be accepted in-order to safely recover from a slow speed or stalled condition.

This maneuver will demonstrate the criticality and need for prompt and immediate corrective actions. These actions are necessary to Prevent a slow speed or stall event from becoming an aircraft upset.

The understanding that the amount of excess thrust available to the pilot varies, and the need of using potential energy (reducing the AOA) to Recover from a slow speed/stalled condition is the key to our SPRT/UPRT training. This will be performed as maneuver-based training.

Note: See the SOP for procedural guidance and company policy regarding stall recoveries. There is no requirement to climb back to the original altitude, unless, in the judgement of the pilots, it is determined necessary to ensure the safe operation of the aircraft.

CL-65 TYPE CHARACTERISTICS:

1. The CL-65 has very little buffet effect, it may be minor or imperceptible, especially at low altitude. The recognition of a stall must come through the pilot's observation of systems, instrumentation, kinesthetic sensing or any combination thereof.
2. Roll control at low altitude is relatively stable, so it may be mis-leading when determining the aircrafts state. Emphasis should not be placed on this environmental factor when assessing the aircrafts condition.
3. The CL-65 has tail-mounted engines. When applying thrust, this configuration will provide a nose down moment.

AREA OF EMPHASIS:

Reducing the AOA is the single most important action when recovering from an impending stall or full stalled condition.

There is no predetermined value for altitude loss and maintaining altitude during recovery is not required.

Stall Prevention and Recovery – Pusher

1-5.7.11 Stick Pusher Recovery

Description of Recovery on Stick Pusher

This information is intended to be used for training purposes and inadvertent entry only. Stick pusher recovery will only be demonstrated in the simulator.

If an approach to stall is allowed to continue to the stick pusher, the aircraft energy needs to be re-established by sacrificing significantly more altitude. Therefore, until a positive stall recovery has been achieved, the goal of minimizing altitude loss becomes a secondary consideration.

Stall Recovery Technique following a stick pusher:

- Pitch angle must be immediately reduced until the shaker stops
- Bank angle must be immediately reduced to zero
- Thrust set to MAX (or firewall, if required)
- Ensure spoilers are retracted

When aircraft energy status allows:

- Pitch angle shall be increased smoothly to minimize altitude loss

  Warning: Avoid inducing additional stick shaker events. Should such an event occur, immediately reduce the pitch angle until shaker stops.

- Reduce thrust as needed
- Configure the aircraft as appropriate

Unusual Attitude Recovery at High Altitude

Element 15 – Unusual Attitude Recovery at High Altitude

OBJECTIVE:

The intent of this maneuver is to allow the pilot the opportunity to demonstrate the practical skills necessary to recover from an aircraft upset. This will be accomplished through a two-part training element. The first part will use maneuver-based training, and the second part will be scenario-based training. Upon completion of the two elements, the PF will be able to recognize, nose-high and nose low upset attitudes, perform the correct upset recovery procedure and do so without exposing the aircraft to loads outside its designed operational envelope. This maneuver will use prevention, recognition, and recovery skills. It will be taught utilizing maneuver-based and scenario-based training methodologies. The scenario-based training should take place at some point after the maneuver-based training is completed to allow for a true "startle" effect.

CL-65 TYPE CHARACTERISTICS:

1. The CL-65 has very little buffet effect, it may be minor or imperceptible, especially at low altitude. Stall buffet may be confused with MACH buffet. The recognition of a stall must come through the pilot's observation of systems, instrumentation, kinesthetic sensing or any combination thereof.
2. Roll control at high altitude is relatively less stable.
3. The CL-65 has tail-mounted engines. When applying thrust, this configuration will provide a nose down moment, which may assist in reducing the AOA.
4. Flight controls will feel less effective.

AREA OF EMPHASIS:

Improper recovery from unusual attitudes or aircraft upsets can result in forces that exceed the aircrafts structural design limits. Sufficient amounts of excess thrust, to accelerate, avoid, or recover from a stalled/upset condition may not be available at all altitudes. The need to utilize potential energy may be the only solution to return the aircraft to a safe energy state.

QUESTIONS:

1. Assuming the A/P is disconnected, what is the first and therefore the most important control input to recover from an upset?
2. Which direction should you roll?
3. Should rudder be applied during recovery?

Note: If needed, a large bank angle is helpful in reducing excessively high pitch attitudes. The angle of bank should not normally exceed approximately 60°. Continuous nose-down elevator pressure will keep the wing angle of attack low (un-loading the aircraft), which will make the roll controls more effective.

Warning: Excessive use of STAB TRIM or rudder inputs may aggravate the upset condition or may result in structural limitation exceedances.

UPRT Upset Recoveries

- PUSH
- ROLL
- PITCH
- THRUST

Loss of Reliable Airspeed

Unreliable Airspeed In-flight

(1) Autopilot ..... DISENGAGE
(2) FDs ..... DESELECT
(3) Use ISI for pitch reference.

Initial take-off climb or go-around is required:

(4) Pitch/N_1 ..... 10 degrees/TOGA from SL to 15000 ft; 5 degrees/CLB above 15000 ft
(5) Aircraft configuration ..... At clean up altitude Gear UP / FLAPS 0
(6) Airplane altitude ..... MAINTAIN lowest safe altitude or higher

CAUTION

Respect stall warning/stick shaker.

(7) Set and monitor pitch and roll using ISI. <1099>
(7) Set and monitor pitch and roll using PFD. <1025> or <1100>

At desired altitude:

(8) Pitch/N_1 ..... Set as per Table A – Level Flight – FLAPS 0
(9) STALL PTCT, PUSHER (left or right) ..... OFF

CAUTION

1. Do not use any FD/autopilot SPEED mode.
2. Rudder travel limits may be inappropriate for phase of flight. For cruise and descent flight, avoid excessive rudder inputs. For approach, landing and go-around flight, differential thrust and aileron input may be required to assist in maintaining directional control. Select the longest runway available with minimum crosswind and turbulence.
3. ISI must be used for pitch reference. <1099>

(10) Flight Director ..... PTCH/ROLL or HDG modes

▼

Please open QRH 2 Page 17-2

Flight Technique:

Set thrust and pitch to target, then adjust pitch to maintain required altitude or path:

- Allow sufficient time to stabilize altitude or path between pitch adjustments.
- If still descending below desired altitude or path, INCREASE pitch using 0.5–degree increments.
- If still climbing above desired altitude or path, DECREASE pitch using 0.5–degree increments.
- If displayed, VSI can be used to monitor required altitude or path.

NOTE

1. Initial pitch target is for reference only. See Flight Technique to adjust pitch as required up to a maximum of +/– 1.5 degrees.
2. If pitch is increased, REDUCE expected speed range by ΔKIAS/ΔMach.
3. If pitch is decreased, INCREASE expected speed range by ΔKIAS/ΔMachs.

Table A – LEVEL FLIGHT – FLAPS 0

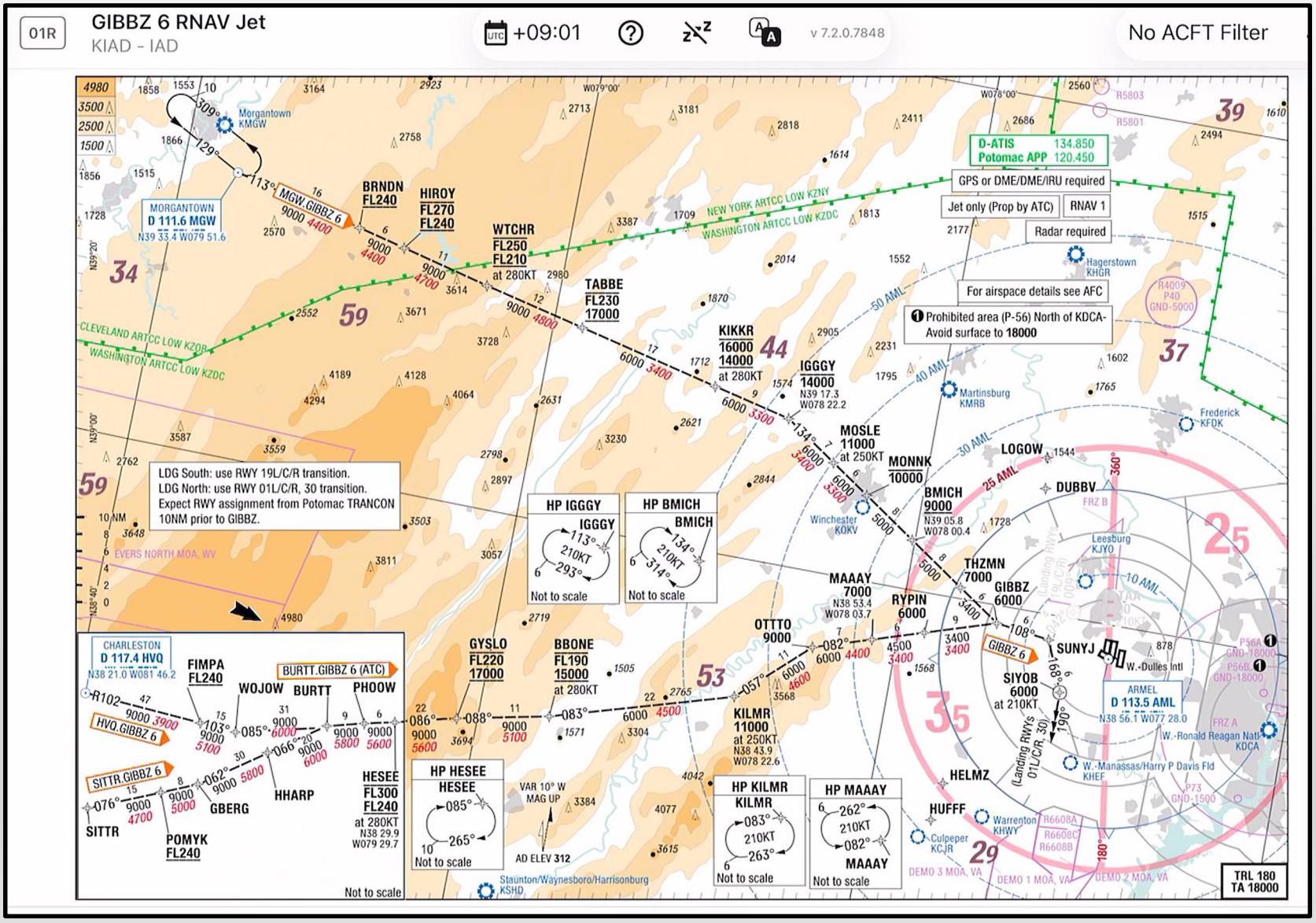
ALT (ft)	EXPECTED SPD RANGE KIAS/Mach	EXPECTED SPD CHANGE FOR 0.5 DEGREE CHANGE IN PITCH ΔKIAS/ΔMach	Weight lb Pitch (degree) / Initial Thrust (%N1)						
			45000	50000	55000	60000	65000	70000	75000
40000	220 – 250/ .73 – .82	5/0.01	– 0.5 / 80.9	– 0.5 / 82.2	0.0 / 83.5	0.5 / 83.4	1.0 / 85.7	-- / --	-- / --
35000	230 – 275/ .69 – .81	5/0.01	– 1.0 / 75.6	– 0.5 / 79.4	– 0.5 / 80.3	0.0 / 81.4	0.5 / 82.5	0.5 / 83.6	1.0 / 84.9
30000	250 – 285	10	– 1.0 / 74.9	– 0.5 / 77.8	– 0.5 / 78.6	0.0 / 79.4	0.5 / 80.3	0.5 / 81.2	1.0 / 82.1
25000	250 – 286	10	– 1.0 / 74.2	– 0.5 / 74.8	– 0.5 / 75.5	0.0 / 76.3	0.5 / 77.1	0.5 / 77.8	1.0 / 78.6
20000	250 – 287	10	– 1.0 / 70.6	– 0.5 / 71.2	– 0.5 / 71.9	0.0 / 72.6	0.5 / 73.2	0.5 / 73.8	1.0 / 74.5
15000*	260 – 285	10	– 1.0 / 67.1	– 0.5 / 67.6	– 0.5 / 68.2	0.0 / 68.9	0.5 / 69.5	0.5 / 70.1	1.0 / 70.8
15000**	200 – 235	5	1.0 / 58.9	1.0 / 59.9	1.5 / 61.1	2.0 / 62.4	2.5 / 63.9	3.0 / 65.3	3.5 / 66.8
10000	200 – 230	5	1.0 / 54.6	1.5 / 55.7	2.0 / 56.9	2.5 / 58.2	3.0 / 59.6	3.5 / 61.0	4.0 / 62.5
5000	200 – 230	5	1.0 / 51.0	1.5 / 52.0	2.0 / 53.1	2.5 / 54.3	3.0 / 55.6	3.5 / 56.9	4.0 / 58.3
0	200 – 230	5	1.0 / 47.9	1.5 / 48.8	2.0 / 49.8	2.5 / 51.0	3.0 / 52.2	3.5 / 53.4	4.0 / 54.7
If any indicated speed is outside the expected indicated airspeed range, it should be considered UNRELIABLE.									

* Pitch/N_1 settings for cruise phase
** Pitch/N_1 settings for transition to approach phase

Interpolation is acceptable

The tables start on page 17-7. There are tables for Level Flight, Climb, Descent, Approach, and Approach Flaps 45 Gear Down.

GIBBZ# Manual Arrival (STAR)



Stall Prevention and Recovery – Landing Configuration

Element 6 – Stall Prevention and Recovery – Landing Configuration

OBJECTIVE:

To ensure the pilot understands, for any slow speed or stall event, the first and most important step in Recovery is to reduce/lower the AOA.

During SPRT/UPRT, pilots must Recognize the fact that even at low altitude, with large amounts of excess thrust and quick response times, thrust alone is not sufficient when Recovering from a stalled condition. Only with the reduction of the AOA (potential energy) is a safe recovery assured. Altitude loss must be accepted in-order to safely recover from a slow speed or stalled condition.

This maneuver will demonstrate the criticality and need for prompt and immediate corrective actions. These actions are necessary to Prevent a slow speed or stall event from becoming an aircraft upset.

The understanding that the amount of excess thrust available to the pilot varies, and the need of using potential energy (reducing the AOA) to Recover from a slow-speed/stalled condition is the key to our SPRT/UPRT training.

The landing stall recovery will be accomplished twice. Once utilizing the STICK PUSHER and once at the 1st indication of the stall (SHAKER). The Instructor will guide the pilot through the configuration changes and the entry into the stall. The pilot will recognize the impending stall and immediately perform the stall recovery procedure. Once the pilot determines it's safe to do so, initiates a missed approach procedure. This will be performed as maneuver-based and scenario-based training.

Note: See the SOP for procedural guidance and company policy regarding stall recoveries. There is no requirement to climb back to the original altitude, unless, in the judgement of the pilots, it is determined necessary to ensure the safe operation of the aircraft.

CL65 TYPE CHARACTERISTICS

1. The CL-65 has very little buffet effect, it may be minor or imperceptible, especially at low altitude. The recognition of a stall must come through the pilot's observation of systems, instrumentation, kinesthetic sensing or any combination thereof.
2. Roll control at low altitude is relatively stable, so it may be mis-leading when determining the aircrafts state. Emphasis should not be placed on this environmental factor when assessing the aircrafts condition.
3. The CL-65 has tail-mounted engines. When applying thrust, this configuration will provide a nose down moment.

Landing Stall

1-5.7.9 Landing Attitude Stall

The Landing stall is meant to simulate an approach to stall in the landing configuration. The aircraft should be configured for landing with the autopilot on (Gear – DOWN, Flaps – 45).

1.	Autopilot	Disengage, if required
2.	Pitch attitude	Lower nose to reduce angle of attack
3.	Thrust levers	Advance to MAX POWER
4.	Roll attitude	Wings level
5.	FLIGHT SPOILER	RETRACT

After airspeed increases and stall warning goes out:

6.	Pitch attitude	Adjust to minimize altitude loss
7.	Thrust levers and aircraft configuration	Adjust as required

Note 1: It is essential that the AOA be immediately reduced, even if this means a loss of altitude.

Note 2: Avoid abrupt or aggressive pitch control inputs during recovery. Inappropriate recovery inputs can result in a secondary stall.

Note 3: Height loss resulting from high AOA recovery, especially at cruise altitude and/or low initial thrust conditions, can be significant.

Bounced Landing

The Ground Lift Dumping (GLD) system is very effective in preventing bounced landings, but its automatic deployment requires that the thrust levers be at IDLE prior to touchdown, as they should be at all landings. Do not attempt to cushion the touchdown with power.

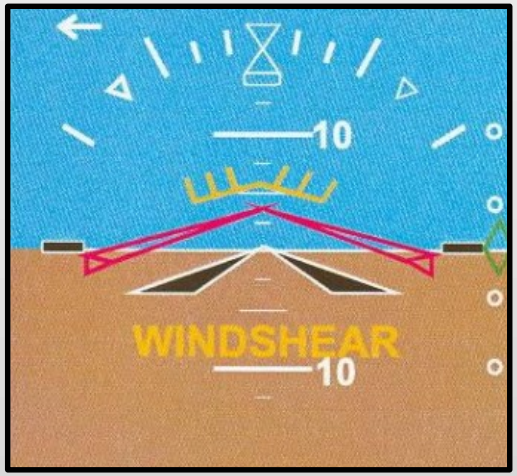
If the pilot believes that thrust must be added and maintained until touchdown to salvage a landing, then a balked/rejected landing should be executed.

Improper landing technique (thrust levers not at IDLE) may result in a shallow bounce. Reducing the thrust levers to idle, while the aircraft is airborne after a bounce, will cause the GLD to deploy. When this occurs, lift will be lost causing the aircraft to touchdown at a descent rate that may exceed the structural capability of the aircraft.

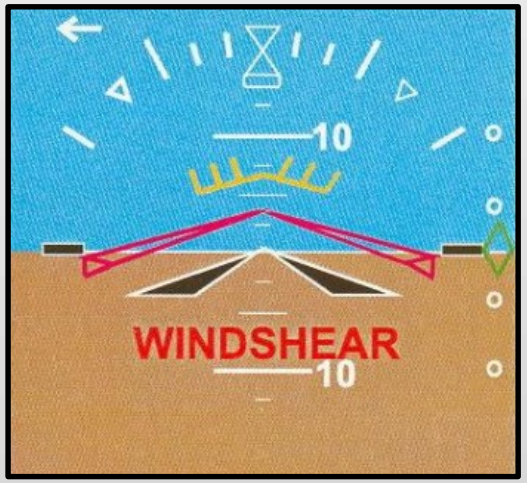
A poorly executed approach and touchdown with a high rate of descent can generate a high, hard bounce that can quickly develop into a hard landing accident. A balked/rejected landing should always be executed following such a bounce. GO AROUND!!!!

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



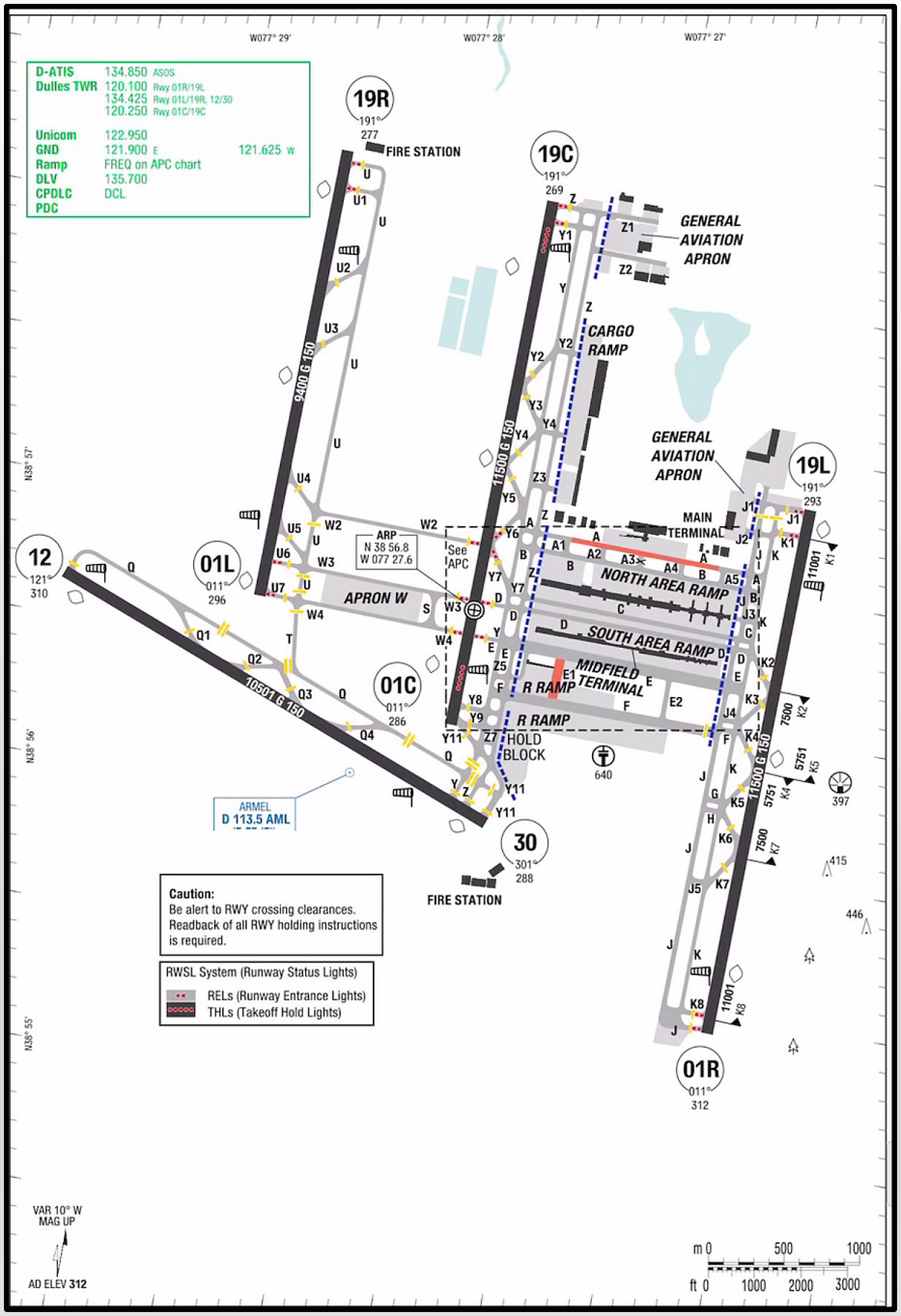
Increasing performance windshear is annunciated on the PFD by a flashing amber “WINDSHEAR” message and the alpha margin indicator (AMI).



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

Normal Takeoff
IAD 30

- Takeoff Stall
  (Flaps 8, left turn 190)
- Expect High Speed Visual Approach, backed up by ILS 1R



Stall Prevention and Recovery – Takeoff Configuration

Element 5 – Stall Prevention and Recovery – Takeoff Configuration

OBJECTIVE:

To ensure the pilot understands, for any slow speed or stall event, the first and most important step in Recovery is to reduce/lower the AOA.

During SPRT/UPRT, pilots must Recognize the fact that even at low altitude, with large amounts of excess thrust and quick response times, thrust alone may not be sufficient when Recovering from a stalled condition. Only with the reduction of the AOA (potential energy) is a safe recovery assured. Altitude loss must be accepted in-order to safely recover from a slow speed or stalled condition.

This maneuver will demonstrate the critical need for prompt corrective actions. These actions are necessary to Prevent a slow speed or stall event from becoming an aircraft upset.

The understanding that the amount of excess thrust available to the pilot varies, and the need of using potential energy (reducing the AOA) to Recover from a slow-speed/stalled condition is the key to our SPRT/UPRT training.

The Instructor will guide the student into the proper configuration and slow speed event. The pilot will recognize the impending stall immediately and perform the recovery procedure at the first indication (i.e. Stick Shaker). This will be performed as maneuver-based training.

Note: See the SOP for procedural guidance and company policy regarding stall recoveries. There is no requirement to climb back to the original altitude, unless, in the judgement of the pilots, it is determined necessary to ensure the safe operation of the aircraft.

CL-65 TYPE CHARACTERISTICS:

1. The CL-65 has very little buffet effect, it may be minor or imperceptible, especially at low altitude. The recognition of a stall must come through the pilot's observation of systems, instrumentation, kinesthetic sensing or any combination thereof.
2. Roll control at low altitude is relatively stable, so it may be mis-leading when determining the aircrafts state. Emphasis should not be placed on this environmental factor when assessing the aircrafts condition.
3. The CL-65 has tail-mounted engines. When applying thrust, this configuration will provide a nose down moment.

AREA OF EMPHASIS:

Reducing the AOA is the single most important action when recovering from an impending stall or full stalled condition.

Takeoff Stall

1-5.7.5 Takeoff Stall

The Takeoff Stall is meant to simulate an approach to stall in the takeoff phase of flight. The aircraft should be configured for a flaps 20 takeoff without the use of the autopilot (Gear – DOWN, Flaps – 20, Left/Right Bank). (We will be using flaps 8 today)

1.	Autopilot	Disengage, if required
2.	Pitch attitude	Lower nose to reduce angle of attack
3.	Thrust levers	Advance to MAX POWER
4.	Roll attitude	Wings level
5.	FLIGHT SPOILER	RETRACT

After airspeed increases and stall warning goes out:

6	Pitch attitude	Adjust to minimize altitude loss
7.	Thrust levers and aircraft configuration	Adjust as required

Note 1: It is essential that the AOA be immediately reduced, even if this means a loss of altitude.

Note 2: Avoid abrupt or aggressive pitch control inputs during recovery. Inappropriate recovery inputs can result in a secondary stall.

Note 3: Height loss resulting from high AOA recovery, especially at cruise altitude and/or low initial thrust conditions, can be significant.

High Speed Visual Approach

1-6.3.2 Decelerated Approaches

During flight operations it is not always practical to bug and follow intermediate speeds during the initial approach phase of the flight. ATC instructions or traffic flow may dictate higher speeds during the initial part of any approach. This variation from the "Normal" speeds is acceptable and each intermediate speed need not be set with the speed bug provided:

1. The approach is "Stabilized" (SOP 1-6.3.6) prior to the Stabilized Approach Height.
2. The non-flying pilot calls out any airspeed deviations of 5 knots or more below "standard approach speeds" for each configuration outlined in SOP 1-6.3.1.

Visual Approach Briefing

1-6.2.3 Visual Approach Briefing

When a visual approach is expected to be flown, flight crews shall use a charted instrument approach procedure as a reference, if one is available. A precision approach is the best selection, any other approach is less desirable and should only be selected when a precision approach is not available.

Prior to any visual approach, including charted visual approaches, flight crews will brief the relevant aspects of the approach. The briefing should include, at a minimum, the following items:

1. Frequency of the approach navaid
2. Final approach course
3. Glide slope intercept altitude or crossing altitude at the final approach fix
4. Descent angle and descent point
5. Terrain considerations

The navigation radios should be tuned to the appropriate approach navaid and used during the visual approach.

Stabilized Approach Review

1-6.3.6 Stabilized Approach

A stabilized approach means that the aircraft must be in an approved configuration and must maintain the proper approach speed and the proper flight path before descending below the minimum "Stabilized Approach Height". Anytime one of the following conditions is exceeded when below the "Stabilized Approach Height", a missed approach will be initiated.

- Airspeed greater than +/- 5 knots
- Course or glide slope deviation exceeds one dot (Instrument Approach)
- Descent rate greater than 1000 fpm
- Aircraft not properly configured

When flying an instrument approach or a non-charted visual approach, the minimum stabilized approach height for the CRJ is 1000' height above touchdown (HAT), meaning:

- The aircraft shall be stable by 1000' HAT;
- At 1000' HAT a **"1000 ABOVE, STABLE"** callout shall be made. If the aircraft is unstable when the callout is made, or anytime below 1000', a missed approach shall be initiated immediately.

When flying a charted visual approach, the minimum stabilized approach height for the CRJ is 500' HAT, meaning:

- The aircraft shall be stable by 500' HAT;
- At 500' HAT a **"500 ABOVE, STABLE"** callout shall be made. If the aircraft is unstable when the callout is made, or anytime below 500', a missed approach shall be initiated immediately.

A visual approach can be accomplished if the aircraft is configured by the minimum stabilized approach height and is in a position from which a descent to a landing from that height to the intended runway can be made at a normal rate of descent, using normal maneuvers, and where that descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing.

Note 1: If at any point the flight crew determines that ATC is placing the flight in an unstable approach position, they must state **"unable"**.

Note 2: Circling only approaches are not meant to be flown straight-in to a runway. Adherence to stabilized approach criteria may not be possible when flying straight-in to a runway from a circling approach.

Landing with a Crosswind

1-6.3.11 Landing with a Crosswind

The recommended crosswind landing technique on the CRJ is to combine crab and sideslip.

On final approach, a crab angle is established with wings level to hold the airplane on the desire course.

When commencing the flare, gently apply rudder to align the aircraft with the runway centerline while applying aileron to prevent a sideways drift.

Rudder control is effective down to approximately 60 KIAS. Rudder pedal steering is sufficient for maintaining directional control during the rollout. During a crosswind, displace aileron into the wind.

CRJ	The maximum demonstrated crosswind component for landing is 30 knots.

Note 1: GoJet Airlines considers limiting and will not exceed the maximum demonstrated crosswind components. The crosswind limit is applied to the steady-state wind.

Note 2: In high crosswind conditions, rudder effectiveness may be limited after landing with maximum reverse thrust selected.

Caution: FCOM1 indicates that a bank angle of 11.6° at touchdown will lead to a wingtip contacting the ground. However, FOQA data has shown that a bank angle less than 11.6° will also lead to a wingtip contacting the ground. Care should be used when lowering a wing for touchdown during a crosswind landing, or for any other reason when near the ground.

Debrief

- ✓ How did you do as Pilot Flying?
- ✓ How did you do as Pilot Monitoring?
- ✓ Instructor Feedback
- ✓ Homework!

What’s next:

- Maneuvers Validation (MV)
- Seat Dependent Training (SDT)
- Seat Dependent Evaluation (SDE)
- Please make a list of anything that you have questions on!