

Normal Approach to Landing: Canadair Regional Jet (CRJ200)

Brief Description: The Canadair Regional Jet is an exciting but somewhat intimidating airplane to fly for the pilot transitioning from the piston or turboprop to the jet. The aircraft can have a tendency to 'get away' from the pilot in the landing environment. This lesson will help the new CRJ pilot learn to fly a normal approach to landing.


Objectives: The pilot will perform a stabilized approach to landing and then land the aircraft, complying with company, FAA, and other applicable guidelines and regulations used for visual approaches. The pilot will also accurately complete the weight and balance, checklists, and other procedures in accordance with company rules and procedures. See **Completion Standards** in this lesson plan for more specific objectives.

Elements:




1. Ground lesson and instruction: weight and balance exercise and lesson on stabilized approaches.
2. Cockpit procedures lesson and practice: demonstration and practice of visual approach to landing.
3. Simulator lesson and practice: practice of transition from cruise to descent, then to visual approach with a landing, and a no-flap approach to landing if time available.
4. Post-flight critique and evaluation, using a video.

Schedule: The schedule will include the following events:

TRAINING EVENT	TIME ALLOTTED (DECIMAL HOURS)
Ground Lesson & Procedures Discussion	1.0
Cockpit Procedures Trainer & Checklist Practice with Crew	.5 
Break	.5
Simulator: (each pilot will split the four hour block, with one pilot acting as flying pilot, and the other as non-flying pilot)	4.0
Post-flight Review & Video	1.0

Equipment: The following equipment is available at the Montreal Bombardier facility for our use:

- Airline Flight Standards manual.
- Plastic model of CRJ. 
- Video tape of Simulator Flight.
- Flight Analysis print out of flights.
- Pilot training records.
- Weight and balance worksheet.
- Dry-erase board and markers.
- Simple cockpit procedures trainer.
- Level C Flight Simulator with motion turned on.

Instructor's Actions: The instructor should be well-prepared for the lesson and perform the following tasks:

- Introduces lesson (.1). (lecture format)
- Has crew complete weight and balance exercise, grades, and corrects any errors if necessary (.3). (group exercise)
- Reviews company and FAA procedures regarding stabilized approach. (.2) (small discussion)
- Demonstrates proper visual approach maneuver on dry erase board. (.2) (lecture format)
- Discusses hints for making a good visual approach. (.1) (small discussion)
- Discusses reasons for poor approaches. (.1) (small discussion)
- Reviews proper flows and checklist procedures in cockpit procedure trainer. (.3) (demonstration)
- Has crew perform and practice approaches to landing on cockpit procedures trainer. (.7) (practice)
- Gives students opportunity for adequate break and stress reliever (a short walk would be good). (.5)
- Set up simulator for Cincinnati visual approach to runway 27. (.1)
- Have students transition from the cruise to descent to the approach environment through realistic air traffic control approach into Cincinnati. (.4 each pilot) (practice)
- Have student complete visual approach to landing several times as necessary, alternating. (1.4 each) (practice)
- If time is available, complete no flap landing emergency procedure. (.7) (demonstration and practice)



Safety Considerations: Although the flight will occur in a simulator, the environment can still be dangerous when the motion is occurring (remember the deaths and injuries of the airline crew several years ago). I will show the crew again where to get out in case of a failure of the device,

where the fire extinguisher is, and I will prevent and extreme hard landings by freezing the motion.

Student Actions: Pilots will perform the following actions.

Ground lesson:

- Pilot crew performs weight and balance for today's conditions.
- Crew describes how to conduct a stabilized approach and possible problems to instructor.
- Crew correctly uses before landing and after landing checklist.

Cockpit Procedures Trainer:

- Crew performs approach to landing checklist and flows, alternating who is the flying and non-flying pilot.
- Crew initiates call outs and radio communications.
- Crew performs 'mock' visual approach to landing.

Simulator Event:

- Crew performs stabilized visual approach to landing.
- Crew configures aircraft and uses checklists.
- Crew alternates between flying and non-flying pilot.
- Crew repeats task as necessary to ensure completion standards met.
- If there is additional time left, the crew will perform a no flap visual approach abnormal procedure and approach to landing.

Completion Standards: the following are the minimum behaviors that must be observed:

- Crew performs the before landing checklist without any errors or omissions.
- Crew complies with ATC clearances or advises if unable to comply.
- Pilot flying maintains a stabilized aircraft approach and configuration.
- Pilot flying maintains airspeed +/- 5 knots.
- Pilot not flying monitors instruments and approach, calling out any significant deviations in airspeed.
- Pilot not flying uses proper radio calls and procedures.
- Pilot flying slows from approach speed so as to be 50 feet above threshold at V_{ref} for the appropriate flap configuration speed.
- Pilot reduces thrust levers to idle to cause change in pitch moment.
- Pilot initiates flare as necessary.

- Pilot avoids floating.
- Pilot adjusts control column after touchdown to permit smooth nose wheel touchdown.
- Pilot flying applies reverse thrust and brakes as necessary.
- Pilot flying keeps aircraft on centerline.
- Captain takes control of aircraft (if not flying) at approximately 60 knots.
- Crew transitions to normal taxi and performs the After Landing checklist.

Common Student Errors: Because this is the second simulator lesson for many of the pilots, there is a tendency for some problems.



PILOT PROBLEM	SOLUTION
Pilot fails to use checklists correctly because they are fixated on the novelty of the simulator or they are nervous.	Force the crew to work together to use the checklists and pause the motion on the simulator if necessary for students to acclimate to the enclosed simulator environment. If the pilot is nervous, tell a joke or tell the pilot to concentrate on breathing and relaxing.
Pilot is unable to maintain consistent glideslope.	It is normal for the student to have difficulty maintaining a consistent glideslope. This is why the maneuver is more difficult in the simulator than a standard ILS approach. The student can use the VSI and visual VASI indicators to help maintain a more consistent approach path.
Crew members fail to configure airplane correctly or at incorrect times prior to landing.	The crewmembers must know how to use the checklists properly prior to entering the simulator and should have already developed a good task flow using the cockpit procedures trainer. If necessary, modify the schedule prior to the simulator training event to ensure proper checklist usage occurs.
Pilot fails to maintain appropriate airspeed.	The pilot's scan is either poor or his attention is distracted. Repeat the approaches in the simulator, emphasizing traditional instrument skills.
Pilot does not stabilize approach.	Sometimes, if the pilot fails to stabilize the approach, the other crewmember should point out the errors and insist on performance of a missed approach. If there is a failure for this to occur, sometimes it is best

	to allow the crew to see the consequences of their actions in the simulator environment, provided that such a poor approach is never repeated.
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