Cessna Aircraft
Short & Soft Field
Takeoff & Landing
Techniques
Objectives / Content

- For short- and soft-field takeoff and landing operations in CAP Cessna aircraft, review:
  - Standards (from ACS)
  - Procedures (from POH/AFM)
  - Techniques (from experience)
  - Risk management and decision-making for short- and soft-field operations
The information in this briefing is intended to serve as a departure point for discussion during CAP flight evaluations and transition training. It should not be interpreted or used as a substitute for the detailed information provided in the Airplane Flying Manual or Pilot’s Operating Handbook for each aircraft model.
ACS – Short-Field Takeoff Standards
Short-Field Procedures (POH/AFM)

For Your Specific Model Aircraft

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Short Field Takeoff Techniques

- Use all available runway for takeoff
- Set flaps per the POH
- Use a Static Takeoff
- Hold the brakes while setting takeoff power with yoke slightly aft of neutral to keep weight off nose wheel
- After brake release, vary elevator control as necessary to maintain slightly nose high sight picture
- Approaching rotation speed, the airplane should be firmly and smoothly lifted off the surface to a pitch attitude that will result in reaching obstacle clearance speed at 50’ AGL
- The landing gear and flaps should remain in takeoff position until clear of obstacles (or as recommended by the manufacturer)
Short Field Takeoff Common Errors

- Improper use of flaps
- Failure to use all available runway
- Lift-off or rotation premature
- Improper application of power
- Poor directional control on takeoff
- Brakes improperly used during takeoff
- Failure to firmly rotate at the specified rotation speed and achieve Obstacle Clearance Speed at 50’ AGL per the POH
- Failure to maintain appropriate climb speed
Short Field Landing Techniques

• In smooth air, use the airspeed and flap setting recommended in the POH with enough power to control glide path
• In turbulent air, slightly higher airspeeds should be used
• Once clear of obstacles, smoothly reduce power and maintain airspeed by lowering the nose
• Touchdown should be made on the main wheels first.
• Immediately after touchdown, lower the nose and apply heavy braking as required (simulate heavy braking for training)
• For maximum brake effectiveness, retract flaps and apply maximum brake pressure without sliding the tires

(Recommend not reconfiguring flaps until clear of runway to reduce risk of loss of control)
Short Field Landing Common Errors

• Required landing distance exceeds available runway length
• Poor airspeed control
• Landing configuration established late
• Power control and monitoring inadequate
• Unstable approach
• Improper use of flaps
• Failure to trim properly
• Ignoring checklist
• Hard impact or bounce at touchdown
• Excessive brake application
• Go-around situation not recognized
Short Field Landing Errors
Short Field Landing Errors
Short Field Landing Errors
ACS – Soft-Field Takeoff Standards
# Soft-Field Procedures (POH/AFM)

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Soft Field Takeoff Techniques

- Taxi on soft surfaces with full aft yoke
- Set flaps per the POH
- Use a rolling takeoff (do not stop while setting takeoff power) with yoke slightly aft of neutral to keep weight off nose wheel
- Smoothly increase power to maximum as airspeed increases
- Vary elevator control as airspeed increases to maintain slightly nose high sight picture
- Lift off at lowest possible airspeed and lower nose to accelerate in ground effect until a safe flap retraction speed is reached per the POH
- If obstacles are present, accelerate in ground effect until reaching the obstacle clearance speed per the POH
- Once obstacles are cleared, increase to a safe flap retraction speed per the POH
Techniques - The Right Attitude

Attitude for takeoff:
• Note nose wheel just off ground
• 7-8 degrees nose up

Very important: This attitude for takeoff and landing prevents tail strikes and provides a visual reference for directional control.

• Sight picture from cockpit for takeoff.
• Note end of runway on nose.
Techniques - The Wrong Attitude

An attitude of 12.5 degrees will result in a tail strike.

At this attitude, you cannot see the runway resulting in a tail strike.
Soft Field Takeoff Common Errors

- Improper use of flaps
- Airplane stopped on runway prior to takeoff
- Improper application of power
- Poor directional control on takeoff
- Brakes improperly used during takeoff
- Excessive pitch attitude
- Drifting uncontrolled during initial climb
- Touchdown inadvertently after lift-off
Soft Field Takeoff Errors
Soft Field Takeoff Errors
ACS – Soft-Field Landing Standards
Soft Field Landing Techniques

• Use a normal landing technique (i.e. flap setting appropriate for runway and wind conditions)

• Hold the airplane 1-2’ off the surface as long as possible while dissipating airspeed. Add power to control descent rate.
  – Power controls rate of descent
  – Retarding power abruptly will result in a hard landing

• Touch down at or near stall speed, under power with minimum sink, slightly tail low to prevent nosing over

• Hold the nose wheel off the surface as long as possible

• Taxi on soft surfaces with full aft yoke
Soft Field Landing Common Errors

- Required landing distance exceeds available runway length
- Poor airspeed control
- Landing configuration established late
- Throttle closed too abruptly or quickly
- Unstable approach
- Improper use of flaps
- Failure to trim properly
- Excessive descent rate
- Hard impact or bounce at touchdown
- Nose wheel lowered prematurely
- Brakes improperly used
- Go-around situation not recognized
Soft Field Landing Errors
Soft Field Landing Errors
Soft Field Landing Errors
previous repair external doubler patch w/ CherryMax rivets

ground through at least 3 layers of material - doubler patch, original skin & maybe internal bulkhead frame too.

hole

scrape
Risk Management Reminders

• Threshold Questions:
  – Do I really need to operate from a short or soft field?
  – If so, am I current, capable, and proficient in these operations?
  – Are there crosswind or gusty wind conditions?
  – Consider doing practice short/soft takeoffs and landings on a long, wide runway to have more options available in case things go sour

• Reminders:
  – Establish & maintain a stabilized approach
  – Keep sight picture on end of the runway
  – Never attempt to save a landing
  – Make the go-around decision early
  – Instructor/Check Pilot must always guard the controls!