C-414A Transition Flight Training Student Guide

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Used with C-414A Transition Ground Training Student Guide

20 Hours

LESSON	Block 1 Lessons 1- 3: 5 Hours Flight	HOURS
1	Orientation Flight, SRM	1.5
2	Automation, Autopilot, Aircraft Performance	2
3	Systems, Instrument Approaches, Abnormal Procedures	1.5
LESSON	**Block 2 Lessons 4- 7: 8 Hours Flight**	**HOURS**
4	RNAV and Non-Precision Approaches	1.5
5	GPS Sequencing, High Altitude, Emergency Procedures	2
6	WAAS, RNAV, Weight & Balance	1.5
7	Review	1.5
LESSON	**Block 3 Lessons 8- 11: 7 Hours Flight**	**HOURS**
8	Night Flight, Performance, Diversion	1.5
9	Prep for Evaluation	2
10	Review 1	1.5
11	Review 2	1.5
12	Standards Evaluation	2.0
PAGE		
15	C-414 Maneuvers	
62	C-414 Standard Operating Procedures	

OBJECTIVES: This training provides the pilot with a detailed summary of specific knowledge and skill required for transition to a C-414 aircraft with training tailored to the specific type of avionics and autopilot systems installed.
Elements of any flight lesson that are not accomplished during the flight should be completed as soon as possible, and each lesson can be repeated as often as necessary, however, no element of the next block should be introduced until all the elements of the previous block have been finished.

COMPLETION STANDARDS: You show by written record, and will demonstrate through oral and by practical tests, that you meet the required aeronautical skill, knowledge, experience performance standards, and insurance requirements to safely operate the Cessna 414 aircraft, with specific makes and models of avionics and automation installed. You will receive an endorsement in your logbook documenting the successful completion of transition training, a flight review and proficiency check.

ENROLLMENT PREREQUISITES: A pilot may enroll in this course provided that the pilot holds at least a private pilot certificate, holds an instrument rating or ATP with an airplane rating, holds a multiengine land rating, and meets the recent flight experience of 14CFR 61.57 for TO & LDGS in the preceding 90 days.

GROUND TRAINING HOME STUDY: Completion of ground training is required prior to the completion of flight training. If home studying, the student will be administered two quizzes and a final written test. The student must pass the final test with a score of at least 80% with both test and quizzes corrected to 100%. Ground training with home study shall at a minimum consist of the following subjects and elements:

Aircraft General
Engines / Propellers
Normal Procedures Checklist
Powerplant Management
Aircraft Fuel System

Performance / Flight Planning
Flight Controls / Wing Flaps
Fuel Management
Flight Profiles
Emergency Procedures
Electrical Systems

Flight Instruments
Landing Gear
Systems Failure Analysis
Avionics and Auto-pilot
Collision Avoidance
CFIT

Environmental Systems
Anti-ice / De-ice
High Altitude Flight
Flight in Icing Conditions
Aeronautical Decision Making

Weight and Balance Procedures
Aircraft Loading Procedures
Systems Review / FAR's
Optional Equipment /Modifications
Emergency Procedures Checklist
Scenario Based Flight Training

Single Pilot Resource Management
Runway Incursion Avoidance
Positive Aircraft Control
Risk Management
Written Test

HOW TO USE THIS GUIDE: Lesson elements contain bulleted items represented by a double line arrow to the left of each subject:

⇒ Landing with Inoperative Engine

The double line arrow serves as a checklist for each lesson element, and is marked solid by the instructor in his copy when that element is completed:

➔ Landing with Inoperative Engine

Incomplete elements from previous lessons may be completed on subsequent lessons. If an element of a previous lesson within a block is incomplete, it must be completed prior to starting the next block. The insides of each folded page may be used for notes.

PRINTING AND FOLDING:

Pages are printed and folded in half as shown along the vertical line to the right → with the page number below showing on the first folded side of the page.

Three holes are then punched on the page side opposite the fold.

The page then becomes 5-1/2" wide by 8-1/2" high, with space for writing notes on both sides. After each lesson, pages are scanned and transmitted to the student, along with the separate flight data page containing clearances, weather, fuel, hobbs, tach, and other flight data.

My mission is:

"To inspire excellence in pilot training and evaluation, ensuring that pilots trained and certified are the safest in the world."

To that extent, my intention is to provide you with the kind of training experience, which fully supports the goals of my mission statement: Excellence in training, safety and quality.

It is extremely important that you receive the aeronautical training and experience to completely qualify you to comfortably transition to the Cessna 414. My service goal is to provide you with the best support by remaining available to answer questions after training is completed.

As my customer, you are the single most important resource I have for information, suggestions, feedback, and fresh ideas. Please do not hesitate to forward your comments and thoughts to me.
It is my goal to leave you with a sense that you have received the best training available in a positive learning environment. Your continued constructive input allows me to maintain my commitment to the best training possible.

Tom

Thomas Gorski
2267082 CFI

Lesson # 1 (1.5 Hrs.)
Orientation Flight, SRM

Name_____ Date_____ TOT_____

START_____ OFF_____ ON_____ IN_____

⇒ Preflight Discussion
⇒ Acft. Systems / Ops Integration
⇒ Preflight Inspection
⇒ IFR Flight Plan, Clearances
Type/ID/Model/Tas./Dprt./Etd./ALT/Route/Dest./Ete./
Remarks/FOB/Alternate/Name/Phone/Base/SOB/Color

⇒ Before Starting Engines Checks
⇒ Airspeeds for Safe Operation
⇒ Electrical System Checks
⇒ Fuel Quantity & Selectors
⇒ Annuciator Lights Check
⇒ Landing Gear Handle & Lights

⇒ Normal Engine Start
⇒ Before Taxi Checks
⇒ Aux Fuel Pumps
⇒ Charging Instruments Checked
⇒ Vacuum System Check
⇒ Lights
⇒ Flight Instruments
⇒ Before Take-off
⇒ Engine Runup
⇒ Ice Protection
⇒ Pressurization set
⇒ Autopilot Checks
⇒ Trim set
⇒ Faps set

⇒ Normal and Crosswind Takeoff
(Heading +-5 degrees, Airspeed +-5 Kts.)

⇒ Clearing Turns
At least 90 degrees heading change
⇒ Steep Turns
45 Degree Bank Altitude +- 5 Degrees
Heading +-10 degrees
Altitude +-100’
Airspeed +-10 Knots
(VA 151; 27"MAP 2300RPM; AI, VSI, ALT)

⇒ GPS Direct-To Navigation
(Nav/GPS Selector, Set Crs on HIS, VOR/LOC Freq ID)

⇒ BASIC Autopilot Operation
(Heading and Altitude)

⇒ Vectors to Final Approach: (<3/4 Scale Deflection)
(Airspeed +-10 Kts. Altitude +-100’ Heading +-10°)

_____VOR _____ILS _____LOC

_____RNAV _____ LPV _____LPV

⇒ Normal or Crosswind Landing and Approaches to Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=500’)

⇒ Single Pilot Resource Management, Safety Risk Management (SRM)

⇒ Postflight and Next Lesson Preview

Lesson # 2 (2 Hrs.)
Automation, Autopilot, Aircraft Performance

Name_____ Date_____ TOT_____

START_____ OFF_____ ON_____ IN_____

⇒ Preflight Discussion

⇒ Aircraft Performance Calculation
⇒ Preflight Inspection
⇒ IFR Flight Plan, Clearances
Type/ID/Model/Tas./Dprt./Etd./ALT/Route/Dest./Ete./
Remarks/FOB/Alternate/Name/Phone/Base/SOB/Color

⇒ Normal and Crosswind Takeoff
(Heading +-5 degrees, Airspeed +-5 Kts.)

⇒ Instrument Departure (Begin Takeoff Visually, Hood or View-Limiting at 50' AGL)

⇒ Unusual Attitude Recovery
(Airspeed Increasing = Power, Level Wings, Raise Pitch;
Airspeed Decreasing = Power, Lower Pitch, Level Wings.)

⇒ VMC Demonstration (10Kts>Sse, Bank, Pitch = 1Kt/Sec)
(HDG +-20° Accelerate to Vyse +10 -5)

⇒ Maneuvering During Slow Flight (Alt+-100' Hdg. +-10° Aspd. +10 -0 Bank +-10°.)
⇒ Advanced Autopilot Operations
(Turns, Climbs, Descents, Transfer VS Control from Auto to Manual and Back)
⇒ ILS Coupled Approach: (Vectors or PT)
⇒ Normal or Crosswind Landing and Approaches to Landing
(1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=400')

Review A/P Engagement Procedures Prior To Flight
Use Manual Mode for initial climb.

⇒ Engage Autopilot during normal 130KT Climb

⇒ Fly HDG Mode only
⇒ Fly VS Mode

⇒ Level-Off at pre-determined altitude

⇒ Fly Straight-and-Level. Hold Altitude and Heading

⇒ Climb 1000' above present altitude. (500FPM)

⇒ Level-off
⇒ Descent 100' below present altitude. (500FPM)
⇒ Level-off

⇒ Combine changes of Heading with Altitude

⇒ Intercept and track GPS or Nav Crs (Nav Mode)
⇒ Intercept and track GPS or Nav Crs (App Mode)
⇒ Fly RNAV / LPV
⇒ Fly RNAV Missed Approach
⇒ Intercept and Track Back Crs (Rev Mode)

⇒ Fly Coupled approach to landing

⇒ Postflight and Next Lesson Preview

Lesson # 3 (1.5 Hrs.)
Systems, Instrument Approaches, Abnormal Procedures

Name_____ Date_____ TOT_____

START_____ OFF_____ ON_____ IN_____

⇒ Preflight Discussion
⇒ Acft. Systems Abnormal or Emergency Checklist
Engine Driven Fuel Pump Failure
Alternator Failure
Blocked Static Source
Avionics Bus Failure
Induction Air Icing
Loss of Oil Pressure
Fuel Crossfeed (one engine inop)
Smoke in Cockpit
Manual Gear Extension

⇒ IFR Flight Plan, Clearances
Type/ID/Model/Tas./Dprt./Etd./ALT/Route/Dest./Ete./
Remarks/FOB/Alternate/Name/Phone/Base/SOB/Color

⇒ PreTakeoff Checks

⇒ Short Field Takeoff and Maximum Performance Climb (Heading +-5 degrees, Airspeed +-5 Kts.)

⇒ Instrument Departure (Begin Takeoff Visually, Hood or View-Limiting Device at 50' AGL)

⇒ Maneuvering During Slow Flight (Alt+-100' Hdg. +-10° Aspd. +10 -0 Bank +-10°.)

⇒ Approaches to Stalls (At least one while turning in 15 to 30 degree bank)

⇒ Communications Failure
⇒ Gyro, Suction or Pressure Pump Failure
⇒ Engine Failure

⇒ Maneuvering with One Engine Inoperative (>=3000 AGL Demo Coordinated Flight & Restart)

⇒ Approach: (<3/4 Scale Deflection) (Airspeed +-10 Kts. Altitude +-100' Heading +-10°)

_____VOR _____ILS _____LOC

_____RNAV _____Back Course

⇒ Low Approach (Missed Approach) (Heading +-10° Altitude +-100' Airspeed Vx or Vy +10 -5 Kts.)

⇒ Normal or Crosswind Landing and Approaches to Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=400')

⇒ Landing from a Circling Approach (Heading +-5° Altitude +100'-0' Airspeed +-5 Kts.)

⇒ Short Field Approach and Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=200')

⇒ Landing with Inoperative Engine by Reference to Instruments (3/4 CDI & GS or 10°. +-10Kts.)

⇒ Postflight and Next Lesson Preview

Lesson #4 (1.5 Hrs.)
RNAV and Non-Precision Approaches

Name_____ Date_____ TOT_____

START_____ OFF_____ ON_____ IN_____

⇒ Preflight Discussion

⇒ Acft. Systems / Ops Integration

⇒ IFR Flight Plan, Clearances
Type/ID/Model/Tas./Dprt./Etd./ALT/Route/Dest./Ete./
Remarks/FOB/Alternate/Name/Phone/Base/SOB/Color

⇒ PreTakeoff Checks

⇒ RNAV Approach Procedures: (Initial and Final Approach Fix ARE the Same)

⇒ RNAV Approach Procedures: (Initial and Final Approach Fix NOT the Same)

⇒ Holding (Planned or Unplanned)

⇒ Approach: (<3/4 Scale Deflection) (Airspeed +-10 Kts. Altitude +-100' Heading +-10°)

_____VOR _____ILS _____LOC

_____RNAV _____LPV

⇒ Low Approach (Missed Approach) (Heading +-10° Altitude +-100' Airspeed Vx or Vy +10 -5 Kts.)

⇒ Normal or Crosswind Landing and Approaches to Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=400')

⇒ Landing from a Circling Approach (Heading +-5° Altitude +100'-0' Airspeed +-5 Kts.)

⇒ Short Field Approach and Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=200')

⇒ Landing with Inoperative Engine
(3/4 CDI & GS or 10°. +-10Kts.)

⇒ Postflight and Next Lesson Preview

Lesson #5 (2 Hrs.)
GPS Sequencing, High Altitude, Emergency Procedures

Name_____ Date_____ TOT_____

START_____ OFF_____ ON_____ IN_____

⇒ Preflight Discussion

⇒ Acft. Systems / Ops Integration

⇒ IFR Flight Plan, Clearances
Type/ID/Model/Tas./Dprt./Etd./ALT/Route/Dest./Ete./
Remarks/FOB/Alternate/Name/Phone/Base/SOB/Color

⇒ PreTakeoff Checks

⇒ Engine Failure During Takeoff Before Vmc
(Calculated 50 percent below Vmc)

⇒ Engine Failure After Lift-Off (Simulated >Vsse, Vxse, Vyse, >400AGL Vxse or Vmc+5 then Vyse HDG. 10° ASPD 5Kt.

⇒ RNAV Approach Procedures: (Initial and Final Approach Fix ARE the Same)

⇒ RNAV Approach Procedures: (Initial and Final Approach Fix NOT the Same)

⇒ Holding (Planned or Unplanned)

⇒ High Altitude Operations (=> FL250)

⇒ Emergency Descent (Positive Load Factors, Checklists, Emergency Authority)

⇒ Engine Failure

⇒ Approach with Inoperative Engine: (<1/2 Scale Deflection) (Airspeed +-10 Kts. Altitude +-100' Heading +-10°)

_____VOR _____ILS _____LOC

_____RNAV _____Back Course

⇒ Low Approach (Missed Approach) (Heading +-10° Altitude +-100' Airspeed Vx or Vy +10 -5 Kts.)

⇒ Normal or Crosswind Landing and Approaches to Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=400')

⇒ Landing from a Circling Approach (Heading +-5° Altitude +100'-0' Airspeed +-5 Kts.)

⇒ Short Field Approach and Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=200')

⇒ Landing with Inoperative Engine
(3/4 CDI & GS or 10°. +-10Kts.)

⇒ Postflight and Next Lesson Preview

Lesson #6 (1.5 Hrs.)
WAAS, RNAV, Weight & Balance

Name_____ Date_____ TOT_____

START_____ OFF_____ ON_____ IN_____

⇒ Preflight Discussion

⇒ Operations at Maximum Gross Weight (Scenario for PDX - North Bend or similar scenario, with loading problem for flying a trip requiring fuel planning for alternate airport.)

⇒ IFR Flight Plan, Clearances
Type/ID/Model/Tas./Dprt./Etd./ALT/Route/Dest./Ete./
Remarks/FOB/Alternate/Name/Phone/Base/SOB/Color

⇒ PreTakeoff Checks

⇒ WAAS RNAV Approach Procedures

⇒ WAAS Alternate Airport Approach Procedures

⇒ Holding (Planned or Unplanned)

⇒ VNAV Approach: (<3/4 Scale Deflection) (Airspeed +-10 Kts. Altitude +-100' Heading +-10°)

_____VOR _____LNAV + V _____LPV

_____RNAV _____LOC

⇒ Low Approach (Missed Approach) (Heading +-10° Altitude +-100' Airspeed Vx or Vy +10 -5 Kts.)

⇒ Normal or Crosswind Landing and Approaches to Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=400')

⇒ Landing from a Circling Approach (Heading +-5° Altitude +100'-0' Airspeed +-5 Kts.)

⇒ Postflight and Next Lesson Preview

Lesson # 7 (1.5 Hrs.)
Review

Name_____ Date_____ TOT_____

START_____ OFF_____ ON_____ IN_____

⇒ Preflight Discussion

⇒ Aircraft Performance Calculation

⇒ Preflight Inspection

⇒ Certificates, Documents, Inspection Requirements

⇒ IFR Flight Plan, Clearances
Type/ID/Model/Tas./Dprt./Etd./ALT/Route/Dest./Ete./
Remarks/FOB/Alternate/Name/Phone/Base/SOB/Color

⇒ Normal and Crosswind Takeoff
(Heading +-5 degrees, Airspeed +-5 Kts.)

⇒ Engine Failure During Takeoff Before Vmc
(Simulated & Calculated 50 percent below Vmc)

⇒ Engine Failure After Lift-Off (Simulated >Vsse, Vxse, Vyse, >400AGL Vxse or Vmc+5 then Vyse HDG. 10° ASPD 5Kt.

⇒ Instrument Departure (Begin Takeoff Visually, Hood or View-Limiting at 50' AGL)

⇒ Unusual Attitude Recovery
(Airspeed Increasing = Power, Level Wings, Raise Pitch;
Airspeed Decreasing = Power, Lower Pitch, Level Wings.)

⇒ VMC Demonstration (10Kts>Sse, Bank, Pitch = 1Kt/Sec)
(HDG +-20° Accelerate to Vyse +10 -5)

⇒ Maneuvering During Slow Flight (Alt+-100' Hdg. +-10° Aspd. +10 -0 Bank +-10°.)

⇒ Approaches to Stalls (At least one while turning in 15 to 30 degree bank)

⇒ Approach: (<3/4 Scale Deflection) (Airspeed +-10 Kts. Altitude +-100’ Heading +-10°)

_____VOR _____ILS _____LOC

_____WAAS _____RNAV _____BC

⇒ Low Approach (Missed Approach) (Heading +-10° Altitude +-100’ Airspeed Vx or Vy +10 -5 Kts.)

⇒ Normal or Crosswind Landing and Approaches to Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=400’)

⇒ Landing from a Circling Approach (Heading +-5° Altitude +100’-0’ Airspeed +-5 Kts.)

⇒ Short Field Approach and Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=200’)

⇒ Landing with Inoperative Engine by Reference to Instruments (3/4 CDI & GS or 10°. +-10Kts.)

⇒ Practice as Necessary

⇒ Postflight and Next Lesson Preview

Lesson #8 (1.5 Hrs.)
Night Flight, Performance, Diversion

Name_____ Date_____ TOT_____

START_____ OFF_____ ON_____ IN_____

⇒ Preflight Discussion (Physiological aspects related to vision, lighting systems, obstructions, PCL, Aircraft lighting systems, Spatial Disorientation, Somatogravic and Black Hole Approach Illusions. Rapid acceleration stimulates the otolith organs in the same way as tilting the head backwards, creating the somatogravic illusion of being in a nose-up attitude, especially in situations without good visual references.)

(Absence of surrounding ground features, in overwater approaches, over darkened areas, or terrain made featureless by snow, can create an illusion the aircraft is at a higher altitude than it actually is. This “black hole” causes pilots to fly a lower approach than is desired.)

⇒ Equipment

⇒ Weather Factors for Night Operations

⇒ Night Orientation, Navigation and Chart Reading Techniques

⇒ IFR Flight Plan, Clearances
Type/ID/Model/Tas./Dprt./Etd./ALT/Route/Dest./Ete./
Remarks/FOB/Alternate/Name/Phone/Base/SOB/Color

⇒ PreTakeoff Checks

⇒ RNAV Approach Procedures

⇒ Diversion to Alternate Airport

⇒ Alternate Airport Approach Procedures

⇒ Holding (Planned or Unplanned)

⇒ VNAV Approach: (<3/4 Scale Deflection) (Airspeed +-10 Kts. Altitude +-100’ Heading +-10°)

_____VOR _____LNAV + V _____LPV

_____RNAV _____LOC

⇒ Low Approach (Missed Approach) (Heading +-10° Altitude +-100’ Airspeed Vx or Vy +10 -5 Kts.)

⇒ Normal or Crosswind Landing and Approaches to Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=400’)

⇒ Landing from a Circling Approach (Heading +-5° Altitude +100’-0’ Airspeed +-5 Kts.)

⇒ Postflight and Next Lesson Preview

Lesson # 9 (2 Hrs.)
Prep For Evaluation

Name_____ Date_____ TOT_____

START_____ OFF_____ ON_____ IN_____

⇒ Preflight Discussion

⇒ Aircraft Performance Calculation

⇒ IFR Flight Plan, Clearances
Type/ID/Model/Tas./Dprt./Etd./ALT/Route/Dest./Ete./
Remarks/FOB/Alternate/Name/Phone/Base/SOB/Color

⇒ Normal and Crosswind Takeoff
(Heading +-5 degrees, Airspeed +-5 Kts.)

⇒ Engine Failure During Takeoff Before Vmc
(Simulated & Calculated 50 percent below Vmc)

⇒ Engine Failure After Lift-Off (Simulated >Vsse, Vxse, Vyse, >400AGL Vxse or Vmc+5 then Vyse HDG. 10° ASPD 5Kt.

⇒ Instrument Departure (Begin Takeoff Visually, Hood or View-Limiting at 50' AGL)

⇒ Unusual Attitude Recovery
(Airspeed Increasing = Power, Level Wings, Raise Pitch;
Airspeed Decreasing = Power, Lower Pitch, Level Wings.)

⇒ VMC Demonstration (10Kts>Sse, Bank, Pitch = 1Kt/Sec)
(HDG +-20° Accelerate to Vyse +10 -5)

⇒ Maneuvering During Slow Flight (Alt+-100' Hdg. +-10° Aspd. +10 -0 Bank +-10°.)

⇒ Approaches to Stalls (At least one while turning in 15 to 30 degree bank)

⇒ Approach: (<3/4 Scale Deflection) (Airspeed +-10 Kts. Altitude +-100' Heading +-10°)

_____VOR _____ILS _____LOC

_____WAAS _____RNAV _____BC

⇒ Low Approach (Missed Approach) (Heading +-10° Altitude +-100' Airspeed Vx or Vy +10 -5 Kts.)

⇒ Normal or Crosswind Landing and Approaches to Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=400')

⇒ Landing from a Circling Approach (Heading +-5° Altitude +100'-0' Airspeed +-5 Kts.)

⇒ Short Field Approach and Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=200')

⇒ Landing with Inoperative Engine by Reference to Instruments (3/4 CDI & GS or 10°. +-10Kts.)

⇒ Practice as Necessary

⇒ Postflight and Next Lesson Preview

Lesson # 10 (1.5 Hrs.)
Review

Name_____ Date_____ TOT_____

START_____ OFF_____ ON_____ IN_____

⇒ Preflight Discussion

⇒ Aircraft Performance Calculation

⇒ IFR Flight Plan, Clearances
Type/ID/Model/Tas./Dprt./Etd./ALT/Route/Dest./Ete./
Remarks/FOB/Alternate/Name/Phone/Base/SOB/Color

⇒ Normal and Crosswind Takeoff
(Heading +-5 degrees, Airspeed +-5 Kts.)

⇒ Engine Failure During Takeoff Before Vmc
(Simulated & Calculated 50 percent below Vmc)

⇒ Engine Failure After Lift-Off (Simulated >Vsse, Vxse, Vyse, >400AGL Vxse or Vmc+5 then Vyse HDG. 10° ASPD 5Kt.

⇒ Instrument Departure (Begin Takeoff Visually, Hood or View-Limiting at 50' AGL)

⇒ Unusual Attitude Recovery
(Airspeed Increasing = Power, Level Wings, Raise Pitch;
Airspeed Decreasing = Power, Lower Pitch, Level Wings.)

⇒ VMC Demonstration (10Kts>Sse, Bank, Pitch = 1Kt/Sec)
(HDG +-20° Accelerate to Vyse +10 -5)

⇒ Maneuvering During Slow Flight (Alt+-100' Hdg. +-10° Aspd. +10 -0 Bank +-10°.)

⇒ Approaches to Stalls (At least one while turning in 15 to 30 degree bank)

⇒ Approach: (<3/4 Scale Deflection) (Airspeed +-10 Kts. Altitude +-100' Heading +-10°)

_____VOR _____ILS _____LOC

_____WAAS _____RNAV _____BC

⇒ Low Approach (Missed Approach) (Heading +-10° Altitude +-100' Airspeed Vx or Vy +10 -5 Kts.)

⇒ Normal or Crosswind Landing and Approaches to Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=400')

⇒ Landing from a Circling Approach (Heading +-5° Altitude +100'-0' Airspeed +-5 Kts.)

⇒ Short Field Approach and Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=200')

⇒ Landing with Inoperative Engine by Reference to Instruments (3/4 CDI & GS or 10°. +-10Kts.)

⇒ Practice as Necessary

⇒ Postflight and Next Lesson Preview

Lesson # 11 (1.5 Hrs.)
Review

Name_____ Date_____ TOT_____

START_____ OFF_____ ON_____ IN_____

⇒ Preflight Discussion

⇒ Aircraft Performance Calculation

⇒ IFR Flight Plan, Clearances
Type/ID/Model/Tas./Dprt./Etd./ALT/Route/Dest./Ete./
Remarks/FOB/Alternate/Name/Phone/Base/SOB/Color

⇒ Normal and Crosswind Takeoff
(Heading +-5 degrees, Airspeed +-5 Kts.)

⇒ Engine Failure During Takeoff Before Vmc
(Simulated & Calculated 50 percent below Vmc)

⇒ Engine Failure After Lift-Off (Simulated >Vsse, Vxse, Vyse, >400AGL Vxse or Vmc+5 then Vyse HDG. 10° ASPD 5Kt.

⇒ Instrument Departure (Begin Takeoff Visually, Hood or View-Limiting at 50' AGL)

⇒ Unusual Attitude Recovery
(Airspeed Increasing = Power, Level Wings, Raise Pitch;
Airspeed Decreasing = Power, Lower Pitch, Level Wings.)

⇒ VMC Demonstration (10Kts>Sse, Bank, Pitch = 1Kt/Sec)
(HDG +-20° Accelerate to Vyse +10 -5)

⇒ Maneuvering During Slow Flight (Alt+-100' Hdg. +-10° Aspd. +10 -0 Bank +-10°.)

⇒ Approaches to Stalls (At least one while turning in 15 to 30 degree bank)

⇒ Approach: (<3/4 Scale Deflection) (Airspeed +-10 Kts. Altitude +-100' Heading +-10°)

_____VOR _____ILS _____LOC

_____WAAS _____RNAV _____BC

⇒ Low Approach (Missed Approach) (Heading +-10° Altitude +-100' Airspeed Vx or Vy +10 -5 Kts.)

⇒ Normal or Crosswind Landing and Approaches to Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=400')

⇒ Landing from a Circling Approach (Heading +-5° Altitude +100'-0' Airspeed +-5 Kts.)

⇒ Short Field Approach and Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=200')

⇒ Landing with Inoperative Engine by Reference to Instruments (3/4 CDI & GS or 10°. +-10Kts.)

⇒ Practice as Necessary

⇒ Postflight and Next Lesson Preview

Lesson # 12 (2.0 Hrs.)
Standards Evaluation

Name_____ Date_____ TOT_____

START_____ OFF_____ ON_____ IN_____

⇒ Preflight

⇒ IFR Flight Plan, Clearances
Type/ID/Model/Tas./Dprt./Etd./ALT/Route/Dest./Ete./
Remarks/FOB/Alternate/Name/Phone/Base/SOB/Color

⇒ Normal and Crosswind Takeoff
(Heading +-5 degrees, Airspeed +-5 Kts.)

⇒ Instrument Departure (Begin Takeoff Visually, Hood or View-Limiting at 50' AGL)

⇒ Approaches: (<3/4 Scale Deflection) (Airspeed +-10 Kts. Altitude +-100' Heading +-10°)

_____VOR _____ILS _____LOC

_____WAAS _____RNAV _____BC

⇒ Low Approaches (Missed Approach) (Heading +-10° Altitude +-100' Airspeed Vx or Vy +10 -5 Kts.)

⇒ Normal or Crosswind Landing and Approaches to Landing (1.3Vso +10 -5 Kts. with wind/gust factor applied, TD<=400')

⇒ Landing from a Circling Approach (Heading +-5° Altitude +100'-0' Airspeed +-5 Kts.)

⇒ Postflight

INTRODUCTION

The flight training maneuvers described here will serve as the basis for standardization of flight training. They will also serve as guidelines to achieve the highest level of proficiency and provide safe operations of the aircraft. At no time during flight training will the limitations of the aircraft be intentionally exceeded, nor maneuvers conducted that would jeopardize safety.

ONLY APPROVED MANEUVERS WILL BE EXECUTED. Prior approval by the Instructor will be required for deviations from or changes in the maneuvers contained herein.

In addition to the references to Commercial and Instrument Airman Certification Standards, the applicable titles contained in the Airline Transport Pilot Airman Certification Standard, shall apply to those pilots who hold an Airline Transport Pilot Certificate.

NOTE:
The Pilot's Operating Handbook or Approved Flight Manual and supplements shall be consulted for the manufactures recommendations and limitations. These recommendations and limitations shall supersede any to the contrary herein.

FORMAT

The following flight training maneuvers are designed for flight training, pilot preparation and pilot evaluation. These maneuvers are presented in accordance with the following outline:

1. ***TITLE***. A specific name for the individual maneuver or maneuvers consistent with a title identified in the applicable portion of the Federal Aviation Regulations and/or the applicable Airman Certification Standards. Additional flight training maneuvers/procedures are included and identified according to standard titles.

2. ***REFERENCE(S)***. The reference for the maneuver is indicated.

3. ***OBJECTIVE***. The maneuver objective briefly states the purpose for which the maneuver is required.

4. ***DESCRIPTION***. For each flight maneuver utilized, there is an order of events preceding and following the execution of the particular maneuver.

5. ***PROFILE***. (When applicable) Standard Maneuvers performed for the purpose of consistency among different flight crews.

6. Consideration shall also be given to overall judgment, knowledge, precision and smoothness.

Title: **Ground Operations, Preflight Inspection, Start, Taxiing, Runway Operations, Pretakeoff Checks, and After Landing**

References: 14 CFR parts 61, 91, 121, and 135; AC 91-73, AC 120-57, AC 120-74; FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-25; POH/AFM; AIM; Chart Supplements; NOTAMs

Objective: To ensure that the pilot can safely and proficiently inspect, start, taxi, operate and perform all applicable ground operations during this phase of flight.

Description:
While at the aircraft, the instructor will supervise the pilot performing a preflight inspection. Discussions will follow, and the instructor shall point out the critical items specific to the 400 series Cessna Aircraft. Afterwards, both will board the aircraft, and the instructor will demonstrate the items specific to the before-starting procedures. These items shall include the operation of doors, emergency exit, and giving the passenger briefing. Afterwards, the instructor will supervise the student performing flows and following checklists and applying the knowledge from ground school. During and after engine start, the training pilot will act the same way he or she would during normal operations, observing the sterile cockpit rule. During taxing, runway operations and pre-takeoff checks, the instructor may simulate the mannerisms that a passenger might exhibit, in order to determine the extent to which the pilot can deal with a realistic passenger environment. The lesson will conclude with after the pre-takeoff checks have been accomplished, following the company checklist and policies for operation with either a single-pilot or a two-pilot crew. Emphasis shall be placed on a timely response and safe, positive aircraft control during all phases of ground operations, including thrust management and braking. After landing, this lesson continues with after-landing procedures and checks, and is completed upon successful completion of the post-flight inspection.

Acceptable Performance Guidelines:
The pilot demonstrates understanding of:

Current airport aeronautical references and information resources such as the Chart Supplement, airport diagram, and NOTAMs;

Taxi instructions/clearances including published taxi routes; Airport markings, signs, and lights; Appropriate aircraft lighting for day and night operations.

Appropriate flight deck activities prior to taxi, including route planning, identifying the location of Hot Spots, and coordinating with crew if, applicable;

Communications at towered and nontowered airports; Entering or crossing runways.

Night taxi operations.

Low visibility taxi operations and techniques used to avoid disorientation;

Continued on next page

Acceptable Performance Guidelines (Continued):

The pilot demonstrates the ability to identify, assess, and mitigate risks, encompassing:

Inappropriate activities and distractions.

Confirmation or expectation bias as related to taxi instructions.

A taxi route or departure runway change.

Low visibility taxi operations.

The pilot demonstrates the ability to:

Record/receive taxi instructions, read back/acknowledge taxi clearances, and review taxi routes on the airport diagram.

Use an airport diagram or taxi chart during taxi.

Comply with ATC clearances and instructions and observe all runway hold lines, ILS critical areas, beacons, and other airport/taxiway markings and lighting.

Coordinate with crew, if applicable, and complete the appropriate checklist(s) prior to and during taxi, as appropriate.

Maintain situational awareness.

Maintain correct and positive airplane control, proper speed, appropriate use of wheel brakes and reverse thrust, and separation between other aircraft, vehicles, and persons to avoid an incursion/incident/accident.

Demonstrate taxi during day and night operations. If either condition is not available, the pilot must explain the differences between day and night taxi.

Demonstrate proper use of aircraft exterior lighting for day and night operations. If either condition is not available, the pilot must explain the differences between exterior aircraft lighting used for day and night operations.

Explain the hazards of low visibility taxi operations.

Performs after landing checks and postflight inspection.

Title: **Normal and Crosswind Takeoff**

References: FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-23; POH/AFM

Objective: To determine that the pilot is competent in performing takeoffs safely under all normally anticipated conditions and configurations, conforming to the Takeoff and Climb Profile.

Description:
The pilot will accomplish normal takeoffs after all appropriate clearances are obtained and the before takeoff checklist and crew briefing have been completed satisfactorily. Emphasis shall be placed on airport situational awareness, clearing the runway to be used and final approach paths of all runways that may pose a conflicting traffic hazard.

The engines shall be smoothly brought up to takeoff thrust and a quick check made of the engine gauges while maintaining the center line and holding proper control deflections for any crosswind conditions. Passing 80 KTS, control pressure shall be applied to rotate the aircraft smoothly to break ground. With a positive rate of climb and inadequate runway ahead for landing, retract the landing gear. Accelerate to and climb initially at Vyse +/- 5 KTS until reaching 1000' AGL. After 1000' AGL, accelerate to 130 KTS, adjust power and complete the after takeoff checklist.

Emphasis shall be placed on division of attention inside and outside the aircraft, scanning for traffic, and overall smoothness. If an SIC is present, and is the PNF, the SIC shall monitor both engine instruments and flight instruments, and call out any abnormal indications to the PF. If the SIC is flying, the PF will monitor both engine instruments and flight instruments, and call out any abnormal indications to the SIC. Both pilots will maintaining collision avoidance by staying alert and watching for other traffic in the vicinity.

Profile:
Climb at Blue Line to 1000' AGL, then accelerate to 130 KTS. Takeoff-power is set until 1000' AGL. After 1000' AGL, MAP is reduced to the top of the green, and the props are set to 2500 RPM (climb power.)

Continued on next page

Normal and Crosswind Takeoff (Continued):

Acceptable Performance Guidelines:

The pilot must demonstrate the following knowledge and aeronautical skills:

1. Exhibits knowledge of the elements related to normal and crosswind takeoff and climb.
2. Positions the flight controls for the existing conditions.
3. Clears the area, taxies into the takeoff position, and aligns the airplane on the runway center.
4. Advances the throttles to takeoff power.
5. Rotates at recommended airspeed, and accelerates to Vyse ±5 knots.
6. Retracts the landing gear only after a positive rate of climb is established.
7. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
8. Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
9. Complies with noise abatement procedures.
10. Completes appropriate checklists.

Additional Criteria

Use of the checklists and CRM for crew coordination will be used.

Checklists shall be accomplished in a timely fashion using proper division of attention.

Title: **Short-Field Takeoff**

References: FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-23; POH/AFM

Objective: To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with a short-field takeoff, maximum performance climb operations, and rejected takeoff procedures.

Description:
The pilot will accomplish short-field takeoffs after all appropriate clearances are obtained and the before takeoff checklist and crew briefing have been completed satisfactorily. Emphasis shall be placed on knowledge of the effects of atmospheric conditions, including wind, on takeoff and climb performance, VX and VY; and the appropriate airplane configuration, available distance, and wind.

Emphasis shall be placed on division of attention inside and outside the aircraft, scanning for traffic, and overall smoothness. If an SIC is present, and is the PNF, the SIC shall monitor both engine instruments and flight instruments, and call out any abnormal indications to the PF. If the SIC is flying, the PF will monitor both engine instruments and flight instruments, and call out any abnormal indications to the SIC. Both pilots will maintaining collision avoidance by staying alert and watching for other traffic in the vicinity. Emphasis is also placed on the selection of runway based on pilot capability, airplane performance and limitations, The effects of:
a. Crosswind;
b. Windshear;
c. Tailwind;
d. Wake turbulence; and,
e. Runway surface/condition.

Profile:
The engines shall be smoothly brought up to takeoff thrust and a quick check made of the engine gauges while maintaining the center line and holding proper control deflections for any crosswind conditions. Passing 80 KTS, control pressure shall be applied to rotate the aircraft smoothly to break ground. With a positive rate of climb and inadequate runway ahead for landing, retract the landing gear. Establish a pitch attitude that will maintain the recommended obstacle clearance airspeed
or VX, ±5 knots until the obstacle is cleared or until the airplane is 50 feet above the surface.
Establish a pitch attitude for VY and accelerate to VY ±5 knots after clearing the obstacle or
at 50 feet AGL if simulating an obstacle. Configure the airplane in accordance with the manufacturer's guidance after a positive rate of climb has been verified. Maintain VY ±5 knots to a safe maneuvering altitude. Maintain directional control and proper wind-drift correction throughout takeoff and climb.
Comply with noise abatement procedures. After 1000' AGL, accelerate to 130 KTS, adjust power and complete the after takeoff checklist.

Continued on next page

Short-Field Takeoff (Continued):

Acceptable Performance Guidelines:

The pilot must demonstrate the following knowledge and aeronautical skills:

1. Exhibits knowledge of the elements related to the short-field takeoff and climb.
2. Positions the flight controls for the existing conditions.
3. Clears the area, taxies into the takeoff position, and aligns the airplane on the runway center.
4. Advances the throttles to takeoff power.
5. Rotates at recommended airspeed, and accelerates to Vy ±5 knots.
6. Retracts the landing gear only after a positive rate of climb is established.
7. Maintains takeoff power to a safe maneuvering altitude, then sets climb power.
8. Maintains directional control and proper wind-drift correction throughout the takeoff and climb.
9. Complies with noise abatement procedures.
10. Completes appropriate checklists.

Additional Criteria

Use of the checklists and CRM for crew coordination will be used.

Checklists shall be accomplished in a timely fashion using proper division of attention and for abnormal operations, to include planning for:
Rejected takeoff,
Engine failure in takeoff/climb phase of flight,
Collision hazards, to include aircraft, terrain, obstacles, wires, vehicles, persons, and wildlife.
Low altitude maneuvering including, stall, spin, or CFIT.
Distractions, loss of situational awareness, or improper task management.

Title: **Instrument Takeoff**

References: 14 CFR parts 61 and 91; FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-6, FAA-H-8083-15, FAA-H-8083-16, FAA-H-8083-23, FAA-H-8083-25; POH/AFM; AIM; TPP

Objective: To determine that the pilot is competent in performing takeoffs safely under low-visibility conditions, including lower than standard takeoff minimums.

Description:
When a takeoff minimum is not published, you may use the applicable standard takeoff minimum and the specific lower than standard takeoff minimums authorized by the company's operations specifications. When standard takeoff minimums or greater are used, the Touchdown Zone RVR report, if available, is controlling. The pilot will accomplish actual or simulated low-visibility takeoffs after all appropriate clearances are obtained and the before takeoff checklist and crew briefing have been completed satisfactorily. Emphasis shall be placed on airport situational awareness, and understanding of the company's Operations Specifications. Standard takeoff minimums are defined as 1 statute mile visibility or RVR 5000 for airplanes having 2 engines or less. RVR reports, when available for a particular runway, shall be used for all takeoff operations on that runway.

Align the airplane with the centerline of the runway with the nosewheel straight. Hold the brakes firmly. Set the heading indicator with the nose index on the 5° mark nearest the published runway heading, so you can instantly detect slight changes in heading during the takeoff. Advance the throttles to an RPM that will provide partial rudder control. Release the brakes, advancing the power smoothly. The engines shall be smoothly brought up to takeoff thrust and a quick check made of the engine gauges while maintaining the center line and holding proper control deflections for any crosswind conditions. Passing 80 KTS, control pressure shall be applied to rotate the aircraft smoothly to break ground. With a positive rate of climb and inadequate runway ahead for landing, retract the landing gear.

Accelerate to and climb initially at Vyse +/-5 KTS until reaching 1000' AGL. After 1000' AGL, accelerate to 130 KTS, adjust power and complete the after takeoff checklist. During the takeoff roll, hold the heading constant on the heading indicator by using the rudder. As the airplane accelerates, cross-check both heading indicator and airspeed indicator rapidly. As flying speed is approached smoothly apply elevator control for the desired takeoff attitude on the attitude indicator. When the altimeter shows a safe altitude (approximately 100 feet), raise the landing gear.

Throughout the instrument takeoff, cross-check and interpretation must be rapid, and control positive and smooth. If an SIC is present, the SIC shall monitor both engine instruments and flight instruments, and call out any abnormal indications to the PF.

Instrument Takeoff (Continued):

Profile:
Climb at Blue-Line to 1000' AGL, then accelerate to 130 KTS. Takeoff-power is set until reaching pattern altitude. Upon reaching 1000' AGL, MAP is reduced to the top of the green, and the props are set to 2500 RPM (climb power.)

Acceptable Performance Guidelines:

The pilot demonstrates the ability to identify, assess, and mitigate risks, encompassing:

Selection of a runway, or runway intersection, based on pilot capability, aircraft limitations, available distance, surface conditions, wind, and wake turbulence.

Abnormal operations, to include planning for:
a. Rejected takeoff
b. Engine failure in takeoff/climb phase of flight

Improper aircraft configuration or settings (e.g., trim, flaps, etc.).

Collision hazards, to include aircraft, terrain, obstacles, wires, vehicles, vessels, persons, and wildlife.

Low altitude maneuvering including stall, spin, or CFIT.

Distractions, loss of situational awareness, or improper task management.

The pilot demonstrates the ability to:

Coordinate with crew, if applicable, and complete the appropriate checklist(s) prior to takeoff in a timely manner.
Make radio calls as appropriate.
Verify assigned/correct runway.
Verify the airplane is configured for takeoff.
Position the flight controls for the existing wind.
Clear the area; taxi into takeoff position and align the airplane on the runway centerline.
Maintain centerline and proper flight control inputs during the takeoff roll.
Confirm takeoff power and proper engine and flight instrument indications prior to rotation making callouts, as appropriate, for the airplane or per the operator’s procedures.
Rotate and lift off at the recommended airspeed.
Establish a power setting and a pitch attitude to maintain

Additional Criteria

Use of the checklists and CRM for crew coordination will be used.
Checklists shall be accomplished prior to taking the runway.

Title: **Takeoff with Powerplant Failure**

References: FAA-H-8083-2, FAA-H-8083-3; POH/AFM

Objective: To ensure that the pilot can safely and proficiently complete a takeoff while experiencing a powerplant failure during the takeoff procedure.

Description:

After a normal takeoff has occurred, the instructor will announce a simulated problem by reducing the thrust on one of the engines to idle. To reduce thermal excursions during the procedure, care will be given to a slow reduction of power during the early phase of departure, and special attention shall be paid to restoring power if the airspeed decreases below safe single-engine speed. Emphasis shall be placed on a timely response and safe, positive aircraft control including heading, and airspeed to achieve a maximum climb profile. After the engine securing procedure has been accomplished, through simulation, power can be restored, and a normal climb-out will commenced, or an immediate return to the airport shall be accomplished.

The pilot need not be given any warning prior to the instructor's actions. The pilot must, however, be given a preflight briefing outlining the procedures to be used and crew responsibilities in the event of a takeoff with powerplant failure. This is absolutely necessary for the safety of the flight. The instructor must assure adequate airspeed and altitude exists for a safe climb-out or return at all timed during the lesson.

Profile:
Climb at Blue-Line to 1000' AGL, then accelerate to 130 KTS if possible. Takeoff-power is set until reaching 1000' AGL. After 1000' AGL, MAP is reduced to the top of the green, and the prop on the operating engine is set to 2500 RPM (climb power.)

Acceptable Performance Guidelines:

The pilot demonstrates understanding of:

The procedures used during a powerplant failure on takeoff, the appropriate reference airspeeds, and the specific pilot actions required.

Operational considerations to include: airplane performance (e.g., sideslip, bank angle, rudder input), takeoff warning systems, runway length, surface conditions, density altitude, wake turbulence, environmental conditions, obstructions, and other related factors that could adversely affect safety.

Continued on next page

Takeoff with Powerplant Failure Acceptable Performance Guidelines (Continued):

The pilot demonstrates the ability to identify, assess, and mitigate risks, encompassing:

Failure to plan for a powerplant failure during takeoff considering operational factors such as takeoff warning inhibit systems, other airplane characteristics, runway/takeoff path length, surface conditions, environmental conditions, obstructions, and LAHSO operations.

Failure to brief the plan for a powerplant failure during takeoff, in a crew environment.

Failure to follow proper procedures or checklists in an emergency.

Failure to correctly identify the inoperative engine.

Inability to climb or maintain altitude with an inoperative powerplant.

Failure to consider altitude, wind, terrain, and obstructions in an emergency.

Low altitude maneuvering including stall, spin, or CFIT.

Distractions, loss of situational awareness, or improper task management.

The pilot demonstrates the ability to:

Following the powerplant failure, maintain positive airplane control and adjust the powerplant controls as recommended by the manufacturer for the existing conditions.

Continue the takeoff if the (simulated) powerplant failure occurs at a point where the airplane can continue to a specified airspeed and altitude at the end of the runway commensurate with the airplane's performance capabilities and operating limitations.

After establishing a climb, maintain the desired airspeed, ±5 knots. Use flight controls in the proper combination as recommended by the manufacturer, or as required, to maintain best performance and trim as required.

Maintain the appropriate heading, ±5°, when powerplant failure occurs. Coordinate with crew, if applicable, and complete the appropriate checklist(s) following the powerplant failure.

Communicate with ATC and the evaluator, as appropriate for the situation.

Title: **Rejected Takeoff**

References: FAA-H-8083-2, FAA-H-8083-3; POH/AFM

Objective: To ensure that the pilot can safely and proficiently abort a takeoff during the takeoff roll.

Description:

After a normal takeoff roll has begun, but prior to 50% Vmc, the instructor will announce a simulated problem such as “runway blocked ahead”. The pilot shall then smoothly and efficiently abort the takeoff by closing the throttles and applying brakes as appropriate. A skidding, panic stop is not appropriate. To save wear and tear on the airplane, the training pilot may announce maximum braking rather than actually using maximum braking when remaining runway length is adequate. Emphasis shall be placed on a timely response and safe, positive aircraft control including heading, power and braking. After the aircraft has been safely slowed to normal taxi speed, the pilot shall announce the abort to the tower (or CTAF).

The pilot need not be given any warning prior to the instructor’s announcement, beginning the abort. The pilot must, however, be given a preflight briefing outlining the procedures to be used and crew responsibilities in the event of an abort. This is absolutely necessary for the safety of the flight. **The instructor must assure adequate runway exists for a safe stop prior to initiating the abort, and the abort command is given prior to reaching 50% of Vmc.**

Acceptable Performance Guidelines:

The pilot demonstrates understanding of:

Conditions and situations that could warrant a rejected takeoff (e.g., takeoff warning systems, powerplant failure, other systems warning/failure).

Safety considerations following a rejected takeoff.

The procedure for accomplishing a rejected takeoff.

Accelerate/stop distance.

Relevant V-speeds for a rejected takeoff.

Continued on next page

Rejected Takeoff Acceptable Performance Guidelines (Continued):

The pilot demonstrates the ability to identify, assess, and mitigate risks, encompassing:

Selection of the takeoff path based on pilot capability, aircraft limitations, available distance, surface conditions, and wind.

A powerplant failure or other malfunction during takeoff.

Failure to maintain directional control following a rejected takeoff.

A rejected takeoff with inadequate stopping distance.

A high-speed abort.

Distractions, loss of situational awareness, or improper task management.

The pilot demonstrates the ability to:

Abort the takeoff if the powerplant failure occurs at a point during the takeoff where the abort procedure can be initiated and the airplane can be safely stopped on the remaining runway.

Promptly reduce the power and maintain positive aircraft control using drag and braking devices, as appropriate, to come to a stop.

Coordinate with crew, if applicable, and complete the appropriate procedures, checklist(s), and radio calls following a rejected takeoff in a timely manner.

Title: **Area Departure**

References: FAA-H-8083-2, FAA-H-8083-3; POH/AFM

Objective: To ensure that the pilot can safely conduct area departure procedures.

Description:

After takeoff, the pilot shall follow the departure procedure. Special emphasis will be paid to lost communication procedures, and obstacle clearance departures. The instructor may announce radio failure, and ensure that the pilot follows the proper procedures for dealing with the departure. Emphasis shall be placed on collision avoidance and crew resource management, if operating with two-pilot crews.

The area departure should include intercepting radials, tracking, and climbs with restrictions. Whenever practical, a standard instrument departure should be used. Many of the standard procedures, however, are not suitable for the purpose of testing a student's abilities. For example, common radar departures are essentially initial climb instructions for a radar hand off and provide little opportunity for testing a student’s ability to set up and use the navigation equipment normally used on an area departure. If a suitable published procedure is not available and circumstances allow, the instructor should give a clearance that presents the desired tests. Instructors should allow students to use all installed equipment.

Profile:
Climb at Blue-Line to 1000' AGL, then accelerate to 130 KTS. Takeoff-power is set until reaching 1000' AGL. After 1000' AGL, MAP is reduced to the top of the green, and the props are set to 2500 RPM (climb power.) Climb power is maintained until reaching cruising altitude. When reducing power to cruise, make power changes in small increments in order to minimize pressure-excursions in the pressurization system. Use the RAM CHART to set power for cruise. Observe RAM limitations when setting cruise power.

Acceptable Performance Guidelines:

1. Adhere to actual or simulated ATC clearances (including assigned radials); and

2. Properly use available navigation facilities.

Title: **Steep Turns**

References: FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-25; POH/AFM

Objective: To determine that the pilot is competent in the performance of Steep Turns.

Description:

The objective of the maneuver is to develop smoothness, coordination, orientation, division of attention, and control techniques while executing high performance turns. The steep turn maneuver consists of a turn in either direction, using a bank angle of 45°. Because of the high load factors imposed, these turns should be performed at VA (Maneuvering Speed). The steep turns should be continued until 360° in both directions have been completed.

Prior to initiating a steep turn, or any other flight maneuver, first complete a clearing turn to check the area for traffic. (Either 180° turn or two 90° turns in opposite directions.) When established in the Steep Turn, cross-reference the flight instruments, to maintain a constant altitude and angle of bank. Anticipate the roll-out by leading the roll-out heading by 20°.

Acceptable Performance Guidelines:

Maintain the bank angle within ±5° while in smooth, stabilized flight.

Apply smooth coordinated pitch, bank, and power to maintain the specified altitude within ±100 feet and the desired airspeed within ±10 knots.

Roll out of the turn (at approximately the same rate as used to roll into the turn) within ±10° of the entry or specified heading.

Continued on next page

Title: **Approaches to Stalls**

References: AC 61-67, AC 120-109; FAA-H-8083-2, FAA-H-8083-3; POH/AFM;

Objective: To determine that the pilot is competent in recognition of and recovery from stall situations under all normally anticipated conditions and configurations.

Description:

Stalls will be practiced in the departure, enroute, approach and landing configurations both wings level and banked. Emphasis shall be placed on safety, smoothness and minimum altitude loss in recovery from the stall situation. Instructors are encouraged to use their imaginations in designing real world situations such as a level circle to land maneuver using inadequate power. At no time will the limitations of the aircraft be exceeded. No stalls shall be intentionally entered below 3000 feet AGL. Engine out stalls will NOT be practiced.

Any demonstration must begin with proper clearing of the vicinity. This completed, the aircraft shall be configured in one of the four possibilities listed above, slowed to and stabilized at the entry airspeed and power setting appropriate. Using the smooth application of the controls, the airplane's angle of attack will then be brought to a critical level. The pilot will announce the recognition of the imminent stall and begin immediate control inputs to reduce the angle of attack, level the wings, increase power (if possible) and fly out of the stall situation safely with minimum altitude loss.

Select an entry altitude that will allow recovery to be safely completed at a minimum of 3,000 feet AGL.
Observe the area is clear of other aircraft prior to accomplishing an approach to a stall.
While maintaining altitude, slowly establish the pitch attitude (using trim or elevator/stabilizer), bank angle, and power setting that will induce stall at the desired target airspeed.
Announce the first indication of an impending stall (such as buffeting, stall warning horn, decay of control effectiveness, and any other cues) and initiate recovery (using maximum power or as directed).
Recover to a reference airspeed, altitude and heading, allowing only the acceptable altitude or airspeed loss, and heading deviation.
Demonstrate smooth, positive control during entry, approach to a stall, and recovery.

Approaches to Stalls Acceptable Performance Guidelines (Continued):

The pilot must demonstrate the following knowledge and aeronautical skills:

1. Exhibits knowledge of the elements related to aerodynamic factors associated with stalls and how this relates to actual situations.
2. Selects an entry altitude that allows the task to be completed no lower than 3000 feet AGL
3. Smoothly establishes the assigned configuration, speed and attitude, as specified by the instructor.
4. Transitions smoothly to a pitch attitude that will induce a stall.
5. Maintains the specified heading ±10°, in straight flight; maintains a specified angle of bank, not to exceed 30°, +0/-10°, in turning flight, while inducing a stall.
6. Recognizes and announces the onset of the stall by identifying the first aerodynamic buffeting or decay of control effectiveness.
7. Recovers promptly as the stall occurs by simultaneously decreasing the pitch attitude, increasing power and leveling the wings, with a minimum loss of altitude.
8. Retracts flaps.
9. Retract landing gear after a positive rate of climb is established.
10. Accelerates to Vyse.
11. Returns to the altitude, heading, and airspeed specified by the instructor.

Title: **Powerplant Failure (Simulated)**

References: FAA-H-8083-2, FAA-H-8083-3; POH/AFM

Objective: To ensure that the pilot can safely and proficiently fly the aircraft while experiencing a powerplant failure.

Description:

During flight, the instructor will create a simulated problem by reducing the thrust on one of the engines to idle. To reduce thermal excursions during the procedure, care will be given to a slow reduction of power during the simulation, and special attention shall be paid to restoring power if the airspeed decreases below safe single-engine speed. Emphasis shall be placed on a timely response and safe, positive aircraft control including heading, and airspeed to achieve a constant heading while in straight flight, or to intercept and track the desired course, if on an airway segment or during a portion of an approach procedure. After the engine securing procedure has been accomplished, through simulation, power can be restored, and a normal flight will resume.

The pilot need not be given any warning prior to the instructor's actions.
The instructor must assure adequate airspeed and altitude exists for safe flight.
The student shall not actually feather an engine, and the instructor shall guard against inadvertent feathering by the student.

The pilot must demonstrate the following knowledge and aeronautical skills:

Maintains positive airplane control. Establishes a bank of approximately 5°, to maintain coordinated flight, and properly trims for that condition. Sets powerplant controls, reduces drag as necessary, correctly identifies and verifies the inoperative powerplant after the simulated failure. Maintains the operating powerplant within acceptable operating limits. Follows the prescribed airplane checklist, and verifies the procedures for securing the inoperative powerplant. Determines the cause for the powerplant failure and if a restart is a viable option. Maintains desired altitude within ±100 feet, when a constant altitude is specified and is within the capability of the airplane. Maintains the desired airspeed within ±10 knots. Maintains the desired heading within ±10° of the specified heading. Demonstrates proper powerplant restart procedures (if appropriate) in accordance with FAA-approved procedure/checklist or the manufacturer's recommended procedures and pertinent checklist items. Emphasis will be placed on positive aircraft control, sound judgment in decision making, and following proper procedures.

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Powerplant Failure (Simulated) Acceptable Performance Guidelines (Continued):

1. Exhibits adequate knowledge of the flight characteristics and controllability associated with maneuvering with powerplant inoperative.

2. Maintains positive airplane control. Establishes a bank of approximately 5°, if required, or as recommended by the manufacturer, to maintain coordinated flight, and properly trims for that condition.

3. Sets powerplant controls, reduces drag as necessary, correctly identifies and verifies the inoperative powerplant after the failure (or simulated failure).

4. Maintains the operating powerplant within acceptable operating limits.

5. Follows the prescribed airplane checklist, and verifies the procedures for securing the inoperative powerplant.

6. Determines the cause for the powerplant failure and if a restart is a viable option.

7. Maintains desired altitude within ±100 feet, when a constant altitude is specified and is within the capability of the airplane.

8. Maintains the desired airspeed within ±10 knots.

9. Maintains the desired heading within ±10° of the specified heading.

10. Demonstrates proper powerplant restart procedures (if appropriate) in accordance with FAA-approved procedure/checklist or the manufacturer's recommended procedures and pertinent checklist items.

Title: **Powerplant Failure During Takeoff**

References: FAA-H-8083-2, FAA-H-8083-3; POH/AFM

Objective: To ensure that the pilot can safely and proficiently fly the aircraft while experiencing a powerplant failure. To determine that the pilot exhibits satisfactory knowledge, risk management, and skills associated with a powerplant failure during takeoff.

Description:
The pilot demonstrates understanding of procedures used during a powerplant failure on takeoff, the appropriate reference airspeeds, and the specific pilot actions required.

Operational considerations to include: airplane performance (e.g., sideslip, bank angle, rudder input), takeoff warning systems, runway length, surface conditions, density altitude, wake turbulence, environmental conditions, obstructions, and other related factors that could adversely affect safety.

The pilot demonstrates the ability to identify, assess, and mitigate risks, encompassing:

Failure to plan for a powerplant failure during takeoff considering operational factors such as takeoff warning inhibit systems, other airplane characteristics, runway/takeoff path length, surface conditions, environmental conditions, obstructions, and LAHSO operations.

Failure to brief the plan for a powerplant failure during takeoff, in a crew environment.

Failure to follow proper procedures or checklists in an emergency.

Failure to correctly identify the inoperative engine.

Inability to climb or maintain altitude with an inoperative powerplant.

Failure to consider altitude, wind, terrain, and obstructions in an emergency.

Low altitude maneuvering including stall, spin, or CFIT.

Distractions, loss of situational awareness, or improper task management.

Powerplant Failure During Takeoff Acceptable Performance Guidelines (Continued):

Following the powerplant failure, maintain positive airplane control and adjust the powerplant controls as recommended by the manufacturer for the existing conditions.

Continue the takeoff if the (simulated) powerplant failure occurs at a point where the airplane can continue to a specified airspeed and altitude at the end of the runway commensurate with the airplane's performance capabilities and operating limitations.

After establishing a climb, maintain the desired airspeed, ±5 knots. Use flight controls in the proper combination as recommended by the manufacturer, or as required, to maintain best performance and trim as required.

Maintain the appropriate heading, ±5°, when powerplant failure occurs.

Coordinate with crew, if applicable, and complete the appropriate checklist(s) following the powerplant failure.

Communicate with ATC and the evaluator, as appropriate for the situation.

Title: **Inflight Powerplant Failure and Restart**

References: FAA-H-8083-2, FAA-H-8083-3; POH/AFM

Objective: To determine that the pilot exhibits satisfactory knowledge, risk management, and skills associated with an inflight Powerplant failure in a multiengine airplane and restart procedures.

Description:
The pilot demonstrates understanding of:
Flight characteristics and controllability associated with maneuvering the airplane with powerplant(s) inoperative to include the importance of drag reduction.
Powerplant restart procedures and conditions where a restart attempt is appropriate.
Risk Management

The pilot demonstrates the ability to identify, assess, and mitigate risks, encompassing:
Failure to plan for a powerplant failure during flight.
Failure to follow checklist procedures for a powerplant failure or a powerplant restart.
Incorrect diagnosis of the cause of the powerplant failure.
Collision hazards, to include aircraft, terrain, obstacles, wires, vehicles, vessels, persons, and wildlife.
Improper airplane configuration.
Factors and situations that could lead to an inadvertent stall, spin, and loss of control with an inflight powerplant failure.
Distractions, loss of situational awareness, or improper task management.

Acceptable Performance Guidelines:
The pilot demonstrates the ability to:
Recognize and correctly identify powerplant failure(s), complete memory items (if applicable), and maintain positive airplane control.
Coordinate with crew, as appropriate, and complete the appropriate emergency procedures and checklist(s) for propeller feathering or powerplant shutdown.
Use flight controls in the proper combination as recommended by the manufacturer, or as required, to maintain best performance, and trim as required.
Determine the cause for the powerplant(s) failure and if a restart is a viable option.
Maintain the operating powerplant(s) within acceptable operating limits.
Maintain the airspeed ±10 knots, the specified heading ±10°, and altitude ±100 feet as specified by the evaluator and within the airplane's capability.
Consider a powerplant restart and, if appropriate, demonstrate the powerplant restart procedures in accordance with the manufacturer or operator-specified procedures and checklists.
Select the nearest suitable airport or landing area.
Communicate with ATC and the evaluator, as appropriate for the situation.

Title: **VMC Demonstration**

References: FAA-H-8083-2, FAA-H-8083-3; FAA-P-8740-66; POH/AFM

Objective: To determine that the pilot exhibits satisfactory knowledge, risk management, and skills associated with a VMC Demonstration.

Description:
The pilot demonstrates understanding of:

1. Factors affecting VMC and how VMC differs from stall speed (VS).
2. VMC (red line), VYSE (blue line), and VSSE (safe single-engine speed).
3. Cause of loss of directional control at airspeeds below VMC.
4. Proper procedures for maneuver entry and safe recovery.

The pilot demonstrates the ability to:
Configure the airplane in accordance with the manufacturer's recommendations, in the absence of the manufacturer's recommendations, then at VSSE/VYSE, as appropriate, and:

a. Landing gear retracted
b. Flaps set for takeoff
c. Cowl flaps set for takeoff
d. Trim set for takeoff
e. Propellers set for high RPM
f. Power on critical engine reduced to idle and propeller windmilling
g. Power on operating engine set to takeoff or maximum available power

The pilot establishes a single-engine climb attitude with the airspeed at approximately 10 knots above VSSE; and a bank angle not to exceed 5° toward the operating engine, as required for best performance and controllability. The pilot then increases pitch attitude slowly to reduce the airspeed at approximately 1 knot per second while applying rudder pressure to maintain directional control until full rudder is applied.

Acceptable Performance Guidelines:

1. Recognize indications of loss of directional control, stall warning, or buffet.
2. Recover promptly by simultaneously reducing power sufficiently on the operating engine, decreasing the angle of attack as necessary to regain airspeed and directional control, and without adding power on the simulated failed engine.
3. Recover within 20° of entry heading.
4. Advance power smoothly on the operating engine and accelerate to VSSE/VYSE, as appropriate, ±5 knots during recovery.

Title: **Area Arrival**

References: 14 CFR parts 61 and 91; AC 90-100; FAA-H-8083-2, FAA-H-8083-15,
FAA-H-8083-16; Enroute Low and High Altitude Charts; STARs/FMSPs; TPP; POH/AFM; AIM. Standard Descent Approach and Landing Profile.

Objective: To determine that the pilot is competent in performing area arrivals under all normally anticipated conditions.

Description:

The pilot will accomplish area arrivals adhering to actual or simulated ATC clearances (including assigned radials); and properly use available equipment and navigation facilities.

Acceptable Performance Guidelines:

1. While in actual or simulated instrument conditions, exhibits adequate knowledge of En Route Low and High Altitude Charts, STARs, Instrument Approach Procedure Charts, and related pilot and controller responsibilities.
2. Uses the current and appropriate navigation publications for the proposed flight.
3. Selects and correctly identifies the appropriate navigation frequencies and facilities associated with the area arrival.
4. Performs the checklist items appropriate to the area arrival.
5. Establishes communications with ATC, using proper phraseology.
6. Complies, in a timely manner, with all ATC clearances, instructions, and restrictions.
7. Exhibits adequate knowledge of two-way communications failure procedures.
8. Intercepts, in a timely manner, all courses, radials, and bearings appropriate to the procedure, route, ATC clearance, or as directed by the instructor.
9. Adheres to airspeed restrictions and adjustments required by regulations
10. Establishes, where appropriate, a rate of descent consistent with the operating characteristics and safety.
11. Maintains the appropriate airspeed within ±10 knots; heading ±10°; altitude within ±100 feet and accurately tracks radials, courses, and bearings.
    Complies with the provisions of the Profile Descent, STAR, and other arrival procedures, as appropriate.

Title: **Holding**

References: 14 CFR parts 61 and 91; AC 91-74; FAA-H-8083-15, FAA-H-8083-16; POH/AFM; AIM; TPP

Objective: To determine that the pilot is competent in performing holding.

Description:

The pilot will accomplish standard and non standard holding pattern entry and execution. Refer to the Standard Descent Approach and Landing Profile for specific instructions concerning the execution of this task.

Acceptable Performance Guidelines:

1. While in actual or simulated instrument conditions, exhibits adequate knowledge of holding procedures for standard and non-standard, published and non-published holding patterns. If appropriate, demonstrates adequate knowledge of holding endurance, including, but not necessarily limited to, fuel on board, fuel flow while holding, fuel required to alternate, etc.
2. Changes to the recommended holding airspeed appropriate for the helicopter and holding altitude, so as to cross the holding fix at or below maximum holding airspeed.
3. Recognizes arrival at the clearance limit or holding fix.
4. Remains within protected airspace.
5. Complies with ATC reporting requirements.
6. Uses the proper timing criteria required by the holding altitude and ATC's instructions.
7. Complies with the holding pattern leg length when a DME distance is specified.
8. Arrives over the holding fix as close as possible to the "expect further clearance" time.
9. Maintains the appropriate airspeed within ±10 knots, altitude within ±100 feet; headings within ±10°; and accurately tracks radials, courses, and bearings.

Title: **Normal ILS Approach**

References: 14 CFR parts 61 and 91; FAA-H-8083-15, FAA-H-8083-16; TPP; AIM; Chart Supplements; Standard Descent Approach and Landing Profile

Objective: To determine that the pilot is competent in performing Normal ILS Approaches under all normally anticipated conditions. Refer to the Standard Descent Approach and Landing Profile for specific instructions concerning the execution of this task.

Acceptable Performance Guidelines:

1. Exhibits adequate knowledge of the elements of an ILS instrument approach procedure.
2. Selects and complies with the appropriate ILS instrument approach procedure to be performed.
3. Establishes two-way communications with ATC, as appropriate to the phase of flight or approach segment, and uses proper radio communications phraseology and technique.
4. Selects, tunes, identifies, and confirms the operational status of ground and aircraft navigation equipment to be used for the approach procedure.
5. Complies with all clearances issued by ATC.
6. Advises ATC anytime the aircraft is unable to comply with a clearance.
7. Establishes the appropriate aircraft configuration and airspeed, considering turbulence and wind shear, and completes the aircraft checklist items appropriate to the phase of flight.
8. Maintains, prior to beginning the final approach segment, specified altitude within 100 feet, heading or course within 10°, and airspeed within 10 knots.
9. Applies the necessary adjustments to the published DH and visibility criteria for the aircraft approach category when required, such as-
   FDC and Class II NOTAM's.
   Inoperative aircraft and ground navigation equipment.
   Inoperative visual aids associated with the landing environment.
   National Weather Service (NWS) reporting factors and criteria.
10. Establishes an initial rate of descent at the point where the electronic glide slope is intercepted, which approximates that required for the aircraft to follow the glide slope to DH.
11. Allows, while on the final approach segment, no more than three-quarter-scale deflection of either the localizer or glide slope indications, and maintains the specified airspeed within 10 knots.
12. Avoids descent below the DH before initiating a missed approach procedure or transitioning to a normal landing approach.
13. Initiates immediately the missed approach procedure when, at the DH, the required visual references for the intended runway are not distinctly visible and identifiable.
14. Transitions to a normal landing approach when the aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers.

Title: **Engine-Out ILS Approach**

References: FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-15, FAA-H-8083-16; POH/AFM; TPP; Standard Descent and Approach Profile

Objective: To determine that the pilot is competent in performing Engine-Out ILS Approaches and landings. Refer to the Standard Descent Approach and Landing Profile for specific instructions concerning the execution of this task.

Acceptable Performance Guidelines:

1. Exhibits knowledge of the elements related to multiengine procedures used during a published instrument approach with one engine inoperative.
2. Sets the navigation and communication equipment used during the approach and uses the proper communications technique.
3. Requests and receives an actual or simulated ATC clearance for an instrument approach.
4. Recognizes simulated engine failure and maintains control.
5. Sets the engine controls, reduces drag, and identifies and verifies the inoperative engine. The instructor shall establish zero-thrust on the inoperative engine.
6. Follows the appropriate checklist to verify procedures for securing the inoperative engine.
7. Establishes a bank toward the operating engine, as necessary, for best performance.
8. Establishes the best engine inoperative airspeed, ±5 knots and trims the airplane.
9. Monitors the operating engine and updates decisions based on observational feedback.
10. Attempts to determine the reason for the engine malfunction.
11. Determines if it is feasible to restart the affected engine; if so, follows appropriate restart procedures.
12. Follows instructions and instrument approach procedures correctly.
13. Maintains a specified airspeed within 10 knots and an altitude within 100 feet prior to the final approach fix.
14. Establishes a rate of descent that will ensure arrival at the MDA or DH, whichever is appropriate, in a position from which a normal landing can be made either straight-in or circling.
15. Allows, while on final approach segment, no more than three-quarter-scale deflection of the localizer/glide slope indicators, CDI, or within 10° in the case of RMI or ADF indicators.
16. Avoids descent below the published minimum altitude on straight-in approaches or exceeding the visibility criteria for the aircraft approach category on circling approaches.
17. Completes appropriate checklists.

Title: **Coupled Approach**

References: 14 CFR parts 61 and 91; FAA-H-8083-15, FAA-H-8083-16; TPP; AIM; Chart Supplements; Standard Descent and Approach Profile

Objective: To determine that the pilot is competent in flying precision approaches using the autopilot during coupled approaches.

Description:

The pilot will accomplish precision approaches using the autopilot. Refer to the Standard Descent Approach and Landing Profile for specific instructions concerning the execution of this task.

Acceptable Performance Guidelines:

Autopilot engagement should be planned so as to capture the glideslope while the localizer course is centered. Emphasis is placed on properly monitoring the Autopilot during the approach and disengaging it immediately if any problem arises.

Title: **Standard Descent Approach and Landing Profile, Landing from an ILS**

References: 14 CFR parts 61 and 91; FAA-H-8083-15, FAA-H-8083-16; SAFO 19001; AIM

Objective: To determine that the pilot is competent in performing Descents Approaches and Landings using the Standard Profile, and landing from an ILS.

Description:

Plan the descent for an instrument approach based on distance from the approach fix, so that cruise altitude can be maintained as long as efficiency prevails, and still arrive at the fix at the required altitude. Distance to go and airplane altitude must be continuously compared to ensure that the airplane maintains the desired profile.

Power Settings:

Do not reduce cruise power until starting down, and then reduce power slowly to allow for stage-cooling of the engines. Stage Cooling Profile is 1" MAP per minute, until the CHT's are below 300 degrees F or until MAP is below 23". During descent from enroute flight altitude, the pilot not flying will announce the standard callouts.

Holding:

Holding will be performed at 120KTS, in the clean configuration. Reduce to holding speed when 3 minutes or less, but prior to crossing the fix. The recommended power setting for holding is approximately 18” MAP. The autopilot shall not be used during holding in icing conditions.

Approach Briefing:

Prior to the start of an instrument approach, the pilot flying briefs the other pilot as to his intentions in conducting the approach, and both pilots review the approach procedure. The items typically covered in the approach briefing are:

- Chart Description
- Chart Date
- Type of approach
- Approach Frequency including Beacons and other Facilities as required
- Inbound Course
- Initial Approach Altitude
- Glideslope Intercept Altitude
- Decision Height
- Missed Approach Procedures

Stabilized Approach:

Assure air conditioning or heating, and pressurization are properly configured for landing. Verify the Altimeter is set to destination airport setting. For a normal approach, gear down is established upon GS intercept or over the FAF. Stabilize on 120KTS speed with airplane in trim. Power shall be set to achieve 120 KTS in level flight (between 17" and 19", with gear and flaps up.) High, low, or offset corrections should be made as early in the approach as possible, in order to be in a stabilized condition through the approach. The pilot should maintain a constant profile and proper rate of descent coordinating pitch attitude with power changes. If at anytime during the approach, the approach becomes unstable, execute the missed approach.

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Standard Descent Approach and Landing Profile, Landing from an ILS (Continued):

Operations in Icing Conditions
Operations in icing is not recommended. Be aware that a higher speed is recommended whenever operating in icing conditions. This includes flying a higher approach speed, flying at higher holding speeds, and flying approaches at higher speeds than normal. **Flaps are not to be used during approaches and landings in icing conditions.**

Wind Corrections:
The recommended approach speed wind correction is 1/2 the gust value, based on tower reported winds. In all cases, a steady wind correction of 1/2 the gust factor should be maintained to the flare. When the wind is reported calm or light and variable, and no windshear exists, blue-line shall be the airspeed on final, bleeding off speed when a normal landing on the runway is assured.

Non-Precision Approach:
Reduce to approach speed of 120KTS prior to passing the final approach fix. Non-Precision approaches will be flown in the clean configuration with approximately 18" MAP in level flight for 120KTS. Gear and flaps are deployed in accordance with the following table:

TYPE OF APPROACH	GEAR DOWN	FLAPS DOWN
Straight-In One Engine Inoperative	Final Approach Fix	Landing Assured
Circling Approach All Engines Operating	Final Approach Fix	Landing Assured
Circling Approach One Engine Inoperative	Landing Assured	Landing Assured
Straight-In All Engines Operating	Final Approach Fix	Landing Assured

Flaps are deployed at the point on the approach when a landing is assured. Gear is normally extended at the final approach fix. In the case of an engine-out approach, gear is extended when either the landing is assured, or at the Final Approach Fix, depending on the type of approach. After passing the Final Approach Fix inbound, descend to the MDA at 1000' per minute. Do not dive at the runway when breaking clear of clouds at low attitudes.

Visual Traffic Pattern:
Power should be set to between 17" and 19" for pattern entry. This will produce 120KTS in level flight, with gear and flaps up. Upon entering downwind, extend the landing gear. Extend flaps to 15 degrees ("Flaps 15" is called by the pilot flying) after turning base. Flaps are extending to the full-down position on final approach, when landing is assured. Fly Blue-Line airspeed on final, until a normal landing on the runway is assured.

Crosswind:
The crab, is the accepted method of correcting for a crosswind, until approaching the flair, and then transitioning to a sideslip just prior to touchdown. Use rudder to hold the airplane on centerline. Displacing the aileron into the wind assists in directional control. 120KTS or more, depending on the conditions should be the airspeed on final, bleeding off speed when a normal landing on the runway is assured.

Landing:
As the airplane approaches the touchdown point, aligned with the centerline, smoothly retard power. Slowly raise the pitch so that the main wheels touch first. After touchdown, gently lower the nose and maintain directional control with the rudder. After landing, apply braking as necessary, maintaining directional control.

After Landing:
Slow the aircraft almost to a full stop before making 90 degree taxi turns. This is vital to protect the nose gear from damage resulting from side loads. No configuration changes are to be made until after the aircraft clears the active runway, after which time the after landing checklist items may be performed.

Title: **Missed Approach, Missed approach from an ILS**

References: 14 CFR parts 61 and 91; FAA-H-8083-15, FAA-H-8083-16; TPP; AIM

Objective: To determine that the pilot is competent in performing missed approaches, including missed approached from an ILS.

Description:
Upon reaching the missed approach point, execute the published missed approach procedure, or a procedure directed by ATC, by the nearly simultaneous increase in pitch attitude and addition of power, while retracting the flaps. After reaching positive rate of climb, gear is retracted and climb is continued. Climb speed should be Vy until reaching 1000' AGL then accelerate to 130KTS while following the missed approach procedure.

Acceptable Performance Guidelines:

1. Exhibits adequate knowledge of the elements related to missed approach procedures associated with standard instrument approaches, and ILS approaches.
2. Initiates the missed approach promptly by applying power, establishing a climb attitude, and reducing drag in accordance with the aircraft manufacturer's recommendations.
3. Reports to ATC beginning the missed approach procedure.
4. Complies with the published or alternate missed approach procedure.
5. Advises ATC anytime the aircraft is unable to comply with a clearance, restriction, or climb gradient.
6. Follows the recommended checklist items appropriate to the go-around procedure.
7. Requests, if appropriate, ATC clearance to the alternate airport, clearance limit, or as directed.
8. Maintains the recommended airspeed within 10 knots; heading, course, or bearing within 10°; and altitude(s) within 100 feet during the missed approach procedure.
9. Properly configures navigation and autoflight systems from VHF to RNAV during execution of the missed approach procedure.

Title: **Circling Approach**

References: 14 CFR parts 61, 91, and 97; FAA-H-8083-15, FAA-H-8083-16; AIM; TPP; Chart Supplements; SAFO 19001

Objective: To determine that the pilot is competent in performing Circling Approaches.

Description:
A circling approach is started from an instrument approach at a point where visual reference to the runway can be maintained. The circling minimums published on the instrument approach chart provide a minimum of 300 feet of obstacle clearance in the circling area. During a circling approach, you should maintain visual contact with the runway of intended landing and fly no lower than the circling minimums until you are in position to make a final descent for a landing. Remember—circling minimums are just that—minimums. If the ceiling allows it, fly at an altitude that more nearly approximates your VFR traffic pattern altitude. This will make any maneuvering safer and bring your view of the landing runway into a more normal perspective. Flaps are deployed at the point on the approach when a landing is assured. Gear is normally extended at the final approach fix, except in the case of an engine-out approach, when gear is extended when the landing is assured. The pilot should not dive at the runway when breaking clear of clouds at low attitudes. The circling maneuver must be discontinued and a missed approach initiated at any time visual reference to the runway is lost. In that instance, the initial turn to the missed approach heading shall be toward the direction of the runway.

Acceptable Performance Guidelines:

1. Exhibits adequate knowledge of the elements related to a circling approach procedure.
2. Selects and complies with the appropriate circling approach procedure considering turbulence and wind shear and considering the maneuvering capabilities of the aircraft.
3. Confirms the direction of traffic and adheres to all restrictions and instructions issued by ATC and the instructor.
4. Does not exceed the visibility criteria or descend below the appropriate circling altitude until in a position from which a descent to a normal landing can be made.
5. Maneuvers the aircraft, after reaching the authorized MDA and maintains that altitude within +100 feet -0 feet and a flight path that permits a normal landing on a runway at least 90° from the final approach course.

Title: **Normal and Crosswind Approach**

References: AC 61-67, AC 120-109; FAA-H-8083-2, FAA-H-8083-3; POH/AFM; Standard Descent Approach and Landing Profile

Objective: To determine that the pilot is competent in performing landings under all normally anticipated conditions and configurations.

Description:

The recommended method of correcting for a crosswind during approach and landing is to use the crab instead of a side-slip, until approaching a flare. Use rudder to align the longitudinal axis of the aircraft to be parallel with the centerline. Displace the aileron to control drift. 120KTS or more, depending on the conditions, should be the airspeed on final, bleeding off speed when a normal landing on the runway is assured. Approaches will be flown with no flaps until the airplane is in a position where the landing is assured.

All normal approaches to landings will be stabilized, power-on approaches. Final approach descents should be planned so as to cross the runway threshold at 50 feet AGL, and touchdown at the runway 1,000 foot touchdown zone marks or on a point specified by the instructor pilot +200/-0 feet. From the base leg turn onto final approach the airplane should maintain alignment with the extended centerline of the runway and the appropriate amount of drift correction applied and maintained for crosswinds. In crosswind conditions, a crab should be established on final approach, with constant corrections made for the wind as the approach continues.

As the airplane approaches the touchdown point, aligned with the centerline, smoothly retard power and slowly raise the pitch so that the main wheels touch first. After touchdown, gently lower the nose and maintain directional control with the rudder. After landing, apply braking as necessary, maintaining directional control, while displacing ailerons as necessary for the crosswind.

Care will be taken after landing to slow the aircraft almost to a full stop before making 90 degree taxi turns. This is vital to protect the nosegear from damage resulting from side loads. No configuration changes are to be made until after the aircraft clears the active runway, after which time the after landing checklist items may be performed. The "After Landing" checklist will not be accomplished until clear of the landing runway. When an SIC is present, crew coordination will be used.

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Normal and Crosswind Approach Acceptable Performance Guidelines (Continued):

Standard Descent Approach and Landing Profile

Proper establishment and use of approach power, configuration, and airspeed.

Maintenance of a stabilized approach angle and airspeed +/- 5 knots.

Verification of wind conditions and positive correction for crosswinds.

Maintenance of a precise ground track on final approach.

Smooth, timely, and precise control application during the approach, transition from approach to landing round-out (flare) and landing.

Prompt recognition and correction of deviations during approach and landing.

Smoothness at touchdown at the approximate airplane stalling speed, beyond and within 200 feet of a specified point.

Alignment with the centerline of the runway with no drifting or side loads on touchdown and rollout.

Maintenance of positive directional control and crosswind correction during the after landing roll.

Timely completion of the "After Landing" checklist.

Additional Criteria

Use of the checklists and CRM for crew coordination will be used.

The elimination of distractions and reduction of work load on final approach by accomplishing all pre-landing requirements prior to the completion of the turn to final approach.

Title: **Short Field Landing**

References: FAA-H-8083-2, FAA-H-8083-3; POH/AFM; AIM

Objective: To determine that the pilot is competent in performing short field landings with emphasis on proper use and coordination of flight controls, and selection of runway based on pilot capability, airplane performance and limitations, available distance, and wind.

Description:

All short-field approaches to landings will be stabilized, power-on approaches. Final approach descents should be planned so as to cross the runway threshold at 50 feet AGL, and touchdown at the runway within 200 feet of a point specified by the instructor pilot +200/-0 feet. From the base leg turn onto final approach the airplane should maintain alignment with the extended centerline of the runway and the appropriate amount of drift correction applied and maintained for crosswinds.

The selection of a suitable runway is based on pilot capability, airplane performance and limitations,
available distance, and wind, with consideration given to the effects of:
a. Crosswind,
b. Windshear,
c. Tailwind,
d. Wake turbulence and,
e. Runway surface/condition.

Include proper planning for:
a. Go-around and rejected landing and,
b. Land and hold short operations.

As the airplane approaches the touchdown point, aligned with the centerline, smoothly retard power and slowly raise the pitch so that the main wheels touch first. After touchdown, gently lower the nose and maintain directional control with the rudder. After landing, apply braking as necessary, maintaining directional control, while displacing ailerons as necessary for any crosswind which may be present.

Care will be taken after landing to slow the aircraft almost to a full stop before making 90 degree taxi turns. This is vital to protect the nosegear from damage resulting from side loads. No configuration changes are to be made until after the aircraft clears the active runway, after which time the after landing checklist items may be performed. The "After Landing" checklist will not be accomplished until clear of the landing runway. When an SIC is present, crew coordination will be used.

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Short-Field Landing (Continued):

Acceptable Performance Guidelines

1. Selection and aiming for a suitable touchdown point considering the wind, landing surface, and obstructions.

2. Establishing the recommended approach and landing configuration and airspeed, and adjusting pitch attitude and power as required to maintain a stabilized approach.

3. Maintaining the manufacturer's published approach airspeed or in its absence not more than 1.3 VSO, ±5 knots with wind gust factor applied.

4. Maintaining directional control and appropriate crosswind correction throughout the approach and landing.

5. Making smooth, timely, and correct control application during the round out and touchdown.

6. Touching down at a proper pitch attitude within 200 feet beyond or on the specified point, threshold markings, or runway numbers, with no side drift, minimum float, and with the airplane's longitudinal axis aligned with and over runway centerline.

7. Using the manufacturer's recommended procedures for airplane configuration and braking.

8. Executing a timely go-around if the approach cannot be made within the tolerances specified above or for any other condition that may result in an unsafe approach or landing.

9. Maintaining positive directional control and crosswind correction during the after landing roll, and timely completion of the "After Landing" checklist.

   <u>Additional Criteria</u>

   Use of the checklists and CRM for crew coordination will be used.

   The elimination of distractions and reduction of work load on final approach by accomplishingall pre-landing requirements prior to the completion of the turn to final approach.

Title: **Approaches and Landings with an Engine Inoperative**

References: AC 61-21, Airman Certification Standards: Commercial, ATP

Objective: To determine that the pilot is competent in performing landings with a power loss under all normally anticipated conditions.

Description:

The pilot will accomplish approaches and landings using limited or zero thrust on one engine. The engine malfunctions initiated by the instructor shall be of a simulated nature. No landings will intentionally be undertaken with any engines actually shut down.

A through pre-flight briefing must precede this lesson. The actions and duties of the instructor as well as the pilot must be completely understood or safety will be compromised.

The instructor will initiate the engine failure using the throttle. Immediately the pilot must begin the memorized engine failure checklist while controlling the heading, altitude and airspeed of the aircraft. The pilot should check the mixtures rich, props high rpm, throttles open, gear and flaps as required for the phase of flight, i.e. don't retract down and locked landing gear unless necessary for continued flight. Then the pilot should identify the malfunctioning powerplant and verify by closing, or at least checking the throttle on the identified engine closed. At this point, the pilot must decide if the engine should be immediately feathered and secured or if a restart might be possible or even desirable to attempt.

With plenty of altitude and airspeed, a safe restart attempt may be undertaken using the restart checklist. If the flight is not in a position for a safe restart attempt, the pilot shall again verify the effected engine throttle closed and grasp the prop control for the same engine moving it aft toward the feathered position approximately ¼ of its travel and touching the mixture of the identified engine. The purpose of this is to give the student as much actual experience with the sequence of events without actually shutting down the engine. The pilot shall also back up his actions with a verbal rendition of the checklist items as they are accomplished. After the pilot has touched the prop control and called "feather the (left/right) engine", the instructor shall adjust the throttle of the simulated feathered engine to approximate the drag reduction of a feathered propeller called zero thrust. This value is approximately 18" to 19" on the Cessna 414.
Consult the Zero Thrust Table from the Cessna POH to find the setting for your particular flight environment.

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Approaches and Landings with an Engine Inoperative (Continued):

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During this time the airplane must be keep under positive control at all times with an appropriate bank into the operating engine. A methodical approach to the checklist items and positive aircraft control will be stressed over the speed of checklist completion.

The aircraft will be maneuvered to a point from which a normal approach to the runway can be initiated. A normal approach profile should be used with only small modification if necessary to accommodate the performance limitations of the aircraft. The normal in range and pre-landing checklists shall be accomplished at the appropriate times. The instructor will control the throttle of the "dead" engine as the aircraft slows to maintain a zero thrust setting right through to touchdown. After touchdown, the instructor will close the throttle on the zero thrust engine as not to overtax the brakes. Full stop landings will be done to avoid going to takeoff thrust on a possibly over-cooled powerplant.

After landing, apply braking as necessary, maintaining directional control, while displacing ailerons as necessary for any crosswind. Care will be taken after landing to slow the aircraft almost to a full stop before making 90 degree taxi turns. This is vital to protect the nose gear from damage resulting from side loads.

No configuration changes are to be made until after the aircraft clears the active runway, after which time the after landing checklist items may be performed. The "After Landing" checklist will not be accomplished until clear of the landing runway. When an SIC is present, crew coordination will be used.

Acceptable Performance Guidelines:

Standard Descent Approach and Landing Profile

The pilot must demonstrate the following knowledge and aeronautical skills:

1. Exhibits adequate knowledge of the flight characteristics and controllability associated with maneuvering to a landing with (a) powerplant(s) inoperative (or simulated inoperative) including the controllability factors associated with maneuvering, and the applicable emergency procedures.

Approaches and Landings with an Engine Inoperative (Continued):

2. Maintains positive airplane control. Establishes a bank of approximately 5°, if required, or as recommended by the manufacturer, to maintain coordinated flight, and properly trims for that condition.
3. Sets powerplant controls, reduces drag as necessary, correctly identifies and verifies the inoperative powerplant(s) after the simulated failure.
4. Maintains the operating powerplant(s) within acceptable operating limits.
5. Follows the prescribed airplane checklist, and verifies the procedures for securing the inoperative powerplant(s).
6. Proceeds toward the nearest suitable airport.
7. Maintains, prior to beginning the final approach segment, the desired altitude ±100 feet, the desired airspeed ±10 knots, the desired heading ±5°; and accurately tracks courses, radials, and bearings.
8. Establishes the approach and landing configuration appropriate for the runway or landing area, and meteorological conditions; and adjusts the powerplant controls as required.
9. Maintains a stabilized approach and the desired airspeed/V-speed within ±5 knots.
10. Accomplishes a smooth, positively-controlled transition from final approach to touchdown.
11. Maintains positive directional control and crosswind corrections during the after-landing roll.
12. Uses wheel brakes as appropriate, in such a manner to bring the airplane to a safe stop after landing
13. Completes the after-landing checklist items in a timely manner, after clearing the runway, and as recommended by the manufacturer.

Additional Criteria

Use of the checklists and CRM for crew coordination will be used.

The elimination of distractions and reduction of work load on final approach by accomplishing all pre-landing requirements prior to the completion of the turn to final approach.

Title: **Approaches and Landings with Flap Malfunction**

Continued on next page

References: FAA-H-8083-2, FAA-H-8083-3; POH/AFM; SAFO 19001

Objective: To determine that the pilot is competent in performing landings with the installed lift devices malfunctioning under all normally anticipated conditions.

Description:

The pilot will accomplish approaches and landings using partial and no flaps as directed by the instructor. Emphasis shall be placed on knowledge of aircraft systems and performance considerations, planning and proper speed control.

A through preflight briefing for this lesson should include a discussion of the flap and any other installed lift modification device actuator system(s) including any fail safe systems, monitoring, power sources, normal and emergency operations and performance considerations including runway lengths and conditions. At no time shall any aircraft limitations be exceeded.

At any time before the pre-landing checklist the instructor will inform the pilot of the simulated malfunction to be practiced. The student must then determine the possible problems associated with this landing condition and any speed corrections, limitations or runway considerations required. Any required calculations, planning or crew briefing must be completed as soon as practical and in any case before turning final. The pilot may elect to leave the traffic pattern or abandon the approach to a safe area to complete this work. The crew must properly manage the distractions involved or safety will be compromised.

After the pre-landing work is completed, the pilot shall fly a normal approach profile in all respects. The recommended approach speed of 120 KTS shall be flown +/- 5 knots while the pilot carefully controls the flight path. Slips should not be used, as the Cessna 414 A has a 30 second slip limitation.

A full stop landing need not be accomplished at the discretion of the instructor. If landing is undertaken, the airplane should touchdown smoothly near the threshold. If stopping, the pilot must then use the available braking, to safely slow the aircraft under control without skidding or exceeding any published limitation.

Approaches and Landings with Flap Malfunction (Continued):

Caution: Observe all brake limits. These stops from higher than normal speeds will heat up the brakes possibly causing dangerous brake fade and/or damage. Do not practice these stops consecutively!

Acceptable Performance Guidelines:

The pilot must demonstrate the following knowledge and aeronautical skills:

1. Exhibits adequate knowledge of the factors which affect the flight characteristics of an airplane when full or partial flaps, leading edge flaps, and other similar devices become inoperative.
2. Uses the correct airspeeds/V-speeds for the approach and landing.
3. Maintains the proper airplane pitch attitude and flight path for the configuration, gross weight, surface winds, and other applicable operational considerations.
4. Uses runway of sufficient length for the zero or nonstandard flap condition.
5. Maneuvers the airplane to a point where, in the opinion of the instructor, touchdown at an acceptable point on the runway and a safe landing to a full stop could be made.
6. If a landing is made, uses wheel brakes as appropriate, in such a manner to bring the airplane to a safe stop.

Title: **Nonprecision Approaches, all may be with or without DME.**

References: 14 CFR parts 61 and 91; AC 120-108; FAA-H-8083-15, FAA-H-8083-16;
TPP, AIM; Chart Supplements

Objective: To determine that the pilot can execute safe and accurate nonprecision instrument approaches under all normal conditions and with a simulated powerplant failure and/or partial flight instrument failure.

Description:

The GPS approach procedure described here will serve as an example of procedures to be followed in the practice of other nonprecision approaches qualified under Operations Specifications in effect at the time the training is completed.

The pilot will demonstrate published GPS and other assigned nonprecision instrument approach procedures. These may be combined with simulated engine out emergency procedures and/or failure of the vacuum or electrically driven flight instruments. Normal ATC procedures will be followed using the appropriate ATC and navigational facilities. The instructor pilot or ATC will clear the pilot's aircraft for the GPS approach. The marker beacon receiver audio will be turned on; the GPS turned on and set to the proper approach, and checked. In the case of an NDB approach, the ADF receiver has no off flag, so the identifier will be left on low audio. The other available NAV receiver(s) will be tuned and identified as necessary to provide fix information along the approach course and/or missed approach facilities, as required. The "Approach" checklist should be completed during the intermediate approach segment. The GPS approach procedure will be demonstrated with and without the use of ATC radar vectors to final approach.

Prior to reaching the final approach point or fix inbound, the pilot shall verbally verify with the instructor pilot, the field elevation, minimum descent altitude (MDA), and the missed approach instructions/procedures. If the assigned missed approach instructions differ from the published procedure, the ATC assigned instructions will be reviewed.

Continued on next page

Nonprecision Approaches, all may be with or without DME. (Continued):

At the final approach fix, a timer should be started, the landing gear will be extended, and the "Before Landing" checklist completed with the exception of full wing flaps, which will be delayed until landing is assured. After passing the final approach fix the approach airspeed of 120 KTS should be maintained. At the MDA and before the missed approach point, the instructor pilot will either call “field in sight”, in which case the student is expected to execute a normal landing, touch and go, or stop and go as directed, or, the student is expected to execute the assigned missed approach procedure immediately upon reaching the missed approach point.

Note: One engine inoperative approach procedures remain the same. The landing gear is extended at the final approach fix/point when maneuvering with both engines. In the case of a single-engine circling approach, the gear should be extended during the circling approach at a point where the aircraft is in a position to maneuver safely on one powerplant in at the current gross weight and atmospheric conditions.

Acceptable Performance Guidelines:

Standard Descent Approach and Landing Profile

Compliance with all clearances issued by ATC and/or the instructor pilot.

Prompt advising of the instructor pilot anytime the airplane is unable to comply with a clearance.

When required, establishment and maintenance of 2-way radio communications with ATC using proper phraseology and technique.

Establishment of the proper aircraft configuration and airspeed and timely completion of the aircraft checklist items appropriate to the phase of flight.

Continued on next page

Nonprecision Approaches, all may be with or without DME Acceptable Performance Guidelines (Continued):

Prior to the F.A.F./F.A.P. maintenance of:

Altitude +/- 100 feet
Airspeed +/- 10 knots
Headings or courses +/- 10 degrees.

Prompt and correct selection, tuning, and identification of ground navigational equipment, and confirmation of its operational status prior to using the approach procedure.

Application of adjustments to the published MDA and visibility criteria for the aircraft approach category when required by approach speeds, weather, data received, inoperative navigational or visual aids, inoperative equipment, and published NOTAMS.

Establishment of an appropriate rate of descent in a timely fashion at the proper fixes along the approach course.

From the FAF/FAP inbound less than 10 degrees off the desired bearing or less than full scale deflection of the CDI and maintenance of airspeeds +/- 10 knots of that approach airspeed assigned/used.**

Avoidance of descent below MDA (–0/+100 feet) BEFORE INITIATION OF A MISSED APPROACH procedure and when, at the MDA, the required visual references for the intended landing runway are not identifiable and clearly visible.

Immediate initiation of the appropriate missed approach procedure at the MAP when the runway environment is not visible. Smooth transition to a normal landing approach when the aircraft is in a position to make a landing on the intended runway using normal maneuvering.

Continued on next page

Nonprecision Approaches, all may be with or without DME Acceptable Performance Guidelines (Continued):

ADDITIONAL CRITERIA

**If the pilot holds an ATP Certificate ATP standards for maintenance of the final approach course apply, i.e., no more than one quarter scale deviation of the CDI, and MDA altitude –0/+50 feet.

Use the engine-out procedure consistent with airplane performance to maintain the appropriate approach airspeeds. Approach airspeed in an engine-inoperative approach will be 120 KTS.

The missed approach procedure, either single engine or with both engines operating, when a missed approach checklist is not published, will be:

Upon reaching the missed approach point, execute the published missed approach procedure, or a procedure directed by ATC, by the nearly simultaneous increase in pi
AGL then accelerate to 130KTS while following the missed approach procedure.

Title: **Unusual Attitude Recovery**

References: 14 CFR part 61; AC 120-111; FAA-H-8083-2, FAA-H-8083-15; POH/AFM

Objective: To ensure that the pilot is competent in recognition of and recovery from unusual attitude recovery, and to execute the proper course of action for immediate recovery.

Description:

An unusual attitude recovery shall be given at an altitude consistent with a safe recovery by the instructor, if the student is unable to make a proper recovery. The student must recognize the attitude and respond correctly. Instructors shall observe the minimum safe altitudes for this event.
The unusual attitude recovery shall be initiated after performing the necessary clearing turns. Have the student close the eyes, and look directly down or directly up. Instruct the student to maneuver the airplane while looking outside for other traffic, and monitoring the aircraft attitude. At the point when the aircraft reaches an unusual attitude, have the student recover solely by reference to instruments.

Acceptable Performance Guidelines:

1. Exhibits adequate knowledge of the elements relating to attitude instrument flying during recovery from unusual flight attitudes (both nose-high and nose-low).

2. Uses proper instrument cross-check and interpretation, and applies the appropriate pitch, bank, and power corrections in the correct sequence to return the aircraft to a stabilized level flight attitude.

Title: **Windshear/Microburst Encounter During a Critical Phase of Flight**

References: AC 61-21, AC 00-54

Objective: To ensure that the pilot is competent in recognition of and recovery from shear induced loss of performance under all anticipated conditions, and to execute an alternate course of action after warning signs of possible windshear and or microburst.

Description:

After a normal instrument approach has begun, the instructor will announce a simulated weather report such as "Multiple wind shear alerts. Runway 31 arrival, windshear alert, 40 kt gain on runway; runway 13 departure, wind shear alert, 20 kt gain on runway, wind 250 at 30." The pilot shall then smoothly and efficiently abort the approach and advise the alternate course of action. Avoidance is emphasized as the best defense against the hazards of low altitude windshear. As part of ground training, the pilot pilot will have a strong background in the conditions that induce or accentuate windshear, recognition of these conditions, resources available to a pilot to aid in recognition and qualification of shear associated hazards, techniques for avoiding such hazards and procedures for surviving inadvertent encounters with windshear.

NOTE: Pilots that receive advanced simulator training will receive instruction in realistic windshear recognition and recovery practice.

Title: **C-414 STANDARD OPERATING PROCEDURES**

Objective: To ensure that the Flightcrew is competent in the performance of all standardized profiles, including start, taxi, takeoff, climb, cruise, descent approach, landing and after landing procedures.

Description:

Effective crew coordination is essential in routine operations to develop habit patterns required to ensure safety. Standard call outs shall be used to maintain conformity among all flight crewmembers. These procedures have been established to ensure that there is never any doubt at any time about who is the pilot flying (PF) and who is the pilot monitoring (PM) . The PM shall monitor and assist the PF by making call outs for each significant transition point, event, or specified condition, and by performing actions requested by the PF, and by responding in accordance with standard callouts. If the primary responsibility for controlling the aircraft is transferred from one pilot to the other during flight, the procedure is a standard call out: ***"Your Controls"*** followed by the acknowledgment ***"My Controls"*** when positive transfer has occurred. The purpose of this standard procedure is to assure a clear understanding of who is flying the aircraft.

Checklist Procedures:
The Challenge & Response method shall be used for running checklists with two-pilot crews. The pilot flying shall call for the checklist. The PM shall read the checklist items. The PF shall state the response. When checklist is completed, PM shall state "Checklist Completed".

PF's operating as a single pilot will use flow-pattern with checklist verification for running checklists. The same checklist will be used for both two-pilot and single-pilot operations to maintain consistency. These methods are established to ensure that all actions required for a particular flight are properly performed and that no items on the checklist are missed.

Flow & verification is designed to minimize head-down in the cockpit without lessening the effectiveness of cockpit check procedures, and incorporate the following principles:

(a) The checklist shall be used to confirm the completion of a flow pattern, when operating with a single-pilot flying.
(b) The flow-pattern with checklist verification is designed so that the pilot will be looking inside only for very short periods of time.

(c) The flow-pattern with checklist verification also minimizes the cockpit checking which must be done at critical times and in a high workload environment.
(d) Operating procedures are arranged to enhance safety during critical phases of flight, such as arrival and departure.

Stabilized Approach Concept. All approaches must be conducted in accordance with the stabilized approach concept. In instrument weather conditions, a pilot must continuously assess instrument information throughout an approach to properly maneuver the aircraft (or monitor Autopilot performance) and to decide on the proper course of action at the decision point (DH or MDA/MAP).

NOTE: The Cessna 414 has a split-flap system, which is designed for drag only. For this reason the procedure is to keep the flaps up until the landing is assured. This procedure permits minimum drag during maneuvering for approach procedures, and permits operation of the autopilot during an approach.
Maintaining a stable speed, descent rate, vertical flight path, and aircraft configuration is a procedure commonly referred to as the stabilized approach concept. A stabilized approach is essential for safe operations. Configuration changes at low altitude should be limited to those changes which can be easily accommodated without adversely affecting pilot workload. A stabilized approach means that the aircraft must be in approach configuration, must maintain the proper approach speed, and must be established on the proper flight path before descending below the following minimum stabilized approach altitudes:
500 feet above the airport elevation during VFR or visual approaches and during straight-in instrument approaches in VFR weather conditions;
MDA or 500 feet above airport elevation, whichever is lower, if a circling maneuver is to be conducted after completing an instrument approach;
1000 feet above the airport or touchdown zone elevation during any straight-in instrument approach in instrument flight conditions;
1000 feet above the airport during contact approaches.
These conditions must be maintained throughout the approach for it to be considered a stabilized approach.

If the aircraft approach is not stabilized: On Glideslope or Glidepath; On Speed; Configured; Checklist Complete" by 500' then a mandatory go around is required.

Checklist Completion: For all approaches conducted in instrument conditions, the Before Landing Checklist down to Flaps, must be completed before the aircraft passes 1000 feet above the touchdown elevation. For approaches conducted in VFR conditions, all checklist items must be completed before passing 500 above the touchdown zone elevation.

Standard call outs:
Standard call outs for basic IFR operations are established to ensure that the Flightcrew functions as a well-coordinated team and maintains the situational awareness necessary for safe operation of the aircraft. The PM is assigned the responsibility for monitoring the flight progress and for providing call outs to the PF for each significant transition point, event, or failure condition. The following PM call outs are used as Standard Operating Procedures:
(a) During climb to assigned altitude, the PM calls out "***one to go***" when passing one thousand feet above or below assigned altitude and/or "***Altimeter Set L or R***" through 18,000 feet (as a reminder to reset the altimeters).

(b) During cruise, the PM shall call out "***altitude***" when the aircraft altitude deviates by 100 feet or more from the assigned altitude.

(c) During descent from cruise altitude, the PM shall call out "***Altimeter Set L or R***" at flight level 180 and "***one to go***" at 1000 feet above the assigned altitude.

(d) At 1000 feet above the runway the PM will call out ***"1000 feet"*** and check the altimeter settings and instrument indications and to confirm the status of warning flags for the flight and navigation instruments and other critical systems. During flight director or coupled approaches, proper flight director and/or Autopilot mode engagement and lateral and/or vertical navigational signal tracking is also confirmed.

(e) Rate of Descent call outs. If the flight altitude is less than 2000 feet above ground level and when the rate of descent exceeds 1200 feet per minute the PM shall call ***"Sink Rate"***.

(f) Altitude call outs. For approaches conducted in instrument conditions, the PM shall call **"*200 above", "100 above",*** and ***"minimums"*** as appropriate. Either pilot shall call ***"missed approach"*** if visual contact is lost with the runway at any time after reaching minimums.

(g) Airspeed call out. The PM shall call ***"airspeed"*** at any point in the approach when the airspeed is 5 knots below or 10 knots above the planned speed for the existing aircraft configuration.

(h) Approach Profile call out. The PM shall call out if the aircraft deviates from the proper approach profile during any portion of an instrument approach. Furthermore, the PM shall call **"*localizer*" "*glideslope*"** or ***"glidepath"*** as appropriate if the localizer or glideslope displacement exceeds one dot. For non-precision approaches, a call out shall be made if the displacement exceeds one dot during the final approach segment.

½ dot below glideslope or gradient path approaching FAF gear down.

(i) Visual Cue call out. PM shall call when the visual cues required to continue the approach by visual reference are acquired, such as ***"approach lights"*** or ***"runway in sight"***. When the PM calls ***"runway in sight"*** the PF shall call ***"Going Visual."*** This is an instruction to the PM to begin monitoring glideslope and localizer course, while the PF controls the aircraft with reference to the landing environment. In the event the landing environment is lost after transitioning to visual, ***"missed approach"*** will be immediately called out and executed.
(k) Missed Approach call out. The first person to recognize loosing the runway environment calls ***"missed approach"*** **THIS IS A NO-DISCUSSION CALL.**

(l) Departure Briefing. (*The pilot flying the leg will give the briefing.)*
PF:
"In the event of a rejected takeoff, I will stop the aircraft and you notify tower or traffic (as applicable). For a normal takeoff the first heading is ___ and the first altitude is ____. In the event of an emergency return, we will use runway ___." (other details may be added as appropriate, such as departure procedure, departure route, obstructions, etc.)
PM:
"In the event of a rejected takeoff, you stop the aircraft and I will notify the tower (if applicable). For a normal takeoff the first heading is ___ and the first altitude is ____. In the event of an emergency return, we will use runway ___." (other details may be added as appropriate)

Starting, Taxiing, Takeoffs and Landings:
The PF will always perform the engine start and shutdown sequences, with the PM assisting by clearing the area before starting, and monitoring engine instruments after starting. During the PM's flight leg, the PM should taxi, takeoff, and land, with the PF assisting as necessary.

Use of Autopilot by SIC:
SIC's should use the Autopilot whenever necessary, by coordinating with the PF for mode selection on the altitude selector-alerter (ASA), and for disconnection.

Use of Lights:
Anti-collision lights shall be turned on prior to entering the runway, and shall remain on except while operating in IMC where flashing lights can be a distraction to the flight crew. Landing lights shall be turned on prior to landing at night. Recognition lights, if installed, shall be turned on when entering the runway for takeoff, and during approach when making the first call on CTAF or tower. The taxi light shall be turned on during taxi, with the only exception being on ramps or in the vicinity of personnel sensitive to bright lights, such as during nighttime operations near people who may be adjusting to the nighttime environment.

Areas of Control:
The PF is responsible for operating all controls, switches, buttons or levers located on the left side of the throttle quadrant. The SIC is responsible for operating all controls, switches, buttons or levers located on the right side of the throttle quadrant, except for the trim wheel. The avionics in the center panel may be operated by either crewmember.

Fuel Pumps:
Electric boost pumps shall be placed in the low position prior to takeoff and shall remain on during all phases of flight. Electric boost pumps shall be returned to the off position after landing and clearing the runway.

Landing Gear:
Upon achieving a positive rate of climb, as indicated on the VSI, the landing gear will be retracted by the PF when the PM calls ***"Positive Rate."***

Flaps:
Flaps shall be extended by the PM when the PF calls ***"Flaps 15", "Flaps 30"*** or ***"Flaps full."***

Approach and Missed Approach Preparation: Before executing any instrument approach procedure, the PF shall brief the approach. The briefing shall include at least the approach to be flown, navigation facility frequencies, the final approach course, the minimum safe altitude (MSA), the minimum descent altitude (MDA) or decision height (DH), the controlling minimums, the field elevation, and the missed approach procedure. Both pilots shall review the approach procedure before the final approach fix.

Standard Cockpit Procedures and Flows:
The PM operates and sets the communications and navigation radios. The PF can either set or request that certain receivers be set.

PM's Cockpit Preparation Flow:
This flow starts on the right, moves forward, then to the left.

Window	CHECK
Circuit Breaker Panel	CHECK

PF's Cockpit Preparation Flow:
This flow starts on the floor, moves up the pedestal, and then to the left.

Emergency Crossfeed Shutoff	OPEN
Fuel Selectors	MAIN TANKS
Cowl Flaps	OPEN
Yaw Damper	OFF
Trim	SET
Mixtures	FULL RICH
Props	HIGH RPM
Throttles Full Open for Cold Start Prime	
Throttles ½" Open for Hot Start	
Throttles Full Closed if Heat Soaked	
Gear Switch	DOWN
Air Conditioning Switch	OFF
Dump Valves /Alternate Air	IN
Parking Brake	SET
Magneto Switches	ON
Battery and Alternator Switches	ON
Nav Lights	ON
Fuel Quantity Gauges	CHECK
Gear Position Lights	CHECK
Circuit Breaker Panel	CHECK
Prop and Blast Areas	CLEAR

Engine Starting Procedure:
Boost Pumps:
If Cold Start:
Prime 1 second then reduce throttle to ½" open. Start engine, holding primer switch toward that side while starting. When engine starts, release button and switch. Switch electric pump off. Repeat for other engine.
If Hot Start:
Set Throttles ½" open and Start Engine. Switch electric pump on LOW, modulate throttle for smooth operation. Switch electric pump off. Repeat for other engine.

If Heat Soaked:
Close throttles and mixtures. Switch electric pumps on HIGH for 1 minute. After one minute, switch pumps to LOW, open throttle 1" start engine, and slowly advance mixture until engine starts. Immediately retard throttle. Switch electric pump off. Repeat for other engine.

Oil Pressure	25 PSI within 30 Seconds
Engine Indicators	CHECK

After Starting:

If Engines are Warm	SET MIXTURE FOR TAXI
Air Conditioning or Heating	ON AS REQUIRED
Avionics Power	ON
Audio Panel	SET
Altimeters (ASA, ALT, GX50)	SET
Lights	AS REQUIRED

PM:

Altimeters	SET
Monitor Ramp Environment	

PM:

ATIS/ASOS/AWOS/ UNICOM	Listen

The #1 Nav/Comm is used for CTAF, Tower, Ground, Approach, and Center.
The #2 Nav/Comm is used for ATIS/ASOS/AWOS/UNICOM, FSS, and Clearance.

Taxi-Out:
A current taxi chart shall be available for the pilot's use during taxi.
Release parking brake, smoothly increase power to the minimum required for the airplane to roll forward, and reduce power to idle. When clear of congested areas, continue using minimum power for taxi. ***Always close throttles completely prior to applying brakes.*** Good taxi technique requires an awareness of the proximity of obstacles, the possibility of thrust causing damage or kicking up dust into hangars, and consideration for avoiding moving the props over standing water. Make all turns with as large a radius as possible. After completing a turn and before stopping, return the nosewheel to center, and roll forward enough to allow it to center, relieving tire and structural twisting stresses. At idle power, the airplane may accelerate to a higher taxi speed than desired. Do not ride the brakes to prevent high taxi speed. Allow the airplane to accelerate, then brake smoothly to a slow taxi speed, release the brakes smoothly and repeat the sequence. Intermittent brake usage allows the brakes to cool between brake applications.

Prior to or during taxi, the PF shall set the heading bug to the departure runway, set the altitude alerter to the initial altitude, and select the desired modes on the autopilot/flight director and navigation source selector. *(After lining up on the runway, the PF will reset the heading bug on the HSI to the departure heading.)*

PF during Taxi:
Check Flight Controls.

PM during Taxi:
Sets GPS for departure, enroute and destination and sets Nav/Comm for departure. Verifies waypoints, airways, altitudes and frequencies with PF.

PF during Run-up:
Set the parking brake, check engine instruments, set power to 1500, Exercise props: Set power to 1700, check mags, check suction, check electrical, check annunciators.

PM during Run-up:
Verify that all checklist items are completed.

Below the Line: *(This call refers to the items on the checklist located below the "Cleared For Takeoff" line items.)*
The PF calls ***"below the line"*** when cleared for takeoff, or when ready to taxi on to the runway at an uncontrolled field. The PM then sets the transponder to ALT, verifies flaps are up, and the trims are set for takeoff. The PM then verifies the PF's items are completed. The PF verifies the PM items are properly set and checks that electric pumps set to LOW, and lights are on.

Line-up Check:
After lining up on the runway, the PF and PM confirm the aircraft is located on the correct runway, and then will confirm their bugs are set to either the runway or the departure heading.

For PM Departures:
The PM will advance the throttles to full power, call ***"Set Power"***, and then release the throttles. The PF will take control of the throttles and fine tune the power controls as needed. When the PF calls ***"positive rate"*** the PM then calls ***"Gear Up"*** and the PF will release the throttles to raise the gear while the PM returns hands back on the throttles until after the first power reduction. Either pilot can call ***"Abort"*** but only the PF will close the throttles and stop the aircraft.

For all Departures:
A rolling takeoff is recommended. After setting power, the PM will check the engine instruments, and continue to monitor engine instruments and annunciator during the takeoff roll. The PM calls ***"Power Normal"*** or ***"Abort"*** if necessary. The PM calls ***"80 knots,"*** and ***"Positive Rates,"*** while continuing to monitor both altimeters, engine instruments and annunciators. The PF should apply elevator pressure as the airplane continues to accelerate past 80 knots. Elevator pressure should be sufficient to bring the airplane into ground-effect for faster acceleration. The PF shall leave ground-effect at blue-line and climb at blue-line to 1000 AGL. The PF will apply the brakes momentarily prior to retracting the gear. After 1000 AGL the PF will accelerate to 130 knots climb speed.

The PF calls for the After Takeoff Check when climbing past 1000 AGL.

Fuel Crossfeed:
During fuel cross feeding, place the RAM Card (or equivalent side card) on the throttle quadrant as a reminder that cross feeding is in progress. Remove the card when Crossfeed is complete. The throttle quadrant shall be kept clear, except during cross feeding.

C-414 PF/PM STANDARD CALL OUTS		
Condition / Location		**Pilot Monitoring Call Out**
Engine Starting	During Engine Start	"oil pressure"
	During Takeoff	"power normal" or "abort"
		"80 Kts"
	Positive Rate After Takeoff or during Missed Approach	"positive rate"
Anytime	Airspeed 5 knots or more below target airspeed	"airspeed"
	Altitude 200 feet above or below target	"altitude"
Climb	1000 ft below assigned altitude	"one to go"
Climb/ Descent	Approaching Transition Altitude/Flight Level	"altimeters set"
Descent	1000 ft above assigned altitude	"one thousand to go"
	VSI exceeds 1200 feet per minute	"sink rate"

Condition / Location		**Pilot Monitoring Call Out**
Approach	First Positive Inward motion of localizer needle	"localizer alive" (when captured, "localizer" or "course" captured")
	First Positive motion of glideslope needle	"glideslope alive" (when captured, "glideslope" or "glidepath" captured")
	1000 above the runway	"One Thousand Feet, instruments normal"
	If more that one dot from GS	"glideslope" or "glidepath"
	If more that one dot from Localizer	"localizer" or "course"
	Visual Descent Point	"VDP"
	200' above minimums	"200' above"
	100' above minimums	"100' above"
	Reaching Decision Height, Minimum Descent Altitude, or Missed Approach Point	"minimums" or "approach/lights" or "runway in sight" or "no runway"
	Loosing Runway Environment	"missed approach"
Transfer of Controls		Pilot flying ***"Your Controls"*** followed by pilot monitoring acknowledgment ***"My Controls"***