

ABC Airsports

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Tasks for MEL add on to SEL commercial

Based on FAA ACS June 2018

Feb. 5th 2019

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Based on commercial ACS version FAA-S-ACS-7A June 2018 Table page A-14

Addition of a MEL to an existing commercial SEL pilot certificate.

Areas of operation:

I - F,G

II - A,C,F

III - None

IV - A,B,E,F

V - A

VI - None

VII - All

VIII - None

IX - A,C,E,F,G

X - All

XI - None

Addition of an Airplane Multiengine Land Rating to an existing Commercial Pilot Certificate

Required Tasks are indicated by either the Task letter(s) that apply(s) or an indication that all or none of the Tasks must be tested based on the notes in each Area of Operation.

Commercial Pilot Rating(s) Held

Areas of Operation	ASEL	ASES	AMES	RH	RG	Glider	Balloon	Airship
I	F,G	F,G	F,G	F,G	F,G	D,F,G	D,F,G	D,F,G
II	A,C,F	A,C,D,F	A,D,F	A,B,C,D,F	A,B,C,D,F	A,B,C,D,F	A,B,C,D,F	A,B,C,D,F
III	None	B	B	B	B	B	B	B
IV	A,B,E,F	A,B,E,F	A,B,E,F	A,B,E,F,N	A,B,E,F,N	A,B,E,F,N	A,B,E,F,N	A,B,E,F,N
V	A	A	None	A	A	A	A	A
VI	None	None	None	None	None	All	All	None
VII	All	All	None	All	All	All	All	All
VIII	None	None	None	All	All	All	All	All
IX	A,C,E,F,G	A,C,E,F,G	None	A,C,E,F,G	A,C,E,F,G	A,C,E,F,G	A,C,E,F,G	A,C,E,F,G
X*	All	All	None	All	All	All	All	All
XI	None	A	A	A	A	A	A	A

* Tasks C and D are not required for applicants who are instrument-rated and who have previously demonstrated instrument proficiency in a multiengine airplane or for applicants who do not hold an instrument rating.

I. Preflight Preparation

Task	F. Performance and Limitations
References	FAA-H-8083-1, FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-25; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with operating an airplane safely within the parameters of its performance capabilities and limitations.
Knowledge	The applicant demonstrates understanding of:
CA.I.F.K1	Elements related to performance and limitations by explaining the use of charts, tables, and data to determine performance.
CA.I.F.K2	Factors affecting performance, to include:
CA.I.F.K2a	a. Atmospheric conditions
CA.I.F.K2b	b. Pilot technique
CA.I.F.K2c	c. Airplane configuration
CA.I.F.K2d	d. Airport environment
CA.I.F.K2e	e. Loading (e.g., center of gravity)
CA.I.F.K2f	f. Weight and balance
CA.I.F.K3	Aerodynamics.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.I.F.R1	Inaccurate use of manufacturer's performance charts, tables, and data.
CA.I.F.R2	Exceeding airplane limitations.
CA.I.F.R3	Possible differences between calculated performance and actual performance.
Skills	The applicant demonstrates the ability to:
CA.I.F.S1	Compute the weight and balance, correct out-of-center of gravity (CG) loading errors and determine if the weight and balance remains within limits during all phases of flight.
CA.I.F.S2	Demonstrate use of the appropriate airplane manufacturer's approved performance charts, tables, and data.

I. Preflight Preparation

Task	G. Operation of Systems
References	FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-23, FAA-H-8083-25; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with the safe operation of systems on the airplane provided for the flight test.
Knowledge	The applicant demonstrates understanding of:
<i>CA.I.G.K1</i>	Airplane systems, to include: Note: <i>If K1 is selected, the evaluator must assess the applicant's knowledge of at least three of the following sub-elements.</i>
<i>CA.I.G.K1a</i>	a. Primary flight controls
<i>CA.I.G.K1b</i>	b. Secondary flight controls
<i>CA.I.G.K1c</i>	c. Powerplant and propeller
<i>CA.I.G.K1d</i>	d. Landing gear
<i>CA.I.G.K1e</i>	e. Fuel, oil, and hydraulic
<i>CA.I.G.K1f</i>	f. Electrical
<i>CA.I.G.K1g</i>	g. Avionics
<i>CA.I.G.K1h</i>	h. Pitot-static, vacuum/pressure, and associated flight instruments
<i>CA.I.G.K1i</i>	i. Environmental
<i>CA.I.G.K1j</i>	j. Deicing and anti-icing
<i>CA.I.G.K1k</i>	k. Water rudders (ASES, AMES)
<i>CA.I.G.K1l</i>	l. Oxygen system
<i>CA.I.G.K2</i>	Indications of and procedures for managing system abnormalities or failures.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
<i>CA.I.G.R1</i>	Failure to detect system malfunctions or failures.
<i>CA.I.G.R2</i>	Improper management of a system failure.
<i>CA.I.G.R3</i>	Failure to monitor and manage automated systems.
Skills	The applicant demonstrates the ability to:
<i>CA.I.G.S1</i>	Explain and operate at least three of the systems listed in K1a through K1l above.
<i>CA.I.G.S2</i>	Use appropriate checklists properly.

II. Preflight Procedures

Task	A. Preflight Assessment
References	FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-23; POH/AFM; AC 00-6
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with preparing for safe flight.
Knowledge	The applicant demonstrates understanding of:
CA.II.A.K1	Pilot self-assessment.
CA.II.A.K2	Determining that the airplane to be used is appropriate and airworthy.
CA.II.A.K3	Airplane preflight inspection including:
CA.II.A.K3a	a. Which items must be inspected
CA.II.A.K3b	b. The reasons for checking each item
CA.II.A.K3c	c. How to detect possible defects
CA.II.A.K3d	d. The associated regulations
CA.II.A.K4	Environmental factors including weather, terrain, route selection, and obstructions.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.II.A.R1	Pilot.
CA.II.A.R2	Aircraft.
CA.II.A.R3	Environment (e.g., weather, airports, airspace, terrain, obstacles).
CA.II.A.R4	External pressures.
CA.II.A.R5	Aviation security concerns.
Skills	The applicant demonstrates the ability to:
CA.II.A.S1	Inspect the airplane with reference to an appropriate checklist.
CA.II.A.S2	Verify the airplane is in condition for safe flight and conforms to its type design.

II. Preflight Procedures

Task	C. Engine Starting
References	FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-25; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with recommended engine starting procedures.
Knowledge	The applicant demonstrates understanding of:
CA.II.C.K1	Starting under various conditions.
CA.II.C.K2	Starting the engine(s) by use of external power.
CA.II.C.K3	Engine limitations as they relate to starting.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.II.C.R1	Propeller safety.
Skills	The applicant demonstrates the ability to:
CA.II.C.S1	Position the airplane properly considering structures, other aircraft, wind, and the safety of nearby persons and property.
CA.II.C.S2	Complete the appropriate checklist.

II. Preflight Procedures

Task	F. Before Takeoff Check
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 the before takeoff check.
Knowledge	The applicant demonstrates understanding of:
CA.II.F.K1	Purpose of pre-takeoff checklist items including:
CA.II.F.K1a	a. Reasons for checking each item
CA.II.F.K1b	b. Detecting malfunctions
CA.II.F.K1c	c. Ensuring the airplane is in safe operating condition as recommended by the manufacturer
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.II.F.R1	Division of attention while conducting pre-flight checks.
CA.II.F.R2	Unexpected runway changes by ATC.
CA.II.F.R3	Wake turbulence.
Skills	The applicant demonstrates the ability to:
CA.II.F.S1	Review takeoff performance.
CA.II.F.S2	Complete the appropriate checklist.
CA.II.F.S3	Properly position the airplane considering other aircraft, vessels, and wind.
CA.II.F.S4	Divide attention inside and outside the flight deck.
CA.II.F.S5	Verify that engine parameters and airplane configuration are suitable.

IV. Takeoffs, Landings, and Go-Arounds

Task	A. Normal Takeoff and Climb
References	FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-23; POH/AFM; AIM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with a normal takeoff, climb operations, and rejected takeoff procedures. <i>Note: If a crosswind condition does not exist, the applicant's knowledge of crosswind elements must be evaluated through oral testing.</i>
Knowledge	The applicant demonstrates understanding of:
CA.IV.A.K1	Effects of atmospheric conditions, including wind, on takeoff and climb performance.
CA.IV.A.K2	V_x and V_y .
CA.IV.A.K3	Appropriate airplane configuration.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.IV.A.R1	Selection of runway based on pilot capability, airplane performance and limitations, available distance, and wind.
CA.IV.A.R2	Effects of:
CA.IV.A.R2a	a. Crosswind
CA.IV.A.R2b	b. Windshear
CA.IV.A.R2c	c. Tailwind
CA.IV.A.R2d	d. Wake turbulence
CA.IV.A.R2e	e. Runway surface/condition
CA.IV.A.R3	Abnormal operations, to include planning for:
CA.IV.A.R3a	a. Rejected takeoff
CA.IV.A.R3b	b. Engine failure in takeoff/climb phase of flight
CA.IV.A.R4	Collision hazards, to include aircraft, vehicles, vessels, persons, wildlife, terrain, obstacles, and wires.
CA.IV.A.R5	Low altitude maneuvering including, stall, spin, or CFIT.
CA.IV.A.R6	Distractions, loss of situational awareness, and/or improper task management.
Skills	The applicant demonstrates the ability to:
CA.IV.A.S1	Complete the appropriate checklist.
CA.IV.A.S2	Make radio calls as appropriate.
CA.IV.A.S3	Verify assigned/correct runway.
CA.IV.A.S4	Ascertain wind direction with or without visible wind direction indicators.
CA.IV.A.S5	Position the flight controls for the existing wind conditions.
CA.IV.A.S6	Clear the area; taxi into takeoff position and align the airplane on the runway centerline (ASEL, AMEL) or takeoff path (ASES, AMES).
CA.IV.A.S7	Confirm takeoff power and proper engine and flight instrument indications prior to rotation (ASEL, AMEL).
CA.IV.A.S8	Rotate and lift off at the recommended airspeed and accelerate to V_y .
CA.IV.A.S9	Retract the water rudders, as appropriate, establish and maintain the most efficient planing/lift-off attitude, and correct for porpoising and skipping (ASES, AMES).
CA.IV.A.S10	Establish a pitch attitude to maintain the manufacturer's recommended speed or $V_y \pm 5$ knots.
CA.IV.A.S11	Configure the airplane in accordance with manufacturer's guidance.
CA.IV.A.S12	Maintain $V_y \pm 5$ knots to a safe maneuvering altitude.
CA.IV.A.S13	Maintain directional control and proper wind-drift correction throughout takeoff and climb.
CA.IV.A.S14	Comply with noise abatement procedures.

IV. Takeoffs, Landings, and Go-Arounds

Task	B. Normal Approach and Landing
References	FAA-H-8083-2, FAA-H-8083-3, FAA-H-8083-23; POH/AFM; AIM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with a normal approach and landing with emphasis on proper use and coordination of flight controls. <i>Note: If a crosswind condition does not exist, the applicant's knowledge of crosswind elements must be evaluated through oral testing.</i>
Knowledge	The applicant demonstrates understanding of:
CA.IV.B.K1	A stabilized approach, to include energy management concepts.
CA.IV.B.K2	Effects of atmospheric conditions, including wind, on approach and landing performance.
CA.IV.B.K3	Wind correction techniques on approach and landing.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.IV.B.R1	Selection of runway based on pilot capability, airplane performance and limitations, available distance, and wind.
CA.IV.B.R2	Effects of:
CA.IV.B.R2a	a. Crosswind
CA.IV.B.R2b	b. Windshear
CA.IV.B.R2c	c. Tailwind
CA.IV.B.R2d	d. Wake turbulence
CA.IV.B.R2e	e. Runway surface/condition
CA.IV.B.R3	Planning for:
CA.IV.B.R3a	a. Go-around and rejected landing
CA.IV.B.R3b	b. Land and hold short operations (LAHSO)
CA.IV.B.R4	Collision hazards, to include aircraft, vehicles, vessels, persons, wildlife, terrain, obstacles, and wires.
CA.IV.B.R5	Low altitude maneuvering including, stall, spin, or CFIT.
CA.IV.B.R6	Distractions, loss of situational awareness, and/or improper task management.
Skills	The applicant demonstrates the ability to:
CA.IV.B.S1	Complete the appropriate checklist.
CA.IV.B.S2	Make radio calls as appropriate.
CA.IV.B.S3	Ensure the airplane is aligned with the correct/assigned runway or landing surface.
CA.IV.B.S4	Scan the runway or landing surface and adjoining area for traffic and obstructions.
CA.IV.B.S5	Consider the wind conditions, landing surface, obstructions, and select a suitable touchdown point.
CA.IV.B.S6	Establish the recommended approach and landing configuration and airspeed, and adjust pitch attitude and power as required to maintain a stabilized approach.
CA.IV.B.S7	Maintain manufacturer's published approach airspeed or in its absence not more than 1.3 V_{SO} , ± 5 knots with wind gust factor applied.
CA.IV.B.S8	Maintain crosswind correction and directional control throughout the approach and landing.
CA.IV.B.S9	Make smooth, timely, and correct control application during round out and touchdown.
CA.IV.B.S10	Touch down at a proper pitch attitude, within 200 feet beyond or on the specified point, with no side drift, and with the airplane's longitudinal axis aligned with and over the runway center/landing path.
CA.IV.B.S11	Execute 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.
CA.IV.B.S12	Utilize runway incursion avoidance procedures.

IV. Takeoffs, Landings, and Go-Arounds

Task	<i>E. Short-Field Takeoff and Maximum Performance Climb (ASEL, AMEL)</i>
References	FAA-H-8083-2, FAA-H-8083-3; POH/AFM; AIM
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.
Knowledge	The applicant demonstrates understanding of:
CA.IV.E.K1	Effects of atmospheric conditions, including wind, on takeoff and climb performance.
CA.IV.E.K2	V_x and V_y .
CA.IV.E.K3	Appropriate airplane configuration.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.IV.E.R1	Selection of runway based on pilot capability, airplane performance and limitations, available distance, and wind.
CA.IV.E.R2	Effects of:
CA.IV.E.R2a	a. Crosswind
CA.IV.E.R2b	b. Windshear
CA.IV.E.R2c	c. Tailwind
CA.IV.E.R2d	d. Wake turbulence
CA.IV.E.R2e	e. Runway surface/condition
CA.IV.E.R3	Abnormal operations, to include planning for:
CA.IV.E.R3a	a. Rejected takeoff
CA.IV.E.R3b	b. Engine failure in takeoff/climb phase of flight
CA.IV.E.R4	Collision hazards, to include aircraft, vehicles, persons, wildlife, terrain, obstacles, and wires.
CA.IV.E.R5	Low altitude maneuvering including, stall, spin, or CFIT.
CA.IV.E.R6	Distractions, loss of situational awareness, and/or improper task management.
Skills	The applicant demonstrates the ability to:
CA.IV.E.S1	Complete the appropriate checklist.
CA.IV.E.S2	Make radio calls as appropriate.
CA.IV.E.S3	Verify assigned/correct runway.
CA.IV.E.S4	Ascertain wind direction with or without visible wind direction indicators.
CA.IV.E.S5	Position the flight controls for the existing wind conditions.
CA.IV.E.S6	Clear the area, taxi into takeoff position and align the airplane on the runway centerline utilizing maximum available takeoff area.
CA.IV.E.S7	Apply brakes while setting engine power to achieve maximum performance.
CA.IV.E.S8	Confirm takeoff power prior to brake release and verify proper engine and flight instrument indications prior to rotation.
CA.IV.E.S9	Rotate and lift off at the recommended airspeed and accelerate to the recommended obstacle clearance airspeed or V_x , ± 5 knots.
CA.IV.E.S10	Establish a pitch attitude that will maintain the recommended obstacle clearance airspeed or V_x , ± 5 knots until the obstacle is cleared or until the airplane is 50 feet above the surface.
CA.IV.E.S11	After clearing the obstacle, establish pitch attitude for V_y , and accelerate to and maintain V_y ± 5 knots during the climb.
CA.IV.E.S12	Configure the airplane in accordance with the manufacturer's guidance after a positive rate of climb has been verified.
CA.IV.E.S13	Maintain V_y ± 5 knots to a safe maneuvering altitude.
CA.IV.E.S14	Maintain directional control and proper wind-drift correction throughout takeoff and climb.
CA.IV.E.S15	Comply with noise abatement procedures.

IV. Takeoffs, Landings, and Go-Arounds

Task	F. Short-Field Approach and Landing (ASEL, AMEL)
References	FAA-H-8083-2, FAA-H-8083-3; POH/AFM; AIM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with a short-field approach and landing with emphasis on proper use and coordination of flight controls.
Knowledge	The applicant demonstrates understanding of:
CA.IV.F.K1	A stabilized approach, to include energy management concepts.
CA.IV.F.K2	Effects of atmospheric conditions, including wind, on approach and landing performance.
CA.IV.F.K3	Wind correction techniques on approach and landing.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.IV.F.R1	Selection of runway based on pilot capability, airplane performance and limitations, available distance, and wind.
CA.IV.F.R2	Effects of:
CA.IV.F.R2a	a. Crosswind
CA.IV.F.R2b	b. Windshear
CA.IV.F.R2c	c. Tailwind
CA.IV.F.R2d	d. Wake turbulence
CA.IV.F.R2e	e. Runway surface/condition
CA.IV.F.R3	Planning for:
CA.IV.F.R3a	a. Go-around and rejected landing
CA.IV.F.R3b	b. Land and hold short operations (LAHSO)
CA.IV.F.R4	Collision hazards, to include aircraft, vehicles, persons, wildlife, terrain, obstacles, and wires.
CA.IV.F.R5	Low altitude maneuvering including, stall, spin, or CFIT.
CA.IV.F.R6	Distractions, loss of situational awareness, and/or improper task management.
Skills	The applicant demonstrates the ability to:
CA.IV.F.S1	Complete the appropriate checklist.
CA.IV.F.S2	Make radio calls as appropriate.
CA.IV.F.S3	Ensure the airplane is aligned with the correct/assigned runway.
CA.IV.F.S4	Scan the landing runway and adjoining area for traffic and obstructions.
CA.IV.F.S5	Consider the wind conditions, landing surface, obstructions, and select a suitable touchdown point.
CA.IV.F.S6	Establish the recommended approach and landing configuration and airspeed, and adjust pitch attitude and power as required to maintain a stabilized approach.
CA.IV.F.S7	Maintain manufacturer's published airspeed or in its absence not more than $1.3 V_{SO}$, ± 5 knots with wind gust factor applied.
CA.IV.F.S8	Maintain crosswind correction and directional control throughout the approach and landing.
CA.IV.F.S9	Make smooth, timely, and correct control application during the round out and touchdown.
CA.IV.F.S10	Touch down at a proper pitch attitude within 100 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.
CA.IV.F.S11	Use manufacturer's recommended procedures for airplane configuration and braking.
CA.IV.F.S12	Execute 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.
CA.IV.F.S13	Utilize runway incursion avoidance procedures.

V. Performance and Ground Reference Maneuvers

Task	A. Steep Turns
References	FAA-H-8083-2, FAA-H-8083-3; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with steep turns. Note: See Appendix 7: Aircraft, Equipment, and Operational Requirements & Limitations .
Knowledge	The applicant demonstrates understanding of:
CA.V.A.K1	Purpose of steep turns.
CA.V.A.K2	Aerodynamics associated with steep turns, to include:
CA.V.A.K2a	a. Coordinated and uncoordinated flight
CA.V.A.K2b	b. Overbanking tendencies
CA.V.A.K2c	c. Maneuvering speed, including the impact of weight changes
CA.V.A.K2d	d. Load factor and accelerated stalls
CA.V.A.K2e	e. Rate and radius of turn
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.V.A.R1	Failure to divide attention between airplane control and orientation.
CA.V.A.R2	Collision hazards, to include aircraft, terrain, obstacles, and wires.
CA.V.A.R3	Low altitude maneuvering including, stall, spin, or CFIT.
CA.V.A.R4	Distractions, loss of situational awareness, and/or improper task management.
CA.V.A.R5	Failure to maintain coordinated flight.
Skills	The applicant demonstrates the ability to:
CA.V.A.S1	Clear the area.
CA.V.A.S2	Establish the manufacturer's recommended airspeed; or if one is not available, a safe airspeed not to exceed V_A .
CA.V.A.S3	Roll into a coordinated 360° steep turn with approximately a 50° bank.
CA.V.A.S4	Perform the Task in the opposite direction.
CA.V.A.S5	Maintain the entry altitude ± 100 feet, airspeed ± 10 knots, bank $\pm 5^\circ$, and roll out on the entry heading $\pm 10^\circ$.

VII. Slow Flight and Stalls

Task	A. Maneuvering During Slow Flight
References	FAA-H-8083-2, FAA-H-8083-3; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with maneuvering during slow flight. Note: See Appendix 6: Safety of Flight and Appendix 7: Aircraft, Equipment, and Operational Requirements & Limitations .
Knowledge	The applicant demonstrates understanding of:
CA.VII.A.K1	Aerodynamics associated with slow flight in various airplane configurations, to include the relationship between angle of attack, airspeed, load factor, power setting, airplane weight and center of gravity, airplane attitude, and yaw effects.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.VII.A.R1	Inadvertent slow flight and flight with a stall warning, which could lead to loss of control.
CA.VII.A.R2	Range and limitations of stall warning indicators (e.g., aircraft buffet, stall horn, etc.).
CA.VII.A.R3	Failure to maintain coordinated flight.
CA.VII.A.R4	Effect of environmental elements on airplane performance (e.g., turbulence, microbursts, and high-density altitude).
CA.VII.A.R5	Collision hazards, to include aircraft, terrain, obstacles, and wires.
CA.VII.A.R6	Distractions, loss of situational awareness, and/or improper task management.
Skills	The applicant demonstrates the ability to:
CA.VII.A.S1	Clear the area.
CA.VII.A.S2	Select an entry altitude that will allow the Task to be completed no lower than 1,500 feet AGL (ASEL, ASES) or 3,000 feet AGL (AMEL, AMES).
CA.VII.A.S3	Establish and maintain an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in a stall warning (e.g., airplane buffet, stall horn, etc.).
CA.VII.A.S4	Accomplish coordinated straight-and-level flight, turns, climbs, and descents with the aircraft configured as specified by the evaluator without a stall warning (e.g., airplane buffet, stall horn, etc.).
CA.VII.A.S5	Maintain the specified altitude, ± 50 feet; specified heading, $\pm 10^\circ$; airspeed, $+5/-0$ knots; and specified angle of bank, $\pm 5^\circ$.

VII. Slow Flight and Stalls

Task	B. Power-Off Stalls
References	FAA-H-8083-2, FAA-H-8083-3; AC 61-67; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with power-off stalls. Note: See Appendix 7: Aircraft, Equipment, and Operational Requirements & Limitations .
Knowledge	The applicant demonstrates understanding of:
CA.VII.B.K1	Aerodynamics associated with stalls in various airplane configurations, to include the relationship between angle of attack, airspeed, load factor, power setting, airplane weight and center of gravity, airplane attitude, and yaw effects.
CA.VII.B.K2	Stall characteristics (i.e., airplane design) and impending stall and full stall indications (i.e., how to recognize by sight, sound, or feel).
CA.VII.B.K3	Factors and situations that can lead to a power-off stall and actions that can be taken to prevent it.
CA.VII.B.K4	Fundamentals of stall recovery.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.VII.B.R1	Factors and situations that could lead to an inadvertent power-off stall, spin, and loss of control.
CA.VII.B.R2	Range and limitations of stall warning indicators (e.g., airplane buffet, stall horn, etc.).
CA.VII.B.R3	Failure to recognize and recover at the stall warning during normal operations.
CA.VII.B.R4	Improper stall recovery procedure.
CA.VII.B.R5	Secondary stalls, accelerated stalls, and cross-control stalls.
CA.VII.B.R6	Effect of environmental elements on airplane performance related to power-off stalls (e.g., turbulence, microbursts, and high-density altitude).
CA.VII.B.R7	Collision hazards, to include aircraft, terrain, obstacles, and wires.
CA.VII.B.R8	Distractions, loss of situational awareness, and/or improper task management.
Skills	The applicant demonstrates the ability to:
CA.VII.B.S1	Clear the area.
CA.VII.B.S2	Select an entry altitude that will allow the Task to be completed no lower than 1,500 feet AGL (ASEL, ASES) or 3,000 feet AGL (AMEL, AMES).
CA.VII.B.S3	Configure the airplane in the approach or landing configuration, as specified by the evaluator, and maintain coordinated flight throughout the maneuver.
CA.VII.B.S4	Establish a stabilized descent.
CA.VII.B.S5	Transition smoothly from the approach or landing attitude to a pitch attitude that will induce a stall.
CA.VII.B.S6	Maintain a specified heading, $\pm 10^\circ$ if in straight flight; maintain a specified angle of bank not to exceed 20° , $\pm 5^\circ$, if in turning flight, until an impending or full stall occurs, as specified by the evaluator.
CA.VII.B.S7	Acknowledge the cues at the first indication of a stall (e.g., airplane buffet, stall horn, etc.).
CA.VII.B.S8	Recover at the first indication of a stall or after a full stall has occurred, as specified by the evaluator.
CA.VII.B.S9	Configure the airplane as recommended by the manufacturer, and accelerate to V_X or V_Y .
CA.VII.B.S10	Return to the altitude, heading, and airspeed specified by the evaluator.

VII. Slow Flight and Stalls

Task	C. Power-On Stalls
References	FAA-H-8083-2, FAA-H-8083-3; AC 61-67; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with power-on stalls. Note: See Appendix 6: Safety of Flight and Appendix 7: Aircraft, Equipment, and Operational Requirements & Limitations .
Knowledge	The applicant demonstrates understanding of:
CA.VII.C.K1	Aerodynamics associated with stalls in various airplane configurations, to include the relationship between angle of attack, airspeed, load factor, power setting, airplane weight and center of gravity, airplane attitude, and yaw effects.
CA.VII.C.K2	Stall characteristics (i.e., airplane design) and impending stall and full stall indications (i.e., how to recognize by sight, sound, or feel).
CA.VII.C.K3	Factors and situations that can lead to a power-on stall and actions that can be taken to prevent it.
CA.VII.C.K4	Fundamentals of stall recovery.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.VII.C.R1	Factors and situations that could lead to an inadvertent power-on stall, spin, and loss of control.
CA.VII.C.R2	Range and limitations of stall warning indicators (e.g., airplane buffet, stall horn, etc.).
CA.VII.C.R3	Failure to recognize and recover at the stall warning during normal operations.
CA.VII.C.R4	Improper stall recovery procedure.
CA.VII.C.R5	Secondary stalls, accelerated stalls, elevator trim stalls, and cross-control stalls.
CA.VII.C.R6	Effect of environmental elements on airplane performance related to power-on stalls (e.g., turbulence, microbursts, and high-density altitude).
CA.VII.C.R7	Collision hazards, to include aircraft, terrain, obstacles, and wires.
CA.VII.C.R8	Distractions, loss of situational awareness, and/or improper task management.
Skills	The applicant demonstrates the ability to:
CA.VII.C.S1	Clear the area.
CA.VII.C.S2	Select an entry altitude that will allow the Task to be completed no lower than 1,500 feet AGL (ASEL, ASES) or 3,000 feet AGL (AMEL, AMES).
CA.VII.C.S3	Establish the takeoff, departure, or cruise configuration, as specified by the evaluator, and maintain coordinated flight throughout the maneuver.
CA.VII.C.S4	Set power (as assigned by the evaluator) to no less than 65 percent available power.
CA.VII.C.S5	Transition smoothly from the takeoff or departure attitude to the pitch attitude that will induce a stall.
CA.VII.C.S6	Maintain a specified heading $\pm 10^\circ$ if in straight flight; maintain a specified angle of bank not to exceed 20° , $\pm 10^\circ$, if in turning flight, until an impending or full stall is reached, as specified by the evaluator.
CA.VII.C.S7	Acknowledge the cues at the first indication of a stall (e.g., airplane buffet, stall horn, etc.).
CA.VII.C.S8	Recover at the first indication of a stall or after a full stall has occurred, as specified by the evaluator.
CA.VII.C.S9	Configure the airplane as recommended by the manufacturer, and accelerate to V_X or V_Y .
CA.VII.C.S10	Return to the altitude, heading, and airspeed specified by the evaluator.

VII. Slow Flight and Stalls

Task	D. Accelerated Stalls
References	FAA-H-8083-2, FAA-H-8083-3; AC 61-67; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management related to accelerated (power-on or power-off) stalls. Note: See Appendix 6: Safety of Flight and Appendix 7: Aircraft, Equipment, and Operational Requirements & Limitations .
Knowledge	The applicant demonstrates understanding of:
CA.VII.D.K1	Aerodynamics associated with accelerated stalls in various airplane configurations, to include the relationship between angle of attack, airspeed, load factor, power setting, airplane weight and center of gravity, airplane attitude, and yaw effects.
CA.VII.D.K2	Stall characteristics (i.e., airplane design), impending stall, and full stall indications (i.e., how to recognize by sight, sound, or feel).
CA.VII.D.K3	Factors and situations that can lead to an accelerated stall and actions that can be taken to prevent it.
CA.VII.D.K4	Fundamentals of stall recovery.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.VII.D.R1	Factors and situations that could lead to an inadvertent accelerated stall, spin, and loss of control.
CA.VII.D.R2	Range and limitations of stall warning indicators (e.g., airplane buffet, stall horn, etc.).
CA.VII.D.R3	Failure to recognize and recover at the stall warning during normal operations.
CA.VII.D.R4	Improper stall recovery procedure.
CA.VII.D.R5	Secondary stalls, cross-control stalls, and spins.
CA.VII.D.R6	Effect of environmental elements on airplane performance related to accelerated stalls (e.g., turbulence, microbursts, and high-density altitude).
CA.VII.D.R7	Collision hazards, to include aircraft, terrain, obstacles, and wires.
CA.VII.D.R8	Distractions, loss of situational awareness, and/or improper task management.
Skills	The applicant demonstrates the ability to:
CA.VII.D.S1	Clear the area.
CA.VII.D.S2	Select an entry altitude that will allow the Task to be completed no lower than 3,000 feet AGL.
CA.VII.D.S3	Establish the configuration as specified by the evaluator.
CA.VII.D.S4	Set power appropriate for the configuration, such that the airspeed does not exceed the maneuvering speed (V_A) or any other applicable POH/AFM limitation.
CA.VII.D.S5	Establish and maintain a coordinated turn in a 45° bank, increasing elevator back pressure smoothly and firmly until an impending stall is reached.
CA.VII.D.S6	Acknowledge the cue(s) and recover promptly at the first indication of an impending stall (e.g., aircraft buffet, stall horn, etc.).
CA.VII.D.S7	Execute a stall recovery in accordance with procedures set forth in the POH/AFM.
CA.VII.D.S8	Configure the airplane as recommended by the manufacturer, and accelerate to V_X or V_Y .
CA.VII.D.S9	Return to the altitude, heading, and airspeed specified by the evaluator.

VII. Slow Flight and Stalls

Task	<i>E. Spin Awareness</i>
References	FAA-H-8083-2, FAA-H-8083-3; AC 61-67; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with spins, flight situations where unintentional spins may occur and procedures for recovery from unintentional spins.
Knowledge	The applicant demonstrates understanding of:
<i>CA.VII.E.K1</i>	Aerodynamics associated with spins in various airplane configurations, to include the relationship between angle of attack, airspeed, load factor, power setting, airplane weight and center of gravity, airplane attitude, and yaw effects.
<i>CA.VII.E.K2</i>	What causes a spin and how to identify the entry, incipient, and developed phases of a spin.
<i>CA.VII.E.K3</i>	Spin recovery procedure.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
<i>CA.VII.E.R1</i>	Factors and situations that could lead to inadvertent spin and loss of control.
<i>CA.VII.E.R2</i>	Range and limitations of stall warning indicators (e.g., aircraft buffet, stall horn, etc.).
<i>CA.VII.E.R3</i>	Improper spin recovery procedure.
<i>CA.VII.E.R4</i>	Effect of environmental elements on airplane performance related to spins (e.g., turbulence, microbursts, and high-density altitude).
<i>CA.VII.E.R5</i>	Collision hazards, to include aircraft, terrain, obstacles, and wires.
<i>CA.VII.E.R6</i>	Distractions, loss of situational awareness, and/or improper task management.
Skills	[Intentionally left blank]

IX. Emergency Operations

Task	A. Emergency Descent
References	FAA-H-8083-2, FAA-H-8083-3; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, skills and risk management associated with an emergency descent. Note: See Appendix 6: Safety of Flight .
Knowledge	The applicant demonstrates understanding of:
CA.IX.A.K1	Situations that require an emergency descent (e.g., depressurization, smoke, and/or engine fire).
CA.IX.A.K2	Immediate action items and emergency procedures.
CA.IX.A.K3	Airspeed, to include airspeed limitations.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.IX.A.R1	Failure to consider altitude, wind, terrain, obstructions, and available glide distance.
CA.IX.A.R2	Collision hazards, to include aircraft, terrain, obstacles, and wires.
CA.IX.A.R3	Improper airplane configuration.
CA.IX.A.R4	Distractions, loss of situational awareness, and/or improper task management.
Skills	The applicant demonstrates the ability to:
CA.IX.A.S1	Clear the area.
CA.IX.A.S2	Establish and maintain the appropriate airspeed and configuration appropriate to the scenario specified by the evaluator and as covered in POH/AFM for the emergency descent.
CA.IX.A.S3	Demonstrate orientation, division of attention and proper planning.
CA.IX.A.S4	Use bank angle between 30° and 45° to maintain positive load factors during the descent.
CA.IX.A.S5	Maintain appropriate airspeed, +0/-10 knots, and level off at specified altitude, ±100 feet.
CA.IX.A.S6	Complete the appropriate checklist.

IX. Emergency Operations

Task	C. Systems and Equipment Malfunctions
References	FAA-H-8083-2, FAA-H-8083-3, POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with system and equipment malfunctions appropriate to the airplane provided for the practical test, and that the applicant is able to analyze malfunctions and take appropriate action for simulated emergencies.
Knowledge	The applicant demonstrates understanding of:
CA.IX.C.K1	Partial or complete power loss related to the specific powerplant, including:
CA.IX.C.K1a	a. Engine roughness or overheat
CA.IX.C.K1b	b. Carburetor or induction icing
CA.IX.C.K1c	c. Loss of oil pressure
CA.IX.C.K1d	d. Fuel starvation
CA.IX.C.K2	System and equipment malfunctions specific to the airplane, including:
CA.IX.C.K2a	a. Electrical malfunction
CA.IX.C.K2b	b. Vacuum/pressure and associated flight instrument malfunctions
CA.IX.C.K2c	c. Pitot/static system malfunction
CA.IX.C.K2d	d. Electronic flight deck display malfunction
CA.IX.C.K2e	e. Landing gear or flap malfunction
CA.IX.C.K2f	f. Inoperative trim
CA.IX.C.K3	Smoke/fire/engine compartment fire.
CA.IX.C.K4	Any other system specific to the airplane (e.g., supplemental oxygen, deicing).
CA.IX.C.K5	Inadvertent door or window opening.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.IX.C.R1	Failure to use the proper checklist for a system or equipment malfunction.
CA.IX.C.R2	Distractions, loss of situational awareness, and/or improper task management.
Skills	The applicant demonstrates the ability to:
CA.IX.C.S1	Describe appropriate action for simulated emergencies specified by the evaluator, from at least three of the elements or sub-elements listed in K1 through K5 above.
CA.IX.C.S2	Complete the appropriate checklist.

IX. Emergency Operations

Task	E. Engine Failure During Takeoff Before V_{MC} (Simulated) (AMEL, AMES)
References	FAA-H-8083-2, FAA-H-8083-3; FAA-P-8740-66; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with an engine failure during takeoff before V_{MC} . Note: See Appendix 6: Safety of Flight and Appendix 7: Aircraft, Equipment, and Operational Requirements & Limitations .
Knowledge	The applicant demonstrates understanding of:
CA.IX.E.K1	Factors affecting V_{MC} .
CA.IX.E.K2	V_{MC} (red line) and V_{YSE} (blue line).
CA.IX.E.K3	Accelerate/stop distance.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.IX.E.R1	Failure to plan for engine failure during takeoff.
CA.IX.E.R2	Improper airplane configuration.
CA.IX.E.R3	Distractions, loss of situational awareness, and/or improper task management.
Skills	The applicant demonstrates the ability to:
CA.IX.E.S1	Close the throttles smoothly and promptly when a simulated engine failure occurs.
CA.IX.E.S2	Maintain directional control and apply brakes (AMEL), or flight controls (AMES), as necessary.

IX. Emergency Operations

Task	F. Engine Failure After Liftoff (Simulated) (AMEL, AMES)
References	FAA-H-8083-2, FAA-H-8083-3; FAA-P-8740-66; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with an engine failure after liftoff. Note: See Appendix 6: Safety of Flight and Appendix 7: Aircraft, Equipment, and Operational Requirements & Limitations .
Knowledge	The applicant demonstrates understanding of:
CA.IX.F.K1	Factors affecting V_{MC} .
CA.IX.F.K2	V_{MC} (red line), V_{YSE} (blue line), and V_{SSE} (safe single-engine speed).
CA.IX.F.K3	Accelerate/stop and accelerate/go distances.
CA.IX.F.K4	How to identify, verify, feather, and secure an inoperative engine.
CA.IX.F.K5	Importance of drag reduction, to include propeller feathering, gear and flap retraction, the manufacturer's recommended control input and its relation to zero sideslip.
CA.IX.F.K6	Simulated propeller feathering and the evaluator's zero-thrust procedures and responsibilities.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.IX.F.R1	Failure to plan for engine failure after liftoff.
CA.IX.F.R2	Collision hazards, to include aircraft, terrain, obstacles, and wires.
CA.IX.F.R3	Improper airplane configuration.
CA.IX.F.R4	Low altitude maneuvering including, stall, spin, or CFIT.
CA.IX.F.R5	Distractions, loss of situational awareness, and/or improper task management.
Skills	The applicant demonstrates the ability to:
CA.IX.F.S1	Promptly recognize an engine failure, maintain control, and utilize appropriate emergency procedures.
CA.IX.F.S2	Establish V_{YSE} ; if obstructions are present, establish V_{XSE} or $V_{MC} + 5$ knots, whichever is greater, until obstructions are cleared. Then transition to V_{YSE} .
CA.IX.F.S3	Reduce drag by retracting landing gear and flaps in accordance with the manufacturer's guidance.
CA.IX.F.S4	Simulate feathering the propeller on the inoperative engine (evaluator should then establish zero thrust on the inoperative engine).
CA.IX.F.S5	Use flight controls in the proper combination as recommended by the manufacturer, or as required to maintain best performance, and trim as required.
CA.IX.F.S6	Monitor the operating engine and make adjustments as necessary.
CA.IX.F.S7	Recognize the airplane's performance capabilities. If a climb is not possible at V_{YSE} , maintain V_{YSE} and return to the departure airport for landing, or initiate an approach to the most suitable landing area available.
CA.IX.F.S8	Simulate securing the inoperative engine.
CA.IX.F.S9	Maintain heading $\pm 10^\circ$ and airspeed ± 5 knots.
CA.IX.F.S10	Complete the appropriate checklist.

IX. Emergency Operations

Task	G. Approach and Landing with an Inoperative Engine (Simulated) (AMEL, AMES)
References	FAA-H-8083-2, FAA-H-8083-3; FAA-P-8740-66; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with an approach and landing with an engine inoperative, including engine failure on final approach. Note: See Appendix 6: Safety of Flight and Appendix 7: Aircraft, Equipment, and Operational Requirements & Limitations .
Knowledge	The applicant demonstrates understanding of:
CA.IX.G.K1	Factors affecting V_{MC} .
CA.IX.G.K2	V_{MC} (red line) and V_{YSE} (blue line).
CA.IX.G.K3	How to identify, verify, feather, and secure an inoperative engine.
CA.IX.G.K4	Importance of drag reduction, to include propeller feathering, gear and flap retraction, the manufacturer's recommended flight control input and its relation to zero sideslip.
CA.IX.G.K5	Applicant responsibilities during simulated feathering.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.IX.G.R1	Failure to plan for engine failure inflight or during an approach.
CA.IX.G.R2	Collision hazards, to include aircraft, terrain, obstacles, and wires.
CA.IX.G.R3	Improper aircraft configuration.
CA.IX.G.R4	Low altitude maneuvering including, stall, spin, or CFIT.
CA.IX.G.R5	Distractions, loss of situational awareness, and/or improper task management.
CA.IX.G.R6	Possible single-engine go-around.
Skills	The applicant demonstrates the ability to:
CA.IX.G.S1	Promptly recognize an engine failure and maintain positive aircraft control. Set the engine controls, reduce drag, identify and verify the inoperative engine, and simulate feathering of the propeller on the inoperative engine. (Evaluator should then establish zero thrust on the inoperative engine).
CA.IX.G.S2	Use flight controls in the proper combination as recommended by the manufacturer, or as required to maintain best performance, and trim as required.
CA.IX.G.S3	Follow the manufacturer's recommended emergency procedures.
CA.IX.G.S4	Monitor the operating engine and make adjustments as necessary.
CA.IX.G.S5	Maintain the manufacturer's recommended approach airspeed ± 5 knots in the landing configuration with a stabilized approach, until landing is assured.
CA.IX.G.S6	Make smooth, timely, and correct control application during round out and touchdown.
CA.IX.G.S7	Touch down on the first one-third of available runway/landing surface, with no drift, and the airplane's longitudinal axis aligned with and over the runway center or landing path.
CA.IX.G.S8	Maintain crosswind correction and directional control throughout the approach and landing.
CA.IX.G.S9	Complete the appropriate checklist.

X. Multiengine Operations

Task	A. Maneuvering with One Engine Inoperative (AMEL, AMES)
References	FAA-H-8083-2, FAA-H-8083-3; FAA-P-8740-66; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with one engine inoperative. Note: See Appendix 6: Safety of Flight and Appendix 7: Aircraft, Equipment, and Operational Requirements & Limitations .
Knowledge	The applicant demonstrates understanding of:
CA.X.A.K1	Factors affecting V_{MC} .
CA.X.A.K2	V_{MC} (red line) and V_{YSE} (blue line).
CA.X.A.K3	How to identify, verify, feather, and secure an inoperative engine.
CA.X.A.K4	Importance of drag reduction, to include propeller feathering, gear and flap retraction, the manufacturer's recommended flight control input and its relation to zero sideslip.
CA.X.A.K5	Feathering, securing, unfeathering, and restarting.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.X.A.R1	Failure to plan for engine failure during flight.
CA.X.A.R2	Collision hazards, to include aircraft, terrain, obstacles, and wires.
CA.X.A.R3	Improper airplane configuration.
CA.X.A.R4	Low altitude maneuvering including, stall, spin, or CFIT.
CA.X.A.R5	Distractions, loss of situational awareness, and/or improper task management.
Skills	The applicant demonstrates the ability to:
CA.X.A.S1	Recognize an engine failure, maintain control, use manufacturer's memory item procedures, and utilize appropriate emergency procedures.
CA.X.A.S2	Set the engine controls, identify and verify the inoperative engine, and feather the appropriate propeller.
CA.X.A.S3	Use flight controls in the proper combination as recommended by the manufacturer, or as required to maintain best performance, and trim as required.
CA.X.A.S4	Attempt to determine and resolve the reason for the engine failure.
CA.X.A.S5	Secure the inoperative engine and monitor the operating engine and make necessary adjustments.
CA.X.A.S6	Restart the inoperative engine using manufacturer's restart procedures.
CA.X.A.S7	Maintain altitude ± 100 feet or a minimum sink rate if applicable, airspeed ± 10 knots, and selected headings $\pm 10^\circ$.
CA.X.A.S8	Complete the appropriate checklist.

X. Multiengine Operations

Task	B. V_{MC} Demonstration (AMEL, AMES)
References	FAA-H-8083-2, FAA-H-8083-3; FAA-P-8740-66; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with a V_{MC} demonstration. Note: See Appendix 6: Safety of Flight and Appendix 7: Aircraft, Equipment, and Operational Requirements & Limitations .
Knowledge	The applicant demonstrates understanding of:
CA.X.B.K1	Factors affecting V_{MC} and how V_{MC} differs from stall speed (V_S).
CA.X.B.K2	V_{MC} (red line), V_{YSE} (blue line), and V_{SSE} (safe single-engine speed).
CA.X.B.K3	Cause of loss of directional control at airspeeds below V_{MC} .
CA.X.B.K4	Proper procedures for maneuver entry and safe recovery.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.X.B.R1	Improper airplane configuration.
CA.X.B.R2	Maneuvering with one engine inoperative.
CA.X.B.R3	Distractions, loss of situational awareness, and/or improper task management.
Skills	The applicant demonstrates the ability to:
CA.X.B.S1	Configure the airplane in accordance with the manufacturer's recommendations, in the absence of the manufacturer's recommendations, then at V_{SSE}/V_{YSE} , as appropriate, and:
CA.X.B.S1a	a. Landing gear retracted
CA.X.B.S1b	b. Flaps set for takeoff
CA.X.B.S1c	c. Cowl flaps set for takeoff
CA.X.B.S1d	d. Trim set for takeoff
CA.X.B.S1e	e. Propellers set for high RPM
CA.X.B.S1f	f. Power on critical engine reduced to idle and propeller windmilling
CA.X.B.S1g	g. Power on operating engine set to takeoff or maximum available power
CA.X.B.S2	Establish a single-engine climb attitude with the airspeed at approximately 10 knots above V_{SSE} .
CA.X.B.S3	Establish a bank angle not to exceed 5° toward the operating engine, as required for best performance and controllability.
CA.X.B.S4	Increase the 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.
CA.X.B.S5	Recognize indications of loss of directional control, stall warning, or buffet.
CA.X.B.S6	Recover promptly by simultaneously reducing power sufficiently on the operating engine while decreasing the angle of attack as necessary to regain airspeed and directional control. Recovery should not be attempted by increasing the power on the simulated failed engine.
CA.X.B.S7	Recover within 20° of entry heading.
CA.X.B.S8	Advance power smoothly on the operating engine and accelerate to V_{SSE}/V_{YSE} , as appropriate, ± 5 knots during recovery.

X. Multiengine Operations

Task	C. One Engine Inoperative (Simulated) (solely by Reference to Instruments) During Straight-and-Level Flight and Turns (AMEL, AMES)
References	FAA-H-8083-2, FAA-H-8083-3; FAA-P-8740-66; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with flight solely by reference to instruments with one engine inoperative. Note: See Appendix 6: Safety of Flight and Appendix 7: Aircraft, Equipment, and Operational Requirements & Limitations .
Knowledge	The applicant demonstrates understanding of:
CA.X.C.K1	Procedures used if engine failure occurs during straight-and-level flight and turns while on instruments.
Risk Management	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
CA.X.C.R1	Failure to identify the inoperative engine.
CA.X.C.R2	Inability to climb or maintain altitude with an inoperative engine.
CA.X.C.R3	Low altitude maneuvering including, stall, spin, or CFIT.
CA.X.C.R4	Distractions, loss of situational awareness, and/or improper task management.
CA.X.C.R5	Fuel management during single-engine operation.
Skills	The applicant demonstrates the ability to:
CA.X.C.S1	Promptly recognize an engine failure and maintain positive airplane control.
CA.X.C.S2	Set the engine controls, reduce drag, identify and verify the inoperative engine, and simulate feathering of the propeller on the inoperative engine. (Evaluator should then establish zero thrust on the inoperative engine.)
CA.X.C.S3	Establish the best engine-inoperative airspeed and trim the airplane.
CA.X.C.S4	Use flight controls in the proper combination as recommended by the manufacturer, or as required to maintain best performance, and trim as required.
CA.X.C.S5	Verify the prescribed checklist procedures normally used for securing the inoperative engine.
CA.X.C.S6	Attempt to determine and resolve the reason for the engine failure.
CA.X.C.S7	Monitor engine functions and make necessary adjustments.
CA.X.C.S8	Maintain the specified altitude ± 100 feet or minimum sink rate if applicable, airspeed ± 10 knots, and the specified heading $\pm 10^\circ$.
CA.X.C.S9	Assess the airplane's performance capability and decide an appropriate action to ensure a safe landing.
CA.X.C.S10	Avoid loss of airplane control or attempted flight contrary to the engine-inoperative operating limitations of the airplane.
CA.X.C.S11	Demonstrate SRM.

X. Multiengine Operations

Task	<i>D. Instrument Approach and Landing with an Inoperative Engine (Simulated) (solely by Reference to Instruments) (AMEL, AMES)</i>
References	FAA-H-8083-2, FAA-H-8083-3; FAA-P-8740-66; POH/AFM
Objective	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with executing a published instrument approach solely by reference to instruments with one engine inoperative. Note: See Appendix 6: Safety of Flight and Appendix 7: Aircraft, Equipment, and Operational Requirements & Limitations .
Knowledge	The applicant demonstrates understanding of:
CA.X.D.K1	Instrument approach procedures with one engine inoperative.
Risk Management	The applicant demonstrates the ability to identify, assess, and mitigate risks, encompassing:
CA.X.D.R1	Failure to plan for engine failure during approach and landing.
CA.X.D.R2	Distractions, loss of situational awareness, and/or improper task management.
CA.X.D.R3	Single-engine performance.
Skills	The applicant demonstrates the ability to:
CA.X.D.S1	Promptly recognize engine failure and maintain positive airplane control. Set the engine controls, reduce drag, identify and verify the inoperative engine, and simulate feathering of the propeller on the inoperative engine. (Evaluator should then establish zero thrust on the inoperative engine).
CA.X.D.S2	Use flight controls in the proper combination as recommended by the manufacturer or as required to maintain best performance, and trim as required.
CA.X.D.S3	Follow the manufacturer's recommended emergency procedures.
CA.X.D.S4	Monitor the operating engine and make adjustments as necessary.
CA.X.D.S5	Request and follow an actual or a simulated ATC clearance for an instrument approach.
CA.X.D.S6	Maintain altitude ± 100 feet or minimum sink rate if applicable, airspeed ± 10 knots, and selected heading $\pm 10^\circ$.
CA.X.D.S7	Establish a rate of descent that will ensure arrival at the MDA or DA/DH, with the airplane in a position from which a descent to a landing on the intended runway can be made, either straight in or circling as appropriate.
CA.X.D.S8	On final approach segment, maintain vertical (as applicable) and lateral guidance within $\frac{3}{4}$ -scale deflection.
CA.X.D.S9	Avoid loss of airplane control or attempted flight contrary to the operating limitations of the airplane.
CA.X.D.S10	Comply with the published criteria for the aircraft approach category if circling.
CA.X.D.S11	Execute a normal landing.
CA.X.D.S12	Complete the appropriate checklist.

Removal of the “Airplane Multiengine VFR Only” Limitation

The removal of the “Airplane Multiengine VFR Only” limitation, at the Commercial Pilot Certificate level, requires an applicant to satisfactorily perform the following Area of Operation and Tasks from the Commercial Pilot – Airplane ACS in a multiengine airplane that has a manufacturer’s published V_{MC} speed.

X. Multiengine Operations
Task C: Engine Failure During Flight (Simulated) (solely by Reference to Instruments) (AMEL, AMES)
Task D: Instrument Approach and Landing with an Inoperative Engine (Simulated) (solely by Reference to Instruments) (AMEL, AMES)

Removal of the “Limited to Center Thrust” Limitation

The “Limited to Center Thrust” limitation for the AMEL rating is issued to applicants who complete the practical test for the AMEL rating in an aircraft that does not have a manufacturer’s published V_{MC} . When conducting a practical test for the purpose of removing the “Limited to Center Thrust” limitation from the AMEL rating, the applicant must be tested on the multiengine Tasks identified in the table below in a multiengine airplane that has a manufacturer’s published V_{MC} speed. This speed would be found on the type certificate data sheet (TCDS) or in the AFM. If the limitation will be removed under parts 121, 135, or 142, it must be done in accordance with an approved curriculum or training program. An applicant that holds an airplane instrument rating and has not demonstrated instrument proficiency in a multiengine airplane with a published V_{MC} shall complete the additional Tasks listed under Removal of the “Airplane Multiengine VFR Only” Limitation section.

IX. Emergency Operations
Task E: Engine Failure During Takeoff Before V_{MC} (Simulated) (AMEL)
Task F: Engine Failure After Liftoff (Simulated) (AMEL, AMES)
Task G: Approach and Landing with an Inoperative Engine (Simulated) (AMEL, AMES)
X. Multiengine Operations
Task A: Maneuvering with One Engine Inoperative (AMEL, AMES)
Task B: V_{MC} Demonstration (AMEL, AMES)

Appendix 6: Safety of Flight

General

Safety of flight must be the prime consideration at all times. The evaluator, applicant, and crew must be constantly alert for other traffic. If performing aspects of a given maneuver, such as emergency procedures, would jeopardize safety, the evaluator will ask the applicant to simulate that portion of the maneuver. The evaluator will assess the applicant's use of visual scanning and collision avoidance procedures throughout the entire test.

Stall and Spin Awareness

During flight training and testing, the applicant and the instructor or evaluator must always recognize and avoid operations that could lead to an inadvertent stall or spin and inadvertent loss of control.

Use of Checklists

Throughout the practical test, the applicant is evaluated on the use of an appropriate checklist.

Assessing proper checklist use depends upon the specific Task. In all cases, the evaluator should determine whether the applicant appropriately divides attention and uses proper visual scanning. In some situations, reading the actual checklist may be impractical or unsafe. In such cases, the evaluator should assess the applicant's performance of published or recommended immediate action "memory" items along with his or her review of the appropriate checklist once conditions permit.

In a single-pilot airplane, the applicant should demonstrate the crew resource management (CRM) principles described as single-pilot resource management (SRM). Proper use is dependent on the specific Task being evaluated. The situation may be such that the use of the checklist while accomplishing elements of an Objective would be either unsafe or impractical in a single-pilot operation. In this case, a review of the checklist after the elements have been accomplished is appropriate.

Use of Distractions

Numerous studies indicate that many accidents have occurred when the pilot has been distracted during critical phases of flight. The evaluator should incorporate realistic distractions during the flight portion of the practical test to evaluate the pilot's situational awareness and ability to utilize proper control technique while dividing attention both inside and outside the cockpit.

Positive Exchange of Flight Controls

There must always be a clear understanding of who has control of the aircraft. Prior to flight, the pilots involved should conduct a briefing that includes reviewing the procedures for exchanging flight controls.

The FAA recommends a positive three-step process for exchanging flight controls between pilots:

- When one pilot seeks to have the other pilot take control of the aircraft, he or she will say, "You have the flight controls."
- The second pilot acknowledges immediately by saying, "I have the flight controls."
- The first pilot again says, "You have the flight controls," and visually confirms the exchange.

Pilots should follow this procedure during any exchange of flight controls, including any occurrence during the practical test. The FAA also recommends that both pilots use a visual check to verify that the exchange has occurred. There must never be any doubt as to who is flying the aircraft.

Aeronautical Decision-Making, Risk Management, Crew Resource Management, and Single-Pilot Resource Management

Throughout the practical test, the evaluator must assess the applicant's ability to use sound aeronautical decision-making procedures in order to identify hazards and mitigate risk. The evaluator must accomplish this requirement by reference to the risk management elements of the given Task(s), and by developing scenarios that incorporate and combine Tasks appropriate to assessing the applicant's risk management in making safe aeronautical

decisions. For example, the evaluator may develop a scenario that incorporates weather decisions and performance planning.

In assessing the applicant's performance, the evaluator should take note of the applicant's use of CRM and, if appropriate, SRM. CRM/SRM is the set of competencies that includes situational awareness, communication skills, teamwork, task allocation, and decision making within a comprehensive framework of standard operating procedures (SOP). SRM specifically refers to the management of all resources onboard the aircraft as well as outside resources available to the single pilot.

Deficiencies in CRM/SRM almost always contribute to the unsatisfactory performance of a Task. While evaluation of CRM/SRM may appear to be somewhat subjective, the evaluator should use the risk management elements of the given Task(s) to determine whether the applicant's performance of the Task(s) demonstrates both understanding and application of the associated risk management elements.

Multiengine Considerations

On multiengine practical tests, where the failure of the most critical engine after liftoff is required, the evaluator must consider local atmospheric conditions, terrain, and type of aircraft used. The evaluator must not simulate failure of an engine until attaining at least $V_{SSE}/V_{XSE}/V_{YSE}$ and an altitude not lower than 400 feet AGL.

The applicant must supply an airplane that does not prohibit the demonstration of feathering the propeller in flight. Practical tests conducted in a flight simulation training device (FSTD) can only be accomplished as part of an approved curriculum or training program. Any limitations for powerplant failure will be noted in that program.

For safety reasons, when the practical test is conducted in an airplane, the applicant must perform Tasks that require feathering or shutdown only under conditions and at a position and altitude where it is possible to make a safe landing on an established airport if there is difficulty in unfeathering the propeller or restarting the engine. The evaluator must select an entry altitude that will allow the single-engine demonstration Tasks to be completed no lower than 3,000 feet AGL or the manufacturer's recommended altitude (whichever is higher). If it is not possible to unfeather the propeller or restart the engine while airborne, the applicant and the evaluator should treat the situation as an emergency. At altitudes lower than 3,000 feet AGL, engine failure should be simulated by reducing throttle to idle and then establishing zero thrust.

Engine failure (simulated) during takeoff should be accomplished prior to reaching 50 percent of the calculated V_{MC} .

Single-Engine Considerations

For safety reasons, the evaluator will not request a simulated powerplant failure in a single-engine airplane unless it is possible to safely complete a landing.

High Performance Aircraft Considerations

In some high performance airplanes, the power setting may have to be reduced below the ACS guidelines power setting to prevent excessively high pitch attitudes greater than 30° nose up.

Appendix 7: Aircraft, Equipment, and Operational Requirements & Limitations

Aircraft Requirements & Limitations

14 CFR part 61, section 61.45 prescribes the required aircraft and equipment for a practical test. The regulation states the minimum aircraft registration and airworthiness requirements as well as the minimum equipment requirements, to include the minimum required controls.

Multiengine practical tests require normal engine shutdowns and restarts in the air, to include propeller feathering and unfeathering. The Airplane Flight Manual (AFM) must not prohibit these procedures, but low power settings for cooling periods prior to the actual shutdown in accordance with the AFM are acceptable and encouraged. For a type rating in an airplane not certificated with inflight unfeathering capability, a simulated powerplant failure is acceptable.

If the multiengine airplane used for the practical test does not publish a V_{MC} , then the "Limited to Center Thrust" limitation will be added to the certificate issued from this check, unless the applicant has previously demonstrated competence in a multiengine airplane with a published V_{MC} .

If the aircraft presented for the practical test has inoperative instruments or equipment, it must be addressed in accordance with 14 CFR part 91, section 91.213. If the aircraft can be operated in accordance with 14 CFR part 91, section 91.213, then it must be determined if the inoperative instruments or equipment are required to complete the practical test.

Equipment Requirements & Limitations

The equipment examination should be administered before the flight portion of the practical test, but it must be closely coordinated and related to the flight portion.

The aircraft must meet the requirements as outlined in 14 CFR part 61, section 61.45.

A complex airplane must be used for an AMEL or AMES tests, as defined in 14 CFR part 61, section 61.1.

To assist in management of the aircraft during the practical test, the applicant is expected to demonstrate automation management skills by utilizing installed, available, or airborne equipment such as autopilot, avionics and systems displays, and/or flight management system (FMS). The evaluator is expected to test the applicant's knowledge of the systems that are installed and operative during both the oral and flight portions of the practical test. If the applicant has trained using a class 1 or class 2 EFB to display charts and data, and wishes to use the EFB during the practical test, the applicant is expected to demonstrate appropriate knowledge, risk management, and skill.

If the practical test is conducted in an aircraft, the applicant is required by 14 CFR part 61, section 61.45(d) (2) to provide an appropriate view-limiting device acceptable to the evaluator. The applicant and the evaluator should establish a procedure as to when and how this device should be donned and removed, and brief this procedure before the flight. The device must be used during all testing that requires flight "solely by reference to instruments" included as part of the Task objective. This device must prevent the applicant from having visual reference outside the aircraft, but it must not restrict the evaluator's ability to see and avoid other traffic. The use of the device does not apply to specific elements within a Task when there is a requirement for visual references.

Operational Requirements, Limitations, & Task Information

V. Performance and Ground Reference Maneuvers

For initial commercial applicants seeking an ASEL or ASES rating, the evaluator must choose:

- Task A, Steep Turns, or Task B, Steep Spiral;
- Task C, Chandelles, or Task D, Lazy Eights; and
- Task E, Eights on Pylons.

VII. Slow Flight and Stalls

Task A. Maneuvering During Slow Flight

Evaluation criteria for this Task should recognize that environmental factors (e.g., turbulence) may result in a momentary activation of stall warning indicators such as the stall horn. If the applicant recognizes the stall warning indication and promptly makes an appropriate correction, a momentary activation does not constitute unsatisfactory performance on this Task. As with other Tasks, unsatisfactory performance would arise from an applicant's continual deviation from the standard, lack of correction, and/or lack of recognition.

Task B. Power-Off Stalls

Evaluation criteria for a recovery from an approach to stall should not mandate a predetermined value for altitude loss and should not mandate maintaining altitude during recovery. Proper evaluation criteria should consider the multitude of external and internal variables, which affect the recovery altitude.

Task C. Power-On Stalls

Evaluation criteria for a recovery from an approach to stall should not mandate a predetermined value for altitude loss and should not mandate maintaining altitude during recovery. Proper evaluation criteria should consider the multitude of external and internal variables, which affect the recovery altitude.

Task D. Accelerated Stalls

In a multiengine airplane, the power should be set so that the airspeed is at or below the design maneuvering speed (V_A) for the airplane. The pilot should promptly initiate the stall recovery procedure at the first indication of a stall. During the recovery, angle of attack should be reduced first, followed by rolling wings level prior to the addition of power to alleviate the risk of asymmetric thrust while in a turn. A pilot should delay application of high power if the aircraft is not above V_{MC} and responding as expected.

Evaluation criteria for a recovery from an approach to stall should not mandate a predetermined value for altitude loss and should not mandate maintaining altitude during recovery. Proper evaluation criteria should consider the multitude of external and internal variables, which affect the recovery altitude.

IX. Emergency Operations

Task E. Engine Failure During Takeoff Before V_{MC} (Simulated) (AMEL, AMES)

Engine failure (simulated) during takeoff should be accomplished prior to reaching 50 percent of the calculated V_{MC} .

X. Multiengine Operations

Task B. V_{MC} Demonstration (AMEL, AMES)

Airplanes with normally aspirated engines will lose power as altitude increases because of the reduced density of the air entering the induction system of the engine. This loss of power will result in a V_{MC} lower than the stall speed at higher altitudes. Therefore, recovery should be made at the first indication of loss of directional control, stall warning, or buffet. Do not perform this maneuver by increasing the pitch attitude to a high angle with both engines operating and then reducing power on the critical engine. This technique is hazardous and may result in loss of airplane control.

Task C. Engine Failure During Flight (by Reference to Instruments) (AMEL, AMES)

This Task is not required if an instrument-rated applicant has previously demonstrated instrument proficiency in a multiengine airplane, or if the applicant does not hold an instrument airplane rating. If an applicant holds both a single- and multiengine rating on a pilot certificate, but has not demonstrated instrument proficiency in a multiengine aircraft, that airman's certificate must bear a limitation indicating that multiengine flight is permitted in visual flight rules (VFR) conditions only.

Task D. Instrument Approach and Landing with an Inoperative Engine (Simulated) (by Reference to Instruments) (AMEL, AMES)

This Task is not required if an instrument-rated applicant has previously demonstrated instrument proficiency in a multiengine airplane, or if the applicant does not hold an instrument airplane rating. If an applicant holds both a single- and multiengine rating on a pilot certificate, but has not demonstrated instrument proficiency in a multiengine aircraft, that airman's certificate must bear a limitation indicating that multiengine flight is permitted in VFR conditions only.

Appendix 8: Use of Flight Simulation Training Devices (FSTD) and Aviation Training Devices (ATD): Airplane Single-Engine, Multiengine Land and Sea

Use of Flight Simulator Training Devices

14 CFR part 61, section 61.4, *Qualification and approval of flight simulators and flight training devices*, states in paragraph (a) that each full flight simulator (FFS) and flight training device (FTD) used for training, and for which an airman is to receive credit to satisfy any training, testing, or checking requirement under this chapter, must be qualified and approved by the Administrator for—

- (1) *the training, testing, and checking for which it is used;*
- (2) *each particular maneuver, procedure, or crewmember function performed; and*
- (3) *the representation of the specific category and class of aircraft, type of aircraft, particular variation within the type of aircraft, or set of aircraft for certain flight training devices.*

14 CFR part 60 prescribes the rules governing the initial and continuing qualification and use of all Flight Simulator Training Devices (FSTD) used for meeting training, evaluation, or flight experience requirements for flight crewmember certification or qualification.

An FSTD is defined in 14 CFR part 60 as an FFS or FTD:

Full Flight Simulator (FFS)—*a replica of a specific type, make, model, or series aircraft. It includes the equipment and computer programs necessary to represent aircraft operations in ground and flight conditions, a visual system providing an out-of-the-flight deck view, a system that provides cues at least equivalent to those of a three-degree-of-freedom motion system, and has the full range of capabilities of the systems installed in the device as described in part 60 of this chapter and the qualification performance standard (QPS) for a specific FFS qualification level. (part 1)*

Flight Training Device (FTD)—*a replica of aircraft instruments, equipment, panels, and controls in an open flight deck area or an enclosed aircraft flight deck replica. It includes the equipment and computer programs necessary to represent aircraft (or set of aircraft) operations in ground and flight conditions having the full range of capabilities of the systems installed in the device as described in part 60 of this chapter and the QPS for a specific FTD qualification level (part 1).*

The FAA National Simulator Program (NSP) qualifies Level A-D FFSs and Level 4 – 7¹ FTDs. In addition, each operational rule part identifies additional requirements for the approval and use of FSTDs in a training program². Use of an FSTD for the completion of the Commercial Pilot airplane practical test is permitted only when accomplished in accordance with an FAA-approved curriculum or training program.

Use of Aviation Training Devices

14 CFR part 61, section 61.4(c) states the Administrator may approve a device other than an FFS or FTD for specific purposes. Under this authority, the FAA's General Aviation and Commercial Division provides approvals for aviation training devices (ATD).

¹ The FSTD qualification standards in effect prior to part 60 defined a Level 7 FTD for airplanes (see Advisory Circular 120-45A, Airplane Flight Training Device Qualification, 1992). This device required high fidelity, airplane specific aerodynamic and flight control models similar to a Level D FFS, but did not require a motion cueing system or visual display system. In accordance with the “grandfather rights” of 14 CFR part 60, section 60.17, these previously qualified devices will retain their qualification basis as long as they continue to meet the standards under which they were originally qualified. There is only one airplane Level 7 FTD with grandfather rights that remains in the U.S. As a result of changes to part 60 that were published in the Federal Register in March 2016, the airplane Level 7 FTD was reinstated with updated evaluation standards. The new Level 7 FTD will require a visual display system for qualification. The minimum qualified Tasks for the Level 7 FTD are described in Table B1B of Appendix B of part 60.

² 14 CFR part 121, section 121.407; part 135, section 135.335; part 141, section 141.41; and part 142, section 142.59.

Advisory Circular (AC) 61-136A, *FAA Approval of Aviation Training Devices and Their Use for Training and Experience*, provides information and guidance for the required function, performance, and effective use of ATDs for pilot training and aeronautical experience (including instrument currency). FAA issues a letter of authorization (LOA) to an ATD manufacturer approving an ATD as a basic aviation training device (BATD) or an advanced aviation training device (AATD). LOAs are valid for a five-year period with a specific expiration date and include the amount of credit a pilot may take for training and experience requirements.

Aviation Training Device (ATD) – a training device, other than an FFS or FTD, that has been evaluated, qualified, and approved by the Administrator. In general, this includes a replica of aircraft instruments, equipment, panels, and controls in an open flight deck area or an enclosed aircraft cockpit. It includes the hardware and software necessary to represent a category and class of aircraft (or set of aircraft) operations in ground and flight conditions having the appropriate range of capabilities and systems installed in the device as described within AC 61-136 for the specific basic or advanced qualification level.

Basic Aviation Training Device (BATD) – provides an adequate training platform for both procedural and operational performance Tasks specific to instrument experience and the ground and flight training requirements for the Private Pilot Certificate and instrument rating per 14 CFR parts 61 and 141.

Advanced Aviation Training Device (AATD) – provides an adequate training platform for both procedural and operational performance Tasks specific to the ground and flight training requirements for the Private Pilot Certificate, instrument rating, Commercial Pilot Certificate, Airline Transport Pilot (ATP) Certificate, and Flight Instructor Certificate per 14 CFR parts 61 and 141. It also provides an adequate platform for Tasks required for instrument experience and the instrument proficiency check.

Note: ATDs cannot be used for practical tests, aircraft type specific training, or for an aircraft type rating; therefore use of an ATD for the Commercial Pilot – Airplane practical test is not permitted.

Credit for Time in an FSTD

14 CFR part 61, section 61.129 specifies the minimum aeronautical experience requirements for a person applying for a Commercial Pilot Certificate. Paragraphs (a) and (b) specify the time requirements for a Commercial Pilot Certificate in a single-engine airplane and a multiengine airplane, respectively ³. Paragraph (i) of this section specifies the amount of credit a pilot can take for time in an FFS or FTD. For those that received training in programs outside of 14 CFR part 142, reference section 61.129(i)(1)(i) ⁴. For those pilots that received training through a 14 CFR part 142 program, reference section 61.129(i)(2)(i).

Credit for Time in an ATD

14 CFR part 61, section 61.129 specifies the minimum aeronautical experience requirements for a person applying for a Commercial Pilot Certificate. Paragraphs (a) and (b) specify the time requirements for a Commercial Pilot Certificate in a single-engine airplane and a multiengine airplane, respectively ⁵. These paragraphs include specific experience requirements that must be completed in an airplane. Paragraph (i) of this section specifies the amount of credit a pilot can take towards the Commercial Pilot Certificate aeronautical experience requirements.

In order to credit pilot time, an ATD must be FAA-approved and the time must be provided by an authorized instructor. AC 61-136A, states the LOA for each approved ATD will indicate the credit allowances for pilot training and experience, as provided under 14 CFR parts 61 and 141. Time with an instructor in an AATD may be credited towards the aeronautical experience requirements for the Commercial Pilot Certificate as specified in the LOA for the device used. It is recommended that applicants who intend to take credit for time in an AATD towards the aeronautical experience requirements for the Commercial Pilot Certificate obtain a copy of the LOA for each device used so they have a record for how much credit may be taken. For additional information on the logging of ATD time, reference AC 61-136A.

³ The minimum aeronautical experience requirements may be further reduced as permitted in part 61, section 61.129(i)(3).

⁴ As part of program approval, part 141 training providers must also adhere to the requirements for permitted time in an FFS or FTD per Appendix D to part 141.

⁵ The minimum aeronautical experience requirements may be further reduced as permitted in part 61, section 61.129(i)(3).

Use of an FSTD on a Practical Test

14 CFR part 61, section 61.45 specifies the required aircraft and equipment that must be provided for a practical test unless permitted to use an FFS or FTD for the flight portion. 14 CFR part 61, section 61.64 provides the criteria for using an FSTD for a practical test. Specifically, paragraph (a) states –

If an applicant for a certificate or rating uses a flight simulator or flight training device for training or any portion of the practical test, the flight simulator and flight training device—

- (1) Must represent the category, class, and type (if a type rating is applicable) for the rating sought; and*
- (2) Must be qualified and approved by the Administrator and used in accordance with an approved course of training under 14 CFR part 141 or part 142 of this chapter; or under 14 CFR part 121 or part 135 of this chapter, provided the applicant is a pilot employee of that air carrier operator.*

Therefore, practical tests or portions thereof, when accomplished in an FSTD, may only be conducted by FAA aviation safety inspectors (ASI), aircrew program designees (APD) authorized to conduct such tests in FSTDs in 14 CFR parts 121 or 135, qualified personnel and designees authorized to conduct such tests in FSTDs for 14 CFR part 141 pilot school graduates, or appropriately authorized part 142 Training Center Evaluators (TCE).

In addition, 14 CFR part 61, section 61.64(b) states if an airplane is not used during the practical test for a type rating for a turbojet airplane (except for preflight inspection), an applicant must accomplish the entire practical test in a Level C or higher FFS and the applicant must meet the specific experience criteria listed. If the experience criteria cannot be met, the applicant can either—

(f)(1) [...] complete the following Tasks on the practical test in an aircraft appropriate to category, class, and type for the rating sought: Preflight inspection, normal takeoff, normal instrument landing system approach, missed approach, and normal landing; or

(f)(2) The applicant's pilot certificate will be issued with a limitation that states: "The [name of the additional type rating] is subject to PIC limitations," and the applicant is restricted from serving as PIC in an aircraft of that type.

When flight Tasks are accomplished in an airplane, certain Task elements may be accomplished through "simulated" actions in the interest of safety and practicality. However, when accomplished in an FFS or FTD, these same actions would not be "simulated." For example, when in an airplane, a simulated engine fire may be addressed by retarding the throttle to idle, simulating the shutdown of the engine, simulating the discharge of the fire suppression agent, if applicable, and simulating the disconnection of associated electrical, hydraulic, and pneumatics systems. However, when the same emergency condition is addressed in an FSTD, all Task elements must be accomplished as would be expected under actual circumstances.

Similarly, safety of flight precautions taken in the airplane for the accomplishment of a specific maneuver or procedure (such as limiting altitude in an approach to stall or setting maximum airspeed for an engine failure expected to result in a rejected takeoff) need not be taken when an FSTD is used. It is important to understand that, whether accomplished in an airplane or FSTD, all Tasks and elements for each maneuver or procedure must have the same performance standards applied equally for determination of overall satisfactory performance.

Appendix 9: References

This ACS is based on the following 14 CFR parts, FAA guidance documents, manufacturer's publications, and other documents.

Reference	Title
14 CFR part 39	Airworthiness Directives
14 CFR part 43	Maintenance, Preventive Maintenance, Rebuilding and Alteration
14 CFR part 61	Certification: Pilots, Flight Instructors, and Ground Instructors
14 CFR part 68	Requirements for Operating Certain Small Aircraft Without a Medical Certificate
14 CFR part 71	Designation of Class A, B, C, D and E Airspace Areas; Air Traffic Service
14 CFR part 91	General Operating and Flight Rules
14 CFR part 93	Special Air Traffic Rules
14 CFR part 119	Certification: Air Carriers and Commercial Operators
AC 00-6	Aviation Weather
AC 00-45	Aviation Weather Services
AC 60-28	English Language Skill Standards Required by 14 CFR parts 61, 63 and 65
AC 61-67	Stall and Spin Awareness Training
AC 68-1	Alternative Pilot Physical Examination and Education Requirements
AC 00-54	Pilot Windshear Guide
AC 61-107	Aircraft Operations at Altitudes Above 25,000 Feet Mean Sea Level or Mach Numbers Greater Than .75/ with Change 1
AC 91.21-1	Use of Portable Electronic Devices Aboard Aircraft
AC 91-73	Parts 91 and 135 Single Pilot, Flight School Procedures During Taxi Operations
AC 91.21-1	Use of Portable Electronic Devices Aboard Aircraft
AFM	Airplane Flight Manual
AIM	Aeronautical Information Manual
FAA-H-8083-1	Aircraft Weight and Balance Handbook
FAA-H-8083-2	Risk Management Handbook
FAA-H-8083-3	Airplane Flying Handbook
FAA-H-8083-6	Advanced Avionics Handbook
FAA-H-8083-15	Instrument Flying Handbook
FAA-H-8083-23	Seaplane, Skiplane, and Float/Ski Equipped Helicopter Operations Handbook
FAA-H-8083-25	Pilot's Handbook of Aeronautical Knowledge
FAA-P-8740-66	Flying Light Twins Safely Pamphlet
POH/AFM	Pilot's Operating Handbook/FAA-Approved Airplane Flight Manual
Other	Chart Supplements
	Navigation Charts
	Navigation Equipment Manual
	USCG Navigation Rules, International-Inland
	NOTAMs

Note: Users should reference the current edition of the reference documents listed above. The current edition of all FAA publications can be found at www.faa.gov.

Appendix 10: Abbreviations and Acronyms

The following abbreviations and acronyms are used in the ACS.

Abb./Acronym	Definition
14 CFR	Title 14 of the Code of Federal Regulations
AATD	Advanced Aviation Training Device
AC	Advisory Circular
ACS	Airman Certification Standards
AD	Airworthiness Directive
ADM	Aeronautical Decision-Making
AELS	Aviation English Language Standard
AFM	Airplane Flight Manual
AFS	Flight Standards Service
AGL	Above Ground Level
AIM	Aeronautical Information Manual
AKTR	Airman Knowledge Test Report
ALD	Alternative Lighting Devices
AMEL	Airplane Multiengine Land
AMES	Airplane Multiengine Sea
AOA	Angle of Attack
AOO	Area of Operation
APD	Aircrew Program Designee
APD	Aircrew Program Designee
ASEL	Airplane Single-Engine Land
ASES	Airplane Single-Engine Sea
ASI	Aviation Safety Inspector
ATC	Air Traffic Control
ATD	Aviation Training Device
ATP	Airline Transport Pilot
BATD	Basic Aviation Training Device
CDI	Course Deviation Indicator
CFIT	Controlled Flight Into Terrain
CFR	Code of Federal Regulations
CG	Center of Gravity
CP	Completion Phase
CRM	Crew Resource Management
CTP	Certification Training Program
DA	Decision Altitude
DH	Decision Height
DME	Distance Measuring Equipment
DP	Departure Procedures

Abb./Acronym	Definition
DPE	Designated Pilot Examiner
ELT	Emergency Locator Transmitter
FAA	Federal Aviation Administration
FADEC	Full Authority Digital Engine Control
FFS	Full Flight Simulator
FMS	Flight Management System
FSB	Flight Standardization Board
FSDO	Flight Standards District Office
FSTD	Flight Simulation Training Device
FTD	Flight Training Device
GBAS	Ground Based Augmentation System
GBAS -GLS	Ground Based Augmentation Landing System
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HAT	Height Above Threshold (Touchdown)
HSI	Horizontal Situation Indicator
IA	Inspection Authorization
IAP	Instrument Approach Procedure
ICAO	International Civil Aviation Organization
IFO	International Field Office
IFP	Instrument Flight Procedures
IFR	Instrument Flight Rules
IFU	International Field Unit
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
IPC	Instrument Rating – Airplane <i>Canadian Conversion</i>
IPC	Instrument Proficiency Check
IR	Instrument Rating
IRA	Instrument Rating – Airplane
KOEL	Kinds of Operation Equipment List
LAHSO	Land and Hold Short Operations
LDA	Localizer-Type Directional Aid
LOA	Letter of Authorization
LOC	ILS Localizer
LPV	Localizer Performance with Vertical Guidance
LSC	Learning Statement Codes
MAP	Missed Approach Point
MDA	Minimum Descent Altitude
MEL	Minimum Equipment List
MFD	Multi-functional Displays
MMEL	Master Minimum Equipment List

Abb./Acronym	Definition
NAS	National Airspace System
NOD	Notice of Disapproval
NOTAMs	Notices to Airmen
NSP	National Simulator Program
NTSB	National Transportation Safety Board
NWS	National Weather Service
PIC	pilot-in-command
POA	Plan of Action
POH	Pilot's Operating Handbook
PTS	Practical Test Standards
QPS	Qualification Performance Standard
RAIM	Receiver Autonomous Integrity Monitoring
RMP	Risk Management Process
RNAV	Area Navigation
RNP	Required Navigation Performance
SAE	Specialty Aircraft Examiner
SFRA	Special Flight Rules Area
SMS	Safety Management System
SOP	Standard Operating Procedures
SRM	Single-Pilot Resource Management
SRM	Safety Risk Management
STAR	Standard Terminal Arrival
SUA	Special Use Airspace
TAEA	Track Advisory Environmental Assessment
TAF	Terminal Forecast
TAS	True Airspeed
TCE	Training Center Evaluator
TCH	Threshold Crossing Height
TEM	Threat and Error Management
TFR	Temporary Flight Restrictions
TUC	Time of Useful Consciousness
UTC	Coordinated Universal Time
V _{FE}	Maximum flap extended speed
VFR	Visual Flight Rules
VLE	Landing F Expanding Speed
VMC	Visual Meteorological Conditions
V _{MC}	Minimum Control Speed with the Critical Engine Inoperative
V _{NE}	Never exceed speed
VOR	Very High Frequency Omnidirectional Range
V _s	Stall Speed
V _x	Best Angle of Climb Speed

Abb./Acronym	Definition
V _Y	Best Rate of Climb Speed
V _{SSE}	Safe, intentional one-engine-inoperative speed. Originally known as safe single-engine speed
V _{XSE}	Best angle of climb speed with one engine inoperative
V _{YSE}	Best rate of climb speed with one engine inoperative
V _{SO}	Stalling Speed or the Minimum Steady Flight Speed in the Landing Configuration