EGYPTIAN CIVIL AVIATION AUTORITY

AIRLINE TRANSPORT PILOT AND AIRCRAFT TYPE RATING
Examination Standards
For
AIRPLANES

ATP.1.Introduction:

(a) General Information

The Flight Safety Standards Sector of the Egyptian Civil Aviation Supervisory Authority (ECAA) has developed this ECA Examination Standards book to be used by examiners when conducting airline transport pilot and aircraft type rating ECA Examinations in airplanes. Instructors are expected to use this book when preparing applicants for ECA Examinations. Applicants should refer to these standards during their training.

Information considered directive in nature is described in this ECA Examination Standards in terms such as "shall" and "must" indicating the actions are mandatory. Guidance information is described in terms such as "should" and "may" indicating the actions are desirable or permissive but not mandatory.

The ECAA gratefully acknowledges the valuable assistance provided by many individuals and companies who contributed their time and talent in assisting with the development of this ECA Examination Standards.

(b) ECA Examination standards concept

ECAR part 61 specifies the areas in which knowledge and skills must be demonstrated by the applicant before the issuance of an airline transport pilot certificate and/or a type rating in airplanes.

(c) Aircraft and Equipment Requirements for the ECA Examination

The applicant is required to provide an appropriate and airworthy aircraft for the ECA Examination. Its operating limitations must not prohibit the TASKS required on the ECA Examination. Flight instruments are those required for controlling the aircraft without outside references. The aircraft must have radio equipment for communications with air traffic control and the performance of instrument approach procedures.

(d) Use of ECAA -Approved Flight Simulator or Flight Training Device

In the AREA OF OPERATION labeled "PREFLIGHT PREPARATION," the TASKS are knowledge only. These TASKS do not require the use of a flight training device (FTD), flight simulator, or an aircraft to accomplish, but they may be used.

Each inflight maneuver or procedure must be performed by the applicant in an FTD, flight simulator, or an aircraft. Appendix 1 of this ECA Examination Standards should be consulted to identify the maneuvers or procedures that may be accomplished in an FTD or flight simulator. The level of FTD or flight simulator required for each maneuver or procedure will also be found in appendix 1.

When accomplished in an aircraft, certain TASK elements may be accomplished through "simulated" actions in the interest of safety and practicality, but when accomplished in an FTD or flight simulator, these same actions would not be "simulated." For example, when in an aircraft, 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, and simulating the disconnection of associated electrics, hydraulics, pneumatics, etc.

However, when the same emergency condition is addressed in an FTD or a flight simulator, all TASK elements must be accomplished as would be expected under actual circumstances. Similarly, safety of flight precautions taken in the aircraft for the accomplishment of a specific maneuver or procedure (such as limiting altitude in an approach to stall, setting maximum airspeed for a rejected takeoff) need not be taken when an FTD or a flight simulator is used.

(e) Examiner Responsibility

The examiner who conducts the ECA Examination is responsible for determining that the applicant meets the standards outlined in the Objective of each TASK within the AREAS OF OPERATION, in the ECA Examination Standards. The examiner shall meet this responsibility by determining that the applicant's knowledge and skill meet the Objective in all required TASKS.

The equipment examination must be closely coordinated and related to the flight portion of the ECA Examination, but must not be given during the flight portion of the ECA Examination. The equipment examination should be administered prior (it may be the same day) to the flight portion of the ECA Examination. The examiner may accept

written evidence of the equipment exam if the exam is approved by the Administrator and administered by an individual authorized by the Administrator. The examiner shall use whatever means deemed suitable to determine that the applicant's equipment knowledge meets the standard.

The AREAS OF OPERATION in Section 2 contain TASKS which include both "knowledge" and "skill" ELEMENTS. The examiner shall ask the applicant to perform the skill ELEMENTS. Knowledge ELEMENTS not evident in the demonstrated skills may be tested by questioning, at anytime, during the flight event. Questioning in flight should be used judiciously so that safety is not jeopardized. Questions may be deferred until after the flight portion of the test is completed.

For aircraft requiring only one pilot, the examiner may not assist the applicant in the management of the aircraft, radio communications, tuning and identifying navigational equipment, and using navigation charts. If the examiner, other than an ECAA Inspector, is qualified and current in the specific make and model aircraft that is certified for two or more crewmembers, he or she may occupy a duty position. If the examiner occupies a duty position on an aircraft that requires two or more crewmembers, the examiner must fulfill the duties of that position. Moreover, when occupying a required duty position, the examiner shall perform crew resource management functions as briefed and requested by the applicant.

SAFETY OF FLIGHT shall be the prime consideration at all times. The examiner, applicant, and crew shall be constantly alert for other traffic.

(f) Satisfactory Performance

The ability of an applicant to safely perform the required TASKS is based on:

(1) Performing the TASKS specified in the AREAS OF OPERATION for the certificate or rating sought within the approved standards;

(2) Demonstrating mastery of the aircraft with the successful outcome of each TASK performed never seriously in doubt;

(3) Demonstrating sound judgment and crew resource management; and single-pilot competence if the aircraft is type certificated for single-pilot operations.

(g) Unsatisfactory Performance

Consistently exceeding tolerances stated in the TASK Objective, or failure to take prompt, corrective action when tolerances are exceeded, is indicative of unsatisfactory performance. The tolerances represent the performance expected in good flying conditions. Any action, or lack thereof, by the applicant which requires corrective intervention by the examiner to maintain safe flight shall be disqualifying.

If, in the judgment of the examiner, the applicant's performance of any TASK is unsatisfactory, the associated AREA OF OPERATION is failed and therefore the ECA Examination is failed. Examiners shall not repeat TASKS that have been attempted and failed. The examiner or applicant may discontinue the test at any time after the failure of a TASK which makes the applicant ineligible for the certificate or rating sought. The ECA Examination will be continued only with the consent of the applicant. In such cases, it is usually better for the examiner to continue with the ECA Examination to complete the other TASKS. If the examiner determines that the entire ECA Examination must be repeated, the ECA Examination should not be continued but should be terminated immediately. If the ECA Examination is either continued or discontinued, the applicant is entitled to credit for those AREAS OF OPERATION satisfactorily performed, if the remainder of the ECA Examination is completed within 60 days of when the ECA Examination was discontinued. However, during the retest and at the discretion of the examiner, any AREA OF OPERATION may be reevaluated including those previously passed. Whether the remaining parts of the ECA Examination are continued or not after a failure, a notice of disapproval must be issued.

When the examiner determines that a TASK is incomplete, or the outcome uncertain, the examiner may require the applicant to repeat that TASK, or portions of that TASK. This provision has been made in the interest of fairness and does not mean that instruction or practice is permitted during the certification process. When practical, the remaining TASKS of the ECA Examination phase should be completed before repeating the questionable TASK. If the second attempt to perform a questionable TASK is not clearly satisfactory, the examiner shall consider it unsatisfactory.

If the ECA Examination must be terminated for unsatisfactory performance and there are other AREAS OF OPERATION which have not been tested or still need to be repeated, a notice of disapproval shall be issued listing the specific AREAS OF OPERATION which have not been successfully completed or tested.

This ECA Examination Standards uses the terms "AREA OF OPERATION" and "TASK" to denote areas in which competency must be demonstrated. When a disapproval notice is issued, the examiner must record the applicant's unsatisfactory performance in terms of "AREA OF OPERATION" appropriate to the ECA Examination conducted.

(h) Crew Resource Management (CRM)

CRM "...refers to the effective use of all available resources; human resources, hardware, and information." Human resources "...includes all other groups routinely working with the cockpit crew (or pilot) who are involved in decisions that are required to operate a flight safely. These groups include, but are not limited to: dispatchers, cabin crewmembers, maintenance personnel, and air traffic controllers." CRM is not a single TASK. CRM is a set of competencies which must be evident in all TASKS in this ECA Examination Standards as applied to the single pilot or the multicrew operation. CRM competencies, grouped into three clusters of observable behavior, are:

(1) Communications processes and decisions
- (i) Briefing
- (ii) Inquiry/Advocacy/Assertiveness
- (iii) Self-Critique
- (iv) Communication with available personnel resources
- (v) Decision making

(2) Building and maintenance of a flight team
- (i) Leadership/Followership
- (ii) Interpersonal Relationships

(3) Workload management and situational awareness
- (i) Preparation/Planning
- (ii) Vigilance
- (iii) Workload Distribution
- (iv) Distraction Avoidance
- (v) Wake Turbulence Avoidance

CRM deficiencies almost always contribute to the unsatisfactory performance of a TASK. Therefore, the competencies provide an extremely valuable vocabulary for debriefing. For debriefing purposes, an amplified list of these competencies, expressed as behavioral markers. These markers consider the use of various levels of automation in flight management systems.

CRM evaluations are still largely subjective. Certain CRM competencies are well-suited to objective evaluation. These are the CRM-related practices set forth in the aircraft manufacturer's or the operator's ECAA -approved operating or training manuals as explicit, required procedures. Those procedures may be associated with one or more TASKS in these ECA Examination Standardss. Examples include required briefings, radio calls, and instrument approach callouts. The evaluator simply observes that the individual complies (or fails to comply) with requirements.

(i) How the Examiner Applies CRM

Examiners are required to exercise proper CRM competencies in conducting tests as well as expecting the same from applicants.

Pass/Fail judgments based solely on CRM issues must be carefully chosen since they may be entirely subjective. Those Pass/Fail judgments which are not subjective apply to CRM-related procedures in ECAA -approved operations manuals that must be accomplished, such as briefings to other crewmembers. In such cases, the operator (or the aircraft manufacturer) specifies what should be briefed and when the briefings should occur. The examiner may judge objectively whether the briefing requirement was or was not met. In those cases where the operator (or aircraft manufacturer) has not specified a briefing, the examiner shall require the applicant to brief the appropriate items from the following note. The examiner may then judge objectively whether the briefing requirement was or was not met.

NOTE: The majority of aviation accidents and incidents are due to resource management failures by the pilot/crew; fewer are due to technical failures. Each applicant shall give a crew briefing before each takeoff/departure and approach/landing. If the operator or aircraft manufacturer has not specified a briefing, the briefing shall cover the appropriate items, such as runway, SID/STAR/IAP, power settings, speeds, abnormals or emergency prior to or after V1, emergency return intentions, missed approach procedures, FAF, altitude at FAF, initial rate of descent, DH/MDA, time to missed approach, and what is expected of the other crewmembers during the takeoff/SID and approach/landing. If the first takeoff/departure and approach/landing briefings are satisfactory, the examiner may allow the applicant to brief only the changes, during the remainder of the flight.

Applicant's Use of Checklists

Throughout the ECA Examination, the applicant is evaluated on the use of an appropriate checklist. 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, especially in a single-pilot operation. In this case, a review of the checklist after the elements have been accomplished would be appropriate. Use of a checklist should also consider visual scanning and division of attention at all times.

(j) Use of Distractions during ECA Examinations

Numerous studies indicate that many accidents have occurred when the pilot has been distracted during critical phases of flight. To evaluate the pilot's ability to utilize proper control technique while dividing attention both inside and outside the cockpit, the examiner shall cause a realistic distraction during the flight portion of the ECA Examination to evaluate the applicant's ability to divide attention while maintaining safe flight.

SECTION 1 - PREFLIGHT PREPARATION

I. AREA OF OPERATION: PREFLIGHT PREPARATION

A. TASK: EQUIPMENT EXAMINATION

Objective. To determine that the applicant:

1. Exhibits adequate knowledge appropriate to the airplane; its systems and components; its normal, abnormal, and emergency procedures; and uses the correct terminology with regard to the following items—

a. landing gear—indicators, float devices, brakes, antiskid, tires, nose-wheel steering, and shock absorbers.

b. powerplant—controls and indications, induction system, carburetor and fuel injection, turbocharging, cooling, fire detection/protection, mounting points, turbine wheels, compressors, deicing, anti-icing, and other related components.

c. propellers—type, controls, feathering/unfeathering, autofeather, negative torque sensing, synchronizing, and synchrophasing.

d. fuel system—capacity; drains; pumps; controls; indicators; crossfeeding; transferring; jettison; fuel grade, color and additives; fueling and defueling procedures; and substitutions, if applicable.

e. oil system—capacity, grade, quantities, and indicators.

f. hydraulic system—capacity, pumps, pressure, reservoirs, grade, and regulators.

g. electrical system—alternators, generators, battery, circuit breakers and protection devices, controls, indicators, and external and auxiliary power sources and ratings.

h. environmental systems—heating, cooling, ventilation, oxygen and pressurization, controls, indicators, and regulating devices.

i. avionics and communications—autopilot; flight director; Electronic Flight Indicating Systems (EFIS); Flight Management System(s) (FMS); Long Range Navigation (LORAN) systems; Doppler Radar; Inertial Navigation Systems (INS); Global Positioning System (GPS/DGPS/WGPS); VOR, NDB, ILS/MLS, RNAV systems and components; indicating devices; transponder; and emergency locator transmitter.

j. ice protection—anti-ice, deice, pitot-static system tion, propeller, windshield, wing and tail surfaces.

k. crewmember and passenger equipment—oxygen system, survival gear, emergency exits, evacuation procedures and crew duties, and quick donning oxygen mask for crewmembers and passengers.

l. flight controls—ailerons, elevator(s), rudder(s), winglets, canards, control tabs, balance tabs, stabilizer, flaps, spoilers, leading edge flaps/slats and trim systems.

m. pitot-static system with associated instruments and the power source for the flight instruments.

2. Exhibits adequate knowledge of the contents of the Pilot's Operating Handbook or AFM with regard to the systems and components listed in paragraph 1 (above); the Minimum Equipment List (MEL), if appropriate; and the Operations Specifications, if applicable.

B. TASK: PERFORMANCE AND LIMITATIONS

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of performance and limitations, including a thorough knowledge of the adverse effects of exceeding any limitation.

2. Demonstrates proficient use of (as appropriate to the airplane) performance charts, tables, graphs, or other data relating to items such as—

a. accelerate-stop distance.

b. accelerate-go distance.

c. takeoff performance—all engines, engine(s) inoperative.

d. climb performance including segmented climb performance; with all engines operating—with one or more engine(s) inoperative, and with other engine malfunctions as may be appropriate.

e. service ceiling—all engines, engines(s) inoperative, including drift down, if appropriate.

f. cruise performance.

g. fuel consumption, range, and endurance.

h. descent performance.

i. go-around from rejected landings.

j. other performance data (appropriate to the airplane).

3. Describes (as appropriate to the airplane) the airspeeds used during specific phases of flight.

4. Describes the effects of meteorological conditions upon performance characteristics and correctly applies these factors to a specific chart, table, graph or other performance data.

5. Computes the center-of-gravity location for a specific load condition (as specified by the examiner), including adding, removing, or shifting weight.

6. Determines if the computed center of gravity is within the forward and aft center-of-gravity limits, and that lateral fuel balance is within limits for takeoff and landing.

7. Demonstrates good planning and knowledge of procedures in applying operational factors affecting airplane performance.

SECTION 2 -PREFLIGHT PROCEDURES, INFLIGHT MANEUVERS, AND POSTFLIGHT PROCEDURES

II. AREA OF OPERATION: PREFLIGHT PROCEDURES

A. TASK: PREFLIGHT INSPECTION.

NOTE: If a flight engineer (FE) is a required crewmember for a particular type airplane, the actual visual inspection may be waived. The actual visual inspection may be replaced by using an approved pictorial means that realistically portrays the location and detail of inspection items. On airplanes requiring an FE, an applicant must demonstrate adequate knowledge of the FE functions for the safe completion of the flight if the FE becomes ill or incapacitated during a flight.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the preflight inspection procedures, while explaining briefly—

a. the purpose of inspecting the items which must be checked.

b. how to detect possible defects.

c. the corrective action to take.

2. Exhibits adequate knowledge of the operational status of the airplane by locating and explaining the significance and importance of related documents such as—

a. airworthiness and registration certificates.

b. operating limitations, handbooks, and manuals.

c. minimum equipment list (MEL) (if appropriate).

d. weight and balance data.

e. maintenance requirements, tests, and appropriate records applicable to the proposed flight or operation; and maintenance that may be performed by the pilot or other designated crewmember.

3. Uses the approved checklist to inspect the airplane externally and internally.

4. Uses the challenge-and-response (or other approved) method with the other crewmember(s), where applicable, to accomplish the checklist procedures.

5. Verifies the airplane is safe for flight by emphasizing (as appropriate) the need to look at and explain the purpose of inspecting items such as—

a. powerplant, including controls and indicators.

b. fuel quantity, grade, type, contamination safeguards, and servicing procedures.

c. oil quantity, grade, and type.

d. hydraulic fluid quantity, grade, type, and servicing procedures.

e. oxygen quantity, pressures, servicing procedures, and associated systems and equipment for crew and passengers.

f. hull, landing gear, float devices, brakes, and steering system.

g. tires for condition, inflation, and correct mounting, where applicable.

h. fire protection/detection systems for proper operation, servicing, pressures, and discharge indications.

i. pneumatic system pressures and servicing.

j. ground environmental systems for proper servicing and operation.

k. auxiliary power unit (APU) for servicing and operation.

l. flight control systems including trim, spoilers, and leading/trailing edge.

m. anti-ice, deice systems, servicing, and operation.

6. Coordinates with ground crew and ensures adequate clearance prior to moving any devices such as door, hatches, and flight control surfaces.

7. Complies with the provisions of the appropriate Operations Specifications, if applicable, as they pertain to the particular airplane and operation.

8. Demonstrates proper operation of all applicable airplane systems.

9. Notes any discrepancies, determines if the airplane is airworthy and safe for flight, or takes the proper corrective action.

10. Checks the general area around the airplane for hazards to the safety of the airplane and personnel.

B. TASK: POWERPLANT START

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the correct powerplant start procedures including the use of an auxiliary power unit (APU) or external power source, starting under various atmospheric conditions, normal and abnormal starting limitations, and the proper action required in the event of a malfunction.

2. Ensures the ground safety procedures are followed during the before-start, start, and after-start phases.

3. Ensures the use of appropriate ground crew personnel during the start procedures.

4. Performs all items of the start procedures by systematically following the approved checklist items for the before-start, start, and after-start phases.

5. Demonstrates sound judgment and operating practices in those instances where specific instructions or checklist items are not published.

C. TASK: TAXIING

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Objective. To determine that the applicant:

1. Exhibits adequate knowledge of safe taxi procedures (as appropriate to the airplane including push-back or power-back, as may be applicable).

2. Demonstrates proficiency by maintaining correct and positive airplane control. In airplanes equipped with float devices, this includes water taxiing, sailing, step taxi, approaching a buoy, and docking.

3. Maintains proper spacing on other aircraft, obstructions, and persons.

4. Accomplishes the applicable checklist items and performs recommended procedures.

5. Maintains desired track and speed.

6. Complies with instructions issued by ATC (or the examiner simulating ATC).

7. Observes runway hold lines, localizer and glide slope critical areas, buoys, beacons, and other surface control markings and lighting.

8. Maintains constant vigilance and airplane control during taxi operation.

D.TASK: PRETAKEOFF CHECKS

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the pretakeoff checks by stating the reason for checking the items outlined on the approved checklist and explaining how to detect possible malfunctions.

2. Divides attention properly inside and outside cockpit.

3. Ensures that all systems are within their normal operating range prior to beginning, during the performance of, and at the completion of those checks required by the approved checklist.

4. Explains, as may be requested by the examiner, any normal or abnormal system operating characteristic or limitation; and the corrective action for a specific malfunction.

5. Determines if the airplane is safe for the proposed flight or requires maintenance.

6. Determines the airplane's takeoff performance, considering such factors as wind, density altitude, weight, temperature, pressure altitude, and runway condition and length.

7. Determines airspeeds/V-speeds and properly sets all instrument references, flight director and autopilot controls, and navigation and communications equipment.

8. Reviews procedures for emergency and abnormal situations which may be encountered during takeoff, and states the corrective action required of the pilot in command and other concerned crewmembers.

9. Obtains and correctly interprets the takeoff and departure clearance as issued by ATC.

III. AREA OF OPERATION: TAKEOFF AND DEPARTURE PHASE

A. TASK: NORMAL AND CROSSWIND TAKEOFF

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of normal and crosswind takeoffs and climbs including (as appropriate to the airplane) airspeeds, configurations, and emergency/abnormal procedures.

2. Notes any surface conditions, obstructions or other hazards that might hinder a safe takeoff.

3. Verifies and correctly applies correction for the existing wind component to the takeoff performance.

4. Completes required checks prior to starting takeoff to verify the expected powerplant performance. Performs all required pretakeoff checks as required by the appropriate checklist items.

5. Aligns the airplane on the runway centerline.

6. Applies the controls correctly to maintain longitudinal alignment on the centerline of the runway prior to initiating and during the takeoff.

7. Adjusts the powerplant controls as recommended by the ECAA -approved guidance for the existing conditions.

8. Monitors powerplant controls, settings, and instruments during takeoff to ensure all predetermined parameters are maintained.

9. Adjusts the controls to attain the desired pitch attitude at the predetermined airspeed/V-speed to attain the desired performance for the particular takeoff segment.

10. Performs the required pitch changes and, as appropriate, performs or calls for and verifies the accomplishment of, gear and flap retractions, power adjustments, and other required pilot-related activities at the required airspeed/V-speeds within the tolerances established in the Pilot's Operating Handbook or AFM.

11. Uses the applicable noise abatement and wake turbulence avoidance procedures, as required.

12. Accomplishes or calls for and verifies the accomplishment of the appropriate checklist items.

13. Maintains the appropriate climb segment airspeed/V-speeds.

14. Maintains the desired heading within ±5° and the desired airspeed/V-speed within ±5 knots or the appropriate V-speed range.

B. TASK: INSTRUMENT TAKEOFF

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of an instrument takeoff with instrument meteorological conditions simulated at or before reaching an altitude of 100 feet (30 meters) AGL. If accomplished in a flight simulator, visibility should be no greater than one-quarter (1/4) mile 400 meter, or as specified by operator specifications.

2. Takes into account, prior to beginning the takeoff, operational factors which could affect the maneuver such as Takeoff Warning Inhibit Systems or other airplane characteristics, runway length, surface conditions, wind, wake turbulence, obstructions, and other related factors that could adversely affect safety.

3. Accomplishes the appropriate checklist items to ensure that the airplane systems applicable to the instrument takeoff are operating properly.

4. Sets the applicable radios/flight instruments to the desired setting prior to initiating the takeoff.

5. Applies the controls correctly to maintain longitudinal alignment on the centerline of the runway prior to initiating and during the takeoff.

6. Transitions smoothly and accurately from visual meteorological conditions to actual or simulated instrument meteorological conditions.

7. Maintains the appropriate climb attitude.

8. Complies with the appropriate airspeeds/V-speeds and climb segment airspeeds.

9. Maintains desired heading within ±5° and desired airspeeds within ±5 knots.

10. Complies with ATC clearances and instructions issued by ATC (or the examiner simulating ATC).

C. TASK: POWERPLANT FAILURE DURING TAKEOFF

NOTE: In a multiengine airplane with published V1, VR, and/or V2 speeds, the failure of the most critical powerplant should be simulated at a point:

1. After V1 and prior to V2, if in the opinion of the examiner, it is appropriate under the prevailing conditions; or

2. As close as possible after V1 when V1 and V2 or V1 and VR are identical.

In a multiengine airplane for which no V1, VR, or V2 speeds are published, the failure of the most critical powerplant should be simulated at a point after reaching a minimum of VSSE and, if accomplished in the aircraft, at an altitude not lower than 500 feet AGL.

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Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the procedures used during powerplant failure on takeoff, the appropriate reference airspeeds, and the specific pilot actions required.

2. Takes into account, prior to beginning the takeoff, operational factors which could affect the maneuver such as Takeoff Warning Inhibit Systems or other airplane characteristics, runway length, surface conditions, wind, wake turbulence, obstructions, and other related factors that could adversely affect safety.

3. Completes required checks prior to starting takeoff to verify the expected powerplant performance. Performs all required pretakeoff checks as required by the appropriate checklist items.

4. Aligns the airplane on the runway.

5. Applies the controls correctly to maintain longitudinal alignment on the centerline of the runway prior to initiating and during the takeoff.

6. Adjusts the powerplant controls as recommended by the ECAA -approved guidance for the existing conditions.

7. Single-Engine Airplanes: Establishes a power-off descent approximately straight-ahead, if the powerplant failure occurs after becoming airborne.

8. Continues the takeoff (in a multiengine airplane) 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.

9. Maintains (in a multiengine airplane), after a simulated powerplant failure and after a climb has been established, the desired heading within ±5°, desired airspeed within ±5 knots, and, if appropriate for the airplane, establishes a bank of approximately 5°, or as recommended by the manufacturer, toward the operating powerplant.

10. Maintains the airplane alignment with the heading appropriate for climb performance and terrain clearance when powerplant failure occurs.

D. TASK: REJECTED TAKEOFF

Objective. To determine that the applicant understands when to reject or continue the takeoff and:

1. Exhibits adequate knowledge of the technique and procedure for accomplishing a rejected takeoff after powerplant/system(s) failure/warnings, including related safety factors.

2. Takes into account, prior to beginning the takeoff, operational factors which could affect the maneuver such as Takeoff Warning Inhibit Systems or other airplane characteristics, runway length, surface conditions, wind, obstructions, and other related factors that could affect takeoff performance and could adversely affect safety.

3. Aligns the airplane on the runway centerline.

4. Performs all required pretakeoff checks as required by the appropriate checklist items.

5. Adjusts the powerplant controls as recommended by the ECAA -approved guidance for the existing conditions.

6. Applies the controls correctly to maintain longitudinal alignment on the centerline of the runway.

7. Aborts the takeoff if, in a single-engine airplane the powerplant failure occurs prior to becoming airborne, or in a multiengine airplane, 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/stopway.

8. Reduces the power smoothly and promptly, if appropriate to the airplane, when powerplant failure is recognized.

9. Uses spoilers, prop reverse, thrust reverse, wheel brakes, and other drag/braking devices, as appropriate, maintaining positive control in such a manner as to bring the airplane to a safe stop. Accomplishes the appropriate powerplant failure or other procedures and/or checklists as set forth in the Pilot's Operating Handbook or AFM.

E. TASK: INSTRUMENT DEPARTURE

Objective. To determine that the applicant:

1. In actual or simulated instrument conditions, exhibits adequate knowledge of SIDs, En Route Low and High Altitude Charts, STARs, and related pilot/controller responsibilities.
2. Uses the current and appropriate navigation publications for the proposed flight.
3. Selects and uses the appropriate communications frequencies, and selects and identifies the navigation aids associated with the proposed flight.
4. Performs the appropriate checklist items.
5. Establishes communications with ATC, using proper phraseology.
6. Complies, in a timely manner, with all instructions and airspace restrictions.
7. Exhibits adequate knowledge of two-way radio communications failure procedures.
8. Intercepts, in a timely manner, all courses, radials, and bearings appropriate to the procedure, route, clearance, or as directed by the examiner.
9. Maintains the appropriate airspeed within ±10 knots, headings within ±10°, altitude within ±100 feet (30 meters); and accurately tracks a course, radial, or bearing.
10. Conducts the departure phase to a point where, in the opinion of the examiner, the transition to the en route environment is complete.

IV. AREA OF OPERATION: INFLIGHT MANEUVERS

A. TASK: STEEP TURNS

Objective. To determine that the applicant:
1. In actual or simulated instrument conditions, exhibits adequate knowledge of steep turns (if applicable to the airplane) and the factors associated with performance; and, if applicable, wing loading, angle of bank, stall speed, pitch, power requirements, and over-banking tendencies.
2. Selects an altitude recommended by the manufacturer, training syllabus, or other training directive, but in no case lower than 3,000 feet (900 meters) AGL.
3. Establishes the recommended entry airspeed.
4. Rolls into a coordinated turn of 180° or 360° with a bank of at least 45°. Maintains the bank angle within ±5° while in smooth, stabilized flight.
5. Applies smooth coordinated pitch, bank, and power to maintain the specified altitude within ±100 feet (30 meters) and the desired airspeed within ±10 knots.
6. Rolls out of the turn (at approximately the same rate as used to the airplane in a straight-and-level attitude or, at the discretion of the examiner, reverses the direction of turn and repeats the maneuver in the opposite direction.
7. Avoids any indication of an approaching stall, abnormal flight attitude, or exceeding any structural or operating limitation during any part of the maneuver.

B. TASK: APPROACHES TO STALLS

THREE approaches to stall are required, as follows:
1. One in the takeoff configuration (except where the airplane uses only zero-flap takeoff configuration) or approach configuration.
2. One in a clean configuration.

3. One in a landing configuration.

One of these approaches to a stall must be accomplished while in a turn using a bank angle of 15 to 30°

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Objective. To determine that the applicant:

1. In actual or simulated instrument conditions exhibits adequate knowledge of the factors which influence stall characteristics, including the use of various drag configurations, power settings, pitch attitudes, weights, and bank angles. Also, exhibits adequate knowledge of the proper procedure for resuming normal flight.
2. Selects an entry altitude that is in accordance with the AFM or Pilot's Operating Handbook, but in no case lower than an altitude that will allow recovery to be safely completed at a minimum of 3,000 feet (900 meters) AGL. When accomplished in an FTD or flight simulator, the entry altitude may be at low, intermediate, or high altitude as appropriate for the airplane and the configuration, at the discretion of the examiner.
3. Observes the area is clear of other aircraft prior to accomplishing an approach to a stall.
4. While maintaining altitude, slowly establishes the pitch attitude (using trim or elevator/stabilizer), bank angle, and power setting that will induce stall at the desired target airspeed.
5. Announces the first indication of an impending stall (such as buffeting, stick shaker, decay of control effectiveness, and any other cues related to the specific airplane design characteristics) and initiates recovery or as directed by the examiner (using maximum power or as directed by the examiner).
6. Recovers to a reference airspeed, altitude and heading, allowing only the acceptable altitude or airspeed loss, and heading deviation.
7. Demonstrates smooth, positive control during entry, approach to a stall, and recovery.

C. TASK:POWERPLANT FAILURE—MULTIENGINE AIRPLANE.

NOTE: When not in an FTD or a flight simulator, the feathering of one propeller must be demonstrated in any multiengine airplane equipped with propellers (includes turboprop) which can be safely feathered and unfeathered while airborne. In a multiengine jet airplane, one engine must be shut down and a restart must be demonstrated while airborne. Feathering or shutdown should be performed only under conditions, and at such altitudes (no lower than 3,000 feet [900 meters] AGL) and in a position where a safe landing can be made on an established airport in the event difficulty is encountered in unfeathering the propeller or restarting the engine. At an altitude lower than 3,000 feet (900 meters) AGL, simulated engine failure will be performed by setting the powerplant controls to simulate zero-thrust. In the event propeller cannot be unfeathered or engine air started during the test, it should be treated as an emergency. When authorized and conducted in a flight simulator, feathering or shutdown may be performed in conjunction with any procedure or maneuver and at locations and altitudes at the discretion of the examiner. However, when conducted in an FTD, authorizations shall be limited to shutdown, feathering, restart, and/or unfeathering procedures only. See appendix 1.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the flight characteristics and controllability associated with maneuvering with powerplant(s) inoperative (as appropriate to the airplane).
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 failure (or 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. Determines the cause for the powerplant(s) failure and if a restart is a viable option.

7. Maintains desired altitude within ±100 feet (30 meters), 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 ECAA -approved procedure /checklist or the manufacturer's recommended procedures and pertinent checklist items.

D. TASK: POWERPLANT FAILURE—SINGLE–ENGINE AIRPLANE

NOTE: No simulated powerplant failure shall be given by the examiner in an airplane when an actual touchdown could not be safely completed should it become necessary.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the flight characteristics, approach and forced (emergency) landing procedures, and related procedures to use in the event of a powerplant failure (as appropriate to the airplane).

2. Maintains positive control throughout the maneuver.

3. Establishes and maintains the recommended best glide airspeed, ±5 knots, and configuration during a simulated powerplant failure.

4. Selects a suitable airport or landing area which is within the performance capability of the airplane.

5. Establishes a proper flight pattern to the selected airport or landing area, taking into account altitude, wind, terrain, obstructions, and other pertinent operational factors.

6. Follows the emergency checklist items appropriate to the airplane.

7. Determines the cause for the simulated powerplant failure (if altitude permits) and if a restart is a viable option.

8. Uses configuration devices such as landing gear and flaps in a manner recommended by the manufacturer and/or approved by the ECAA .

E. TASK: SPECIFIC FLIGHT CHARACTERISTICS

Objective. To determine that the applicant:

Exhibits adequate knowledge of specific flight characteristics appropriate to the specific airplane, such as Dutch Rolls in a Boeing 727 or Lear Jet.

V. AREA OF OPERATION: INSTRUMENT PROCEDURES

A. TASK: INSTRUMENT ARRIVAL

Objective. To determine that the applicant:

1. 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 all instrument references, flight director and autopilot controls, and navigation and communications equipment associated with the arrival.
4. Performs the airplane checklist items appropriate to the 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 examiner.
9. Adheres to airspeed restrictions and adjustments required by regulations, ATC, the Pilot's Operating Handbook, the AFM, or the examiner.
10. Establishes, where appropriate, a rate of descent consistent with the airplane operating characteristics and safety.
11. Maintains the appropriate airspeed/V-speed within ±10 knots, but not less than VREF, if applicable; heading ±10°; altitude within ±100 feet (30 meters); and accurately tracks radials, courses, and bearings.
12. Complies with the provisions of the Profile Descent, STAR, and other arrival procedures, as appropriate.

B. TASK: HOLDING

Objective. To determine that the applicant:
1. 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 airplane 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. Follows appropriate entry procedures for a standard, non-standard, published, or non-published holding pattern.
5. Complies with ATC reporting requirements.
6. Uses the proper timing criteria required by the holding altitude and ATC or examiner's instructions.
7. Complies with the holding pattern leg length when a DME distance is specified.
8. Uses the proper wind-drift correction techniques to accurately maintain the desired radial, track, courses, or bearing.
9. Arrives over the holding fix as close as possible to the "expect further clearance" time.
10. Maintains the appropriate airspeed/V-speed within ±10 knots, altitude within ±100 feet (30 meters), headings within ±10°; and accurately tracks radials, courses, and bearings.

C. TASK: PRECISION INSTRUMENT APPROACHES

NOTE: Two precision approaches, utilizing airplane NAVAID equipment for centerline and glideslope guidance, must be accomplished in simulated or actual instrument conditions to Decision Height (DH). At least one approach must be flown manually. The second approach may be flown via the autopilot, if appropriate, and if the DH altitude does not violate the authorized minimum altitude for autopilot operation. Manually flown precision approaches may use raw data displays or may be flight director assisted, at the discretion of the examiner.

For multiengine airplanes at least one manually controlled precision approach must be accomplished with a simulated failure of one powerplant. The simulated powerplant failure should occur before initiating the final approach segment and must continue to

touchdown or throughout the missed approach procedure. As the markings on localizer/glide slope indicators vary, a one-quarter scale deflection of either the localizer, or glide slope indicator is when it is displaced one-fourth of the distance that it may be deflected from the on glide slope or on localizer position.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the precision instrument approach procedures with all engines operating, and with one engine inoperative.
2. Accomplishes the appropriate precision instrument approaches as selected by the examiner.
3. Establishes two-way communications with ATC using the proper communications phraseology and techniques, either personally, or, if appropriate, directs co-pilot/safety pilot to do so, as required for the phase of flight or approach segment.
4. Complies, in a timely manner, with all clearances, instructions, and procedures.
5. Advises ATC anytime the applicant is unable to comply with a clearance.
6. Establishes the appropriate airplane configuration and airspeed/V-speed considering turbulence, wind shear, microburst conditions, or other meteorological and operating conditions.
7. Completes the airplane checklist items appropriate to the phase of flight or approach segment, including engine out approach and landing checklists, if appropriate.
8. Prior to beginning the final approach segment, maintains the desired altitude ±100 feet (30 meters), the desired airspeed within ±10 knots, the desired heading within ±5°; and accurately tracks radials, courses, and bearings.
9. Selects, tunes, identifies, and monitors the operational status of ground and airplane navigation equipment used for the approach.
10. Applies the necessary adjustments to the published Decision Height and visibility criteria for the airplane approach category as required, such as—
    a. Notices to Airmen, including NOTAMs.
    b. Inoperative airplane and ground navigation equipment.
    c. Inoperative visual aids associated with the landing environment.
    d. National Weather Service reporting factors and criteria.
11. Establishes a predetermined rate of descent at the point where the electronic glide slope begins which approximates that required for the airplane to follow the glide slope.
12. Maintains a stabilized final approach, from the Final Approach Fix to Decision Height allowing no more than one-quarter scale deflection of either the glide slope or localizer indications and maintains the desired airspeed within ±5 knots.
13. A missed approach or transition to a landing shall be initiated at Decision Height.
14. Initiates immediately the missed approach when at the Decision Height, and the required visual references for the runway are not unmistakably visible and identifiable.
15. Transitions to a normal landing approach (missed approach for seaplanes) only when the airplane is in a position from which a descent to a landing on the runway can be made at a normal rate of descent using normal maneuvering.
16. Maintains localizer and glide slope within one-quarter scale deflection of the indicators during the visual descent from Decision Height to a point over the runway where glide slope must be abandoned to accomplish a normal landing.

D. TASK: NONPRECISION INSTRUMENT APPROACHES

NOTE: The applicant must accomplish at least two nonprecision approaches (one of which must include a procedure turn) in simulated or actual weather conditions, using two different approach systems. At least one nonprecision approach must be flown manually without receiving radar vectors. The examiner will select nonprecision approaches that are representative of that which the applicant is likely to use. The choices must utilize two different systems; i.e., NDB and one of the following: VOR, LOC, LDA, GPS, or LORAN.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of nonprecision approach procedures representative of those the applicant is likely to use.

2. Accomplishes the nonprecision instrument approaches selected by the examiner.

3. Establishes two-way communications with ATC as appropriate to the phase of flight or approach segment and uses proper communications phraseology and techniques.

4. Complies with all clearances issued by ATC.

5. Advises ATC or the examiner any time the applicant is unable to comply with a clearance.

6. Establishes the appropriate airplane configuration and airspeed, and completes all applicable checklist items.

7. Maintains, prior to beginning the final approach segment, the desired altitude ±100 feet (30 meters), the desired airspeed ±10 knots, the desired heading ±5°; and accurately tracks radials, courses, and bearings.

8. Selects, tunes, identifies, and monitors the operational status of ground and airplane navigation equipment used for the approach.

9. Applies the necessary adjustments to the published Minimum Descent Altitude (MDA) and visibility criteria for the airplane approach category when required, such as—

a. Notices to Airmen, including NOTAMs.

b. Inoperative airplane and ground navigation equipment.

c. Inoperative visual aids associated with the landing environment.

d. National Weather Service reporting factors and criteria.

10. Establishes a rate of descent that will ensure arrival at the MDA (at, or prior to reaching, the visual descent point (VDP), if published) with the airplane in a position from which a descent from MDA to a landing on the intended runway can be made at a normal rate using normal maneuvering.

11. Allows, while on the final approach segment, not more than quarter-scale deflection of the Course Deviation Indicator (CDI) or ±5° in the case of the RMI or bearing pointer, and maintains airspeed within ±5 knots of that desired.

12. Maintains the MDA, when reached, within -0, +50 feet (-0, +15 meters) to the missed approach point.

13. Executes the missed approach if the required visual references for the intended runway are not unmistakably visible and identifiable at the missed approach point.

14. Executes a normal landing from a straight-in or circling approach when instructed by the examiner.

E. TASK: CIRCLING APPROACH

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of circling approach categories, speeds, and procedures to a specified runway.

2. In simulated or actual instrument conditions to MDA, accomplishes the circling approach selected by the examiner.

3. Demonstrates sound judgment and knowledge of the airplane maneuvering capabilities throughout the circling approach.
4. Confirms the direction of traffic and adheres to all restrictions and instructions issued by ATC.
5. Descends at a rate that ensures arrival at the MDA at, or prior to, a point from which a normal circle-to-land maneuver can be accomplished.
6. Avoids descent below the appropriate circling MDA or exceeding the visibility criteria until in a position from which a descent to a normal landing can be made.
7. Maneuvers the airplane, after reaching the authorized circling approach altitude, by visual references to maintain a flightpath that permits a normal landing on a runway at least 90° from the final approach course.
8. Performs the procedure without excessive maneuvering and without exceeding the normal operating limits of the airplane (the angle of bank should not exceed 30°).
9. Maintains the desired altitude within -0, +100 feet (-0, +30 meters), heading/track within ±5°, the airspeed/V-speed within ±5 knots, but not less than the airspeed as specified in the Pilot's Operating Handbook or the AFM.
10. Uses the appropriate airplane configuration for normal and abnormal situations and procedures.
11. Turns in the appropriate direction, when a missed approach is dictated during the circling approach, and uses the correct procedure and airplane configuration.
12. Performs all procedures required for the circling approach and airplane control in a smooth, positive, and timely manner.

F. TASK: MISSED APPROACH

NOTE: The applicant must perform two missed approaches with one being from a precision approach (ILS, MLS, or GPS). One complete published missed approach must be accomplished. Additionally, in multiengine airplanes, a missed approach must be accomplished with one engine inoperative (or simulated inoperative). The engine failure may be experienced anytime prior to the initiation of the approach, during the approach, or during the transition to the missed approach attitude and configuration.

Going below the MDA or DH, as appropriate, prior to the initiation of the missed approach shall be considered unsatisfactory performance. However, satisfactory performance may be concluded if the missed approach is properly initiated at DH and the airplane descends below DH only because of the momentum of the airplane transitioning from a stabilized approach to a missed approach.

Objective. To determine that the applicant:
1. Exhibits adequate knowledge of missed approach procedures associated with standard instrument approaches.
2. Initiates the missed approach procedure promptly by the timely application of power, establishes the proper climb attitude, and reduces drag in accordance with the approved procedures.
3. Reports to ATC, beginning the missed approach procedure.
4. Complies with the appropriate missed approach procedure or ATC clearance.
5. Advises ATC any time the applicant is unable to maneuver the airplane to comply with a clearance.
6. Follows the recommended airplane checklist items appropriate to the go-around procedure for the airplane used.
7. Requests clearance, if appropriate, to the alternate airport, another approach, a holding fix, or as directed by the examiner.
8. Maintains the desired altitudes ±100 feet (30 meters), airspeed ±5 knots, heading ±5°; and accurately tracks courses, radials, and bearings.

VI. AREA OF OPERATION: LANDINGS AND APPROACHES TO LANDINGS

NOTE: Notwithstanding the authorizations for the combining of maneuvers and for the waiver of maneuvers, the applicant must make at least three actual landings (one to a full stop). These landings must include the types listed in this AREA OF OPERATION; however, more than one type may be combined where appropriate (i.e., crosswind and landing from a precision approach or landing with simulated powerplant failure, etc.). For all landings, touchdown should be 500 to 3,000 feet (200 to 1000 meters) past the runway threshold, not to exceed one-third of the runway length, with the runway centerline between the main gear.

A. TASK: NORMAL AND CROSSWIND APPROACHES AND LANDINGS

NOTE: In an airplane with a single powerplant, unless the applicant holds a commercial pilot certificate, he or she must accomplish accuracy approaches and spot landings from an altitude of 1,000 feet (300 meters) or less, with the engine power lever in idle and 180° of change in direction. The airplane must touch the ground in a normal landing attitude. At least one landing must be from a forward slip. Although circular approaches are acceptable, 180° approaches using two 90° turns with a straight base leg are preferred.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of normal and crosswind approaches and landings including recommended approach angles, airspeeds, V-speeds, configurations, performance limitations, wake turbulence, and safety factors (as appropriate to the airplane).
2. Establishes the approach and landing configuration appropriate for the runway and meteorological conditions, and adjusts the powerplant controls as required.
3. Maintains a ground track that ensures the desired traffic pattern will be flown, taking into account any obstructions and ATC or examiner instructions.
4. Verifies existing wind conditions, makes proper correction for drift, and maintains a precise ground track.
5. Maintains a stabilized approach and the desired airspeed/V-speed within ±5 knots.
6. Accomplishes a smooth, positively controlled transition from final approach to touchdown.
7. Maintains positive directional control and crosswind correction during the after-landing roll.
8. Uses spoilers, prop reverse, thrust reverse, wheel brakes, and other drag/braking devices, as appropriate, in such a manner to bring the airplane to a safe stop.
9. Completes the applicable after-landing checklist items in a timely manner and as recommended by the manufacturer.

B. TASK: LANDING FROM A PRECISION APPROACH

NOTE: If circumstances beyond the control of the applicant prevent an actual landing, the examiner may accept an approach to a point where, in his or her judgment, a safe landing and a full stop could have been made, and credit given for a missed approach. Where a simulator, approved for landing from a precision approach, is used, the approach may be continued through the landing and credit given for one of the landings required by this AREA OF OPERATION.

Objective. To determine that the applicant:

1. Exhibits awareness of landing in sequence from a precision approach.

2. Considers factors to be applied to the approach and landing such as displaced thresholds, meteorological conditions, NOTAMs, and ATC or examiner instructions.

3. Uses the airplane configuration and airspeed/V-speeds, as appropriate.

4. Maintains, during the final approach segment, glide slope and localizer indications within applicable standards of deviation, and the recommended airspeed/V-speed ±5 knots.

5. Applies gust/wind factors as recommended by the manufacturer, and takes into account meteorological phenomena such as wind shear, microburst, and other related safety of flight factors.

6. Accomplishes the appropriate checklist items.

7. Transitions smoothly from simulated instrument meteorological conditions at a point designated by the examiner, maintaining positive airplane control.

8. Accomplishes a smooth, positively controlled transition from final approach to touchdown.

9. Maintains positive directional control and crosswind correction during the after-landing roll.

10. Uses spoilers, prop reverse, thrust reverse, wheel brakes, and other drag/braking devices, as appropriate, in such a manner to bring the airplane to a safe stop after landing.

11. Completes the applicable after-landing checklist items in a timely manner and as recommended by the manufacturer.

C. TASK: APPROACH AND LANDING WITH (SIMULATED) POWERPLANT FAILURE—MULTIENGINE AIRPLANE.

NOTE: In airplanes with three powerplants, the applicant shall follow a procedure (if approved) that approximates the loss of two powerplants, the center and one outboard powerplant. In other multiengine airplanes, the applicant shall follow a procedure which simulates the loss of 50 percent of available powerplants, the loss being simulated on one side of the airplane.

Objective. To determine that the applicant:

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.

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 failure (or 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 (30 meters), 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 spoilers, prop reverse, thrust reversers, wheel brakes, and other drag/braking devices, as appropriate, in such a manner to bring the airplane to a safe stop after landing.

13. Completes the applicable after-landing checklist items in a timely manner, after clearing the runway, and as recommended by the manufacturer.

D. TASK: LANDING FROM A CIRCLING APPROACH

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of a landing from a circling approach.
2. Selects, and complies with, a circling approach procedure to a specified runway.
3. Considers the environmental, operational, and meteorological factors which affect a landing from a circling approach.
4. Confirms the direction of traffic and adheres to all restrictions and instructions issued by ATC.
5. Descends at a rate that ensures arrival at the MDA at, or prior to, a point from which a normal circle-to-land maneuver can be accomplished.
6. Avoids descent below the appropriate circling MDA or exceeding the visibility criteria until in a position from which a descent to a normal landing can be made.
7. Accomplishes the appropriate checklist items.
8. Maneuvers the airplane, after reaching the authorized circling approach altitude, by visual references, to maintain a flightpath that permits a normal landing on a runway at least 90° from the final approach course.
9. Performs the maneuver without excessive maneuvering and without exceeding the normal operating limits of the airplane. The angle of bank should not exceed 30°.
10. Maintains the desired altitude within +100, -0 feet (+30, -0 meters), heading within ±5°, and approach airspeed/V-speed within ±5 knots.
11. Uses the appropriate airplane configuration for normal and abnormal situations and procedures.
12. Performs all procedures required for the circling approach and airplane control in a timely, smooth, and positive manner.
13. Accomplishes a smooth, positively controlled transition to final approach and touchdown or to a point where in the opinion of the examiner that a safe full stop landing could be made.
14. Maintains positive directional control and crosswind correction during the after-landing roll.
15. Uses spoilers, prop reverse, thrust reverse, wheel brakes, and other drag/braking devices, as appropriate, in such a manner to bring the airplane to a safe stop.
16. Completes the appropriate after-landing checklist items, after clearing the runway, in a timely manner and as recommended by the manufacturer.

E. TASK: REJECTED LANDING.

NOTE: The maneuver may be combined with instrument, circling, or missed approach procedures, but instrument conditions need not be simulated below 100 feet (30 meters) above the runway. This maneuver should be initiated approximately 50 feet (15 meters) above the runway and approximately over the runway threshold. For those applicants seeking a VFR only type rating in an airplane not capable of instrument flight, and where this maneuver is accomplished with a simulated engine failure, it should not be initiated at speeds or altitudes below that recommended in the Pilot's Operating Handbook.

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of a rejected landing procedure, including the conditions that dictate a rejected landing, the importance of a timely decision, the recommended airspeed/V-speeds, and also the applicable "clean-up" procedure.
2. Makes a timely decision to reject the landing for actual or simulated circumstances and makes appropriate notification when safety-of-flight is not an issue.
3. Applies the appropriate power setting for the flight condition and establishes a pitch attitude necessary to obtain the desired performance.
4. Retracts the wing flaps/drag devices and landing gear, if appropriate, in the correct sequence and at a safe altitude, establishes a positive rate of climb and the appropriate airspeed/V-speed within ±5 knots.
5. Trims the airplane as necessary, and maintains the proper ground track during the rejected landing procedure.

6. Accomplishes the appropriate checklist items in a timely manner in accordance with approved procedures.

F. TASK: LANDING FROM A NO FLAP OR A NONSTANDARD FLAP APPROACH

NOTE: This maneuver need not be accomplished for a particular airplane type if the Administrator has determined that the probability of flap extension failure on that type airplane is extremely remote due to system design. The examiner must determine whether checking on slats only and partial-flap approaches are necessary for the ECA Examination.

Objective. To determine that the applicant:

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 flightpath 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 a touchdown at an acceptable point on the runway and a safe landing to a full stop could be made.
6. After landing, uses spoilers, prop reverse, thrust reverse, wheel brakes, and other drag/braking devices, as appropriate, in such a manner to bring the airplane to a safe stop.

VII. AREA OF OPERATION: NORMAL AND ABNORMAL PROCEDURES

Objective. To determine that the applicant:

1. Possesses adequate knowledge of the normal and abnormal procedures of the systems, subsystems, and devices relative to the airplane type (as may be determined by the examiner); knows immediate action items to accomplish, if appropriate, and proper checklist to accomplish or to call for, if appropriate.
2. Demonstrates the proper use of the airplane systems, subsystems, and devices (as may be determined by the examiner) appropriate to the airplane such as—

a. powerplant.
b. fuel system.
c. electrical system.
d. hydraulic system.
e. environmental and pressurization systems.
f. fire detection and extinguishing systems.
g. navigation and avionics systems.
h. automatic flight control system, electronic flight instrument system, and related subsystems.
i. flight control systems.
j. anti-ice and deice systems.

k. airplane and personal emergency equipment, other systems, subsystems, and devices specific to the type airplane, including make, model, and series.

VIII. AREA OF OPERATION: EMERGENCY PROCEDURES

Objective. To determine that the applicant:

1. Possesses adequate knowledge of the emergency procedures (as may be determined by the examiner) relating to the particular airplane type.
2. Demonstrates the proper emergency procedures (as must be determined by the examiner) relating to the particular airplane type, including—
    a. emergency descent (maximum rate).
    b. inflight fire and smoke removal.
    c. rapid decompression.
    d. emergency evacuation.
    e. others (as may be required by the AFM).
3. Demonstrates the proper procedure for any other emergency outlined (as must be determined by the examiner) in the appropriate approved AFM.

IX. AREA OF OPERATION: POSTFLIGHT PROCEDURES

A. TASK: AFTER-LANDING PROCEDURES

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of safe after-landing/taxi/ramping/anchoring/docking and mooring procedures as appropriate.
2. Demonstrates proficiency by maintaining correct and positive control. In airplanes equipped with float devices, this includes water taxiing, approaching a buoy, sailing, and docking.
3. Maintains proper spacing on other aircraft, obstructions, and persons.
4. Accomplishes the applicable checklist items and performs the recommended procedures.
5. Maintains the desired track and speed.
6. Complies with instructions issued by ATC (or the examiner simulating ATC).
7. Observes runway hold lines, localizer and glide slope critical areas, and other surface control markings and lighting.
8. Maintains constant vigilance and airplane control during the taxi operation.

B. TASK: PARKING AND SECURING

Objective. To determine that the applicant:

1. Exhibits adequate knowledge of the parking, mooring, docking, beaching, and the securing airplane procedures.
2. Demonstrates adequate knowledge of the airplane forms/logs to record the flight time/discrepancies.

Rules governing Flight Simulator Operators

The Operator of a Flight Simulator must demonstrate his capability to maintain the performance, functions and other characteristics specified for the Flight Simulator Qualification Level as follows:

(a) Quality control. Maintain a quality control system.

(b) Updating. Maintain a link with manufacturers to incorporate important modifications, especially:

(1) Aeroplane modifications. Aeroplane modifications, whether or not enforced by an airworthiness directive, and which are essential for training and checking, shall be introduced into all affected Flight Simulators.

(2) Modification of simulators, including motion and visual systems:

(أ) Where applicable and essential for training and checking, Simulator Operators shall update their Flight Simulators (for example in the light of data revisions). Modifications of the simulator hardware and software, which affect flight, ground handling, and performance or any major modifications of the motion or visual system must be evaluated to determine the impact on the original qualification criteria. If necessary, Simulator Operators must prepare amendments for any affected Validation Tests. The Simulator Operator must test the simulator to the new criteria.

(ب) The Authority must be advised in advance of any major changes to determine if the tests carried out by the Simulator Operator are satisfactory. A special evaluation of the simulator may be necessary prior to returning it to training following the modification.

(c) Installations. Ensure that Flight Simulator is housed in suitable premises which support safe and reliable operation.

(1) The Simulator Operator shall ensure that the simulator and its installation comply with the requirements, of the Egyptian Civil Aviation Regulations (ECAR (s)) for Parts 61 and 121, section 121.407 and Appendix "H". However as a minimum the following shall be addressed:

(أ) Simulator occupants and maintenance personnel must be briefed on simulator safety to ensure that they are aware of all safety equipment and arrangement in the simulator in case of emergency.

(ب) Adequate fire/smoke detection, warning and suppression arrangements to ensure the safe passage of personnel from the simulator.

(ج) Adequate protection against electrical, mechanical, hydraulic and pneumatic hazards including those arising from the control loading & motion systems to ensure the maximum safety of all personnel in the vicinity of the simulator.

(iv) Other items:

(A) Two-way communication system which remains operational in the event of total power failure.

(B) Emergency lighting.

(C) Escape exits & facilities.

(D) Occupant restraints (seats, seat belts etc.).

(E) External warning of motion and access ramp or stairs activity.

(F) Danger area markings.

(G) Guard rails and gates.

(H) Motion & Control Loading Emergency stop controls accessible from either pilot and instructor seats; and

(I) A manual or automatic electrical power isolation switch.

(2) The simulator safety features such as emergency stops and emergency lighting must be checked regularly by the Simulator Operator but in any case at least annually.

Table 1 Minimum simulator requirements for qualifying ECAA Level A, B, C and D Simulators

Qualification Level	General Technical Requirements	Maximum Credit
Level A	The lowest level of simulator technical complexity. An enclosed full scale replica of the Aeroplane cockpit/flight deck including simulation of all systems, instruments, navigational equipment, communications and caution and warning systems. An Instructor's station with seat must be provided and checking except for take off and as must be seats for the crewmembers and one landing maneuver. Seat for inspectors/observers. Control forces and displacement characteristics must correspond to that of the replicated Aeroplane and they must respond in the same manner as the Aeroplane under the same flight conditions. The use of class specific data tailored to the specific Aeroplane type with fidelity sufficient to meet the Objective Tests. Functions and Subjective Tests are allowed. Generic Ground Effect and ground handling models are permitted. Motion, visual and sound systems sufficient to support the training, testing and checking	Suitable for: -Crew procedures training. Instrument Flight training. -Transition / Conversion training, testing -Recurrent training, checking and testing (Type and Instrument Rating Renewal/Revalidation).

	credits sought are required. The visual system must provide at least 45 degrees horizontal and 30 degrees vertical field of view per pilot. A night scene is acceptable. The response to control inputs shall not be greater than 300 milliseconds more than that experienced on the aircraft. Windshear need not be simulated. (For Level 'A' Simulators see IEM STD 1A.030)	
Level B	***As for Level A plus: Validation Flight Test Data must be used as the basis for flight and performance and systems characteristics. Additionally ground handling and aerodynamics programming to include Ground Effect reaction and handling characteristics must be derived from validation Flight Test Data.***	***As for Level A plus:*** ***Recency of experience (three take off and landings in 90 days).*** ***-Transition /Conversion training for take off and landing maneuvers.*** ***-Transition/Conversion testing and checking except for take off and landings.***
Level C	***The second highest Level of simulator performance.*** ***As for Level B plus:*** ***A Dusk/Night Visual system is required with an instantaneous horizontal field of view of not less than 75 degrees per pilot. A six-axis motion system shall be provided. The sound simulation must include the sounds of precipitation and other significant airplane noises perceptible to the pilot and must be able to reproduce the sounds of a crash landing. The response to control inputs shall not be greater than 150 milliseconds more than that experienced on the aircraft. Windshear simulation must be provided.***	***As for Level B plus:*** ***-Transition /Conversion testing and checking of take off and landings for crew members whose minimum experience level is defined by the Authority.***
Level D	***The highest Level of simulator performance.*** ***As for Level C plus:*** ***A full Daylight/Dusk/Night visual system is required and there must be complete fidelity of sounds and motion buffets.***	***As for Level C plus:*** ***-Transition / Conversion testing and checking of take off and landings for crews, who may be required to meet a minimum experience level defined by the Authority.***

APPENDIX 1 - TASK VS. SIMULATION DEVICE CREDIT

APPENDIX 1 — AIRPLANES

TASK VS. SIMULATION DEVICE CREDIT

Examiners conducting the Airline Transport Pilot and Aircraft Type Rating ECA Examination Standardss — Airplane with simulation devices should consult appropriate documentation to ensure that the device has been approved for training, testing, and checking the TASKS in question. The documentation for each device should reflect that the following activities have occurred:

1. The device must be evaluated, determined to meet the appropriate standards, and assigned the appropriate standards For airplane flight training devices (FTD's), Airplane Flight Training Device Qualification, will be used. For simulators, Airplane Simulator Qualification, will be used.
2. The ECAA must approve the device for training, testing, and checking the specific TASKS listed in this appendix.
3. The device must continue to support the level of student or applicant performance required by this PTS.

USE OF CHART

X Creditable.

A Creditable if appropriate systems are installed and operating.

NOTE: 1. The airplane may be used for all tasks.

2. For the Airline Transport Pilot Certificate, not more than 50 percent of the maneuvers may be accomplished in an FTD or simulator unless:

a. each maneuver has been satisfactorily accomplished for an instructor in the appropriate airplane not less than three times, or

ii. the applicant has logged not less than 1,500 hours of flight time as a pilot.

3. Level C simulators may be used as indicated only if the applicant meets established prerequisite experience requirements.
4. Training Devices below Level 4 may NOT be used for airplane type ratings.
5. Standards for and use of Level 1 Flight Training Devices have not been determined.