AIRLINE TRANSPORT PILOT AIRPLANE

PRACTICAL TEST GUIDE

1972

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Flight Standards Service

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PREFACE

This test Guide has been prepared by the Flight Standards Service of the Federal Aviation Administration and—

1. specifies those maneuvers and procedures required by Federal Aviation Regulations to be accomplished successfully by the Airline Transport Pilot applicant;

2. describes the maneuvers and procedures and stipulates the conditions and limitations under which they are to be performed; and

3. describes the level of competence and expresses the factors which are to be taken into account by the inspector/examiner in deciding whether the applicant has satisfactorily accomplished the maneuver or procedure.

Specific airplane configuration for any particular operation will be as specified in the airplane operating instructions for the airplane in use. Since this Guide may be used for aircraft ranging from a single-engine trainer to a four-engine jet transport, general terms such as approach speed, landing configuration, takeoff power, etc., will indicate that a condition/position/setting should be as specified in those operating instructions.

Descriptions of maneuvers are not of a "how-to-accomplish" nature since this is not intended as an instructional publication. How to perform a particular maneuver or procedure is explained in detail in one of several training publications such as the operating instructions for the airplane in use, the *Flight Training Handbook*, the *Instrument Flying Handbook*, and many commercial publications available. There are no maneuvers required for the ATP flight test that are not a part of the required training for previous flight tests for either private, commercial, instrument, or multiengine ratings. The difference is the level of skill required to be demonstrated in performing the maneuvers and procedures.

Comments regarding this publication should be directed to Department of Transportation, Federal Aviation Administration, Flight Standards Technical Division, P.O. Box 25082, Oklahoma City, Oklahoma 73125.

AIRLINE TRANSPORT PILOT (AIRPLANE) PRACTICAL TEST GUIDE

General Information.

This Guide describes the practical test requirements for Airline Transport Pilot Certificates (Airplane) and associated Class and Type ratings.

An applicant for an Airline Transport Pilot (Airplane) Certificate must meet the requirements prescribed in FAR §§ 61.141, 61.143, 61.145, and 61.147. The holder of an Airline Transport Pilot Certificate (Rotorcraft) who applies for an airplane rating must comply with §§ 61.143, 61.147, and 61.157(c). An applicant who does not already have an instrument rating must, in addition to the maneuvers and procedures described in this Guide, comply with § 61.37 (c) (1) as part of the oral, and, as part of the flight test, perform each additional maneuver required by § 61.37(c) (2) that is appropriate to the airplane type.

Each applicant is required to furnish an airworthy airplane in accordance with § 61.25. He should also furnish current charts or publications for departure, enroute, and approach operations in the National Airspace

System. Any system of aeronautical charts that accurately depicts the approved instrument procedures is acceptable.

Throughout the maneuvers described in this Guide, and those required by § 61.37(c), if appropriate, good judgment commensurate with a high level of safety must be demonstrated. In determining whether such judgment has been shown, the inspector/examiner* who conducts the check considers adherence to approved procedures, actions based on analysis of situations for which there is no prescribed procedure or recommended practice, and qualities of prudence and care in selecting a course of action.

Each maneuver or procedure must be performed in flight except to the extent that certain maneuvers or procedures may be performed in an airplane simulator with a visual system (visual simulator), or an airplane simulator without a visual system (non-visual simulator), or a training device, or may be waived. The current appendix A to FAR Part 61 should be consulted to identify the maneuvers which are affected by these provisions.

The airline transport pilot (airplane) practical test described in this Guide is arranged

* The words "inspector/examiner" are used in this Guide to denote either an FAA Inspector or a Pilot Examiner who has been designated by the FAA to conduct flight tests for Airline Transport Pilot Certificates or Type Ratings.

in seven sections. Under each section are pertinent performance items. When the final performance of *any* item is unsatisfactory, the flight test will be unsatisfactory. A flight test may be discontinued at any time by the inspector/examiner or the applicant. However, once started, every effort should be made to complete the test. In the event of an unsatisfactory or incomplete test, credit will be allowed on subsequent reexamination for each satisfactorily completed item.

The items listed under each section outline the procedures and maneuvers and contain three divisions: *Objective*, *Description*, and *Acceptable Performance Guidelines*.

The *Objective* states briefly the reason the procedure or maneuver is required. It specifies the piloting operations which the applicant must perform properly to demonstrate that he has mastered this element of pilot qualifications.

The *Description* explains the procedure or maneuver and stipulates the conditions and limitations under which it is to be performed. These descriptions should not be confused with the objectives.

The *Acceptable Performance Guidelines* describe the factors which are taken into account by the inspector/examiner in deciding whether the applicant has accomplished the objectives of the maneuver or procedure at the required level of competence. The airspeed, altitude, and heading tolerances are not hard and fast,

but represent the performance to be expected in good flying conditions.

In addition to specific factors to be considered for a particular item, the applicant's performance will be evaluated by the inspector/examiner on the basis of the judgment, knowledge, accuracy, and smoothness displayed on the test. The competent performance of a flight maneuver is a performance in which the pilot is obviously the master of the airplane.

Throughout the flight test, the applicant will be evaluated on his vigilance for other air traffic, and his adequate clearance of the area before performing any flight maneuver which might result in a hazard of collision with another aircraft.

The procedures and maneuvers set forth in this Guide must be performed in a manner that satisfactorily demonstrates knowledge and skill with respect to—

1. the airplane, its systems and components;

2. proper control of airspeed, configuration, direction, altitude, and attitude in accordance with procedures and limitations contained in the approved Airplane Flight Manual, check lists, or other approved material appropriate to the airplane type; and

3. compliance with approved en route, instrument approach, missed approach, ATC, or other applicable procedures.

I. PREFLIGHT

A. Equipment Examination (Oral).

1. ***Objective.*** To determine that the applicant has a practical knowledge of the airplane, its operation and limitations.

2. ***Description.*** As part of the practical test the equipment examination must be closely coordinated with, and related to, the flight maneuvers portion but may not be given during the flight maneuvers portion. Notwithstanding § 61.21, the equipment examination may be given to an applicant who has completed a ground school that is part of an approved training program under the Federal Aviation Regulations Part 121 for the airplane type involved and who is recommended by his instructor. The equipment examination must be repeated if the flight maneuvers portion is not satisfactorily completed within 60 days. The equipment examination must cover—

a. subjects requiring a practical knowledge of the airplane, its powerplants, systems, components, and operational and performance factors;

b. normal, abnormal, and emergency procedures and the operations and limitations related thereto; and

c. the appropriate provisions of the approved Airplane Flight Manual.

3. ***Acceptable Performance Guidelines.*** The applicant's performance will be evaluated on the basis of his knowledge of the appropriate flight manual and understanding of the airplane, its systems and components, and knowledge of weight and balance limitations.

B. Preflight Inspection.

1. ***Objective.*** To determine that the applicant possesses the necessary knowledge of the airplane to ascertain that it is safe for flight.

2. ***Description.*** The pilot must—

a. conduct an actual visual inspection of the exterior and interior of the airplane, locating each item and explaining briefly the purpose of inspecting it; and

b. demonstrate the use of the prestart check list, appropriate control system checks, starting procedures, radio and electronic equipment checks, and the selection of proper navigation and communications radio facilities and frequencies prior to flight.

If a flight engineer is a required crewmember for the particular type airplane, the actual visual inspection may either be waived or it may be replaced by using an approved pictorial means that realistically portrays the location and detail of inspection items.

3. ***Acceptable Performance Guidelines.*** The applicant will be expected to

explain the operational purposes of each item. If a flight engineer is a required flight crewmember for the airplane involved, the waiver provision of § 61.147(c) applies to the visual inspection.

C. Taxiing.

1. ***Objective.*** To determine that the applicant has the ability to maneuver the airplane expeditiously and safely on the surface.

2. ***Description.*** This maneuver includes taxiing, sailing, or docking procedures in compliance with instructions issued by the appropriate traffic control authority or by the inspector/examiner.

3. ***Acceptable Performance Guidelines.*** Evaluation will be made on the basis of the applicant's attention to safety; proficiency in handling the aircraft; consideration for other aircraft and personnel on ramps and taxiways; the use of power brakes and flight controls for directional control; and the proper use of nose-wheel steering, tailwheel lock, or water rudder as applicable.

D. Powerplant Checks.

1. ***Objective.*** To determine that the applicant can make the necessary checks to assure the airplane's immediate readiness for flight.

2. ***Description.*** As appropriate to the airplane type.

3. ***Acceptable Performance Guidelines.*** The applicant will be evaluated on the basis of the proficiency and thoroughness with which the powerplant checks are accomplished and the knowledge displayed of the airplane engines, systems, and related operational checks.

II. TAKEOFFS

A. Normal.

B. Instrument.

C. Crosswind.

D. Powerplant Failure.

E. Rejected.

1. ***Objective.*** To determine that the applicant can make safe takeoffs under normal and emergency conditions and under various meteorological conditions, and can safely reject the takeoff when appropriate.

2. ***Description.***

a. *Normal.* One normal takeoff which, for the purpose of this maneuver, begins when the airplane is taxied into position on the runway to be used.

b. *Instrument.* One takeoff with instrument conditions simulated at or before reaching an altitude of 100 feet above the airport elevation.

c. *Crosswind.* One crosswind takeoff, if practicable under the existing meteorological, airport, and traffic conditions.

d. *Powerplant Failure.* One takeoff with a simulated failure of the most critical powerplant—

(i) at a point after V_1 and before V_2 that, in the judgment of the inspector/examiner, is appropriate to the airplane type under the prevailing conditions;

(ii) at a point as close as possible after V_1 when V_1 and V_2 (or V_1 and V_R) are identical; or

(iii) at the appropriate speed for nontransport category airplanes.

e. *Rejected.* A rejected takeoff performed in an airplane during a normal takeoff run after reaching a reasonable speed determined by giving due consideration to aircraft characteristics, runway length, surface conditions, wind direction and velocity, brake heat energy, and any other pertinent factors that may adversely affect safety or the airplane.

3. ***Acceptable Performance Guidelines.*** Performance will be evaluated on the basis of the takeoff and reject technique, judgment, observance of traffic patterns and control tower instructions, coordination, and smoothness. Airplane configuration, airspeed, and operational procedures should be in accordance with those recommended in the

applicable operating instructions for the airplane being used.

III. INSTRUMENT PROCEDURES

A. Area Departure and Area Arrival.

1. ***Objective.*** To determine that the applicant can adhere to actual or simulated ATC clearances, including assigned radials and proper use of navigation facilities.

2. ***Description.*** During each of these maneuvers the applicant must—

a. adhere to actual or simulated ATC clearances (including assigned radials); and

b. properly use available navigation facilities. Either area arrival or area departure, but not both, may be waived under § 61.147 (c).

3. ***Acceptable Performance Guidelines.*** Evaluation will be made on the basis of the applicant's acceptance and knowledge of instructions and his knowledge of, and use of, available navigation facilities; also his knowledge of, and adherence to, airspeed limits relative to altitude and distance from the airport.

B. Holding.

1. ***Objective.*** To determine that the applicant can enter and fly a holding pattern properly.

2. ***Description.*** This maneuver includes entering, maintaining, and leaving holding patterns. It may be performed under either area departure or area arrival.

3. ***Acceptable Performance Guidelines.*** Evaluation will be made on the basis of compliance with the holding direction/radial, timing, and staying within the holding airspace. The applicant should maintain altitude within 100 feet of the assigned altitude. Holding airspeed should be maintained within 10 knots of that airspeed recommended for holding in the airplane being used.

C. ILS and Other Instrument Approaches.

1. ***Objective.*** To determine that the applicant can make safe and accurate instrument approaches under normal conditions and with a simulated powerplant failure.

2. ***Description.*** There must be the following:

a. At least one normal ILS approach.

b. At least one manually controlled ILS approach with a simulated failure of one powerplant. The simulated failure should occur before initiating the final approach course and must continue to touchdown or through the missed approach procedure.

c. At least one nonprecision approach procedure that is representative of the non-

precision approach procedures the applicant is likely to use.

d. Demonstration of at least one non-precision approach procedure on a letdown aid, other than the approach procedure performed under subparagraph (c) of this paragraph, that the applicant is likely to use. If performed in a synthetic instrument trainer, the procedures must be observed by the inspector/examiner, or, if the applicant has completed an approved training course under Part 121 of the Federal Aviation Regulations for the airplane type involved, the procedures may be observed by a person qualified to act as an instructor or check airman under the approved training program. Each instrument approach must be performed according to any procedures and limitations approved for the approach facility used. The instrument approach begins when the airplane is over the initial approach fix for the approach procedure being used (or turned over to the final approach controller in the case of PAR approach) and ends when the airplane touches down on the runway or when transition to a missed approach configuration is completed. Instrument conditions need not be simulated below 100 feet above touchdown zone elevation.

3. ***Acceptable Performance Guidelines.*** Airplane configuration and airspeeds should be in accordance with those recommended in the applicable operating instruc-

tions for the airplane being used. Arrival at authorized minimum in position for a straight-in landing is an acceptable performance for nonprecision instrument approaches. The ILS approach, to be considered acceptable, should be conducted so that glide slope and localizer indications do not exceed one dot deviation. Altitude should be maintained within 100 feet of prescribed altitude during initial approach, and within −0 to +50 feet of minimum descent altitude or decision height. Airspeed should be controlled within 10 knots of the recommended airspeed for the airplane configuration from the initial approach fix to the final fix inbound and within −0 to +10 knots of reference airspeed with appropriate wind/gust factor adjustment from the final fix to minimum descent altitude or decision height.

D. Circling Approaches.

1. ***Objective.*** To determine that the applicant can maneuver the airplane safely under conditions of low visibility to align with and land on a more favorable runway when a straight-in approach is not practicable.

2. ***Description.*** At least one circling approach must be made under the following conditions:

a. The portion of the circling approach to the authorized minimum circling approach altitude must be made under simulated instrument conditions.

b. The approach must be made to the authorized minimum circling approach altitude followed by a change in heading and the necessary maneuvering (by visual reference) to maintain a flight path that permits a normal landing on a runway at least 90° from the final approach course of the simulated instrument portion of the approach.

c. The circling approach must be performed without excessive maneuvering, and without exceeding the normal operating limits of the airplane. The angle of bank should not exceed 30°. When the maneuver is performed in an airplane, it may be waived as provided in § 61.147(c) if local conditions beyond the control of the pilot prohibit the maneuver or prevent it from being performed as required.

3. ***Acceptable Performance Guidelines.*** Angle of bank should not exceed 30°. Altitude should be maintained within −0 to +100 feet during flight at minimum descent altitude. MDA should be maintained until aircraft is in a position from which a normal approach to a landing can be accomplished, and preferably until turning final. Airspeed should be controlled within −0 to +10 knots of the recommended airspeed for the airplane configuration from the final fix inbound to the point where the transition is made from the approach configuration to the landing configuration, and within −0 to +10 knots of reference airspeed with appropriate wind/

gust factor adjustment after the landing configuration is established.

E. Missed Approaches.

1. ***Objective.*** To determine that the applicant can accurately and safely transition from approach and landing configuration to climb configuration, and can fly the airplane throughout the missed approach procedure from minimum approach altitude to the missed approach altitude under normal conditions and with a simulated powerplant failure.

2. ***Description.*** Each applicant must perform at least two missed approaches, with at least one from an ILS approach. A complete approved missed approach procedure must be accomplished at least once and, at the discretion of the inspector/examiner, a simulated powerplant failure may be required during any of the missed approaches. These maneuvers may be performed either independently or in conjunction with maneuvers required under Sections III or V of this Guide. At least one must be performed in flight.

3. ***Acceptable Performance Guidelines.*** Evaluation will be made on the basis of the applicant's judgment in deciding to execute the missed approach, the appropriateness of his communications and navigation procedures, his ability to maintain positive

airplane control and to operate all airplane systems in accordance with applicable operating instructions for the airplane being used. Descent below the Decision Height on ILS final prior to initiation of the missed approach procedure will be disqualifying except in those instances where the runway environment was in sight at DH.

IV. IN-FLIGHT MANEUVERS

A. Steep Turns.

1. ***Objective.*** To determine that the applicant can control an airplane in a steep bank under maneuvering load factors, and to maintain altitude and orientation.

2. ***Description.*** At least one steep turn in each direction must be performed. Each steep turn must involve a bank angle of 45° with a heading change of at least 180° but not more than 360°.

3. ***Acceptable Performance Guidelines.*** The applicant will be expected to maintain altitude within 100 feet of the entry altitude, and a bank angle of 45°, ±5°, after the turn is established, and recover within 10° of the assigned headings. Airspeed should be controlled within 10 knots of that recommended for the airplane being used. Special attention will be directed to the applicant's smoothness, coordination, and orientation.

B. Approaches to Stalls.

1. ***Objective.*** To determine that the applicant can recognize approaches to stalls in various airplane configurations, and can make prompt and effective recoveries.

2. ***Description.*** For the purpose of this maneuver, the required approach to a stall is reached when there is a perceptible buffet or other response to the initial stall entry. Except as provided below, there must be at least three approaches to stalls as follows:

a. One must be in the takeoff configuration (except where the airplane uses only a zero-flap takeoff configuration).

b. One in a clean configuration.

c. One in a landing configuration.

At the discretion of the inspector/examiner, one approach to a stall must be performed in one of the above configurations while in a turn with a bank angle between 15° and 30°. Two out of the three approaches required by this paragraph may be waived as provided in § 61.147(c).

3. ***Acceptable Performance Guidelines.*** The applicant should recognize the approach to a stall when there is a perceptible buffet or from activation of stall warning devices. Recoveries should be initiated at the first indication of an approaching stall.

The recoveries should be accomplished positively and smoothly, using appropriate and coordinated flight and power controls and with the least loss of altitude consistent with the recovery of full control effectiveness. After recovery, the applicant should make an expeditious return to the original altitude. Additional evaluation will be made on the basis of the applicant's prompt, smooth, and positive control application.

C. Specific Flight Characteristics.

1. ***Objective.*** To determine that the applicant can control and recover from specific flight characteristics that are peculiar to the airplane type.

2. ***Description.*** Recovery from specific flight characteristics that are peculiar to the airplane type.

3. ***Acceptable Performance Guidelines.*** Evaluation will be made on the basis of the applicant's demonstration of smooth, prompt, and positive recovery to normal flight, stressing minimum loss of altitude commensurate with safety. He should maintain positive aircraft control without exceeding the limitations of the aircraft being used.

D. Powerplant Failures.

1. ***Objective.*** To determine that the applicant can use the correct procedures for

feathering or shutting down an engine in flight, and that he can maneuver an airplane effectively and safely with an engine, or engines, inoperative.

2. ***Description.*** In addition to the specific requirements for maneuvers with simulated powerplant failures, the inspector/examiner may require a simulated powerplant failure at any time during the check.

3. ***Acceptable Performance Guidelines.*** Evaluation will be made on the basis of the applicant's ability to maintain heading within 20° of the original heading during the engine shutdown and restart procedures, and his altitude within 100 feet of the original altitude if it is within the capability of the airplane used. The applicant will be expected to promptly identify the inoperative engine after the engine is made inoperative by the inspector/examiner. Shut down and restart procedures should be as prescribed in the appropriate operating instructions for the airplane type. In an airplane not capable of maintaining altitude with an engine inoperative under existing conditions, the applicant will be expected to maintain an airspeed within 5 knots of the engine-out best rate-of-climb speed. The use of prescribed operating procedures, proper trim settings, and smoothness will be emphasized.

V. LANDINGS AND APPROACHES TO LANDINGS

A. Normal Landing.

B. Landing In Sequence from an ILS Approach.

C. Crosswind Landing.

D. Landing with Simulated Failure of 50% of Available Powerplants.

E. Landing from Circling Approach.

F. Rejected Landing.

G. No Flap Visual Approach to Landing.

H. Accuracy Approaches and Spot Landings (For Single Powerplant Rating Only).

1. ***Objective.*** To determine that the applicant can consistently make safe landings under normal, abnormal, and emergency conditions, and can reject a landing safely when required.

2. ***Description.*** Notwithstanding the authorizations for combining of maneuvers and for waiver of maneuvers, at least three actual landings (one to a full stop) must be made. These landings must include the types listed below but more than one type can be combined where appropriate:

a. Normal landing.

b. Landing in sequence from an ILS instrument approach except that, if circumstances beyond the control of the pilot prevent an actual landing, the inspector/examiner may accept an approach to a point where in his judgment a landing to a full stop could have been made.

c. Crosswind landing, if practical under existing meteorological, airport, and traffic conditions.

d. Maneuvering to a landing with a simulated failure of 50% of the available powerplants. The simulated loss of power must be on one side of the airplane (center and one outboard engine on three-engine airplanes), except that in turbojet powered airplanes, the following maneuvers may be substituted for this requirement.

(i) In the case of a four-engine turbojet powered airplane, maneuvering to a landing with simulated failure of the most critical powerplant, if a flight instructor in an approved training program under Part 121 of the Federal Aviation Regulations certifies to the Administrator that he has observed the applicant satisfactorily perform a landing in that type airplane with simulated failure of 50% of the available powerplants. However, these substitute maneuvers may not be used if the Administrator determines that training in the two-engine-out landing maneuver provided in the training program is unsatisfactory.

(ii) In the case of a three-engine airplane, maneuvering to a landing using an approved procedure that approximates the loss of two powerplants.

e. Landing under simulated circling approach conditions except that if circumstances beyond the control of the pilot prevent a landing, the inspector/examiner may accept an approach to a point where in his judgment a landing to a full stop could have been made.

f. A rejected landing, including a normal missed approach procedure, that is rejected approximately 50 feet over the runway and approximately over the runway threshold. This maneuver may be combined with instrument, circling, or missed approach procedures; but instrument conditions need not be simulated below 100 feet above the runway.

g. A no flap visual approach to a point where, in the judgment of the inspector/examiner a landing to a full stop on the appropriate runway could be made.

h. For a single powerplant rating only, unless the applicant holds a commercial pilot certificate, he must accomplish accuracy approaches and spot landings that include a series of three landings from an altitude of 1,000 feet or less, with the engine throttled and 180° of change in direction. The airplane must touch the ground in a normal landing attitude beyond and within 200 feet from a designated line. At least one landing

B. Approaches to Stalls.

1. ***Objective.*** To determine that the applicant can recognize approaches to stalls in various airplane configurations, and can make prompt and effective recoveries.

2. ***Description.*** For the purpose of this maneuver, the required approach to a stall is reached when there is a perceptible buffet or other response to the initial stall entry. Except as provided below, there must be at least three approaches to stalls as follows:

a. One must be in the takeoff configuration (except where the airplane uses only a zero-flap takeoff configuration).

b. One in a clean configuration.

c. One in a landing configuration.

At the discretion of the inspector/examiner, one approach to a stall must be performed in one of the above configurations while in a turn with a bank angle between 15° and 30°. Two out of the three approaches required by this paragraph may be waived as provided in § 61.147(c).

3. ***Acceptable Performance Guidelines.*** The applicant should recognize the approach to a stall when there is a perceptible buffet or from activation of stall warning devices. Recoveries should be initiated at the first indication of an approaching stall.

The recoveries should be accomplished positively and smoothly, using appropriate and coordinated flight and power controls and with the least loss of altitude consistent with the recovery of full control effectiveness. After recovery, the applicant should make an expeditious return to the original altitude. Additional evaluation will be made on the basis of the applicant's prompt, smooth, and positive control application.

C. Specific Flight Characteristics.

1. ***Objective.*** To determine that the applicant can control and recover from specific flight characteristics that are peculiar to the airplane type.

2. ***Description.*** Recovery from specific flight characteristics that are peculiar to the airplane type.

3. ***Acceptable Performance Guidelines.*** Evaluation will be made on the basis of the applicant's demonstration of smooth, prompt, and positive recovery to normal flight, stressing minimum loss of altitude commensurate with safety. He should maintain positive aircraft control without exceeding the limitations of the aircraft being used.

D. Powerplant Failures.

1. ***Objective.*** To determine that the applicant can use the correct procedures for

feathering or shutting down an engine in flight, and that he can maneuver an airplane effectively and safely with an engine, or engines, inoperative.

2. ***Description.*** In addition to the specific requirements for maneuvers with simulated powerplant failures, the inspector/examiner may require a simulated powerplant failure at any time during the check.

3. ***Acceptable Performance Guidelines.*** Evaluation will be made on the basis of the applicant's ability to maintain heading within 20° of the original heading during the engine shutdown and restart procedures, and his altitude within 100 feet of the original altitude if it is within the capability of the airplane used. The applicant will be expected to promptly identify the inoperative engine after the engine is made inoperative by the inspector/examiner. Shut down and restart procedures should be as prescribed in the appropriate operating instructions for the airplane type. In an airplane not capable of maintaining altitude with an engine inoperative under existing conditions, the applicant will be expected to maintain an airspeed within 5 knots of the engine-out best rate-of-climb speed. The use of prescribed operating procedures, proper trim settings, and smoothness will be emphasized.

V. LANDINGS AND APPROACHES TO LANDINGS

A. Normal Landing.

B. Landing In Sequence from an ILS Approach.

C. Crosswind Landing.

D. Landing with Simulated Failure of 50% of Available Powerplants.

E. Landing from Circling Approach.

F. Rejected Landing.

G. No Flap Visual Approach to Landing.

H. Accuracy Approaches and Spot Landings (For Single Powerplant Rating Only).

1. ***Objective.*** To determine that the applicant can consistently make safe landings under normal, abnormal, and emergency conditions, and can reject a landing safely when required.

2. ***Description.*** Notwithstanding the authorizations for combining of maneuvers and for waiver of maneuvers, at least three actual landings (one to a full stop) must be made. These landings must include the types listed below but more than one type can be combined where appropriate:

a. Normal landing.

b. Landing in sequence from an ILS instrument approach except that, if circumstances beyond the control of the pilot prevent an actual landing, the inspector/examiner may accept an approach to a point where in his judgment a landing to a full stop could have been made.

c. Crosswind landing, if practical under existing meteorological, airport, and traffic conditions.

d. Maneuvering to a landing with a simulated failure of 50% of the available powerplants. The simulated loss of power must be on one side of the airplane (center and one outboard engine on three-engine airplanes), except that in turbojet powered airplanes, the following maneuvers may be substituted for this requirement.

(i) In the case of a four-engine turbojet powered airplane, maneuvering to a landing with simulated failure of the most critical powerplant, if a flight instructor in an approved training program under Part 121 of the Federal Aviation Regulations certifies to the Administrator that he has observed the applicant satisfactorily perform a landing in that type airplane with simulated failure of 50% of the available powerplants. However, these substitute maneuvers may not be used if the Administrator determines that training in the two-engine-out landing maneuver provided in the training program is unsatisfactory.

(ii) In the case of a three-engine airplane, maneuvering to a landing using an approved procedure that approximates the loss of two powerplants.

e. Landing under simulated circling approach conditions except that if circumstances beyond the control of the pilot prevent a landing, the inspector/examiner may accept an approach to a point where in his judgment a landing to a full stop could have been made.

f. A rejected landing, including a normal missed approach procedure, that is rejected approximately 50 feet over the runway and approximately over the runway threshold. This maneuver may be combined with instrument, circling, or missed approach procedures; but instrument conditions need not be simulated below 100 feet above the runway.

g. A no flap visual approach to a point where, in the judgment of the inspector/examiner a landing to a full stop on the appropriate runway could be made.

h. For a single powerplant rating only, unless the applicant holds a commercial pilot certificate, he must accomplish accuracy approaches and spot landings that include a series of three landings from an altitude of 1,000 feet or less, with the engine throttled and 180° of change in direction. The airplane must touch the ground in a normal landing attitude beyond and within 200 feet from a designated line. 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.

3. ***Acceptable Performance Guidelines.*** Traffic pattern airspeeds should be controlled within −0 to +10 knots of that recommended for that type airplane and the appropriate airplane configuration until reaching final approach. Airspeed on the final approach should be controlled within −0 to +10 knots of reference speed with appropriate wind/gust factor adjustment as recommended by the operating instructions for the airplane being used. Threshold airspeeds, also, should be as recommended by these instructions with appropriate wind/gust factor adjustments.

VI. NORMAL AND ABNORMAL PROCEDURES

A. Anti-icing and Deicing Systems.

B. Autopilot Systems.

C. Automatic or Other Approach Aid Systems.

D. Stall Warning Devices, Stalling Avoidance Devices, Stability Augmentation Devices.

E. Airborne Radar Devices.

F. Any Other Systems, Devices, or Aids Available.

G. Hydraulic and Electrical System Failures and Malfunctions.

H. Landing Gear and Flap System Failures or Malfunctions.

I. Failure of Navigation or Communications Equipment.

1. ***Objective.*** To determine that the applicant has a practical knowledge of the systems and devices appropriate to the airplane type.

2. ***Description.*** Each applicant must demonstrate the proper use of as many of the systems and devices listed in test items A. through I. above as the inspector/examiner finds are necessary to determine that the person being checked has a practical knowledge of the use of the systems and devices appropriate to the aircraft type.

3. ***Acceptable Performance Guidelines.*** Performance will be evaluated on the basis of the applicant's demonstration of knowledge of the procedures for the airplane used and the judgment displayed.

VII. EMERGENCY PROCEDURES

A. Fire In Flight.

B. Smoke Control.

C. Rapid Decompression.

D. Emergency Descent.

E. Any Other Emergency Procedure Outlined in the Appropriate Approved Airplane Flight Manual.

1. ***Objectives.*** To determine that the applicant has an adequate knowledge of, and the ability to perform, emergency procedures appropriate to the airplane in use.

2. ***Description.*** Each applicant must demonstrate the proper emergency procedures for as many of the emergency situations listed in test items A. through E. above as the inspector/examiner finds are necessary to determine that the person being checked has an adequate knowledge of, and ability to perform, such procedures.

3. ***Acceptable Performance Guidelines.*** Performance will be evaluated on the basis of the applicant's demonstration of knowledge of the emergency procedures outlined above for the airplane used, the judgment displayed, and the accuracy of his operations.

* GPO : 1972 O - 458- 276