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Instrument Multi Engine Practical Test Standards

I. AREA OF OPERATION: PREFLIGHT PREPARATION

A. TASK: WEATHER INFORMATION

1. aviation weather information -obtaining, reading, and analyzing the applicable items, such as—
 - a. weather reports and forecasts.
 - b. pilot and radar reports.
 - c. surface analysis charts.
 - d. radar summary charts.
 - e. significant weather prognostics.
 - f. winds and temperatures aloft.
 - g. freezing level charts.
 - h. stability charts.
 - i. severe weather outlook charts.
 - j. SIGMETs and AIRMETs.
 - k. ATIS reports.
2. Correctly analyzes the assembled weather information pertaining to the proposed route of flight and destination airport, and determines whether an alternate airport is required, and, if required, whether the selected alternate airport meets the regulatory requirement.

B. TASK: CROSS-COUNTRY FLIGHT PLANNING

1. presenting and explaining a preplanned cross-country flight, as previously assigned by the examiner (preplanning is at examiner's discretion). It should be planned using real time weather and conform to the regulatory requirements for instrument flight rules within the airspace in which the flight will be conducted.
2. aircraft's performance capabilities by calculating the estimated time en route and total fuel requirement based upon factors, such as—
 - a. power settings.
 - b. operating altitude or flight level.
 - c. wind.
 - d. fuel reserve requirements.



3. Selects and correctly interprets the current and applicable en route charts, instrument departure procedures (DPs), RNAV, STAR, and Standard Instrument Approach Procedure Charts (IAP).
4. Obtains and correctly interprets applicable NOTAM information.
5. Determines the calculated performance is within the aircraft's capability and operating limitations.
6. Completes and files a flight plan in a manner that accurately reflects the conditions of the proposed flight. (Does not have to be filed with ATC.)
7. Demonstrates adequate knowledge of GPS and RAIM capability, when aircraft is so equipped.

II. AREA OF OPERATION: PREFLIGHT PROCEDURES

A. TASK: AIRCRAFT SYSTEMS RELATED TO IFR OPERATIONS

applicable aircraft anti-icing/deicing system(s) and their operating methods to include:

1. Airframe.
2. Propeller.
3. Intake.
4. Fuel.
5. Pitot-static.

B. TASK: AIRCRAFT FLIGHT INSTRUMENTS AND NAVIGATION EQUIPMENT

1. aircraft flight instrument system(s) and their operating characteristics to include—
 - a. pitot-static.
 - b. altimeter.
 - c. airspeed indicator.
 - d. vertical speed indicator.
 - e. attitude indicator.
 - f. horizontal situation indicator.
 - g. magnetic compass.
 - h. turn-and-slip indicator/turn coordinator.
 - i. heading indicator.
 - j. electrical systems.
 - k. vacuum systems.
 - l. electronic flight instrument display.



2. aircraft navigation system(s) and their operating characteristics to include—
 - a. VOR.
 - b. DME.
 - c. ILS.
 - d. marker beacon receiver/indicators.
 - e. transponder/altitude encoding.
 - f. ADF.
 - g. GPS.
 - h. FMS.

C. TASK: INSTRUMENT COCKPIT CHECK

1. preflighting instruments, avionics, and navigation equipment cockpit check by explaining the reasons for the check and how to detect possible defects.
2. Performs the preflight on instruments, avionics, and navigation equipment cockpit check by following the checklist appropriate to the aircraft flown.
3. Determines that the aircraft is in condition for safe instrument flight including—
 - a. communications equipment.
 - b. navigation equipment, as appropriate to the aircraft flown.
 - c. magnetic compass.
 - d. heading indicator.
 - e. attitude indicator.
 - f. altimeter.
 - g. turn-and-slip indicator/turn coordinator.
 - h. vertical speed indicator.
 - i. airspeed indicator.
 - j. clock.
 - k. power source for gyro-instruments.
 - l. pitot heat.
 - m. electronic flight instrument display
 - n. traffic awareness/warning/avoidance system.
 - o. terrain awareness/warning/alert system.
 - p. FMS.
 - q. auto pilot.
4. Notes any discrepancies and determines whether the aircraft is safe for instrument flight or requires maintenance.

III. AREA OF OPERATION: AIR TRAFFIC CONTROL CLEARANCES AND PROCEDURES

NOTE: The ATC clearance may be an actual or simulated ATC clearance based upon the flight plan.

A. TASK: AIR TRAFFIC CONTROL CLEARANCES



1. ATC clearances and pilot/controller responsibilities to include tower en route control and clearance void times.
2. Copies correctly, in a timely manner, the ATC clearance as issued.
3. Determines that it is possible to comply with ATC clearance.
4. Interprets correctly the ATC clearance received and, when necessary, requests clarification, verification, or change.
5. Reads back correctly, in a timely manner, the ATC clearance in the sequence received.
6. Uses standard phraseology when reading back clearance.
7. Sets the appropriate communication and navigation systems and transponder codes in compliance with the ATC clearance.

B. TASK: COMPLIANCE WITH DEPARTURE, EN ROUTE, AND ARRIVAL PROCEDURES AND CLEARANCES

1. ATS routes, and related pilot/controller responsibilities.
2. Uses the current and appropriate navigation publications for the proposed flight.
3. Selects and uses the appropriate communication facilities; selects and identifies the navigation aids associated with the proposed flight.
4. Performs the appropriate aircraft checklist items relative to the phase of flight.
5. Establishes two-way communications with the proper controlling agency, using proper phraseology.
6. Complies, in a timely manner, with all ATC instructions and airspace restrictions.
7. Exhibits adequate knowledge of communication failure procedures.
8. Intercepts, in a timely manner, all courses, radials, and bearings appropriate to the procedure, route, or clearance.
9. Maintains the applicable airspeed within +/-10 knots; headings within +/-10°; altitude within +/-100 feet; and tracks a course, radial or bearing within ¾ scale deflection of the CDI.

C. TASK: HOLDING PROCEDURES

NOTE: Any reference to DME will be disregarded if the aircraft is not so equipped.

1. holding procedures.
2. Changes to the holding airspeed appropriate for the altitude or aircraft when 3 minutes or less from, but prior to arriving at, the holding fix.
3. Explains and uses an entry procedure that ensures the aircraft remains within the holding pattern airspace for a standard, nonstandard, published, or nonpublished holding pattern.



4. Recognizes arrival at the holding fix and initiates prompt entry into the holding pattern.
5. Complies with ATC reporting requirements.
6. Uses the proper timing criteria, where applicable, as required by altitude or ATC instructions.
7. Complies with pattern leg lengths when a DME distance is specified.
8. Uses proper wind correction procedures to maintain the desired pattern and to arrive over the fix as close as possible to a specified time.
9. Maintains the airspeed within +/-10 knots; altitude within +/-100 feet; headings within +/-10°; and tracks a selected course, radial or bearing within ¾ scale deflection of the CDI.

IV. AREA OF OPERATION: FLIGHT BY REFERENCE TO INSTRUMENTS

A. TASK: BASIC INSTRUMENT FLIGHT MANEUVERS

Basic flight maneuvers.

1. Exhibits adequate knowledge of the elements related to attitude instrument flying during straight-and-level, climbs, turns, and descents while conducting various instrument flight procedures.
2. Maintains altitude within +/- 100 feet during level flight, headings within +/- 10°, airspeed within +/- 10 knots, and bank angles within +/- 5° during turns.
3. Uses proper instrument crosscheck and interpretation, and apply the appropriate pitch, bank, power, and trim corrections when applicable.

B. TASK: RECOVERY FROM UNUSUAL FLIGHT ATTITUDES

NOTE: Any intervention by the examiner to prevent the aircraft from exceeding any operating limitations, or entering an unsafe flight condition, shall be disqualifying.

1. Exhibits adequate knowledge of the elements relating to attitude instrument flying during recovery from unusual flight attitudes (both nose-high and nose-low).
2. Uses proper instrument cross-check and interpretation, and applies the appropriate pitch, bank, and power corrections in the correct sequence to return the aircraft to a stabilized level flight attitude

V. AREA OF OPERATION: NAVIGATION SYSTEMS

A. TASK: INTERCEPTING AND TRACKING NAVIGATIONAL SYSTEMS AND DME ARCS



NOTE: Any reference to DME arcs, ADF, or GPS shall be disregarded if the aircraft is not equipped with these specified navigational systems.

1. intercepting and tracking navigational systems and DME arcs.
2. Tunes and correctly identifies the navigation facility.
3. Sets and correctly orients the course to be intercepted into the course selector or correctly identifies the course on the RMI.
4. Intercepts the specified course at a predetermined angle, inbound or outbound from a navigational facility.
5. Maintains the airspeed within +/-10 knots, altitude within +/-100 feet, and selected headings within +/-5°.
6. Applies proper correction to maintain a course, allowing no more than three-quarter-scale deflection of the CDI or within +/-10° in case of an RMI.
7. Determines the aircraft position relative to the navigational facility or from a waypoint in the case of GPS.
8. Intercepts a DME arc and maintain that arc within +/-1 nautical mile.
9. Recognizes navigational receiver or facility failure, and when required, reports the failure to ATC.

VI. AREA OF OPERATION: INSTRUMENT APPROACH PROCEDURES

NOTE: TASK D, Circling Approach, is applicable only to the airplane category.

NOTE: The requirements for conducting a GPS approach for the purpose of this test are explained on page 8 of the Introduction.

A. TASK: NONPRECISION APPROACH (NPA)

NOTE: The applicant must accomplish at least two nonprecision approaches (one of which must include a procedure turn or, in the case of an RNAV approach, a Terminal Arrival Area (TAA) procedure) in simulated or actual weather conditions. At least one nonprecision approach must be flown without the use of autopilot and without the assistance of radar vectors. (The yaw damper and flight director are not considered parts of the autopilot for purpose of this part). The examiner will select nonprecision approaches that are representative of the type that the applicant is likely to use. The choices must utilize two different types of navigational aids. Some examples of navigational aids for the purpose of this part are: NDB, VOR, LOC, LDA, GPS, or RNAV.

1. instrument approach procedure.
2. Selects and complies with the appropriate instrument approach procedure to be performed.



3. Establishes two-way communications with ATC, as appropriate, to the phase of flight or approach segment, and uses proper communication phraseology and technique.
4. Selects, tunes, identifies, and confirms the operational status of navigation equipment to be used for the approach procedure.
5. Complies with all clearances issued by ATC or the examiner.
6. Recognizes if any flight instrumentation is inaccurate or inoperative, and takes appropriate action.
7. Advises ATC or examiner anytime that the aircraft is unable to comply with a clearance.
8. Establishes the appropriate aircraft configuration and airspeed considering turbulence and wind shear, and completes the aircraft checklist items appropriate to the phase of the flight.
9. Maintains, prior to beginning the final approach segment, altitude within +/- 100 feet, heading within +/-10° and allows less than ¾ scale deflection of the CDI or within +/-10° in the case of an RMI, and maintains airspeed within +/- 10 knots.
10. Applies the necessary adjustments to the published MDA and visibility criteria for the aircraft approach category when required, such as—
 - a. NOTAMs.
 - b. inoperative aircraft and ground navigation equipment.
 - c. inoperative visual aids associated with the landing environment.
 - d. NWS reporting factors and criteria.
11. Establishes a rate of descent and track that will ensure arrival at the MDA prior to reaching the MAP with the aircraft continuously in a position from which descent to a landing on the intended runway can be made at a normal rate using normal maneuvers.
12. Allows, while on the final approach segment, no more than a three-quarter-scale deflection of the CDI or within 10° in case of an RMI, and maintains airspeed within +/-10 knots of that desired.
13. Maintains the MDA, when reached, within +100 feet, -0 feet to the MAP.
14. Executes the missed approach procedure when the required visual references for the intended runway are not distinctly visible and identifiable at the MAP.
15. Executes a normal landing from a straight-in or circling approach when instructed by the examiner.

B. TASK: PRECISION APPROACH (PA)

NOTE: A precision approach, utilizing aircraft NAVAID equipment for centerline and vertical guidance, must be accomplished in simulated or actual instrument conditions to DA/DH.

1. precision instrument approach procedures.
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, 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 that 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 aircraft 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, the desired airspeed within ± 10 knots, the desired heading within $\pm 10^\circ$; 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 DA/DH and visibility criteria for the airplane approach category as required, such as—
 - a. NOTAMs
 - b. inoperative airplane and ground navigation equipment.
 - c. inoperative visual aids associated with the landing environment.
 - d. NWS 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 aircraft to follow the glide slope.
12. Maintains a stabilized final approach, from the Final Approach Fix to DA/DH allowing no more than three-quarter scale deflection of either the glide slope or localizer indications and maintains the desired airspeed within ± 10 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 DA/DH, 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 aircraft 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 three-quarter-scale deflection of the indicators during the visual descent from DA/DH to a point over the runway where glide slope must be abandoned to accomplish a normal landing.

C. TASK: MISSED APPROACH

1. Missed approach procedures associated with standard instrument approaches.



2. Initiates the missed approach promptly by applying power, establishing a climb attitude, and reducing drag in accordance with the aircraft manufacturer's recommendations.
3. Reports to ATC beginning the missed approach procedure.
4. Complies with the published or alternate missed approach procedure.
5. Advises ATC or examiner anytime that the aircraft is unable to comply with a clearance, restriction, or climb gradient.
6. Follows the recommended checklist items appropriate to the go-around procedure.
7. Requests, if appropriate, ATC clearance to the alternate airport, clearance limit, or as directed by the examiner.
8. Maintains the recommended airspeed within +/-10 knots; heading, course, or bearing within +/-10°; and altitude(s) within +/-100 feet during the missed approach procedure.

D. TASK: CIRCLING APPROACH

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

E. TASK: LANDING FROM A STRAIGHT-IN OR CIRCLING APPROACH

1. Pilot's responsibilities, and the environmental, operational, and meteorological factors, which affect a landing from a straight-in or a circling, approach.
2. Transitions at the DA/DH, MDA, or VDP to a visual flight condition, allowing for safe visual maneuvering and a normal landing.
3. Adheres to all ATC (or examiner) advisories, such as NOTAMs, wind shear, wake turbulence, runway surface, braking conditions, and other operational considerations.
4. Completes appropriate checklist items for the pre-landing and landing phase.
5. Maintains positive aircraft control throughout the complete landing maneuver.



VII. AREA OF OPERATION: EMERGENCY OPERATIONS

A. TASK: LOSS OF COMMUNICATIONS

Loss of communication procedures to include:

1. Recognizing loss of communication.
2. Continuing to destination according to the flight plan.
3. When to deviate from the flight plan.
4. Timing for beginning an approach at destination.

B. TASK: ONE ENGINE INOPERATIVE DURING STRAIGHT-AND-LEVEL FLIGHT AND TURNS (MULTIENGINE AIRPLANE)

1. Procedures used if engine failure occurs during straight-and-level flight and turns while on instruments.
2. Recognizes engine failure simulated by the examiner during straight-and-level flight and turns.
3. Sets all engine controls, reduces drag, and identifies and verifies the inoperative engine.
4. Establishes the best engine-inoperative airspeed and trims the aircraft.
5. Verifies the accomplishment of prescribed checklist procedures for securing the inoperative engine.
6. Establishes and maintains the recommended flight attitude, as necessary, for best performance during straight-and-level and turning flight.
7. Attempts to determine the reason for the engine failure.
8. Monitors all engine control functions and makes necessary adjustments.
9. Maintains the specified altitude within +/-100 feet, (if within the aircraft's capability), airspeed within +/-10 knots, and the specified heading within +/-10°.
10. Assesses the aircraft's performance capability and decides an appropriate action to ensure a safe landing.
11. Avoids loss of aircraft control, or attempted flight contrary to the engine-inoperative operating limitations of the aircraft.

C. TASK: ONE ENGINE INOPERATIVE—INSTRUMENT APPROACH (MULTIENGINE AIRPLANE)

1. The procedures used during an instrument approach in a multiengine aircraft with one engine inoperative.
2. Recognizes promptly, engine failure simulated by the examiner.
3. Sets all engine controls, reduces drag, and identifies and verifies the inoperative engine.
4. Establishes the best engine-inoperative airspeed and trims the aircraft.



5. Verifies the accomplishment of prescribed checklist procedures for securing the inoperative engine.
6. Establishes and maintains the recommended flight attitude and configuration for the best performance for all maneuvering necessary for the instrument approach procedures.
7. Attempts to determine the reason for the engine failure.
8. Monitors all engine control functions and makes necessary adjustments.
9. Requests and receives an actual or a simulated ATC clearance for an instrument approach.
10. Follows the actual or a simulated ATC clearance for an instrument approach.
11. Establishes a rate of descent that will ensure arrival at the MDA/DH prior to reaching the MAP with the aircraft continuously in a position from which descent to a landing on the intended runway can be made straight-in or circling.
12. Maintains, where applicable, the specified altitude within +/-100 feet, the airspeed within +/-10 knots if within the aircraft's capability, and the heading within +/-10°.
13. Sets the navigation and communication equipment used during the approach and uses the proper communications technique.
14. Avoids loss of aircraft control, or attempted flight contrary to the engine-inoperative operating limitations of the aircraft.
15. Complies with the published criteria for the aircraft approach category when circling.
16. Allows, while on final approach segment, no more than three-quarter-scale deflection of either the localizer or glide slope or GPS indications, or within +/- 10° or ¾ scale deflection of the nonprecision final approach course.
17. Completes a safe landing.

D. TASK: APPROACH WITH LOSS OF PRIMARY FLIGHT INSTRUMENT INDICATORS

Note: This approach shall count as one of the required nonprecision approaches.

1. Recognizing if primary flight instruments are inaccurate or inoperative, and advise ATC or the examiner.
2. Advises ATC or examiner anytime that the aircraft is unable to comply with a clearance.
3. Demonstrates a nonprecision instrument approach without the use of the primary flight instrument using the objectives of the nonprecision approach TASK (AREA OF OPERATION VI, TASK A).

VIII. AREA OF OPERATION: POSTFLIGHT PROCEDURES



A. TASK: CHECKING INSTRUMENTS AND EQUIPMENT

1. All instrument and navigation equipment for proper operation.
2. Notes all flight equipment for proper operation.
3. Notes all equipment and/or aircraft malfunctions and makes appropriate documentation of improper operation or failure of such equipment.