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ADVANCED INSTRUMENT PROCEDURE GUIDE (TACTICAL)

ROTARY-RO

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DEPARTMENT OF ROTARY WING TRAINING
UNITED STATES ARMY AVIATION SCHOOL
FORT RUCKER, ALABAMA

ADVANCED INSTRUMENT PROCEDURE GUIDE (Tactical)

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ADVANCED INSTRUMENT PROCEDURE GUIDE
(Tactical)

PART ONE

GENERAL

The purpose of this procedure guide is to supplement, as a ready reference, the appropriate TM's, AR's, and FLIP publications. It is not intended to be the sole reference required for the Rotary Wing Instrument Course.

The instrument system enables a qualified rotary wing instrument aviator to fly to and land at prepositioned navigational facilities. Using this system, helicopter instrument flight is possible into and out of areas under adverse weather conditions.

PART TWO

FLIGHT PLANNING

Flight planning involves all actions prior to and during the execution of an instrument flight. Specific items to be considered are—

1. Preflight planning.

    a. Point of departure.

    b. Route of flight to destination and alternate (to include courses, distances, times, and facility identification).

    c. MEA.

    d. Points of intended landing.

    e. Approaches to be flown.

2. Standard approach.

    a. Approach course and its reciprocal.

    b. Procedure turn altitude and direction of turn.

    c. Low-station altitude.

    d. Time from facility to field.

    e. Minimum altitude.

f. Missed approach procedures.

g. Total time en route (to include approach and ground time for intermediate stops).

h. Total fuel requirement.

i. Enroute emergency procedures.

j. Understand weather forecasts.

NOTE: (Weather briefing) Since typical flights are envisioned as 30 miles or less, existing and/or forecast weather for the base airfield will normally be used. It should be noted that specific deviations may occur because of a difference in the terrain elevation between the home base and the destination. For this reason, a thorough map study must be made with reference to terrain elevations so that the existing weather can be properly interpolated. If the winds at altitude are available, they should be used in computing ETE.

k. Copilot qualifications and preparations.
Determine copilot qualifications.
Brief copilot on his duties.

3. Required items in flight.

a. Map.

b. Pencil.

c. Computer.

d. Kneeboard.

e. Plotter.

f. Additional material as necessary to successfully complete the flight; i.e., flight planning data, approach plates, note paper, and flashlight (night flights).

PART THREE

CREWMEMBER DUTIES

The following procedures are to be used as a guide for delineation of pilot and copilot duties.

NOTE: Due to limited flight time available in the advanced instrument training stage, the pilot must assume a large portion of the normal copilot's duties in order to utilize every possible minute of training time allotted. The instructor pilot must impress this upon the student and insure that he is aware of the normal breakdown of preflight and in-flight responsibilities. The instructor pilot should, at his discretion, assume a portion of the pilot's duties so that the student is never overloaded to the point that instruction is not properly received. If time permits and the student is making satisfactory progress, a flight can be planned and flown, utilizing the standard apportionment of duties.

4. Pretakeoff.

a. Pilot (student). The pilot will complete a thorough preflight plan to include MEA for all legs of the flight, ETE based on the current winds aloft sequence. The pilot will brief the copilot concerning his duties prior to leaving the pilot's briefing room. The pilot will make all checks of attitude and navigation instruments and all navigation radios to be used during the flight. He will call ground control, request hover instructions and instrument flight clearance, copy clearance, and complete instrument hover check en route to takeoff position by

instructing the copilot to perform desired maneuvers. During this portion of the flight the pilot will use the standard USAAVNS instrument flight checklist to insure completion of preflight takeoff check.

b. Copilot (instructor pilot). The copilot will complete a thorough preflight inspection of the aircraft and perform prestarting cockpit check to exclude attitude and navigation instruments. He will then start the aircraft and hover to the takeoff position.

5. Enroute navigation.

a. Pilot (student). The pilot will be at the controls of the aircraft to the maximum extent allowed by his other duties. He is required to compute groundspeeds, ETE and fuel consumption rate, make all mandatory reports, tune and identify navigational aids, and maintain proper orientation in relation to navigational aids being utilized. He will copy any clearance which is received in flight unless he has briefed his copilot to the contrary prior to takeoff, and insure completion of proper cockpit checks in the event of a simulated emergency; i.e., hydraulic failure.

b. Copilot (instructor pilot). The copilot will fly the aircraft and maintain heading, airspeed, and altitude when instructed to do so by the pilot. If briefed by the pilot prior to takeoff, the copilot will copy enroute clearances which are received while the pilot is at the controls of the aircraft. The pilot is responsible to maintain a specific ground track and recognize station passage at a navigational aid.

6. Approach.

a. Pilot (student). Prior to commencing all approaches, the pilot will have sufficient knowledge of the approach procedure and restrictions that he can brief his copilot and successfully execute the approach without relying on his copilot for information contained in the approach plate or approach clearance. The pilot will brief the copilot prior to commencing all approaches. Upon arrival at the facility, the pilot will be at the controls of the aircraft and execute the complete approach, timing the outbound leg, computing procedure turn headings, and timing the leg from the facility to the landing area during a standard ADF approach. The pilot will make all necessary reports during the approach. In the event visual contact is not established, the pilot will initiate the proper missed approach procedures.

b. Copilot (instructor pilot). The copilot will assist the pilot in any way possible without taking control of the aircraft except when visual contact is established with the ground, and the copilot has the field in sight. He will take control of the aircraft and perform the landing. If visual contact is not established and a missed approach is executed, the copilot will take control of the aircraft after the missed approach is initiated and continue the missed approach in compliance with instructions from the pilot. The copilot, if instructed, will advise the pilot when approaching minimum approach altitude.

PART FOUR

AIR TRAFFIC CONTROL

7. General. Air traffic control procedures for the "Tactical Instrument Training Program" will adhere basically to the ATC procedures as outlined in TM 11-2557-29, TM 11-2557-30, part I of the "Airman's Information Manual," and section II of the DOD "Flight Information Publication Manual."

8. Helicopter departing procedure.

a. Call for hover instructions; IFR your first point of intended landing.

EXAMPLE: "Tan Son Nhut ground control, Green 2, Charlie (row) for hover instructions, IFR Bao Loc, over."

YOU RECEIVE: "Green 2, Tan Son Nhut ground control, hover Charlie North, winds 130° at 10, altimeter 3010, density altitude plus 1275 feet, time 1240 Zulu; we have your IFR clearance on request, over."

b. Ground control calls you when they receive your initial clearance.

EXAMPLE: "Green 2, Tan Son Nhut ground control, we have your IFR clearance; are you ready to copy, over."

EXAMPLE: "Initial clearance: ATC clears Black 56 to the Hoa Bin radio beacon, via V-13; maintain 2400; read back, over."

c. After correct readback, Tan Son Nhut ground control will instruct you to contact Tan Son Nhut tower on frequency 321.6 or 248.4 for your departure instructions (or when ready for IFR departure).

NOTE: To expedite departure, instructions are usually given before hovering rather than at the takeoff panel.

EXAMPLE: Tower contact: "Tan Son Nhut tower, Green 2, request departure instructions (or ready for IFR departure, IFR Bao Loc)."

EXAMPLE: Departure instructions: "Green 2, take off North, maintain heading 330 until reaching 1500, right turn, climb on course, contact Tan Son Nhut departure control frequency 234.4 after takeoff, hold for release."

d. Tower then will call you and report: "Green 2, Tan Son Nhut tower, frequency change approved, cleared for takeoff."

9. Clearances and radio voice communications procedures.

a. Clearances. Clearances are those messages originating at ARTC, ATC, or approach control, which authorize and specify the manner in which an instrument flight must be conducted. The procedures for issuance of a clearance are the same for all those originators listed above. Clearances conform to the format listed on page 11.

(1) Aircraft identification.

(2) Clearance limit.

(a) Destination landing site.

(b) Approach facility serving destination.

(c) Intersection or facility short of destination.

(3) Route of flight.

(4) Altitude assignment.

(5) Special instructions.

b. Reporting procedures. Basic rules are—

(1) Do not change frequencies until directed to do so. Change frequencies only at the time or point specified. Exceptions: Under lost communications or if a special request to change frequencies is approved.

(2) Begin radio calls with the name or call sign of the controlling agency followed by your aircraft identification or call sign.

(3) Acknowledge all instructions with your call sign or identification.

(4) Read back all altimeter settings and initial clearances. Read back amended clearances and instructions if not copied or understood.

(5) Under positive radar contact, omit all reports. Exception: Always call out of assigned altitudes and any reports requested. The rules require reading back only the altimeter setting whenever received. All other transmissions, except that of a request nature, can be acknowledged by replying with identification and "roger."

c. Radio calls.

(1) Compulsory reports are those reports that are standard procedure for all instrument flights under ATC control and need no special instructions stating that such a report must be made. They are as follows:

(a) Arriving at a fix or compulsory reporting point.

(b) Vacating an assigned altitude.

(c) Departing a holding fix.

(d) Fix or facility inbound on approach.

(e) Missed approach.

(f) Arrival at clearance limit.

(g) Unforecasted weather encountered.

(h) Items pertaining to safety of flight (to include other aircraft proposing flight within the area).

(i) Loss of navigational aids or air-ground radio.

(j) Change in true airspeed of 10 knots.

(k) Revised estimate over 3 minutes.

(l) Any reports as requested by ATC.

(2) Basic report.

(a) Full position report.

1. PTA (position, time, altitude).

2. Estimated time of arrival at next reporting point.

3. Name of next succeeding reporting point.

4. Remarks (may be included in all calls).

EXAMPLE: "Paris Center, Black 56 Ben Tre 36, 2400, Ban Me Thuot 43, Ban Me Thuot, over."

(b) Arrival at holding fix (or fix without further clearance).

1. PTA.

2. Holding.

(c) Departing holding fix. Make full position report.

EXAMPLE: "Alpha Center, Green 2, departing Ben Cat 36, 2000."

(d) Initial contact over a compulsory reporting point.

1. Position.

2. Full position report follows.

EXAMPLE: "Alpha Center, Green 2, Ben Cat, over." (After Alpha Center answers, you give a full position report.)

(e) Initial contact over a noncompulsory point.

1. Estimate.

2. Altitude.

EXAMPLE: "Paris Center, Black 56, estimating Hoa Bin 25, 2400, over."

(f) Initial contact (radar environment).

EXAMPLE: "Paris Center, Green 2, 2400, over."

(g) Other reports.

1. Departing an altitude.

EXAMPLE: "Alpha Center, Green 2, leaving 2000, over."

2. Departing report (initial contact ATO in radar environment).

a. Aircraft identification.

b. Altitude climbing to—

EXAMPLE: "Cairns Departure Control, Green 2, climbing to 2000, over."

3. Departing report (initial contact ATO in nonradar environment).

a. Aircraft identification.

b. Estimate to next fix.

c. Altitude climbing to—

EXAMPLE: "Alpha Center, Green 2, estimating Bien Hoa, 30, climbing to 2000, over."

4. Malfunction report (not an emergency, but requires special handling).

a. Failure or malfunction.

b. Request (expedited approach, negative holding, further clearance, no gyro GCA, etc.).

EXAMPLE: "Alpha Center, Green 2, RMI failure, request no gyro GCA Tan Son Nhut, over."

5. Special requests. Report exactly what is requested.

EXAMPLE: "Green 2, Alpha Center, report level 2000, over."

YOUR REPORT: "Alpha Center, Green 2, level 2000, over."

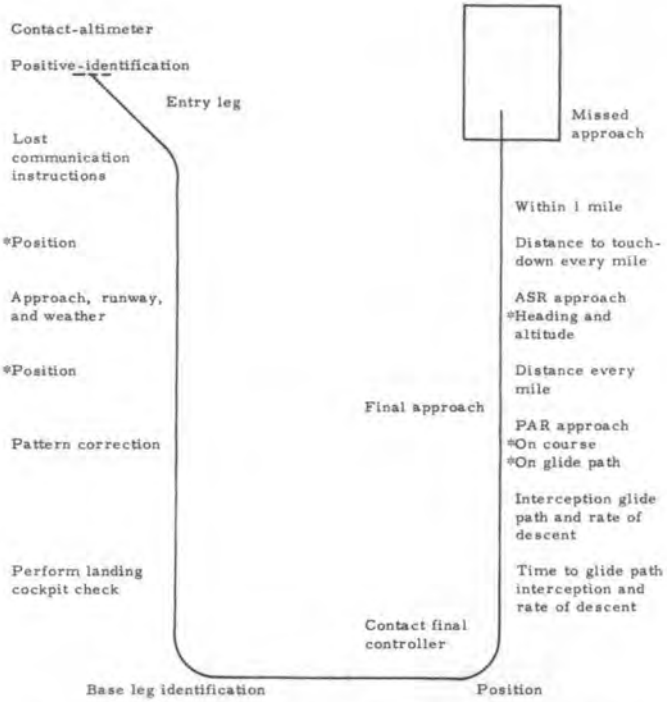
EXAMPLE: "Green 2, report intercepting the 360° bearing Ben Cat, over."

YOUR REPORT: "Alpha Center, Green 2, intercepting the 360° bearing Ben Cat."

PART FIVE

APPROACH PROCEDURES

10. GCA.



*These transmissions are used as necessary and provide filler information during the 2 minutes in the surveillance pattern and 5 seconds on final.

a. Definition. GCA is the common terminology for a ground radar controlled instrument approach.

b. Maneuver procedure. A GCA ground track will normally appear as an extended visual traffic pattern, consisting of an entry leg, base, and final approach leg. However, under tactical conditions, the ground track may be varied considerably to avoid areas of enemy concentration and reduce the time or length of the approach.

(1) Compliance and acknowledgement of instructions must be simultaneous and instantaneous.

(2) Acknowledge emergency instructions if clearly understood. Request a readback if not understood.

(3) Repeat all altimeter settings.

(4) Acknowledge all headings and altitudes when understood by "roger."

(5) Make all climbs and descents standard rate unless otherwise instructed.

(6) Make all turns standard rate (3° per second) while in the pattern.

c. Elements of a precision GCA approach.

(1) The initial contact.

EXAMPLE: "Tan Son Nhut GCA, Green 2, (position), (heading), (altitude), request a GCA."

EXAMPLE: "Green 2, altimeter setting is _____."

(2) After the initial contact with the radar facility and positive radar identification is established, the pilot shall be instructed as to the procedure to be followed in the event radio communications are lost.

EXAMPLE: "Green 2, if no transmissions are received for _____(time interval) in the pattern or _____(time interval) on final (alternate procedures)."

EXAMPLE: *"Green 2, this will be a precision approach to runway 17; the wind is _____ (direction and velocity)."

(3) While on downwind leg, the pilot shall be advised to perform landing cockpit check; when an incomplete pattern is used, the pilot shall be advised to perform landing cockpit check well in advance to turning on final approach.

EXAMPLE: (GCA) "Green 2, perform landing cockpit check."

(Pilot) "Green 2, landing cockpit check complete."

(4) The pilot of an aircraft executing a radar approach shall be advised of his position at least once prior to the start of final approach.

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*Weather will be furnished only when field is reported at or below the highest circling minimums for the field. If the approach is made to other than the active runway, the pilot will be advised.

EXAMPLE: (GCA) "Green 2, downwind leg/base leg _____ (distance) (direction) from touchdown."

(5) After the turn on final approach, the pilot will be advised to contact the final controller (if one is utilized).

EXAMPLE: (GCA) "Green 2, contact final controller on _____ (frequency)."

(Pilot) "Green 2, roger."

(Pilot) "Tan Son Nhut final controller, Green 2, over."

(6) The final controller will give the pilot a communications check on initial contact.

EXAMPLE: (GCA) "Green 2, this is Tan Son Nhut final controller, how do you hear me?"

(Pilot) "Green 2, loud and clear."

(7) Prior to starting final descent, the pilot shall be advised of the procedures to be followed in the event communications are lost, if not given for final approach initially.

EXAMPLE: (GCA) "Green 2, if no transmissions are received for 5 seconds on final approach _____ (alternate procedures)."

(GCA) "Green 2, on final, do not acknowledge further transmissions unless requested to do so."

(8) Approximately 15 to 30 seconds before the aircraft reaches the point at which final descent will begin, the pilot shall be advised that the aircraft is approaching glide-path interception. Recommended rate of descent will be announced.

EXAMPLE: (GCA) "Green 2, approaching glide path in _____ seconds. Recommended rate of descent is 400 feet per minute (4-degree approach)."

EXAMPLE: (GCA) "Green 2, on glide path, begin descent.

(9) After descent has begun and until over the end of the runway, the pilot will receive the following instructions:

(a) Heading and position in relation to the on course.

(b) Range at least once per mile.

(c) Position in relation to glide path.

(d) Over approach lights (omitted on tactical GCA).

(e) Over end of runway or landing zone.

(10) Airspeed on final approach should be 60 knots for the TH-13T. This airspeed will be maintained until visual contact with the ground is established or a missed approach is executed.

d. Elements of a surveillance GCA approach.

(1) The initial contact with GCA.

EXAMPLE: (Pilot) "Tan Son Nhut GCA, Green 2, (position), (heading), (altitude), request a GCA approach."

(GCA) "Green 2, this is _____ (radar facility); altimeter setting is _____."

(2) Loss of communications procedures.

EXAMPLE: (GCA) "Green 2, if no transmissions are received for _____ (time interval) in the pattern or _____ (time interval) on final (alternative procedures)."

(Pilot) "Green 2, roger."

(GCA) *"Green 2, this will be a surveillance approach to runway _____: winds are _____ (direction and velocity); recommended altitudes will be furnished each mile on final except the last mile. Request airspeed on final."

(GCA) "Green 2, the present weather at _____ is _____."

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*The recommended altitudes are determined locally by adding the following values to the airfield elevation and rounding them off to the nearest 100 feet:

3-degree approach
6 miles - 1800 feet
5 miles - 1500 feet
4 miles - 1200 feet
3 miles - 900 feet
2 miles - 600 feet

(3) Landing cockpit check.

EXAMPLE: (GCA) "Green 2, perform landing cockpit check."

(Pilot) "Green 2, landing cockpit check complete.

(4) The pilot of the aircraft shall be advised of the position at least once prior to turn to final.

EXAMPLE: (GCA) "Green 2, downwind/base leg _____ (distance and direction) from airport."

(5) To request the pilot, when required, to change frequency for final approach.

EXAMPLE: (GCA) "Green 2, contact final controller on frequency _____; if no contact, return to this frequency."

(Pilot) "Tan Son Nhut final controller, Green 2, over."

(GCA) "Green 2, this is your final controller, how do you hear me?"

(Pilot) "Green 2, loud and clear."

(6) Lost communications procedures, if not covered for final initially.

EXAMPLE: (GCA) "Green 2, if no transmissions are received for 30 seconds on final approach _____ (missed approach procedures)."

(GCA) "Green 2, on final approach do not acknowledge further transmissions unless requested to do so."

(GCA) "Green 2, tower has cleared you for this _____ (full stop or low approach)."

(7) To advise the pilot of recommended rate of descent and advance notices of where descent will begin.

EXAMPLE: (GCA) "Green 2, rate of descent on final approach should be approximately _____ (number of feet per minute). Prepare to begin descent in _____ (number of seconds)."

(8) From point where descent begins to 1 mile from the end of runway, the pilot will receive the following instructions:

(a) Headings.

(b) Range and recommended altitudes at least once per mile.

(c) One mile from end of runway.

11. ADF (Reference: TM 1-225).

a. Definition. ADF is the common terminology used for automatic direction finding equipment and usage. The frequencies for nondirectional beacons commonly used in the ADF system are 220 kilocycles to 550 kilocycles. A complete ADF problem consists of an orientation, track interception, tracking, holding, approach, and missed approach.

b. Orientation.

(1) Tune and identify the desired station.

(2) Observe the relative bearing on the radio compass. If equipped with RMI, the No. 1 needle will indicate the magnetic course to the station.

(3) Turn until the radio compass indicates a 0-degree relative bearing. The aircraft is then flying toward the station. With RMI, turn until the heading corresponds with the indications of the No. 1 needle.

c. Track interception.

(1) Turn parallel to the desired track.

(2) Observe the angular difference between the present course and the desired course shown on the bearing indicator.

(3) Turn to intercept the desired track at a 45-degree or 90-degree angle in the direction of the magnetic course or bearing.

(4) When the ADF indicator deviates from the zero position equal to the angle of intercept, the aircraft is on the desired track. With RMI, the No. 1 needle will be indicating the desired track.

(5) To intercept a desired outbound track, use deviations from the head of the needle.

d. Track-following.

(1) Aligning and maintaining a helicopter on a desired track is commonly termed "tracking" or "track-following." Tracking procedures begin only after the helicopter is on the desired course and the magnetic heading of the helicopter coincides with the desired course.

(2) Maintain a constant heading until a definite off-course indication is apparent; i.e., a relative bearing of 5° off the nose or tail. After detecting a definite off-course position, turn 30° toward the desired track. If this is not enough correction to converge with the desired track, then add another 30.

(3) Remove one-half of the correction angle upon arriving on course. The heading of the aircraft will then be 15° into the wind from the inbound course heading. This is assuming the initial correction remained 30°.

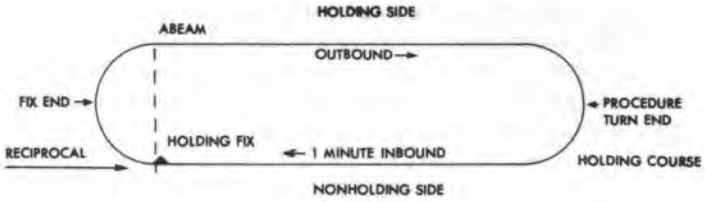
(a) If this results in a downwind off-course indication again, return to the 30-degree correction angle until on course; then assume a heading of 20° into the wind, or—

(b) If this results in an upwind off-course indication, return to the original inbound heading until on course; then assume a heading of 10° into the wind.

e. Standard holding and approach.

(1) Holding.

(a) Descriptive terms.



NOTE: Right turns (illustrated). Nonstandard pattern—anything other than right turns, 1 minute inbound.

(b) Entry. The aircraft is considered to be in the holding pattern at the time of initial station passage of the holding fix. The direction to turn outbound at initial holding fix passage is dependent upon aircraft heading.

1. Entry turns. The aircraft heading at initial holding fix passage determines the direction of turn to enter the holding pattern.

a. If the aircraft heading is within 70° of the inbound holding course, turn outbound in the same direction as the holding pattern to parallel the holding course (e. g., right-hand pattern, turn right to enter).

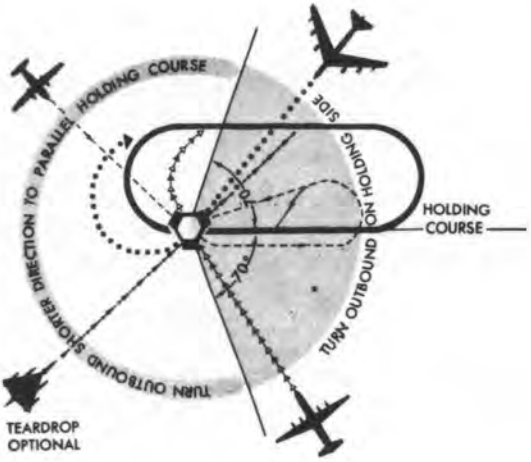
b. If the aircraft heading is not within 70° of the inbound holding course, turn outbound in the shorter direction to parallel the holding course. If this places the aircraft on the nonholding side at completion of the outbound leg, turn toward the holding side.

c. The teardrop entry may be used at the pilot's discretion when entering the

holding pattern on the heading conveniently aligned with the teardrop course. The teardrop course is 30° or less outbound from the holding course and on the holding side. Course interception is not mandatory prior to turning inbound.

d. When turning inbound the first time, proceed direct to the fix or intercept and fly the holding course.

2. Holding entry diagram is shown below.



(c) Inbound leg time (1 minute). The initial outbound leg should be flown for not more than 1 minute. Timing for subsequent legs should be adjusted, as necessary, to achieve the proper inbound leg time. Timing begins when the aircraft is abeam the station or fix. If the abeam position

cannot be determined, start timing when the turn to the outbound leg is complete.

(d) Nonstandard holding. Anything other than right turns, 1 minute inbound.

(e) Standard tracking procedure. Inbound to the fix on the holding course, apply standard tracking procedure to remain on course and to determine the drift angle.

(f) Outbound heading. This will be determined by using the inbound wind drift angle as the basic factor.

1. When the inbound drift angle is 10° or less, double the angle and apply the resultant to the outbound leg.

2. When the inbound drift angle is more than 10°, add 10° to that angle and apply the resultant to the outbound leg.

(g) Relative bearing. Abeam the station is indicated by a 90-degree or 270-degree (plus or minus the applied wind drift angle) relative bearing.

(2) Approach.

(a) Definition. An instrument approach is that portion of an instrument flight subsequent to arrival at a terminal fix and consists of compliance with published procedures or instructions.

(b) Upon receipt of an approach clearance. The following procedures will be executed upon receipt of clearance:

1. Clearance issued on fix arrival.

a. Complete landing check and start descent to procedure turn altitude outbound.

b. Report leaving assigned altitude.

c. Execute procedure turn as published after establishing the aircraft on the published outbound track. Outbound time of 40 seconds may be adjusted, as necessary, to compensate for wind. Descend below procedure turn altitude only after established on approach course inbound. Procedure turn may be accomplished prior to arrival at procedure turn altitude.

d. Descend to the published altitude.

e. Upon station passage, start time, begin descent, and report.

f. Establish track from the station to the field and descend to the authorized minimum altitude.

g. If visual contact with the ground is not established upon reaching minimum approach altitude and the appropriate time inbound from the fix has elapsed, execute a missed approach. (Inbound time is based on groundspeed.)

2. Clearance received prior to fixed arrival.

a. When cleared for an approach, descend as soon as possible to the published transition altitude, the minimum obstruction clearance altitude, or if not on an airway, the minimum safe altitude depicted on the appropriate approach chart; but not lower than the published procedure turn altitude.

b. Report altitude departure.

c. Upon arrival at the destination fix, report arrival and execute the approach.

3. Clearance received while in the holding pattern on the published inbound approach leg.

a. Complete prelanding check and start an immediate descent to the appropriate procedure turn altitude regardless of whether you are holding left or right turns. (Upon receipt of an approach clearance, the 1-minute holding limitation is abolished.)

b. Report assigned altitude departure.

c. The final turn inbound to the fix is considered as the procedure turn. Descend below procedure turn altitude only after established on the approach course inbound.

(3) Missed approach.

(a) Definition. A missed approach is a maneuver executed following an unsuccessful instrument approach and consists of a climbout in compliance with published procedures or special instructions.

(b) Missed approach. Following an unsuccessful instrument approach, a missed approach will be executed immediately.

1. Start an immediate climb.

2. Follow published procedures prescribed for the missed approach or as directed by the controller.

3. Report missed approach with intentions.

EXAMPLE: "Approach control, Green 2, missed approach; request clearance to Bien Hoa via V-31, 2,400, over."

12. Servo failure.

a. Maintain heading, altitude, and airspeed within safe limits (try to maintain 60 knots airspeed).

b. Hydraulic control circuit breaker out; if power is not restored, IN.

c. Hydraulic control switch - recycle; if power is not restored, OFF.

d. Report type of failure and request expedited or priority clearance and/or approach clearance, depending upon the situation.

EXAMPLE: "Tan Son Nhut Approach Control, Green 2, servo failure, request expedited approach Tan Son Nhut, over."

13. Autorotations (TH-13T).

a. Pitch down, announce (for example) "rotor in the (high, middle, or low) green."

b. Maintain cruise airspeed; maintain heading.

c. Distress report.

EXAMPLE: "MAYDAY, MAYDAY, MAYDAY, Green 2, engine failure, position or estimated position (state which)."

d. Recover on command by leveling off. (Return to original heading if necessary.)

e. Report situation, recovery altitude, and request new clearance.

EXAMPLE: "Center, Green 2, engine restart, 1500, request clearance to 2000, over."

PART SEVEN

MISCELLANEOUS

14. Weather minima - helicopters (AR 95-2).

a. Takeoff standard card - 100 feet, one-fourth mile, or RVR 1600.

b. Takeoff special card - none.

c. Landing (both) - at time of arrival, at or above DH or MDA with 50 percent published visibility or RVR.

d. An alternate airport is required if the forecast for the destination 1 hour prior until 1 hour after ETA is at or below 1000 feet above the appropriate landing minimum and visibility is less than 2 miles or published minimum, whichever is greater.

e. An airfield will not be listed as an alternate unless current weather forecast indicates that the ceiling and visibility at the alternate airfield will be at or greater than the following during the period from 1 hour before until 1 hour after ETA:

(1) Airfields for which an instrument procedure or radar minimum is provided in authorized publications can be used as alternate if ceiling and visibility are at or greater than standard alternate minima specified in authorized publications, except that visibility may be reduced by 50 percent.

(2) Instrument procedures not published in the DOD FLIP or for which alternate minima are not specified (i.e., Jeppeson, coast and geodetic survey charts) can be used if ceiling is 400 feet above the appropriate landing minima and visibility is three-fourths mile above published minima.

(3) Airfields without an instrument approach must have forecast weather conditions which permit VFR descent, approach, and landing with visibility of not less than 1 1/2 miles.

15. Loss of radio voice communications. The procedures outlined below will be used when the flight is conducted within the ATC controlled area.

a. Check all circuit breakers in an attempt to establish communications, using all available radios.

b. Make at least two calls on assigned frequency. Turn up all installed receivers (to include navigational aids) loud enough to monitor. (Have copilot transmit.)

c. Tune to last assigned frequency and make at least two calls.

d. Attempt contact on ATC, "discrete," or FSS frequency.

e. Tune to emergency frequency and make two calls; if no communications are established, make all transmissions "in the blind" on emergency frequency, continually monitoring all available receivers, and follow procedures listed below.

(1) If the failure occurs in VFR conditions, or if VFR conditions are encountered after

the failure, continue the flight under VFR and notify ATC upon landing.

(2) If the failure occurs in IFR conditions, or if paragraph "a" of this section cannot be complied with, continue the flight according to the following:

(a) Route.

1. Proceed by the route assigned in the last ATC clearance received.

2. If receiving a radar vector, proceed by the direct route from the point of radio failure to the fix, route, or flight corridor specified in the vector clearance.

3. In the absence of an assigned route, proceed by the route that ATC has advised may be expected in a further clearance, or—

4. In the absence of any of the above, by the route filed in the flight plan.

(b) Altitude. Proceed at the highest of the following altitudes:

1. The altitude assigned in the last ATC clearance received.

2. The minimum enroute altitude, or—

3. The altitude ATC has advised may be expected in a further clearance.

(c) Climb. When it is necessary to climb in order to comply with paragraph (b) above, the following applies:

1. Climb to the assigned altitude in accordance with the last ATC clearance received.

2. Climb to the minimum altitude for IFR operation at the time or place necessary to comply with that minimum, or—

3. Climb to the altitude ATC has advised may be expected in a further clearance at the time or place included in the "expect further clearance."

(d) Leave holding fix. If holding instructions have been received, leave the holding fix at the "expect further clearance" time received; if an expected approach clearance time has been received, leave the holding fix in order to arrive over the fix from which the approach begins as close as possible to the expected approach clearance time.

(e) Descent. Begin descent from the enroute altitude upon reaching the fix from which the approach begins, but not before—

1. The "expect approach clearance time," or—

2. If no expect approach clearance time has been received at the estimated time of arrival (ETA) shown on the flight plan, as amended with ATC.

(f) Holding. If holding is necessary at the radio fix to be used for the approach and

there is no holding pattern depicted, holding and descent to the initial altitude for the execution of the instrument approach will be accomplished in a holding pattern on the side of the final approach course on which the procedure turn is described.

16. Navigation radio failure. Flight planning must include actions to be taken in the event either the aircraft radio or NDB becomes inoperative. Specific action to be taken will depend largely upon the conditions under which the flight is being conducted; i.e., are you under ATC control; is radar available to you; does your destination or alternate have a GCA, the type weather you were encountering when the failure occurred, and fuel on board.

17. Fuel consumption check. To determine fuel consumption, note fuel in tanks and the time. Fifteen minutes later note gallons of fuel used and compute fuel exhaustion time. Subtract 45 minutes from fuel exhaustion time to determine when the aircraft will be consuming reserve fuel.

18. Transponder operation (TPR-610 ATC transponder).

a. Normal operation.

(1) Set function switch to STBY.

(2) Select desired reply code on code selector switches.

(3) Set mode selector to A.

(4) After a warmup time of at least 15 seconds, set function switch to ON. Transponder is now ready for normal operation.

b. Emergency operation.

(1) Set function switch to ON.

(2) Set code selector switches to 7700. Any operating modes of the TPR-610 other than those above will be requested by the controller. He will use the word "squawk" followed by the action he desires.

Squawk identification. Momentarily press IDENT button.

Squawk low. Set function switch to LO position.

Squawk code 08. Set code selector switches to 0800.

c. Self-test (self-test models, B and D only). To test the transponder system for proper operation, set the switches as described under NORMAL OPERATION and momentarily press the TEST button. Proper operation will be indicated by the REPLY light flashing twice if the mode selector switch is in the A position; three times if in AC position. (The second two flashes will be close together.) Self-test takes approximately 10 seconds.

19. References. References to be used in conjunction with this procedure guide are listed below.

a. AR 95-1.

b. AR 95-2.

c. AR 95-4.

d. AR 95-63, with C3.

e. TM 1-215.

f. TM 1-225, with C1.

g. TM 1-300, with C1 and C2.

h. FM 21-26.

i. FLIP enroute charts.

j. FLIP, section I.

k. FLIP, section II.

l. FLIP IFR supplement.

1. Co-Pilot
   a. qualifications
   b. equipment

2. Flight
   a. mission
   b. route of flight, to include GCA
   c. Alternate

3. Approaches Available
   a. destination
   b. GCA site; ASR, PAR
   c. alternate

4. Commo
   a. call sigh A/C + ground troops
   b. frequencies ones available
   c. emergency freq's
   d. lost commo procedures

5. Situation
   a. Friendly
   b. enemy

6. Weather Briefing
   a. destination
   b. Alternate c. GCA

7. Transfer of A/C controls

8. co-pilots responsibility

9. Emergencies

10. Questions