

# INITIAL ENTRY ROTARY WING (IERW) AVIATOR TH-67 PRIMARY PHASE 

## FLIGHT TRAINING GUIDE

THIS FTG SUPERSEDES, IERW FTG, DATED JAN 04

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## TH-67

## PRIMARY PHASE

## FLIGHT TRAINING GUIDE

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## CHAPTER 1. INTRODUCTION

## 1-1. GENERAL.

a. To train Initial Entry Rotary Wing (IERW) students for qualification in the TH-67 helicopter.
b. Location: Fort Rucker, Alabama.
c. Duration: 12 weeks. (MAX ALLOWABLE TIME)

## 1-2. SAFETY CONSIDERATIONS.

a. Prior to the first flight, the instructor pilot will brief the student pilot on airfield operations and procedures; airfield layout and facilities; and the Primary SOP.
b. Aircraft will be operated in accordance with (IAW) current operators supplement and vAR 1-100.
c. Only those tasks specified in this flight training guide (FTG) will be performed or demonstrated.

1-3. REQUIRED TASKS AND PROCEDURES. Tasks and procedures required for training are shown in their recommended order of accomplishment. A schedule of flight time is provided as a guide to the instructor for the proper pacing of students.

## 1-4. GENERAL REQUIREMENTS.

a. Paragraph 2-3 (Tasks Selected for Training) lists the tasks that will be taught.
b. Students will not practice "power-off" maneuvers during solo flight periods.
c. End-of-stage requirements (Stage I). The following maneuvers and procedures will be accomplished prior to releasing a student for the end-of-stage evaluation.
(1) All maneuvers listed under paragraph 2-4, flight periods PD-1 through PD-11.
(2) The student must be able to present orally all procedures, which are not demonstrated or practiced in the aircraft.
(3) To complete Stage I the student must have:
(a) The student must pass all Stage I examinations.
(b) A minimum of 3.5 hours and a maximum of 6.5 hours total flight time.
d. Prior to unsupervised solo flights, a student must:
(1) Complete a minimum of 3.5 and a maximum of 6.5 hours total flight time (weather permitting).
(2) Satisfactorily complete the Stage I end-of-stage evaluation.
e. All unsupervised solo flights will be conducted under appropriate ATC control, if available.
f. Quality Assurance Evaluation (QAE): 10 percent of the class may receive a QAE after they have completed all unsupervised solo flights. Only flight commanders, assistant flight commanders, and DES will conduct QAE.
h. Stage II end-of-stage requirements. The following maneuvers and procedures will be accomplished prior to the end-of-stage evaluation:
(1) All maneuvers listed in paragraph 2-4, periods PD-4 through PD-13.
(2) Have a maximum of 15.0 hours.
(3) Satisfy all standards listed in Chapter 3.
i. The following equipment and references helpful during instruction periods:
(1) Flight Training Guide.
(2) TH-67 Checklist.
(3) vAR 1-100, Flight Regulations.
(4) USAAVNC Standard Operating Procedures (SOP).
(5) Student's personal study guide. (This is includes any material the student desires to help with training.)
(6) FS Nav or other GPS System.
k. Two dual cross-country training flights will be accomplished during phase Il prior to end-of-phase evaluation.

1-5. DESCRIPTION OF TRAINING. Training will be conducted in the TH-67 helicopter.
a. This course consists of 15.5 hours to be flown no more than 12 -week flight training period
b. Daily block time for flight training is 2.0 hours (If able). Student-instructor ratio is 2:1.
c. Unsatisfactory progress and progress evaluation flight procedures:
(1) Progress evaluation flights may be preplanned for slow proficiency students, or unannounced for measuring student's progress and instructor pilot effectiveness IAW Aviation Training Brigade SOP.
(2) Students who fail a progress evaluation will be referred to the TRADOC Commander. Students who pass a progress evaluation will be returned to training.
d. The end-of-stage evaluation flight will cover all maneuvers shown for evaluation requirements in chapter 2.

## CHAPTER 2. TRAINING SEQUENCE

## 2-1. FLIGHT HOURS.

a. This phase is broken down as follows:

| TRAINING STAGE | DUAL | $\underline{\text { SOLO }}$ |  | EVAL |
| :--- | :--- | :--- | :--- | :--- |

## OBJECTIVE FLIGHT HOUR CHART

STAGE I

| FLT PD | 1 | 2 | 3 | 4 |
| :--- | ---: | ---: | ---: | :---: |
| DUAL | $\underline{0.5}$ | $\underline{1.0}$ | $\underline{1.0}$ | $\underline{1.0 \mathrm{E}}$ |
| CUM TIME | $\mathbf{0 . 5}$ | $\mathbf{1 . 0}$ | $\mathbf{2 . 5}$ |  |

STAGE II

| FLT PD | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| :--- | ---: | ---: | ---: | :---: | :---: | ---: | ---: | ---: |
| DUAL | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| SOLO | 1.0 | 1.0 |  | 1.0 |  |  |  |  |
|  | $\mathbf{4 . 5}$ | $\mathbf{5 . 5}$ | $\mathbf{6 . 5}$ | $\overline{\mathbf{7 . 5}}$ | $\overline{\mathbf{8 . 5}}$ | $\overline{\mathbf{9 . 5}}$ | $\overline{\mathbf{1 0 . 5}}$ | $\overline{\mathbf{1 1 . 5}}$ |

FLT PD 13

DUAL $\quad \frac{1.5}{13}$
CUM TIME $\quad \frac{15}{13}$
2-2. FLIGHT PERIOD. Each flight period is broken down as follows:
a. Instructor Pilots briefing covering the following:
(1) Mission, i.e., Stage I/Stage II and training day.
(2) Task, i.e., new maneuvers to be demonstrated.
(3) Syllabus flight time.
(4) Flight route(s).
(5) Mission restrictions, e.g., NOTAMs, avoidance areas.
(a) Assigned stagefield.
(b) Frequencies to be used.
(c) Lane utilization (if applicable).
(d) Stagefield restrictions.
(6) Refueling (location and procedures).
(7) Weather briefing.
(8) Inadvertent IMC procedures.
(9) Discuss daily questions.
d. After the training period is complete, the IP will log on the PIREP, the student's PID and tasks completed.
e. Individual instructor pilot's debriefing of his assigned students will include a critique of the student's performance to enable the student to gain the maximum benefit from each day's experience.

## 2-3. TASKS SELECTED FOR TRAINING.

TASK NO TITLE PAGE

1001 Perform Preflight Mission Planning. 38
1001.01 Conduct Mission Briefing. 38
1001.04 Maintain Airspace Surveillance. 41

1002 Perform Hover Check. 41
1003 Perform Engine-Start, Run-Up, and Before-Takeoff Checks. 42
1004 Perform Hovering Flight. 46
1005 Perform a VMC Takeoff. 50
1006 Perform Straight-and-Level Flight. 54
TASK NO TITLE PAGE
1007 Perform Climbs and Descents. 55
1008 Perform Turns. 57
1009 Perform Acceleration/Deceleration. 58
$1010 \quad$ Perform Climbing and Descending Turns. 58
1011 Perform Traffic Pattern Flight. 62
1012 Perform VMC Approach. 65
1013 Perform Before-Landing Checks. 68
1014 Perform Go-Around. 69
1015 Perform Confined Area Operations. 70

| 1016 | Perform Slope Operations. | 72 |
| :--- | :--- | ---: |
| 1017 | Perform Pinnacle/Ridgeline Operations. | 73 |
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| 1019 | Perform Radio Communication Procedures. | 87 |
| 1020 | Perform After-Landing Tasks. | 88 |
| $4-1 a$. | Local Area Orientation. | 90 |
| $4-1 b$. | Explain the Relationship of the Flight Controls and the Instruments. | 90 |

## 2-4. FLIGHT PERIOD OUTLINE.

## STAGE I

| PD | TASK |  |  |
| :---: | :---: | :---: | :---: | :---: |
| NO | TASK/PROCEDURES | EVAL | FLIGHT |

PD-1

1. Instructor's briefing.
2. Demonstration or orientation of:
1.0
a. Preflight Mission Planning.
b. Airfield orientation.
e. Local flying rules, Airspace and regulations.
3. Debriefing.


| PD | $\begin{aligned} & \text { TASK } \\ & \text { NO } \\ & \hline \end{aligned}$ | TASK/PROCEDURES | EVAL | FLIGHT <br> TIME |
| :---: | :---: | :---: | :---: | :---: |
| PD-3 |  | 1. Instructor's briefing. |  |  |
|  |  | 2. Demonstrate and practice: |  | (1.5) |
|  | 1002 | b. Hover check. |  |  |
|  | 1004 | a. Hovering flight. |  |  |
|  | 1004 | b. Takeoff to a hover. |  |  |
|  | 1004 | c. Hovering turns. |  |  |
|  | 1004 | d. Landing from a hover |  |  |
|  | 1013 | f. Before-landing check. |  |  |
|  | 1019 | g. Radio communications procedures. |  |  |
|  | 1011 | e. Traffic pattern flight. |  |  |
|  | 1011 | f. Traffic pattern entry. |  |  |
|  | 1011 | g. Traffic pattern exit. |  |  |
|  | 1001.01 | a. Conduct crew mission briefing. |  |  |
|  | 1005 | b. VMC takeoff (hover). |  |  |
|  | 1012 | c. VMC (normal) approach (hover). |  |  |
|  | 1018 | a. Shallow approach to a run-on landing. |  |  |
|  |  | $3 . \quad$ Debriefing. |  |  |
| PD-4 |  | 1. Evaluator's briefing. |  |  |
|  |  | 3. Stage I evaluation. |  | (1.0)E |
|  |  | 4. Debriefing. |  |  |

## STAGE II

| PD | $\begin{aligned} & \text { TASK } \\ & \text { NO } \end{aligned}$ | TASK/PROCEDURES | $\begin{array}{r} \text { FLIGHT } \\ \text { TIME } \end{array}$ |
| :---: | :---: | :---: | :---: |
| PD-5 |  | 1. Instructor's briefing. <br> 2. Student will perform a minimum of three solo traffic patterns. <br> 3. Debriefing. | $\begin{aligned} & (1.0) \\ & \text { SOLO } \end{aligned}$ |
| PD-6 |  | 1. Instructor's briefing. <br> 2. Student will perform a minimum of three solo traffic patterns. <br> 3. Debriefing. | $\begin{aligned} & (1.0) \\ & \text { SOLO } \end{aligned}$ |


| PD | TASK <br> NO | TASK/PROCEDURES | EVAL |
| :--- | :--- | :--- | :--- | | FLIGHT |
| :---: |
| TIME |

1. Instructor's briefing.

PD-8
1015
2. Review and practice tasks

1016
a. Confined area operations.
b. Pinnacle/ridgeline operations.
3. Debriefing.

1. Instructor's briefing.

PD-9
2. Review and practice tasks selected by IP.
3. Debriefing.

1. Instructor's briefing.

PD-10
2. Day Cross Country flight with IP following.
3. Debriefing.

1. Instructor's briefing.

PD-11
2. Day Cross Country flight
with IP following.
3. Debriefing.

1. Instructor's briefing.

PD-12
2. Review and practice tasks
selected by IP for Stage II flight evaluation.
3. Debriefing.

1. Flight evaluator's briefing.

PD-13
2. Stage II flight evaluation.
3. Debriefing.

## CHAPTER 3. TRAINING OBJECTIVES

3-1. PRIMARY TRAINING TASKS. This section covers all tasks/minimum learning objectives presented in this phase of training.

TASK: PERFORM PREFLIGHT INSPECTION.
1001
CONDITIONS: Given a TH-67 helicopter and a checklist.
STANDARDS:

1. Perform the preflight inspection.
2. Correctly enter appropriate information the VATSIM flight plan or USAV server flight plan.
3. Correctly perform crew coordination actions.

DESCRIPTION: The student pilot will always file a flight plan, either VFR or IFR. The pilot will receive proper weather information for his/her departure, en route, and destination locations.

TASK: CONDUCT CREW MISSION BRIEFING.
CONDITIONS: Prior to flight in a TH-67 helicopter and given a crew-briefing checklist.
STANDARDS:

1. Brief the items detailed on the crew-briefing checklist.
2. Assign crewmember mission duties and responsibilities.

## DESCRIPTION:

1. The pilot must brief the crew utilizing the crew-briefing checklist. The checklist will aid in assigning crew duties and responsibilities prior to and during the mission.
2. During the briefing, the pilot must discuss the critical aspects of the mission from takeoff to touchdown.
3. The overall goal is to reduce uncertainty by preplanning a margin of error to compensate for unexpected events.

## REFERENCE: Crew-Briefing Checklist

## CREW BRIEFING CHECKLIST

1. Crew introduction:
a. Crew endurance.
2. Mission.
3. Execution
a. Routes and altitudes.
b. Estimated time en route.
c. Fuel and refuel requirements.
4. Weather and NOTAMs.
5. Aircraft:
a. Operating restrictions.
6. Crew duties:
(1) Fly the aircraft (primary focus is outside the aircraft).
(2) Avoid traffic and obstacles.
(3) Cross-check instruments and systems.
(4) Monitor and transmit on assigned radios.
(5) Announce traffic and obstacles.
(6) Announce when focused inside the aircraft.
(7) Adjust avionics, and monitor and transmit on assigned radios.
(8) Navigate.
(9) Cross-check instruments and systems.
(10) Copy ATC clearances and mission data, and perform fuel consumption checks.
7. Questions concerning the crew mission briefing.

TASK: MAINTAIN AIRSPACE SURVEILLANCE.
CONDITIONS: In a TH-67 helicopter.
STANDARDS:

1. Immediately inform pilots of all air traffic or obstacles that pose a threat to the flight.

DESCRIPTION: Maintain close surveillance of the airspace surrounding the aircrafts. Call out the location of traffic or obstacles by the clock and distance method. (The 12 o'clock position is at the nose of the aircraft.) Give the distance in miles or fractions of miles for air traffic and in feet for ground obstacles.

## TASK: PERFORM HOVER CHECK.

CONDITIONS: In a TH-67 helicopter and aircraft cleared.
STANDARDS:

1. Perform hover check IAW the operator's supplement or TH-67 checklist.
2. Correctly determine proper control responses.
3. Correctly determine proper CG.
4. Correctly identify proper engine and transmission operating limits.
5. Correctly identify proper flight instrument responses.

DESCRIPTION: Accomplish hover/taxi checks IAW the operator's supplement or TH-67 checklist. As the aircraft is picked up to a hover and/or taxi is begun, the pilot will ensure proper flight control responses and center of gravity for the existing conditions. Identify any engine or transmission system not giving proper indications, and ensure that all required flight instruments are operational prior to departing the ramp/parking areas and arriving at the appropriate takeoff runway or pad.

## TASK: PERFORM ENGINE-START, RUN-UP, AND BEFORE-TAKEOFF CHECKS.

CONDITIONS: In a TH-67 helicopter and given the aircraft checklist.

## STANDARDS:

1. Pilot:
a. Perform procedures and checks according to the aircraft checklist.
b. Properly maintain airspace surveillance.

## DESCRIPTION:

1. All pilots will clear the area around the aircraft prior to engine start.
2. The checklist will be used to accomplish the pre/post engine start checks in the appropriate sequence.
3. The pilot will ensure the before-takeoff checks are completed. And will announce when ready for takeoff and remain focused outside the aircraft.

NOTE 3: The before-takeoff check will be accomplished by using the checklist when taking off from a basefield, stagefield, confined area, etc., for the first time. If subsequent traffic patterns are to be flown at that same field, the before-takeoff check may be done from memory at the discretion of the pilot.

REFERENCES: Aircraft Operator's Supplement
vAR 1-100
Unit SOP

## TASK: PERFORM HOVERING FLIGHT.

CONDITIONS: In a TH-67 helicopter with before-takeoff check completed and aircraft cleared.

## STANDARDS:

1. Takeoff to a Hover.
a. Establish a vertical ascent to a hover altitude of 3 feet (+/-1 foot.)
b. Maintain heading (+/-10 degrees)
c. Do not allow drift to exceed 2 feet.
2. Hovering Flight.
a. Stationary:
(1) Maintain altitude 3 feet (+/- 1 foot.)
(2) Maintain heading (+/-10 degrees)
(3) Do not allow drift to exceed 2 feet.
b. Forward, sideward, or rearward:
(1) Maintain altitude 3 feet, (+/-1 foot.)
(2) Maintain heading (+/-10 degrees)
(3) Maintain a constant hover speed.
(4) Maintain ground track as directed.
3. Hovering Turns.
a. Maintain altitude 3 feet (+/- 1 foot.).
b. Do not allow drift to exceed 2 feet from pivot point.
c. Maintain a constant rate of turn, not to exceed 90 degrees in four seconds.
4. Landing from a Hover.
a. Execute a smooth, controlled descent with no lateral or rearward drift at touchdown.
b. Maintain heading (+/- 10 degrees)

NOTE: A rapid and continuous crosscheck is necessary for safety and good aircraft control.
DESCRIPTION (Hovering Flight): Apply cyclic in the desired direction of flight. Maintain heading with pedals and maintain altitude with collective. Rate of movement should not exceed a brisk walk. To return to a stationary hover, apply opposite cyclic while maintaining altitude with collective and heading with pedals.

## PROCEDURE FOR HOVERING FLIGHT:

1. When hovering, maintain the helicopter position by using the cyclic, and maintain altitude by use of the collective. A constant heading is maintained by using the pedals. Only by the proper coordination of all controls can you achieve successful hovering flight.
2. All control corrections should be pressure movements rather than abrupt movements. In hovering, as in straight-and-level flight, the attitude of the helicopter is again the governing factor which determines movement over the ground. Check the visual references in the cockpit relative to the horizon; this attitude will keep the helicopter hovering over a spot. Direct your attention well out in front and do not stare directly at the ground. When you are looking in too close, you will tend to over control because of attempting to correct every little movement. Your primary concern is to keep the helicopter under control.
3. Hovering altitude is maintained by use of the collective (see Note 3). The amount of collective needed to maintain 3 feet will vary under different conditions of wind, air density, and gross weight. When a steady wind is blowing, fewer collective corrections are required to hold 3 feet altitude. Notice how the ground looks while you are hovering at 3 feet. When the helicopter starts to descend, you will notice that objects on the ground become more level with your line of sight; and when starting to climb, your line of sight becomes steeper. When you notice the helicopter start to descend, increase collective and adjust left pedal to counteract for increased torque effect. When the helicopter starts to climb, reduce collective to hover power. If necessary, adjust right pedal as required to maintain heading.
4. The cyclic is used to maintain your position over the ground. The helicopter will not move if it is in a proper attitude for the load distribution and the existing wind. Notice the relationship of the top of the console and other cockpit reference points to the horizon. As long as the reference points remain in this relation to the horizon, the helicopter will be in a level attitude and will not move over the ground unless there is a variation in wind. In order to hover, you must maintain this attitude with the cyclic.

NOTE 1: Level attitude refers to an attitude at which the helicopter is stationary under existing conditions.
NOTE 2: The TH-67 fuselage normally hangs slightly nose low at a hover.
NOTE 3: During initial hover training, the IP may direct a higher hover altitude for safety purposes. As soon as practical, hover height will conform to standard.
5. If the level attitude changes to a nose-low attitude, the helicopter will start to move forward. Notice the relation of the console to the horizon in the nose-low attitude. To stop the forward
movement, bring the nose back to a level attitude by applying slight aft pressure on the cyclic control. When the nose reaches a level attitude, release the aft pressure and the helicopter will drift to a stop.
6. If the level attitude changes to a right-side-low or left-side-low attitude, the helicopter will start to move toward the low side. To stop the sideward movement, apply slight pressure on the cyclic opposite to the low side. When the helicopter returns to the level attitude, relax the pressure and the helicopter will drift to a stop.
7. Notice that there is a lag between the time of a nose-low attitude and the beginning of forward movement. In order to hover without forward movement, it is necessary to recognize a nose-low attitude and correct it before starting to move forward. When the helicopter starts into a nose-low attitude, raise the nose to the level attitude before it starts to move. In this way, by detecting changes from the level attitude, you can maintain your position. The same technique is used to prevent sideward or rearward movement.
8. The coordination of all controls when hovering cannot be overemphasized. Any change on one control almost always requires a coordinated correction on one or more of the other controls. Hovering can be accomplished with precision only when corrections are small, smooth, and coordinated.
9. Forward hovering - from 3-foot AGL hover, apply forward cyclic pressure to initiate forward movement, maintaining altitude with collective and heading with pedals. Rate of speed should not exceed that of a brisk walk. To return to a stationary hover, apply cyclic pressure opposite to the direction of movement, maintaining altitude with collective and heading with pedals.
10. Sideward hovering - from 3-foot AGL hover, apply lateral cyclic in the desired direction of flight to initiate sideward movement. Maintain heading perpendicular to ground track with the pedals. Maintain altitude with collective pitch control. Rate of speed should not exceed that of a normal walk. To return to a stationary hover, apply cyclic pressure opposite the direction of movement, maintaining altitude with collective and heading with the pedals.
11. Rearward hovering - from a 3-foot AGL hover, apply aft cyclic pressure to initiate rearward movement, maintaining altitude with collective pitch and heading with the pedals. Rate of speed should not exceed that of a normal walk. To return to a stationary hover, apply cyclic pressure opposite to the direction of movement, maintaining altitude with the collective and heading with the pedals.

DESCRIPTION (Takeoff to a Hover): With collective full down, RPM at 100 percent and throttle full open, place cyclic and pedals in NEUTRAL position. Increase collective with a smooth, positive pressure, apply pedals to maintain heading, and coordinate cyclic for a vertical ascent. As the aircraft leaves the ground, check for proper control response and that aircraft is within CG limits. As appropriate upon reaching the desired hover altitude, perform hover check IAW the checklist.

NOTE: Normal hover altitude is 3 feet (from skids to the ground).

## PROCEDURE FOR TAKEOFF TO A HOVER:

1. Clear around the aircraft and select several reference points. Verify that the throttle is full open.
2. Smoothly increase collective pitch; maintain heading with pedals until aircraft is light on the ground.
3. As the aircraft becomes light on the ground, direct your attention approximately 50 feet in front of the aircraft in a scanning manner.
4. As power is increased, apply left pedal as necessary to prevent the aircraft from yawing.
5. Once the aircraft is light, adjust the cyclic as necessary to affect a vertical ascent and prevent drift.
6. Continue a slow upward pressure on the collective until you depart the ground.
7. Maintain position over the ground with the cyclic.
8. Maintain heading with pedals.
9. At 3 feet AGL, adjust collective to maintain this altitude.

DESCRIPTION (Hovering Turns): Clear aircraft. Apply pressure on the desired pedal to begin the turn and use pressure and counter pressure on pedals as necessary to maintain a constant rate of turn. Coordinate cyclic control to maintain position over pivot point while maintaining altitude with collective pitch control. Hovering turns can be made around the vertical axis, nose, or tail of the aircraft.

## PROCEDURE FOR HOVERING TURNS:

1. Establish a 3-foot stabilized hover and clear the area in the vicinity of the aircraft. Note aircraft heading or surrounding ground objects.
2. To start the turn, apply pedal in the direction of turn. This should be a PRESSURE movement just enough to start the aircraft turning slowly.
3. While turning, keep the cyclic into the wind to keep the mast over the same position on the ground. As you approach the completion of the turn, apply pressure to the opposite pedal to stop the turn at the desired heading. Maintain hovering altitude with collective.

NOTE: The proper rate of turn appears to be that of a constant normal walk (approximately 15 degrees per second). If the aircraft stops during the turn, the rate of turn is too slow.

DESCRIPTION (Landing from a Hover): From a stabilized hover, decrease collective to begin a gradual descent to touchdown. Make necessary corrections with pedals and cyclic to maintain vertical descent and constant heading to prevent movement over the ground. Upon ground contact, continue decreasing collective smoothly and steadily until collective is full down. Neutralize pedals and cyclic.

NOTE: Landing from a hover is a vertical descent from a 3-foot hover while maintaining a stabilized position over a spot with a constant heading.

## PROCEDURE FOR LANDING FROM A HOVER:

1. From a 3-foot AGL hover, begin the descent by applying a slight downward pressure on the collective.
2. Maintain the aircraft's position over the ground with the cyclic and heading with the pedals.
3. As the aircraft contacts the ground, use cyclic and right pedal as necessary, and continue to reduce the collective to the "full-down" position.

NOTE: Use slow, smooth control movements.

CONDITIONS: In a TH-67 helicopter with hover power and before-takeoff checks completed.

## STANDARDS:

1. Initiate takeoff from an appropriate hover altitude " 1 foot when taking off from a hover.
2. Maintain ground track alignment with takeoff direction with minimum drift.
3. Maintain takeoff heading " 10 degrees prior to 50 feet AGL.
4. Maintain aircraft in trim above 50 feet AGL.
5. Maintain takeoff power until reaching desired airspeed "10 KIAS.
6. Maintain 60 KIAS " 10 knots.
7. Maintain 500 FPM rate of climb "100 FPM.

DESCRIPTION: Ensure that the throttle is full open. Select progressive reference points to maintain a ground track. Apply forward cyclic to accelerate to effective translational lift (ETL) and maintain heading with pedals and altitude with collective. As ETL is reached and the climb begins, apply forward cyclic to attain an attitude that will result in the 60 KIAS climb. Adjust collective as required to establish the desired rate of climb. Above 50 feet, place the aircraft in trim.

NOTE 1: The normal takeoff is used to transition the helicopter from the ground or a stationary hover into translational lift and a normal climb in the safest and simplest manner.

## PROCEDURES:

1. To accomplish the maneuver, sufficient power to hover must be available and no high barriers can be in the flight path to restrict a normal climb-out.
2. A normal takeoff is executed from the ground or a 3 -foot AGL hover. If operating under preventive control, make a clearing turn to ensure that there are no aircraft close enough to prevent a safe takeoff. Call out the before-takeoff check. Clear aircraft left, right and overhead. Select two reference points along the intended takeoff path. These reference points will be used in maintaining the desired ground track.
a. From a Hover. To start moving forward, apply forward pressure on the cyclic. Do not apply too much pressure on the cyclic, as this will result in a nose-low attitude. With the nose too low, the helicopter will gain airspeed rapidly and tend to descend due to loss of vertical lift. As the aircraft starts moving forward, adjust collective as necessary to maintain 3 feet AGL until passing through ETL. After passing through ETL, initially adjust the collective to attain hover power. When 60 knots and 500 FPM rate of climb are established, adjust the controls for a normal climb.
b. From the Ground. Increase collective and maintain heading with pedals. As the aircraft leaves the ground, apply cyclic as necessary to accelerate forward while maintaining minimum safe ground clearance with collective. As you accelerate through effective translational lift, the helicopter will begin to climb; and the nose will rise. At this point, apply additional forward cyclic to overcome this tendency. Assume an attitude that will allow acceleration to 60 knots and continue as in takeoff from a hover.
3. In a crosswind below 50 feet AGL, the helicopter is flown in a slip; keep the heading aligned with the takeoff path with the pedals, and apply cyclic in the direction of the wind to maintain a good ground track over the reference points. Continue to increase airspeed to 60 KIAS. At 50 feet AGL, place the helicopter in a crab. You have the right amount of crab if your ground track is over the reference points and the helicopter is in trim. As airspeed increases, you will have to add more right pedal. This is due to the increasing force produced by the vertical fin. As the airspeed approaches 60 knots, adjust the cyclic to establish a $60-\mathrm{knot}$ attitude and continue the normal climb.

NOTE: One objective in making a normal takeoff is to use the minimum amount of power to attain effective translational lift, and prevent the helicopter from settling as you move forward. Do not allow aircraft to climb or descend prior to reaching effective translational lift.

TASK: PERFORM STRAIGHT-AND-LEVEL FLIGHT.
CONDITIONS: In a TH-67 helicopter, in the local flying area, given altitude, cruise airspeed, and course heading.

## STANDARDS:

1. Maintain altitude " 100 feet.
2. Maintain cruise airspeed "10 KIAS.
3. Maintain course heading " 10 degrees.
4. Maintain desired ground track.
5. Maintain aircraft in trim.

NOTE: Straight-and-level flight is flight in which a constant airspeed, altitude, and direction are maintained.

DESCRIPTION: To perform straight-and-level flight, a complete crosscheck must be used to maintain altitude, heading, airspeed, and trim. Maintain heading and airspeed with cyclic, altitude with collective, and trim with pedals. The attitude crosscheck is made primarily by visual reference to the horizon and aircraft flight instruments.

## PROCEDURES:

1. The airspeed for straight-and-level flight is 90 knots. The attitude that corresponds with 90 knots is the desired constant attitude; use the airspeed indicator frequently for verification crosscheck.
2. Maintain a constant altitude with the collective, frequently cross-checking the altimeter to verify the altitude. The frequency of collective movements will depend upon the
turbulence level. When the air is smooth, there are less collective corrections required.
3. The RPM setting is 100 percent.
4. Pedals usually require very little adjusting in straight-and-level flight, but must always be used if power is changed.
5. To establish level flight, select a reference line or point to fly to. Then, using the pedals to maintain the aircraft in trim, make cyclic corrections that will establish the aircraft in a level attitude on a straight ground track to the reference point. If a crosswind exists, the aircraft will be in a crab. Aligning the aircraft with the ground reference when a crosswind exists will result in drifting or uncoordinated flight.

NOTE: Develop a crosscheck that scans outside the aircraft to additionally develop attitude flying and to avoid other aircraft. Use the instruments to verify your attitude flying. Learn to interpret the instruments quickly; do not stare at them.

TASK: PERFORM CLIMBS AND DESCENTS.
CONDITIONS: In a TH-67 helicopter, in the local flying area, given altitude, airspeed, rate of climb/ descent, and a new altitude.

## STANDARDS:

1. Maintain heading "10 degrees.
2. Maintain 500 FPM rate of climb/descent "100.
3. Maintain airspeed "10 KIAS.
4. Maintain aircraft in trim.

DESCRIPTION: Initiate the maneuver from straight-and-level flight by increasing or decreasing collective to establish desired rate of climb or descent. Maintain heading, attitude, and airspeed with cyclic. Maintain trim with pedals. An attitude for a VMC climb or descent is made primarily by visual reference to the horizon. Level off should be accomplished by adjusting power to cruise torque at approximately 50 feet prior to reaching the desired altitude.

## PROCEDURES:

1. Climbs.
a. Prior to beginning a normal climb, clear left, right, and above for other aircraft.
b. Apply upward pressure on the collective to establish climb power.
c. Simultaneously apply left pedal to maintain trim.
d. Maintain 90 knots indicated airspeed.

NOTE 1: Do not exceed 85 percent torque above 80 knots indicated airspeed.

NOTE 2: In the climb, constantly look for other aircraft. Altitude corrections of 100 feet or less are not considered normal climb.
e. To return to straight-and-level flight: Approximately 50 feet prior to reaching desired altitude, lower collective to cruise power, adjust the cyclic to maintain the desired airspeed and simultaneously apply right pedal to compensate for reduced torque.
2. Descents.
a. A normal descent is a maneuver which requires descending at a controlled rate while maintaining a constant airspeed and heading.
b. To establish a normal descent, reduce the collective to approximately 25 percent torque to begin the descent and simultaneously add right pedal to compensate for reduced torque and maintain coordinated flight (trim).
c. Adjust the cyclic to maintain the desired airspeed.
d. To return to straight-and-level flight, increase collective pitch approximately 50 feet prior to the desired altitude, simultaneously apply the necessary left pedal to compensate for increased torque and adjust power to cruise setting.
e. Adjust the cyclic to maintain the desired airspeed.

NOTE: Altitude corrections of 100 feet or less are not considered normal descents.

## TASK: PERFORM TURNS.

CONDITIONS: In a TH-67 helicopter, in the local flying area, given altitude, cruise airspeed and course headings.

## STANDARDS:

1. Clear aircraft.
2. Maintain required rate of turn (angle of bank) " 5 degrees.
3. Roll out on new heading within " 10 degrees.
4. Maintain altitude " 100 feet.
5. Maintain airspeed " 10 KIAS.
6. Maintain aircraft in trim.

## DESCRIPTION:

1. A turn is a maneuver used to change the direction of flight while maintaining a constant airspeed and altitude. Since turns are incorporated into almost all other maneuvers, it is important that you learn them well. There are three categories of turn--shallow (15degree bank), medium (30-degree bank), and steep (45-degree bank).
2. This maneuver is executed from straight-and-level flight. Before beginning the turn, look in the direction of the turn to clear above, below, and at your flight level. You do
this to make sure that the area is clear of any aircraft that may interfere with safely executing the turn. Practice turns in flight are normally done with a medium bank and involve a 90 -degree change in heading unless otherwise specified. As you clear the area, pick out an object to use as a reference point for the completion of your turn.
3. When the area has been cleared apply a slight sideward pressure on the cyclic in the direction you wish to turn; this is the only control movement necessary to start the turn. When the desired angle of bank is reached, the cyclic must be moved to the "neutral" position or the bank angle will continue to increase. You should practice using a slight pressure on the cyclic and roll into your turns slowly to aid you in learning to feel the pressure properly. It is important to maintain a constant altitude and airspeed during the turn. This is best done by holding a constant attitude, using cockpit reference points and the horizon. If these references are kept in the same relative position throughout the turn, you will have a constant altitude, and airspeed. Crosscheck by occasionally glancing at the altimeter, airspeed indicator, and turn and slip indicator while continuing to clear the area while turning. Slight collective increases will be required at higher bank angles to maintain altitude. Adjust antitorque pedals throughout the turn to maintain aircraft in trim. Throughout the turn, the degree of bank should be held constant with the cyclic, just as it was to keep the aircraft level in straight-and-level flight.
4. Recovery from a turn is the same as the entry except the pressure you use on the cyclic is in the opposite direction. Since the helicopter will continue to turn as long as there is any bank, start the rollout before reaching your desired heading. This will allow the helicopter to turn during the time it takes to roll from a banked attitude to a level attitude. As the helicopter becomes level, it will again be necessary to neutralize the cyclic to prevent entering a turn in the opposite direction. Upon completion of the turn, you should be aligned with your previously selected guide point and in straight-and-level flight.

NOTE: Your posture while seated in the helicopter is very important in all maneuvers, especially in turns. Don't lean from side to side during turns. Don't lean away from the turn or attempt to keep your body vertical with the horizon. "Just ride with the turn."

TASK: PERFORM ACCELERATION/DECELERATION.

CONDITIONS: In a TH-67 helicopter in an approved upper air work area, given an altitude.

## STANDARDS:

1. Maintain entry airspeed 90 KIAS, " 10 KIAS, and deceleration airspeed 50 KIAS, " 10 KIAS.
2. Maintain altitude "100 feet.
3. Maintain ground track as directed.
4. Maintain aircraft in trim.

DESCRIPTION: To initiate the maneuver, simultaneously reduce collective and apply aft cyclic to obtain the minimum deceleration airspeed ( 50 knots). Maintain entry altitude with collective and ground track with cyclic. Adjust pedals to maintain aircraft in trim. As the aircraft approaches minimum deceleration airspeed, simultaneously increase collective to maintain altitude and apply forward cyclic to accelerate to entry airspeed ( 90 knots). Adjust pedals to maintain the aircraft in
trim. For VMC, attitude crosscheck is made primarily by visual reference to the horizon and aircraft flight instruments.

TASK: PERFORM CLIMBING AND DESCENDING TURNS.
CONDITIONS: In a TH-67 helicopter, in the local flying area, given an altitude, airspeed and course heading.

## STANDARDS:

1. Clear the aircraft.
2. Maintain required rate of turn (angle of bank) " 5 degrees.
3. Roll out on new heading within " 10 degrees.
4. Maintain altitude " 100 feet.
5. Maintain desired rate of climb/descent " 100 FPM.
6. Maintain airspeed " 10 KIAS.
7. Maintain aircraft in trim.

## DESCRIPTION:

1. Climbing and Descending. Climbing and descending turns are maneuvers, which require a change in aircraft heading and altitude. Initiate the maneuver at an assigned airspeed by smoothly increasing or decreasing the collective to establish the desired rate of climb or descent. Apply cyclic to obtain the desired angle of bank. Adjust pedals to maintain aircraft in trim. Turns are made primarily by visual reference with the horizon and the aircraft flight instruments.
2. Level off should be accomplished by adjusting the power to cruise torque approximately 50 feet prior to the desired altitude. Roll out should be initiated by leading the desired heading by one-half the angle of bank.

## PROCEDURES:

1. To practice climbing or descending turns, align the aircraft with a road or section line on the ground and select a reference point for the completion of the turn. Remember to clear the area before you begin the turn.

NOTE: For a climbing turn of more than 100 feet, use airspeed of 90 knots and a rate of climb of approximately 500 FPM. Do not exceed 85 percent torque above 80 knots indicated airspeed. Altitude corrections of 100 feet or less are not considered normal climbs or descents.
2. To establish a climbing turn, use the same procedure as used to establish a normal climb; but as the aircraft begins to climb, coordinate pressure laterally on the cyclic so that the bank is established simultaneously with the climb.
3. To establish a descending turn, use the same procedure as establishing a normal descent and coordinate lateral pressure on the cyclic so the bank and descent are established simultaneously.
4. Recovery from both of these maneuvers is made by rolling out of the bank and returning to cruise flight so you are flying straight-and-level and aligned with ground reference points.

NOTE: Do not use pedals to assist in the turns. The pedals are used to maintain coordinated flight trim.

TASK: PERFORM TRAFFIC PATTERN FLIGHT.
CONDITIONS: In a TH-67 helicopter; given altitudes, airspeeds, and traffic pattern landing direction; with aircraft cleared.

STANDARDS:

1. Maintain rate of climb or descent " 100 FPM.
2. Maintain ground track alignment as directed.
3. Maintain aircraft in trim.
4. Maintain airspeed " 10 KIAS.
5. Maintain altitude " 100 feet.
6. Complete the before-landing check according to the aircraft checklist.

NOTE 1: For training, 60 KIAS on crosswind and base legs and 90 KIAS on downwind leg will be used.

NOTE 2: For training, approximately 500 FPM will be used for climbs.

## DESCRIPTION:

NOTE: The traffic pattern is a rectangular pattern designed to establish an even flow of traffic around an area. At all times, stay clear of other aircraft and conform to the flow of traffic.

1. Upwind leg starts at 60 knots, 100 feet AGL, hover torque, and aligned with the takeoff lane.
2. Approximately 50 feet prior to directed altitude, clear for other aircraft in the direction of turn.
3. At crosswind altitude, execute a 90 -degree ground track climbing turn to crosswind in the direction of the traffic pattern in use.

NOTE: Normally, commence the turn to crosswind when within approximately 300 feet of the pattern (downwind) altitude.
4. Crosswind leg is flown at 60 knots, with power as required to maintain rate of climb and airspeed, in trim. Continue climb to traffic pattern altitude on a 90 -degree ground track from upwind leg.
5. At approximately 50 feet prior to traffic pattern altitude, clear for other aircraft in the direction of turn and begin to level off.

NOTE: The level-off may be executed on the crosswind or the turn to downwind. The point of level-off will depend on the aircraft's ability to climb and where the downwind leg has been established.
6. The level-off is accomplished by placing the aircraft into a 90 -knot attitude. Adjust the collective to maintain cruise torque, and add right pedal to compensate for the decreased torque.
7. The turn to downwind is a 90 -degree ground track turn to parallel the stagefield lanes.
8. Downwind leg is straight-and-level flight at 90 knots and at traffic pattern altitude.
9. On downwind, a before-landing check will be completed.
10. Prior to turning to base, clear in the direction of turn for other aircraft.

NOTE: Caution must be observed to avoid establishing a base leg "inside" the pattern of another aircraft.
11. Base leg is a descending, decelerating 90-degree ground track turn from the downwind in the direction of the stagefield.

NOTE: The base and final legs for a standard autorotation are flown at 90 knots and at traffic pattern altitude.
12. Normally, the descent to base leg altitude is begun on downwind, just prior to beginning the turn to base leg. Upon arrival at your ground reference point, begin descent by lowering collective to reduce torque to approximately 25 percent. Apply right pedal as necessary to compensate for the reduction in torque. As the aircraft begins to descend, apply aft cyclic pressure to decelerate to 60 knots and lateral cyclic pressure to initiate a 90 -degree ground turn. (If desired, the descent, deceleration, and turn may be initiated simultaneously.)
13. After the turn is accomplished, maintain a 90-degree ground track from the downwind leg.
14. Level-off at 60 knots and base altitude.

NOTE: The descent and deceleration should be accomplished in the first two-thirds of the base leg. DO NOT FORGET TO COMPENSATE FOR TORQUE IN THE DESCENT with the use of the pedals.
15. Prior to turning to final, clear in the direction of turn for other aircraft and evaluate the winds for the turn to final.
16. The turn to final is a 90 -degree ground track, level turn, at 60 knots at base altitude.
17. As the turn is completed, the aircraft will be aligned with the appropriate lane.

NOTE: If the aircraft is not aligned with the lane, after the turn is completed, make a go-around; DO NOT change lanes on final or allow the aircraft to drift away from lane alignment.
18. Final is flown straight and level at 60 knots until the entry point for the approach is intercepted.

NOTE: Under preventive ATC control, the approach will be made to the most upwind available panel, not including the takeoff panel. Under positive ATC control, land to the most upwind available panel (including panel 4) or to the panel assigned by ATC.

## PROCEDURES FOR ENTERING TRAFFIC:

1. Determine the direction of traffic and select ground reference points for ground track.
2. Clear and check the spacing of other aircraft.
3. Entry into traffic is at 45 degrees to the middle one-third of the downwind leg (unless otherwise directed).
4. Airspeed for training is 90 knots.
5. Prior to entry into traffic, while established on the entry leg, call the tower for entry into traffic.
6. Start a turn to the downwind to align with other aircraft on downwind or to where a normal downwind is generally established.

NOTE 1: Aircraft on downwind have the right-of-way over aircraft on entry. It may be necessary to orbit away from traffic to establish proper spacing. DO NOT CROWD OTHER AIRCRAFT.

## PROCEDURES TO EXIT THE TRAFFIC PATTERN:

1. Prior to takeoff, make a radio call to the tower stating your intentions.
2. The exit from the traffic pattern is normally executed at 60 knots climbing to traffic pattern altitude from the crosswind leg on a 45-degree ground track away from the crosswind leg, or as directed.
3. Continue to climb to traffic pattern altitude; once clear of traffic, continue to your destination.

TASK: PERFORM VMC APPROACH.
CONDITIONS: In a TH-67 helicopter with before-landing check completed.

## STANDARDS:

1. Select a suitable landing area.
2. Maintain entry altitude as directed " 100 feet.
3. Establish entry airspeed ( 60 knots) " 10 KIAS.
4. Maintain a constant approach angle to clear obstacles.
5. Maintain ground track alignment with landing direction with minimum drift.
6. Maintain apparent rate of closure, not to exceed the speed of a brisk walk.
7. Execute a smooth and controlled termination to a hover or to the ground.

NOTE: For the primary phase of training, the VMC approach will be trained and evaluated from both a normal approach angle of 8 degrees to 10 degrees and a steep approach angle of 15 degrees to 20 degrees.

DESCRIPTION (Normal Approach, 8 degrees to 10 degrees): When a normal approach angle is intercepted, decrease collective to establish the descent. Maintain entry airspeed until your apparent ground speed and rate of closure appear to be increasing. Progressively decrease the rate of descent and the forward airspeed until a hover is established over the intended landing spot. Maintain ground track aligned with landing direction. Maintain aircraft in trim above 50 feet and the aircraft aligned with the landing heading below 50 feet.

NOTE: The normal approach is used to provide a safe and precise method of terminating the helicopter at a 3 -foot hover, 3 feet behind the approach panel; or to the ground 3 feet behind the approach panel.

## PROCEDURES FOR NORMAL APPROACH:

1. To a hover.
a. To prepare for the approach, a before-landing check must be completed.
b. The helicopter will be aligned with the centerline of the lane to be used, at directed altitude, and airspeed 60 KIAS. Maintain a straight ground track, in line with the approach panel by observing the relation between your flight path and the boundaries of the lane. Use lateral cyclic to maintain ground track and pedals to maintain aircraft in trim.
c. The approach is initiated upon intercepting an angle of 8 to 10 degrees in relation to the approach panel. The selected angle must be maintained throughout the approach.
d. Upon reaching the appropriate approach angle, begin the approach by reducing the collective until you feel and see the helicopter beginning to descend. Adjust cyclic as necessary to control aircraft attitude and establish and maintain the correct rate of closure. Visualize a straight line from your position directly to the approach panel and keep the helicopter on this line with collective applications. The rate at which the helicopter seems to be moving across the ground is referred to as the "apparent rate of closure," and is maintained with the cyclic. The proper apparent rate of closure is that of a brisk walk and is a function of attitude control (cyclic). Attitude changes made to correct the apparent rate of closure should be very small. Larger changes will require corresponding adjustments in collective and pedal to maintain the desired angle and aircraft in trim.
e. During the last portion of the approach, the helicopter may tend to descend below the desired angle as it begins to lose the effects of translational lift, due to the slower airspeeds. An increase of collective is required to prevent underarcing of the desired angle and a slight amount of forward cyclic may be required to maintain the proper rate of closure. Left pedal is required to maintain the heading.
f. The last 50 feet AGL of the approach will be flown with the skids aligned with the lane (most often referred to as a slip). A slip is accomplished by applying pedal to align the nose of the aircraft with the landing direction and adjusting the cyclic to maintain the desired ground track.
g. The termination of the approach should be in a level attitude with no forward movement, at 3 feet AGL, and 3 feet behind the approach panel.
2. To the ground. Proceed as in a normal approach, except continue the descent to the ground. Make the touchdown with zero forward ground speed. After ground contact, ensure that the aircraft remains stable. Reduce the collective to the full-down position, and neutralize pedals and cyclic.

DESCRIPTION (Steep Approach to the Ground, 15 degrees to 20 degrees): When a steep approach angle is intercepted, decrease collective to establish the descent. Maintain entry airspeed until apparent ground speed and rate of closure appear to be increasing. Progressively decrease rate of descent and forward speed so as to arrive at the touchdown point at zero rate of descent and zero forward ground speed. Maintain ground track aligned with landing direction. Maintain aircraft in trim above 50 feet and the aircraft aligned with the landing heading below 50 feet. After ground contact, fully lower collective and neutralize pedals and cyclic.

NOTE: The steep approach angles are from 10 to 90 degrees; however, for PRIMARY TRAINING, 15 to 20 degrees will be used.

PROCEDURES FOR STEEP APPROACH: The steep approach is similar to the normal approach in technique. The entry to the steep approach is a more positive entry than the normal approach. The collective pitch will have to be decreased more, and the aircraft slowed at a faster rate, as the aircraft must descend and decelerate in a shorter distance than the normal approach. At this point proceed as in a normal approach, except continue the descent to the ground.

TASK: PERFORM BEFORE-LANDING CHECKS.
CONDITIONS: In a TH-67 helicopter and given the aircraft checklist.

## STANDARDS:

1. Perform procedures and checks according to the aircraft checklist.
2. Correctly perform crew coordination actions.

## DESCRIPTION:

1. Pilot will ensure that the before-landing check is completed according to the aircraft checklist.

TASK: PERFORM GO-AROUND.
CONDITIONS: In a TH-67 helicopter, at a stagefield or other approved training area, during an approach to land.

## STANDARDS:

1. Adjust collective as required.
2. Adjust to climb airspeed of 60 knots " 10 KIAS.
3. Maintain appropriate ground track.
4. Maintain aircraft in trim.

DESCRIPTION: When it becomes doubtful that a safe landing can be accomplished, apply power and simultaneously adjust pitch attitude to stop the descent and maintain the aircraft in trim. Accelerate to 60 KIAS, adjust collective to hover power for a climb, adjusting the pedals to keep aircraft in trim, and complete the "go-around," maintaining the desired ground track with the cyclic.

NOTE: The stagefield go-around is designed to remove the helicopter from the traffic pattern without interfering with the normal flow of traffic or creating an unsafe flight condition when continuation of the approach is not feasible.

## PROCEDURES:

1. To initiate the go-around, start a normal climb straight ahead (avoid flight over other aircraft) to an altitude 200 feet above traffic pattern altitude. Do not fly into overcast. If low clouds prevent a climb 200 feet above the traffic pattern altitude, use an altitude that is clear and below all clouds.
2. Notify the controlling agency by radio and continue straight ahead until well clear of traffic. Deviations from this procedure are allowed only when communication with the control tower is established and clearance to remain in closed traffic is approved.
3. When remaining in closed traffic, climb to the appropriate traffic pattern altitude and utilize a normal traffic pattern ground track and spacing.
4. Unless otherwise specified, a go-around should be made on the downwind side of the lane over the sod. Avoid over flight of other aircraft if possible.
5. After clearing traffic, fly to a point well clear of the traffic pattern and reenter traffic in the normal manner.

CAUTION: A go-around flight path should not deviate from an assigned approach path at a controlled airfield unless otherwise directed by ATC.

TASK: PERFORM CONFINED AREA OPERATIONS.
CONDITIONS: In a helicopter with before-landing check completed.
STANDARDS:

1. Pilot:
a. Prior to the approach:
(1) Establish desired altitude "100 feet.
(2) Establish desired airspeed ( 60 knots) " 10 KIAS.
(3) Properly perform landing area reconnaissance.
b. During the approach:
drift.
path. check.
drift.
f. Correctly perform crew coordination actions.
g. Properly maintain airspace surveillance.

## DESCRIPTION:

1. When the landing area is reached, the pilot will evaluate suitability of the area. The pilot will select and a flight path, an airspeed, and an altitude that will afford the best observation of the landing area. He will remain focused outside the aircraft to evaluate the suitability of the area and the effects of the wind. Select tentative flight paths for approach and departure based on tactical situation, long axis, winds, and availability of forced landing areas. The pilot will select a landing point in the forward one-third of the landing area and announce whether the approach will terminate to a hover or to the ground. He will announce any deviation from the approach to include go-around (if required).
2. The pilot will confirm suitability of the landing area, assist in clearing the aircraft, and provide adequate warning of traffic and obstacles. If a go-around is necessary, the pilot will focus their attention outside the aircraft to assist with obstacle avoidance.
3. Approach. Approach may be initiated from either a straight-in or modified pattern. Continue flight at desired altitude and airspeed until intercepting an angle, which assures obstacle clearance. On final approach, pilot will conduct a low reconnaissance and confirm suitability of the selected landing area, identify possible hazards and confirm suitability of the departure path. Maintain the aircraft in trim above the obstacles and maintain landing area alignment below the obstacles. Progressively decrease rate of descent and forward speed using collective and cyclic, as necessary, to the intended point of landing. If pilot detects instability during the touchdown, he will reposition the aircraft.
4. The pilot will announce initiation of a go-around when visual contact with the touchdown point is lost or it becomes apparent that it will be lost and anytime a successful landing is doubtful. The decision to go-around is made prior to descending below the barriers or before decelerating below ETL. If go-around is necessary, the pilot will focus their attention outside the aircraft for obstacle avoidance.
5. Ground Operations. Once in the confined area, the pilot will conduct a ground reconnaissance. He will announce his intent to conduct a specific hovering maneuver and termination of the maneuver. The pilot will formulate the takeoff plan by evaluating the wind, obstacles, shape of the area, and aircraft load. The pilot will ensure that there is adequate main rotor and tail rotor clearance while maneuvering.
6. Takeoff. The pilot will announce ready for takeoff, and remain focused outside the aircraft to assist in clearing and provide adequate warning of obstacles. The pilot will announce his intent to takeoff from the ground or from a hover, the direction of takeoff, and his intention to either abort or alter takeoff. Coordinate the cyclic and collective as necessary to attain a constant angle of climb that will assure obstacle clearance. Maintain heading with pedals. Once obstacles are cleared, smoothly adjust flight controls to transition to the desired mode of flight, and select additional references to maintain desired ground track.

NOTE 1: Hover OGE power is required for this task.
NOTE 2: The use of a straight-in or modified approach pattern will be determined by the wind, long axis, lowest obstacles and arrival flight path.

NOTE 3: Takeoff direction will be determined by the wind, long axis, and lowest obstacles. During ground operations the aircraft may be repositioned to increase distance for obstacle clearance on takeoff.

NOTE 4: In the absence of takeoff obstacles, perform normal takeoff.
NOTE 5: The pilot should plan to land to the ground if surface conditions permit. This will help reduce the effects of blowing dust, snow, or debris.

NOTE 6: The acronym SSBATT is a useful tool to complete the landing area reconnaissance:
S - Size
S - Suitability
B - Barriers
A - Approach path
T - Touchdown area
T - Takeoff path
REFERENCES: Aircraft Operators Manual Unit SOP

TASK: PERFORM SLOPE OPERATIONS.
CONDITIONS: In a TH-67 helicopter with aircraft cleared and suitable slope landing selected.

## STANDARDS:

1. Pilot:
a. Maintain heading " 5 degrees.
c. Do not exceed a 1 -foot drift before and allow no drift after skid contact with the ground.
d. Execute a smooth, controlled descent and touchdown.
e. Execute a smooth, controlled ascent.
f. Properly maintain airspace surveillance.

## DESCRIPTION:

1. The pilot will hover into position 3 feet above the intended touchdown point and should focus vision out in front of the helicopter. The pilot will turn aircraft to the landing heading and announce initiating the landing. If possible, he will orient the aircraft into the wind.
2. The pilot will begin the slope landing by reducing the collective. This will start the helicopter descending slowly. As the upslope skid contacts the ground, apply cyclic pressure into the upslope direction and decrease collective slightly to hold the skid in this position. Continue to decrease collective slowly, applying additional cyclic into the upslope direction as necessary to prevent sideward movement. Use caution and do not apply too much cyclic. Maintain heading with pedals. If the cyclic or aircraft slope limitations are reached before the aircraft is firmly on the ground, the pilot will return the aircraft to a hover, move to an area where the slope is less steep, then repeat the maneuver. When the down slope skid is on the ground, continue slowly reducing the collective to the full-down position, then neutralize the pedals and cyclic.
3. The procedure for takeoff is almost the exact reverse of landing. The pilot will announce intentions to takeoff and apply lateral cyclic into the slope to maintain the position of the upslope skid. Increase collective slowly to raise the downslope skid, maintaining heading with pedals, and coordinate cyclic movement to the neutral position as the lower skid begins to rise. Apply additional collective and coordinate cyclic movement to lift off vertically to a hover. Depart the slope with the skids perpendicular to the slope. Avoid turning the tail upslope.

NOTE 1: As used throughout this maneuver, the term "slope" refers to the fall line of the sloping terrain, e.g., the path of a rolling object under the influence of gravity, and not to the elevation contour lines of the slope area.

REFERENCES: Aircraft Operator's Supplement

TASK: PERFORM PINNACLE/RIDGELINE OPERATIONS.
CONDITIONS: In a helicopter, with a before-landing check completed.

## STANDARDS:

1. Reconnaissance.
a. Establish desired altitude "100 feet.
b. Establish desired airspeed ( 60 knots) " 10 KIAS.
c. Properly perform a continuous reconnaissance.
2. Approach.
a. Maintain ground track alignment with selected approach path with minimum drift.
b. Maintain a constant approach angle.
c. Maintain an appropriate rate of closure.
d. Execute a smooth, controlled termination in the forward usable one-third of the landing area.
3. Takeoff.
a. Perform a hover power check if required, and complete a before-takeoff check.
b. Properly clear the aircraft.
c. Perform an airspeed-over-altitude takeoff while maintaining heading "10 degrees.
d. Maintain appropriate airspeed "10 KIAS.

## DESCRIPTION:

1. Start the reconnaissance on the windward side of the pinnacle or ridgeline when practical. Upon approaching the area, evaluate the overall suitability of the landing site. Select a flight path, airspeed, and an altitude that will provide the best observation. Determine if the landing site is suitable, locate obstacles, and estimate the effects of the wind. Plan the approach to the forward one-third of the landing area. Depending on the wind, density altitude, load, and forced landing areas, the approach angle can vary from a shallow to a steep angle. Continue the reconnaissance on final approach to confirm information previously gained. When surface conditions permit, land to the ground.

CAUTION: A go-around will be made anytime a safe landing is in question. The decision to Agoaround@ should be made prior to descending below barriers, decelerating below ETL, or if visual reference with the touchdown point is lost.
2. After touchdown, check aircraft stability by slowly moving the cyclic and pedals as the collective is lowered to the full-down position. If aircraft movement is detected, reposition the aircraft. Clear the aircraft and execute an airspeed-over-altitude takeoff. If the takeoff requires clearing obstacles, do not use an angle of climb which is greater than that required to clear them. Use power as necessary to clear the obstacles while maintaining a constant angle of climb and ground track. After clearing the obstacles, adjust attitude to gain forward airspeed.

TASK: PERFORM A SHALLOW APPROACH TO A RUN-ON LANDING.

CONDITIONS: In a TH-67 helicopter with an IP and a before-landing check completed.

## STANDARDS:

1. Establish entry altitude "100 feet.
2. Establish entry airspeed (60 knots) "10 knots.
3. Maintain ground track with the landing direction.
4. Maintain constant approach angle to clear obstacles.
5. Touchdown is preferred in the first one-third of the approach lane; the middle one-third is acceptable.
6. Execute a smooth and controlled termination with landing area alignment " 10 degrees.

## DESCRIPTION:

1. The shallow approach to a running landing is used when it is not possible to terminate the approach at a hover because of heavy loads, a hydraulics failure, tail rotor failures or insufficient power available.
2. Before-landing check completed.
3. The helicopter ground track will be aligned with the centerline of the lane to be used, at 60 KIAS.
4. The shallow approach is initiated on base or final after intercepting a 5 - to 8 -degree approach angle. Touchdown is preferred in the first one-third of the approach lane or area; the middle one-third is acceptable.
5. Upon reaching the approach angle, start the descent by reducing collective, maintaining 60 KIAS and ground track with the cyclic. Maintain airspeed until apparent rate of closure and ground speed appear to be increasing. Very gradually apply aft cyclic to reduce airspeed and decrease rate of descent to touchdown, at or slightly above effective translational lift (ETL) within the first one-third of the approach lane (preferred); the second one-third is acceptable. Above 50 feet AGL, maintain the aircraft in trim. At 50 feet AGL, align the nose of the aircraft with the landing direction in the intended touchdown area. Control rate of descent at touchdown with the collective, maintain aircraft attitude and landing area alignment with cyclic and the heading with pedals. Ensure the aircraft remains stable as the collective is partially lowered to reduce ground run.
6. Once the aircraft has come to a complete stop, reduce the collective to the full-down position and neutralize pedals and cyclic.

NOTE: Lateral drift will be difficult to control if the collective is full down due to minimal main rotor thrust.

TASK: PERFORM RADIO COMMUNICATION PROCEDURES.
CONDITIONS: In a TH-67 helicopter with two-way radio communications established.

## STANDARDS:

1. Adjust radio (RW, Team Speak, or other) to the proper frequencies.
2. Establish radio contact with the appropriate ATC facility.
3. When communicating with ATC facilities, use correct radio communication procedures and phraseology per the DOD FLIP and the AIM.
4. Acknowledge each radio communication with ATC by using the correct aircraft call sign.
5. Acknowledge and comply with ATC instructions.

DESCRIPTION: Adjust radio to required frequencies. Continuously monitor the radio. When required, establish communications with the appropriate ATC facility. Monitor the frequency before transmitting. Use the correct radio call sign when acknowledging each communication. When advised to change frequencies, acknowledge the instruction. Select the new frequency as soon as possible. Use radio communication procedures and phraseology as appropriate for the area of operations.

## TASK: PERFORM AFTER-LANDING TASKS.

CONDITIONS: In a TH-67 helicopter and given the aircraft checklist.

## STANDARDS:

1. Perform procedures and checks according to the aircraft checklist and local directives.

## DESCRIPTION:

1. Pilot will ensure the aircraft shutdown and after-landing tasks are completed according to aircraft checklist and local directives.
2. Pilot will monitor flight controls and reference outside the aircraft during shutdown until the rotor stops turning.
3. Pilot shall accomplish the after-landing tasks to include entering necessary information in the pirep and closing flight plan.

## PROCEDURES:

1. When operating at the stagefield and after termination of the first approach:
a. Transponder-STBY.
b. Landing/searchlight - as required.
2. When terminating to a basefield, place transponder to standby and landing/searchlight (if used) should be turned off.
3. For aircraft shutdown:
a. Perform required checks IAW the operator's supplement or operator's supplement checklist.
b. Use oral callout and confirmation method.
c. Items are required to be checked in sequence.
d. Complete pirep.

## CHAPTER 4. SUPPLEMENTAL INFORMATION

## 4-1. SUPPORTING SKILLS AND KNOWLEDGE.

## 4-1a Local Area Orientation:

The local area orientation is designed as an introduction to rotary-wing flight training. The instructor pilot will identify pertinent stagefields, airfields, airspace boundaries and restricted areas. Different phases or characteristics of flight may also be explained during the orientation flight.

4-1b Explain the Relationship of the Flight Controls and the Instruments:

The instruments identified in this paragraph are the flight and engine instruments that have the most significant relationship to the flight controls. The following subparagraphs are basic generalizations that are to serve as building blocks for primary rotary-wing flight training.
a. Improper pedal positions in flight will cause a low inaccurate airspeed indication if they are not in the proper position for that particular power setting. This is due to the sideslip and out-of-trim condition causing airflow to hit the pitot tube at a side angle, thus causing erroneous indications on the airspeed indicator. Improper use of pedals also shows an out-of-trim condition on the turn and slip indicator by having the ball out of the trim position.
b. The cyclic is the primary control for airspeed. Forward cyclic causes the airspeed to increase; aft cyclic causes the airspeed to decrease. During normal flight airspeeds with a constant cruise torque pressure setting, the altitude will decrease as airspeed increases unless there is a torque pressure increase; when the airspeed is decreased, the altitude will increase unless there is a torque pressure decrease.
c. The collective is the primary altitude and power (torque) control. Raising the collective causes the aircraft to climb and torque pressure to increase; reducing the collective will cause the aircraft to descend and the torque pressure to decrease.
d. The main relationships between the flight controls and instruments are--
(1) The collective controls the altitude (VSI and altimeter) and torque pressure
(power).
(2) The cyclic controls the attitude of the helicopter, airspeed, direction of movement, and ground track ( HSI and turn indicator).
(3) Pedals control the heading of the aircraft during hovering maneuvers and aid in coordinated flight (in trim condition). Except for hovering maneuvers, the ball in the slip indicator should normally remain centered during all flight maneuvers. A rule of thumb is to "step on the ball" if it is not centered. This will center the ball between the two vertical lines on the indicator.

NOTE: When asymmetric loading exists, a one-side low condition may be considered normal. Forcing the ball to the center position will result in an out-of-trim condition. (For further information on this subject, refer to the Heading Controls and Antitorque Pedals section for semiridged helicopters in FM 1-203.)

## 4-2. DISTRESS CALLS.

a. Forced landing:
(1) "MAYDAY, MAYDAY, MAYDAY."
(2) Tail number.
(3) Location.
(4) A brief description of your distress.
b. Precautionary landing:
(1) "PAN, PAN, PAN."
(2) Tail number.
(3) Location.
(4) A brief description of your distress.

## 4-3. INADVERTENT INSTRUMENT METEOROLOGICAL CONDITIONS (IMC)

PROCEDURES. In the event that anyone piloting a TH-67 while in Primary Training flies into IMC conditions, the procedure is as follows:
a. Level the aircraft and begin a 500 FPM rate of descent by decreasing collective as required. Continue straight ahead until clear of clouds. The descent should be established at 60 knots maintaining trim with the turn and slip indicator (needle and ball centered).
b. No turns should be attempted until visual contact with the terrain has been made. If solo, once visual contact with the terrain has been made, land immediately at the first available appropriate landing area. Dual aircraft may continue to train if weather minimums permit.
c. After regaining VMC (dual) or once on the ground (solo), call the tower and report position and altitude at which IMC conditions exist or on the ground attempt to make radio contact with the controlling agency. If unable to reach controlling agency, an attempt will be made to reach basefield on the appropriate assigned frequency. Once two-way radio contact is established, an approximate location of the aircraft will be given.
d. If the student departed the traffic pattern while IMC, reenter traffic and land if VMC conditions can be maintained.
e. If the solo aircraft was landed on other than the stagefield due to an inadvertent IMC, the student pilot will wait for an instructor pilot to fly the aircraft out of the area or until relieved by an aircraft guard.

## 4-4. STAGEFIELD RADIO PROCEDURES.

a. Initial contact with stagefield tower will be made in vicinity of appropriate Aircraft Control Point (ACP) and will consist of IP call sign and position.

Example: "Allen Tower, Bandit 21 is Brackens inbound".
NOTE: Observe proper radio courtesy to ensure that you do not interfere with landing clearance communications for aircraft already established in the traffic pattern.

When stagefield radio traffic permits, tower will reply that ATC personnel are prepared to copy flight information about the inbound aircraft.

Example: "Bandit 21, Allen Tower, go ahead".
The aircraft crew will then repeat IP call sign and will provide last four numbers of the aircraft tail number with "buzz" letter, and number of persons on board. All subsequent calls will include only the last two numbers and "buzz" letter.

Example: "Bandit 21 in aircraft 6853D, 3 personnel on board".

Tower will respond with landing direction, current winds, altimeter setting, and any further instructions.

Example: "53D, Allen is landing East. Winds are 080 at 06; Cairns altimeter is 2992. Report entry North downwind.
b. All aircraft will report to tower on initial entry to traffic.

Example: "Allen Tower, 53D, entry North downwind".
Tower will respond with further instructions.
Example: "Roger 53D, report base".
c. Upon turning base leg at stagefield, aircraft will call tower and report turning base and type of approach.

Example: "Allen, 53D, right base, VMC approach".
Tower will respond with lane and panel numbers as appropriate.
Example: "Roger 53D, land lane 2, panel 3".
d. When on takeoff panel, before takeoff check complete and ready for takeoff, call tower with your location, type takeoff and type of approach on return.

Example: "Allen, 53D, lane 2, panel 4, Max Performance Takeoff, return steep approach."

Tower will provide priority and spacing and give any further information.
Example: "Roger 53D, winds 230 at 08 cleared for take-off."
e. When departing traffic for refuel or confined area, etc., IP will inform tower of intentions and estimated time of return.

Example: "Allen Tower, 53D, departing for Toth for refuel, ETR 0+20 minutes, request frequency change."

Tower will respond as appropriate.
Example: "Roger, 53D, report inbound, frequency change approved".
f. When departing traffic to Lowe with no intent to return that day, give destination and negative ETR.

Example: "Allen Tower, 53D, departing downwind for Cairns, negative ETR, request frequency change".

Tower will respond as appropriate.
Example: "Roger 53D, frequency change approved".

4-6. STANDARD COCKPIT TERMINOLOGY. Air crewmembers should use standard words and phrases to communicate with each other in the aircraft. They must keep the number of words to a minimum and use clear, concise terms that can be easily understood and complied within an environment full of distractions. The following is a list of standard cockpit words and phrases with their meanings which crewmembers should use.

| ABORT | Terminate a preplanned aircraft maneuver. |
| :---: | :---: |
| AFFIRMATIVE | Yes. |
| BANDIT | An identified enemy aircraft. |
| BOGEY | An unidentified aircraft assumed to be enemy. |
| BREAK | Immediate action command to perform an emergency maneuver to deviate from present ground track. Will be followed by the words left or right. |
| CALL OUT | Command by the pilot on the controls for a specified procedure to be read from the checklist by another crew member. |
| CLEAR | No obstruction present to impede movement of the intended ground track. Will be preceded by the words "NOSE"/"TAIL"/ "AIRCRAFT" and followed by direction "LEFT or "RIGHT" or "SLIDE LEFT or "SLIDE RIGHT." Also an indication that ground personnel are authorized to approach the aircraft. |
| COME UP/COME DOWN | Command to change altitude up or down. Normally used to control masking and unmasking operations. |
| CONTACT | Establish communication with....(followed by name of element). |
| CONTROLS | Refers to aircraft flight controls. |
| DRIFTING | An alert of the unintentional/uncommanded movement of the aircraft. To be followed by a direction left, right, forward or rear. |
| EGRESS <br> row. | Command to get out of the aircraft. Repeated three times in a |
| EXECUTE | Initiate an action. |
| EXPECT | Anticipate further instruction/guidance. |
| FIRE | Confirmation of illumination of master fire warning light. |
| FLY HEADING | Command to fly an assigned compass heading. |
| GO AHEAD | Proceed with your message. |
| HOLD | Command to maintain present position. |
| HOVER | Horizontal movement of aircraft perpendicular to its heading: will be followed by the word "left" or "right". |
| INSIDE | Primary focus of attention is inside the cockpit. |


| JETTISON | Command for the emergency/unexpected release of an external load or stores. When followed by the word canopy, will indicate the requirement to perform emergency canopy removal. |
| :---: | :---: |
| MAINTAIN | Command to continue or keep the same. |
| MASK/UNMASK | To conceal the $\mathrm{A} / \mathrm{C}$ by using available terrain features. To position the $A / C$ above the terrain features. |
| MONITOR | Command to maintain constant watch or observation. |
| MOVE AFT | Command to hover aft followed by distance in feet. |
| MOVE FORWARD | Command to hover forward followed by distance in feet. |
| NEGATIVE CONTACT element). | Unable to establish communication with...(followed by name of |
| NEGATIVE | Not correct or permission not granted. |
| NO JOY | Target/traffic/obstruction not positively seen or identified. |
| NOW | Indicates an immediate action required. |
| OUTSIDE | Primary focus of attention is outside the cockpit. |
| PUT ME UP | Command to place $\mathrm{P}^{*}$ radio transmit selector switch to a designated position. Will be followed by radio position numbers on the intercommunication panels ( 1,2 , and 3 ). |
| RELEASE | Command for the planned/expected release of an external load. |
| REPORT | Command to notify. |
| ROGER | Message received and understood. |
| SAY AGAIN | Repeat your transmission. |
| SLIDE | Horizontal movement of an aircraft perpendicular to its heading. (To be followed by left or right) |
| SLOW DOWN | Command to reduce ground speed. |
| SPEED UP | Command to increase ground speed. |
| STAND BY | Wait. Duties of a higher priority are being conducted; requested cannot be complied with at this time. |
| STOP | Command to go no further; halt present action. |
| STROBE | Indicates that the aircraft's APR 39 has indicated a radar threat. The pilot will follow with a clock direction. |


| TALLY | Target/traffic/obstruction positively seen or identified. Will be <br> followed by repeat of word target/traffic/obstruction and o'clock <br> position. |
| :--- | :--- |
| TARGET | Alert that a ground target has been spotted. |
| TRAFFIC | Refers to friendly aircraft that present a potential hazard to the <br> current route of flight of your aircraft. The word "traffic" will be <br> followed by an approximate o'clock position and distance from <br> your aircraft, with a reference to ALT (high or low). |
| TURN | Command to deviate from present ground track. Will be followed <br> by words right/left, a specific heading in degrees, a bearing (turn <br> right 30 degrees), or instruction to follow a well-defined contour <br> (follow the draw at two o'clock). |
| $\underline{\text { TURN OFF }}$ | To deactivate. |
| TURN ON | To activate. |
| Indicates inability to comply with a specific instruction of request. |  |

## 4-7. TASK: ORAL KNOWLEDGE.

a. CONDITIONS: In a TH-67 helicopter; TH-67FS; or a classroom and given access to weather information; flight planning aids; necessary charts, forms, and publications.
b. STANDARDS: Demonstrate a working knowledge and understanding of the subject areas presented.
c. DESCRIPTION: By the training day, a task, maneuver, or subject area is demonstrated or covered in academics. The student must have a working knowledge and understanding of topics in the respective subject area.
d. REFERENCES: vAR 1-100

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