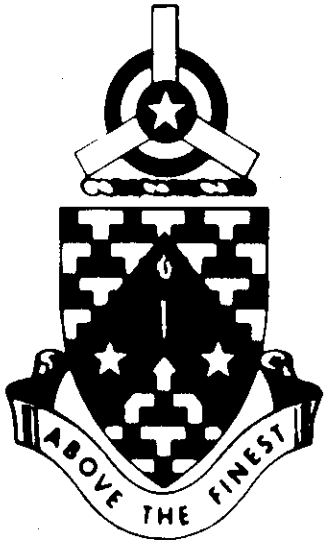
45-47

PROGRAMED TEXT

AUTOROTATIONS, SIMULATED FORCED LANDINGS
AND GROUND TRACK MANEUVERS

PRACTICAL EXERCISE

AM-46



FEBRUARY 1969

UNITED STATES ARMY
PRIMARY HELICOPTER SCHOOL
FORT WOLTERS, TEXAS

PROGRAMED TEXT

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FILE NO: AM-46

PROGRAM TITLE

AUTOROTATIONS, SIMULATED FORCED LANDINGS, AND GROUND TRACK MANEUVERS

(Practical Exercise)

POI SCOPE: Exercise reviewing procedures involved in executing autorotations, simulated forced landings, and ground track maneuvers.

INSTRUCTOR REFERENCES:

Helicopter Primary Flight Training Manual, USAPHS, Fort Wolters, Texas
Fort Wolters Training Films

PREPARED BY:

CW2 Gilbert R. Lazo
Airmanship Div

DATE:

February 1969

REVISED BY:

DATE:

APPROVED BY:

for DONALD J. LEWIS
LTC, SC
Chief, OCD

DATE:

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PREFACE

This program is designed to review the procedures you have already learned on autorotations, simulated forced landings and ground track maneuvers. The proper application of these procedures will greatly effect your future as a living Army aviator.

Start on page 1 and work on through the text. Answer each question to the best of your ability. Now begin by studying the performance objectives on page iv.

PERFORMANCE OBJECTIVES

AUTOROTATIONS AND SIMULATED FORCED LANDINGS

Without the aid of references you will be able to:

1. Identify the initial entry requirements for straight-in autorotations and simulated forced landings.

2. Identify the initial entry control movements for a straight-in and 180 degree autorotation.

3. Identify aircraft attitude and control movements and instrument crosschecks during autorotative descent.

4. Identify the deceleration altitude, attitude, and control movements prior to and during touch down.

5. Identify criteria for selecting simulated forced landing areas.

GROUND TRACK MANEUVERS

The student will be able to list the necessary steps in establishing and maintaining a ground track to conform with:

1. A rectangular course on the earth's surface.

2. An imaginary "S" superimposed on a straight-line terrain feature.

PRACTICAL EXERCISE

1. An autorotation is started by

   a. decreasing to cruise RPM, losing 200 feet of altitude and slowing to 40 knots on base leg.
   b. increasing to take-off RPM, on final approach, maintaining traffic pattern altitude, and maintaining 50 knots of airspeed.
   c. increasing to cruise RPM, losing 200 feet of altitude, and slowing to 40 knots on final approach.
   d. increasing to take-off RPM on base leg, maintain traffic pattern altitude, and maintaining 50 knots of airspeed.

2. To initiate an autorotation

   a. collective pitch is smoothly reduced while rolling off engine RPM, applying left pedal, and establishing a 40 knot attitude.
   b. collective pitch is smoothly reduced while maintaining operating engine RPM and alignment with the lane with the cyclic control.
   c. collective pitch is rapidly bottomed while increasing to cruise RPM, and maintain aircraft heading with the cyclic control.
   d. collective pitch is smoothly reduced while maintaining operating RPM, and aft cyclic to slow the aircraft to 35 knots.

3. Which of the following indicates the proper control responses?

   a. Collective control for rotor overspeed, cyclic for heading, and pedals for aircraft alignment and attitude.
   b. Cyclic for aircraft alignment and attitude, pedals for rotor overspeed, and collective for heading.
   c. Pedals for aircraft heading, cyclic for attitude and alignment and collective for rotor overspeed.

4. A check for rotor in the green should be made

   a. at least once after the initial pitch pull.
   b. only after moving the collective pitch smoothly to the full down position.
   c. only after moving aft cyclic to initiate the deceleration and a crosscheck throughout the remainder of the descent.
   d. after moving the collective pitch smoothly to the full down position and as a part of the crosscheck throughout the descent.

1. d. If you answered a, b, or c, refer to AM-43, Part I, Frame 1.

2. b. If you answered a, c, or d, refer to AM-43, Part I, Frame 2.

3. c. If you answered a, b, or d, refer to AM-43, Part I, Frames 2 & 3.

4. d. If you answered a, b, or c, refer to AM-43, Part I, Frame 3.

5. The proper procedure for executing the deceleration is

   a. at approximately 35 to 50 feet (OH-13 and OH-23) smoothly join the needles and execute a deceleration to stop the descent.
   b. at approximately 25 feet (TH-55) smoothly to join the needles and execute a deceleration sufficiently to noticeably slow the descent.
   c. at approximately 100 feet smoothly roll off the throttle and at 35 to 50 feet (OH-13 and OH-23) and 25 feet (TH-55) execute a deceleration sufficient to noticeably slow the descent.
   d. at approximately 100 feet smoothly roll off the throttle and at 35 to 50 feet (OH-13 and OH-23) and 25 feet (TH-55) execute a deceleration to stop the descent.

6. The proper control movements prior and during touchdown are

   a. apply collective pitch to check and slow descent, forward cyclic to level skids, and additional collective pitch to cushion the aircraft on the ground.
   b. join the needles, apply collective pitch to check and slow the descent and forward cyclic to cushion the aircraft on the ground.
   c. smoothly roll off throttle, apply collective pitch to check and slow descent, and aft cyclic to cushion the aircraft on the ground.
   d. apply collective pitch to check and slow descent, aft cyclic to level the skids, and additional collective pitch to cushion the aircraft on the ground.

7. While practicing a 180 degree autorotation, the downwind leg should be flown

   a. further from the lane than a normal pattern at an altitude of 500 feet and 50 knots.
   b. closer to the lane than a normal pattern at an altitude of 500 feet and 50 knots.
   c. the same distance from the lane as a straight-in autorotation and at an altitude of 500 feet and 50 knots.
   d. closer to the lane than usual at an altitude of 300 feet at 45-50 knots.

8. In order to increase your rate of turn in a 180 degree autorotation to the left, you should

   a. apply left pedal and increase airspeed.
   b. apply additional cyclic to the left.
   c. apply additional cyclic to the left and use left pedal.
   d. apply left pedal and decrease airspeed.

5. c. If you answered a, b, or d, refer to AM-43, Part 1, Frame 3.

6. a. If you answered b, c, or d, refer to AM-43, Part 1, Frame 4.

7. b. If you answered a, c, or d, refer to AM-43, Part 1, Frame 5.

8. b. If you answered a, c, or d, refer to AM-43, Part 1, Frame 6.

9. The turn in a 180 degree autorotation should be completed

a. approximately 200 feet above the ground.
b. approximately 85 to 100 feet above the ground.
c. just prior to beginning the initial collective pitch pull.
d. approximately 35 to 50 feet (OH-13 and OH-23) or 25 feet (TH-55) above the ground.

10. When your instructor closes the throttle to split the needles for a simulated forced landing, you should immediately

a. lower the collective, apply right pedal, check engine RPM, call out, "rotor in the green".
b. lower the collective, apply right pedal, check rotor RPM, call our, "rotor in the green".
c. lower the collective, check rotor RPM, call out "rotor in the green".

11. In a simulated forced landing, you should maintain which of the following Autorotative Attitudes?

a. 60 knots.
b. 35-40 knots.
c. 55 to 60 knots.
d. 45 to 50 knots.

12. Naturally, the perfect forced landing area is an established landing area. The next best substitute would be

a. an uncut hay field with a headwind.
b. a smooth road with a tailwind.
c. a smooth hard-packed road with a headwind.
d. a smooth field with a tailwind.

13. A power recovery from a forced landing must be completed

a. by the student prior to reaching 100 feet AGL.
b. by the instructor prior to reaching 100 feet AGL.
c. by the student at a hover.
d. by the instructor at a hover.

14. In order to increase the glide distance of your flight path

a. increase collective slightly and decrease airspeed.
b. increase airspeed.
c. decrease airspeed.
d. raise nose of helicopter slightly.

9. b. If you answered a, c, or d, refer to AM-43, Part 1, Frame 7.

10. b. If you answered a, c, or d, refer to AM-43, Part 2, Frame 2.

11. d. If you answered a, b, or c, refer to AM-43, Part 2, Frame 2.

12. c. If you answered a, b, or d, refer to AM-43, Part 2, Frame 1.

13. b. If you answered a, c, or d, refer to AM-43, Part 2, Frame 4.

14. b. If you answered a, c, or d, refer to AM-42, Frame 6.

15. "Crabbing" means

a. maintaining true course by varying ground track.
b. maintaining ground track by varying heading.
c. adjusting the heading to the downwind side of the course.
d. holding the correct pedal into the wind.

16. Turning from downwind to base leg, on a rectangular course, you should

a. use a steep bank to compensate for the wind.
b. use a shallow bank to avoid drifting out of the pattern.
c. use a moderate bank since the wind has no effect on ground track.
d. use right pedal to compensate for wind draft.

17. In the "S" turn maneuver, the reference line is as nearly as possible

a. 45° to the wind.
b. into the wind.
c. 180° to the wind.
d. 90° to the wind.

18. The reference line should be intercepted

a. downwind.
b. upwind.
c. crosswind.
d. none of the above.

19. The best method to accomplish a uniform radius of turn is

a. to keep your head in the cockpit watching the instruments.
b. to check instruments and select features on the ground for reference.
c. to hold a constant angle of bank.
d. none of the above.

15. b. If you answered a, c, or d, refer to AM-40, Frame 2.

16. a. If you answered b, c, or d, refer to AM-40, Frame 3.

17. d. If you answered a, b, or c, refer to AM-40, Frame 5.

18. a. If you answered b, c, or d, refer to AM-40, Frame 5.

19. b. If you answered a, c, or d, refer to AM-40, Frame 5.

L3891 Army—Ft. Sill, Okla.