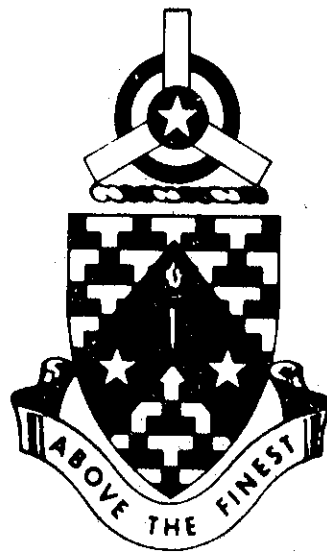


PROGRAMED TEXT

GROUND HANDLING

AM-24



APRIL 1969

**UNITED STATES ARMY
PRIMARY HELICOPTER SCHOOL
FORT WOLTERS, TEXAS**

PROGRAMED TEXT

PROGRAM TEXT

FILE NO:

AM-24

PROGRAM TITLE

GROUND HANDLING

POI SCOPE: Upon completion of this program, the student will be cognizant of the Fort Wolters policies and procedures in parking, mooring, ground handling and servicing the helicopter trainers used at Fort Wolters.

INSTRUCTOR REFERENCES:

TM 55-1520-206-10, Operator's Manual: OH-23 and OH-13
TM 55-1520-206-20, Organizational Maintenance Manual: OH-23 and OH-13
Handbook of Maintenance Instruction, Hughes 269A
Helicopter Primary Flight Training Manual

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DATE:

April, 1969

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PREFACE

Helicopters can be badly damaged by wind gusts, other helicopters hovering close by, or by careless ground handling and parking procedures.

This program will focus attention on those procedures which, if followed, will prevent parking, mooring, ground handling and servicing accidents.

The procedures in this text are applicable only to the Primary Helicopter School, Fort Wolters, Texas.

The following publications are your guides to proper parking, mooring, ground handling and servicing procedures:

1. Helicopter Primary Flight Training Manual, published by the USAPHS, Fort Wolters, Texas (Parking Tie Down TH-55).
2. Operator's Manual (-10), (Tie Down OH-23 and OH-13).
3. Organizational Maintenance Manual (-20), (Mooring).

PERFORMANCE OBJECTIVES

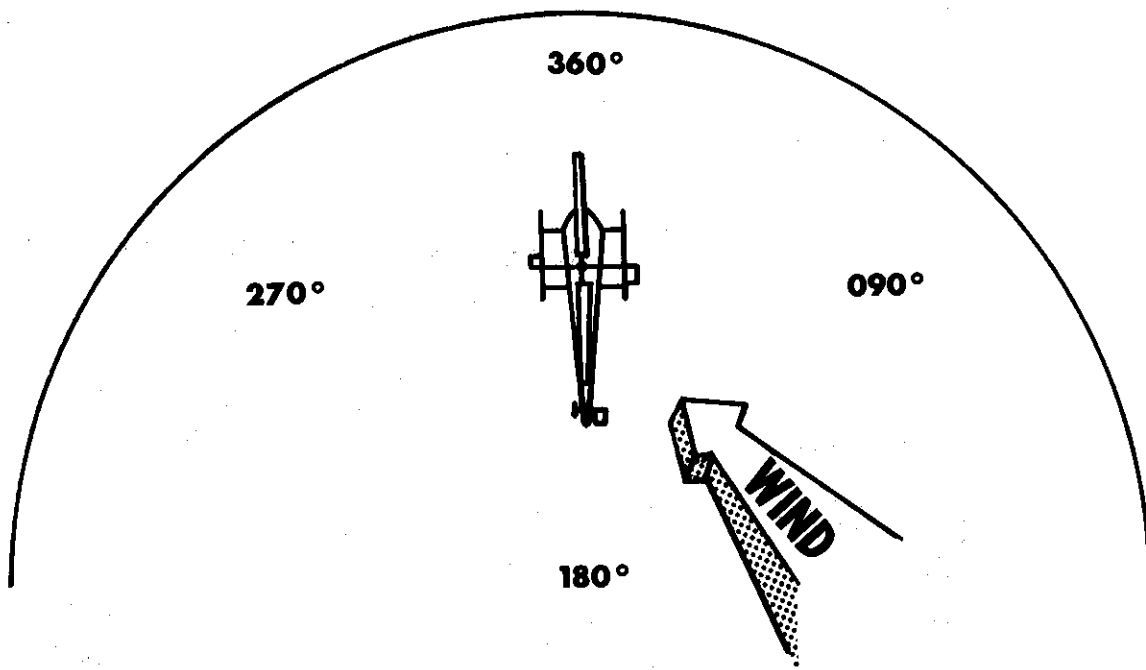
Upon completion of this programed text you will be able to:

1. List ground handling procedures and servicing precautions for Army helicopters.
2. State the correct parking procedures used for helicopters at Fort Wolters, Texas.
3. List general procedures and references for mooring an Army helicopter.

FRAME 1

You have been issued the Helicopter Primary Flight Training Manual. This manual directs that all helicopters be parked so that the wind strikes the helicopter from the right rear, which is approximately 135° to the right of the nose of the helicopter.

EXAMPLE



To find out how I would park my helicopter with respect to wind direction, I would refer to my _____.
(reference)

TURN TO PAGE 3 FOR FRAME 2

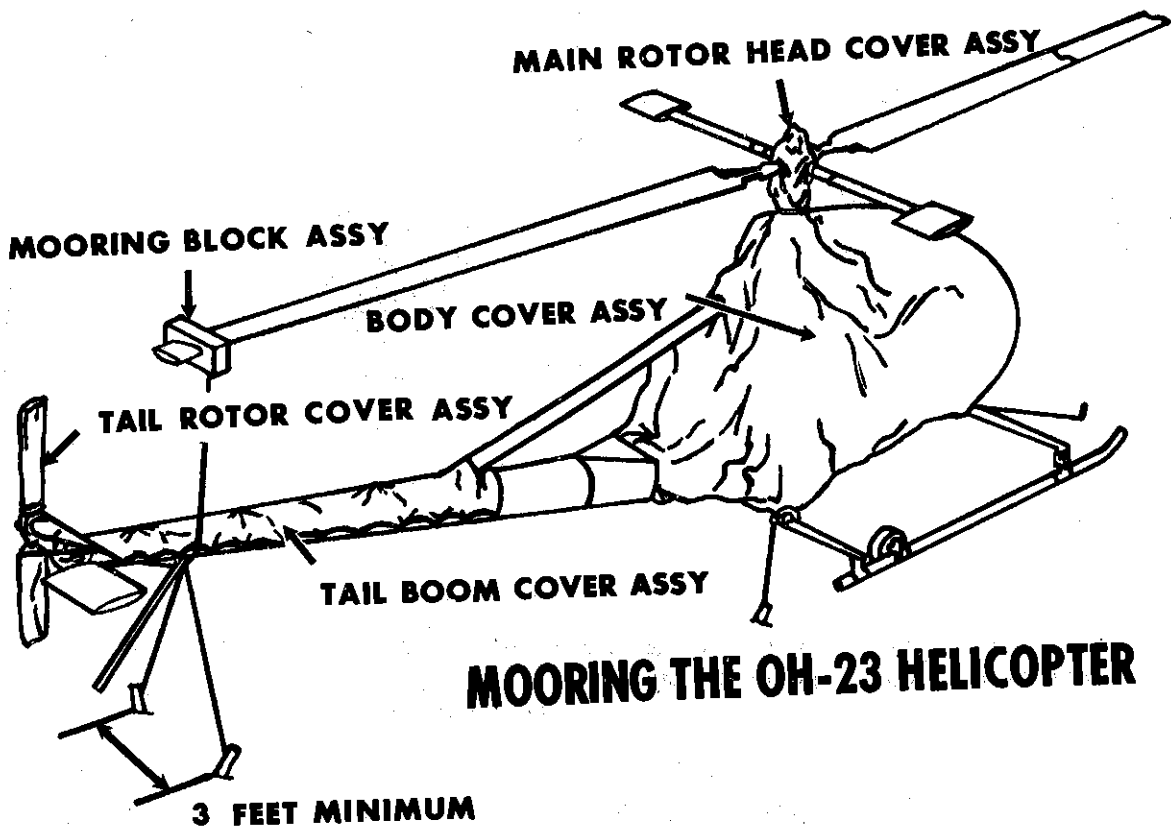
ANSWER: 3 rotor blades

FRAME 6

To "moor" a helicopter means to stake and tie down the complete helicopter.

When the wind or weather conditions become extreme, (over 50 kts), consideration will be given to mooring or hanging the helicopter. The organizational Maintenance Manual (-20) gives the proper mooring procedures to be used.

Example: (Note helicopter is staked
down securely.)



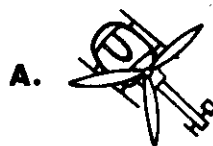
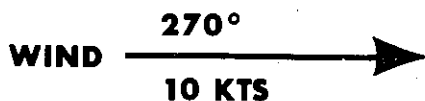
The ~~-10/-20~~ manual will give me the information I need to properly moor my helicopter, while the ~~-10/-20~~ manual tells how to use the main rotor mooring block.

TURN TO PAGE 4 FOR FRAME 7

FRAME 2

The reason for this parking policy is simple. The wind coming from the right rear of the helicopter causes the main rotor blades to climb as they cross the tailboom while in a freewheeling state after the engine is stopped. This procedure prevents the blades from flexing into the tailboom or tail rotor drive shaft in severe gusting conditions. Remember, always park with the wind striking the helicopter from the right rear, or 135° to the right of the nose.

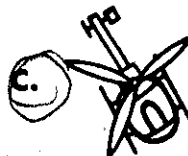
Which of the helicopters below is parked correctly? (Circle letter).



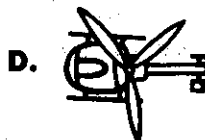
NOSE- 315° HEADING



NOSE- 045° HEADING



NOSE- 135° HEADING

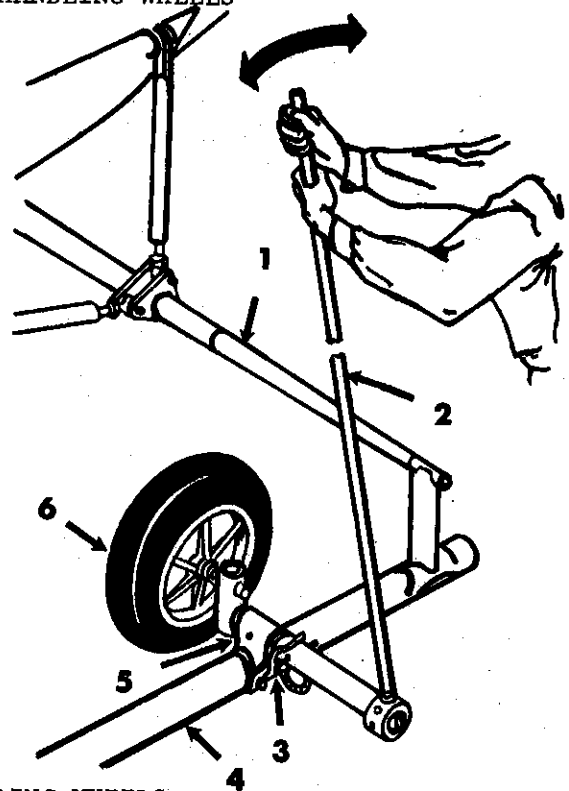


NOSE- 270° HEADING

FRAME 7

EXAMPLE OF GROUND HANDLING WHEELS

1. Aft landing gear spring tube
2. Skid wheel extension and retraction bar assembly (Special Tool 92067)
3. Landing gear wheel pin
4. Left-hand skid runner
5. Lock pin hole
6. Left-hand side ground handling wheel



OH-23 GROUND HANDLING WHEELS

Ground handling wheel mounts are provided near the rear of the skids on the OH-13 and OH-23, and the TH-55.

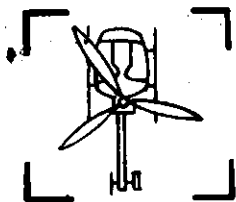
All ground handling wheels are positioned by the same procedures. One man must pull down on the tail boom, raising the front of the skids off the ground. A second man, using an extension tool as a lever, rotates the wheel into its proper position, placing the lock pin through the hole. The helicopter can now be pushed or pulled wherever you desire.

ANSWER: c. Nose - 135° heading

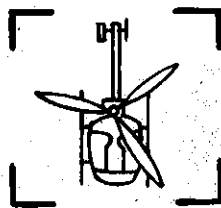
FRAME 3

Most helicopter parking areas at Fort Wolters are indicated by an "H", a number or a square painted on the ramp. These markers provide sufficient rotor blade clearance between helicopters as long as both aircraft are parked on the markers. You should park on the marker if possible, but always park so you have sufficient rotor clearance if both helicopters were to start at the same time.

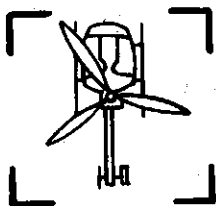
Which helicopter is improperly parked with respect to markers and wind?
(More than one may be correct.)



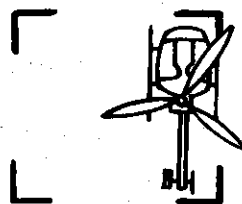
a



b



c

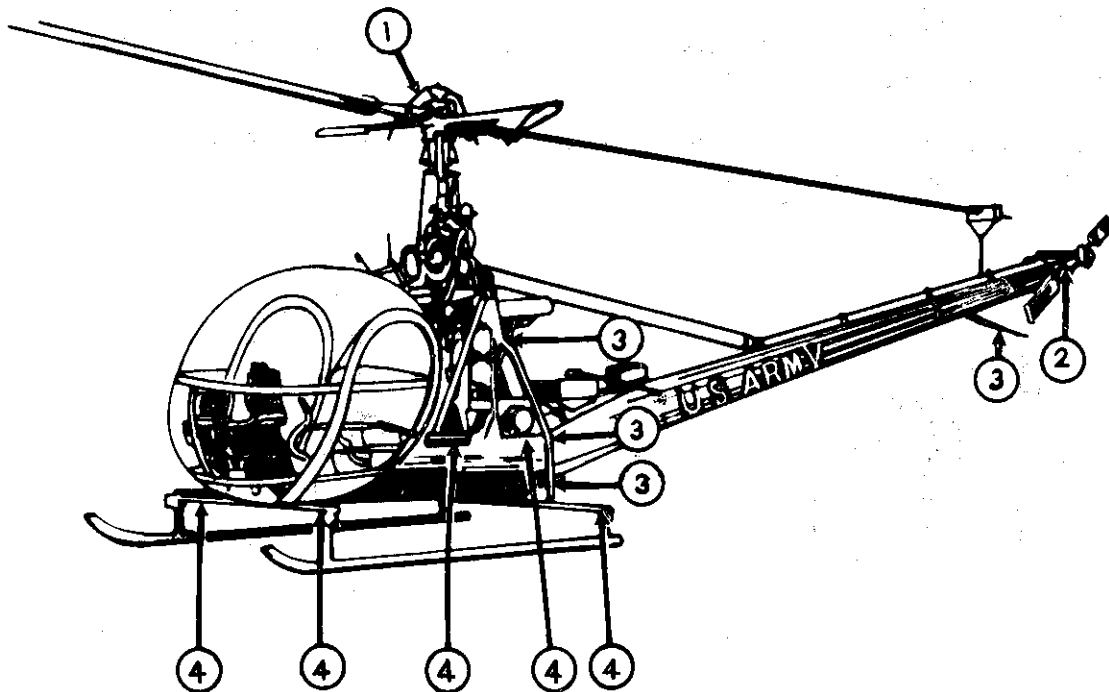


d

Arrow denotes the
direction of the wind

FRAME 8

When ground handling any helicopter, have enough personnel available to control the helicopter. Check the -10 Operator's Manual and the -20 Maintenance Manual for the proper places that are used to push or pull the helicopter. Specifically, do not push or pull on control linkages, cables, tail rotors or antennas.



- | | |
|---------------------------|-------------------------------------|
| 1. ROTATING THE ROTORS | 3. PUSHING & PULLING THE HELICOPTER |
| 2. LOWERING THE TAIL BOOM | 4. :STEP HERE: LOCATIONS |

OH - 23 HANDHOLD AND STEPS (TYPICAL)

To prevent damaging the helicopter during ground handling operations, check the _____ for the "push or pull" points.
reference

The _____ would be a good place to
(Engine Mount Brace/Control Linkage)
apply pressure to move the helicopter that is being ground handled.

ANSWER: b and d

FRAME 4

Always insure 20 yards clearance from hub to hub. If a dangerous condition exists, the helicopter should be ground handled to a safe area before starting.

Which of the following helicopters would have to be moved (ground handled) before starting?



A



B



C



D

ANSWERS: -10 operators manual, and the -20 organizational maintenance manual;
engine mount brace

FRAME 9

SERVICING OF AIRCRAFT

You may be required to service, or supervise the servicing of, your aircraft. There are certain precautionary steps you must take prior to servicing your aircraft. These steps are:

1. Turn all switches "off".
2. Allow no smoking within fifty feet of your aircraft while refueling.
3. Insure that the fuel truck (if utilized) remains at least twenty (20) feet from the aircraft.
4. Insure that your aircraft is properly grounded. (3 grounds)
 - a. Aircraft grounded to ground
 - b. Fuel truck grounded to ground
 - c. fuel truck grounded to aircraft
5. Open fuel tank
6. Check the fuel for contamination

If you follow these steps you will reduce considerably the chances of an accident occurring during refueling operations.

What is the closest a fuel truck may come to an aircraft while refueling it?

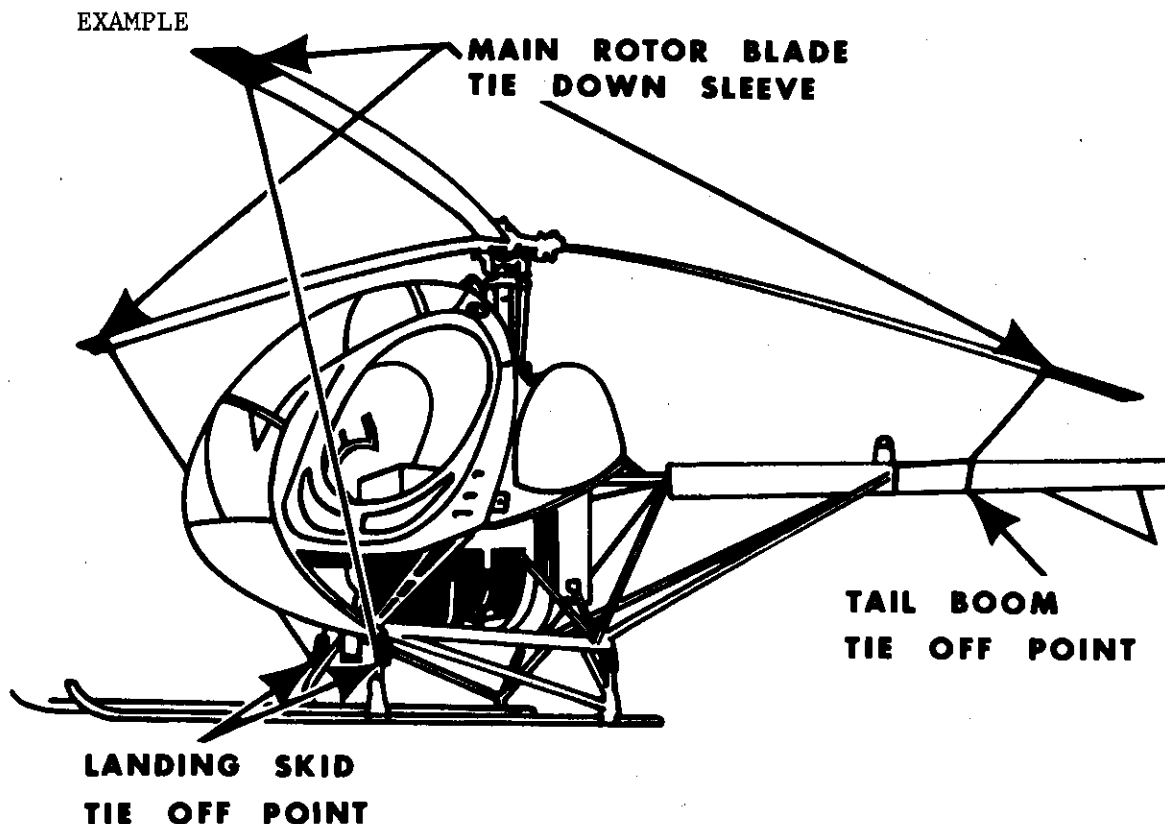
ANSWER: c or d

FRAME 5

To "tie down" a helicopter means to secure (or tie) the main rotor blade(s) only, so that it will have little or no swing either to the right or left.

The Operator's Manual (-10) gives information pertaining to the correct tie down procedures for the OH-23 and OH-13 under normal wind and weather conditions. Tie down procedures for the TH-55 are referenced in the Helicopter Primary Flight Training Manual.

The helicopter's main rotor blade is tied down with either a main rotor mooring block (OH-13 and OH-23), or blade tie down sleeves (TH-55).



You have been flying a TH-55 helicopter the last period of the day and want to tie it down. You would tie down _____ rotor blades.
(1, 2, or 3)

TURN TO PAGE 2, FRAME 6

ANSWER: The fuel truck must remain at least twenty feet from an aircraft during refueling operations.

EXAMPLE OF GROUND HANDLING ERRORS

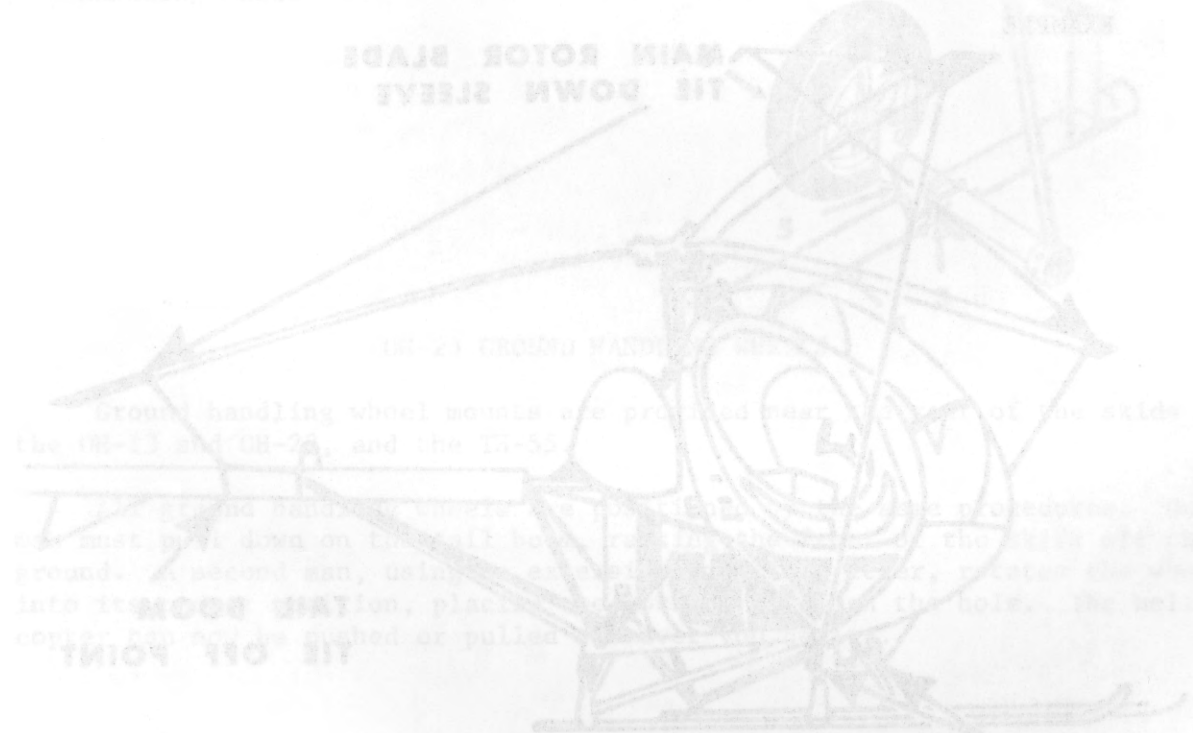
FRAME 2

To "tie down" a helicopter means to secure (or tie) the main rotor blades(s) only so that it will have little or no swing either to the right or left.

The Operator's Manual (-10) gives information pertaining to the correct tie down procedures for the OH-23 and OH-23A under normal and weather conditions. The tie down procedures for the TH-55 are given in the Helicopter Primary Flight Training Manual, and are as follows:

1. Tie down the main rotor blades.
2. Tie down the tail rotor blades.
3. Tie down the landing gear.
4. Tie down the fuel tank.
5. Tie down the engine.

The helicopter's main rotor blades are tied down with elastic straps (TH-55) or rotor tie down blocks (OH-13 and OH-23), or blade tie down blocks (TH-55).



LANDING STRIP

THE OFF POINT

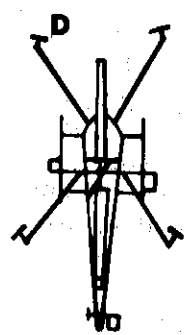
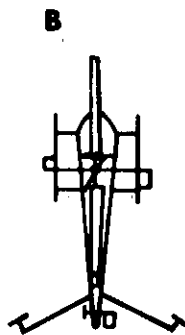
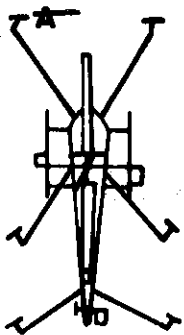
You have been flying a TH-55 helicopter the last period of the day and want to tie it down. You would tie down (1, 2, or 3)

TURN TO PAGE 2, FRAME 3

SELF EVALUATION EXERCISE

1. The correct Fort Wolters parking procedure, with respect to wind direction, is found in the
 - a. Fort Wolters Guide Book.
 - ☒ b. Primary Helicopter Flight Training Manual.
 - c. -20 Manual for the PHT's. (Primary Helicopter Trainer's)
 - d. daily weather report.
2. To avoid meshing rotor blades when starting your helicopter next to another helicopter, you would
 - a. mentally check blade clearance to avoid meshing of rotor blades.
 - ☒ b. manually check main rotor blade clearance by swinging the blade before starting, insuring 20 yards clearance from hub to hub between helicopters.
 - c. crank fast to move before the other helicopter does.
 - d. be required to call the tower operator and request a ground guide to assist you.
3. As you hover into the parking area, you find another helicopter tied down next to your parking position. You would park
 - a. on the parking markers, regardless of where the other helicopter is parked.
 - b. at least 30 feet away from the parked helicopter's skids.
 - c. to give you clearance of 30 feet from the parked helicopter's mast.
 - ☒ d. to give you twenty yards clearance from hub to hub between helicopters.
4. Tie down instructions are located in the
 - a. Fort Wolters Guide Book.
 - ☒ b. Primary Helicopter Flight Training Manual.
 - c. The -10 manual for the OH-13 and OH-23.
 - d. b and c are correct.
5. As you hover your helicopter to the parking lane, the tower gives the wind as 090° at 19 knots. You would park your helicopter on a compass heading of
 - a. 90°
 - b. 225°
 - c. 270°
 - ☒ d. 315°

6. In a 10 knot wind the OH-13 and the OH-23 rotor mooring block is
 - a. tied so as to flex the rotor blade down to within 4" of the tail boom.
 - b. tied loose enough so the blade may swing 18" in either direction.
 - ☒ c. tied so as to hold the rotor blade firmly, with little or no swing either to the left or right.
 - d. tied to both the main rotor and the tail rotor blades so as to hold them both firmly, with little or no swinging motion at all.
7. The ground handling wheels on the OH-13 and OH-23 helicopter are attached near the rear 1/3 of the skids. To install the ground handling wheels properly you should
 - a. block up or raise the tail boom at the tail boom block point.
 - ☒ b. place weight on the tail boom to raise the front of the helicopter.
 - c. block up first the right side, then the left side as you install the ground handling wheels.
 - d. block up first the left side, then the right side as you install the ground handling wheels.
8. Mooring instructions for the OH-23 and OH-13 will be found in the
 - a. Fort Wolters Guide Book.
 - b. Primary Helicopter Flight Training Manual.
 - ☒ c. -20 Manual.
 - d. b and c are correct.
9. Select the properly moored helicopters.



10. When the wind is forecasted to be extreme (50 kts or more), you would
- ☒ a. moor, hangar or evacuate your helicopter to a safer area.
 - b. leave your helicopter on the ground, but tie the rotor blade down extra tight.
 - c. continue to operate, as 50 kts would not bother the type of helicopter used here at Fort Wolters.
 - d. Moore, hangar or evacuate only if the winds were forecast to be 55 kts or more.
11. When ground handling your helicopter, you would move it by applying pressure on the
- ☒ a. engine mount brace.
 - b. push-pull tube.
 - c. tail rotor control linkage.
 - d. rotor mooring block.
12. What is the minimum safe distance for personnel to be while smoking in the vicinity of refueling operations?
- a. 20 feet
 - ☒ b. 50 feet
 - c. 50 yards
 - d. 100 feet
13. How many grounds must you have during refueling operations?
- a. one
 - b. two
 - ☒ c. three
 - d. no

ANSWERS TO SELF EVALUATION EXERCISE

1. b
2. b
3. d
4. d
5. d
6. c
7. b
8. c
9. a
10. a
11. a
12. b
13. c