HELICOPTER OPERATIONS

I will attempt to explain helicopter operations in and around the airport environment and some tips on hovering and moving the helicopter. This will include:

- WHERE CAN HELICOPTERS LAND
- MOVEMENT ON AN AIRPORT
- DEPARTING AN AIRPORT
- ARRIVAL AND LANDING AT AN AIRPORT AND CLOSED TRAFFIC PATTERNS
- TIPS FOR TAKING OFF, HOVERING, AND LANDING FROM A HOVER.

Many of you may only fly the Huey in DCS World. I have added this section for information as it applies to helicopter operations. This is for general knowledge and by no means a complete guide to helicopter operations. In all cases, consult the applicable FAA regulations and the Airman's Information Manual.

Helicopters are remarkable pieces of machinery. They can land almost anywhere and can maneuver in ways impossible to other aircraft. Helicopters have come a long way in the last 50 years. They are used in a wide variety of industries and services. The military, medical transport, executive use, off-shore petroleum, logging, and the list goes on.

The use and handling of helicopters has been a development and educational journey by manufactures, pilots, and the FAA/Air Traffic Control System. Helicopters have become faster, more complex with greater capabilities and state of the art avionics. There was a time when flying by instrument flying regulation (IFR) in instrument meteorological conditions (IMC) was unheard of and impossible. There are a lot of helicopters flying today, so we had to develop a control system that affords safety, courtesy, and efficiency to all who share our airways and the Air Traffic Control System.

WHERE CAN HELICOPTERS LAND?

The obvious answer is anywhere they can be set down. We have seen helicopters fly in Santa Clause, clowns, construction equipment and just about anything that can be hauled internally or underneath by a sling load. Here is the catch: you must have permission to land. That permission can come from a tower in controlled airspace, a landowner, a city or municipality, or whoever controls or owns the area you want to land or the agency that controls the property. The regulation says you will not fly in a manner that will endanger the lives of bystanders or the general public.

We see many helipads being built from hospitals, rooftops, fields, back yards, etc. Many of these are registered and are private and many that are registered are for public use. Just because you see an H does not mean you can arbitrarily land a helicopter. In closing, do your homework, ask permission and always keep the landing safe, courteous, and within the limits and capabilities of your aircraft.

MOVEMENT ON AN AIRPORT

When you get ready to come to hover, you do it for several reasons. It may be just to practice hovering, hover to a take-off area, or move to another portion of the airfield. Your hanger may be on one side of the field and you need to move to the opposite side for fuel or maintenance. How do you hover or move to another location on the airfield?

Always call ground control for permission to hover, or if at an uncontrolled airport, make a call on CTAF (Common Traffic Advisory Frequency).

Here is how the Airman's Information Manual defines taxiing a helicopter.

The phraseology taxi is used when it is intended or expected that the helicopter will taxi on the airport surface, either via taxiways or other prescribed routes. Taxi is used primarily for helicopters equipped with wheels or in response to a pilot request. Preference should be given to this procedure whenever it is necessary to minimize effects of rotor downwash.

Pilots may request a hover taxi when slow forward movement is desired or when it may be appropriate to move very short distances. Pilots should avoid this procedure if rotor downwash is likely to cause damage to parked aircraft or if blowing dust/snow could obscure visibility. If it is necessary to operate above 25 feet AGL when hover taxiing, the pilot should initiate a request to ATC.

Air taxi is the preferred method for helicopter ground movements on airports provided ground operations and conditions permit. Unless otherwise requested or instructed, pilots are expected to remain below 100 feet AGL. However, if a higher than normal airspeed or altitude is desired, the request should be made prior to lift-off. The pilot is solely responsible for selecting

a safe airspeed for the altitude/operation being conducted. Use of air taxi enables the pilot to proceed at an optimum airspeed/altitude, minimize downwash effect, conserve fuel, and expedite movement from one point to another. Helicopters should avoid overflight of other aircraft, vehicles, and personnel during air-taxi operations. Caution must be exercised concerning active runways and pilots must be certain that air taxi instructions are understood. Special precautions may be necessary at unfamiliar airports or airports with multiple/intersecting active runways.

Airman's Information Manual 4-3-17 b.

If you only have to move to the end of the ramp for takeoff, then use the hover taxi. If you have to move to the other side of the airfield, then request an air taxi. Air traffic controllers will usually grant this request as it doesn't tie up taxiways and take a lot less time. No sense burning time and fuel by doing a slow hover clear across the airfield.

It's very possible to land at a large, unfamiliar airport and not know your way around. If you're flying by yourself and don't have a new Garmin display with all the taxiways, runway and intersection information, just ask the tower or ground control for a progressive taxi. When you request that, they will give you instructions on how to get where you want to go.

DEPARTING AN AIRFIELD

FAR 91.12.126 (B) (2**) "*Each pilot of a helicopter or powered parachute must avoid the flow of fixed-wing aircraft."***

That regulation has been a blessing to both fixed wing and helicopter pilots as well. I once flew into an airport in the winter right after a rather large snowstorm had subsided. I contacted the tower and was informed the airport was closed. I asked why and was told that braking action was poor as reported by a Tapley meter. (A Tapley meter measures braking action on a slick or icy runway) I told them I don't need the runway and could land on the taxiway or the ramp. They still told me no and after pleading once again they told me I could land at my own risk to the ramp.

The point of this story is, do not be afraid to ask for a clearance or for permission that will avoid the flow of fixed wing traffic and/or will expedite your departure or landing at an airport.

AIM Helicopter operations may be conducted from a runway, taxiway, portion of a landing strip, or any clear area which could be used as a landing site such as the scene of an accident, a construction site, or the roof of a building. The terms used to describe designated areas from which helicopters operate are: movement area, landing/takeoff area, apron/ramp, heliport and helipad (See Pilot/Controller Glossary). These areas may be improved or unimproved and may be separate from or located on an airport/heliport. ATC will issue takeoff clearances from movement areas other than active runways, or in diverse directions from active runways, with additional instructions as necessary. Whenever possible, takeoff clearance will be issued in lieu of extended hover/air taxi operations. Phraseology will be "CLEARED FOR TAKEOFF FROM (taxiway, helipad, runway number, etc.), MAKE RIGHT/ LEFT TURN

FOR (direction, heading, NAVAID radial) DEPARTURE/DEPARTURE ROUTE (number, name, etc)." Unless requested by the pilot, downwind takeoffs will not be issued if the tailwind exceeds 5 knots.

Airman's Information Manual 4-3-17 c.

CLOSED TRAFFIC PATTERNS

As we all know, we learn so much from flying closed traffic patterns. We take off, fly a crosswind, downwind, base, final and then land. The same holds true for helicopters. Flying a closed traffic pattern helps us develop that 7-10-degree angle for a normal approach. Traffic patterns for helicopters are usually at a lower altitude and closer to the field than fixed wing patterns. Helicopters usually fly a 500 ft. downwind and the turn to final is much closer to the runway than an airplane.

If the traffic is light, you can request the runway. Pick out a good spot on the runway to shoot your approach to (the numbers at the end are great). If the traffic is heavy, you can request a taxiway, a ramp, an intersection, or anyplace on the airport suitable for your training. Once again, just ask the tower where you can train.

TIPS FOR HOVERING

There is no magic wand to teach you how to instantly hover a helicopter. I recognized that you are learning to hover and fly the DCS Huey and are really limited to your senses regarding the operation of the aircraft. You just have to practice, practice, crash, practice, get discouraged, take a break, practice, try different settings on your controls and one day that magical moment will come when it all comes together. Here are a few tips taken from the real world of the Huey and I hope they will be helpful to you.

1. Clear your area. Make sure you won't hover into your neighbor.
2. Run through your mind the sequence of events that will happen as you begin to pull collective pitch.
    a. Keep your vision outside. Don't get fixated on the cockpit. Look forward about 50 feet ahead of the aircraft with an occasional glane of 45 degrees off to your right or left.
    b. As you slowly pull collective pitch, torque will increase and the nose will want to move to the right. Be prepared to add left pedal to compensate for the torque of the main rotor.
    c. The Huey will want to move forward due to the 5 degree forward tilt of the main rotor mast. You will need to add some aft cyclic to rise to a stable hover.
    d. The Huey will want to move to the right due to the thrust from the main rotor. That's the translating tendency we talked about during our aerodynamics session.
3. You will have to remember left pedal and a little aft cyclic. You probably have already noticed when you pick the Huey up it wants to start moving forward. How much would you ask? Well the old saying in aviation is "whatever it takes". This will become a

second sense to you and you'll be able to take off to a hover and keep within the perimeter of a football field with no problem.

If you need to keep the rotorwash down, move the cyclic a little forward and pull some collective and you can slide the Huey on the ground.

Be aware of fixed wing aircraft parked in the vicinity. They may not have control locks in place and the rotor wash of a Huey could damage the flight controls.

Never hover over the top of other aircraft, buildings or people. Keep a clear path below you at all times.

I hope this will be of some help as we charge forward in our workshops. Thanks again for having me be a part of it!

Tom L.

Here are some links to the FAA controller's manual and the Airmans Information Manual. I hope these will be of some help.

https://www.faa.gov/air_traffic/publications/atpubs/aim_html/chap4_section_3.html

https://www.faa.gov/air_traffic/publications/atpubs/atc_html/chap3_section_11.html