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| UNIT OVERVIEW |
| **Course** Helicopter Crewmember, S-271 |
| **Unit** 8 – Helispot Operations |
| **Time** TBD |
| **Objectives**  1. Describe the process for staffing and preparing a landing area or helispot.  2. Define the methods for constructing landing areas or helispots.  3. Describe the duties performed in managing a helispot. |
| **Strategy**  This unit will help students to define the duties associated with helispot management from the beginning of preparing a landing area and the management of the helispot. This will be accomplished through lecture, discussion, and hands-on exercises. |
| **Instructional Method(s)**   * Facilitation/informal lecture with PowerPoint * Group exercises |
| **Instructional Aids**   * Personal computer with LCD projector and presentation software * Fireline Handbook, PMS 410-1 * IRPG * IHOG |
| **Exercises**   * Where Should the Helispot be Located? * Helispot Management |
| **Evaluation Method(s)**   * Review and discuss group exercises. |
| **Outline**  I. Helispot Preparation  A. Assigned to a Helispot  B. Helispot Equipment Needs  C. Apply Risk Management  II. Landing Area Considerations  A. Unimproved Landing Area  B. Take Off and Landing Area  C. Safety Circle  D. Touchdown Pad  E. Standard Landing Area Size  III. Helispot Construction  A. Selecting a Helispot Site  B. Helispot Site Situations to Avoid  C. Approach and Departure Path  D. Helispot Construction  E. Helispot Hazards  IV. Helispot Manager Duties and Responsibilities  A. Helispot Management |
| **Aids and Cues Codes**  The codes in the Aids and Cues column are defined as follows:  IG – Instructor Guide IR – Instructor Reference  SW – Student Workbook SR – Student Reference  HO – Handout Slide – PowerPoint |

# UNIT PRESENTATION

COURSE: Helicopter Crewmember, S-271

UNIT: 8 – Helispot Operations

| OUTLINE | AIDS & CUES |
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| Unit Title Slide.  Present Unit Objectives.  I. Take-off and Landing Areas  A. Heliport  Permanent facility built to FAA standards  Typically found at hospitals, city, and county facilities.  Heliport Components:   * Permanent pad * Wind indicator * Road access * Parking area * Communications * Rest area (pilot & crew)   B. Permanent Helibase  Usually meets heliport specifications.  Permanent Helibase Components:   * Permanent pad * Wind indicator * Road access * Parking area * Communications * Rest area (pilot & crew)   C. Temporary Helibase  Used on a short-term basis.  Temporary Helibase Components:   * Communications * Road access * Parking areas * Landing pads * Wind indicator * Rest area (pilot & crew) * Staging area (passengers/cargo)   D. Helispot  Natural or improved take-off and landing area  Helispot Components:   * Communications * Landing pads * Wind indicator * Rest area (pilot & crew) * Staging area (passengers/cargo)   A helispot might not have:   * Road access   E. Unimproved Landing Area  Used first time at discretion of pilot  An unimproved landing area is not intended for multiple uses.  If it is to be used on a recurring basis, necessary improvements should be made, and it should be referred to thereafter as a helispot.  The pilot is responsible for making the decision to utilize unimproved landing sites. The government representative on board may make a recommendation, but must defer to the pilot’s judgment, even if the pilot’s preferred site is at a distance from that desired.  Conversely, the government representative has the option to advise the pilot that he or she does not feel comfortable landing at a site selected. Examples of this type of landing area would be sites selected by the pilot for an emergency rescue, inspection of aircraft due to mechanical problems (chip light, rotor strike, etc.). The point being that no subsequent landings will occur again in this area.  Prior to landing for the first time at an unimproved site, the pilot shall make a high-level reconnaissance of the area to determine the location of any aerial hazards in the approach or departure path and to determine wind conditions, slope, ground stability, rotor clearances, ground hazards, and size of pad.  F. Take Off and Landing Area  This a specific area in which the helicopter actually lands and takes off, including the touchdown pad and safety circle.  G. Safety Circle  A safety circle is a zone that provides an obstruction-free area on all sides of the touchdown pad. For helispots and helibases, the only items that should be within the safety circle are a fire extinguisher, a pad marker, and if applicable, external or internal loads awaiting transport. The parking tender may also be within the safety circle.  The size of the safety circle will depend on the size of the helicopter. But as a rule of thumb, it should be at least one and one-half times the diameter of the rotor.  H. Touchdown Pad  This is the specific location where the skids or wheels will come to rest. Usually has a prepared or improved surface, on a heliport, airport, takeoff/landing area, apron/ramp, or movement area used for takeoff, landing or parking of helicopters.  I. Standard Landing Area Size  **Type 3 & 4 (light helicopters):**   * Safety circle should be at least 75 feet in diameter. * Touchdown pad is 15 by 15 feet.   **Type 2 (medium helicopters):**   * Safety circle should be at least 90 feet in diameter. * Touchdown pad is 20 by 20 feet.   **Type 1 (heavy helicopters):**   * Safety circle should be at least 110 feet in diameter. * Touchdown pad is 30 by 30 feet.   ii. helispot construction  A. Selecting a Helispot Site  Ideal: 2-way approach/departure path   * Ridge tops or exposed knobs * HIGE * Level pad * No obstructions * Requires minimum labor * Close to work area or incident * Natural dust abatement * Proximity to safety zone * LCES can safely be in place   Always attempt to locate the area so that takeoffs and landings may be executed into the prevailing winds. Avoid if at all possible one way helispots. This becomes more important with higher elevations.  Ridge tops and exposed knobs offer the best locations, especially if they can be approached and departed from in all or several directions.  If possible, avoid locating the landing and takeoff area on a slope.  Area that will require minimum labor to bring to proper standards.  Area must be clear of people, vehicles, and obstructions such as trees, poles, and especially overhead wires. The area must be free of stumps, brush, posts, large rocks or anything over 18 inches high.  Natural dust abatement-ground cover  Address LCES prior to staffing existing or proposed helicopter landing areas.  B. Helispot Site Situations to Avoid   * Helispots that require that same approach and departure paths (one-way helispots) should be avoided whenever, possible. * Freshly cut dozer lines (dust). * Rocky touchdown pads (tank clearance, skid damage). * Sites that are HOGE limited (height/velocity curve). * Dusty locations which cause visibility problems; flying debris, dust and particles get ingested into the helicopter engines. Injuries to personnel can be caused by loose objects. Always provide for dust abatement before using these types of helispots. * Aerial hazards (cannot be seen from air). * Tall grass (lessens ground effect, conceals hazards). * Tundra and boggy area (dynamic rollover). * Sloping touchdown pads (dynamic rollover). * Lee side turbulence (downdrafts, wind shear). * Trash and debris (foreign object damage). * Pinnacles requiring high power-on landings (tailbooms become inaccessible for loading and unloading cargo). * Nearby commercial flight patterns. * Nearby populated area.   C. Approach and Departure Path   * 2-way approach/departure * Width same as safety circle * Obstruction free (150’ approach X 300’ departure) * Into prevailing wind   This is a clear path selected for flight extending upward and outward from the touchdown pad and safety circle. Preferably, the approach and departure paths should not be the same. Several approach and departure paths should be developed. This allows pilots to adjust to changes in wind conditions.  The minimum width of approach and departure paths should be the same as the diameter of the corresponding safety circle.  Safety may be improved if the paths could be widened 20 degrees from the safety circle.  The paths may generally be aligned with the prevailing wind, but not always. Pilots will use such variables as velocity of the wind, turbulence, updrafts and downdrafts in deciding the direction of approach and departure.  The approach and departure path should not overfly structures, inhabited areas, personnel, and vehicle parking areas. Routes for sling operations should never fly over these areas.  Curving paths are permissible in order to avoid major obstacles.  No obstacles should penetrate that slope during the 20 degree spread for:   * Approach Path – 150 feet (48 meters) * Departure Path –300 feet (95 meters)   The minimum clearance for the approach and departure path should be equal to the safety circle diameter.  D. Helispot Construction  Remove all brush and trees with the following diameter safety circle around the touchdown pad according to the size of the helicopter.   * 75-feet for light helicopters. * 90-feet for medium helicopters. * 110 feet for large helicopters (such as UH-60, S-61N, and Boeing-Vertol 107) * Sufficient approach and departure * Minimized ground disturbance   Hand construction methods are best since there is less ground disturbance than that created by mechanized construction.  Clear brush and trees below the level required for approach and departure.   * Cut trees or snags close to the ground, leaving stump heights of 0-3 inches. (It is recognized that this may not always be possible during initial construction; follow-up flush cutting will be necessary.)   If possible, and **only** if it can be performed safely, fell trees or other vegetation so that some cut trees and snags will be in a crisscrossed or natural appearing arrangement.   * Buck up and limb only what is necessary to achieve a safe operation in and around the touchdown pad and in the approach and departure paths. Excessive bucked up pieces are unnatural. They also increase the workload of camouflaging cut faces during helispot rehabilitation. * If large rocks are moved, they should be removed and placed in an area where they appear to be natural. * Dozer-constructed landing areas generally have soil that is too disturbed, requiring dust abatement procedures.   E. Helispot Hazards   * Wires, towers, fences, snags * Construction incomplete, not level, or not cleared; ground cover not removed to a safe distance. * Canyon bottoms or converging canyons * Cirque basins * Roads * Tundra or boggy areas * Dusty, loose soil conditions * Crews congregating on the helispot. * Litter, paper and plastic bags, boxes, sleeping bags or other light items * Personnel working around landing area should brace themselves when larger helicopters are landing or taking off due to the velocity of the rotor downwash.   Helispot Exercise  IV. helispot manager duties and responsibilities  A. Helispot Equipment Needs  Required supplies at helispot:   * Wind Indicator * 40 BC Fire Extinguisher (20 lbs.) * Evacuation/crash rescue kit * Pad marker * Hanging scale   Recommended supplies for personnel staffing helispot:   * Allowable payloads (HIGE and HOGE) for all helicopters using helispot * Passenger/cargo manifest book * Fiber tape * Flagging * Pocket calculator * Line gear * Food and drinking water * Passenger briefing cards * Radio * Incident action plan (IAP)   B. Personnel Assigned to a Helispot  Helispot management assignments will normally be given out at the morning briefing at the helibase.   * Ensure that daily missions to helispot are understood. * Flight helmets must be worn when flying to staff a helispot. When a helispot manager is on the helispot, it is then considered managed. Passengers flying from a managed helispot or helibase to another managed helispot or helibase may wear a hard hat with a chin strap in lieu of a flight helmet. * The helispot should not be made operational until the helispot manager informs the helibase that they are ready to receive personnel and/or cargo.   C. Helispot Management  Helispot management is essential for safe and efficient operations.   * Obtain briefing from Helibase Manager. * Minimum of two persons assigned. * Should be familiar with all helicopters at helibase. * As the helispot operation becomes more complex, additional people may be needed to provide support. * Ensure that qualified helicopter crew members are assigned to assist in helispot management. * Provide on-the-job training as necessary. * Conduct regular briefings with helispot crew. * Ensure all assigned personnel understand their responsibilities and authority. * Manage resources/supplies dispatched to the helispot. * Ensure that all helispot personnel are capable and prepared to perform fire suppression duties in and around the helispot. * Ensure that helispot crew is equipped to remain overnight, even in adverse weather conditions. * Establish radio communications with the helibase. * Ensure the helispot and landing pad is constructed and prepared properly. * Install wind indicators and sign the area perimeter as necessary. * Perform any necessary aerial and ground hazard reduction and safety improvements. * Anticipate dust abatement needs and provide or request as necessary. * Ensure crash-rescue equipment is available. * Ensure that flight routes and aerial hazards are made known to all pilots. * Ensure manifests and briefings are timely and accurate. * Return external load equipment (nets, leadlines, swivels) and excess firefighting equipment to the helibase promptly. * Inform Helibase Manager of helispot activities. * If returned to the helibase, attend the nightly debriefing and provide feedback on the day’s operations; otherwise, provide by radio. * Helispot crews should be continuously cleaning the helispots of garbage and loose debris.   D. Apply Risk Management   * Before any helispot staffing/development can occur, refer to the IRPG and apply the Risk Management Process. * Do not rely on helicopters to be your escape route to a safety zone. * Follow the process to determine if the helispot can be developed and function safely. * Anytime the situation changes, contact the helibase manager to inform of situation change. * Wait for further instructions to cease or continue helispot operations.   Exercise  Refer students to Risk Management Process in IRPG.  Conduct discussion of helicopter crewmembers preparing to staff a helispot. Discuss each step of the process and how it applies to fire and helispot management.  Step 1: How are you going to gather information?  Probable answers: IAP, local knowledge, briefings, etc.  Step 2: Hazard Assessment  Probable answers: Fire hazards, aerial hazards, helispot hazard, weather concerns, insects, animals, etc.  Step 3: Hazard Control  Probable answers: LCES, communications, qualified personnel, equipment, etc.  Step 4: Decision point  Probable answers: Controls for hazards, expected fire behavior, clear instructions, etc.  Step 5: Evaluate  Probable answers: Human factors, changing situations, etc.  Any Questions?  Review Unit Objectives.  Hand out unit quiz. Correct quiz as a class. | Slide 8-1  Slide 8-2  Slide 8-3  Slide 8-4  Slide 8-5  Slide 8-6  Slide 8-7  Slide 8-8  Slide 8-9  Slide 8-10  Slide 8-11  Slide 8-12  Slide 8-13  Slide 8-14  Slide 8-15  Slide 8-16  Slide 8-17  Slide 8-18  Slide 8-19  Slide 8-20  Slide 8-21  Slide 8-22  Slide 8-23  Slide 8-24  Slide 8-25  Slide 8-26  Slide 8-27  Slide 8-28  Slide 8-29  Slide 8-30  Slide 8-31  Slide 8-32  thru  Slide 8-35  Slide 8-36  Slide 8-37  Slide 8-38  Slide 8-39  Slide 8-40  Slide 8-41  Slide 8-42  Slide 8-43  Slide 8-44  Slide 8-45  Slide 8-46  Slide 8-47  Slide 8-48  HO-8-1 |