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| UNIT OVERVIEW |
| **Course** Helicopter Crewmember, S-271 |
| **Unit** 4 – Communications |
| **Time** TBD |
| **Objectives**1. Ensure all communication is performed using clear text.2. Describe the process of communication within the chain of command.3. Demonstrate proper radio usage.4. Describe helicopter marshalling procedures and techniques. |
| **Strategy**This unit will help students to perform proper radio protocol. This will be accomplished through lecture, discussion, and hands-on exercise. |
| **Instructional Method(s)*** Facilitation/informal lecture with PowerPoint
* Group exercise
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| **Instructional Aids*** Personal computer with LCD projector and presentation software
* Fireline Handbook, PMS 410-1
* IRPG
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| **Exercise*** Radio Protocol (role play)
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| **Evaluation Method(s)*** Review and discuss group exercise.
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| **Outline**I. Communication ProtocolA. Clear TextB. Flight Plans and flight FollowingC. Flight Planning (Emergency response for overdue/missing aircraft)D. Communication within the chain of commandII. Radio UsageA. Radio CommunicationsB. Types of RadiosC. Daily Radio PreparationsD. Standard Target Description (STD)E. Marshalling HelicoptersF. Hand Signals |
| **Aids and Cues Codes**The codes in the Aids and Cues column are defined as follows:IG – Instructor Guide IR – Instructor ReferenceSW – Student Workbook SR – Student ReferenceHO – Handout Slide – PowerPoint |

# UNIT PRESENTATION

COURSE: Helicopter Crewmember, S-271

UNIT: 4 – Communications

| OUTLINE | AIDS & CUES |
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| Unit Title Slide.Present Unit Objectives.Show Helicopter Operations Video. I. Communication ProtocolA. Clear TextAll communications should be in clear text. What is clear text? Clear text is the use of the English language to communicate. All radio transmissions, written messages, and verbal instructions will be in clear text. No ten codes or agency specific codes are used when using clear text.* Use clear text
* Be brief, clear and to the point (short concise communication).
* Plan your transmission before you key the radio. “Don’t think out loud on the radio”.

B. Flight Plans and Flight FollowingAll aviation missions for USFS and Department of the Interior agencies, regardless of how simple or complex, are required to have an approved flight plan filed.Reference USFS Manual 5716.5-Flight Plans And Flight Following and Departmental Manual 351 DM 1.1.4- Flight Plans and Flight Following.This is a detailed outline of where, when, and how the mission will be flown. Good thorough flight planning leads to a safe mission, poor planning only increases the chances for problems or accidents. 1. FAA flight planFAA flight plans shall be filed by the pilot prior to take-off whenever possible.2. Agency flight following (radio) providing:a. Flight following will be accomplished under the agency’s written flight following policy.b. Radio contact will be made at predetermined intervals not to exceed one hour. (Most agencies use predetermined intervals of less than one hour, e.g., 15 to 30 minutes).c. Position reports or amendments are communicated and recorded.d. Personnel tasked with flight following responsibility must monitor the communications radio at all times during the flight.e. Agency flight following must minimally include:* Aircraft type and identification (“N” number)
* Aircraft color
* Pilot name(s)
* Fuel on board (e.g., two hours of fuel)
* Passenger(s) name(s)
* Passenger/cargo weight
* Nature of mission
* Flight routes/point of departure/destination
* Estimated duration of mission
* Estimated time of departure
* Estimated time of arrival
* Check-in procedures

f. Automated Flight Following (AFF):AFF is a satellite/web-based system, which allows the dispatcher to monitor aircraft location on a computer screen.AFF reduces the requirement to “check in” via radio every 15 minutes, and provides the dispatcher near real time information regarding the aircraft latitude and longitude, heading, airspeed, altitude, and flight history. This reduces pilot workload, clears congested radio frequencies, and provides the dispatcher with much greater detail and accuracy on aircraft location. AFF is an approved method of agency flight following. Most agency aircraft have AFF capability. C. Flight Planning (emergency response for overdue/missing aircraft)An FAA study on general aviation accidents found that the response time for search and rescue (SAR) units to arrive at the accident scene was significantly decreased when a flight plan was used. Filing a written flight plan and flight following may double your odds of surviving an aircraft mishap.1. The average time for SAR initial notification is about 30 minutes.2. Average time for SAR units to arrive on scene is about 4 hours.A written flight plan and flight following dramatically decreases the response time for SAR efforts. It may still require more than five hours for individuals to check and confirm there is a missing aircraft.The search area may be massive because only written information is available to determine the flight route and destination. Deviation from a flight plan only complicates the potential of locating a downed aircraft. By the time SAR efforts locate the aircraft and arrive on scene, an average time of 38 hours has passed. What is the potential of surviving a trauma if it takes more than a day to get to you?Without a flight plan, in a downed aircraft, if you have even minor injuries, the chances of your survival are slim. It may take more than a day for someone to acknowledge that you’re missing (FAA average of 35.5 hours).More than three days (FAA average of 82 hours) may pass before someone arrives at the scene of the accident. What are your chances for survival?Post-Crash Survival Time–After an accident in a remote area, an injured person may survive for one day. An uninjured person may survive for three days.Always consider the environment that you will be flying in. Even on routine flights, remember to bring clothing and/or supplies commensurate with the conditions in the event you have a mishap. Know what your agencies policy is regarding supplemental survival equipment.Diagram of aircraft communication including ground resources.D. Communication within the Chain of CommandThe helibase usually has good radio communications once it is established. Radio is the primary communication link between helibase, helispots, aircraft, and line functions. It also provides communications within the Air Operations Section: Operations Section Chief, Air Support Group Supervisor, Air Operations Branch Director, Air Attack, and Helibase Manager. Without good communication, the operation cannot be conducted safely or efficiently. Ground Communications are used to transmit radio communication within the incident sections and functions; Logistics, Supply, Medical, etc.It is important to follow the chain of command when contacting another section or function.ii. Radio communicationsA. Radio CommunicationsGround Communications* Logistics
* Line Operations
* Operations Section Chief
* Helibase Operations

Air to Ground Communications* Air Attack
* Flight Following
* Takeoff and Landing Controller

Air to Air Communications* Air Attack to Aircraft
* Position Reporting
* Coordination between Aircraft

Radio is the most common mode of communication used on incidents. It, however, is subject to limitations such as line-of-site.B. Types of RadiosThere are three types of radio communication available:* **VHF-FM** use most frequently for on incident communications.
* **VHF-AM** is commonly known as VICTOR radio. It is an AM frequency and can be used to direct aircraft from the ground takeoff and landing controller (TOLC) or provide air-to air communications between aircraft. Either of the two, VHF-FM or VHF-AM, can be used for continuous flight following.
* **UHF-FM** is primarily for logistical helibase and Incident Base Camp.

Repeaters are used to link all elements of the operations together.C. Daily Radio PreparationsPart of your daily routine is to make sure that all assigned radios are functional prior to commencing daily operations by:* Checking batteries - replace and change daily (good practice).
* Spare batteries with each radio.
* Check antenna for damage (replace as needed)
* Check key button to make sure it works
* Radio check – With personnel or aircraft on deck
* Verify frequencies with Incident Action Plan (IAP)

D. Standard Target Description (STD)STD is a systematic technique for a ground contact to communicate target identification and location by radio, enabling the pilot to locate, identify and take action on the target in the shortest possible time reducing risk for the pilot.The purpose of STD is to have aircraft in the “low and slow” zone the shortest amount of time possible.1. The ground contact may need to communicate with:The instructor may wish to elaborate on these positions and their responsibilities.* Air Tactical Group Supervisor (ATGS)
* Aerial Supervision Module (ATGS and Lead Pilot are in same aircraft)
* Air Tanker/Fixed Wing coordinator (ATCO)
* Helicopter Coordinator (HLCO)
* Air Tanker Pilot
* Helicopter Pilot

2. Before talking to aircraft the ground contact needs to know:* Hazards to aircraft
* Where you are
* Your call sign
* Your tactical objective (plan)
* Aircraft call sign
* Aircraft frequencies
* Primary and secondary targets
* Wind speed and direction

3. Where do you get this information?* Helibase
* Incident Action Plan (IAP)
* Division/Group supervisor
* Personal observations
* Radio traffic
* Briefings

4. Operating proceduresa. Use the ICS position resources (ATGS, HLCO, ATCO) to coordinate drops.b. Have and know the tactical plan.* Anchor and flank
* Hot spot
* Buy time
* Secure the edge

c. Use standard fire terminology.* Head
* Heel
* Right flank
* Left flank
* Spot fire

d. Use standard target description* Parts of the fire
* Clock orientation (from the aircraft’s position)
* Right, left, nose, tail
* High, even, low
* Cardinal points (north, south, east, and west). Only use compass directions if you and the pilot both agree on which way is north. This is the least desirable method.

EXERCISE: Clock OrientationShow slides 4-40 to 4-47 and ask the class to establish themselves as a reference point using the clock orientation technique. i.e., 1 o-clock, high.e. Use easily identifiable target references.* To previous drop
* From your position
* To topographic or terrain features
* To human made features (cut areas, trails, roads, dozer line, vehicles, structures)
* Part of fire (heel, head, flanks) or fire activity, e.g., spot fire on right flank
* To cardinal points (agree with pilot which way is north)

f. Describe target when pilot is in position to see target.* Use clear text.
* Be brief, clear and to the point (short concise communication).
* Plan your transmission before you key the radio.
* Don’t “think out loud” on the radio.

5. Stages of pilot orientationa. Long distance (Radio contact but no visual contact with aircraft)* Geographical/topographical reference points must be large and obvious.
* GPS coordinates are useful if the air crew has time to enter the information.
* Relay lat/longs to helibase when initial order is made for aircraft allowing pilots to enter coordinates into GPS unit while still on ground.

Review and discuss latitude and longitude procedures with students. Expand as needed.* Keep positive communication with aircraft until visual contact is established (both the ground contact and pilot).

b. Medium distance (may or may not have visual contact with aircraft)* Reference points must be obvious.
* If aircraft is in sight use the clock orientation technique.
* Signaling devices are effective (mirrors, strobes, flares).
* Keep positive communication with aircraft until visual contact is established (both the ground contact and pilot).
* Relay aerial hazards to pilot including other aircraft expected or on the incident.
* If appropriate, relay overall tactical plan to pilot.

c. Short distance (visual contact with aircraft)* Reference points must be unique to your target area.
* Clock orientation techniques are effective.
* Signaling devices are effective (mirrors, strobes, flares, space blankets, flagging).
* Describe targets and give tactical plan to pilot (including location of ground forces).
* Reemphasize aerial hazards including other aircraft expected or on the incident.
* If the aircraft is getting close and the pilot doesn’t have the target location, communicate any aerial hazards.

6. Feedback* Give honest, constructive evaluation concerning drops
* Early, late, uphill, downhill, on target, etc.

If conditions allow, pilot will adjust based on your feedbackE. Marshalling HelicoptersSafety precautions to follow while marshalling:* Receive a briefing from supervisor
* Obtain a radio for communication
* Clear the landing area of all obstacles and obstructions before signaling the pilot to take off or land.
* Ensure you remain at the front and visual to the pilot at all times.
* Direct the pilot by radio or standard hand signals.
* Have an adequate fire extinguisher(s) accessible.
* Approved hand signals should be used by all personnel and pilot.
* Brace yourself when large helicopters are landing or taking off due to the velocity of the rotor downwash.
* Keep landing area free of litter and trash.

F. Hand SignalsUse national standards – Use the hand signals in Basic Aviation Safety or in the Fireline Handbook or in the Incident Response Pocket Guide (IRPG).Standard hand signals should be used. Demonstrate all hand signals and explain the intent of each.* Include pilot in training so everyone has the same understanding.
* Hand signals need to be exaggerated to be effective.
* A smooth transition between one signal to the next.
* Minimize the time spent holding the helicopter in a hover.

Refer the students to - Basic Aviation Safety, Fireline Handbook, or IRPG for Helicopter Hand Signals.As a class go through each signal and practice.Review Unit Objectives.Hand out unit quiz. Correct quiz as a class. | Slide 4-1Slide 4-2Slide 4-3Slide 4-4Slide 4-5Slide 4-6Slide 4-7Slide 4-8Slide 4-9Slide 4-10Slide 4-11Slide 4-12Slide 4-13Slide 4-14Slide 4-15Slide 4-16Slide 4-17Slide 4-18Slide 4-19Slide 4-20Slide 4-21Slide 4-22Slide 4-23Slide 4-24Slide 4-25Slide 4-26Slide 4-27Slide 4-28Slide 4-29Slide 4-30Slide 4-31Slide 4-32Slide 4-33Slide 4-34Slide 4-35Slide 4-36Slide 4-37Slide 4-38Slide 4-39Slide 4-40thruSlide 4-47Slide 4-48Slide 4-49Slide 4-50Slide 4-51Slide 4-52Slide 4-53Slide 4-54Slide 4-55Slide 4-56Slide 4-57Slide 4-58Slide 4-59Slide 4-60Slide 4-61Slide 4-62Slide 4-63HO-4-1 |