Terminal Objectives

• Upon the completion of this program, US&R members will be able to explain the fundamentals of operating safely around rotor wing aircraft (helicopters).
Enabling Objectives

- Describe the FEMA interagency use of pre-scripted mission assignment for aircraft
- Demonstrate basic helicopter safety rules
- Discuss the components of the pre-flight briefing for pilot, crew and passengers
- Explain communications responsibilities
- Apply aircraft passenger responsibilities as a US&R member
Enabling Objectives

- Demonstrate in-flight emergency procedures
- Explain the preparation of landing zones
- Explain communications with aircraft
- Recognize aviation “watch-out” situations
- Demonstrate helicopter hand signals
Introduction

- Rotary wing aircraft (helicopters) are often used in US&R operations
- Task Force personnel may be utilized to perform a variety of missions from rotary wing aircraft, this includes hoist operations
- Aircraft operations have inherent dangers, multiple aircraft, poor visibility, poor communication
Introduction

• Rotorwash can generate winds of 100 mph causing injuries and damage
• Air operations normally managed by an Air Operations Branch Director (AOBD)
  – Can be from US&R System, USCG, DoD
Previous Incidents during Katrina

Unsafe Seating
- Secured only with lap strap

Short landing
- Resulted in two injuries
- Required treatment
Pre-Scripted Mission Assignments

- Under the Stafford Act, FEMA has authority to direct other Federal departments and agencies to provide disaster assistance, this includes the use of aviation resources

- Aircraft Resources
  - Military/National Guard aircraft
  - Non-DoD commercial contract aircraft
  - Public Agency owned aircraft
  - Public Agency contracted aircraft
  - Call When Needed (CWN) aircraft
Helicopters

• Not all makes of helicopters are equal
• Different models within same series may look the same, but newer models generally have increased performance
• Within same model, some may have engine and/or rotor blade modifications that dramatically increase performance
• Density altitude and other environmental factors dramatically affect payload
ICS Helicopter Typing

Type 1

- Passenger seats = 15 plus
- Minimum payload = 5000 lbs (59°F at sea level)
- Examples:
  - Sikorsky UH-60
  - Sikorsky S-61
  - Boeing Vertol 107 or 234/CH-47
  - Sikorsky S-70 Firehawk
ICS Helicopter Typing

Type 2
• Passenger seats = 9 to 14
• Minimum payload = 2500 lbs (59°F at sea level)
• Examples:
  • Bell 212
  • Bell 412
  • Sikorsky S-58T
  • BK-117 A-4
ICS Helicopter Typing

Type 3

- Passenger seats = 4-8
- Minimum payload = 1200 lbs (59°F at sea level)
- Examples:
  - Bell 206 Jet Ranger
  - Bell 206 Long Ranger
  - Bell 407
  - Aerospatiale AS-350 “Astar”
Basic Safety Rules

• *These safety rules should be followed anytime US&R personnel are working in or around helicopters*

• Stay clear of the landing area during approach and departure of aircraft

• Always remain in view of the pilot – maintain eye contact with the pilot or crew chief (member in-charge)
Basic Safety Rules (continued)

- **ALWAYS** approach/depart the aircraft from the front, and down slope (lower side)
- **NEVER** approach the tail section of the helicopter
- Keep your head down, approach/depart from crouched position
Basic Safety Rules (continued)

• Carry tools and long objects parallel to the ground and never above your head
• Do not run
• Ensure your hat or helmet are secured to your body
• Protect your eyes from rocks and debris that may fly toward you
Basic Safety Rules (continued)

• Aircraft are VERY loud – wear adequate hearing protection

• Kneel or crouch down at least 50 feet from the outer edge of the rotors when waiting for an aircraft to land

• NO SMOKING within 50 feet of the aircraft
Preflight Briefing

• Essential requirement for each mission
• All crew members and US&R passengers need to participate and understand information given in the briefing.

• If you do not understand any points in the briefing or believe there are safety issues, **STOP**, **you** are responsible to ask for further clarification.
Preflight Briefing Information

- Specifics of the mission
- Manifest with accurate weights of passengers
  - While wearing gear
- Accurate weight of cargo
  - Tools and other equipment
- All hazards materials being transported
  - Don’t forget fuel in tools
- Radio frequencies
Preflight Briefing Information (continued)

- Flight following (tracking) procedures
- Other aircraft operating in the same area
- Current and forecasted weather conditions
- Hazards in the flight area
Prior to flight all US&R Passengers will be briefed on:

- **Personal Protective Equipment:**
  - US&R ensemble (long-sleeve shirt & pants, or flight suit)
  - Approved US&R helmet or flight helmet
  - All-leather boots
  - Hearing protection
  - Nomex and/or leather gloves
  - Survival equipment as applicable (PFD, etc)
Prior to flight all US&R Passengers will be briefed on:

• **NO Smoking:** Rules around the aircraft

• **Approach and departure paths:**
  – Always approach and depart form the down slope side as directed by pilot/crew chief
  – Approach the helicopter in a crouch position, never run
  – Assure all clothing and equipment is secure during approach
  – Keep pilot’s/crew chief field of vision at all times
  – Stay away from the main and tail rotors. **DO NOT** chase any item that has become unsecured!
  – **NEVER** go near the tail of the helicopter.
Prior to flight all US&R Passengers will be briefed on:

• **Tools and equipment:**
  • Secure tools and equipment awaiting transport
  • Make assignments for carrying tools/equipment to/from helicopter
  • Carry tools/long objects parallel to the ground, never on shoulder
  • All tools and equipment shall be loaded by qualified personnel
  • Turn portable radios off *(unless directed by crew)*
Prior to flight all US&R Passengers will be briefed on:

- Helicopter Doors: Location and normal operation
Prior to flight all US&R Passengers will be briefed on:

- **In-flight Discipline**
  - Follow the instructions of pilot/crew chief
  - Keep loose items inside aircraft secured
  - All baggage secured in aircraft or cargo hold
  - **NEVER** throw any object from the helicopter
  - No movement inside aircraft once seated
  - Keep clear of flight controls at all times
  - Unbuckle only when directed to do so by pilot/crew chief
  - Leave doors closed, wait for crew chief to unload
  - Know location of first aid kit, fire extinguisher, ELT, fuel and battery shutoff switch operation, radio operations, oxygen use (if equipped)
Prior to flight all US&R Passengers will be briefed on:

- **In-flight Emergency Procedures**
  - Emergency Exits: Location and operation
  - Follow instructions of the pilot/crew chief
  - Snug seat-belt & shoulder harness; secure gear
Prior to flight all US&R Passengers will be briefed on:

• **In-flight Emergency Procedures**
  
  • Emergency Seating Position: WITH SHOULDER HARNESS (four point OR single diagonal strap): sit in full upright position with head & back pressed against seat and use arms to brace in position. If time permits, and equipped, lock the inertial reel.
Prior to flight all US&R Passengers will be briefed on:

• **In-flight Emergency Procedures**
  • Emergency Seating Position WITH LAP BELT ONLY: bend over as far as possible and hold onto your legs
Prior to flight all US&R Passengers will be briefed on:

- **In-flight Emergency Procedures**
  - Assist any injured person who cannot leave the aircraft
  - Move clear of the aircraft only after rotor blades stop or when instructed to do so by the pilot or crew chief
Prior to flight all US&R Passengers will be briefed on:

- **In-flight Emergency Procedures**

- Assess the situation, follow pilot/crew chief instructions, render first aid, remove first aid kit, survival kit, radio, ELT & fire extinguisher
Communications Responsibilities

• As a passenger, you may have communications through a headset and microphone connected to the intercommunications system (ICS)

• Even if not connected to ICS you should be part of the team by being observant and relaying information that is important
Communications Responsibilities

• Ensure the pilot or crew chief is aware of any discrepancies you observe

• Trust your senses and don’t be intimidated by peers or superiors. If it doesn’t feel right, it probably isn’t.

• Be professional, continue to learn, maintain situational awareness, and respond to challenging situations appropriately

• Adhere to standard operating procedures

• Never assume the pilot sees everything. Look for and notify the pilot of potentially hazardous situations.
Aircraft Passenger Responsibilities

- These guidelines should be followed any time Task Force personnel are passengers on helicopters
  - Follow the crew’s instructions
  - Keep clear of flight controls
  - Secure any loose items (don’t set things on the floor of the aircraft unsecured)
  - Once seated, do not move around (unless directed by the crew)
  - Ensure your seatbelt is securely fastened, unbuckle it only when directed to do so
In-flight Emergency Procedures

• Pilot has the final say during flight
• In the event the pilot is incapacitated, the crew chief will declare an emergency
• As a passenger you should prepare for an emergency landing by:
  – Following all instructions of the crew
  – Knowing your emergency exit and how to operate it
  – Snuggling your seatbelt and securing any loose items
In-flight Emergency Procedures

• After landing, move clear of the aircraft as quickly as possible or when instructed to do so by crew but **NOT** until the rotor blades have stopped.

• Wait for all motion to stop unless there is a post-crash fire

• Assess the situation and if possible, assist other personnel, extinguish fires, render first aid, & radio for help
Preparation of the Landing Zone

• Primary landing site criteria is safety
• Pilot will make final determination
• Paved parking lots, playgrounds, cleared highways and vacant lots are often suitable
Preparation of the Landing Zone

• Choose and area that is relatively flat & clear of debris, vehicles, & obstructions over 18” high (stumps, trees, poles, overhead wires)

• Ensure landing area, & approach/departure zones are clear of spectators & unrestrained animals

• Consider wind direction, helicopters like to approach/depart into the wind
Preparation of the Landing Zone

• Wet the area if dust or dirt is present
• Check for obstructions and communicate them to the pilot by radio or signaling
• Ideal landing zone should have:
  – Type I: *Safety circle 110’ touchdown pad of 30’*
  – Type 2: *Safety circle 90’ touchdown pad of 20’*
  – Type 3: *Safety circle 75’ touchdown pad of 15’*
  – 40 BC fire extinguisher
  – Wind direction indicator
  – Radio, compatible with aircraft
Communication with Aircraft

- Should be accomplished using clear text and International Phonic Alphabet
- Air-to-ground frequency works best but some police and fire aircraft may monitor incident frequencies
- Communications with military and other aircraft may have to be accomplished through relays.
Aviation “Watch-out” Situations

• Task Force Leaders should evaluate missions for safety and efficiency.
  – Is this flight necessary?
  – If dropped off, what is the method and timeframe to return?
  – Are all the hazards identified and have you made them known?
  – Is there any confusion about the mission or objective?
Aviation “Watch-out” Situations

• Are the conditions changing rapidly?
  – Objectives, strategy or tactics
  – Communications
  – Conflicting priorities
  – Weather
  – Wind or turbulence
  – Personnel

• Is there a better way to do it?
Aviation “Watch-out” Situations

- Is there an overwhelming sense of urgency around this mission?
- Can you justify your actions?
- Are there other aircraft in the area?
- Do you have an escape route?
- Are any rules being broken?
Helicopter Hand Signals

Approved Hand Signals

- LZ Unsafe
- Go Down
- Go Up
- Night Operation
- Move Right
- Move Left
- Move Back
- Move Forward

Make certain movements are deliberate and exaggerated!
A Safe Flight

- ANYONE can refuse or curtail a flight when an unsafe condition may exist
- NEVER let undue pressure influence your judgment
- Avoid mistakes and don’t hurry. Remember, under a turning rotor is NOT the time to make plans
- Never pressure the pilot to accomplish the mission
Safety

Accident prevention is of the greatest importance, and we can accomplish this by THINKING and USING COMMON SENSE when working around aircraft.