Aviation Considerations for Ground Resources
Truths

• We are seeing an increase in the size, frequency, and severity of wildland fires.
• We are seeing more values as risk being threatened.
• These wildland fires require a strong interagency approach.
• This is especially true when fires involve aviation.
Complexity and Risk

• Wildland fires are often a complex situation.
• Aviation resources multiply that complexity.
• Resources on the ground need to have a basic understanding of operations such as air tanker drops, water bucket drops and reconnaissance flights.
• Reduce Risk by understanding basic aviation concepts to assess hazards, limit exposure, and communicate when using aircraft to control fires.
Goal of Aviation

- Aviation resources support Firefighters on the ground.
- Bucket and water drops meant to slow the fire until ground troops can get in and contain and control the fire.
Resource Questions

• Which types of air resources are available?
• How far away is the closest appropriate airport?
• Where is my water source?
• Who has the ability and authority to order air resources?
• What are the cost? Who is paying?
• How are we going to communicate?
Resource Questions

• Interagency cooperation is best created before the incident.

• Conversations and planning must take place well before the need arises.

• Work out and document all the “what-ifs”. Agencies need to understand what is expected of them.
Basic Aircraft Types

• Helicopter

• Air Tankers

• Air Attack
Helicopters

• Most commonly use a bucket suspended on a cable to deliver water.
• Release valve on the bottom controlled by helicopter crew.
• When the ship is in position the water is released.
• Refilling occurs when helicopter hovers above water source and lowers bucket to capture water.
• Bucket sizes vary and can be determined by aircraft lifting capabilities.
Air Tankers

• Fixed-wing aircraft capable of transporting and delivering water or fire-retardant.
• Filled on the ground at an airport or tanker base.
• Equipped with tanks for carrying and dumping water or retardant during aerial firefighting operations.
Air Attack

• Generally smaller fixed or rotary-wing aircraft.
• Staffed with pilot and Air Tactical Group Supervisor.
• Responsible for the safe coordination of aircraft operating over an incident.
• Also may provide reconnaissance and size-up the fire from the air.
C, C, C

• Communications

• Coordination

• Confusion
Communications

• Firefighters may be required to communicate with air resources that are arriving at a fire.
• Should occur on a prearranged Air-to-Ground frequency.
• Must have a ground contact. Ground contact must understand the communication challenges faced in this situation.
• For the aircraft. Radio traffic may be chaotic. Might be communicating on multiple different radios and frequencies.
• Firefighters should employ Communication Order Model that pilots are familiar with to lessen chances of missed messages.
Coordination

• Drops must be coordinated with ground contact.
• Ground contact can make visual contact with aviation and “talk them in”.
• Signal mirror, flagging, ground panels, vehicle roof markings can all be visual reference points.
• Visual reference points understood by ground contact and aircraft increase effectiveness of water drops and add a level of safety for ground resources.
Confusion

• Standardizing aviation procedures on incidents will lend to eliminating confusion.
• NWCG Incident Pocket Response Guide provides guidance on directing bucket drops further reducing confusion between ground forces and aviation.
• Ability for ground forces to communicate on the correct frequencies.
Drop Location and Hazards

• Ground contact provides a general location (heel, head, flank, division...)

• Identify and report any flight hazards to aircraft pilots.

• Fine-tune drop locations with some of the following:
  • Clock position form the pilots perspective.
  • Description of landmarks
  • If on a slope identify the portion of the slope (ridge top, upper third, mid slope, lower third)
Drop Location and Hazards

- Fine-tune continued
  - Signal mirror or strobe light
  - Marker panels or flagging
  - Describe the mission and target from your location to assist pilot in making drop technique and flight path decisions.
- Know the pilots intentions prior to the drop.
- Clear the area of ground personnel and equipment.
- Provide feed back about the drop.
- Hazards
Water Drop Safety

• All firefighters working on the ground must be aware of air resource activities.
• 8.35lbs per gallon x 800 gallons + terminal velocity = Bad day!
• Dry run and a live pass.
• Monitor radio traffic.
• This cannot be overstated. Get out of the way!
Summary

- Structural firefighters must become familiar with wildland operations.
  - Communicating and coordinating aviation is not part of normal operations.
- Addressing communications, coordination, and confusion of working with aircraft will lend to safer operations.
- Firefighters must be aware of the location of aircraft making drops.
- Ground forces must have established radio contact with aircraft.
- Ground contact must ensure drop zone in clear.
Kansas Forest Service
Air Tanker 95
Aircraft Specifications

• Carries between 800 and 1,000 gallons of water.
• Can spread water up to 150 yards.
• Can do up to 4 drops with each load.
• Will conduct drops between 50’ and 150’ AGL.
• Contract period is Feb 1 to May 1.
• Limited use in winds gusting about 50 mph.
Requirements for Deployment

• Air temp must be over 40°F.
• Need min 5,000’ runway that supports 27,000 lbs GVW.
• Must have a ground contact.
Safe Operating Area

- Ground resources MUST be clear of the drop zone.
  - 25 yards minimum from the drop zone.
- Drop area must be clear of overhead hazards.
Ground to Air Communication

• Ground contact ensures resources are clear of drop area and communicates status to pilot.
  • Will not drop without confirmation.
• Do not communicate with pilot during the drop unless it is an emergency.
• Describe the type of drop you want.
  • 1 door (approx. 200 gal. Repeat 4 time)
  • 2 doors (approx. 400 gal. Repeat 2 times)
  • 4 doors (Full load all at once)
  • Sequence (meters load over long distance)
• After completion of drop provide feedback to pilot.
• Directions after the drop.
  • Load and Return.
  • Released and stay at airport.
Aviation Guidelines

• Aerial operations will only be performed during daylight hours.

• Aircraft deployment prioritization will be based on needs, including threats to life/property, potential for large fire, etc.

• Aviation resources will not be deployed if no ground contact can be confirmed or without confirmation from Incident Commander.
Requesting Tanker 95

- Identify potential need for an air tanker
  - Threats to life/property
  - Potential for a large fire
- Notify KFS Duty Officer at 785-532-3321
  - Duty officer notifies aircraft personnel to determine availability
  - Aircraft is readied
    - Approx. 2 hours to ready aircraft
Requesting Tanker 95 continued

- Duty Officer receives the request for aircraft
  - Information needed or shared
    - Location of incident
    - Nearest appropriate airport for fill site
    - Air to Ground Communications
    - Ground Contact
    - Other known aircraft in the area
    - Any known aerial hazards

- Duty officer notifies aircraft personnel of above info and they respond.