

## Commanding Initial Attack Air Operations

By Ray Chaney

At the time of this publication fire season in your area is in full swing. You probably have had some good initial attacks and several extended attack or major fires under your belt already and more is to come. What I hope to do with this article is to give you some tools for you tool bag in respect to wildland firefighting with aircraft.

It is 13:35 and your crew has just wrapped up lunch after a long morning of drills and physical fitness training. You have that "feeling" that there is no way you're going to get through the day without something popping. It is 97 degrees the relative humidity is 18% and the wind is 15 to 20 MPH, prime conditions. A pickup truck drives up to the fire station at break neck speed and the driver shouts that there is a fire down the road. As you look over his truck the header is building dark and black. As you arrive you find two structures immediately threatened by the head of the fire. Air Attack arrives on scene a few minutes later. He states that he has one Airtanker and one helicopter on scene and asks, "What do you want to do?"

Aircraft will be one of the biggest contributing factors to mitigating your incident. How you deploy them will be crucial to your overall plan.



### Size up

One of the first communications with your Air Attack should be painting a mental picture of what your incident is doing and where it is going.

If you are lucky you will have a good overall view of your incident. Topography and smoke conditions can limit your overall incident picture. Your Air Attack should paint this mental picture of what is happening currently. For example: "I.C. (Incident Commander) I have your engine at the origin of fire near the highway." Lets stop right here. The Air Attack must be aware of how you are identifying portions of the fire.

### Orientation to the fire.

In that one sentence the Air Attack has stated some important items. He or she has your location and has established a common term to continue a description of the fire. Getting yourself oriented with the Air Attack is a crucial initial action. What you are calling the left flank may in the mind of the Air Attack be in fact the right flank. They have a different view of the fire from where they are at. So initially make sure your flanks and head are the same as the Air Attacks. You can do this by clearly establishing your location relative to the fire using a good visual reference point from the air such as a landmark, building, road, etc. Let's continue:

*"I.C. I have your engine at the origin of the fire near the highway." I estimate your fire at 10 acres in light to medium fuels. Burning at a moderate rate of spread and some spotting in advance of the head". Your left flank has two structures immediately threatened. Estimate less than five minutes until flame impingement on both of those structures. Looks like good engine access to both of them. The rest of your left flank currently has good road access. I.C. the head of the fire is burning into heavier fuel and I estimate the rate of spread will slow some. It is heading for the base of some steep topography and several drainage's estimating 45 min to an hour before it reaches that area. Your right flank has a slow rate of spread backing down the hill in light fuel but it looks to be steep and not very good engine access."*

### **Establishing your Air Attack plan**

Now you have an idea of how to best place your incoming first alarm. You should advise Air Attack and ground resources of your intentions for the fire. It might be your first in resources both ground and fixed wing will be committed to structure protection. Tell Air Attack your strategic priorities.

*“ Air Attack I.C. I copy your report on conditions. I will be placing my first few engines on the left flank, Division A. for structure protection and perimeter control. This is my first priority. I need you to support those engines.” The right flank will be Division Z and I will assign resources as I can to that flank.” Use caution there are power lines on the right flank of the fire. Do you have adequate aircraft for this plan?”*

Now you have established your plan and set the stage for the integration of your air and ground assets. Dependent on your policy you may consider delegating your aircraft ordering to Air Attack. He or she now has your plan and knows what aircraft are needed to support it.



### **Helicopter vs. Airtanker**

A good analogy I like to use for aircraft is, use helicopters like fire engines and airtankers like bulldozers. That is helicopters are excellent for direct suppression of fire much like engine companies. Airtankers are good for building indirect line just ahead of your fire like bulldozers.

### **Helicopters**

Helicopters are great for “knocking down” fire ahead of your hoselays, firecrews or bulldozers

punching line. Type I Helitankers are an excellent tool for this job if available. Their cost (4000.00 to 7000.00 per hour) can seem excessive. However they are quite cost effective if the water source they are dipping from is close by. Seven-minute turnarounds or less is a good general rule of thumb, which can equal cents per gallons delivered.

If you need sheer firepower and knock-down of large volumes of fire then Type I helicopters are the tool for the job. I equate it to a large commercial building well involved with fire. Big fire equals big water i.e. master streams. The equivalent is Type I helicopters in the wildland arena.

When ordering aircraft you need to consider the mission you are going to have them perform. If you are looking for water drops and troop shuttles then Type II helicopters are the best all around tool for this. Some Type I helicopters can perform this but they are few and far between. The Los Padres National Forest Helicopter 527 has an excellent aviation model, which utilizes a Type I Helicopter and a Hotshot crew. They call them “Helishots”. This has proven to be an extremely effective program.

Lets talk about Helitack briefly. Helitack crews are typically a 4 to 9 person crew of firefighters that are inserted by helicopter into sections of fire where they can aggressively attack the fire with saws and tools as the helicopter supports them with water drops. One of the cardinal mistakes made by I.C.’s or Air Attacks is to separate the Helitack crew from their helicopter. There are many factors in a wildland firefight when considering tactical deployment of resources. However the most economic use of Helitack is to work them in unison with their helicopter. The Helitack crew will establish an anchor point and have the helicopter start knocking fire down ahead of their saw teams. They can also take advantage of roads or natural fuel breaks to do some light burning out operations.

Let's go back to your fire. Remember that right flank that had some light fuel and was backing against the wind. This is a good place to put a Helitack crew. With the light fuel and fire intensity a Helitack crew can make quick work on this flank. Here is a great place to go offensive with your attack when able and lock up one of your flanks.

### **Airtankers**

Airtankers are a great tool for building line a short distance ahead of the advancing fire. Lets talk about fire retardant briefly. There are two general categories of retardant. Short term and long term. **Short term** is usually a water/foam type solution used by helicopters. **Long term** retardant is a combination of water, gum thickeners, salt products and red dyes for aerial observation. Long term retardant will continue to be effective even after it dries. Where short term retardant loses its suppressive capabilities after it evaporates. Retardant works best just in advance of a flanking fire or backing fire. A head fire with a rapid rate of spread, will typically not be stopped by retardant drops.

However a good retardant line on a backing or flanking fire will do a great job of delaying or holding the fires spread.

A key point here is **all retardant drops must be followed up by a ground attack.**

Simply laying a retardant line is no guarantee that it will hold the fire unless followed up by an aggressive ground attack by engines, crews, or dozers. Fire retardant can have multiple uses dependant on your strategy. Some tactics use retardant to delay a fires progress until more resources arrive. The time from dispatch until resources arrive to the incident is called "reflex time". Retardant is a good tool to advance this reflex time to your advantage so your engine companies have time in their favor.

Retardant typically will be dropped on top of ridges to take advantage of topography and the fire behavior at that location when the fire arrives.

Consider this when setting up your divisions and allocating resources to engage the fire. Retardant can be used to reduce the fire intensity for ground resources attacking the advancing fire. Dependant of the fuel loading of your fire, retardant can take some of the heat out of the head of your fire so engines or dozers can finish off the advance of the fire. Retardant has been effectively used in support of firing and burning out operations. If aircraft are available and I use this relatively in light of the national airtanker shortage, retardant can be dropped on the green side of your control lines often days in advance of your planned burning operation. What this can do is assist in spot fire mitigation. Spots that occur across your line during the firing operations will be reduced in initial intensity by burning in retardant. This will allow your holding forces to have the advantage in attacking the developing spot fire.

The National Wildfire Coordinating Group or NWCG has some excellent guidelines in respect to retardant use: They are:

- Determine tactics direct or indirect based on fire size-up and resources available.
- Establish an anchor point and work from it.
- Use the proper coverage levels.
- Drop downhill and down-sun when feasible.
- Drop into the wind for best accuracy.
- Maintain honest evaluation and effective communication between the ground and air.
- Use direct attack only when ground support is available or extinguishment is feasible.
- Plan drops so they can be extended or intersected effectively.
- Monitor retardant effectiveness and adjust its use accordingly.

During critical periods of your fire you may dictate placing an airtanker loaded in orbit for a short period of time. Type I Airtankers work well in

this insurance role. This may be a section of line your firing that is going to push against your containment line. It may be the head of the fire hitting structures or any circumstances where you need a rapid reaction force to assist in any unforeseen problems. The aircraft should only be used in this capacity for a short period of time. Note: This tactic should be the exception not the norm because it places a critical resource out of a fire suppression role. You should weigh this decision with the overall management and safety of your incident. The Air Attack will let you know if this is possible with the aircraft available.

In planning the use of your aircraft keep it in the back of your mind that aircraft are complex machines. Thus Murphy's law will catch you just when you needed "just one more drop". If your attack plan is aircraft dependent it's a bad plan! Just when you need the aviation assets the most they will either go out of service due to a mechanical malfunction or be diverted to another incident with higher priority.

### **Airtac Communications**

Nothing is more frustrating for both Air Tactical Group Supervisors (ATGS) and the first in Engine Company when they can't talk to each other. Make sure you know what frequency your aircraft will be on for initial contact. Have a backup frequency such as an Air to Ground. If necessary go to your communications center for help in getting both of you on the same frequency. Once you make your initial contact with your ATGS agree on a frequency you will both be monitoring such as a Tactical Net or Air to Ground. Realize that most Air Attacks have four to six radios that they constantly monitor. There is a lot going on in that cockpit as far as radio transmissions.

What this means is be patient with the Air Attack when calling him or her. You may get a "Standby I.C."

Remember the primary job of the Air Attack is aircraft safety over your incident. His or her communications with other aircraft will have prior-

ity over ground communications accordingly.

Air Attack is a useful tool for gaining the best access to the fire. If units are having trouble accessing the fire ask Air Attack to give some assistance in getting engine companies into the right area of the fire. A word of caution, Air Attack cannot tell the quality of the roadbed, as far as they can see it's well graded when in fact it could be so rutted that only 4WD engines can access.

One of the primary jobs of the Air Attack is to keep aircraft separated while performing their missions. The Air Attack does not want airtankers and helicopters occupying the same air space. How does that effect you as an Incident Commander? It may not however it is worth knowing the basics of the system so that you know why your helicopters seem to be working only on one division or branch.

The Air Attack will take into account your plan of attack as the Incident Commander. Then he or she will develop an aviation attack plan to meet your objectives. The aircraft separation takes place in two basic ways. One way is to use **sequencing**. After an airtanker drops a load of retardant, the Air Attack will allow the helicopter to come in and work the same area that the airtanker just dropped. When another airtanker arrives on scene he or she will move the helicopter into another area to allow the airtanker to drop.

The second means of separation is by what we call a **virtual fence**. The Air Attack will establish an area separating fixed wing and rotary wing aircraft. This is usually done with a predominant landmark such as a ridgeline, road, and stream, something easily identifiable from the air. The aircraft will then be advised not to cross over this virtual fence. So when you observe helicopters holding at a certain topographic feature it is usually this virtual fence and they are waiting for the Air Attack to clear them into the area.

Back to your fire. The left flank as you recall had some structure protection issues but

good access for engines. A few well placed drops on that flank will give your engine companies the knockdown they need to protect the structures and engage the fire with perimeter control towards the head of the fire.

### **Aircraft safety**

Aviation has its inherent risks as we have all seen in our fire careers. In a wildland fire incident there are risks to both ground and air crews. The first consideration is to follow your safety protocols and policies. Aircraft accidents are very unforgiving with little margin for compromise in regulations or policy. These regulations are there for a reason so follow them

Low retardants drops occur infrequently but when they do it can be hazardous. The minimum drop height for fixed wing aircraft is 150'. Crews should be warned in advance of incoming drops and take appropriate action. Low drops have a great deal of mass traveling at a high rate of speed. They can cause injury to personnel and damage to equipment. If a low drops occurs advise the Air Attack or controlling aircraft immediately so corrective action and documentation can take place. Retardant has the consistency of raw eggs. This can create a safety hazard relative to equipment handling such as saws or handtools. Additionally the retardant can make surfaces slippery so watch your footing while hiking. Fire Apparatus operators should use caution when retardant is on the road. If you want to know what driving over snow in the summer time is like try driving over fire retardant on a road surface. Retardant should be washed off the road surface as soon as possible to avoid accidents. Other units should be advised of the incident and area in question.

Helicopters and airtankers can create a safety hazard to ground troops if they are dropping too low. The rotor wash or wing tip vortices off fixed wing can create some wind turbulence. This in turn can have an adverse effect on your fire behavior such as increased fire activity or spots across your containment line. The one common

dominator in all aerial fire pilots is they are there to a good job and assist you the Firefighter. If a helicopter or airtanker has made a bad drop then advise them of that and they will make the correction. Again, they are there to help you, and appreciate feedback to correct their drops.

### **Winds and Wires**

The number one hazard to firefighting aircraft is wires. Wires are very difficult to see from a pilot's perspective. Wires can range from the small static line on major electrical transmission lines to the wire a farmer has strung across his pond. All are deadly to aircraft. If you observe wires in your area of operation you should advise the Air Attack of their location so it can be passed along to other aircraft operating on the incident. Remember they are hard to see from the air so Air Attack may or may not know about them. Aircrews and pilots always appreciate an advisory about wires.

Wind event fires can occur all over the United States. They have a particularly devastating effect on California due to the amount of structural interface. For example the "Tunnel Fire" occurred October 1991, 2,900 structures were consumed by the fire and 25 lives lost. Aircraft can be limited by wind, but can continue to work and be effective in relative high wind. Each incident will have its unique factors influencing wind and aircraft.

Wind velocity safety policies vary with agencies but as a guideline special caution should be used when winds exceed 35 MPH or have wind speed variations in excess of 12 MPH. The bottom line in aerial fire suppression in high wind is are you being effective? The question has to be asked of your troops on the ground that are being directly supported by the aircraft, are you being effective and getting retardant (short or long term) on the ground in a quantity that is suppressing the fire. Then you may consider continuing the air operation in support of the ground troops if Air Attack and the Pilot feels it is safe to continue to operate.

However, if you are marginally effective with drops from both fixed wing and rotary wing aircraft then the call should be made to terminate flight operations until the wind speeds decrease. There is no need to put pilots lives at risk for the sake of flying.

If you are taking weather observations (Field Observers) on the incident and have winds that are close to your departments aircraft safety limitations, advise the Air Attack or controlling aircraft of these wind velocities. This may queue the Air Attack to make some adjustments in tactics to improve aircrew safety or be the trigger to temporarily suspend air operations.

### **Initial Attack outcome**

Back to your fire. As you directed, the Air Attack placed and order for 3 additional airtanker and one additional Type II helicopter. The Air Attack, based on the priorities you set for him or her placed several drops near the structures immediately threatened on Division A. The left flank Division A made an aggressive mobile attack and was able to continue hoselays around the head of the fire as it was being held by retardant.

With the arrival of your second helicopter and Helitack crew you assigned them to Division Z on the right flank of the fire. The helicopter and crew put a scratch line in to check the fire spread. They conducted some small burn out operations with the help from the helicopter to catch any spot fires had they occurred. The Helitack Captain now informs you that he can see Divisions A's hoselay team and they should be tied in within the next thirty minutes. You have stopped the fire from advancing into the steep topography and multiple drainage's that Air Attack advised you of. You have effectively combined your aviation and ground assets into one cohesive plan that came together and prevented an initial attack fire from becoming a major fire. CONGRATULATIONS!



### **Bio Information**

**Ray Chaney** is a 24-year veteran of the *CAL FIRE* (CDF). He currently serves as a field Battalion Chief in San Diego County. Chief Chaney is a qualified Type I Operations Section Chief, Air Operations Branch Director and Air Tactical Group Supervisor. He has served on both CDF and United States Forest Service Incident Command Teams as an Air Operations Branch Director. He is also the President of the Southern California Association of Foresters and Fire Wardens (2008-2009).

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