Is There a Better Way to Do It?

With growing concern over the inappropriate use of helicopters in fire tactical operations, the USDA Forest Service (Fire and Aviation Management) and the National Aviation and Ground Safety committee published a joint paper in Risk Management in Action (Issue 1: March 2001). The paper, "Heli-mopping: A Dirty Word" defined heli-mopping as "use of a helicopter for water or retardant application beyond an initial attack in recently burned areas where there is minimal danger of the fire escaping." The paper cited examples of inappropriate uses, factors that motivate heli-mopping, and outlined legitimate reasons for use of helicopter applications inside the black.

As long time and current Air Attack Group Supervisor Ward Monroe states, "Today heli-mopping appears to be an accepted practice and does not have the stigma that it had years ago". Perhaps it is now time to reassess our tactical use of helicopters (aerial applications) and to determine whether or not "the dirty word" is still a part of normal fire operations.

As a current Air Tactical Group Supervisor (ATGS) I would like to share with you some of my observations with regard to helicopter aerial application operations. Rightly used, the helicopter can be a tremendous tactical tool to assist in containing the fire. However, when the tool is inappropriately used, such as when there is minimal danger of fire escape, and when ground alternatives are readily available, the result is unnecessary exposure of flight crews to a high risk low level flight environment, significantly higher suppression costs, and in many cases, less effective mop up. In some situations, helicopter aerial applications inside the black are justified and perhaps the only practical and safe means for mop-up, preventing fire escape, or spotting from torching near the line.

In the following pages I will discuss my observations, their consequences, and potential alternatives. Before concluding, I will provide recommendations on how I think the "heli-mopping" issue can at least be partially resolved and how helicopter aerial application operations can be made safer and more efficient.

Observations

1. There has been a significant increase in the use of helicopter aerial applications to directly support containment and mop-up objectives when alternative means or methods could be employed to accomplish the objectives. In other words – there's a lot of heli-mopping going on! The greatest increase has been since 2001.Perhaps this is, in part, a response to past fatality fires and changes in how we fight fire today.

2. A significant percentage of the tactical use flight time, and cost, can be attributed to heli-mopping – often with Type 1 helicopters.

3. A majority of the crews / individuals utilizing heli-drops are deficient in effectively communicating target locations, identifying targets and directing drops. Most do not have signal mirrors or ground panels to pinpoint target locations. As a result, mission coordination is often confusing, time consuming and more costly than it should be.

4. Some crews are not acquainted with, or trained in the use of alternative mop-up techniques and equipment. i.e. gravity sock systems, use of pyramid tanks / baby hose and other collapsible tanks – some delivered by helicopter.

5. Many aerial drops "violate" the principles of good risk management and the "Twelve Standard Aviation Watch Out Questions." Most frequently violated are:

   #1 *Is this flight necessary?* Often not – alternative methods could be planned and used. i.e. backpack pump, fold-a-tanks, pyramid tanks and collapsible freestanding tanks with baby hose, gravity sock/hose systems – and good ole dry mop.

   #5 Is *there a better way to do it?* Often times, yes. See #1 above.

   #7 *Can you justify your action?* Often times the answer is no- not when safer, more effective and less costly means are available.

6. Assessment of the potential for fire escape has not been done, or if it has, and there is minimal potential for escape, the drop has been ordered anyway.

7. Some Operations personnel plan heli-mopping in their daily action plan as a standard operating procedure.

Although Fire Managers Incident IC / Operation and ATGSs have tried to address the "heli-mopping issue" it continues to be widespread, even by many hot shot crews and other highly trained firefighters. Unfortunately, some Operation Section Chiefs and Division Group Supervisors, when the practice is brought to their attention, fail to do anything about it.

The Consequences

1. Increased exposure (to accidents) of pilots flying in the high risk low level “dead man’s curve” environment.

2. Significant increase in costs to accomplish the objective.

3. Overall significant increase in aviation resource costs.

4. Increased risk to ground personnel who direct the drop and fail to clear the drop zone.

5. Unnecessary and poor use of pilot duty / flight time.

6. Often times a less efficient and less effective use of water for mop-up as compared to alternative methods.

7. Increase in incident air traffic with greater potential for a mid-air collision.

Aerial Application Alternatives

There are a number of alternatives for accomplishing containment and mop-up objectives that are safer and less costly. Use of these alternatives will result in more efficient, more effective operations with less chance of a reburn or unsuppressed fuels. Alternatives include:

1. Use of basic “dry mop” and cold trail (a lost art).

2. Use of backpack pump / bladder bag (serviced by a local water resource, helicopter slung pyramid tanks, fold-a-tanks, etc.).

3. Use of helicopter slung pyramid tanks, fold-a-tanks – with gravity hose lays/mop-up kits.

4. Use of gravity sock / hose lays with mop-up kits where local water sources are available

More Efficient and Safer Missions

To reduce pilot “low level exposure time”, and increase mission safety and efficiency I suggest the following:

1. Use GPS coordinates for general locations if pilot is unfamiliar with the location.

2. Routinely use signal mirrors to pinpoint the target area.

3. Routinely use highly visible ground panels to identify specific drop targets – space blankets are often used.

4. Be able to accurately direct the pilot using clock direction method.

General Recommendations

Fire managers / Incident Commanders / Operations Section Chiefs can address the "heli-mopping issue"and improve helicopter aerial application mission efficiency by implementing the following.

1. Review Risk Management in Action: "Heli-mopping: A Dirty Word". Discuss the key points with fire people in your unit or on your Incident Management Team.

2. During initial and refresher fire suppression training emphasize use of the dry mop method and de-emphasize dependence on water and helicopter drops.

3. Emphasize effective techniques of mop-up with limited water supply – how to maximize use of backpack pump, collapsible water tanks, mop-up kits.

4. Train crews in use of gravity sock system.

5. Plan for, order, and use ground water handling resources – pyramid tanks, collapsible free standing tanks, fold-a-tanks-etc.

6. Discuss with fire personnel the risks associated with low level helicopter operations i.e. dead man's curve, inefficient missions adding to "exposure time", conservation of pilot flight time, etc.

7. ICs (Type 1-3) at their annual team meetings discuss "heli-mopping" and alternatives to it.

8. Train all fire personnel in the use of signal mirrors, ground panels and effective radio communication for directing helicopter drops.

9. Teams / caches stock signal mirrors.

10. ICs / Operations Section Chiefs strongly encourage "alternative mop-up methods" and monitor mop-up operations.

11. Division Group Supervisors closely monitor their Division for prudent use of helicopter resources.

12. Gather intelligence / locate water sources (fill sites, springs, ponds) which may support "alternative mop-up methods".

13. Operations / Division Group Supervisors coach your subordinates on the alternative uses identified above.

14. Apply the basic principles of Risk Management - a critical and integral part of safe and effective fire-aviation management!

Conclusion

The significant reduction of the heavy airtanker fleet in 2004 resulted in much heavier dependence on helicopters for tactical missions, particularly Type 1 helicopters. OMB and some Fire–Aviation Managers have expressed great concern for the high costs associated with aviation resources, particularly helicopter operations. The prospects for continued heavy dependence on helicopters will continue for quite some time until the heavy airtanker fleet is reestablished. How we manage and use the helicopter fleet will dictate how safe and cost effective our helicopter operations are. I believe that by seriously addressing the observations and recommendations expressed in this paper we will:

1. Improve helicopter operations safety by reducing unnecessary risk to pilots;

2. Significantly reduce helicopter operations cost;

3. Improve mop-up effectiveness;

4. Result in more effective and efficient helicopter operations.

The concept of the "accident triangle" applies to aviation as well as ground operations. Increased, often unjustified, flight hours in the high risk low level environment increases EXPOSURE. Increased exposure leads to a greater potential for ACCIDENTS. Increased number of accidents leads to greater potential for FATALITES.

It is critically important that ICs and Ops Chiefs establish a "helicopter use philosophy" and guidelines. It is equally important that their Division Group Supervisors monitor their division for compliance and assist and coach their subordinates when alternatives are a better way to go. We all have a stake in doing the job in the safest and most cost effective manner.

For what it's worth…

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