



Interagency Aviation Safety Alert



No. IA SA 12-05

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Subject: Helicopter Water Drops and Ground Forces

Area of Concern: Wildland Fire Aviation Operations

Distribution: All Fire and Aviation Operations

Discussion: There have been several incidents recorded this summer involving water drops by helicopters in areas where firefighters and engines were not clear of the water drop zone. A 2,000 gallon drop capacity may deliver 8 tons of water. Even a 400 gallon bucket will drop 1.5 tons in a very small space. This has proven to dislodge rocks and branches, knock trees over, collapse vehicle roofs, and injure personnel. The following summaries outline some of the incidents that were reported.

* [SAFECOM 12-0999](#): During a burnout operation, a heli-tanker made a low pass over a fire crew's position. The crew boss notified division who tried unsuccessfully to raise the helicopter on multiple frequencies including air to ground. On the next helicopter pass, the firefighters tried to visually wave the aircraft off. The aircraft continued with its water drop, hitting personnel, engines, and the burnout operation.

* [SAFECOM 12-0981](#): A helicopter performing water bucket operations was transferred from one division to support another. The pilot was unable to establish communications and made a water drop as he mistakenly assumed the target area was clear. After the drop, he overheard radio traffic to the air-attack on air guard frequency that a helicopter had dropped on the crew that was working in that area.

* [SAFECOM 12-0833](#): While suppressing a spot-fire, a helicopter accidentally dropped water on a saw crew while working an area where the pilots were being allowed to pick "priority targets". The pilot did not see the crew due to smoke and sun angle. The ground crew assumed the pilot was able to see them and did not try to contact the aircraft or move out of the area.

* In a separate incident firefighters were cutting fireline in conjunction with a water dropping mission in very steep and rugged terrain with poor visibility due to a thick canopy making conditions hazardous for both pilots and ground personnel. The pilot was cleared to release 1,000-1,500 gallons of water that could have dislodged trees, rocks and sent mudslides flowing downhill. While performing a thorough recon of the area, the pilot identified firefighters in the drop location and subsequently elected to abort the drop despite being cleared by ground crews. Unfortunately, this situation reoccurred on several occasions which then required the pilot to ensure firefighters were cleared from the drop zone every time.



Some of the common factors in these instances are:

- * Firefighting crews assuming they are visible to the pilot.
- * Pilots assuming an area is clear without confirmation.
- * Pilots and ground personnel continuing aerial suppression operations in the absence of positive two way communications.
- * Air crews dropping in areas of their choice without adequate guidance from ground personnel.

Recommendations:

1. Be aware of the location and flight patterns (final approach, drop zone, exit) of aircraft during drop operations.
2. Positive two way communications must be established between the pilot and ground firefighters prior to any drop.
3. Ground personnel directing aircraft to targets are responsible for ensuring ground firefighters are well clear of the area, and that target descriptions are clear and understood by the pilots.
4. Refer to the Incident Response Pocket Guide (IRPG) pg. 65 for Directing Retardant and Bucket Drops
5. Clear personnel out of the target area before the drop is conducted. If an individual is caught unaware in a drop zone:
 - ◆ Hold your hand tool away from your body
 - ◆ Lie face down with hardhat in place and head toward the oncoming aircraft
 - ◆ Grasp something firm to prevent being carried or rolled about by dropped liquid
 - ◆ Do not run unless escape is ensured
 - ◆ Get clear of dead snags and tops
 - ◆ Be aware of rolling debris below the drop site in steep terrain

While this SAFETY ALERT is focused on helicopter water drops, the recommendations above also apply to fixed-wing water and retardant drops as well.

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