



Interagency Aviation Lessons Learned

**No. IA LL 17-04****June 20, 2017****Page 1 of 2****Subject: Near Mid-Air Collision (NMAC)****Area of Concern: Flight Safety****Distribution: All Aviation Activities**

Discussion: Two helicopters performing concurrent fire suppression and aerial ignition operations experienced a Near Mid-Air Collision (NMAC). A Sikorski S-61 was conducting fire suppression operations when they spotted a Bell 206 B3 slightly low at their 4 o'clock position conducting aerial ignition operations in the same area on a converging course. Both aircraft were operating at or below 500 feet AGL. The pilot of the S-61 initiated an evasive maneuver to the left. The co-pilot stated that she observed the Bell 206 turn to the right about the same time. The closest distance between the two helicopters was estimated to be 225 feet. The pilot of the Bell 206 stated that neither he, nor anyone on board, noticed the S-61 helicopter. At the time of the incident, the two helicopters were operating on different fire control frequencies.

The FAA defines a NMAC as “an incident associated with the operation of an aircraft in which a possibility of collision occurs as a result of proximity of less than 500 feet to another aircraft, or a report is received from a pilot or a flight crew member stating that a collision hazard existed between two or more aircraft.”

The Bell 206 was equipped with an ADS-B (Automatic Dependent Surveillance – Broadcast) In/Out. The ADS-B is a surveillance technology in which an aircraft determines its position via satellite navigation and periodically broadcasts it, enabling it to be tracked. The aircraft's ADS-B receiver can interpret the data and display it on a screen in the flight deck. ADS-B information can be received by air traffic control ground stations as a replacement for secondary radar. It can also be received by other aircraft and displayed to provide situational awareness and improve separation. The ADS-B reporting system will be required by the FAA on January 1, 2020.

The S-61 was equipped with a Mode 3C (altitude reporting) transponder. A transponder with Modes A and C is an air traffic control radar beacon system (ATCRBS) radio with altitude reporting. The only way aircraft would display on the Bell 206 is if it was on Traffic Information Service – Broadcast (TIS-B). TIS-B is a traffic reporting system that uses ADS-B ground stations and FAA radar data to transmit aircraft position to aircraft cockpit displays. TIS-B enables pilots to see what air traffic controller see - other aircraft, along with their altitudes, direction, and speed vectors displayed on their aircraft's display screen. TIS-B data is transmitted from a ground station to all ADS-B equipped aircraft, whether the aircraft uses a 1090 MHz ES link or a 978 MHz UAT data link. According to a FAA representative, radar coverage is generally unavailable below 500 feet AGL due to system and geography limitations, thus it is highly unlikely that it was available in the area of the fire and subsequently unavailable for TIS-B.

It is important to note that the ADS-B system is not a TCAS (Traffic Collision Avoidance System). ADS-B (In) capability allows receipt of local ATC radar traffic when within range of an ADS-B ground station tower.

The regulatory requirement to see and avoid is contained in FAR 91.113 (b), which states: “When weather conditions permit, regardless of whether an operation is conducted under instrument flight rules or visual flight rules, **vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft.**”

Traffic information equipment does not relieve a pilot’s responsibility to see and avoid other aircraft. Managing technology in the cockpit is critical to flight safety. While new aircraft systems can provide pilots with a wealth of information, they can also develop a false sense of security by relying too much on artificial means rather than maintaining a vigilant lookout.

On May 28, 2015, The National Transportation Safety Board issued a [Safety Alert](#) urging pilots to look out for other aircraft and to make their own presence known. The NTSB has investigated numerous general aviation accidents in which pilots operating near one another failed to maintain adequate visual lookout and separation. Investigators also noted that pilots can be distracted by technology such as cell phones, tablets, and other devices that challenge the see-and-avoid concept (see [IA APB 13-01](#))

“As a pilot, your first job is to fly your own airplane,” said NTSB Chairman Christopher A. Hart. “Part of that job is to scan for other airplanes. **On-board traffic advisory systems are not a substitute for an outside visual scan.**”



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Maintaining Separation from Other Aircraft

The problem

- Accidents have occurred in which pilots operating near one another did not maintain adequate visual lookout and failed to see and avoid the other aircraft.
- While some accidents occurred in high-traffic areas (near airports), some accidents occurred in cruise flight; in the cases described below, the pilots were flying in daytime visual meteorological conditions.
- All pilots can be vulnerable to distractions in the cockpit, and the presence of technology has introduced challenges to the see-and-avoid concept. Aviation applications on portable electronic devices (PEDs) such as cell phones, tablets, and handheld GPS units, while useful, can lead to more head-down time, limiting a pilot’s ability to see other aircraft.

KEEP YOUR HEAD UP AND ON A SWIVEL!

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