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Business & Commercial Aviation
Electronically reprinted from October 2015

Flying With Safe Flight's PDS

During this year's HAI Heli-Expo in Orlando, Florida, I got the chance to fly in a Bell 206 JetRanger equipped with Safe Flight Instrument Corp.'s Powerline Detection System (PDS), which senses the electromagnetic fields surrounding power lines. When a power line is detected in the flight path, the system gives the pilot an audible warning starting from a distance of 1,800 ft. from the hazard. That sound increases in frequency as the power line gets closer, and a red warning light illuminates in the cockpit. The system can be temporarily muted when flying in an area where there are a number of power lines.

At the controls of the Bell 206 was Andrew Hayden, owner and operator of AirOcean Aviation. The Yalesville, Connecticut, outfit provides a number of helicopter services including sightseeing, charter, aerial patrol, aerial photography, external load and banner towing. Our demonstration route was westbound into the early evening sun, and even though the local ATIS at nearby Kissimmee Airport was reporting "better than 5 mi.," visibility westward through the minor haze into the sun was limited.

Once airborne, the PDS started a series of buzzes, much like a Geiger counter, that got my immediate attention. My visual scan went into hyper-drive from our safe altitude of 800 ft. MSL, trying to spot the power line towers, as the buzzing's frequency steadily increased, indicating that we were nearing the wires. Peering into the haze, I couldn't see the telltale visual indicators of a power line until we were within approximately 200 yd.

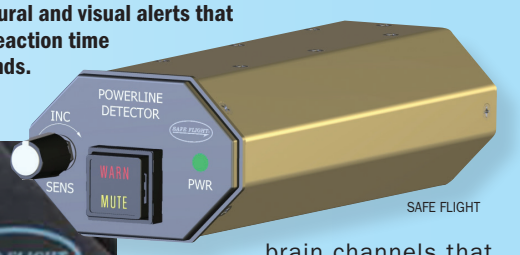
Years earlier when I flew aerial firefighting missions, I recall the vegetation, terrain, smoke and sun position could have easily camouflaged wires and a "high recon" wouldn't have revealed the hidden hazards either. Intense workload and communications overload with four radio channels blaring required a lot of focus, making it easy to momentarily forget about a set of wires. That's where a wire detector system would be a valuable alerting device. It isn't dependent on our fallible memory and vision.

Another strength of this detector system is it's "eyes out of the cockpit" philosophy. When operating in the wires environment, the last place a pilot should be looking is inside the cockpit. The International Commission for Alpine Rescue (ICAR) recommended "that the helicopter industry adopt as a standard the implementation of active cable detection systems combined with heads-up warning devices on all helicopters."

There is another important reason for having one's eyes out of the cockpit rather than glancing at instruments within: It takes time for the eyes to refocus their focal length, or "accommodation," a process that lengthens with age and fatigue.

An aspect I especially like about the Safe Flight system is its use of sound. The workload in the low-altitude environment is tremendous and requires a constant heads-up scan. The PDS's warning signal transmits through one of the pilot's brain channels that isn't being over-worked. The Geiger-counter-like signal instantly grabbed my attention but without being startling or task saturating. It also didn't interfere with crew intercom communications. Hayden and I were able to maintain communication as the signal alerted us to our closing proximity to the wires.

Safe Flight Instrument Corp.'s Powerline Detection System (PDS) lightweight unit mounts easily into most instrument panels, and provides aural and visual alerts that can increase reaction time to 8 vital seconds.



The Safe Flight system provides approximately 10 to 15 sec. of notification, allowing the pilot time to scan the flight path, identify the threat and avoid the power line. For instance, the detector system will sense a 90 kv line (commonly mounted on towers that are 150 ft. tall) from a range of 1,600 ft. At 90 kt., this provides 11 sec. for reaction.

This detector only senses active power lines, and the range of detection depends on the electrical power in the lines. The system will not detect other types of wires such as guy wires, weak telephone lines and non-active lines. Also, the pilot does not get an indication about the direction of the power lines with reference to the aircraft, although if the frequency and loudness of the aural warning increases, the pilot can deduce that the threatening wires are ahead.

The Powerline Detection System is compatible with all civil and military helicopters, and Safe Flight suggests that it be installed by a certified avionics shop or by Safe Flight. The installation takes approximately two days to complete. The unit requires 28 volts direct current (VDC), which is provided by the aircraft, and detects the power line signals at 60 Hz. Safe Flight has tested the lifespan of the detector to be greater than 10,000 flight hours. **BCA**