TerranearPMC Safety Share

Week of April 7, 2014 – Lessons Learned from Flight 370

Without a doubt, the events surrounding Malaysia Airlines Flight 370, is one of the biggest stories in the news, rivaling the political strife in Ukraine. I don't think anyone would be surprised if a year from now, Hollywood comes out with its own dynamic tale for the silver screen. It was in 1979 when another commercial air disaster struck. At that time, it was in the Canary Islands, where two jumbo jet airliners collided into each another during a takeoff. Investigators examined the facts and as a result, new controls were initiated which today are mandatory practices (that is, all decisions regarding takeoffs and landings need to be agreed upon by all members of the cockpit- regardless of ranking). It seems that once again, through this latest disaster, new controls are being considered and include:

- Cameras in the cockpit.
- Real-time streaming of communications and flight information.
- Increased capacity flight data and voice recorders.
- Transponders that detach on impact and float.

Camera images beamed from cockpit to ground: Investigators would be able to see and hear all that transpires in the cockpit. Experts agree that images could prove highly important during investigations. The National Transportation Safety Board (NTSB) has campaigned for cockpit videos for years, arguing that images would have helped solve other crashes like that of EgyptAir 990 in 1999, which the agency concluded was a deliberate act by the co-pilot. A camera would have clarified who was in the cockpit and what was happening. Opponents, however, are not ready to welcome Big Brother in the sky. Many pilots -- and unions that represent them -- worry about an invasion of privacy.

Real-time streaming of flight information: In the age of Netflix streaming and trans-Atlantic Wi-Fi on flights, why can't aircraft-in-flight data come in real time? Canadian company Flyht Aerospace Solutions says it can. The company makes the Automated Flight Information System, or AFIRS, which automatically monitors data such as location, altitude, and performance. Data can be live-streamed when something goes wrong. The technology would have answered many questions about Flight 370 as officials of Flyht claim that this technology would have allowed specific information to be transmitted in real time to Air Traffic Control. On a normal flight, the system would send updates every five to 10 minutes while being programmed to recognize when something is wrong, such as a deviation in flight path, to automatically begin streaming second-by-second data.

Increased capacity for data and voice recorders: Today's recorders are better than recorders of the past, when data was recorded on magnetic tape. But they fall short of current technical potential. Voice recorders, for instance, have only two hours of recording capacity. Since Flight 370 flew almost seven hours beyond the point where something went terribly wrong, it's almost guaranteed that crucial cockpit sounds have been erased. Cockpit voice recorders memorialize pilot's words -- from the inconsequential to the tragic. In 1999, a voice recorder captured the last words of the startled captain of EgyptAir 990 as he fought to maintain control of his plane. The cockpit voice recorder was used to establish that the pilot was trying to pull the plane out if a dive, while his co-pilot flew it into the ocean. Voice recorders also record clicks and hums -- sounds that can reveal a pilot's actions. Flight data recorders capture a wide array of data, including altitudes, air speeds, headings, engine temperatures, flap and rudder positions, while the NTSB asserts that this field is experiencing significant technology advances.

Experts agree that two hours of voice recording capacity is not adequate and suggests voice recordings should cover the last 24 hours of flight. In addition, it has been recommended by commercial flight experts that flight data and voice recorders should be designed so that they detach from the plane on impact or shortly before impact. The transponders would then float.

Longer life for batteries powering locator beacons: Every commercial airplane is required to have *pingers* -- technically called underwater locator beacons -- to help locate lost aircraft. One is attached to the flight data recorder; another to the cockpit voice recorder. Even though these devices are powered by batteries, the depletion of a device's battery will not wipe out data, with such data known to have survived years on modern recorders in harsh sea water conditions.

Uplinking information from plane to satellite before a crash: In 2009, Air France Flight 449 crashed into the Atlantic Ocean killing all 228 persons aboard. It took 2 years before the aircraft's black box was recovered, leading investigators to finally understand the true cause of the disaster. The resulted in U.S. aviation safety officials to look into uplinking critical flight data to orbiting satellites from airplanes flying across oceans. Today, flight data recorders use computer chips to record information about how the plane is working in flight. The cockpit voice recorder captures audio from crew members including pilots. However, all that data could be uncollected if the plane crashes in a large body of water. Then, the devices can't be retrieved without help from special recovery teams. The NTSB had been researching a new system that would uplink airplane data about a plane's location, direction, equipment functions and about 30 other parameters to orbiting satellites, which would then beam the data back to the ground for storage.

While such a system would be expensive, advocates contend that it could save millions of dollars in operations to recover onboard flight data devices when a crash occurs. For example, searching for the Air France devices and aircraft wreckage cost $40 million. But critics cite potential reasons why in-flight data uplinks might not work, including high costs, limited bandwidth, security concerns, privacy issues, and cumbersome aviation bureaucracies.

It is so often the case that through disasters, significant changes in processes or equipment that are designed to improve safety and health are instituted. Such was the case with commercial aircraft disasters at the Canary Islands (mentioned earlier) and the British Airliner BOAC Comet explosions in midair in the 1950's, where the quick and cost effective method of merely changing the shape of the windows would have prevented countless deaths. Similarly, it seems that Malaysia Air Flight 370, with a few safety measures, may not have been the tragedy it has become.

It is through the technique of hazard identification – an established protocol necessary to be conducted ***BEFORE*** the commencement of a task - where appropriate controls can be instituted. It is said that once a hazard has been identified, you are half-way to preventing an accident. However, as we can see, if the extra step is not taken, then those who have identified a problem as well as an effective control, do not incorporate these "fixes," then they become the responsible party in the event of a tragedy.

You may find that having is not so pleasing a thing as wanting. This is not logical, but it is often true Spock (Star Trek Episode "Amok Time")