BRINGING COLLABORATIVE SOLUTIONS TO THE PRESSING CHALLENGES OF LOSS OF CONTROL IN-FLIGHT

ICAO is continuing to focus its operational safety efforts on three main priorities: runway safety, Controlled Flight Into Terrain and Loss of Control In-flight. Recent actions on these challenges have contributed significantly to related reductions in global/annual aviation fatalities and provide important contributions to the overarching priorities established in the ICAO Global Aviation Safety Plan.

ICAO's upcoming Loss of Control In-flight (LOCI) Symposium (20-22 May 2014) will see pilots, operators, regulators and training organizations gathering at the Organization's Montreal HQ to explore a range of topics relating to this global safety priority while being provided with a cross-section of ICAO's latest LOCI-related guidance and tools.

The Symposium will also showcase work being undertaken throughout the industry that addresses individual and crew strategies, operational countermeasures, as well as training and educational approaches to prevent and recover from a loss of control in-flight.

"An accident caused by the loss of control of an aircraft in-flight is very rare," explained Nancy Graham, Director of ICAO's Air Navigation Bureau, "but over the last eight years these accidents have resulted in more fatalities in scheduled commercial operations than any other type, including runway incursions, runway excursions and controlled flight into terrain. It's because of its association with high fatalities that LOCI is now the number one issue in aviation today."

ICAO, through its Global Aviation Safety Plan (GASP), has already developed a programme for Controlled Flight Into Terrain and continues to address Runway Safety priorities through an intensively collaborative action programme that has thus far delivered excellent results. LOCI, however, represents what is arguably one of the most complicated areas of aviation today and could pose more significant challenges as the global air transport community seeks to come to terms with it.

"Pilots lose control of an aircraft from a combination of several factors," continued Graham, "but human performance factors especially, such as the way pilots maintain their attention across long flights, the way they respond to unexpected events and the way they interact with flight deck displays and controls, all need to be considered. Basically aviation trains pilots and controllers for what the airplane is supposed to do, not for what it's not supposed to do."

Michelle Millar, ICAO's Human Performance Technical Officer and the primary organizer of the 2014 LOCI Symposium, elaborated on Graham's points noting that "automation is designed to make things safer, but at times the expected outcome isn't what the automation was designed to provide. Part of what we'll be exploring at this event is how we manage the design and implementation processes better to ensure more dependable operational outcomes."

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PLANNED LOCI SYMPOSIUM SESSIONS

Making the most of LOCI data
With few but fatal accidents, can we aggregate and protect the right data to determine the priorities for addressing contributing factors?

The Management of 'everyday things'
Before addressing conditions that occur "outside the envelope", how well are we dealing with everyday conditions "within the envelope"? Do we need to find ways to improve the way we conduct and train for routine operations to avoid pre-LOCI conditions?

Dealing with a dynamic environment
Can new technologies assist current and new generations of pilots to avoid pre-LOCI conditions?

Managing Automation
How can we maximize on the safety and efficiency benefits that automation brings, and address problems related to erroneous expectations and mismanagement? When should the pilot take over from the autopilot?

Managing Human Limitations
In order to recognize the potential convergence of pre-LOCI conditions, can we improve a pilot's ability to monitor, remain vigilant, overcome fatigue and avoid perceptual illusions, or do we need to focus on coordinating crew activities and technologies so that good decisions are made early?

Startle: What is it and how can we manage it?
Why don't we always respond the way we think we will in an unexpected event? What individual and crew strategies are there for managing the physiological and cognitive effects of an unexpected threatening event, such as a LOCI?

New approaches
What recent simulator developments and regulatory approaches aim to improve the way pilots respond to LOCI conditions in the cockpit?

Upset Prevention and Recovery Training
What are the cost-benefits of UP & R training and how can we facilitate its implementation?

Training challenges
In delivering UP & RT, how can we avoid negative training in-aircraft and in FSTDs, identify adequately qualified instructors and train and measure relevant "soft skill" performance?

Graham highlighted that industry is already doing a lot to address LOCI events but that ICAO's mission and role must be to ensure global harmonization of related solutions. She stressed that ICAO's approach would in essence summarize efforts to-date and stay focused around prevention, recognition and recovery efforts. Her point was reiterated by Millar.

"Prevention, recognition and recovery measures represent what we can do prior to a LOCI event occurring," Millar remarked. "They're therefore also the areas we can actually do something about and that's why this is where our training solutions will be targeted. This is a very complex area and no one-size-fits-all solution is going to cut it."

Besides FAA Associate Administrator for Aviation Safety Margaret Gilligan, participants to the ICAO LOCI Symposium will also be hearing from pilots, original equipment manufacturers (OEMs), training organizations, State regulators, human factors scientists and researchers and specialists involved with developing remotely-piloted aircraft systems.

Presentations and discussions will focus around approaches to enhance the way pilots monitor and manage perceptual illusions, methods for improving pilot energy awareness, optimizing the management of automated systems, and human-centric flight deck technology and its application.

"There will be a lot of different viewpoints shared during this few days," noted Millar. "Many people in these respective domains have some strong ideas of how training can be conducted and how long you have to train for. I think that will be an area that will be contested. Automation will be another hot topic in terms of how we design it, how we manage it, and how we teach flight crews to use it effectively."

Millar added that other important discussions would likely touch on the management of unexpected threatening events, upset prevention and recovery training approaches and ICAO provisions, as well as advances in simulation, including extending the training envelope.

"We want to ensure this will be useful for the industry," Millar said. "They'll get a chance at this event to tell us where they see gaps and how we can best address those on a collaborative basis. There are pockets of activity all over the world but this Symposium will help us make great strides toward aligning and coordinating those efforts."

Millar's views were fully supported by Graham, who noted that besides the discussions she would really be looking for a more mature global work programme to result from the event.

"The purpose of this is to bring together the community and agree on a way forward," she stressed. "What that means is that if you aren't a part of this and you work in this business, you missed out. You should be leaving here figuring out how to position yourself for the future because this will create work streams globally." ■