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Opinion - News Analysis

Preventing wet runway accidents

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Building grooved runways and investing in modern runway friction recording equipment are essential for making landings safe.

An Indian Airlines Airbus A320 lands in heavy rain at Chennai airport. — Photo: A. Ranganathan

ON AUGUST 2, 2005, an Air France A-340 overran the runway at Toronto. The aircraft was destroyed in a post-accident fire. Exactly a month earlier, a Bangladesh Biman DC-10, overran the runway at Chittagong. The aircraft suffered extensive damage. An Air India 747, which overran the runway at Mumbai on July 30, 2005, was lucky to escape with no damage except to reputations. Even before the enquiry got under way, several armchair pundits blamed the pilots. Are they aware of what is involved in a wet runway landing?

All the accidents mentioned took place while landing in heavy rain. All the planes involved experienced crosswind (where the surface wind blows from the side) and tailwind conditions. This combination is dangerous. During a heavy downpour the water depth can vary along the runway, depending on the condition and the slope. The aircraft wheels can hydroplane if the depth is sufficient to prevent them from making proper contact with the runway. This makes it very difficult to stop the aircraft within the confines of the runway.

Why do accidents happen on wet runways? The main reason is that the pilots do not get the correct information on the actual runway condition. The only information a pilot gets is that the runway is "wet."

What is a wet runway? For the pilot, the runway is considered "wet" when the depth of water on it is less than 3 mm. This is what the flight manuals state. If the depth is more than 3 mm,

the runway comes in the category of "slippery" or "contaminated." These differences in water depths will change the actual landing distance by a very large amount.

The aircraft requires 40 per cent more runway to stop on a "wet" runway; on a contaminated runway the figure increases by 300 per cent. Thus, if an aircraft requires 6,000 feet of runway for a landing on dry runways, it would require 8,400 feet on a wet runway, and more than 18,000 feet of runway if the conditions are contaminated!

Thus, when a pilot receives a report that says the runway is wet, he assumes that the depth of water is less than 3 mm and that a 40 per cent addition to the landing distance will make for a safe landing. In reality, the actual depth of water on the runway can be as much as 3 inches during a heavy monsoon downpour. This would bring it into the "contaminated" category. In 30 years of airline flying, I have never heard of a runway condition report other than "wet."

Accidents on wet runways are on the increase. Experience levels of pilots in the airlines are dropping due to the rapid expansion of the aviation sector. Unfortunately, training and regulations are not keeping up with the times. There seems to be an unnecessary emphasis on testing pilots for manoeuvres that are next to impossible on modern jets such as 737NGs and the A-320s. This prevents airlines from using the available training time on simulators for carrying out exercises demanded by accident enquiry recommendations. Many of the accidents in the recent past have involved aircraft with old technology, without modern safety features that are inbuilt into new generations aircraft.

DGCA studies

Studies by the Directorate-General of Civil Aviation (DGCA) have established that more than 45 per cent of all landing accidents take place during the monsoon or in heavy rain.

The DGCA constituted the Approach and Landing Accident Reduction task force in 2000, after the introduction of the topic by the Flight Safety Foundation of the U.S. I was a member of the Core Group of the ALAR India task Force. The objective of the ALAR project was to reduce landing accidents by 50 per cent in five years. Officials of the Airports Authority of India were members of the task force. In spite of being aware of the accident statistics, nothing significant has been done to improve the runway conditions nor has there been any effort to make the airport environment safer. Not a single runway in India is grooved.

During the deluge in Mumbai last month, the airfield was completely contaminated with slush and debris. The secondary runway was opened for operation without even carrying out proper runway friction tests. Runway 14 has a down slope towards the second half, and this makes it positively dangerous during heavy rain.

Building grooved runways, investing in modern runway friction recording equipment, and proactive runway condition reporting are essential for making landings safe. What is required is commitment to flight safety.

(Capt. Ranganathan, an airline pilot with 19,000 hours experience, specialises in accident prevention studies.)