RISK OF COLLISIONS FROM RUNWAY INCURSIONS

Runway incursions lead to an ongoing risk of aircraft colliding with vehicles or other aircraft.

The situation

Every year, there are millions of successful takeoffs and landings on Canadian runways. However, an accident can occur when an aircraft or vehicle incurs upon a runway surface that is actively in use.

The aviation industry has been collaborating and making gradual, incremental changes to address this risk. However, the runway incursion rate in Canada has risen from an average rate of 5.3 incursions per 100 000 arrivals and departures in 2010 to an average of 9.9 in 2019. This is an 86% increase over ten years (or an annualized increase of 6.3% per year).

Number of occurrences in Canada

NAV CANADA recorded 623 runway incursions in Canada in 2019 (up from 334 in 2010). Although only a few of these incursions were classified as high risk, the consequences of a collision could be significant given the levels of injury or loss of life from a single accident.

Since this issue was added to the Watchlist in 2010, the TSB has completed 18 investigations into runway incursions, including a safety issue investigation focused on the south complex parallel runways at Toronto Pearson International Airport (CYYZ). As a result of this investigation, the TSB made 4 recommendations intended to address some of the risks related to incursions.

The risks to people, property, and the environment

Although there has not been a recent collision as a result of a runway incursion in Canada, the potential consequences of a collision could be catastrophic. Therefore, the Board is concerned that the rate of runway incursions in Canada and the associated risks of collision will remain elevated until effective defenses created to address identified hazards are implemented at airports and in aircraft, vehicles and air traffic service facilities across Canada.

A global concern

Runway incursions are a global concern. The International Civil Aviation Organization's (ICAO's) 2017 Global Runway Safety Action Plan noted that "although the [number of] runway incursion accidents reported between the period of 2008 to 2016 is very low, the number of runway incursion incidents remains high."

Action taken

Issues on the Watchlist are complex and difficult to solve, requiring action from many stakeholders including operators and the regulator. Even when more needs to be done, some initial steps have often been taken. These are listed here.

There is no one solution that will reduce runway incursions on its own. Reducing the risk of runway incursions is a complex issue and requires collaboration from all sectors of the aviation industry and tailored solutions for each airport.

With NAV CANADA's Runway Safety Action Team taking the lead, aviation industry stakeholders are addressing some of the factors that can lead to runway incursions by implementing incremental improvements to policies, and adapting procedures, technologies, and infrastructure.

For example, in Canada, in-cockpit aids to increase situational awareness, such as electronic flight bags with moving maps, are becoming more prevalent with operators. NAV CANADA has amended radio communications protocols so that instructions are better understood and followed. Some airport authorities continue to make runway holding positions more visible to flight crews. However, despite these actions, there continues to be a consistent increase in the overall rate of runway incursions at Canadian airports.

Actions required

This issue will remain on the TSB Watchlist until the rate of runway incursions, particularly the number of high-risk incursions, demonstrates a sustained reduction; or new technology is implemented that improves safety defences.

There is no single solution that can address the incursion risk nationwide. Individual solutions to previously identified hazards, in combination with wider-reaching technological advancements such as in-cockpit situational awareness aids and runway status lights, will likely be most effective.