—Overview and analysis of accident investigation cases—

Japan Transport Safety Board DIGESTS

JTSB (Japan Transport Safety Board) DIGESTS

Number 47 (issued in December, 2024)

Aviation Accident Analysis Report

Preventing accidents caused by runway contact
—Complying with rules and adhering to the basics—

Chapter 1 Introduction

The Japan Transport Safety Board (JTSB) classifies investigated accidents and serious incidents into 36 categories (Occurrence Category) based on internationally standardized criteria. These occurrence categories are published on the website of the JTSB together with the aircraft accident investigation reports and aircraft serious incident reports (hereinafter referred to as "reports") and provided as keywords for searching reports.

When looking at the breakdown of occurrence categories in reports published through November 2024, categories classified as "any landing or takeoff involving abnormal runway or landing surface contact" (ARC: Abnormal Runway Contact; see Figures 1 and 2) are the most frequent.

Additionally, in documents from the International Civil Aviation Organization (ICAO) and the National Transportation Safety Board (NTSB), a U.S. investigative agency, ARC also consistently ranks among the top occurrence categories and has long been recognized as a risk to safety during takeoff and landing.

As characteristics of ARC, the large number of occurrences is notable, and in some cases it can lead to collisions with ground objects such as the terrain or other aircraft that may result in serious damage.

Figure 1: ARC accident photo

◎ **ARC**

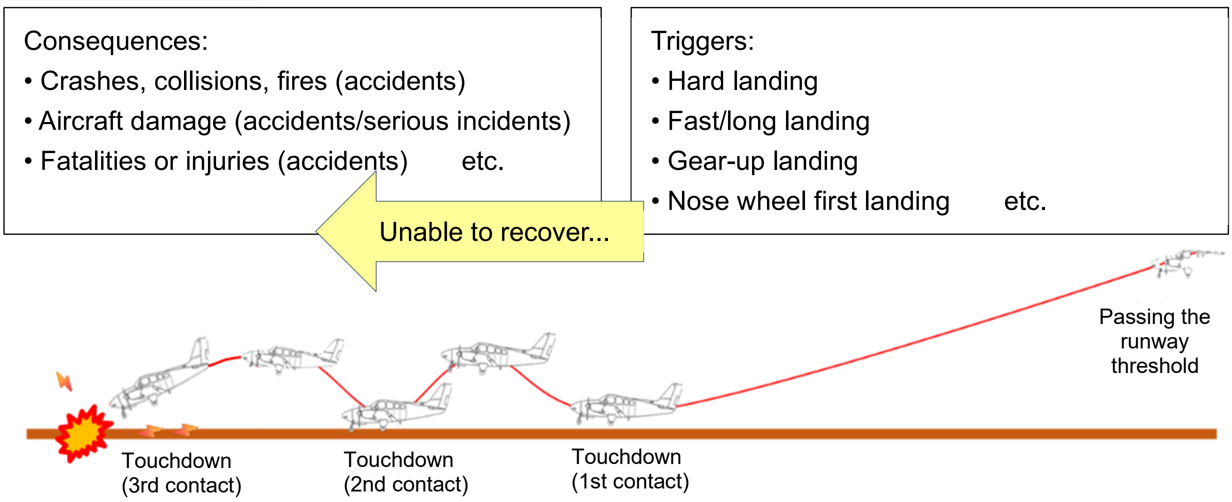


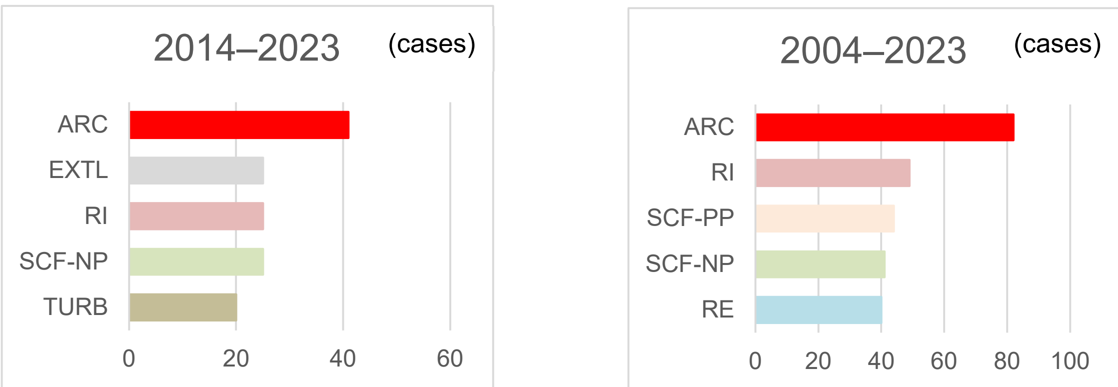
Figure 2: Example of an accident classified as ARC

In this JTSB Digest, we will focus on 41 cases of accidents and serious incidents that are classified as ARC, which occurred during the 10 years from 2014 to 2023 and whose reports were published by November 2024, (excluding those involving ultralight powered aircraft and homebuilt aircraft; hereinafter referred to as “ARC accidents”) to introduce their occurrence, measures to prevent ARC accidents, and some case studies.

Chapter 2 Occurrence of ARC accidents

1. Occurrence of accidents

When looking at the occurrence categories of accidents that occurred during the 10- and 20-year periods up to 2023 (limited to accidents whose reports were published) by tabulating them, ARC accidents numbered 41 in the 10-year period and 82 in the 20-year period, making them the most frequent in both periods, and therefore, measures to prevent recurrence of accidents of this category are necessary. (See Figure 3.)



ARC: Any landing or takeoff involving abnormal runway or landing surface contact
EXTL: Occurrences during or as a result of external load or external cargo operations
SCF-PP: Failure or malfunction of an aircraft system or component related to the powerplant
SCF-NP: Failure or malfunction of an aircraft system or component other than the powerplant
RI: Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft
RE: A veer off or overrun off the runway surface
TURB: In-flight turbulence encounter

Figure 3: Number of occurrences by occurrence category (top five categories only)