AA2023-5

AIRCRAFT ACCIDENT INVESTIGATION REPORT

Privately owned
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August 31, 2023

Japan Transport Safety Board

The objective of the investigation conducted by the Japan Transport Safety Board in accordance with the Act for Establishment of the Japan Transport Safety Board and with Annex 13 to the Convention on International Civil Aviation is to determine the causes of an accident and damage incidental to such an accident, thereby preventing future accidents and reducing damage. It is not the purpose of the investigation to apportion blame or liability.

TAKEDA Nobuo
Chairperson
Japan Transport Safety Board

Note:

This report is a translation of the Japanese original investigation report. The text in Japanese shall prevail in the interpretation of the report.

《Reference》

The terms used to describe the results of the analysis in "3. ANALYSIS" of this report are as follows.

i) In case of being able to determine, the term "certain" or "certainly" is used.
ii) In case of being unable to determine but being almost certain, the term "highly probable" or "most likely" is used.
iii) In case of higher possibility, the term "probable" or "more likely" is used.
iv) In a case that there is a possibility, the term "likely" or "possible" is used.

AIRCRAFT ACCIDENT INVESTIGATION REPORT

July 21,2023
Adopted by the Japan Transport Safety Board
Chairperson TAKEDA Nobuo
Member SHIMAMURA Atsushi
Member MARUI Yuichi
Member SODA Hisako
Member NAKANISHI Miwa
Member TSUDA Hiroka

Company	Privately owned
Type, Registration Mark	Cessna 172P, JA3969
Accident Class	Damage of main wing during taxing (Contact with apron floodlighting)
Date and Time of the Occurrence	At about 13:57 Japan Standard Time (JST: UTC+9 hours), September 22, 2022
Site of the Accident	Yao Airport, Osaka Prefecture (34'35"51 N, 135'35"39 E)

1. PROCESS AND PROGRESS OF THE ACCIDENT INVESTIGATION

Summary of the Accident	On September 22, 2022, the aircraft landed at Yao Airport, and it contacted with an equipment storage box attached to the pole of the apron floodlighting installed in the vicinity of the apron while taxing toward the spot, resulting in damage to the left wing leading edge. There were two persons on board the aircraft, but no one was injured.
Outline of the Accident Investigation	The Japan Transport Safety Board (JTSB) designated an investigator-in-charge and an investigator on October 14, 2022 to investigate this accident. An accredited representative of the United States of America, as the State of Design and Manufacture of the aircraft involved in this accident, participated in the investigation. Comments were invited from the parties relevant to the cause of the accident and the Relevant State.

2. FACTUAL INFORMATION

Aircraft Information

Aircraft type: Cessna 172P
Serial number: 17276563 Date of manufacture: February 12, 1986
Airworthiness certificate: No.Dai-2022-029 Validity: April 27, 2023
Category of airworthiness: Airplane, normal N or Special aircraft X

Personnel Information

(1) Captain: Age: 40
Commercial pilot certificate (Airplane) November 24, 2009
Pilot competency assessment
Expiration date of piloting capable period: October 24, 2022

Restrictions: Single-engine land	July 25, 2008
Instrument Flight Certificate (Airplane)	October 1, 2012
Class 1 Aviation Medical Certificate	
Validity	July 6, 2023
Total flight time	379 hours 06 minutes
Flight time in the last 30 days	0 hour 00 minute
Total flight time on the type of aircraft	114 hours 46 minutes
Flight time in the last 30 days	0 hour 00 minute
(2) Fellow Pilot:	Age: 73
Private Pilot Certificate (Airplane)	April 13, 2007
Pilot competency assessment	
Expiration date of piloting capable period:	March 30, 2024
Restrictions: Single-engine land	April 13, 2007
Class 2 Aviation Medical Certificate	
Validity	May 5, 2023
Total flight time	1,781 hours 14 minutes
Flight time in the last 30 days	0 hour 00 minute
Total flight time on the type of aircraft	1,760 hours 55 minutes
Flight time in the last 30 days	0 hour 00 minute

Meteorological Information

Yao Airport Aviation Routine Weather Report

14:00 Wind direction: 060°, Wind velocity: 14 kt, Prevailing visibility: 10 km or more
Temperature 27℃; Dew point 20℃

Event Occurred and Relevant Information

(1) History of the flight up to the Contact with Apron Floodlighting

The aircraft took off from Kumamoto Airport at 11:11, about an hour behind original schedule, bound for Yao Airport, with two persons on board, consisting of the captain and a fellow pilot.

Upon this flight, the captain was asked by the fellow pilot to supervise the instrument flight training and board the aircraft for the purpose of ensuring the flight safety, therefore the captain provided the fellow pilot with instructions and advice on the flight.

Piloted by the fellow pilot who was seated in the left pilot seat, the aircraft landed on Runway 09 at Yao Airport at 13:54 and started to taxi toward Spot H4 (see Figure 1).

When taxing the aircraft on taxiway P1, the fellow pilot thought that in a few more minutes, it would pass the reserved spot use time. Therefore, the fellow pilot was taxiing the aircraft while calling a controller at Yao Airport by radio to ask for the extension of the use time for Spot H4. As seeing a “G” marking on the apron, the fellow pilot thought they might have passed the entrance to the Lead-in Lines for Spot H, but as reconsidering that the next to the Lead-in Lines for Spot G might be the Lead-in Lines for Spot H, the fellow pilot continued to taxi. However, when seeing an “F” marking on the apron, the fellow pilot recognized they passed the entrance to the Lead-in Lines for Spot H, and said, “We’ve gone too far.” The captain listened to what the fellow pilot said, and recognized the aircraft had passed through the entrance to the Lead-in Lines for Spot H.

The fellow pilot thought that halting the aircraft would cause other aircraft coming from behind trouble, and thus turned to the right at the entrance to the Lead-in Lines for Spot F.

The captain and the fellow pilot did not confirm with air traffic controllers about the travel route or the presence of following aircraft.

As seeing a route in front of the hangar after turning to the right, the fellow pilot decided to head for Spot H4 through the route and entered the GSE Service Road*1.

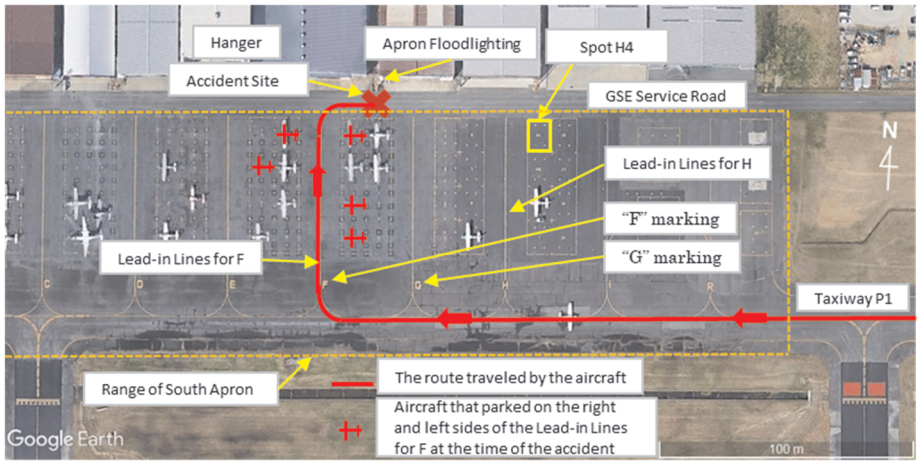

Figure 1: Estimated Travel Route

When taxing the aircraft on the GSE Service Road, the leading edge of the left wing came in contact with an equipment storage box attached to the pole of the apron floodlighting, the fellow pilot stopped the aircraft.

(2) Information on Damage to the Aircraft and Ground Objects

Extent of Damage: Substantially damaged

- There was a dent with a length of about 60 cm, a maximum width of about 16 cm and a maximum depth of about 6 cm on the left wing leading edge.
- The outer skin on the upper left wing surface had been bent upward with a maximum length of about 20 cm and a maximum width of about 1 cm.

Figure 2: Left Wing Leading Edge

Figure 3: Equipment Storage Box

Damage to Ground Objects :

- Peeling of the coating was found on the side of the equipment storage box attached to the pole of the apron floodlighting.

(3) Recognition regarding the GSE Service Road, the Parking Location, the Travel Route by the Captain and the Fellow Pilot

The day before the flight, the fellow pilot confirmed the location of Spot H4 on the plan view of the apron at Yao Airport, but the fellow pilot did not specially confirm that there is a GSE Service Road adjacent to the apron, and this GSE Service Road is not for aircraft to travel. When visually confirming the GSE Service Road in front of the hanger, the fellow pilot thought that it was a part of the apron and possible for the aircraft to pass although being a little narrow. However, the fellow pilot did not notice there was no yellow guide lines. During taxing, the fellow pilot did not confirm the apron plan view.

The spot guide lines are yellow lines and the GSE Service Road are white lines in order to separate between the apron and the GSE Service Road, however, the fellow pilot did not notice the line color had changed while taxiing.

The day before the flight, the captain confirmed the apron plan view at Yao Airport and recognized the presence of the GSE Service Road, but on the day of the flight, when visually confirming the GSE Service Road in front of the hanger, the captain was unable to identify it as

*1 "GSE Service Road" refers to the route provided for airport Ground Support Equipment (vehicles) to travel.

the same GSE Service Road confirmed the day before the flight, and recognized it as a taxiway possible for the aircraft to travel.

On the day of the flight, the captain had heard about the location of the Spot from the fellow pilot, but the captain thought that the fellow pilot would know more about Yao Airport because the fellow pilot had flown more frequently to Yao Airport than the captain had, and thus the captain left it up to the fellow pilot to move to the spot. Therefore, the captain did not confirm the travel route to Spot H4, did not provide any instructions or advice even after the fellow pilot noticed that they had passed through the entrance to the Lead-in Lines for Spot H. Regarding the total number of flights to Yao Airport, this flight was the second for the captain, and the seventh for the fellow pilot.

On the other hand, as the fellow pilot thought that if there was anything wrong about the travel route, the captain would give some advice, the fellow pilot did not confirm with the captain about the travel route.

(4) Situation from Entering GSE Service Road to Coming in Contact with Apron Floodlighting

The fellow pilot visually confirmed the apron floodlighting on the left side of travel direction while taxiing, but did not notice there existed an equipment storage box that was attached to the pole of the apron floodlighting, and the fellow pilot thought that the aircraft would be able to pass through there without touching with the apron floodlighting.

Immediately before entering the GSE Service Road, the captain received a radio call from a controller about the extension of the spot use time. After responding to the call, since the captain was putting the hand mike back into place, the captain did not look out of the aircraft. After the aircraft came in contact with the apron floodlighting, when the captain looked out of the aircraft, not yellow lines but white lines were indicated on the ground, therefore the captain noticed that it was not the place for aircraft to travel.

3. ANALYSIS

(1) Passing through the Lead-in Lines for Spot H

The JTSB concludes that the fellow pilot probably passed through the entrance to the Lead-in Lines for Spot H because the fellow pilot felt pressured and rushed about looming time limit for the reserved spot use time and continued taxiing the aircraft while making a radio contact with a controller to ask for the extension of the spot use time.

It is highly probable that the captain left it up to the fellow pilot to move to the spot and did not know about the location of the Lead-in Lines for Spot H and the travel route, therefore, the captain did not notice they had passed through the entrance to the Lead-in Lines for Spot H.

(2) After Passing through the Lead-in Lines for Spot H

The JTSB concludes that it is most likely that taking consideration into the influence on other aircraft, the fellow pilot did not stop the aircraft and turned to the right at the entrance to the Lead-in Lines for Spot F. In case of taking a wrong travel route, it would have been possible to stop the aircraft and confirm with a controller about the presence of following aircraft and the right travel route, however, it is highly probable that after the aircraft turned to the right, the fellow pilot thought that the aircraft would be able to pass through the GSE Service Road and did not confirm with a controller about the travel route.

It is probable that there was insufficient communication between the fellow pilot, who thought the captain would give some advice if there was anything wrong about the travel route, and the captain, who left the taxiing to the fellow pilot, which was probably involved in the fellow pilot's

failure to stop the aircraft after realizing the aircraft had passed the entrance to Lead-in Lines for Spot H and the failure to confirm with a controller about the travel route.

(3) Entering GSE Service Road and Coming in Contact with Apron Floodlighting

The JTSB concludes that it is most likely that the fellow pilot did not know that the GSE Service Road was the exclusive one for vehicles and not the zone for aircraft to travel, thus entered the GSE Service Road that the fellow pilot visually confirmed while taxiing.

The fellow pilot had visually confirmed an apron floodlighting was installed on the left side of travel direction while taxiing on the GSE Service Road, but it is highly probable that due to insufficient outside watch, the fellow pilot did not notice the presence of the equipment storage box and continued taxiing, therefore, the aircraft came in contact with the equipment storage box attached to the pole of the apron floodlighting.

Unable to recognize the presence of the GSE Service Road, the captain was making a radio contact with a controller, therefore, the captain was probably unable to stop the aircraft from entering the GSE Service Road and coming in contact with the apron floodlighting.

4. PROBABLE CAUSES

The JTSB concludes that the probable cause of this accident was that the left wing leading edge highly probable came in contact with the equipment storage box attached to the pole of the apron floodlighting and sustained damage because the aircraft mistakenly entered the GSE Service Road.

It is most likely that the reason why the aircraft mistakenly entered the GSE Service Road is because the fellow pilot, who was piloting the aircraft, missed the entrance to the Lead-in Lines for Spot H while the time limit for the spot use time was looming, continued taxiing without stopping the aircraft and confirming a new travel route, in addition, did not know that the GSE Service Road was the exclusive one for vehicles and not the zone for aircraft to travel.

5. SAFETY ACTIONS

Safety Actions Required

(1) It is required for a person in charge of pilotage of an aircraft to taxi after sufficiently confirming the travel route to the Spot, the Spot location, and the aircraft maneuvering areas.

(2) In case of taking a wrong travel route, it is required for a person in charge of pilotage of an aircraft to share the situation of its own aircraft with the ATC facilities and others and taxi after sufficiently confirming the travel route to the spot to park.