By **Civil Aviation Administration of Yashiro Commission**
And **Fountaine Transportation Safety Board**

Final Report of IZ-3524 Airbus A300B4 Inazuma Airlines Flight 8361 On May 7th, 2022

Published in June 2025

ABBREVIATIONS

ATC	Air Traffic Controller
ATPL	Airline Transportation Pilot License
CAAYC	Civil Aviation Administration of Yashiro Commission
CB	Cumulonimbus Cloud
CVR	Cockpit Voice Recorder
DC	Direct Current
DME	Distance Measuring Equipment
ECAM	Electronic Centralized Aircraft Monitor
EGT	Exhausted Gas Temperature
FDR	Flight Data Recorder
FTSB	Fountaine Transportation Safety Board
GPWS	Ground Proximity Warning System
ICAO	International Civil Aviation Organization
IFR	Instrument Flying Rule
ILS	Instrument Landing System
MEL	Minimum Equipment List
nm / n mile	Nautical Mile
PF	Pilot Flying
PM	Pilot Monitoring
RVR	Runway Visual Range
VOR	Very High Frequency (VHF) Omnidirectional Beacon

SYNOPSIS

OPERATOR	**:**	**Inazuma Sakura Airlines**
OWNER	**:**	**Inazuma Sakura Airlines**
MANUFACTURER	**:**	**Fountaine Airbus CO**
AIRCRAFT TYPE	**:**	**Airbus A300B4**
NATIONALITY	**:**	**Inazuma**
REGISTRATION	**:**	**IZ-3524**
PLACE OF ACCIDENT	**:**	63 nm northwest of Narukami Island Airport
DATE AND TIME	**:**	17:26:53 – May 7th, 2022

Note:
All time points refer to Inazuma standard time.

On May 7th, 2022, when the aircraft was having its routine flight from Narukami to Watatsumi Island and was passing approximately 25 500 ft, the aircraft was stricken by thunderstorm with elemental Electro and Cyro, which then result in a fire in left engine due to superconducting triggered by a combination of elements causing overwhelming electric current in metal components.

Soon after, the pilots requested a divert back to Narukami. Meanwhile on the ground, the aircraft was attacked by unauthorized personnels, which forced the aircraft to go around. On the second attempt to land, the aircraft landed successfully, and everyone survived.

Under the instruction of **Raiden**, the CAAYC immediately launched investigation and invited accident investigation organization of the aircraft's manufactory nation Fountaine for assistance, following ICAO practices and Annex 13 of the International Civil Aviation Convention. The investigation team now has determined that the direct causes of the accident are:

- Non-recognition of the threat of elemental thunderstorm area;
- Improper ATC guidance before entering thunderstorm area; and
- Improper airport security management.

And the latent causes are:

- Operator's deficiencies of safety culture on flight operation and MEL.
- ATC department's deficiencies of response to elemental weather conditions and relevant safety measures; and

The investigation team consists of:

CAAYC Personnels	:	Kamisato Ayaka
FTSB Delegate	:	Neuvillette
Invited Specialist	:	Seabird Starch Gunnhildr (from RATSC)

Notice that:

An investigation aims to prevent accidents and incidents in the future. It is not used to pursue accountability.

The **Raiden** asked her comments to be attached.

CONTENTS

1 Factual Information

1.1 History of Flight

15 days before the accident, Inazuma Airlines, also known as Inazuma Sakura Airlines ["the airline" / "the operator" in the following text], were preparing for the test operation from Narukami to Watatsumi. For this test flight, the airline dispatched IZ-3524 from Sumeru to Narukami. The dispatch flight was uneventful according to the flight log.

9 days before the accident, a C-level examination was conducted to diagnose any potential malfunction, which turned out that the left engine anti-ice components were inoperative. However, there were no sufficient relevant accessories for the maintenance. The guarantee said:

"***IZ-3524 : Left ENG*** [Engine] ***ANTI ICE INOP*** [Inoperative]***. Not fixed due to insufficiency of accessories.***"[1]

The airline's dispatch then wrote the following order according to MEL:

"***IZ-3524 … is suitable for this flight. … INOPs: Left ENG ANTI ICE – permitted by MEL.***"

Before the flight, the pilots were informed of the significance of the test flight and the inoperative status of the left engine anti-ice components, which were all acknowledged in their flight logs. This malfunctioning was also mentioned in flight plan submitted to ATC and Inazuma aviation authorities by the operator.

On 16:59:33, May 7th, 2022, the aircraft took off from Narukami and had an uneventful initial climb until it reached approximately 14 500 ft at approximately 17:09. At that altitude, the Narukami ATC (area control) received a weather report written at 17:00 and informed the pilots of the Electro-Cyro thunderstorm they were heading to:

"***Sakura***[2] ***3524, there's a thunderstorm on your heading. Would you like to circumvent it?***"

The pilots replied that they had to contact the airline's dispatch and discussed the effects of circumventing with the dispatch for approximately 2 minutes. To ensure that the aircraft could arrival on schedule, given that the thunderstorm was described as "***mild on weather radar***", the dispatch replied that they should "***try passing it directly.***" The pilots agreed and turned on wing anti-ice and right engine anti-ice system as required.

The aircraft entered the thunderstorm area at approximately 17:20 when the aircraft passed 19 000 ft. Since then, CVR recorded pilots discussing miscellaneous affairs for at least three times, which ranged from the difficulty of passing ATPL examinations to the learning ability.

At 17:24:29, when the aircraft was passing 21 300 ft, the pilots monitored a significant increment of EGT of the left engine. Therefore, pilots disengaged autothrottle and retracted the thrust throttle of that engine from 87% to 75% within 12 seconds. In the following 39 seconds, the EGT of the left engine was reduced from 972 °C to 715 °C. Then, at 17:26:31, with the throttle still being slightly retracted towards approximately 69% and the thrust of right engine was correspondingly configured to approximately 73%, the EGT of the left engine had a sudden rise, from 633 °C to a recorded maximum of 1 353 °C according to FDR.

At 17:26:53, the left engine fire warning went out. The captain, operating as PM, called out "***left engine fire***" at 17:27:01, followed by the first officer's (working as PF) correct

[1] All text written or spoken by maintainers, pilots, ATCs or other individuals is translated to English.
[2] The callsign of Inazuma Airlines.

acknowledgement. According to the checklist, both pilots correctly cooperated to attempt to put out the fire. Then the captain took control.

At 17:27:09, the first fire extinguisher bottle was released through the cockpit's handle. However, the EGT of the left engine did not decrease, and the fire warning remained. According to the procedure, at 17:28:03, the second fire extinguisher bottle was released in the same way, with similarly no effect.

At 17:30:01, the first officer contacted Narukami ATC to ask for returning, and informed ATC of the engine fire on board. The ATC correctly guided the aircraft to return. However, at 17:47:52, when the aircraft was conducting its final approach and was 2.5 nm from the runway threshold (1 minutes after passing NRK VOR), the ground engineer noticed the unauthorized personnels entering the runway area and immediately contacted ATC, who instructed a go-around at 17:48:35 when the aircraft was 0.2 nm (approximately 370.4 m) from the runway threshold.

During the go-around, the pilots increased the thrust of the right engine to 98.3%, which led to an imbalance of aircraft lasting for 12 seconds, during which the bank angle of the aircraft reached a maximum of 15.2 deg, triggering "***bank angle***" warning of GPWS. 3 seconds after the thrust increment, PM called out "***watch out bank angle***" and PF immediately took measures to offset the bank caused by thrust imbalance. Also, the aircraft reached its lowest altitude of 22 ft, during which GPWS "***terrain***" and "***pull up***" warnings were triggered.

Afterwards, the aircraft completed the second approach and successfully landed. The evacuation was then conducted after the right engine was shut down, starting at 18:05:33 and finishing at 18:06:57. All passengers and crew members evacuated from the right side of the aircraft.

At 18:07:15, the firefighters decided to isolate the on-fire left engine from the aircraft by directly cutting it down from the wing. This work completed at 18:09:55 and the fire of the engine was put out at approximately 21:03, with the use of Cyro of approximately 1.5 h.

The following image provides a general reconstruction of flight path:

Diagram – Aircraft's Flight Path in This Accident

1.2 Injuries to Persons

Injuries	Crew	Passenger	Other
Fatal	0	0	0
Serious	0	0	0
Minor/None	2	107	-

All the passengers are from Inazuma.

1.3 Damage to Aircraft

1.3.1 General

The aircraft remained generally complete, and most of the damage is in the engine area.

After touching ground, an integrity inspection was conducted by the operator and investigators, which turned out that the aircraft structure, including components relevant to right engine, remained complete and operative.

1.3.2 Engine Component

Photograph – The left engine

The left engine suffered an uncontained failure and lost some of its components during the explosion caused by the fire. The general location of the wreckages was determined but due to the depth of the sea in the area, the wreckages were never found.

1.4 Other Damage

Given that the explosion of the engine occurred over sea, the wreckage did not affect any individual or the environment significantly. Whether the engine wreckage will affect the ecosystem remains to be seen and is not paid attention to in this accident investigation following previous practices.

1.5 Personnel Information

1.5.1 Captain

The captain was female. She held the following licenses and ratings:

License, Certification or Rating	**First Issued on**	**Expires on**
ATPL License	24 Jul 2019 (with 9 weeks' training)	26 Jul 2022[3]
LPC/OPC	13 Dec 2019	/
Line Check	13 Dec 2019	/
CRM Training	15 Dec 2019	/
Boeing 737-200	24 Jul 2019	30 May 2020
Boeing 737-300	24 Jul 2019	30 May 2020
Airbus A300	27 Jun 2020	29 Jul 2022

The captain is believed to be actively working in a social group and always wears a mask. However, all mental assessment turned out that her mental state was normal.

Before the flight, the captain was off work for 4 days, but her friends reported that she participated in AtCoder (an Inazuma competitive programming platform) contests during her rest. Her total flight time in the last 7 days was 25.6 h.

The captain is a Vision owner, mastering Electro.

1.5.2 First Officer

The first officer was female. She held the following licenses and ratings.

License, Certification or Rating	**First Issued on**	**Expires on**
Military Aviation Certification[4]	22 May 2016	30 Dec 2021
ATPL License	13 Jul 2019 (with 9 weeks' training)	26 Jul 2022
LPC/OPC	13 Dec 2019	/
Line Check	13 Dec 2019	/
CRM Training	15 Dec 2019	/
Airbus A300	13 Jul 2019	29 Jul 2022

[3] Expire dates are given as the circumstance when the accident took place. Renewing is considered.
[4] Details are confidential to Inazuma and are not given as a result.

The first officer initially served as a pilot in Inazuma Air Force and still held this position despite her involvement in civil aviation and reduction in military service time.

Before the flight, the first officer was off work for 3 days (military flights included). Her friends reported that she had probably well rested. Her total flight time in the last 7 days was 33.9 h (10 h as military pilot included).

The Inazuma Airline acknowledges her outstanding skill as a "***both commercial and military***" (commented by the airline's manager) but has set a working hour limitation of 40 h per week after negotiating with Inazuma Air Force to ensure sufficient rest.

The first officer is also a Vision owner, mastering Electro.

1.5.3 ATC

The Narukami Area Controller was male. He graduated from an aviation college in June 2014 with all essential qualifications and started his work in Narukami since then. The airport manager commented that he was "***ordinary but hard-working.***"

While he had qualifications, due to the small capacity of Narukami Island Airport, where he worked, he had never handled accident-level emergency in reality.

1.6 Aircraft Information

1.6.1 General[5]

The Airbus A300 is a twin-engined short- to medium-range widebody airliner with a capacity of maximum 345 Passengers produced by the European manufacturer Airbus.

The A300 was the first aircraft of the former Airbus consortium and the world's first twin-engined widebody aircraft.

Crew	2	
Passengers	266 / 345	
Propulsion	2 Turbofan Engines	
Engine Model[6]	Barbatos Engine Manufactory BE2000 (Use A-1 Jet Fuel, no elemental power supply)	
Engine Power (each)	267.3 kN	60100 lbf
Speed	891 km/h	481 kts 554 mph
Mmo (max. Mach)	Mach 0.82	
Service Ceiling	12.192 m	40.000 ft
Range	6.667 km	3.600 nm.
Empty Weight	78.201 kg	172 404 lbs
max. Takeoff Weight	170.500 kg	375 888 lbs
max. Landing Weight	140.000 kg	308 647 lbs
Wingspan	44.84 m	147 ft 1 in

[5] Reference: (flugzeuginfo.net (Ritteroder des Favonius), 2016).
[6] Information of the aircraft in this accident.

Wing Area	260.0 m²	2 799 ft²
Length	54.08 m	177 ft 5 in
Height	16.54 m	54 ft 3 in

The aircraft was manufactured on 29 Oct 1983 and accumulated 34 173 hours' flying time throughout its career. The aircraft had served on the following operators:

Operator	**Time**
Liyue Internation Airlines (Air Liyue)	29 Oct 1983 – 22 Feb 1989
(Unused)	22 Feb 1989 – 15 Nov 1990
Sumeru Airlines	15 Nov 1990 – 27 Dec 2001
Inazuma Airlines	27 Dec 2001 –

The aircraft had finished its routine maintenance and inspection 29 h before departure and:

Maintenance Level	**Time**
A	3 Jun 2019
B	15 Mar 2017
C	11 Nov 2014
D	9 Dec 2010

1.6.2 Engines[7]

Jet engines are used all over the world for different types of airplanes. There are different types of jet engines, and a turbofan is one of them. The fanjet or turbofan engine is a famous type of engine from the category of jet engine. A turbofan engine is most commonly utilized in aircraft propulsions. The turbofan has an additional fan which helps to accelerate a lot of mass without combusting extra fuel. This article explains the turbofan engine working, types, components, and applications.

A turbofan engine is a modified type of jet engine that uses a combination of bypass air and jet core efflux to create thrust. Bypass air is blown through a ducted fan. The jet core drives this ducted fan. The turbofan engine is also known as a bypass or fanjet engine.

The fan of the turbofan draws excess power from the exhaust gases through the turbine. This process slows down the exhaust speed slightly, but bypass air increases the mass significantly.

In the case of the turbojet, all of the drawn air will flow through the turbine and combustion chamber. In contrast, in a turbofan engine, only some parts of the air drawn into the engine bypasses through the turbine and combustion chamber. Therefore, a turbofan engine works as a turbojet that uses a ducted fan.

Most commercial aircraft engines nowadays have high-bypass engines, but the latest military fighter jets have low-bypass turbofan engines. Afterburners can't utilize in high-bypass turbofans but can be utilized in low-bypass engines.

In this type of engine, the core engine surrounds by a front fan and an additional turbine at the rear. Turbines and fans have multiple blades like a central turbine and a central compressor linked through an extra shaft. Because of some mechanical reasons, the fan shaft passes by a central shaft.

[7] Reference: (mechanicalboost.com (Fountaine), 2020).

This arrangement of engine is known as a 2-spool engine. One “spool” is for the core, and the other “spool” is for the fan.

Turbofan engines work through the following procedures:

- Firstly, the air is sucked inside the engine via a fan, and air divides into two various paths.
- Some parts of the air enter the engine core where combustion takes place while the remaining parts of the air (bypass air) move outside of the engine core by a duct.
- After suction, the air enters into a low-pressure compressor which increases the pressure of the air according to the requirements and sends it into a high-pressure compressor.
- When the low-compressed air comes into the high-pressure compressor, it further compresses the air up to very high pressure and also high increases its temperature.
- The high-pressure compressor makes the air temperature so high that when it touches the fuel in the combustion chamber, the combustion process starts itself.
- After the combustion of the air-fuel mixture, the combusted gas enters into the low-pressure and high-pressure turbine.
- After entering the turbine, the hot gases expand into the turbine and strike the turbine blades. The turbine blades extract enough power from the combusted mixture to move the low-pressure compressor and fan. The remaining power of the combusted mixture is sent toward the exhaust nozzle.
- When the exhaust gases enter the nozzle, the nozzle converts their pressure energy into speed and converts them into very high-speed gases.
- When high-speed gases are discharged from the nozzle into the atmosphere, they generate thrust, which moves the airplane forward.
- The speed of the air flowing by the fan is slightly faster than the speed of the air flowing free. This flow of air is known as the bypass or fan airflow.

Diagram – Working Mechanics of Turbofan Engine

1.6.3 Other Engine Components

One engine's fire system consists of two independent detectors. The avionics will consider it a fire if one of the conditions is satisfied:

- Two detectors report fire;
- One detector is disconnected, and one reports fire; and
- Two detectors are disconnected one by one within 10 seconds.

And a simple malfunctioning will be considered if:

- At least one detector is disconnected, and no detector has reported a fire.

The aircraft's engine anti ice is implemented by making part of exhausted gas to particular engine areas to prevent icing in these areas. The component is simply a motor controlled by a switch in the cockpit and an independent detector which detects whether the motor has controlled the valve to reach the expected position and sends malfunctioning message to the cockpit.

The engine anti-ice component had no malfunctioning record before this accident.

1.6.4 Avionics

The aircraft had pure-mechanic avionics to cut down costs when being manufactured.

Photograph – Cockpit Similar to the Configuration of IZ-3524 (Light Test Mode)

The fire warning is shown by a master warning indicator on the left top side[8] and the detailed warning indications between the alternative indicators and the engine parameter panels.

[8] Description of the captain-side avionics. For the first-officer-side, all "left" should be "right" and all "right" should be "left".

The engine fire handles are placed behind[9] the throttles and fuel and electric control panels are on overhead panels, from which pilots can also know relevant information of engines.

The icing indicators are optional and were not installed by the aircraft.

1.6.5 Weather Radar Devices

The weather radar of the aircraft was manufactured by Airbus's supplier, also in Fountaine, whose products were certificated by Fountaine government in March 1975. Given that Vision-related function and detection "***would have cost an arm and a leg for us***" (the manager of the manufacturer) and "***elemental weather condition rarely happen,***" they decided to implement only the regular weather detection based on radar wave's reflection required by international standard, though Fountaine standard encourages manufacturers to implement detection of elemental weather conditions.

1.7 Meteorological Information

1.7.1 Before Entering Thunderstorm Area

The aircraft was flying under IFR with dusk light towards west.

At 17:00, the meteorological information about the aircraft's flight path was given as follows: "***METAR RJIZ 070800Z AUTO 24005G06KT 220V290 4500 TSRA BKN055CB BKN100CB BKN185CB SCT240/// 11/10 A2987 BECMG +TSRA BKN155CB FM0845Z***"

That is:

1. Wind direction was from 220 to 290 deg, at 5 kts and gust 6 kts;
2. Broken clouds (approximately 3/4 of the sky) at 5 500, 10 000, 18 500 ft, bringing rain;
3. Scattered clouds at 24 000 ft, whose category was undetermined (symbolized by "*///*");
4. Thunderstorm and rain in the airport area;
5. There would be heavy thunderstorms and rain from 17:45 local time.

The crew members received the weather information through ATC's information and acknowledged it.

1.7.2 Before Landing

Before landing, at 17:30, the meteorological information was given as follows:

"***METAR RJIZ 070830Z AUTO 24004G07 180V300 3500 +TSRA BKN035CB BKN055CB BKN155CB SCT230/// 10/09 A2985***"

The thunderstorm had become stronger as forecasted and the height of clouds all decreased, compared with the 17:00 report.

1.8 Aids to Navigation

The aircraft was equipped with CAT IIIA Autoland (ILS) devices which allowed it to land with

[9] Description of pilots' view. For the view in the photograph, all "behind" should be "in front of".

at least 200 m RVR and without decision height (go-around if runway not in sight).

The aircraft was also equipped with VOR/DME navigation and LNAV navigation. When the aircraft was climbing, the pilots engaged LNAV.

Radar data revealed that the aircraft was on its instructed track throughout the flight.

1.9 Communication

Investigators compared communication audio recorded by CVR with ATC tapes and invited pilots and ATC staff to transcript them. It turned out that the communication was clear as all transcriptions were correct.

Both pilots and the ATC staff did not report any communication failure.

During the go-around, conscious of the potential delay of the pilots' acknowledgement, the airport staff used a flashing red light to show land prohibition, following light signal practice in case of radio communication failure. According to the interview with the pilots, they recognized the signal after confirming the go-around instruction in the cockpit and before acknowledgement, which suits CVR record.

1.10 Airport Information

1.10.1 General

The airport was built in December 2018, initially operating airline from Liyue and Mondstadt to Inazuma. Due to strict visa policy before 2019, the capacity of all Inazuma airports was limited, which resulted in a long-term deficit before 2020. During that time, the main profit of the airport came from cargo delivery and military service.

1.10.2 Runway Information

In this section, investigators collected only the airport information of Narukami, where the aircraft took off and diverted.

The airport had 2 runways:

1. 02L/35R, which is 29 ft above sea level, 6 553 ft in length and equipped with CAT IIIA landing device; and
2. 02R/35L, which is 30 ft above sea level, 5 354 ft in length and equipped with CAT II landing device.

The taxiway of the airport goes across the railway, and at the sides of the taxiway (parallel with runways) lie the terminal buildings and other buildings connected by underground channels.

1.10.3 Security Service

The airport had a wire mesh, 1.5 m in height, as its border. However, since 2019, there had been 9 recorded cases of Hillchurl's invasion.

Since June 2019, after 7 invasions, airport's operator requested assistance from the Tenryou Commission, the public security bureau and military force of Inazuma, which afterwards significantly reduced the number of invasions.

1.11 Flight Data Recorders

The flight data recorder was located at the tail of the aircraft. Given that the aircraft landed safely, investigators immediately fetched the flight data recorders, including combined CVR and FDR, and sent them to Fountaine’s manufacturer for analysis.

Photograph – Combined Flight Data Recorders

The data was successfully downloaded in July 2020 and was sent back for analysis. Inazuma specialists supervised the whole procedure and ensured the data integrity and correctness.

Given the FDR’s memory capacity, FDR did not involve on-board weather radar data, which increases the difficulty of investigation.

The FDR revealed the EGT temperature change mentioned in 1.1.

1.12 Wreckage Information

1.12.1 General

As the text has mentioned, the aircraft remained complete and undamaged (except for the left engine components). Also, the left engine wreckage had fallen into the deep-sea area and was not revealed within search work for 120 days. Further search was cancelled due to the limitation of the budget.

1.12.2 The Left Engine Components

The missing part of the left engine could not be found, so the following investigation was conducted without this component. Investigators inspected the engine component and revealed that:

1. Only the casing of the left engine remained complete, and the inner components had been mixed together;
2. The main engine components had either twisted or melted;
3. The twisted engine components had signs of electric current burning, including tree-like patterns; and
4. These components had diamond-like dents.

Chemical test revealed that the compounds of dry powder fire extinguisher were attached to the remaining metal surface.

Investigators agree that this might not represent the actual situation of the engine when the aircraft, as the fire continued to burn for a few hours. Besides, given that the anti-ice components had been burnt, investigators could not determine the reason why the left engine anti-ice device was malfunctioning in the following investigation.

1.13 Medical Information

As part of rescue activity, Inazuma government conducted medical examinations for all passengers and crew members. These examinations revealed that there was no physical injury caused by this accident.

Investigators, cooperating with local residential physicians, also tracked passengers' mental health. Besides being afraid of taking an aircraft, no significant mental disease was observed within 90 days.

1.14 Fire

The aircraft suffered left engine fire during the flight. Through analysis on wreckage information, investigators determined that the fire was caused by electric current heating metal components and then igniting fuel, starting an uncontrolled flaming.

The pilots applied on-board engine fire extinguisher, which consists of automatic fuel cutoff and dry powder extinguisher release. However, both fire extinguisher bottles did not put out the fire.

Examination on engine wreckage revealed that the fire extinguisher bottles were successfully released.

1.15 Search and Rescue Activities

15 minutes after the emergency was declared by crew members,

1.16 Experiments

1.16.1 Elemental Superconduct

Investigators collected data of magnetic field that can be created by Electro-and-Cyro elemental superconducting system (inviting Ms. Lisa Minz and Mr. Kaeya Alberich). The result is given below (Cyro is input in 30 s and x-axis is time (s)).

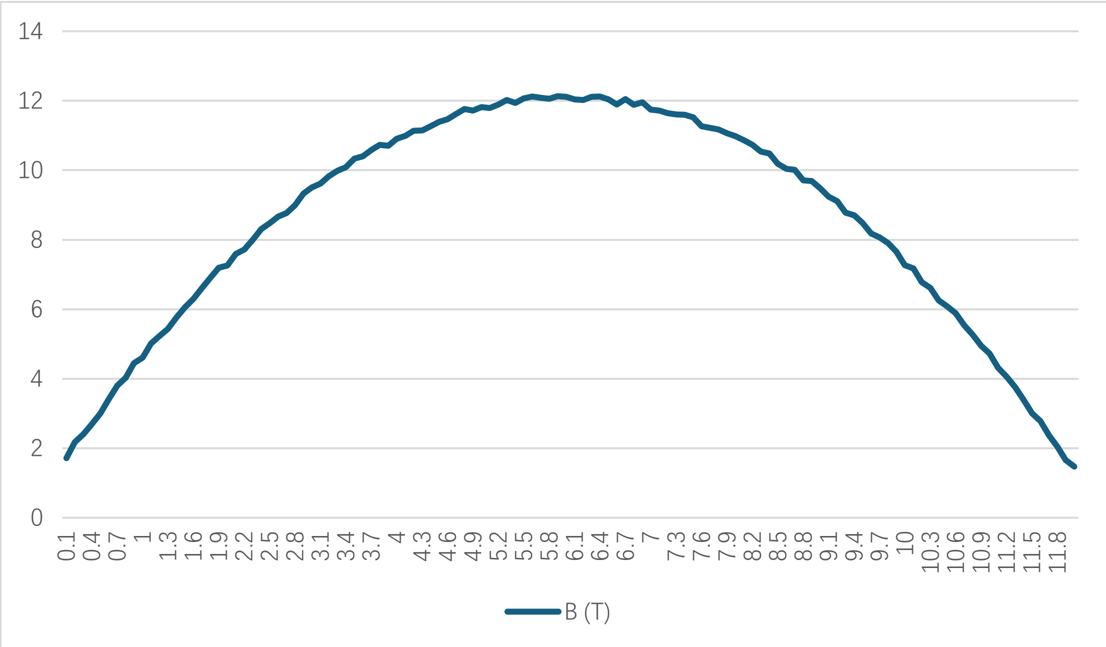

Diagram – Curve 1: 10 kV/m Electro and 10 mol Cyro

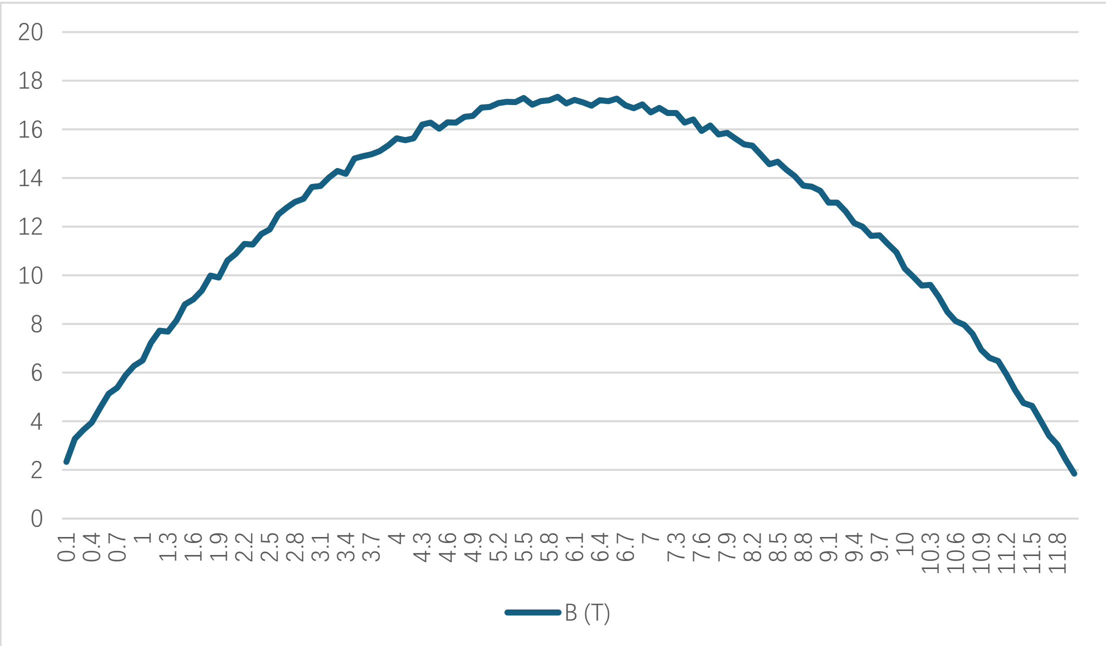

Diagram – Curve 2: 10 kV/m Electro and 20 mol Cyro

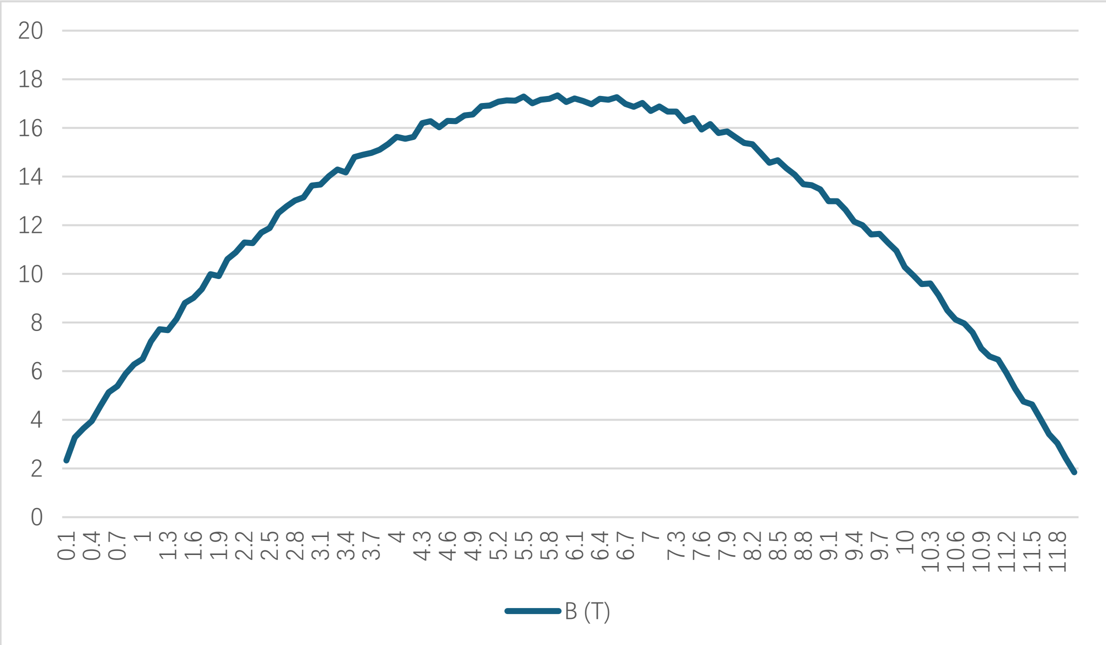

Diagram – Curve 3: 20 kV/m Electro and 10 mol Cyro

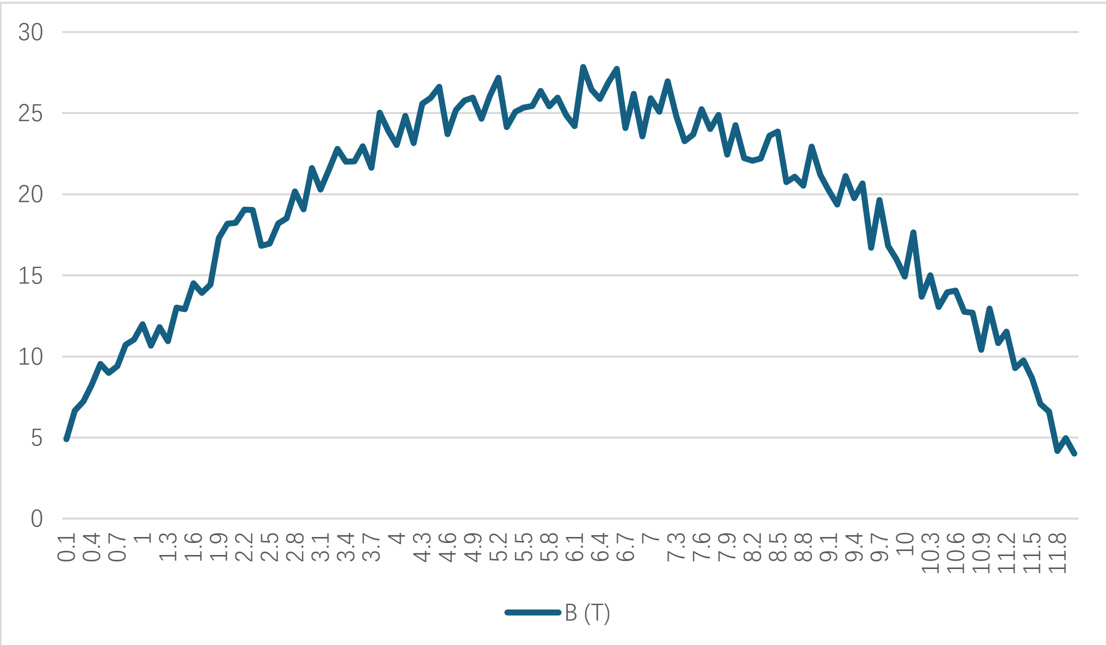

Diagram – Curve 4: 20 kV/m Electro and 20 mol Cyro

Investigators, after interviewing Ritteroder des Favonius members, determined that the actual environment the aircraft was in had much more powerful and unstable Cyro and Electro environment than the curve 4 displays, and according to the weather stations in Inazuma, the magnetic induction intensity should be multiplied by approximately 10.

1.16.2 Elemental Superconduct in Engines

Given that the results of elemental reaction might differ depending on altitude and other geographical conditions, investigators collected the magnetic field data (given in the previous section) and conducted experiments on the ground, as the engine does not involve any elemental feature.

By adding magnetic field similar to the elemental experiment's result in mid-air, investigators measured the temperature of engine areas. With engine running, starting from 600 ℃ and cool one part of a metal with 10W power, investigators measured temperature values of both it and a

Another part of metal (which can be considered electronically connected with the other part).

The result was, while the temperature of the cooled part reached 475 ℃, the uncooled part reached 820 ℃ in just 12 s.

1.16.3 Flight Simulation

Investigators conducted flight simulation to study the go-around process in this accident. This test was conducted under the following conditions:

- Left engine shutdown and continuously on fire, with rudder properly configured to balance the aircraft;
- Upwind speed 4 kts, gust 6 kts;
- Instructed go-around at 300 ft; and
- Terrains distributed in the same way as terrains near Narukami.

The result turned out to be that, 9.5% of pilots (from Inazuma Airlines, Air Fountaine, Luftmondstadt and Air Liyue) touched terrains; 22.4% of pilots (the 9.5% not included) had minimum radio altimeter indication lower than 15 ft; and 21.5% of pilots had maximum bank angle larger than 16 deg.

1.17 Organizational Information

1.17.1 Inazuma Airlines

Inazuma Airlines is the national airline created and managed by Inazuma government (but independent from CAAYC) in 1920, operating domestic and international airlines. Its fleet mainly consists of aircrafts purchased before 1994 (the Inazuma lockdown, or *Sakoku* – border-closure, announced by the **Raiden**), including:

- Airbus A300 and A310 from Fountaine (approximately 31%);
- Boeing 737OG/CL series (-100, -200, -300, -400 and -500) from Mondstadt (approximately 57%); and
- Other general aviation aircrafts manufactured in Inazuma.

Inazuma Airlines recruits and trains pilots mainly at home, with approximately 14% pilots from other nations (the number was 37% before the lockdown). Statistics revealed that only 7% pilots own Vision now (compared with 13% before the lockdown).

The MEL of this airline was developed under regulations of CAAYC, with a key concept of "***ensuring safe operation of aircraft and balancing efficiency and safety***" (the airline's manager). However, the MEL did not involve any regulation about operation under elemental conditions.

1.17.2 ATC

The ATC was governed by CAAYC, the aviation management department of Inazuma. It recruits staff mainly from Inazuma graduates and provides trainings for free.

The ATC was established the same time when the airport began to operate. During the operation of the airport in the year, the area control had guided 15 244 aircrafts and the approach control had guided 8 633 aircrafts in total, none of which reported emergency.

1.17.3 CAAYC

The CAAYC is the official aviation management authority of Inazuma. This authority consists of following departments:

1. The regulation department – Design and announce regulations for aviation operation;
2. The supervision department – Supervise the execution of regulation. This department receives operation report from organizations (airlines, airport management departments, ATCs, etc.) and analyze whether they have followed regulations, and correspondingly analyze whether CAAYC should intervene; and
3. The independent investigation organization.

CAAYC has been set up regulations for MEL since its establishment. Its MEL regulations referred to Liyue CAAL (Civil Aviation Administration of Liyue) and Mondstadt ALDRDF (Abteilung Luftfahrtsicherheit des Ritteroder des Favonius, also known as MTSC), where standards about Geo and Anemo were paid much attention to when considering elemental, respectively.

1.18 Additional Information

1.18.1 Similar Accident

According to Ritteroder des Favonius, in December 2004, a Barbatos Airlines Boeing 737-200 from Mondstadt to Sumeru crossed a thunderstorm area which was later determined as an elemental (Electro) weather area with anti-ice device turned on. When autothrottle reduced power to keep balance, pilots noticed EGT decreased but then increased to 1 075 °C. Pilots conducted the engine overheat checklist and the overheating did not occur again after exiting the area.

1.18.2 Operator Procedures

According to Inazuma Airlines, the following checklist is given to handle engine fire:

1	Auto throttle (if connected)		… Disconnect
2	Thrust (the engine on fire)	… Checked	… Idle
3	Engine starter	… Checked	… OFF
4	Engine fire extinguisher button	… Checked	… Open protection cover
5	**If** engine fire or engine overheat indication remains:		

	Engine fire extinguisher handle	… Pull
	Check DISCH indication of fire extinguisher.	
	If engine fire or engine overheat remains after 30 seconds:	
	Check another DISCH indication of fire extinguisher. When necessary, manually push fire extinguisher release.	
6	**If** vibration appears and continues after the engine shutdown:	
	Descend to a lower altitude to eliminate vibration.	
7	Air bleed X FEED	… OFF
8	Bleed valve	… OFF
	(The engine on fire)	
	The other engine’s high flow will be automatically established.	
9	APU Bleeding	… OFF
10	**If** APU can start:	
	APU	… START
	Then, When APU is running:	
	APU generator	… ON
11	Transponder	… TA
	This can prevent climbing instruction.	
12	Balance fuel if necessary.	
13	Land ASAP.	
	(Enter Single Engine Flying Checklist)	

1.18.3 Operator Use of Vision

Although according to current material, Inazuma Airline did not involve any Vision-based training, but other airlines in Teyvat had various practices. For example, Luftmondstadt and Air Barbatos had additional training depending on element type for Vision owners, such as Anemo-based alternative bleeding enhancing APU and engine startup.

Some operators also encourage cooperation among Vision owners, if possible. For example, elemental reactions could be used in case of emergency including Geo isolation for fire. In July 2001, an aircraft operated by Air Liyue had front cargo area fire. The captain, who was a Geo Vision owner, conducted crystallization reaction when cargo area fire extinguishers did not work, which eventually put out the fire.

2 Analyses

2.1 Engine Fire

2.1.1 Causes

Investigators studied the probable cause of heat leading to the fire. Given that superconducting caused by Electro and Cyro will result in a magnetic field, followed by eddy current due to the changing magnetic field (its voltage, or electromotance, is $E = \frac{S\Delta B}{\Delta t}$). Here we will have:

$$\begin{cases} E = \frac{S\Delta B}{\Delta t} \\ I = \frac{E}{R} \\ W = I^2 R\Delta t \\ \Delta t = \frac{W}{cm} \end{cases}$$

And thus, given that R changes with temperature and external cooling power (10 W), we have (starting from 600 ℃):

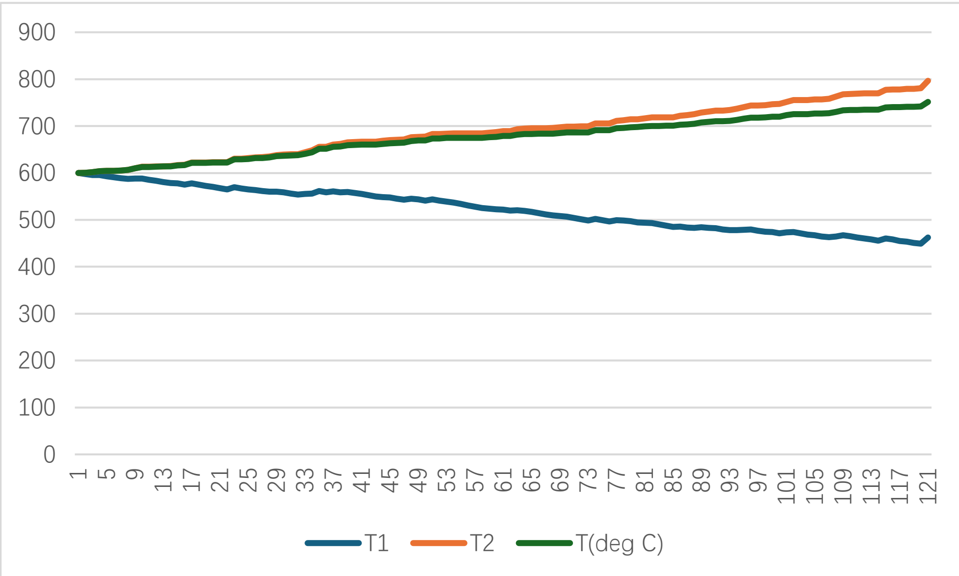

Diagram – T1: Temperature with cooling; T2: Temperature without cooling; T(deg C): Temperature when no cooling is applied

In this diagram, it can be determined that while cooling can reduce the temperature, it increases the temperature of the other part of the metal component by 25% more. Therefore, the fuel in areas where it was supposed to be low temperature was more likely to be ignited and cause fire. More analyses can be done in the same way: When the cooling power reaches 20 W, the highest temperature reaches approximately 900 ℃.

Given the fact that the anti-ice components of the left engine were malfunctioning, the Cyro remained in the engine area beyond expectation and normal operation exacerbated the thermal stress of the engine components by increasing the current (especially in cooler areas without fuel burning), Within 22 seconds, the temperature had risen to a temperature that could ignite the fuel, which then resulted in the uncontained failure.

2.1.2 Failure of Fire Extinguisher

The use of dry powder fire extinguisher is on the basis of:

- Either the fire is limited in the predesigned burning area of the engine, which prevents burning fuel leaking into other components; or
- The fuel leaks out the engine through broken components, which means that the fire extinguisher needs to tackle only the burning fuel attached to remaining components.

So that the fire extinguisher can put out a fire by cooling the burning system down and isolating the oxygen.

However, in this accident, dry powder fire extinguisher could not intervene the burning of a combination of jet fuel and superconducting, as the former provided fuel and the latter provided heat. Furthermore, the twisted and melted metal in the isolation components enabled oxygen to enter to support the burning, and given the mechanism of the burning, cooling would have in fact exacerbated the fire.

2.1.3 Potential Preventions

In the diagram in the previous section, a green line (T(deg C)) suggests a relatively moderate increment. Therefore, if pilots consider remaining a high temperature, the probability of resulting in a fire can be reduced.

Besides, entering a stable magnetic field could also have contributed to the reduction of the electric current. This, if available, could have been done by active intervention, if Vision is available. However, given the Inazuma government's policy in recent years, this can hardly be satisfied by other pilots. In this accident, both pilots owned Visions, but they had neither been trained to use it in aviation nor learned about relevant physics in their career. Unlike Liyue, even in their education, the relationship between electricity (Electro) and magnetic field is not often taught.

Summarizing all the analyses in this section above, investigators suggest:

- Temperature Management: Maintaining higher baseline engine temperatures (e.g., ⩾ 700°C) could reduce thermal gradient-driven current surges;
- Physical Shielding: Consider replacing engine metal components with high electric resistance materials or insulating metal components (especially for the burning area and other areas) to prevent magnetic eddy current;
- Elemental Shielding: Engine components could integrate non-conductive composites (e.g., Geo-infused ceramics) to limit eddy currents; and
- Vision-Assisted Protocols: Trained Vision holders (Electro) could stabilize magnetic fields mid-flight, though long-term regulatory barriers exist.

2.2 Pilot and Dispatch

2.2.1 Response to Thunderstorm

Investigators have determined that the pilots could have chosen to circumvent. Investigators agree that this is caused by multiple causes. Subjectively:

1. Lack of safety awareness. Although the regulation of "10 000 ft's cockpit silence" (which prohibits crew members from discussing miscellaneous affairs before reaching such altitude) was literally satisfied, most aviation administrations, including CAAYC, require that pilots shall keep concentrated on special weather conditions that might result in an accident or incident when it appears. However, in this accident, pilots were unaware of the potential danger of the special weather condition – thunderstorm, which reflected their inability of safety awareness.
2. Lack of situated cognition. Having been informed of the left engine anti-ice malfunctioning before the flight, the pilots were supposed to notice the potential risk of entering thunderstorm area without proper anti-ice, whose consequences basically consist of loss of engine thrust and even engine flameout. However, the pilots had never discussed the potential issue.
3. Lack of CRM. This was a cause of the lack of situated cognition. When facing the special weather condition in this accident, cockpit resources should be managed and affairs including taking radar data, reported meteorological information, other aircrafts' reports and other information into general account, communicating with ATC and the operator's dispatch, and monitoring other parameters of the aircraft should have been assigned. However, according to the CVR, this was not done as expected. Deep down:
   a) The lack of CRM might be caused by the relatively short training period of the captain, which suggests that she might have insufficient grinding-in time with her colleagues and coaches;
   b) Another contributing factor might be the "green-and-green" partnership, given their relatively insufficient experience in civil aviation; and
   c) The first officer's experience of military service might have increased her overconfidence in handling the special weather condition in this accident, which resulted in a lack of CRM; and
4. A rush for quick results. In this accident, both pilots hoped to arrive on schedule and as early as possible, which increased their working pressure and distractions. To counteract the increasing pressure, they applied distractions which decreased their situated cognition.

And objectively:

5. Inability of weather radar forecasting elemental weather conditions. The radar was not equipped with elemental weather detection, which resulted in a relatively mild display in the radar screen as only the regular CB, which were probably in fact not thick, misleading the pilots.

2.2.2 Response to Fire

Comparing checklist given in factual information with CVR record, the pilots correctly executed the engine fire checklist. However, due to the following reasons, the fire could not be put out:

1. The fire extinguisher design. Given in 2.1, the fire extinguisher was unable to put out the fire due to the fire mechanics; and
2. The unawareness of elemental burning. Also given in 2.1, the burning based on elemental reaction requires elemental measures to eventually put out. Given the fact that the ground firefighter department spent hours putting out the fire using normal (physical and non-elemental) measures eventually, there was no way for normal measures to work.

Investigators studied reasons why the pilots did not come up with elemental solutions, given the fact that they both owned Visions:

1. The lack of Vision-using education combined with specified physics knowledge, especially electrodynamics, given in 2.1 and exacerbated by reasons mentioned in 2.2 (2) and relatively short training period (especially of the captain), as given the element of their Visions, their potential response is adjusting magnetic field correspondingly; and
2. The policies in Inazuma which had once prohibited the personal use of Visions resulted in an inability to use Visions without permission from leadership personnels.

2.2.3 Pilot Go-Around Behavior

Investigators studied the pilots' go-around behavior. It can be divided into the following stages:

1. Descending phase: the aircraft was on 3° glide scope descending towards runway with single engine, which thrust at approximately 50%.
2. Go-around phase 1: At 17:48:35, the ATC instructed the go-around and was understood by pilots at 17:48:43 (according to interviews) when the aircraft was at 301 ft. The pilots gradually increased the right engine thrust from 43.1% to 98.3%, during which the aircraft began to bank.
3. Go-around phase 2: At 17:49:29, ground engineer used flashing red signal to ask for go-around in case pilots did not receive ATC instruction, as they could feel "***the plane flying past, above their head***".
4. Go-around phase 3: At 17:49:30, the aircraft reached its lowest altitude 22 ft, above a beach park 2.08 nm away from the runway threshold.
5. Go-around phase 4: The aircraft regained a positive climbing rate. At 17:49:36, the aircraft reached its maximum bank angle 15.2 deg at 575 ft altitude, which was followed by a commanded thrust reduction to 87.1% and offset.

The following diagram might help with understanding:

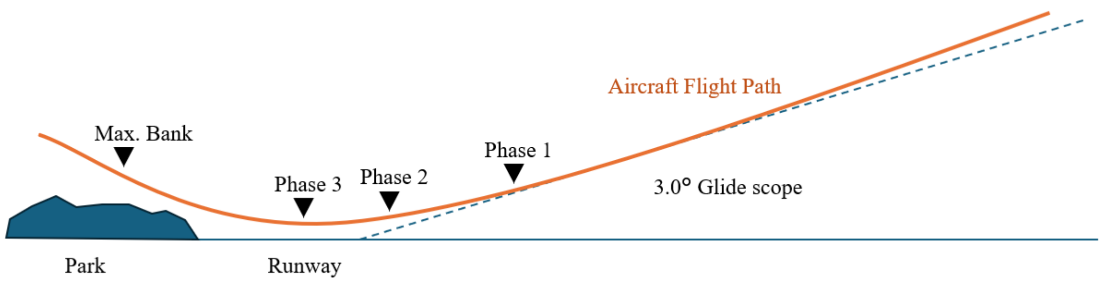

Diagram – Aircraft Flight Path (Vertical)

Investigators studied the process of the go-around. Throughout the go-around, the airspeed was in acceptable range, without any stall or overspeed. The aircraft was always at least 20 ft above terrains according to radio altimeter data recorded by FDR. The go-around process reflected the proficiency of pilots in approach, compared with flight simulation experiments.

Investigators considered the reason why pilots had such proficiency in the go-around but failed to handle the engine fire correctly. Investigators determined that the probable cause is the lack of relevant training mentioned in 2.1, which led to a lack of situated cognition; differently, in the approach, due to the proper training and the first officer's experience about military service, their situated cognition was sufficient for this complex go-around.

2.3 Operator

2.3.1 Maintenance

The deferred maintenance of the left engine anti-ice system constituted a critical latent failure. Though technically permitted under MEL guidelines, investigators agreed that the operator:

1. Ignored contextual risks: Failed to account for the Electro-Cryo thunderstorm forecast along the flight path when authorizing the deferral. Meteorological data indicated a high probability of severe weather but dispatch prioritized schedule integrity over risk mitigation; and
2. Resource management failure: The "insufficiency of accessories" reflected poor supply-chain planning for legacy aircraft (34 years in service). No contingency measures including borrowing parts from Liyue/Mondstadt were attempted despite the 9 days' lead time.

Deep down, investigators determined the following contributing factors:

1. The lack of safety culture. With safety culture, staff in operators would have been searching for ways to improve safety. On the flip side, staff in operators would prioritize efficiency or other factors and ignore potential safety issues, only following basic guidelines; and
2. The lack of flexible workflow. If the workflow had been flexible, staff could propose borrowing or purchasing essential components from other maintainers at home or abroad.
3. The lack of elemental knowledge. This is caused by both the lack of safety culture and the past political restrictions of Vision (which led to the lack of related knowledge).

2.3.2 Training Inadequacies

The operator's training program exhibited systemic gaps throughout the accident:

- Elemental weather blindness: No module covered eddy-current hazards from Electro-Cryo interactions in engines, despite the 2004 Mondstadt incident being documented in ICAO bulletins. It was a normal and nearly "uneventful" incident, so it was unlikely to be paid attention to by operators.
- Vision utilization neglect: Both pilots held Electro Visions, yet CRM training omitted the following:
    - Protocols for stabilizing magnetic fields during superconductivity events.
    - Coordination procedures for dual-Vision holders in emergencies.

The reasons why these trainings were neglected were the same as the ones in 2.1 and 2.2.

- MEL misapplication culture: Dispatchers were trained to treat MEL as a compliance tool rather than a risk-assessment framework, leading to automated approvals without contextual evaluation. This was a consequence of the lack of safety culture.

2.4 ATC

2.4.1 Thunder Guidance

Investigators determined that Narukami ATC performed incomplete and improper pre-thunderstorm guidance:

- Passive advisory: The query *"Would you like to circumvent it?"* placed decision-making solely on the crew, contrary to ICAO Annex 11 which requires controller to be responsible for collision/weather hazard avoidance. The ATC should have directly give direct instructions in order to protect the aircraft from the weather condition, given that even without the elemental feature, the weather described as "***BECMG +TSRA***" (due to its elemental nature, even if weather radar did not provide strong reflection) could bring severe risk.
- Lack of urgency: No emphasis was placed on:
    - The elemental nature of the storm (distinct from conventional CBs). Weather report had pointed out the special (whose features were undetermined) scattered cloud in approximately 21 000 ~ 23 000 ft.
    - The aircraft's known anti-ice deficiency, which was given by flight plan submitted.
- Procedural gap: No standardized phraseology existed for elemental weather threats in Inazuma ATC manuals, delaying pilot risk recognition. This resulted in a fallback of the ATC's cognition towards abstract ICAO standard, also delaying ATC's risk cognition, situated cognition and affecting the ATC's communication.

2.4.2 After Emergency Declaration

The diverting request was permitted by the ATC, and the ATC correctly and efficiently guided the aircraft towards the runway threshold. However, as the aircraft was performing its final approach, an intrusion occurred.

While the ground engineer had reported an intrusion when the aircraft was still 2.5 nm from threshold to the ATC. However, it took approximately one minute for the ATC to confirm the situation and eventually instruct the aircraft to perform go-around when the aircraft had only 0.2 nm.

According to the interview, both the pilots and the ATC were aware of the difficulty of single engine go-around. Also, according to the interview with ground engineer and airport camera, the ground engineers and security departments had been trying to dislodge the unauthorized personnels, but the Tenryou Commission was not ready, as their shunting requires instruction from generals and for airport managers, the procedure of applying for the military assistance could be significantly time-consuming.

Investigators studied the necessity of the go-around. Investigators determined that,

1. The aircraft could not land with the unauthorized personnels. Otherwise, more deaths could be occurred as the personnels could be inhaled into the running engine, and not only causing the severe (or even fatal) injury of these personnels but also causing another fire.
2. The aviation management department could not dislodge the unauthorized personnels in time, according to the interview and that they were still in conflict when the aircraft was about to (normally within at least 50 seconds) land.
3. Therefore, the go-around was unavoidable.

2.5 Airport Management

Investigators have determined that the airport's 1.5 m wire mesh and 9 prior Hilichurl breaches demonstrated:

- Underfunded security: Perimeter defenses were unchanged despite known threats, violating ICAO Annex 14 requiring aerodrome physical protection. A 1.5 m wire mesh can be easily passed by a normal person by climbing or by Hilichurl through collision.
- ATC workload issues: The controller managed approach, weather updates, and security coordination alone due to Narukami's minimal staffing due to its financial difficulties, which served as a latent risk factor. This reveals that, not only the operator but also the ATC management organization lacked safety culture.

2.6 Aviation Management Departments

Investigators believed that CAAYC had shown critical oversight lapses:

1. CAAYC failed to establish regulations for operation under Teyvat's elemental environment. This consists of:
   (a) The void of operation regulation elemental weather condition. During the whole accident, the meteorological station could only report an "unknown" ("***SCT///***") in METAR information and the ATC could only instruct the aircraft with such incomplete data.
   (b) The void of MEL regulation under elemental condition. Normal icy condition does not affect normal operation of aircraft with partial anti-ice malfunctioning, but elemental Cyro (as well as other elements) might have significant effect on operation. However, the MEL standards referred from Liyue and Mondstadt did not involve situations more frequently occurring or unique to Inazuma, including Electro thunderstorm in this accident.
2. CAAYC did not provide any Vision-related training for suitable aviators. This resulted in a lack of better response of pilots, given that they held Visions and was able to recover from Electro-caused engine fire.
3. CAAYC did not respond to invasion cases in Narukami airport. The supervision department should have responded to the invasion despite the unnecessity of launching an investigation due to the fact that the invasion caused no injury or damage. Deep down, investigators determined following latent causes:
   (a) The high working pressure of the supervision department. This department is responsible for supervision of all aviation departments and has to analyze

numerous materials daily, which results in a decline of in-time response;

(b) The unclassified reports. Remaining reports from aviation departments unclassified results in an inability for department staff to notice what aspects of the nation's aviation is in potential danger, so that the preventions will be insufficient; and

(c) The lack of safety culture occurs not only in the airline but also in other aviation departments.

4. CAAYC ceased international communication during the lockdown. This limited CAAYC to access to accident and incident database and exchange experience with peers, including the use of Vision and prevention of element-related accidents.
5. CAAYC did not establish or assist aviation departments to establish essential cooperation with Tenryou Commission to ensure public safety. In this accident, the airport manager considered assistance from the military units but had established such cooperation only after multiple safety incidents.

3 Conclusions

Investigators have determined the following conclusions:

About Pilots

1. The pilots were qualified;
2. The pilots prioritized efficiency over safety due to operator culture, which contributed to the accident;
3. The pilots' response to the engine fire satisfied predesigned procedure and trainings they had received but could not contribute to the solution;
4. The pilots' go-around behavior was correct and necessary;
5. The pilots were unaware of the correct use of the Visions and lack of situated cognition due to the improper training;

About the Aircraft

6. The aircraft was suitable for normal operation;
7. The aircraft's design deficiency contributed to the continuous fire of the left engine;
8. The reason of the engine anti-ice component becoming malfunctioning could not be determined;

About the ATC

9. The ATC staff were qualified;
10. The ATC staff did not do their duty to prevent aircraft entering thunderstorm area due to the lack of safety culture;
11. The ATC staff correctly guided the aircraft to divert after emergency declaration;
12. The ATC staff and airport staff followed appropriate steps to deliver emergency go-around signal in case of unexpected runway invasion;

About the Operators

13. The operator did not design MEL suitable for elemental environment;
14. The operator tended to prioritize efficiency over safety in some cases, including this accident;
15. The operator's maintenance department did not fully do its duty and flexibly apply multiple approaches;
16. The operator as well as the airport management departments was lack of safety culture which could have encouraged its staff to prevent accident in multiple ways, including:
    a) Operator: proper maintenance and dispatch; and
    b) Airport management department: barrier construction and cooperation with Tenryou Commission;
17. The airport management departments were lack of experience due to the small capacity of the airport and its financial situation;

About Authorities

18. The CAAYC did not establish regulations based on the actual situation in Inazuma;
19. The CAAYC neglected the potential use of Vision and the potential consequences of elemental reaction in aviation;
20. The CAAYC's supervision system resulted in an inability to respond to security (and possibly other) incidents in time;
21. The CAAYC did not establish international cooperation with other aviation administrations and departments to ensure safety;
22. The CAAYC did not establish essential cooperation with other Inazuma government departments (including the Tenryou Commission) to ensure aviation safety.

4 Safety Recommendations

4.1 To ATC

The ATC staff in the Inazuma are suggested to be retrained about tackling with weather conditions (especially elemental weather conditions).

Response: CAAYC has developed a training plan and will be executed by August 2025 and added to current ATC training regulation immediately.

4.2 To Operator

The Inazuma Airline is suggested to:

1. Revise its MEL and add operation regulation under Electro and Cyro environment. For example, it is recommended by investigators to add compulsory full anti-ice support under Cyro environment to prevent superconducting and crystalizing;
2. Revise its safety culture by encouraging its staff to discover safety issues, propose multiple solutions and apply multiple methods and never prioritize efficiency over safety; and
3. Involve Vision-related training for Vision-owning pilots and add Vision-usage hints in checklists including Engine fire.

Response: The airline responded by:

1. Adding relevant terms into MEL;
2. Adding “safety guard rewarding” project to reward staff contributing to aviation safety and adjusting its salary calculation by lowering the weight of efficiency by 30% and increasing the weight of safety by 40%;
3. Modifying following checklists:

Checklist item	**Elemental improvement**
All Flaps Up Landing	Anemo aerodynamic support
Cabin Altitude warning	Anemo bleeding
Anti-skid inoperative	Geo deflection
Fire or overheat warnings (engines, APU, etc.)	Geo isolation; Cyro/Hydro extinguisher; Swirling alert (Anemo)
Equipment cooling failure	Cyro cooler
Icing condition (for wings, engines, pitot tubes, etc.)	Pyro melting
Electricity loss	Electro alternative

The airports in Inazuma are suggested to replace its barrier to reliable structures.

Response: CAAYC launched supervision of replacement of airport barriers and replaced 15 barriers covering a total length of 10 355m by the publishment of this report.

4.3 To CAAYC

CAAYC is suggested to:

1. Establish cooperation and information exchange with domestic Tenryou Commission and other departments as well as international aviation administrations and organizations;
2. Revise MEL and checklist regulations;
3. Add recommendations of Vision-related training and procedure.

4.4 To Aircraft Designer

The aircraft designer is suggested to replace the engine metal components by using high electric resistance materials or conduct electric isolation to prevent eddy current.

For current aircrafts, electric circuit probe is recommended to install for aircrafts operating in Electro-related areas to assist pilots determine overheating situation.

Response: The Airbus has delivered service bulletins to recommend the installation of the electric current detector for all aircrafts and sent new design to engine designers, whose new version is expected to come out around February 2026.

The electric current detector works as follows:

1. The detector is powered by the aircraft’s DC system.
2. When the detector detects either high current (> 1A) or high magnetic field, it sends message “***ENG 1/2 HI ELECTRO***” or “***ENG 1/2 HI MAGNET***”, with memo “***REMAIN CURRENT THRUST CONFIG***” and “***AVOID ICING CONDs***”.
3. If engine overheat occurs at the same time and the EGT was lower than 1 200 °C, the ECAM memo will be the following instead of normal engine overheat indicating (which

instructs pilots to reduce thrust), taking engine 1 as an example:

<u>ENG 1</u> OVERHEAT IN HI ELECTRO
A/THR … OFF
IF EGT > 1200:
GO TO ENG OVERHEAT
IF EGT < 1200:
REMAIN CURRENT THRUST CONFIG
AVOID ICING CONDs

25 June 2025

COMMENT OF THE RAIDEN

Official Decree of the Raiden Shogun, Ruler of Eternity
Regarding the Final Report of Inazuma Airlines Flight IZ-3524 Accident (7 May 2022)

I. ACKNOWLEDGEMENT OF INVESTIGATION

We hereby recognize the thorough inquiry conducted by the **Civil Aviation Administration of Yashiro Commission (CAAYC)** and the **Fountaine Transportation Safety Board (FTSB)**. The dedication of investigators—Kamisato Ayaka, Neuvillette, and Gunnhildr—aligns with Our mandate for precision and order. Their adherence to *ICAO Annex 13* fortifies Inazuma's commitment to global aviation standards.

II. CONDEMNATION OF SYSTEMIC FAILURES

The accident unveils profound lapses threatening Eternity's stability:

1. **Operator Negligence**
    - Inazuma Airlines prioritized schedules over safety, disregarding *electro-cryo thunderstorm* risks despite MEL exemptions. This recklessness mirrors a decay in discipline.
    - *"Safety culture"* was sacrificed for efficiency—a transgression We shall not tolerate.
2. *(This thermodynamic betrayal of metal integrity demands structural reforging.)*
3. **ATC Incompetence**
    - Controllers failed to command evasion of the elemental storm, offering mere suggestions instead of directives. Passivity has no place in Inazuma's skies.
    - Runway security breaches (*Hilichurl incursions*) persisted due to inadequate defenses—a vulnerability We decree *unacceptable*.
4. **Regulatory Bankruptcy**
    - CAAYC's oversight ignored *Vision-augmented protocols* and elemental meteorology. To govern is to anticipate; to overlook is to invite chaos.
    - International isolation during the *Sakoku* era crippled knowledge exchange. Eternity requires vigilance, not seclusion.

III. DIVINE MANDATES FOR REFORM

By the authority of the Musou no Hitotachi:

A. To Inazuma Airlines

- **Immediate suspension** of test flights until MEL procedures integrate *elemental threat assessments*.
- **Mandatory Vision-training** for Electro-wielding crew. Their power must serve protection, not gather dust.
- **Redesign safety culture**: Efficiency bows to preservation. Violators face the Shogunate's judgment.

B. To CAAYC

- **Revise regulations** within 90 days to address:
    - Electro-Cryo superconductivity in engine design.
    - Standardized ATC commands for elemental storms.

- **Forge alliances** with Liyue CAAL and Mondstadt MTSC. Isolation breeds weakness; collaboration shields eternity.
- **Audit all airports**: Replace wire meshes with *Geo-infused barriers*.

(This wreckage is a monument to negligence—let it inspire impenetrable defenses.)

C. To Tenryou Commission

- **Permanent security detail** at Narukami Airport. Any future breach will incur the Shogun's wrath.

D. To Aircraft Designers (Fountaine Airbus Co.)

- **Redesign engines** with *non-conductive composites* to resist eddy currents. Submit prototypes to Our scrutiny by 2026.

IV. CLOSING DECREE

The skies of Inazuma are extensions of Our realm. Let this accident remind all that Eternity is preserved not by chance, but by unwavering discipline. Execute these orders with the urgency of lightning.

—Raiden Shogun, Electro Archon and Guardian of Eternity

Sealed at Tenshukaku, Narukami Island

30 June 2025

"Inazuma's eternity transcends mortal error. Rectify weakness; embrace perfection."