



Republic of the Philippines  
DEPARTMENT OF TRANSPORTATION  
**CIVIL AVIATION AUTHORITY OF THE PHILIPPINES**  
MIA Road, Pasay City 1300

## AIRCRAFT ACCIDENT INVESTIGATION AND INQUIRY BOARD

### **FINAL REPORT**

**RP-R8278**  
**AT - 504**

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***OPERATOR: DAVAO AGRITECH INCORPORATED (DAI)***

***TYPE OF OPERATION: AGRICULTURAL SPRAYING***

***DATE OF OCCURRENCE: NOVEMBER 8, 2021***

***PLACE OF OCCURRENCE: LOT 66C, FARM 5, TADECO, BO. AO  
FLORENDO, PANABO CITY, DAVAO DEL NORTE, PHILIPPINES***

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## FOREWORD

This report was produced by the Aircraft Accident Investigation and Inquiry Board (AAIIB), Civil Aviation Authority of the Philippines, MIA Road, Pasay City, Philippines.

The report is based upon the investigation carried out by the AAIIB in accordance with Annex 13 to the Convention on International Civil Aviation, Republic Act 9497 Section 42 and Philippine Civil Aviation Regulation Part 13.

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## **FINAL REPORT**

**TITLE:** An accident involving an Air Tractor Inc., AT-504 type of aircraft, with Registry Number RP-R8278 owned and operated by Davao Agritech Incorporated, that impacted with terrain at Panabo City, Davao del Norte, Philippines on November 08, 2021/0825H.

### **Notification of Occurrence to National Authority**

The notification of accident to AAIB CAAP was relayed by the Operator of the aircraft at 1000H (LOCAL) on November 08, 2021.

### **Identification of the Investigation Authority**

The Aircraft Accident Investigation and Inquiry Board (AAIB), the mandated accident investigation organization within the Civil Aviation Authority of the Philippines (CAAP) as the state of Occurrence/Registry/Operator conducted the investigation.

### **Organization of the Investigation**

In accordance with provisions of Philippine Civil Aviation Regulation (PCAR) Part 13, an Investigator-In-Charge was appointed.

### **Authority Releasing the Report**

The Final investigation report was released by Aircraft Accident Investigation and Inquiry Board (AAIB) and published on the CAAP website on **7 March 2022.**

### **Synopsis:**

On November 08, 2021 at about 0825H, an Air Tractor Inc., AT-504 type of aircraft with Registry Number RP-R8278 owned and operated by Davao Agritech Incorporated, was substantially damaged after it impacted with terrain during an aerial spray application of banana plantation at Panabo City, Davao del Norte, Philippines. The two (2) were fatally injured. The cause of the occurrence was attributed to the pilot's failure to manage the bank angle while maneuvering the aircraft at low altitude.

## **LIST OF ACRONYMS AND ABBREVIATIONS**

AAIIB	:	Aircraft Accident Investigation and Inquiry Board
AAOC	:	Agricultural Aircraft Operator Certificate
ABC	:	ANFLO Banana Corporation
AMO	:	Approved Maintenance Organization
CAAP	:	Civil Aviation Authority of the Philippines
CPL	:	Commercial Pilot License
DAI	:	Davao Agritech Incorporated
DOA	:	Dead On Arrival
ICAO	:	International Civil Aviation Organization
OFSAM	:	Office of the Flight Surgeon and Aviation Medicine
VFR	:	Visual Flight Rules
VMC	:	Visual Meteorological Condition



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**1.0 FACTUAL INFORMATION**

Aircraft Registration No.	:	RP-R8278
Aircraft Type/Model	:	Air Tractor Inc./ AT-504
Operator	:	Davao Agritech Incorporated (DAI)
Address of Operator	:	Bo. AO Florendo, Panabo City. Davao del Norte, Philippines
Place of Occurrence	:	Lot 66C, Farm 5, TADECO, Bo. AO Florendo, Panabo City, Davao del Norte, Philippines
Date/Time of Occurrence	:	08 November 2021/ 0825H/0025 UTC
Type of Operation	:	Agricultural Spraying
Phase of Flight	:	Cruise
Type of Occurrence	:	Aircraft collision with the terrain

**1.1 History of Flight**

On November 08, 2021 at about 0825H, an Air Tractor, AT-504 type of aircraft, with Registry Number RP-R8278 was substantially damaged after it impacted with terrain during an aerial spray application of banana plantation at Lot 66C, Farm 5, TADECO, Bo. AO Florendo, Panabo City, Davao del Norte, Philippines. The pilot and a newly hired pilot as passenger on an observation flight of the area were fatally injured. The aircraft is being operated by Davao Agritech Incorporated (DAI).

The pilot was on his first line of aerial swath after transferring to a new location of the ninth load, when witnesses saw the aircraft moving upwards and dive towards the ground. The aircraft came to stop after ground impact with the nose in a downward position. There were no ground scars leading towards the wreckage. The aircraft's last heading was 233 degrees with coordinates of 07.405751N, 125.573195E (Figure 1). Both occupants were still restrained by their seat belts when the company rescue team arrived in the area. They were brought to the nearest hospital but was declared dead on arrival (DOA). There was no post-crash fire noted and visual meteorological condition (VMC) prevailed at the time of the accident.



Figure 1- RP-R2878 final resting point

## 1.2 Injuries to Persons

<b>Injuries</b>	<b>Crew</b>	<b>Passengers</b>	<b>Others</b>	<b>TOTAL</b>
Fatal	1	1	0	<b>2</b>
Serious	0	0	0	<b>0</b>
Minor	0	0	0	<b>0</b>
None	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## 1.3 Damage to Aircraft

The aircraft was destroyed.

## 1.4 Personnel Information

### 1.4.1 Pilot

Gender : Male  
 Date of Birth : February 09, 1957  
 Nationality : Filipino  
 License : CPL# 102142-CPL  
 Valid up to : August 31, 2024  
 Type Rating : Airplane: Single Engine Land- Agcat, AT502  
                   : Turbo Cat, G164, AT504; AT402 (27-02-2020)  
 Medical Certificate : Class 1 valid up to April 06, 2022  
 Time on A/C type : 2,287+00 Hours (As per current logbook)  
 Grand Total Time : 20,000+00 Hours (As per current logbook)

## 1.5 Aircraft Information

### 1.5.1 Aircraft Data

The Air Trac AT-504 type of aircraft is both a spraying and training aircraft. It has two seats next to each other in the cabin and it allows training new pilots in turboprop. Both instructor and student have full flight controls and almost the same cockpit view and perspective.

Registration Mark	: RP-R8278
Manufacturer	: Air Tractor, Inc.
Type/Model	: AT-504
Operator	: Davao Agritech Inc.(DAI)
Serial No.	: 504-4025
Date of Manufacture	: 2015
Certificate of Airworthiness Valid up to	: December 28, 2021
Certificate of Registration Valid up to	: December 14, 2021
Aircraft Total Time:	: 2,532+09 Hours
Category	: Restricted
Number of Crew	: 2

### 1.5.2 Engine Data

Manufacturer	: Pratt & Whitney
Type/Model	: PT6A-34AG
Serial No.	: PCE-PH1016
Engine Time Since New	: 2,757+41 Hrs

### 1.5.3 Propeller Data

Manufacturer	: Hartzell
Serial Number	: BUA21449
Model	: 2D30
Propeller Time Since New	: 8,936+50 Hours

## 1.6 Meteorological Information

Visual Meteorological Conditions (VMC) prevailed at the time of the accident.

## 1.7 Aids to Navigation

The flight was carried out under Visual Flight Rules (VFR). Using VFR, the pilot must be able to operate the aircraft with visual references to the ground and visually avoiding obstructions and other aircraft.



## **1.8 Communications**

Normal communications were carried out between the pilots and other aircraft operating in the area.

## **1.9 Aerodrome Information**

### **1.9.1 General Information**

Aerodrome Name	: TADECO 1 Airstrip
Aerodrome Operator Address	: Panabo, Davao Del Norte
Coordinates	: 07° 23'19.46"N ; 125° 34' 19.35"E
Runway Magnitude Bearing	: Due North
Azimuth	: 18/36
Runway Length	: 1,000 meters
Runway Width	: 45 meters
Runway Surface	: Part Concrete, Part Macadam
Wind cone	: Operational
CAAP Permit to Operate	: AGA-P-007A-2012

### **1.10 Flight Recorders**

The aircraft is not equipped with any flight recorders and existing CAAP regulation does not require it.

### **1.11 Wreckage and Impact Information**

The aircraft was substantially damaged after it impacted the ground during an aerial swath operation. There were no ground scars leading towards the wreckage. It came to a full stop with the nose in a downward position with a heading of 233 degrees and coordinates of 07.405751N,125.573195E.

### **1.12 Medical and Pathological Information**

The Pilot possesses valid medical certificates and had undergone the medical examination at CAAP-OFSAM. There was no medical impediment that could hinder his fitness to fly. The pilot's medical records also confirmed that he met the CAAP and ICAO Annex 1 Medical Standards for exercising the privileges of the license held.

Based on the autopsy examination conducted by PNP Forensic Crime Laboratory Office 11 at Candelaria St. Ecoland, Davao City, both the pilot and the passenger sustained severe multiple traumatic injuries on head, trunk and extremities.

### **1.13 Fire**

There was no post-crash fire observed during the site investigation.

## **1.14 Search and Survival Aspects**

Search was not conducted since the aircraft crashed in the Company banana plantation. The workers of the banana plantation who witnessed the accident and the company rescue team immediately responded. The accident was not survivable due to the severity of the impact to the ground. The aircraft was almost destroyed as a result of the impact. The responders found the occupants still seated and secured by the seat belt. They were brought to the nearest hospital, however was declared dead on arrival (DOA) at the hospital.

## **1.15 Test and Research**

On November 12, 2021, the engine was removed from the crash site and brought to the company's hangar for further assessment. A visual inspection and a bore scope of the engine was performed by the operator's AMO together with the accident investigator to determine any engine malfunction or failure that might cause the accident. It revealed no evidence of any mechanical malfunction or failure that would have precluded normal operations of the aircraft.

## **1.16 Organizational and Management information**

### **1.16.1 Operator**

Davao Agritech Inc. (DAI) was organized and incorporated on October 25, 1975. The registered address of the company is Brgy AO Florendo, Panabo City. Davao Agritech Inc. is a subsidiary of the ANFLO Group of Companies.

In July 2015, DAI was reinstituted because the management decided to combine aviation related operations into one. Current customer for aerial spray includes Tagum development Company, Inc. (TADECO) and ANFLO Banana Corporations (ABC). It is also expanding its services to other banana farms and clients alike.

It employs 8 GPS equipped aircrafts (7 spray planes and 1 helicopter). The company is a holder of Agricultural Aircraft Operator Certificate (AAOC) #11-201-5016 renewable every 3 years on December and an Approved Maintenance Organization (AMO) certificate #140-15 renewable every February.

## **2.0 ANALYSIS**

### **2.1 General**

On November 08, 2021 at about 0825H, an Air Tractor, AT-504 type of aircraft, with registry number RP-R8278 was substantially damaged after it impacted with the terrain during an aerial spray application of a banana plantation at Lot 66C, Farm 5 TADECO, Bo. AO Florendo, Panabo City, Davao del Norte. The Pilot and the newly hired pilot as passenger on an observation flight of the area were fatally injured. As per available records, the Pilot has logged a total time of 20,000+00 hour and 2,287+14 hours on the particular type of aircraft.

The passenger was a newly hired pilot by Davao Agritech Inc. (DAI). He was admitted as probationary agricultural pilot of DAI effective November 5, 2021. He has logged a total time of 3, 321+00 hours and 671 +00 hour as a spray pilot of Grumman G-164 AG-CAT type of aircraft before being employed by DAI. During the investigation, reveals that the company allowed the newly hired pilot/passenger to be onboard the aircraft during the actual spraying activity as an observer. It is also noted that the newly hired pilot has not yet undergone the initial training for the particular type of aircraft when the accident happened. Being an observer, the newly hired pilot is being oriented on the performance of the aircraft and the area of operation. This is being done before the newly hired pilot is allowed to start the actual spraying activity. In this case, the newly hired pilot should only be allowed as observer during actual spraying activity after the particular aircraft type rating is already attained.

The recorded flight track of the aircraft from the GPS swath guidance system, suggest that it flew the same flight path flown that day. It revealed that the pilot transferred to another small section of the field, and was on the process of swathing the first line with chemical spray of the ninth load. Review of the maneuver made by the pilot from the aircraft GPS track and based on witnesses account, the aircraft initially banked to the left then to the right to intercept the line to be swath of chemical spray. Further, other company aerial swath pilots revealed that such procedure is being performed on a small area to be sprayed. Moreover, witnesses saw the aircraft moving upwards and descended towards the ground. A maintenance personnel also observed that the aircraft made a steep bank to the right before the accident.

The aircraft entered into a stall as a result of an excessive right bank. To recover from such situation, the stall must first be eliminated by releasing the back-elevator pressure as necessary or by moving the elevator control forward. This lowers the nose and returns the wing to an effective AOA. The amount of elevator control pressure or movement applied depends on the severity of the stall, and the proximity of the ground. A moderate movement of the elevator control slightly forward of neutral may be required. An excessive negative load on the wings caused by excessive forward movement of the elevator may impede, rather than hasten, the stall recovery. A maximum allowable power should also be applied to increase the airspeed and assist in reducing the wing's AOA. The throttle should be promptly, but smoothly, advanced to the maximum allowable power.

Inspection of the cockpit of the aircraft during the site investigation, CAAP investigator reveals that the power lever was in full power setting (Figure 2). This could probably indicate that the pilot tried to recover the aircraft. However, the aircraft having been in close proximity to the ground, the pilot's opportunity to recover the aircraft was reduced. With such lower margin for recovery, subsequent impact with the terrain is imminent.



Figure 2. Throttle position in full power

### 3.0 CONCLUSION

#### 3.1 Findings

- a. The Pilot has a valid license and medical certificate issued by Office of Flight Surgeon and Aviation Medicine (OFSAM), CAAP.
- b. The Pilot has logged a total time of 20,000+00 hour and 2,287+14 hours on the particular type of aircraft.
- c. The Pilot transferred to a new location and was on the process of swathing the first line of chemical spray.
- d. The passenger was a newly hired pilot by Davao Agritech Inc.
- e. Witnesses saw the aircraft moving upwards and dive towards the ground.
- f. Visual meteorological condition prevailed at the time of the accident.
- g. The aircraft was released for flight without any discrepancies noted on its logbook.
- h. The aircraft has a valid Registration and Airworthiness certificates.
- i. The aircraft was damaged after it impacted the ground.
- j. No post-crash fire ensued upon ground impact

### **3.2 Probable Cause**

#### **3.2.1 Primary Cause**

- a.** The pilot's failure to manage the bank angle while maneuvering the aircraft at low altitude.

#### **3.2.2 Contributory Cause**

- a.** Inadequate height available for the pilot to recover from stall during the aerial swath operations

## **4.0 SAFETY RECOMMENDATIONS**

### **4.1 CAAP-FSIS to ensure that the Operator:**

- a.** Does not allow Passenger to be onboard during actual spraying activity.
- b.** Only allow newly hired pilot as observer during actual spraying activity after the particular aircraft type rating is already attained.
- c.** Strictly adhere to the Operating Limitations and Performance particularly on bank angle limitations while operating an AT-504 type of aircraft.

**-END-**

Submitted by:

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Aircraft Accident Investigator

Endorsed by:

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Officer-In-Charge  
Aircraft Accident Investigation and Inquiry Board

Noted by:

**CAPTAIN JIM C. SYDIONGCO**  
Director General

