

## CIVIL AERONAUTICS BOARD

**ACCIDENT INVESTIGATION REPORT**

Adopted: February 28, 1957

Released: March 5, 1957

UNITED HECKATHORN, INC., FAIRCHILD C-82, N 4832V,  
BOCA RATON AIRPORT, BOCA RATON, FLORIDA, AUGUST 8, 1956

The Accident

A Fairchild C-82A (Packet), N 4832V, owned by Booth Leasing Corporation and operated by Sky Spray, a subsidiary of United Heckathorn, Inc., and engaged in the MEDFLY<sup>1/</sup> project, crashed during a go-around after an attempted landing at Boca Raton Airport, Boca Raton, Florida, August 8, 1956, at approximately 0505.<sup>2/</sup> The pilot, copilot, and three company employee-passengers were fatally injured. The aircraft was destroyed by ground impact and the ensuing fire.

History of the Flight

N 4832V departed Masters Field, Miami, Florida, for Boca Raton Airport at 0448, August 8, 1956. Aboard the aircraft were Pilot Charles W. Day, Copilot Rae F. Howry, and three company insecticide-mixer personnel. The purpose of the direct 36-mile flight was the movement of the aircraft, crew, and mixer personnel to the Boca Raton Airport from which the spraying operation was to be conducted. The takeoff of N 4832V was followed immediately by another company-operated C-82, N 4829V, and the two aircraft proceeded at an altitude of approximately 500 feet. N 4829V flew to the left, slightly above and to the rear of N 4832V until reaching Boca Raton.

Both aircraft arrived over the city of Boca Raton shortly after 0500 and proceeded north and west the mile or so to the airport. Dawn was breaking and the runways, although unlighted, were plainly visible. N 4832V made a right turn for approach to runway 4. After passing over more than one-third of the length of the 5,000-foot runway a go-around was initiated. The aircraft then immediately went into a climbing left turn. During this turn the aircraft stalled and crashed. Fire occurred immediately. The other C-82 landed normally after circling the airport several times.

The U. S. Weather Bureau 0529 sequence report for West Palm Beach (21 miles north of Boca Raton) was: Thin scattered clouds 12,000 and 25,000 feet; visibility 5 miles; smoky; temperature 76; dewpoint 75; wind calm; barometer 29.95. Sunrise on August 8, 1956, was at 0550, azimuth 74 degrees true.

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<sup>1/</sup> A fruit spraying operation sponsored by the U. S. Department of Agriculture and the State of Florida to eradicate the Mediterranean fruit fly.

<sup>2/</sup> All times referred to herein are eastern standard and are based on the 24-hour clock.

## Investigation

The position of the wreckage was found to be 1,540 feet to the left of runway 4, measured from a point on the runway 3,020 feet from its approach end. The aircraft struck the ground in a steep nose-down right wing-low attitude on a heading of approximately 130 degrees. It then rotated to the left and came to rest on a heading of approximately 60 degrees.

Both engines were torn from their nacelles, the right engine remaining a few feet from the point of impact and the left engine going 42 feet to the northwest.

Examination of both engines revealed no evidence of fire in flight. Teardown of the left engine revealed a failure of the rear master rod bearing. Oil holes from the rear main bearing journal to the rear crankpin were completely plugged with hard sludge. The progressive failure of this master rod bearing had resulted in piston damage which permitted crankcase oil to enter the combustion chamber and exit through the exhaust ports. This condition caused oil deposits on the left side of the aircraft. There was no evidence of oil deposits on the right side of the aircraft and examination of the right engine revealed no evidence of malfunction or structural failure.

The No. 1 propeller was not feathered and all blades remained unbroken in the hub with no indication of high rotational forces at impact. Examination disclosed no discrepancy in the feathering system.

The No. 2 propeller gave indications of high rotational forces at impact. The shaft splines were twisted an estimated six degrees opposite the direction of rotation. Two propeller blades, broken off at their shanks were bent forward more than 35 degrees and one of these blades had a bend of approximately 20 degrees opposite the direction of rotation.

The aircraft structure and controls were examined for possible inflight malfunction or failure; none was found. The trim tabs of the ailerons and elevators were found in the neutral position and the left rudder trim tab was found offset approximately one-half inch to the left. The elevator trim tab control wheel, which was completely detached, was found in the two-degree nose-up position. The elevator spring tab cartridge was disassembled and found to be in good condition. Control cables of the ailerons, elevators, and rudders were normal outside of the ground-fire-damaged section of the fuselage.

All actuator mechanisms of the landing gear and wing flaps were found in the retracted position. All landing gears were torn from their up position during ground impact. The inboard and outboard wing flaps were found to be in the "Up" or retracted positions.

Gross weight of the aircraft at the time of takeoff from Masters Field, Miami, was approximately 35,736 pounds. The maximum allowable weight over congested areas, according to the CAA waiver, was 43,550 pounds. The load,

consisting of fuel, two empty insecticide tanks located near the center of gravity, and the five occupants, was determined to have been properly distributed. There was no spray material aboard the aircraft at the time of the accident.

The Boca Raton Airport has four runways in a triangular configuration: A 6,400-foot N/S (36-18) runway on the east side and three 5,000-foot runways E/W (9-27), NE/SW (4-22), and NW/SE (31-13) to the west of this runway.

The crew of N 4829V, the C-82 accompanying N 4832V, testified that puffs of blue smoke, about a minute apart, were observed coming from the aircraft about five minutes before reaching Boca Raton. Interplane radio contacts, although possible, were not made. When the aircraft was over Boca Raton ground witnesses observed an increase in this smoke trail as well as a change of color to reddish. These ground witnesses also heard the sounds of uneven operation of one engine. The sounds were described as sputtering or back-firing. One witness observed the aircraft proceed west, its landing gear extended, south of the airport at an altitude of not more than 100 feet above the ground. None of the witnesses observed actual fire.

During the investigation it was determined that there were no obstructions, persons, vehicles, or construction work on the runway at the time of the accident.

With reference to the runway alignment of N 4832V the captain of the accompanying aircraft testified, "I proceeded around my turn to the left and observed him to be approximately lined up for the runway but he could have been about 10 degrees to the left. He appeared to be in a three-point landing position about one-third of the way up the runway. Then I observed him to start a left climbing turn at a normal rate. Approximately over the point where the wreckage was later found I observed the aircraft to fall out over the top viciously to the right."

Air Force Technical Order AN-01-115CBA-1 (revised to 1C-82A-1), relative to the aircraft, specifies that airspeed should not be allowed to fall below 120 m. p. h. after it has been attained on a "go-around" at a gross weight of 47,000 pounds or under. The Technical Order further indicates that the minimum speed for directional control with the left engine out is 105 m. p. h.

Investigation disclosed that the company had operated agricultural pest-control aircraft, mainly in western United States, for seven or eight years and that the operation of large, multi-engine aircraft had commenced in the spring of 1956. The C-82 aircraft were certificated by the Civil Aeronautics Administration under the provisions of CAR Part 8 as a special-purpose agricultural and pest-control aircraft. The crew of N 4832V had engaged in spraying operations with C-82 aircraft over 100 hours. Spraying operations were conducted in this instance, the MEDFLY project, only in the first two or three hours of daylight and normally only the flight crew were aboard the aircraft. Captain day had made six previous dawn landings at Boca Raton Airport.

The aircraft log books, normally carried aboard the aircraft, were not located and are presumed to have been destroyed by ground fire. A periodic inspection (ACA-319) of N 4832V was conducted on June 3, 1956. The last 100-hour inspection was July 17, 1956. At that time the spark plugs of both engines were changed, the oil sumps were drained, and no metal particles were found on the screens of either engine. Flying time since the last 100-hour inspection was 52 hours. The last preflight inspection was made the early morning of August 8, 1956, as witnessed by a company mechanic. He stated that he arrived at Masters Field before 0400 and observed Day and Howry attending their aircraft. He did not question them, but observed that their car was facing the plane with its lights on and they were carrying on a preflight inspection, each using a flashlight. This continued for about 20 minutes before they started the engines and taxied over to the landing area where they shut down the engines. This witness stated that later, while he was aboard the other aircraft, both aircraft held off the runway for approximately 10 minutes during which time he observed the engines of N 4832V being run up.

There was one bucket seat, with a safety belt, installed aft of the copilot seat. There were no seats with safety belts for the other two passengers.

#### Analysis

It appears that failure of the left engine rear master rod bearing was progressive and occurred during the last few minutes of flight. It probably did not become serious until the aircraft was at the south side of the airport. The cause of the bearing failure could not be determined owing to the physical damage that had occurred. However, the presence of sludge in the lubricating oil ports suggests that inadequate lubrication caused by this condition may have initiated the failure. When N 4832V was southeast of the airport over Boca Raton it was in a good position to land straight ahead on the northwest runway. The wind was calm and the only reason for continuing west to land on the northeast runway was that the landing roll would have ended near the company insecticide mixing station at the northeast corner of the airport. Because the opportunity to land northwest was passed up, it may be assumed that the left engine operating difficulty was not as serious then as it became very soon afterwards.

The engine manufacturer recommends a reduction of 100 r. p. m. for each one-inch reduction of manifold pressure. It is doubtful if the practice was always maintained during spray operations which require frequent power changes. If so, the master rod bearing may have been excessively loaded at these times which contributed to its failure.

It is believed that the crew of N 4832V did not become aware of a serious engine malfunctioning until the go-around was started. The final approach had resulted in poor runway alignment, necessitating a go-around. The left propeller was not feathered during the attempted go-around, resulting in additional drag.

Contact with the ground came from a stall "over-the-top" while in a left turn, as observed by the captain of the accompanying C-82. A tendency of the aircraft to turn left, because of a malfunctioning left engine and low airspeed, would be resisted by the pilot's use of top rudder and this action is one way that an "over-the-top" spin will occur.

Although the landing gear was observed to have been in the extended position while the aircraft was approaching the airport, examination of the wreckage revealed that the landing gear was retracted at the time of impact. C-82 landing gear retraction tests indicate the average retraction time to be 12 seconds. This amount of time would allow the gear to be retracted during the left turn which covered approximately 2,400 feet.

### Findings

On the basis of all available evidence the Board finds that:

1. The aircraft and crew were currently certificated.
2. Weather was not a factor in the accident.
3. Gross weight of the aircraft and distribution of the load were within prescribed limits.
4. During approach to the airport serious malfunctioning of the left engine occurred.
5. An improperly planned final approach resulted in runway misalignment and necessitated a go-around.
6. During the attempted go-around the left engine rear master rod bearing failed resulting in loss of power on the left engine.
7. The propeller was not feathered for single-engine operation.
8. The lack of left engine power at low airspeed, and the drag resulting from the unfeathered left propeller resulted in loss of directional control.
9. During the resulting left turn the aircraft was stalled and entered an "over-the-top" spin.

### Probable Cause

The Board determines that the probable cause of this accident was loss of power on the left engine and the drag-induced effect of the unfeathered left propeller, resulting in loss of directional control during an attempted go-around.

BY THE CIVIL AERONAUTICS BOARD:

/s/ JAMES R. DURFEE

/s/ CHAN GURNEY

/s/ HARMAR D. DENNY

/s/ G. JOSEPH MINETTI

# S U P P L E M E N T A L   D A T A

## Investigation

The Civil Aeronautics Board was notified of the accident at 0900, August 8, 1956. An investigation was immediately started in accordance with the provisions of Section 702 (a) (2) of the Civil Aeronautics Act of 1938, as amended. Depositions were taken at Boca Raton, Florida, on September 5, 1956; at Miami, Florida, on September 6 and 7, 1956; and at Washington, D. C., on September 21, 1956.

## Aircraft Operator

Sky Spray, the operating subsidiary of United Heckathorn, Inc., is a recently formed California corporation maintaining its principal offices with the parent company in Richmond, California. United Heckathorn, Inc., has operated spraying, seeding, and dusting aircraft since 1948.

## Flight Personnel

Pilot Charles W. Day, age 34, was employed by United Heckathorn, Inc., December 12, 1955. He held a currently effective airman certificate with an airline transport rating and a C-82, DC-3, and C-46 rating under commercial privileges. He had a total of 4,976 flying hours, of which 186 were in C-82 aircraft. His latest physical examination was on September 29, 1955, and was passed class one, no waivers. His last instrument check was February 28, 1956, with check rides (CAA and chief pilot of company) since that date.

Copilot Rae F. Howry, age 32, was employed by United Heckathorn, Inc., May 17, 1956. He held a currently effective airman certificate with commercial pilot, airplane single- and multi-engine land, and instrument ratings. He had a total of 3,179 flying hours, of which 170 were in C-82 aircraft. His latest class D physical examination was passed on March 1, 1956, with no waivers.

## The Aircraft

Fairchild model C-82A, N 4832V, serial number 44-23026A, was manufactured in 1944. Total flying hours were 1,016. The aircraft was equipped with two Pratt and Whitney model R-2800-85 engines. The total time and time since overhaul was 269 hours and 179 hours for the left and right engines, respectively. The propellers were Hamilton Standard model 33E60-81 with total time of 2,260 hours and 2,182 hours on the left and right propellers, respectively. Time since overhaul was 189 hours and 1,016 hours.