

# AIRCRAFT ACCIDENT REPORT ✓

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**ADOPTED:** August 23, 1960**RELEASED:** August 30, 1960

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PACIFIC AIR LINES, INC., DOUGLAS DC-3, N 67589,  
SANTA MARIA, CALIFORNIA, OCTOBER 26, 1959

## SYNOPSIS

A Pacific Air Lines DC-3, N 67589, crashed near the Santa Maria Airport, Santa Maria, California, while making an emergency landing following takeoff at approximately 2018 P. s. t., October 26, 1959. The copilot was killed, the captain was seriously injured, and the purser and 17 passengers received injuries of varying degrees. The aircraft was substantially damaged.

Flight 308 was scheduled between Los Angeles, and San Francisco, with intermediate stops at Oxnard, Santa Maria, and Paso Robles, California. The trip to Oxnard and Santa Maria was routine. Takeoff from Santa Maria was made from runway 30 with 17 passengers on board and a crew of three. A few seconds after the first power reduction following takeoff, a loud explosion was heard and fire was seen in the left engine. The left propeller was immediately feathered, the engine was shut off, and appropriate power was applied to the right engine. At the time this happened the aircraft was at an approximate altitude of 550 feet m s.l., or 300 feet above the ground. Shortly after this the fire was observed to be out; however, the airplane began to buffet. This buffeting became so severe that the aircraft lost altitude and the captain was forced to make an emergency landing about 1-1/2 miles north of the airport.

The Board concludes that this accident was caused by the failure of the No. 5 cylinder of the left engine in flight, resulting in the distortion of the ring cowl to an extent that made flight impossible.

## Investigation

On October 26, 1959, N 67589, a Douglas DC-3, owned and operated by Pacific Air Lines, was dispatched by the company as Flight 308, a scheduled flight between Los Angeles and San Francisco. Intermediate scheduled stops were to be made at Oxnard, Santa Maria, and Paso Robles, California. The crew consisted of Captain Charles W. Craig, First Officer Joseph J. Flanigan, and Purser Donald F. Robesky. First Officer Flanigan was acting as captain and riding in the left seat throughout the flight.

The flight from Los Angeles to Oxnard and Santa Maria was made without incident. Flight 308 landed at Santa Maria at 1945<sup>1/</sup> and passengers and

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<sup>1/</sup> All times herein are Pacific standard based on the 24-hour clock.

cargo were unloaded. While these operations were being performed, a station agent called First Officer Flanigan's attention to the left engine which was leaking oil. First Officer Flanigan left the aircraft and examined the engine by means of a flashlight. He returned to the cockpit and advised Captain Craig that everything seemed to be all right and that no more oil was present than one would normally find on an engine. Further, not enough oil had leaked to cause any to be added. The captain, who had looked at the left engine from the cockpit window, agreed that the leak was not sufficient cause to interrupt the flight.

When the refueling was completed and the flight was ready to go, a normal engine start was made and the airplane was taxied to the takeoff point. Cockpit and magneto checks were normal and the takeoff was made at 2016 from runway 30. The gross weight of the aircraft at the time of takeoff was 24,071 pounds, which was below the maximum allowable gross takeoff weight of 25,346 pounds. The aircraft was loaded within prescribed limits with respect to the center of gravity. There were 17 passengers, including one infant, on board.

A few seconds after the aircraft became airborne and the first power reduction was made, a loud explosion was heard and fire was observed in the left engine. The landing gear and flaps were in the up position at the time. Captain Craig immediately pushed the feathering button to feather the left propeller, determined that the right engine was operating on METO power (maximum except takeoff), and closed the left throttle. He then took control of the aircraft. The altitude at that time was 550 feet m.s.l. (approximately 300 feet above the ground), the airspeed was 91 knots, and the aircraft was in a right turn. The captain stopped the turn and attempted to climb or at least to hold what altitude he had. He then asked Mr. Flanigan to check and see if the gear and flaps were up and if the carburetor heat control was in the cold position. This was done and the first officer said, "I will take care of the fire in the left engine," and reached for the fire controls box.

By then the aircraft was buffeting badly and the captain asked the first officer to see if the left propeller had feathered properly because he thought the buffeting might be caused by a slowly windmilling propeller.

Flanigan looked out of the left window and placed his hand on the feathering button. He then reported that the propeller was feathered. The cowl flaps were checked and found to be in the trail position. With the buffeting becoming worse and the aircraft losing altitude, the right throttle was moved forward for full power. In a short time Captain Craig said that he knew that a crash landing was imminent and seeing the silhouettes of oil derricks ahead and above him, he turned the airplane to the left in an effort to avoid them. The airplane struck the ground almost immediately.

The place of impact was about 1-1/2 miles north of the Santa Maria Airport at an elevation of 230 feet m.s.l. With the aircraft in a left-wing-low attitude, first ground contact was made by the left wing tip. The aircraft cartwheeled to the left on its nose and in doing so the left elevator struck a 12,000-volt powerline causing power to be disrupted over a wide area; there was no fire. The aircraft came to rest on the bottom of its fuselage after sliding rearward approximately 65 feet on a small embankment near a macadam road; it was heading 145 degrees magnetic.

After the aircraft came to rest Purser Robesky was able to free himself from his seat, which had become detached from the floor and had inverted. He immediately opened the main cabin door, through which the passengers were deplaned. First Officer Flanigan was thrown clear of the wreckage and was found strapped in his seat. Captain Craig, after freeing his foot which was caught in the debris near the right rudder pedal, left the aircraft through a large opening which had been made in the left front of the nose.

After the accident it was learned that at 2017 the Los Angeles Air Traffic Control Center heard the following transmission from Flight 308 on 124.0 megacycles: "Santa Maria, Pacific 308, we're coming around and land." This was the last message from the flight. The Santa Maria Airport does not have a control tower.

The weather at the time of the accident was: 1,500 feet overcast; visibility 7 to 8 miles; wind west at 6 knots.

### Examination of Wreckage

All of the aircraft structure, powerplants, and propellers were found either near the main wreckage site or on or adjacent to runway 30. Parts found on the runway were from the left engine, its cowling, and from the No. 5 cylinder and associated structure.

The left engine was torn free of the aircraft by impact forces. It was found minus its cowling in the vicinity of the main wreckage. Examination disclosed that the No. 5 cylinder had separated from its base at a point about 1-3/4 inches above the base flange or near the fourth or fifth fin from the bottom of the cylinder. This area is covered by cylinder baffles and is in the rear row of twin rows of cylinders. The No. 5 cylinder was found near the main wreckage and it is believed that it remained in the cowling until the left wing contacted the ground and the aircraft started to cartwheel to the left; both valves and spark plugs were in position. The piston parts and piston pin with a portion of the connecting rod attached were found on the runway. The piston head had a deep circular gash in it which fitted the broken edge of the cylinder wall of that portion which separated from the base. The piston parts bore evidence of having been subjected to severe forces which had broken and cut the piston into various pieces. The engine's rear power section was severely damaged. The case was punctured, the link rods were broken, and the cylinder skirts were flared. The engine's rear master rod and crankshaft could not be moved.

The front row master and link rods were in normal condition. There was evidence of fire around the rear and upper portions of the engine and the accessory cowling behind these areas. The left engine's cowling, both main and accessory section, was damaged by the failure of the engine and by impact with the ground. Seven small round rubber mounts used as cowling supports were found on the runway; the first was found only 1,900 feet from the takeoff end. A rectangular rubber rocker box pad, which matched the cowl fastenings at the No. 5 cylinder position Dzus fasteners, a cowling hook, a ten-inch section of the heater ram air scoop, and a section of cowl flap were also found on the runway. The accessory cowling section was the more extensively damaged. This section bore evidence of intense heat and some blistering. A section of the top of this

cowl with the ram air scoop for the carburetor attached was bent upward and rearward at an angle near the bottom left corner. The entire accessory section of the cowl was deformed somewhat with fasteners torn out in some portions and tears in others. The propeller governor and feathering pump were checked and found capable of normal operation.

The right engine also separated from the aircraft because of impact forces and was found near its nacelle. This engine suffered impact damage but examination showed that prior to impact it was functioning in a normal manner.

The left propeller was found detached from its engine. The blades were bent and damaged by impact forces; the dome was not damaged. It was determined that all three blades of the propeller were positioned at a blade angle of 73 degrees at the time of impact. To be fully feathered the blade angle should have been 88 degrees.

The right propeller was also found detached from its engine. The dome and blades were damaged by impact forces. The blade angles were determined to be 23 or 24 degrees. These blade angles indicate that this engine was delivering power at the time of impact.

As would be expected the aircraft was badly damaged by impact and the subsequent cartwheel. None of the damage to the aircraft contributed in any way to the cause of the accident and therefore will not be described. It was determined that the CO<sub>2</sub> fire extinguisher bottle had not been used. The landing gear and flaps were found in the up position.

#### Aircraft Maintenance

Pacific Air Lines performed all major overhauls and all major inspections of its aircraft and components, with the exception of propellers, at the company's San Francisco base. The overhaul of propellers was done by an outside agency. At Los Angeles the company contracted with International Flight Service, a local company, to taxi and fuel its aircraft, to perform turnaround and daily inspections if needed, and to make all necessary minor repairs.

Company dispatching for the route involved was accomplished from San Francisco. Records of aircraft and engine times, etc., were kept by the maintenance department and when it was time for an aircraft to return to San Francisco for major inspections or repairs, company flight control was advised and the aircraft was immediately scheduled to return to the main base and if necessary another was sent out in its place. N 67589 had been given a 125-hour inspection 25 or 30 hours prior to the subject flight.

N 67589 was based at Los Angeles and therefore was under the supervision of International Flight Service with respect to maintenance.

The left engine of this aircraft had a number of oil leak complaints which were entered on the flight record by several captains; these began October 19 and continued through October 26. Each item was initialed by a mechanic and an explanation given indicating the corrective action taken. Corrective action included the replacement of rocker seals and gaskets, rocker box covers, and the tightening of holddown nuts around the propeller governor. On October 25, 1959,

an item written in the log was "oil leak left engine." The explanation of the corrective action was written as follows: "Checked for oil, washed down left engine and replaced gasket and rocker box gaskets." These items were initialed by the mechanic doing the work and according to International Flight Service the aircraft in each instance was considered to be airworthy.

On October 26, 1959, Mr. Glen Smith, the owner of International Flight Service, had the following teletype message sent to the company's San Francisco office; "Maint. Boller req that shp 110 be used on Flt. 308/DTE in order to get it back to SFO. Has oil leak in left engine which we have been unable to stop LAX-RR/ IFS/ 1243/26BOB."

At 1252, October 26, 1959, the following message was received from Pacific Air Lines flight control. "LAX-K-WL Plan 110 on Flt 308 X 1252/26H." Accordingly ship 110 was scheduled as directed.

Mr. Smith testified that his organization had done everything it could to find and stop the oil leaks under the limitations of their contract. He said that the night before the flight was scheduled the engine was washed down and the above corrective action taken; the cowling was then left off overnight in order to be able to see any oil which may have leaked during the night. None was found the next morning and the engine was then run until it was hot to see if oil might leak under this condition. Again no leak was found and accordingly the cowling was put on and the aircraft made ready for flight. Mr. Smith further said that he considered the engine to be airworthy.

Maintenance facilities of the company in San Francisco were very good, the shops were well equipped and manned by trained personnel, and an adequate supply of parts was stocked. In Los Angeles this was not the case; proper records were not kept (no recent daily inspection forms were found for this aircraft after the accident) and pilots complained that an inadequate supply of parts was maintained. Mr. Smith testified that although the company did not always furnish them the required inspection forms, all inspections were made as required and all work was performed by capable certificated mechanics in the same manner it would have been done if they had the forms.

### Analysis

The question arises, should N 67589 have been dispatched as a scheduled flight the day of the accident in the light of its history of oil leaks?

The company had knowledge of the trouble with this engine from two sources - i.e., engine and aircraft records that are maintained in San Francisco and which should be kept up-to-date daily, and from the message sent by International Flight Service to the company from Los Angeles which clearly requested that the aircraft be returned to the main base because of an oil leak that could not be stopped. Knowing that oil leaks are often the forerunner of serious engine trouble, the Board believes that both the Service company and the Airline should have taken definite steps to determine that the engine was airworthy before allowing the aircraft to be used on a scheduled flight.

Since this was not done, the Board believes that when the crew found the oil leak at Santa Maria to be of a magnitude sufficient to cause the concern of a fellow company employee, the aircraft should have been delayed until the source of the trouble was determined.

There is no doubt that the No. 5 cylinder of the left engine failed and that this failure occurred only seconds after takeoff. Proof of the time of the failure lies in the fact that engine and cowl parts belonging to this engine were found on the takeoff runway after the accident occurred. The time of the failure is most important because it indicates that it occurred very soon after takeoff before any appreciable airspeed and/or altitude had been gained, and therefore narrows the field of possible corrective action which could have been taken by the crew. It is recognized that this engine's ring cowl was badly deformed as a result of this failure and that a section of it was displaced upward and rearward. The Board believes that the deformation of the cowling disturbed the airflow over the center section and the empennage sufficiently to cause both a severe buffet and a serious drag condition.

### Conclusion

The Board therefore concludes that the pilot was unable to maintain altitude and return to the airport because of conditions beyond his control affecting the flying characteristics of the aircraft.

As a result of this accident, the company decided to send its own maintenance personnel to Los Angeles to perform all future work on company aircraft.

### Probable Cause

The Board determines the probable cause of this accident was that following the failure of the left engine, the left engine's ring cowl was deformed causing a buffeting and drag condition which made sustained flight impossible. A contributing factor was the scheduling of the aircraft by the company when there should have been reasonable doubt concerning the airworthiness of an engine.

BY THE CIVIL AERONAUTICS BOARD:

/s/ WHITNEY GILLILLAND  
Chairman

/s/ CHAN GURNEY  
Vice Chairman

/s/ G. JOSEPH MINETTI  
Member

/s/ ALAN S. BOYD  
Member

/s/ J. S. BRAGDON  
Member

## S U P P L E M E N T A L D A T A

### Investigation and the Taking of Depositions

The Civil Aeronautics Board was notified of the accident at 2200, October 26, 1959. An investigation was immediately initiated in accordance with Section 701 (a) (2) of the Federal Aviation Act of 1958. Depositions were ordered by the Board and were taken in Inglewood, California, December 2, 1959, and San Francisco, California, December 3, 1959.

### Air Carrier

Pacific Air Lines, Inc., is an Arizona corporation with its principal office in San Francisco, California. The corporation operates as an air carrier under a certificate of public convenience and necessity issued by the Civil Aeronautics Board and an operating certificate issued by the Federal Aviation Agency. These certificates authorize the carrier to engage in air transportation of persons, cargo, and mail within the United States.

### Flight Personnel

Captain Charles W. Craig, age 40, was employed by Pacific Air Lines November 11, 1946, as a first officer. He was promoted to captain and later to check pilot. He held an airline transport pilot certificate with DC-3, Martin 202 and 404, and Fairchild F-27 type ratings. His last proficiency check was taken March 23, 1959. His last FAA first-class medical examination was taken October 20, 1959; there were no limitations. He had a total of 17,467 flying hours, of which 14,467 were in the DC-3 aircraft.

First Officer Joseph J. Flanigan, age 31, was employed by the company January 10, 1956. He was in the process of being upgraded to captain at the time of the accident. He held a valid commercial pilot certificate with airplane single-engine land, multiengine land, and instrument ratings. His last FAA medical examination, first-class, was taken January 15, 1959. He had a total of 3,951 flying hours, of which 3,032 were in the DC-3 aircraft.

Purser Donald F. Robesky, age 31, was employed by the company September 25, 1951.

### The Aircraft

N 67589, a Douglas DC-3, serial number 19656, was owned and operated by Pacific Air Lines, Inc. The aircraft had accumulated a total of 24,805.54 hours since new and 12,908.54 hours since major overhaul. It had 31:45 hours since last line maintenance. The aircraft was equipped with two Pratt & Whitney R-1830-92 engines. The left engine had 990.18 hours and the right engine 595 05 hours since overhaul. The propellers were Hamilton standard, model 23E50.