

CIVIL AERONAUTICS BOARD

ACCIDENT INVESTIGATION REPORT

Adopted: March 13, 1946

Released: March 13, 1946

PAN AMERICAN AIRWAYS, LATIN AMERICAN DIVISION,
FORT de FRANCE, MARTINIQUE,
AUGUST 3, 1945

Flight 216, a Sikorsky S-43 of Pan American Airways, Latin American Division, en route from Port of Spain, Trinidad, B.W.I., to San Juan, Puerto Rico, crashed while landing at Fort de France, Martinique at approximately 1011 EDT ^{1/} on August 3, 1945. Four passengers were drowned, six passengers and the crew of four survived. The amphibian aircraft sank in about 120 feet of water and was not salvaged.

Known as the northbound Island Run, Flight 216 departed the airport at Port of Spain on August 3, 1945, at 0804 with Fort de France the first scheduled stop. Preparations for the flight included briefing of the pilot on weather conditions to be expected, forecasts for which indicated squally weather lingering over most of the route in the rear of a receding tropical storm. This storm was moving west-northwestward, and at the time its center was located about 500 miles WNW of Martinique. Weather reports showed improvement as far north as Guadeloupe with conditions fluctuating around safe minimums in the Guadeloupe area and above minimums southward to Trinidad. Flight 216 was dispatched on an instrument clearance at an altitude of 10,000 feet with St. Lucia as the alternate for Fort de France.

About 100 miles north of Trinidad the pilot changed his cruising altitude from 10,000 feet to 8,000 feet to fly between cloud layers. Within 50 miles of Fort de France turbulent weather was encountered, and the captain

^{1/} All times referred to herein are Eastern War and based on the 24-hour clock.

again changed his cruising altitude to 6,000 feet, the minimum en route altitude prescribed by the company. Captain Shaw stated that at this time the left manifold pressure gauge dropped about 4 inches and that adjustment of carburetor heat did not restore the lost pressure. However, he did not consider the situation serious enough to warrant landing at the nearby alternate of St. Lucia. Neither the change in cruising altitudes nor the evidence of engine trouble was reported to company flight control.

Flight 216 continued at 6,000 feet until radio bearings indicated its position to be opposite the Fort de France radio beacon at which point it turned to the west, away from the island, preparatory to making a let-down. About 10 miles west of Martinique the plane entered an area clear of clouds and descent was started in a wide spiral over the open sea. The co-pilot then established radio communications with the company's base station and at 0955 was advised that landing conditions at Fort de France were: wind ESE 20 knots, visibility 2 miles, ceiling 2,000 feet, barometer 1012.2, sea moderate with ground swells. Landing minimums for Pan American at Fort de France, approved by the Civil Aeronautics Administration, are: ceiling 1,000 feet, visibility 2 miles.

During the let-down to Fort de France the pilot observed that the clouds extended upwards from 800 feet and that very heavy rain underneath the overcast made it impossible to determine accurately the condition of the water surface. Captain Shaw stated that during the let-down the left engine cut out momentarily and then resumed normal operation with indication of the proper manifold pressure. Instead of encountering the weather conditions reported at 0955, the pilot found that low ceiling and heavy rain squalls prevailed with visibility reduced to about 1/2 mile. Proceeding to

Fort de France under the overcast, Captain Shaw circled the company station at an altitude of 500 feet and noted that the wind-sock indicated a southwest surface wind instead of the previously reported east-southeast wind.

Remarking to the co-pilot that he was afraid they would "lose" the left engine and, being apprehensive of single-engine performance of the Sikorsky S-43, the pilot elected to risk a landing under his emergency authority. At this moment the company radio advised that the weather was closing in rapidly and a landing should be made as soon as possible. Heading into the southwest wind an approach with full flaps was made toward a portion of Fort de France harbor seldom used for landing. Captain Shaw stated that during the latter part of his approach intense rain precluded forward vision through the windshield and only by opening a side window in the cockpit was he able to see the surface of the water just before the plane landed on the crest of a 4 to 6-foot swell. On contact with the water and alarmed by the size of the surface swells, the pilot attempted to take off, using full throttles, but he stated that the left engine failed to respond. The bow submerged and the plane yawed to the right, shearing off the left wing float and permitting that wing to submerge. As the left wing went down the aircraft rolled over on its back, rapidly filling with water.

Quick action on the part of the crew resulted in the saving of all but four of the ten passengers, several of whom had to be taken from the plane through the submerged hatch. Survivors were picked up by the company service launch and a private fishing boat. The crash occurred at about 1011 and the plane sank within 10 minutes.

INVESTIGATION AND DISCUSSION

Investigation revealed that a few days prior to this accident the right engine of the subject Sikorsky S-43 failed in flight because of a cracked rocker box and the pilot had flown the plane for a period of 35 minutes solely on the left engine. During 15 minutes of this 35-minute emergency, the left engine was operated at a manifold pressure of 38 inches as compared with the normal pressure of $26\frac{1}{2}$ inches, and cylinder head temperatures reached approximately 450° F. After prolonged operation of the left engine in excess of rated horsepower, it would have been reasonable to assume that considerable attention would be given to the engine before returning the aircraft to regularly scheduled runs. However, after a routine inspection, a new cylinder was installed on the right engine and the plane was returned to scheduled operations. The plane was not salvaged at Fort de France due to the deep water in which it sank and no check could be made to determine the condition of the engines. Nevertheless, the above incident is significant as it may account for the pilot's unwillingness to pursue an alternate course of action which would have been predicated upon continued operation of an engine, the reliability of which he was in doubt.

Pan American weather forecasts prior to departure of Flight 216 indicated ceilings of 1,000 to 2,000 feet along the route from Trinidad to Puerto Rico, and the following conditions were forecast for the Guadeloupe area: ceiling 1,000 feet, visibility 3 miles, heavy showers and winds about 25 knots. The Weather Bureau also issued a forecast Miami to Trinidad covering the period of the flight which indicated the worst weather to be in the Puerto Rico area and much better weather from about 50 miles south of Puerto Rico to Trinidad. A squall, more severe than anticipated by either of the forecasts, developed in the Martinique area as the flight approached and was

closing in on Fort de France at the time Flight 216 approached for landing. Apparently the lowest ceiling and heaviest rain occurred while the landing was being accomplished. In the Caribbean area these squalls are normally of short duration and improvement can be expected within an hour. All available information indicates that at the time of departure the weather was marginal throughout the area into which the flight was scheduled. Some stations along the route were somewhat below minimums.

Flight 216 departed from Port of Spain on an instrument clearance which specified Saint Lucia, approximately 56 miles south of Fort de France, as the alternate airport in accordance with instrument flight clearance requirements. Saint Lucia is served by a radio range, and weather reports for the period of the flight showed that ceilings and visibility at that point were above minimum limits except for a brief period at about 0930 in which the visibility was reduced to one mile. Although Pan American had requested Civil Aeronautics Administration's approval of St. Lucia as an alternate airport for the Island Run, approval had not been received at the time of the subject flight.

Pan American had received authority for instrument flight operation along the Island Route and had established 6,000 feet as the minimum safe instrument altitude as operational policy. However, no instrument approach procedures were in effect at Fort de France and it would have been necessary for aircraft to remain contact when descending from 6,000 feet over the radio beacon at that station. Investigation revealed that Pan American had not provided procedures to guide their pilots in transition between instrument flight at the safe en route instrument minimum of 6,000 feet and the 1,000-foot ceiling required for landings at that terminal. While it was

possible to let down in the clear, at least part of the approach to Fort de France made by Flight 216 was on instruments.

Pan American is not permitted by the French Government to maintain a weather station at Fort de France and is dependent on a French station for weather data at that terminal. No special weather reports are available if weather goes below authorized minimums. Captain Shaw stated that radio communications and data on weather and landing conditions had never been satisfactory at Fort de France. Approximately 16 minutes before the accident Flight 216 was advised of landing conditions at Fort de France and, as set forth above, the conditions reported by radio differed greatly from those actually encountered by the pilot. Furthermore, weather conditions were such that it should have been obvious to Pan American ground personnel that the weather as reported to Flight 216 no longer prevailed and that a safe landing would be difficult if not impossible to effect. The flight was not kept advised in this respect.

In issuing air carrier operating certificates the Civil Aeronautics Administration requires a radio-equipped launch as a landing aid to water terminal operations. At Fort de France Pan American had used a chartered boat without radio equipment for a period of two or more years. Investigation disclosed that this boat was used to carry passengers during the time it should have been sweeping the take-off path on the water surface or standing by for take-off. Pan American had been advised by the Civil Aeronautics Administration that the boat equipment at this and several other stations was inadequate. After several months during which no corrective action had been taken, the Civil Aeronautics Administration on May 1, 1945, again directed the company's attention to the fact that the boat equipment at these bases was still unsatisfactory.

Accidents often occur as the result of a series of interrelated or accumulative events or conditions. This observation is particularly apropos in reviewing the circumstances related to the subject accident at Fort de France. Laxity on the part of the company in effectuating compliance with safe and accepted standard practices in conducting an air carrier operation is reflected in the evidence set forth herein. However, it is logical to assume that if the pilot had known of weather conditions at Fort de France which would be hazardous to landing, and in view of the indicated evidence of engine trouble, he would have remained at the safe cruising altitude of 6,000 feet and returned to the specified alternate at Saint Lucia for a safe landing under favorable weather conditions.

FINDINGS

Upon the basis of available evidence the Board finds that:

1. The company, aircraft and crew were properly certificated for the flight involved.
2. There was no evidence that any malfunction of the power plant was directly responsible for the accident but abnormal operation of the left engine must be recognized as a factor which influenced the pilot's decision to land under adverse conditions.
3. Pan American is dependent upon the French meteorological station at Fort de France for official reports on local weather, and the reports given to Flight 216 were not sufficiently current.
4. Pan American ground personnel at the Fort de France station were not alert to the existing hazardous weather and failed to advise the flight that a safe landing would be exceedingly difficult.

5. During his approach to the area the pilot observed the weather conditions which actually existed at Fort de France, was aware of the fact that they were below the minimums prescribed for that station and that the conditions were very doubtful for a safe landing, but elected to land under his emergency authority because of stated engine trouble.
6. The company had not provided adequate or approved let-down procedures between the established minimum en route instrument altitude and the minimum contact landing requirements.

PROBABLE CAUSE

On the basis of the foregoing the Board determines that the probable cause of this accident was the attempt by the pilot to land the aircraft in conditions of water surface not suitable for landing of a flying boat.

SUPPLEMENTAL DATA

Investigation and Hearing

The Atlanta Office of the Civil Aeronautics Board received notification of the accident about 1142 EWT, August 3, 1945, and immediately initiated an investigation in accordance with the provisions of Section 702 (a) (2) of the Civil Aeronautics Act of 1938, as amended.

The Senior Investigator of the Board's Atlanta Office arrived at Fort de France, Martinique, at 0915 on August 5, 1945. Considerable effort had been made by the company to recover the plane. Recovery by grappling was impractical and an attempt was made with deep sea diving equipment brought from Port of Spain. This was found to be inadequate and it was agreed by the company, the Civil Aeronautics Board and the Civil Aeronautics Administration that further salvage attempts be abandoned.

The Board ordered a Public Hearing which was held on August 22 and 23, 1945, at the Dade County Court House, Miami, Florida. The Chief of the Investigation Division, Safety Bureau of the Board, presided.

Air Carrier

Pan American Airways is a New York Corporation with headquarters in New York and main offices of its Latin American Division in Miami. It was operating as an air carrier under a certificate of public convenience and necessity and an air carrier operating certificate, both issued pursuant to the Civil Aeronautics Act of 1938, as amended. These authorized the flying of passengers, property and mail between the United States, and its territories and foreign countries, including Port of Spain, Trinidad and Fort de France, Martinique.

Flight Personnel

Captain Sherrill Taft Shaw, age 38, of Miami, Florida, was employed by Pan American, September 23, 1941, and had accumulated a total flying time of 4,298 hours, of which 698 hours were in the Sikorsky S-43. Co-pilot Charles Thomas Hawkins, age 24, of Miami, Florida, was employed by Pan American, September 1, 1943 and had accumulated a total flying time of 1670 hours, of which 90 hours were in the Sikorsky S-43. A radio operator and steward comprised the remainder of the crew.

Aircraft

NC 15066 was a Sikorsky S-43 amphibian, serial number 4306, manufactured in March 1936. It was powered by two Pratt and Whitney S1EG engines equipped with Hamilton Standard hydromatic, full-feathering propellers. The landing gear had been removed for previous operations, but during June 1945, this aircraft was reconverted to an amphibian and was assigned to the subject run on July 1, 1945.

The airplane had been operated approximately 12,955 hours including about 220 hours since the last major overhaul. The engines had approximately 5,918 hours and 4,495 hours with approximately 327 and 511 hours since overhaul. The propellers had a total time of 511 hours. The airplane was certificated for a standard weight of 20,000 pounds and at the time of takeoff weighed 19,996 pounds. The location of the center of gravity was within allowable limits.

BY THE CIVIL AERONAUTICS BOARD:

/s/ OSWALD RYAN

/s/ HARLEE BRANCH

/s/ JOSH LEE