CIVIL AERONAUTICS BOARD

WASHINGTON, D. C.

FOR RELEASE:

REPORT FOR THE CIVIL AERONAUTICS BOARD
of the
Investigation of an Accident Involving
Aircraft in Scheduled Air Carrier Operation

4423-40

A Douglas DC-2 aircraft, NC 13725, owned by Transcontinental and Western Air, Inc., was extensively damaged in an accident which occurred on December 7, 1940, about 8:50 p.m., approximately seven miles north-north-west of the Greensburg Airport, Greensburg, Pennsylvania. The aircraft was equipped with two Wright cyclone engine, Model SGR-1820 F3. Captain Jones Y. Polizzi, in command of the flight, held an airline transport certificate with A Class 4M Land rating. He had flown approximately 2513 hours, 118.43 of which had been on Douglas DC-2 equipment as captain and 536:42 of which had been on that equipment as co-pilot. He had been employed by TWA since July 17, 1938. First Officer A. V. Dunlop held a commercial pilot certificate with Class 25 Land and Instrument ratings. He had 1225 hours flying time, 475 hours of which had been as co-pilot with TWA. The only other occupants of the plane were B C. Anderson, a passenger, and the Hostess, Kise Kay. No injuries were sustained-by any of the four occupants.

The flight, designated by the carrier as Flight 35, departed LaGuardia Field, New York, on schedule at 4:15 p.m. with mail, passengers, and express. Its destination was Chicago, Illinois, with scheduled inter-mediate tops at Philadelphia) and Pittsburgh, Pennsylvania. The aircraft has loaded within its placarded limits. The flight, properly dispatched by a certificated flight dispatcher, cruised at 4000 feet contact to Philadelphia, where a landing was made at 5:08 p.m. Departure for Pittsburgh from Philadelphia was at 5:20 p.m. Shortly after taking off, the bank and turn indicator became inoperative and the captain radioed to the company that, due to instrument weather ahead, he would land at Harrisburg, Pennsylvania, for a replacement of this instrument. Accordingly, he landed there, where another instrument was installed and the fuel tanks were filled to capacity. After a six-minute traffic delay the flight was resumed at 7:32 p.m.

The weather conditions over the Pittsburgh-Harrisburg airway at 7:35 p.m. were generally good with Buckstown reporting a 600-foot ceiling and visibility 4 miles, light rain and light fog. The entire route was overcase but with ceilings at the other stations - Pittsburgh 4500 feet, Cove Valley 1300 feet, and Harrisburg 3500 feet. Visibility was low at Harrisburg, 2 miles, variable, due to light smoke and light fog.

On the 8:35 p.m. weather sequence, the precipitation at Buckstown had, changed to rain showers with the ceiling lifting to 1300 feet and visibility to 4 miles. Pittsburgh reported 4600 feet and 7 miles; Cove Valley 2000 feet and 7 miles, and Harrisburg 4500 feet and 1-1/2 miles visibility, variable, due to light sacks and light fog; ground temperatures over the course averaged above 35 degrees so that no icing would be expected in the very lover levels.

At 8:16 a.m. when the airplane was at an altitude of 8000 feet flying above the overcast between Cove Valley and Buckstown, Pennsylvania, a small loss of power and a slight roughness in the left engine was noted, Considerable oil came from that engine and difficulty in synchronizing the two engines was experienced. Six minutes later the captain observed that the left engine ring cowling was beginning to spread. The captain throttled the left engine, allowing propellers to remain in high pitch, and applied more power to the right engine. At 8:36 the vibration of the left engine began to increase in rapid intensity and soon reached such proportions that the instrument panel could not be read. At 8:40 the pilot radioed Pittsburgh that he was contact at 4000 feet over New Alexandria and coming in to Pittsburgh on one engine. About 8:45 the air speed had decreased from 120 miles per hour to 96 miles per hour due to the left engine cowling having spread open and flared out in the back. At this time sufficient power to maintain flying speed was not available and an emergency landing was necessitated. The captain turned off the left ignition switch and the fuel to the left engine and put the right propeller in low pitch. He immediately radioed Pittsburgh that he would attempt a landing on the Greensburg, Pennsylvania Airport. An attempt to use the left engine again was fruitless because

it was backfiring end fire was coming from the nacelle. The left engine was therefore shut off again. Captain Polizzi realized that he would not be able to reach the Greensburg Airport because of the drag induced by the expanded engine cowling and the severe vibration set up in the failed engine with its propeller still windmilling. He contemplated landing upon a highway but abandoned the idea, when he observed heavy traffic thereon. Heading west, he released a landing flare and began a spiraling descent. As he approached an open field he pulled the aircraft up sharply to avoid a house, but immediately afterwards the left nacelle struck an electric line pole breaking it off about 2-1/2 feet from its top. Captain Polizzi cut the master ignition switch ad landed the aircraft in a tail-low attitude, with wheels and flaps up, on the side of a ridge. It skidded along about 100 yards on the bottom of the fuselage until the tail wheel locking mechanism failed, whereupon it made an abrupt ground loop of about 90 degrees to the right, up the slope of the hill.

An inspection of the terrain revealed that contact with the ground had been made on an open ridge-side with a slope of about 12 degrees, in such, a direct tan that the skidding had been parallel to the crest of the ridge and was neither up nor down grade. Examination of the left engine revealed that the No. 3 cylinder had core off during the flight, forcing the cowling off of its stops and causing it to open up and flare back, resulting in vibration and drag sufficient to prevent continuation of flight to cylinder, its piston, and wrist pin were missing, and all of the cylinder hold-down studs were broken off at the cylinder pad. The crank case was cracked between No. 2 and 3 cylinders. It was not determined whether the failure was initiated in the cylinder hold-down studs or in the adjacent portion of the crankcase. Further investigation disclosed that there had been no malfunctioning of the control system, or of the structure prior to impact, and that there had been ample fuel. The aircraft was not equipped with full-feathering propellers.

The total time on the left engine was 7996:03 hours. The time since last overhaul was 573:15 hours and the total time since last cylinder base stud check was 79:17 hours, both of which were within the prescribed overhaul and inspection periods required by the Civil Aeronautics Administration, Moreover, all phases of the flight were in accordance with the Civil Air Regulations and with the company's procedure.

As a result of similar accidents involving engine failure on multi-engine aircraft, the Civil Air Regulations were amended, effective August 1, 1941, to require that such aircraft when operated as scheduled air carriers be equipped with full-feathering propellers or other means of stopping propeller rotation.

PROBABLE CAUSE:

Structural failure of left engine resulting in a forced landing on unsuitable terrain.