

REPORT OF SPECIAL INVESTIGATION OF AIRCRAFT ACCIDENT
INVOLVING P-51D No. 44-63869

1. DATE AND TIME OF ACCIDENT: 7 January 1948, 1518 CST
2. LOCATION OF ACCIDENT: 5 miles southwest of Franklin, Kentucky
3. AIRCRAFT: P-51D No. 44-63869
4. HOME STATION AND ORGANIZATION: 165th Fighter Squadron, Kentucky ANG,
Standiford Field, Louisville, Kentucky
5. RESULTS TO AIRCRAFT: Demolished
6. HISTORY OF AIRCRAFT AND ENGINES:

AIRCRAFT

Date of manufacture - 15 December 1944
Total hours - 164.50, 23 December 1947, EST 9:35 to time of crash
Date last overhaul - new

ENGINES

Model - V-1650-7
Number - V-328830
Total hours - 174:25
Hours since last overhaul - new

PROPELLER

Model - Hamilton Hydromatic
Hours since last overhaul - new

7. PILOT HOME STATION AND ORGANIZATION: Thomas F. Mantell Jr., Captain, 0-806873,
123rd Fighter Group, 165th Fighter Squadron,
Standiford Field, Louisville, Kentucky

8. PILOT HISTORY:

	1 st pilot	Other
Total hours	1608:00	559:00
Hours this type	67:00	00:00
Hours this model	67:00	00:00
Hours last 90 days	41:00	00:00
Hours last 30 days	14:00	00:00
Hours last 24 hours	2:00	00:00
Actual Combat hours	107:00	34:00

9. COPILOT HISTORY: Not applicable

10. FLIGHT ENGINEER AND NAVIGATOR, HOME STATION, ORGANIZATION AND HISTORY:

Not applicable

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11. RESULTS TO CREW: Thomas F. Mantell Jr., Captain - fatal

12. NARRATION OF EVENT: On the 9th of January, a flight of four P41's departed Marietta Air Base, Marietta, Georgia, enroute to Standiford Field, Louisville, Kentucky. Captain Mantell was the acting Flight Commander and filed the form 23 at Marietta for all four aircraft. The flight proceeded according to plan without incident to the vicinity of Godman Field, Kentucky. Captain Mantell was asked by Godman Tower to investigate an unidentified object in the sky to the southwest. Captain Mantell led the flight in that direction and started climbing at full power. At this time the one wingman, Lt. Hammond, broke formation and proceeded to Standiford and landed. At approximately 22,500 feet, the other aircraft turned back due to lack of oxygen. A short while later an observer on the ground noticed an aircraft circling at a high altitude then come diving down, slowly spiraling and evidently under full power. At approximately half way from the originally observed altitude and the ground, the plane was seen to disintegrate and subsequently crash on a farm near Franklin, Kentucky. This aircraft was identified as the one piloted by Captain Mantell who was found in the wreckage.

13. INVESTIGATION DISCLOSED:

- a. The purpose of the flight to Standiford Field, Louisville, Kentucky, was to return the four P-51's to the Air National Guard that were grounded at Marietta for weather a week previous.
- b. Form 23 was completed by Captain Mantell and weather was above defined YFR minimums. (Exhibit 1)
- c. In the vicinity of Godman Field, Kentucky, the flight leader was contacted by the tower operator who requested that he investigate an unidentified object if he had enough fuel. (Exhibits 4 and 5)
- d. Captain Mantell advised Godman tower that he had sufficient fuel remaining and that he would investigate the object as requested. (Exhibits 4 and 5)
- e. Captain Mantell did not advise the other aircraft in his flight of his intention. (Exhibits 4 and 5)

- f. The number 2 man in the flight broke away at this point: and returned to Standiford. (Exhibit 3)
- g. Captain Mantell started a sharp spiraling climb to the right which necessitated power settings of 47" M.P. and 2700 MPH for the wing man to stay in position. (Exhibits 4 and 5)
- h. At 14,000 feet, Captain Mantell broke off the spiral and started a straight climb on a heading of approximately 220° at the maximum rata of climb. (Exhibits 4 and 5)

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- i. At 16,000 feet, Lt. Clements, the right wingman, put on his oxygen mask and began breathing oxygen. (Exhibit 4)
- j. Captain Mantell, the flight leader and Lt. Hammond, the left wing man, did not have oxygen or oxygen masks. (Exhibits 4 and 5)
- k. At 18,000 feet, Lt. Clements attempted to pull up close to the flight leader and signal him with hand signals to listen out on Channel B. (Exhibit 4)
- l. Captain Mantell had at no time signaled for a change over to "B" baker Channel which is customary procedure for the flight leader. (Exhibit 4)
- m. At 20,000 feet, Lt. Clements advised Captain Mantell that their ETA for Standiford had elapsed and suggested that he notify Godman tower to relay their position to Flight Service to which Captain Mantell replied "Roger." (Exhibit 4)
- n. A few minutes later, Captain Mantell called the flights attention to a city with an airport beside it, which was identified by Lt. Clements as Bowling Green. (Exhibit 4)
- o. At approximately 20,000 feet, Captain Mantell called the flights attention to an object at 1200 o'clock. (Exhibit 4 and 5)
- p. Captain Mantell's transmission was garbled, but Lt. Clements stated he mentioned something about going to 25,000 feet for 10 minutes. (Exhibit 4)
- q. At 22,500 feet, Lt. Clements advised flight leader that he was breaking off to lead the other wingman back to Standiford Field, however, his transmission was not acknowledged by Captain Mantell. (Exhibit 4)
- r. Through the later stages of this climb, Lt. Hammond was signaling that he was having trouble due to the lack of oxygen and requested descending to a lower altitude. (Exhibit 4)

- s. At the time Lt. Clements and Lt. Hammond broke off from the flight, (22,500) Captain Mantell was observed climbing directly into the sun. (Exhibit 4)
- t. From 18,000 feet on, the point at which the high blower engaged, Lt. Clements had to use full power to maintain his position in the formation. (Exhibit 4)
- u. The last radio contact with Captain Mantell was at 20,000 feet and from all appearances he seemed to have the aircraft under perfect control. (Exhibit 4)
- v. Captain Mantell's aircraft was next observed by William C. Mayes, a civilian from Franklin, Kentucky, circling and after about three circles started into a power dive slowly rotating. (Exhibits 6 and 7)

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- w. The aircraft was making a terrific noise, ever increasing as it descended according to the statement of the two witnesses. (Exhibits 6 and 7)
- x. According to the statements of the witnesses, the aircraft exploded half way between where it started the dive and the ground. (Exhibits 6 and 7)
- y. None of the witnesses observed any fire coming from the aircraft during the descent. (Exhibits 6, 7, 8 and 9)
- z. The aircraft crashed at approximately 1520 CST, southwest of Franklin, Kentucky. (Exhibits 6 and 7)
- aa. The aircraft did not explode or burn on impact. (Exhibits 6 and 7)
- bb. Parts of the ailerons fuselage, empennage and glass from the canopy, were scattered over an area of ¼ -of a mile. (Exhibits 10 and 11)
- cc. Captain Mantell, pilot, was found in the cockpit of the aircraft. (Exhibits 10 and 11)
- dd. The force of the crash snapped the pilot's safety belt.
- ee. The aircraft was not serviced with oxygen at Marietta as none was available at that station. (Exhibit 2)
- ff. Standiford Field did not have oxygen available, however, a bill of lading had been received showing that oxygen was being sent to the 165th Fighter Squadron.
- gg. Statements of other pilots in the flight confirm the fact that Captain Mantell did not have an oxygen mask. (Exhibit 4)

14. CONTRIBUTING CAUSE FACTORS:

- a. The poor judgment displayed by Captain Mantell in that he elected to climb to altitude without oxygen equipment.
- b. The effects of anoxia rendering Captain Mantell unconscious causing, loss of control of the aircraft.

15. COMMENTS:

- a. It is the opinion of the undersigned that the effects of anoxia on Captain Mantell was the underlying cause of this accident. While no definite altitude can be given as the exact limit of human tolerance to a lack of oxygen, it is a well known fact that rapid lowering of the oxygen saturation of arterial blood, as occurred, the rapid ascent of Captain Mantell, will produce symptoms of acute anoxia in a very short time. AF publication

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contend that it is possible to remain conscious for a few minutes at 25,000 feet but collapse occurs very rapidly. It is reasonable to assume that Captain Mantell was not aware of the symptoms of anoxia in that his high altitude flying experience was very limited. Prior to his separation from the service and affiliation with the Air National Guard, Captain Mantell was assigned to Troop Carrier Command and according to fellow officers had no occasion to participate in high altitude flights.

- b. At the time Lt. Clements and Lt. Hammond, who incidentally, had been aware of anoxia symptoms for some time, broke away from the lead ship, they estimated that their altitude was 22,500 feet. The range between 15,000 and 20,000 feet is referred to as the disturbance stage and occasionally there are no subjective sensations up to the time of unconsciousness. The critical stage is between 20,000 and 25,000 feet at which altitude consciousness can be lost rapidly, depending on the physical condition of the individual.

It is believed that Captain Mantell was rendered unconscious from anoxia and the uncontrolled aircraft started a slow spiral culminating into a dive which was precipitated by the high power settings and torque. Consequently, the aircraft with its engine producing full power rapidly exceeded its design limitation as was evidenced from the photos, disposition of the wreckage, and later supplemented by civilians statements to the effect that the aircraft disintegrated approximately half way from its initial point of dive to the ground.

- c. Assuming that Captain Mantell was rendered unconscious, it is not likely that he would have had sufficient time to recover and abandon the aircraft before it crashed.
- d. It is the opinion of the undersigned that all fighter aircraft should be serviced with oxygen before each flight and that it be compulsory that the pilot have an oxygen mask in his possession.

The above would preclude the possibility of a pilot taking any unnecessary chances by flying at altitude without the proper oxygen equipment.

16. RECOMMENDATIONS:

- a. This accident be publicized through the medium of Flying Safety publication "Crash and Consequence. "

17. STATEMENT OF REBUTTAL:

- a. Inasmuch as the pilot was killed in the accident, it was impossible to obtain a statement of rebuttal regarding pilot error.

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ROBERT J. D. JOHNSON
Major, USAF