

7237-25

# AIRCRAFT ACCIDENT REPORT

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**ADOPTED:** October 23, 1964**RELEASED:** October 29, 1964

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DELTA AIR LINES, INC.  
DC-7, N4875C, AND  
U. S. AIR FORCE C-123B, AF 540589,  
MEMPHIS MUNICIPAL AIRPORT,  
MEMPHIS, TENNESSEE,  
JANUARY 13, 1963

## SYNOPSIS

Delta Air Lines Flight 8715, a Douglas DC-7, N4875C, collided with a U. S. Air Force C-123B, parked on the military ramp at the Memphis Municipal Airport on January 13, 1963, at 0233 c.s.t. Of the five crew members aboard the DC-7, one was killed, and three others were injured. The Air Force aircraft was unoccupied.

Delta 8715, a ferry flight planned from Memphis, Tennessee, to Jackson, Mississippi, while taxiing, failed to negotiate a turn, and struck the parked C-123B. Damage to each aircraft was substantial. There was no fire.

The Board determines the probable cause of this accident was the crew's inattention to duty while taxiing on an unfamiliar taxiway at night and the captain's failure to stop the aircraft in sufficient time to avoid striking a parked aircraft.

## Investigation

Delta Air Lines Flight 8715, a Douglas DC-7, N4875C, while taxiing out to Runway 27 for takeoff, collided with an unoccupied parked Air Force C-123B, on the Memphis Municipal Airport at 0233 c.s.t.<sup>1/</sup> January 13, 1963. The captain of the DC-7 was killed.

A preflight check of the engines and aircraft was made by a Delta mechanic prior to the departure. During this preflight check a leak was discovered at the hydraulic line connection with the Meletron pressure switch.<sup>2/</sup> Permission was granted by the Delta maintenance base at Atlanta, Georgia, to disconnect and cap the switch. This was done and additional hydraulic fluid was added to the system. Shortly thereafter the second officer (flight engineer) assigned to Delta 8715 conducted a walk-around inspection of the aircraft. Finding no discrepancies he boarded the aircraft and executed the normal pre-start checklist. Prior to start-

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

<sup>2/</sup> The Meletron switch is an added component in Delta DC-7 aircraft. This switch automatically cuts in the electrically operated auxiliary hydraulic pump when the hydraulic pressure in the brake lines reaches 2100 plus or minus 50 p.s.i.

ing the aircraft engines the flight engineer used the electrically driven auxiliary hydraulic pump to build the hydraulic pressure to 3000 p.s.i. in the accumulators. The emergency hydraulic pump selector valve lever was then placed in the normal forward (brakes only) position. The engineer said that he did not move the by-pass lever,<sup>3/</sup> and that in accordance with the checklist, it was in the down position. While performing other associated duties the flight engineer noted in the log that hydraulic work had been done on the aircraft.

When the captain and the first officer boarded the aircraft the flight engineer advised the captain that the checklist had been completed. The captain then set the parking brakes.

Shortly before the engines were started a Delta mechanic entered the flight deck and explained to the captain the modification that had been made in disconnecting the Meletron switch and capping the hydraulic line to the switch. He also explained that disconnecting this unit in no way affected the normal operation of the hydraulic system.<sup>4/</sup> The mechanic stated that the captain, at his request, operated the auxiliary hydraulic pump; and both men were satisfied that the pump operated.

After performing their assigned functions in the cabin the stewardesses both went forward to the cockpit to observe the takeoff from the flight deck. One occupied the observer's seat directly behind the flight engineer and the other seated herself in a jump seat near the crew entrance door.

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<sup>3/</sup> The by-pass valve mechanically operated by the hydraulic system by-pass lever permits hydraulic fluid to be by-passed directly from the engine-driven pumps to the reservoir. The lever is placed down during ground operation and up in flight when pressure to the various hydraulic units is not desired. The lever is spring loaded to the down position.

<sup>4/</sup> The hydraulic system of DC-7 aircraft consists of the following individual but interconnected components:

(a) The main pressure supply system which utilizes the engine-driven hydraulic pump and the pressure regulator to supply pressure to the hydraulic system for operation of the hydraulically actuated units.

(b) The main pressure accumulator system which provides a reserve supply of fluid under pressure and dampens fluctuations of pressure in the hydraulic system.

(c) The emergency pressure supply system which utilizes an electrically driven hydraulic pump to supply pressure to the hydraulic system for operation of the hydraulically actuated units if pressure is not available from the main pressure supply system. Two switches operate this system. One switch is located to the left of the captain's station, the other to the right of the copilot's station.

(d) The hydraulically actuated units which receive fluid under pressure from the pressure supply system to operate the landing gear, wing flap, brakes, etc.

All engines were started and the first officer stated that the hydraulic pressure was normal, 3000 p.s.i. The wing flaps were lowered to 30° prior to taxi.

At approximately 0229, Delta 8715 called Memphis Ground Control and advised that they were proceeding in accordance with Instrument Flight Rules (IFR) to Jackson, Mississippi. Memphis Ground Control responded with the following taxi clearance: "Delta eighty-seven fifteen Memphis ground, cleared to runway two seven, wind three zero zero degrees variable to three two zero degrees at one five, altimeter three zero two nine, time zero eight two nine and three quarters (Greenwich Mean Time). Taxi to your right out the center taxiway and east on the east-west runway." (See Attachment #1). As the aircraft taxied out, the flight engineer raised the flaps from 30 to 20 degrees, the takeoff setting. Neither the flight engineer nor the first officer monitored the system hydraulic pressure at any time during the taxiing.

Shortly thereafter Delta 8715 transmitted the following message to Memphis Ground Control: "Memphis ground eighty-seven fifteen you want us to go all the way down the east-west or cross over the west?" Memphis Ground Control responded: "Turn right ahead taxi east past the north-south and after you pass the north-south runway turn left the second taxiway and taxi parallel to the east-west and hold short of two seven at the end." Delta 8715 acknowledged.

At approximately 0230 Memphis Ground Control issued an IFR clearance which was read back correctly by Delta 8715.

The aircraft proceeded east on Runway 9 to Taxiway "D" where it made a left turn to the north. When the position of the aircraft on taxiway "D" was detected by the ground controller he initiated the following transmission: "Eighty-seven fifteen, turn right on the ramp ahead and taxi east and hold short of two seven at the end." The flight did not acknowledge this message. Shortly thereafter the ground controller transmitted this message: "Eighty-seven fifteen . . . use caution in taxiing on the military ramp." This transmission was not acknowledged by the flight. The ground controller stated that he transmitted the caution message because he could see the C-123B in the landing light beam of Delta 8715.

The flight engineer said that as the aircraft proceeded north on Taxiway "D" the first indication of difficulty was the captain's exclamation which he understood to mean that he had lost power. The flight engineer interpreted this first to mean engine power; however, finding the engines to be operating normally he then, as he said, realized the captain "couldn't steer the airplane".

As testified by the flight engineer and corroborated by the first officer, the captain then put the sequence bar<sup>5/</sup> down and pulled the throttles into the reverse range. After a few seconds, when the props were slow going into reverse, he moved them out of reverse range into normal idle range. In point of time this was just a few seconds before the collision.

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<sup>5/</sup> The reverse throttle lock which protects against inadvertent propeller reversing must be released manually by pulling the reverse throttle lock release lever aft and down before the throttle can be moved into reverse range.

The first officer in relating the sequence of events stated in part "...he immediately unhooked the low pitch stop, went into reverse cycle. I immediately saw the other airplane and called air brakes,<sup>6/</sup> and I don't know the exact words called it twice, at least twice, and he came out of reverse, and his hand went to the air brake bottle, and that was the time we collided."

One of the stewardesses, when asked if she saw the parked aircraft while she was in the cockpit, said: "We started down the runway and everything appeared to be just fine. I turned around and started to talk to Elizabeth. As I turned back to face the front I saw a plane in front of us but didn't think anything of this because I just figured we'd be turning in a moment. I turned back to (talk) to Elizabeth and just then I heard one of the men yell 'air brake -- air brake'. I turned to face the front and at that moment we hit the plane ..."

Numerous attempts were made by the Memphis tower to contact the aircraft as it was observed to stop on the military ramp. Failing in this, the tower dispatched emergency equipment to the scene. Delta 8715, at approximately 0233, struck the left wing of the C-123B. At this time the left wing rear spar of the C-123B penetrated the upper nose section of the DC-7 slightly below the captain's windshield. A portion of this spar broke off and the remainder of the wing was deflected upward and over the top of the DC-7. When the spar penetrated the nose section it collapsed the instrument panel, sheared the control yoke and impaled the captain.

When the Delta aircraft came to a stop the first officer, after first determining that the captain was beyond help and seeing the flight engineer shutting down the engines and aircraft systems, opened the forward crew compartment door. While attempting to use the emergency escape rope, he lost his balance and fell from the aircraft. The first officer suffered injuries from this fall.

The flight engineer, with one of the stewardesses, proceeded aft to the passenger door where they remained until help arrived. The other stewardess jumped from the open crew compartment door to the ground below.

The C-123B was extensively damaged. Damage to the DC-7 was confined generally to the nose section and cockpit interior.

An examination of the DC-7 engines revealed no evidence to indicate pre-incident failure, operational distress or malfunction. Investigation further revealed that the hydraulic system, emergency air brake system, and the aircraft's landing gear

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<sup>6/</sup> The emergency air brake system has an air pressure supply cylinder pressurized to 2000 p.s.i. The emergency air brake control handle is located on the main instrument panel above the captain's flight instrument. It is normally secured in the "off" position. The control handle has three positions "Off", "Hold" and "On". An air brake pressure gauge is located on the hydraulic instrument panel on the right side wall of the flight compartment forward of the first officer's seat. Cylinder pressure should read 2000 p.s.i. on the gauge.

were capable of normal operation prior to impact.

Examination of the hydraulic system revealed:

Previous maintenance log pages did not indicate any pertinent system discrepancies.

The system repair at the Meletron switch location was subsequently checked and found to be free of leaks.

The hydraulic pressure regulator was functionally tested and found to operate within tolerance.

The hydraulic system by-pass lever was found in the down position. The by-pass lever installation was checked and the spring tension was within tolerance.

The capping of the hydraulic line to the Meletron switch did not adversely affect the normal operation of the aircraft's hydraulic system.

The emergency air brake pressure indicator read "0". The handle of the valve located above the left instrument panel had been pulled out of the body assembly by the left wing spar of the C-123B, thus opening the air pressure line to the bottle.

### Analysis

The investigation revealed no evidence of hydraulic system, powerplant or structural failure. The aircraft and the crew were properly certificated, and weather was not a contributing factor.

Taxi instructions issued by the control tower and recorded on the tape indicate Delta 8715 was instructed to turn left at the second taxiway after passing the north-south runway. Referring to the diagram of the Memphis Airport,<sup>7/</sup> the air traffic control instruction to "turn left at the second taxiway" was misinterpreted by the captain. This placed the aircraft on Taxiway "D", in position for the subsequent collision with the C-123B.

The Board believes that the disconnecting of the Meletron switch was not a contributing factor in this accident inasmuch as this device was additional to, and did not interfere with, the normal operation of the basic hydraulic system.

The testimony indicated that the flight engineer in his pre-start check of the aircraft tested the emergency hydraulic pump selector valve in its three positions and then placed it in the "brakes only" position. He did not move the by-pass lever inasmuch as the positioning of this valve and lever was a part of the "before takeoff checklist". When the captain indicated an emergency the first officer reached for the by-pass lever near the floor of the aircraft to his left

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<sup>7/</sup> See Attachment No. 1.

but the flight engineer had apparently reached it first. It is believed, however, that this valve was in the down position at the time.

It is significant that the crew apparently did not use the hydraulic brakes, the auxiliary hydraulic pump, or the emergency air brake system in attempting to stop the aircraft.

Prior to turning right on the military ramp the pilot would have used the normal hydraulic braking to slow the aircraft. Had the brakes not been working at this time the captain would have, most probably, said that the brakes were not working. At this time either he or the first officer should have turned on the auxiliary hydraulic pump which would have built up pressure for the brakes only and the aircraft could have been stopped. This would have occurred prior to reaching the military ramp and prior to starting the turn to the right on the ramp.

Neither of the surviving crew members could remember if they felt any deceleration which could be associated with brake application; nor could they state that they noticed the captain attempting to use the brakes. The only thing they remembered was that the captain was trying to use the nose steering wheel and their interpretation of his statement was that he couldn't steer the aircraft. Therefore, it must be assumed that the normal hydraulic brakes were never used after turning onto Taxiway "D" and prior to striking the parked aircraft. No explanation can be found as to why the brakes were not used. There is also no valid explanation for the failure of the first officer to use the brakes available to him to aid in stopping the aircraft when he saw the imminent collision. He assumed that since the captain allegedly could not steer the airplane then there was no pressure for using the brakes. While he stated that he reached for the hydraulic bypass handle to check its position he also stated that he did not check the hydraulic pressure gauge to see if he actually had hydraulic system pressure. In addition, he made no attempt to turn on the auxiliary hydraulic pump to get brake pressure. The switch for this pump is located on his side panel adjacent to his right hand.

It is significant that neither of the surviving crew members, by their own admission, monitored the hydraulic system pressure gauge from the time the engines were started until the collision occurred. The Board can only conclude that the flight crew was not paying reasonable attention to the operation of the aircraft during taxi.

The next item to be considered is the captain's failure to utilize the emergency air brakes to make an emergency stop rather than attempting to use propeller reversing. It is a known fact that reversing is relatively ineffective at speeds below 50-60 knots. Use of the air brakes provides immediate braking action and will actually lock the wheels, stopping the aircraft more rapidly than with the use of normal hydraulic brakes.

It is difficult to understand why the crew did not hear and respond to two important radio transmissions by the ground controller. One of these transmissions gave additional taxi instructions, the other was a caution message. This would indicate that the crew was not paying attention to the radio and must have been preoccupied in the cockpit.

The tower controller stated that he was able to see the C-123B in the landing light beam of the Delta aircraft when the caution message was issued. Because the controller could see this aircraft, from a distance of approximately 7/8 of a mile, it is also difficult to understand why the crew did not see the aircraft in sufficient time to avoid it. This is particularly significant in light of the stewardess' statement that she saw the airplane in front of them but was not worried. The Board concludes from this that the C-123B was sufficiently far away at the time she saw it that it could have been avoided and was certainly visible to the crew. However, the first officer stated that he saw the airplane only after the captain allegedly indicated he couldn't steer the aircraft.

Probable Cause

The Board determines the probable cause of this accident was the crew's inattention to duty while taxiing on an unfamiliar taxiway at night and the captain's failure to stop the aircraft in sufficient time to avoid striking a parked aircraft.

BY THE CIVIL AERONAUTICS BOARD:

/s/ ALAN S. BOYD  
Chairman

/s/ ROBERT T. MURPHY  
Vice Chairman

/s/ G. JOSEPH MINETTI  
Member

/s/ WHITNEY GILLILLAND  
Member

GURNEY, Member, did not take part in the adoption of this report.

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

### Investigation and Depositions

The Civil Aeronautics Board was notified of this accident immediately after its occurrence at 0233 on January 13, 1963. Investigators were dispatched immediately to the scene to conduct an investigation in accordance with the provisions of Title VII of the Federal Aviation Act of 1958, as amended. Depositions were ordered by the Board and taken at the Hilton Inn, New Orleans, Louisiana, on February 4-5, 1963.

### Air Carrier

Delta Air Lines, Inc., incorporated under the laws of the State of Louisiana, holds a current certificate of public convenience and necessity issued by the Civil Aeronautics Board to engage in the transportation of persons, property, and mail. It also possesses a valid air carrier operating certificate issued by the Federal Aviation Agency.

### Flight Personnel

Captain Allen B. Olson, age 42, was employed by Delta Air Lines, Inc., on September 8, 1948, and had accumulated a total of 15,707 hours flight time of which 3,250 hours were in DC-6/7 type aircraft. He held currently effective airline transport certificate No. 3961-40 with numerous ratings, among which was the Douglas DC-7. His last line check in DC-7 was on April 3, 1962. His last proficiency check on November 16, 1962, was in a CV 440 aircraft. Records indicate he satisfactorily passed a first-class FAA flight physical on December 23, 1962, without waivers.

First Officer William T. Jeter, Jr., age 28, was employed by Delta Air Lines, Inc., on December 17, 1959, as a flight engineer and had accumulated a total of 2,979 hours as a pilot and 1,742 hours as a flight engineer. His flight time as a pilot in DC-6/7 aircraft was seven hours. He held currently effective commercial pilot certificate No. 1339294 with multiengine and instrument rating. He received his last proficiency check on January 9, 1963, which was his original qualification in DC-7 aircraft. Records indicate he satisfactorily passed an FAA first-class flight physical on October 22, 1962, without waivers.

Second Officer George H. Herbst, age 28, was employed by Delta Air Lines, Inc., on November 30, 1962, and had accumulated 3,720 hours flight time as a pilot, and 42 hours as a flight engineer, 29 of which were in DC-7 aircraft. He was rated by the company as a DC-7 flight engineer on December 4, 1962. He held currently effective FAA flight engineer certificate No. 1545108 and airline transport pilot certificate No. 1327484 with a rating for Constellation aircraft. He received his last proficiency flight check on November 30, 1962. Records indicate he satisfactorily passed an FAA first-class physical on December 14, 1962, without waivers.

Stewardess Elizabeth T. Reid was employed by Delta Air Lines on June 17, 1962. She completed training in fire fighting, emergency evacuation, ditching, and emergency procedures on DC-7 equipment on July 19, 1962. She satisfactorily passed her last company physical examination on November 13, 1962.

Stewardess Judy L. Clark was employed by Delta Air Lines on November 12, 1962. She completed training in fire fighting, emergency evacuation, ditching



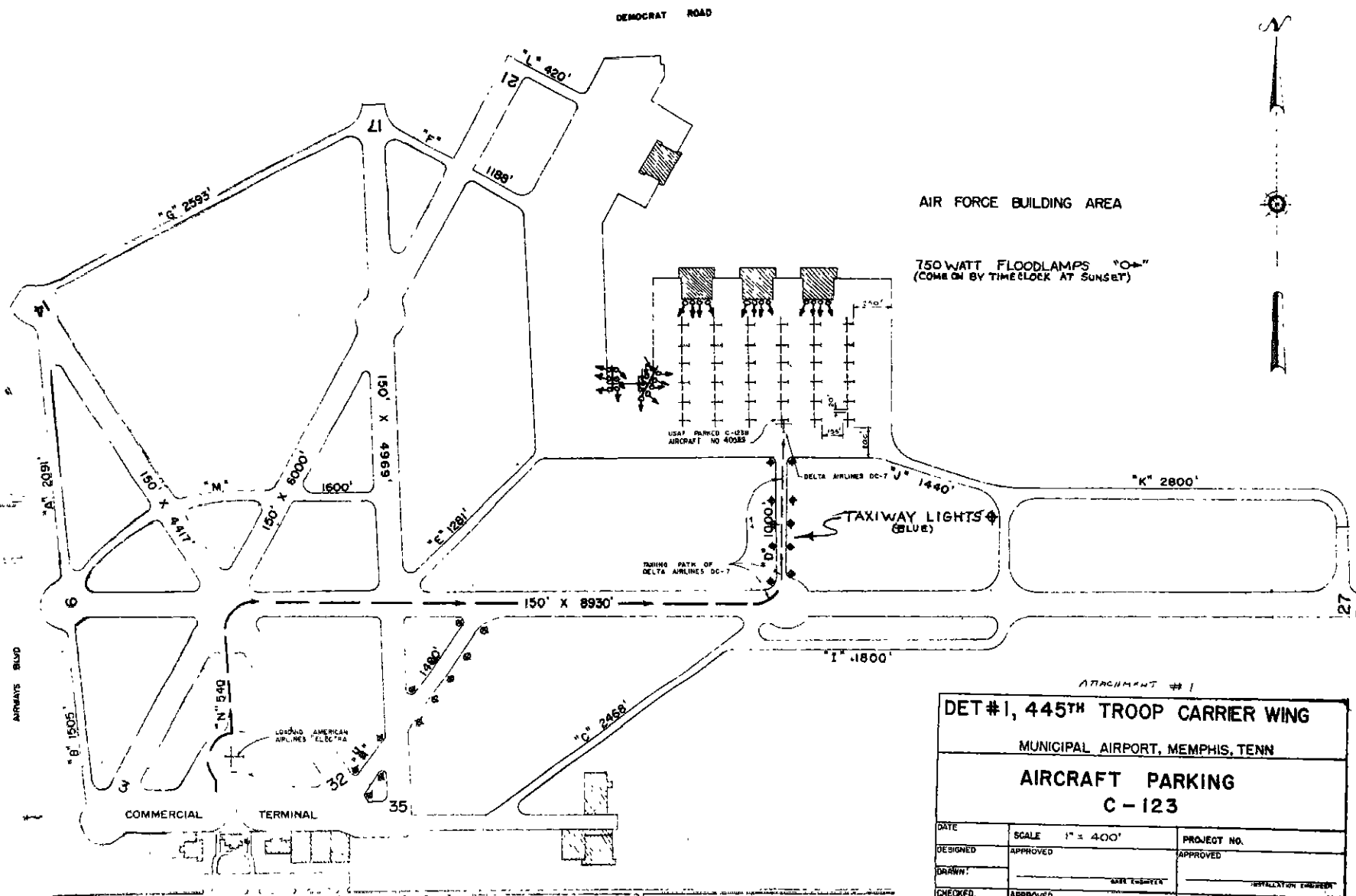
and emergency procedures on DC-7 equipment on December 13, 1962. She satisfactorily passed a company physical examination on November 12, 1962.

The Aircraft

N4875C, a Douglas DC-7, manufacturers serial No. 44579, owned and operated by Delta Air Lines, Inc., was manufactured November 16, 1954, and had a total flying time of 26,055:02 hours of which 2,294:00 hours had been accumulated since the last major inspection. The aircraft was powered by four Wright model 972TC18DA-2/4 engines with Hamilton Standard propellers model 34E60-345. Engine times were as follows:

<u>Engine Position</u>	<u>Time Since Overhaul</u>	<u>Total Time</u>
1	1,689.1	10,929.8
2	788.6	20,017.1
3	1,070.3	11,679.0
4	1,091.3	10,076.0

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<i>Attachment #1</i>		
<b>DET #1, 445TH TROOP CARRIER WING</b>		
<b>MUNICIPAL AIRPORT, MEMPHIS, TENN</b>		
<b>AIRCRAFT PARKING</b>		
<b>C - 123</b>		
DATE	SCALE 1" = 400'	PROJECT NO.
DESIGNED	APPROVED	APPROVED
DRAWN	APPROVED	APPROVED
CHECKED	APPROVED	DRAWING NO.
APPROVED	COMMANDER	SHEET 08