

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



CEN21FA209

EXAMINATION SUMMARY

November 9, 2022

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A. ACCIDENT

Location: Hattiesburg, MS
Date: May 4, 2021
Time: 2305 Local
0405 UTC
Airplane: Mitsubishi MU2B-60

B. EXAMINATION SUMMARY

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C. SUMMARY

Combined report on the examination of the airframe, engines, and propellers from N322TA.

D. DETAILS OF THE EXAMINATION

1.0 Accident Site

Documentation of the accident site was conducted by an NTSB Investigator with the assistance of Honeywell and Mitsubishi.

The accident site was located 2.24 miles from the approach end of runway 13. The airplane impacted the front of an occupied residence and a postimpact fire ensued. The accident site was largely contained to one area without a large debris field consistent with a low energy impact. The nose of the airplane was generally

aligned along a 305° heading and just left of the approach course between NETTI and runway 13.

2.0 Airframe Examination

Documentation of the airframe found that the landing gear was down, and the flaps were set to 20°. Information contained in Advisory Circular No. 91-89 *Training, Experience, and Operating Requirements, Nonprecision Straight-In Approach*, instructs pilots that at landing assured to check the landing gear down, and set flaps to 20° as they approach the final approach fix inbound.

7/22/16

AC 91-89
Appendix A

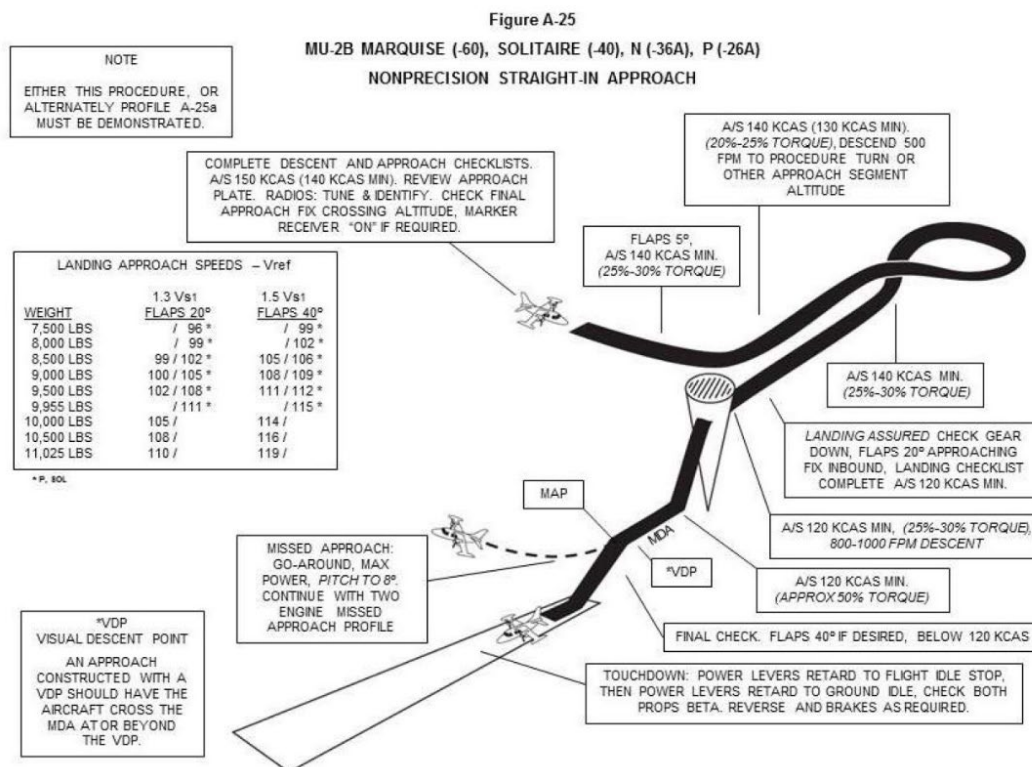


Figure 1 Nonprecision Straight-In Approach Graphic (AC 91-89)

All major flight controls were found at the accident site. Examination of the flight control found multiple fractures/broomstrawing of the flight control cables.

The cockpit instrumentation were fire and impact damaged. The throttle quadrant was impact damaged and distorted. The power levels were both full forward with the left handle fractured at the base. The condition levels were found forward at the near the cruise setting. The Run-Stop-Crank switches were both fire and impact damaged and switch position could not be determined.

The left engine fuel shutoff valve and switch were both found in the open position. The right engine fuel shutoff valve was between open and closed, however the valve position displayed signatures of impact and fire damage.

3.0 Engine Examinations

3.1 Left Engine (s/n P-36113C)

The left engine remained generally intact. There was evidence of impact and fire damage. The engine's propeller shaft and rotating group were not able to be freely rotated.



Figure 2 Left Engine (Honeywell Photo)

There was a large amount of earthen debris located in the engine inlet. The planetary gear assembly was intact, however the inner race of the assembly was cracked on the forward side of all four gears. The gears were able to be rotated with resistance. Rotational scoring was present on each gear at the base of the teeth, on the aft side, and aft face of the teeth. The magnetic chip detector was intact and had metallic slivers observed.



Figure 3 Magnetic Chip Detector (Honeywell Photo)

The first-stage compressor impeller shroud had earthen debris on its surface. There was light rotational scoring from the inducer to the exducer areas around 360°. Static blade marks were present from 10 o'clock to 2 o'clock positions. The compressor impeller had earthen debris present on all blades. Seven blades were bent at the inducer leading edge opposite the direction of rotation. Light rotation scoring was present from the inducer to exducer.



Figure 4 First-Stage Impeller (Honeywell Photo)

The first-stage compressor diffuser contained a large amount of earthen debris in the diffuser and packed around the vanes. Rotational scoring was present on the forward end of the bore from the 7 o'clock to 10 o'clock positions. Rotational scoring present on the aft end of the bore from the 2 o'clock to 3 o'clock positions, and from the 5 o'clock to 1 o'clock positions.



Figure 5 First-Stage Compressor Diffuser

The second stage compressor housing had earthen debris build-up at the outer diameter flow path from the second-stage diffuser exit as well as earthen debris build-up on the impeller shroud. There was rotation scoring from the inducer to exducer areas around 360 degrees. Static marks were present at the shroud knee area. The second-stage compressor impeller had earthen debris adhering to all surfaces with deposits between several blades. There was rotational scoring on the forward hub just aft of the forward curvics as well as on the knee to the exducer of the blades.



Figure 6 Second-Stage Compressor Housing and Impeller (Honeywell Photo)

Earthen debris was located throughout the combustion section. The turbine section had light metal spray on several blade in the first-stage turbine rotor, second-stage turbine stator, and second-stage turbine rotor. The third-stage turbine stator had rotational scoring corresponding to the leading edge of the third stage rotor.

No preimpact anomalies were detected with the left engine.

3.2 Right Engine (s/n P-36114C)

The right engine remained generally intact. There was evidence of impact and fire damage.



Figure 7 Right Engine (Honeywell Photo)

Portions of housing materials to include roofing shingles were found in the inlet area. The first-stage compressor shroud had heavy sooting over the flow path surfaces consistent with static blade position. There was rotational scoring from the inducer to knee and a lip present from the scoring at the exducer. The first-stage impeller had soot on all surfaces. There was evidence of rubbing on the blade tips from the inducer to exducer. Six blades on the inducer were bent opposite the direction of rotation. There was slight bending on several blades on the exducer opposite the direction of rotation. The first-stage compressor diffuser had earthen debris and sooting present in the flow path. A dark colored material consistent with heat coked oil was observed on the outer diameter of the diffuser. There was rotational scoring on the inner diameter around 360°.



Figure 8 First-Stage Impeller & Diffuser (Honeywell Photo)

On each blade of the second-stage compressor impeller there was rotational scoring on the knee to the exducer. On the compressor housing there was rotational scoring around 360° of the knee to exducer area. There was earthen debris adhering to the outer diameter of the shroud and concentrations in the outer diameter flow path.



Figure 9 Second-Stage Impeller & Diffuser (Honeywell Photo)

Throughout the combustion and turbine sections there was ash and earthen debris.

No preimpact anomalies were detected with the right engine.

4.0 Propeller Examinations

The left propeller remained attached to the engine propeller flange during the impact sequence. One blade fractured from the propeller assembly during impact and was found imbedded in the soil at the main impact point. Impact marks on the internal surface of the piston corresponded to a blade angle of approximately 11-16° and markings on the cylinder suggested a blade angle up to approximately 28.5°. Blade damage signatures included chordwise/rotational scoring, compound bending and twisting, leading edge chunking, and fractured pilot tubes consistent with engine power being applied at impact.

The right propeller separated from the engine during the impact sequence. The right propeller was significantly heat damaged in the post-crash fire. All four blades were partially consumed and precluded clear interpretation of blade damage. However, three blades exhibited chordwise/rotational scoring indicating rotation. The piston was fragmented and mostly consumed. A piston fragment attached to the

blade R3 link arm suggested the piston was fractured when the blade angle was approximately 25°. Signatures were consistent with engine power being applied at impact.

Submitted by:

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