



NATIONAL TRANSPORTATION SAFETY BOARD

**Office of Aviation Safety
Western Pacific Region**

SITE and ON-SCENE INFORMATION (Rev A)

**NTSB Accident: WPR18FA251
Accident Date: September 4, 2018**

Examination Dates: September 4 & 5, 2018

This document contains 20 embedded images

A. ACCIDENT

Location: Palo Alto, California
Date: September 4, 2018
Aircraft: Mooney M20J, N701JM, Serial # 24-3281
NTSB IIC: Michael Huhn

B. EXAMINATION PARTICIPANTS:

Michael Huhn	Dennis Pearson
Air Safety Investigator	Air Safety Inspector
National Transportation Safety Board	Federal Aviation Administration
Federal Way, WA	San Jose, California

C. SUMMARY

On September 4, 2018, about 1100 Pacific Daylight time, a Mooney M20J airplane, N701JM, impacted in a tidal flat shortly after a balked landing at Palo Alto Airport (PAO), Palo Alto, California. The private pilot/owner received fatal injuries. One passenger received serious injuries, and the other passenger received minor injuries. The airplane was substantially damaged. The airplane was operated under the provisions of 14 Code of Federal Regulations Part 91, and was a personal flight in the service of Angel Flight West. Visual meteorological conditions existed at PAO about the time of the accident.

All components were accounted for. No evidence consistent with in-flight fire or in-flight structural failure was observed.

D. RESPONSE and SITE LOCATION INFORMATION

1.0 Response

- The accident occurred about 1100
- First responders arrived on scene very shortly thereafter
- Airport & other Palo Alto officials arrived irregularly between 1130 and 1230
- FAA representative arrived about 1145
- NTSB representative arrived about 1230

2.0 Location & Site Condition Information

- The airplane was upright, pointed on a heading of approximately 340° magnetic
- The airplane was approximately 20 feet from shore, in a tidal flat.
 - The tide was receding at the time of the accident

- At 1230, the water level appeared to be about 2 -3 feet lower than the high tide line, and was about 1 ft deep at the airplane
- When plotted using Google Earth, the final resting location was about 890 feet from the center of the threshold of runway 31, on a True bearing of 096° from that runway location
 - This location was offset about 600 ft NE of the runway centerline, and about 600 feet SE of the runway 31 threshold
- Ground scars included a broken fence, ground gouges between the fence and the shoreline, and slices/gouges in the tidal flat mud
 - The fence was a wood structure that supported a chain-link mesh
 - The ground scar direction was about 003° True
 - The fence was located about 50 feet from the shoreline, and was about 6 feet high
 - One top crosspiece of the fence was shattered and thrown in the direction of flight
 - The mesh was deformed and partially separated from the wood posts, but was not torn or cut
 - The ground gouges were discontinuous between the fence and shoreline
 - The mud slices/gouges began about 8 feet from the shoreline
- Witness reports suggested the possibility of propeller strikes on the runway, but two separate runway walkdowns did not reveal any strike scars
- No persons on the ground were injured or killed



Figure 1 - KPAO and Wreckage Location

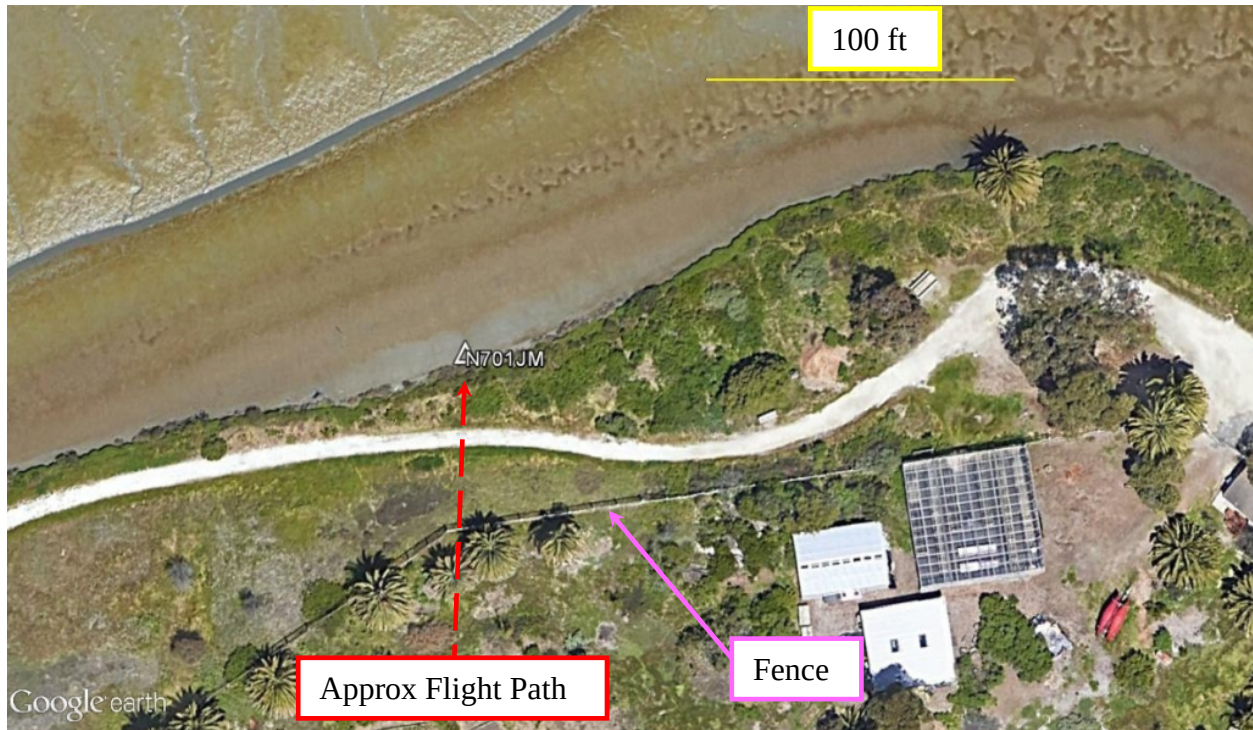


Figure 2 - Accident Location



Figure 3 - Fence and Ground Scar (looking back along flight path)

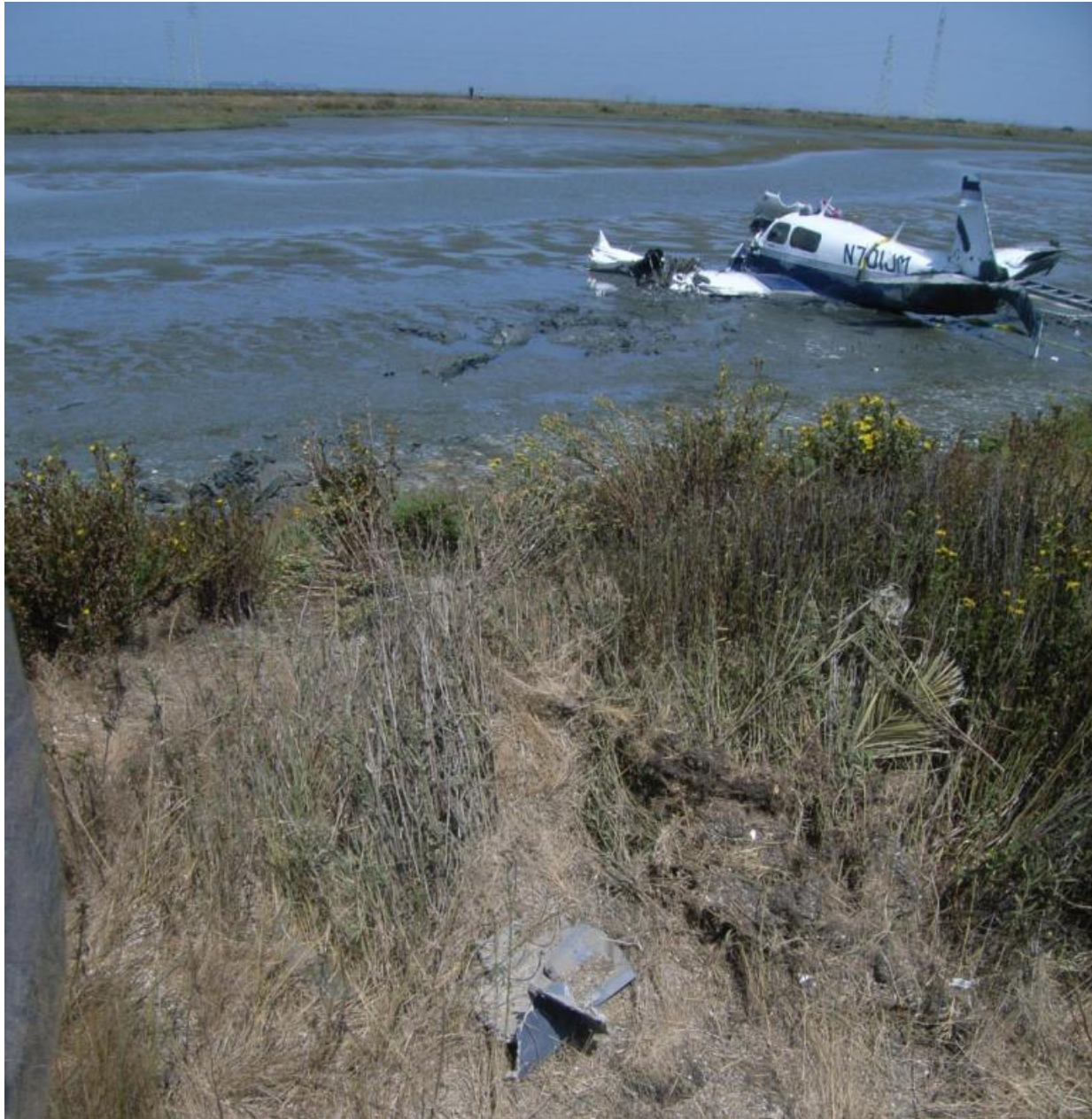


Figure 4 - Site Overview

E. WRECKAGE INFORMATION

1.0 Pre-Removal from Resting Location

- The right composite wingtip, plus some unidentified metal and plastic fragments, as well as some cabin transparency fragments, were located 'inside' (prior to) the fence line
- Some small metal fragments were found on the shore between the fence and shoreline
- The left composite wingtip was found about 5 feet offshore
- An approximate 5 foot section of the outboard left wing was situated about 10 feet forward and left of the fuselage
- The leading edges of both wings displayed multiple impacts
- The outboard end of the right wing displayed significant impact damage
- The engine was partially fracture-separated from the fuselage, and buried in the mud
- All other components remained attached to the airplane
- The left elevator was partially torn from its hinges
- The forward fuselage/cockpit was moderately crushed/deformed
 - The instrument panel was severely disrupted
- The aft cabin/seating area retained its normal occupiable volume
- The fuselage aft of the cabin displayed light to moderate crumpling
- The ELT was reported to have been activated and transmitting
 - The ELT remained installed and attached to its antenna
 - The ELT switch was turned to the OFF position, the antenna cable was disconnected from the device by investigators, and the device was removed from its cradle
- The two master switches were set to the ON position
- The ignition key remained in place, and the switch was set to the BOTH position
- The speedbrakes were found in the stowed position on each wing
- The elevator control rods and linkage were intact from the aft end of the cabin to the elevator
- The pitch trim control rod and linkage were intact from the aft end of the cabin to the forward end of the pitch trim jackscrew assembly
- The rudder control rods and linkage were intact from the aft end of the cabin to the rudder
- The two elevator and one rudder balance weights were present and securely attached
- The left fuel tank contained about 4 inches (approximately 16 gallons) of fuel
 - On scene access limitations precluded determination of whether the tank had been breached
 - The fuel cap remained securely installed
- The right fuel tank was devoid of fuel
 - On scene access limitations precluded determination of whether the tank had been breached
 - The fuel cap remained securely installed
- There were no indications of pre- or post-impact fire
- An iPad mount was found attached to the pilot's yoke, and remnants of an iPad were found in the cockpit
- Later in the afternoon of the first day, due to the eventual return of tidal waters, in order to minimize water immersion, the airplane was dragged (tail-first, via cable and motor vehicle) towards the shoreline

- The repositioning resulted in the tail being adjacent to the shoreline
 - During the repositioning, the engine remained submerged in the mud, and fully separated from the fuselage when the rest of the airplane was moved
- The following personal effects/baggage were noted in the wreckage:
 - Multiple headsets
 - A pilot flight bag with multiple documents, including the pilot's logbook
 - A few loose articles of clothing
 - Passengers' bag and small backpack
 - Cardboard box with miscellaneous airplane items (chocks, oil etc)
- The flight bag was found forward of the front right seat, and weighed about 8 lbs
- The passengers items were scattered throughout the baggage compartment and cabin, and weighed about 10 lbs
- The box and towbar were in the baggage compartment, and weighed about 15 lbs total



Figure 5 - Right Aft View



Figure 6 - Left View



Figure 7 - Aft Fuselage and Empennage



Figure 8 - Left Outboard Wing

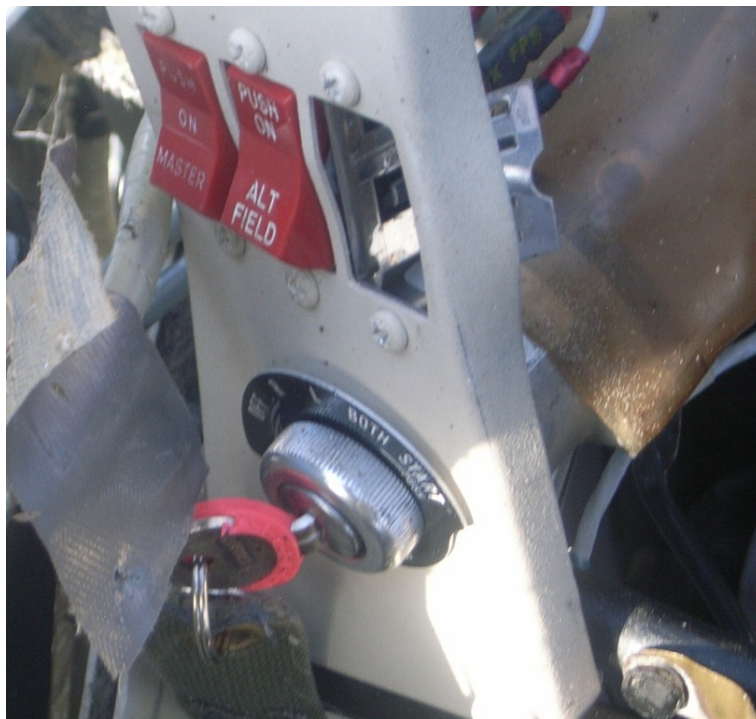


Figure 9 - Ignition and Master Switches



Figure 10 - Right Instrument Panel



Figure 11 - Left Cockpit Side



Figure 12 - Pilot's Yoke (Left horn)



Figure 13 - Left Side Instrument Panel



Figure 14 - Left Instrument Panel

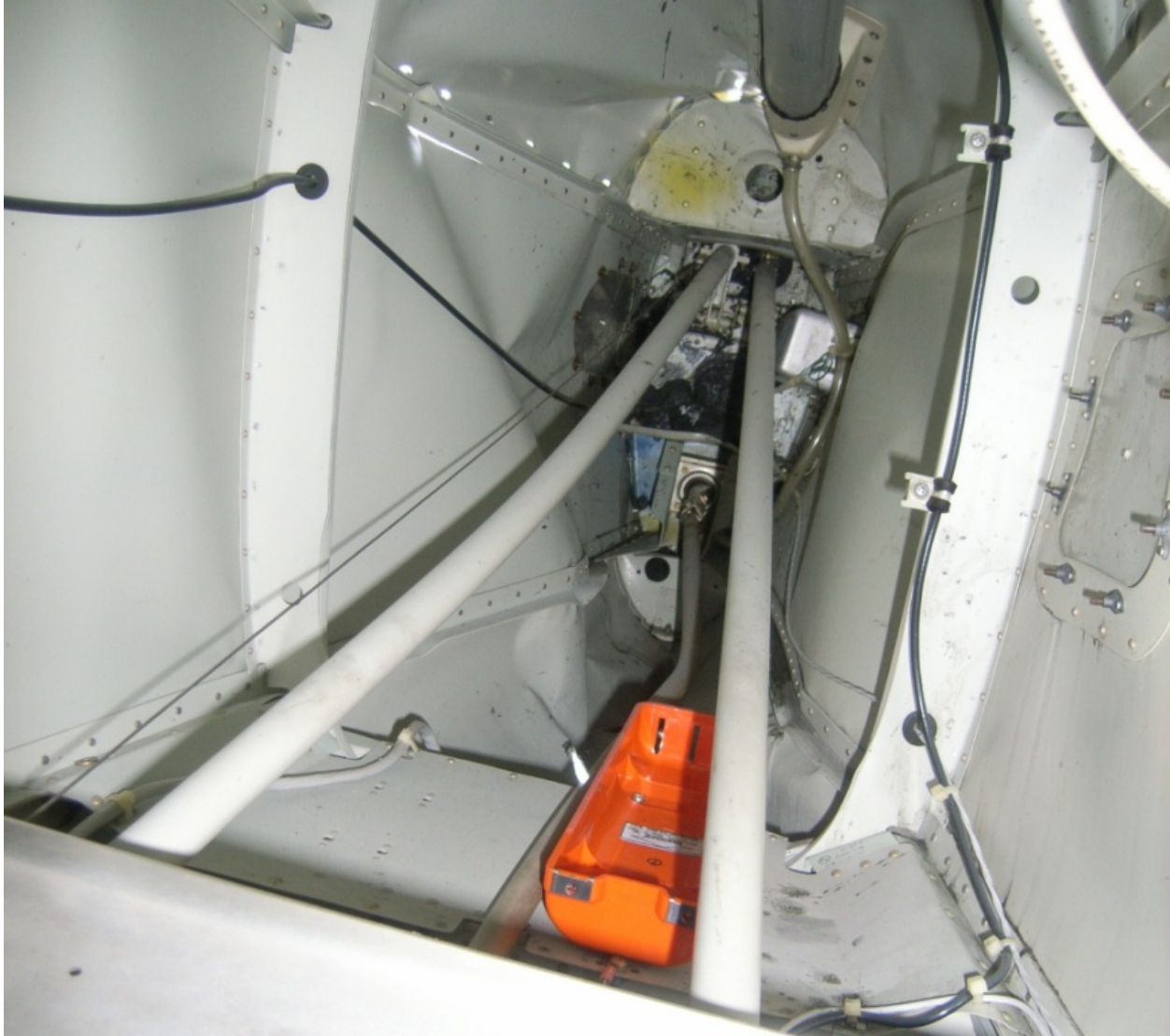


Figure 15 - ELT Cradle and Empennage Flight Control Rods

2.0 Post-Removal from Resting Location

- On the second day the JP Instruments engine monitor was removed from the instrument panel for potential data download
- Later in the day a crane was used to lift the airplane and place it on a flatbed trailer
- While the airplane was suspended from the crane, the underside was examined
 - The left main landing gear was fully retracted
 - The right main landing gear was hanging about 25° into the extended position
 - The nose landing gear was retracted and/or pushed up into the fuselage
 - The underside exhibited minimal other damage
- The right flap was in the fully retracted position
- The left flap appeared to be slightly deflected/extended
- The crane was then used to lift the engine from the mud

- The 2 blade propeller remained attached to the engine
 - Both blades exhibited moderate deformation
 - Neither blade tip exhibited any damage indicative of a runway strike
 - The propeller blades were caked with mud and were not examined in detail; that will be accomplished at the recovery facility
- The engine was rinsed with water to attempt to remove the mud, but was only partly successful due to a lack of water and the tenacity of the mud
 - The upper right forward portion of the engine was cleansed enough to reveal that that portion of the engine did not exhibit any indications of catastrophic internal failure
 - The remainder of the engine will be examined at the recovery facility
- The aft fuselage and empennage were then cut (as a single unit) from the forward fuselage to facilitate loading and transport



Figure 16 - Engine Buried in Mud



Figure 17 - Undamaged Propeller Tip



Figure 18 - Engine After Partial Washdown



Figure 19 - Aft Underside View



Figure 20 - Right Wing and Flap