



NATIONAL TRANSPORTATION SAFETY BOARD

**Office of Aviation Safety
Western Pacific Region**

SITE and ON-SCENE INFORMATION

**NTSB Accident: WPR16FA086
Accident Date: March 21, 2016**

Examination Dates: March 21 & 22, 2016

This document contains 40 embedded images

A. ACCIDENT

Location: Hawthorne, California
Date: March 21, 2016
Aircraft: Airborne XT912, N670EM, Serial # XT912-0214
NTSB IIC: Michael Huhn

B. EXAMINATION PARTICIPANTS:

Michael Huhn
Air Safety Investigator
National Transportation Safety Board
Western Pacific Region

Elliott Simpson
Air Safety Investigator
National Transportation Safety Board
Western Pacific Region

C. SUMMARY

On March 21, 2016 about 1201 Pacific daylight time, an Airborne XT912 weigh shift control (WSC) special light sport aircraft, N670EM, was destroyed when it impacted a fence and a roadway shortly after takeoff from Hawthorne Municipal Airport (HHR), Hawthorne, California. The student pilot received fatal injuries. The instructional flight was operated under the provisions of Title 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed, and no flight plan was filed for the flight.

The wreckage was examined on scene by two NTSB investigators, and again the following day in a secure facility. All components were accounted for. No evidence consistent with in-flight structural failure was observed.

D. RESPONSE and SITE LOCATION INFORMATION

1.0 Response

- The accident occurred about 1201
- A fire developed immediately
- The impact was adjacent to a roadway/water pumping work site
- The workers extracted the pilot from the wreckage
- The workers were able to immediately utilize their fire extinguishers on the fire
 - They reported that their efforts were of limited value due to the size of the fire.
- Airport RFF personnel and equipment reportedly arrived within 5 minutes of the accident
- Airport/RFF first responders applied CPR

2.0 Location

- The wreckage came to rest at the north curb of 120th Street. 120th St is a 4 lane paved road which runs approximately east west, parallel to the runway, and is situated adjacent to the northern boundary fence of HHR
- The wreckage was adjacent to a chain-link fenced electrical equipment enclosure
- That fence exhibited fire and some deformation damage, but the damage could not be positively associated with the impact of the aircraft, and could have been pre-existing
- The airport boundary was a 6 ft high steel chain link fence, and a 5 ft wide sidewalk separated the fence from 120th St.
- The wreckage was located about 280 feet north of the HHR runway 7/25 centerline, and about 1,400 feet west of the east end of the paved runway surface. (Runway 25 has a displaced threshold of about 460 feet)
- Ground scars indicated that the aircraft struck and damaged the fence, and then first impacted the road about 15 feet north of the fence.
- The fence damage, road scar, and wreckage formed a line that was perpendicular to the runway
- The geographic coordinates of the wreckage were 33° 55' 25.60" N, -118° 19' 53.77" W
- Elevation was approximately 65 feet msl

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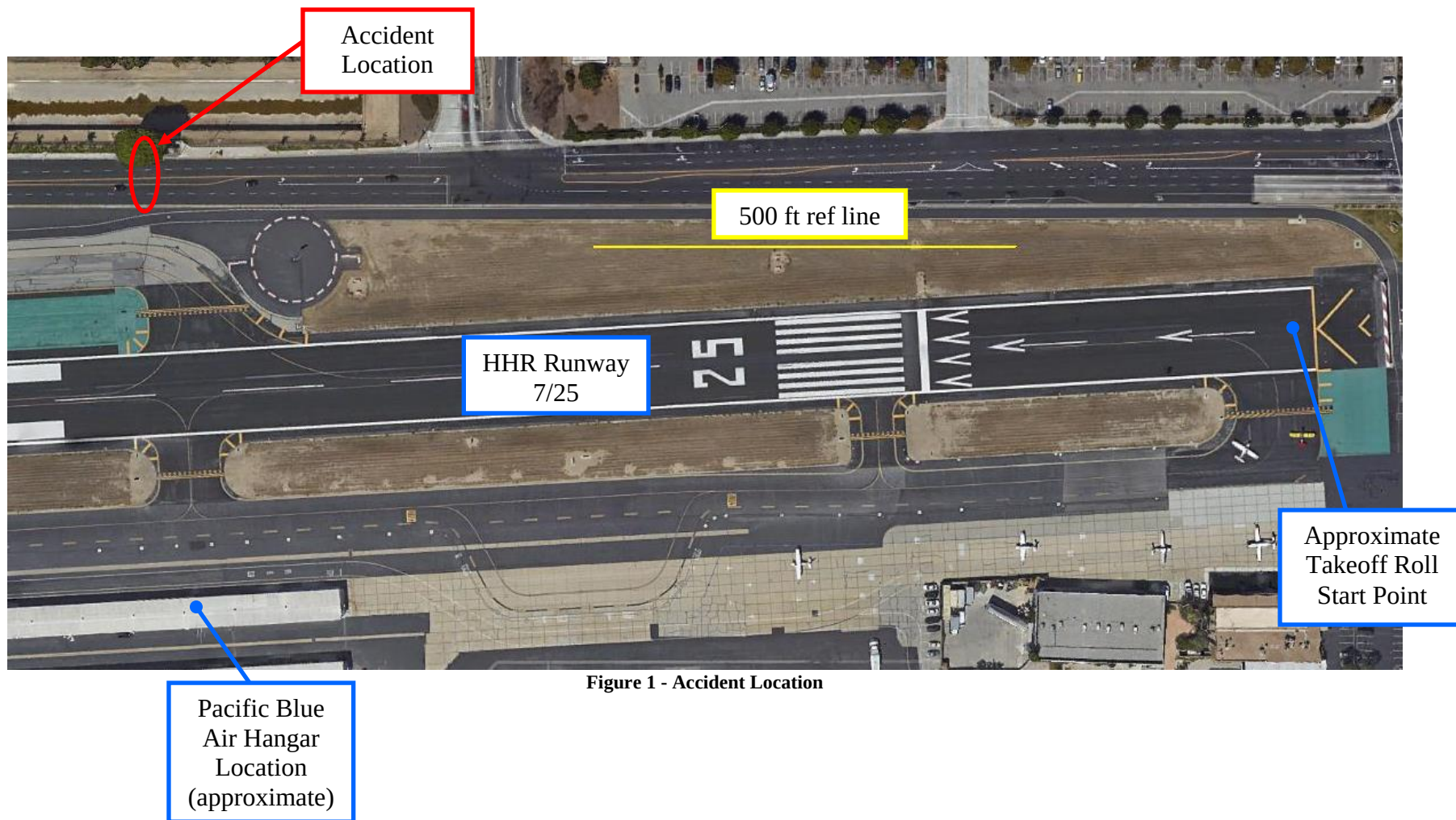


Figure 1 - Accident Location

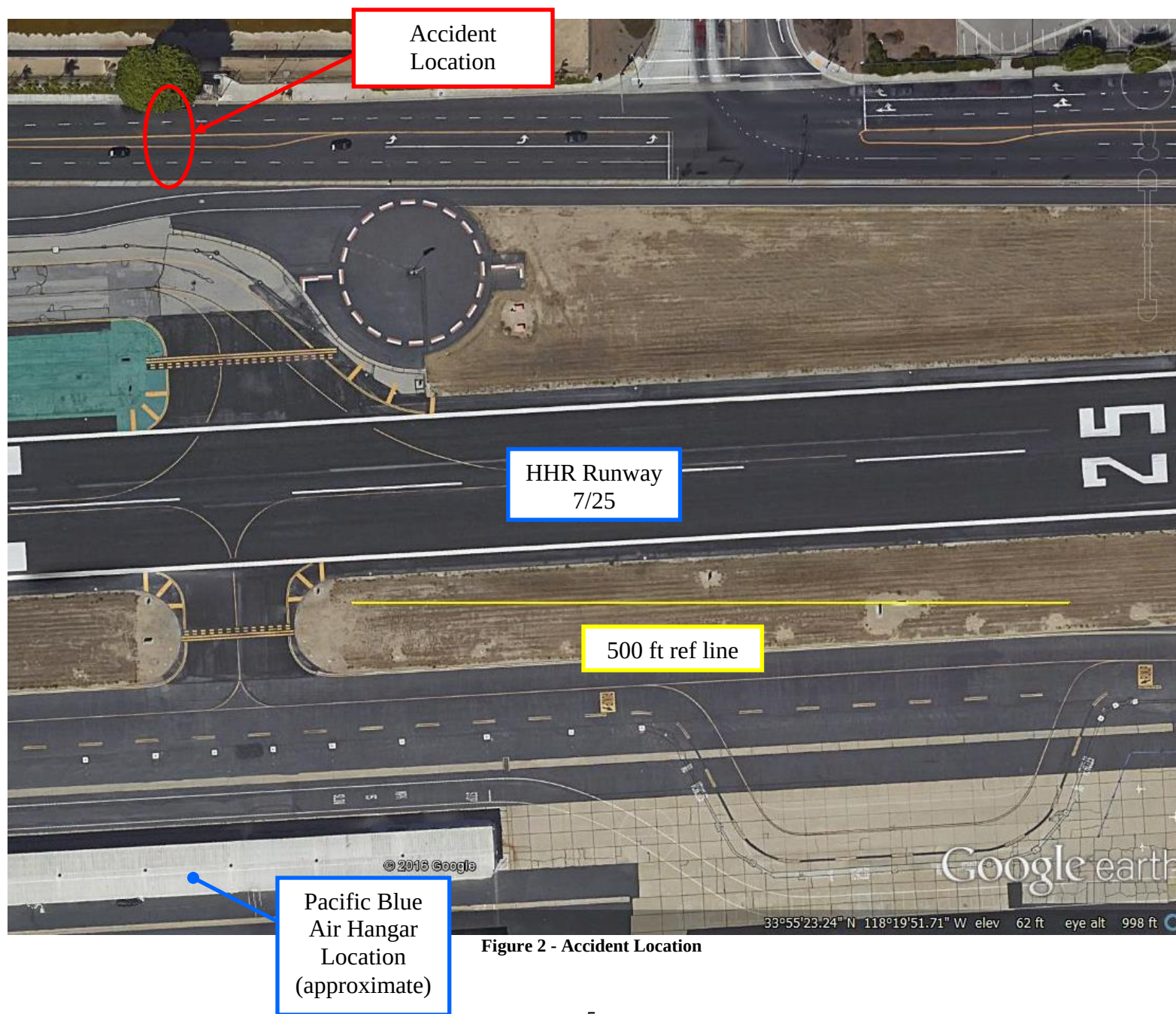


Figure 2 - Accident Location

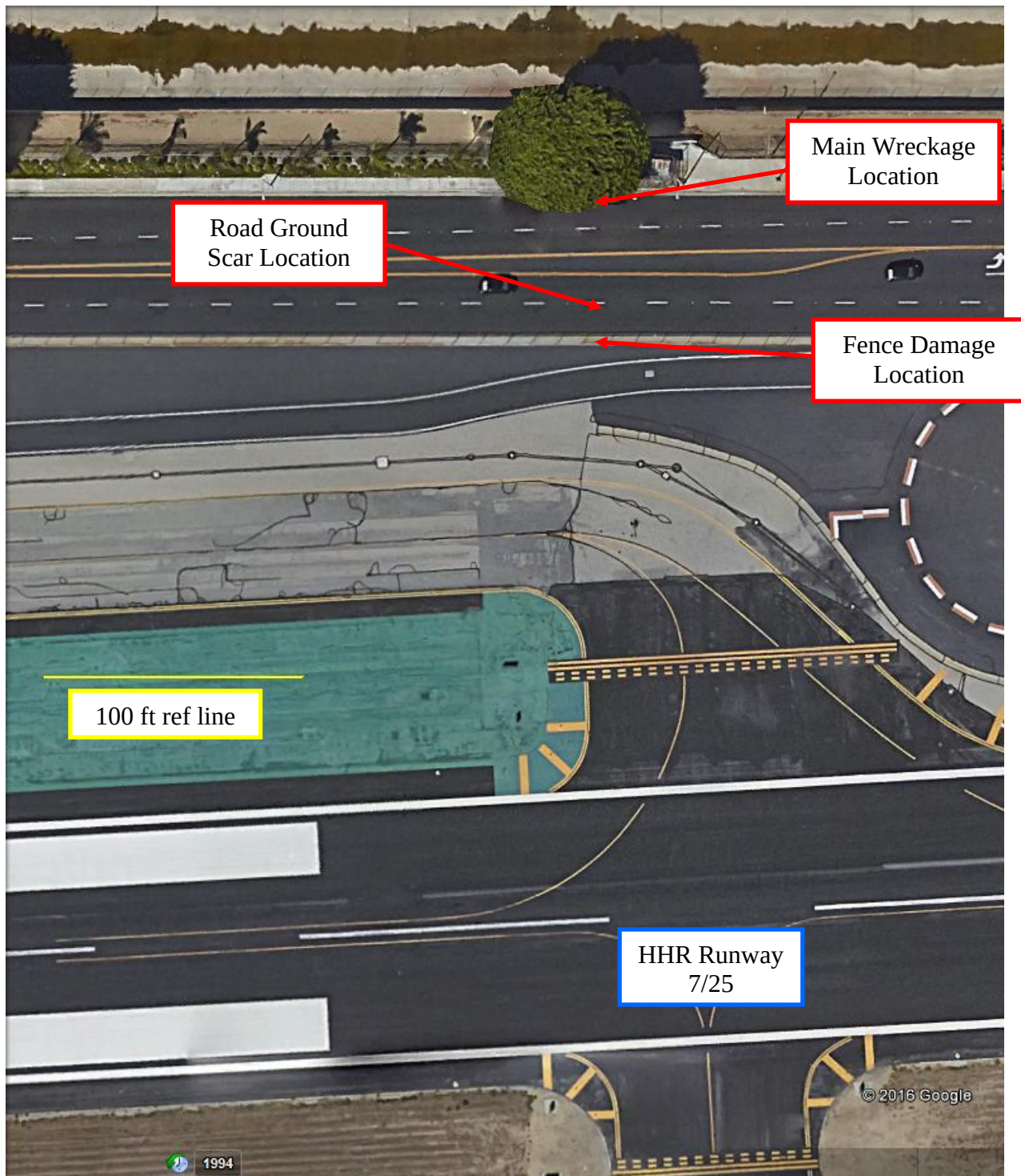


Figure 3 - Accident Location



Figure 4 - Fence Damage and Ground Scar (looking east)



Figure 5 - Fence Damage and Ground Scars (looking east)



Figure 6 - Fence Damage and Ground Scars (looking south)



Figure 7 - Main Wreckage (looking northeast)

E. WRECKAGE INFORMATION

1.0 Airframe

- The aircraft was destroyed by impact and fire
- With the exception of the right main wheel assembly and about a dozen plexiglas windscreen, fiberglass fairing, and propeller fragments, all the wreckage was tightly contained beneath a tree at the north curbside of 120th Street, as depicted in the diagrams
- The airframe ('carriage') and wing structure primarily consisted of aluminum tubing of varying diameters, stabilized by a number of steel cables
 - Portions of several tubes had been damaged or consumed by fire
- The carriage came to rest on its right side, oriented with the nose pointed approximately southeast
- All the steel cables remained intact and securely attached to the structure at each of their respective ends
- The forward carriage frame and nose landing gear assembly was fracture- and/or fire-separated from the aft carriage frame
- The seats were not located/identified in the wreckage, consistent with consumption by fire
- The four instruments (airspeed indicator, radio, transponder, and EFIS (electronic flight instrumentation system)) were identified in the wreckage, but all were severely fire-damaged
 - The owner reported that there were no memory cards or other memory on the EFIS unit
- The airframe recovery parachute was found out of its container;
 - It remained reefed/folded but partially extended lengthwise
 - Much of it was fused or consumed by fire
- The parachute extraction rocket was also found out of its container, and its propellant load appeared to have been consumed in the ground fire
- No witnesses reported any parachute extraction or deployment, or rocket firing, and the location and condition of the parachute and rocket were consistent with release during impact
- The right wheel assembly was fracture-separated from the aircraft just above where its 3 support struts attached to the wheel assembly
- The wheel exhibited significant localized crush damage, which appeared consistent with contact with the top crossbar airport boundary steel fence
 - The fence top crossbar was 'kinked' at one location, consistent with impact



Figure 8 - Main Wreckage (looking north in direction of travel)



Figure 9 - Main Wreckage (looking east-southeast)



Figure 10 - Main Wreckage (looking southeast)



Figure 11 - Main Wreckage (looking south)

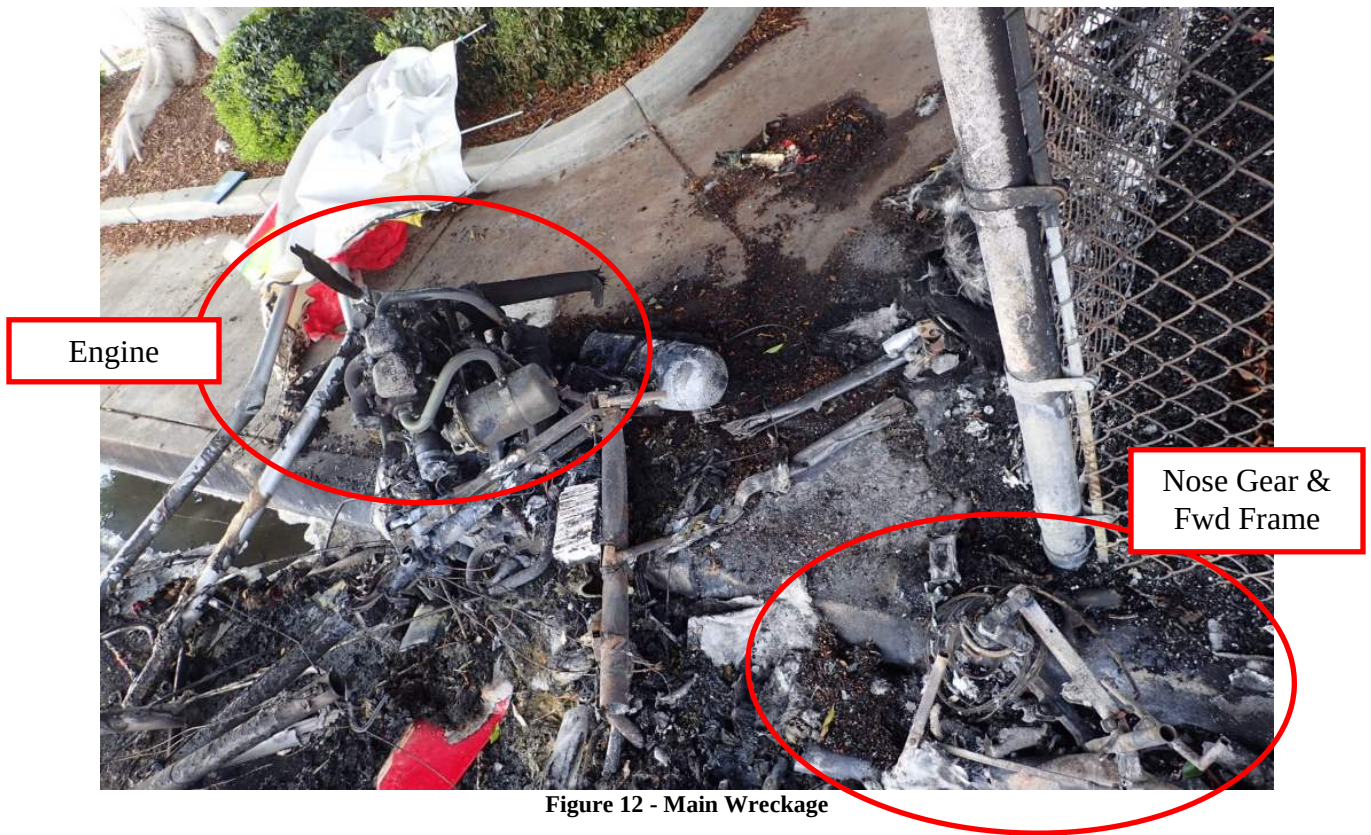




Figure 14 - EFIS Unit



Figure 15 - Other Aircraft Instruments



Figure 16 - Airframe Parachute Extraction Rocket



Figure 17 - Parachute (top) and Rocket (bottom) Cases



Figure 18 - Right Main Wheel Assembly



Figure 19 - Outboard Side of Right Wheel Assembly (note damage)



Figure 20 - Inboard Side of Right Wheel Assembly

2.0 Wing ('sail')

- The wing structure that remained was atop the carriage, right side up, and pointed approximately south
- About 80% of the wing ('sail') cloth had been consumed by fire; only portions of the leading edge cloth and the outboard sections remained.
- All junctures of the wing primary structural tubing remained intact
- The left wing forward spar/leading edge tube was intact to the point about 3 feet from the tip where a sprog and other hardware attached; at that point it was bent approximately 90 degrees aft/up

- The left wing tip and navigation light bore scraping and crush damage consistent with road impact
- The right wing forward spar/leading edge tube exhibited the following damage:
 - Bent outboard segment forward about 35 degrees at the 6 1/2 ft span point. The bend location also exhibited about a 3 inch crush area, consistent with impact at that location
 - Bent outboard end aft about 20 degrees at the 10 ft span point
 - Fracture separated in outboard end aft bending at the 13 ft span point
- The aft spar assembly (akin to the crossbar in the capital letter 'A') which consisted of two segments (right and left) that attached to the L & R forward spars and joined at the aircraft center was found to be attached to the right wing. The right segment bore crush damage and bending at the same span location, and similar in degree, to the LE spar damage at the 6 1/2 ft span point. The damage was consistent with both spars being deformed by impact with a single object while the spars were in their original orientation and alignment
- The left segment of the aft spar assembly was intact and attached to the left LE spar
- The fore-aft center tube of the wing was bent forward end down about 40 degrees at the 3 ft chord point
- The mast tube which attached the wing to the carriage remained attached to both
- Examination of the wing pitch and roll pivot provisions revealed that the wing was free to pivot in both axes subsequent to the accident, and no evidence of any pre-impact jams, disconnects, or other failures was observed
 - The nylon/plastic bushings which allowed the wing to pivot in roll were exposed by investigators, and displayed no evidence of scoring or any other abnormalities that would adversely affect wing roll
- The four struts which form a 'W' and attach the control bar to the wing were all identified in the wreckage.
 - Seven of the eight strut ends were found to be attached to their respective locations on the wing or control bar
 - The upper inboard end of the left inboard strut was fracture-separated from the wing assembly; the attach bolt and fitting exhibited significant bend damage, consistent with impact overload failure
 - Three struts were impact or fire separated into two segments, and the fourth strut was bent



Figure 21 - Wing Spars



Figure 22 - Left Wing Spar and Frame



Figure 23 - Left Wing Tip

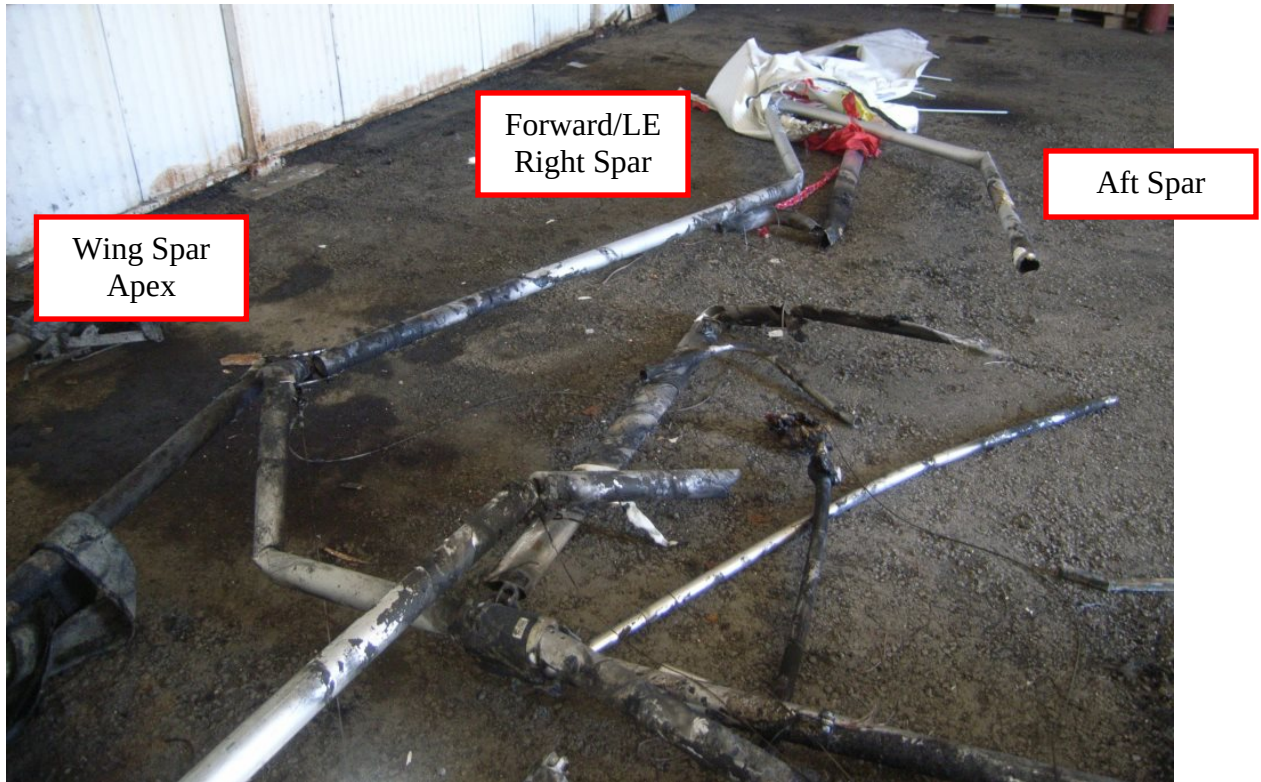


Figure 24 - Right Wing and Frame Portions



Figure 25 - Right Wing LE Spar (bottom) and Aft Spar (top)



Figure 26 - Right Wing Tip



Figure 27 - Right Wing Tip (sail opened to show spar break)



Figure 28 - Wing/Frame Pivot Location



Figure 29 - Wing Strut Juncture (note fractured left upper attach; looking aft)



Figure 30 - Wing Pivot Showing Bearing



Figure 31 - Wing Pivot Bearing



Figure 32 - Fractured Upper Left Strut Attach



Figure 33 - Fractured Upper Left Strut Attach

3.0 Engine and Propeller

- The engine remained attached to its steel frame portion of the carriage
- The engine did not exhibit any evidence of any preimpact failures
- The engine sustained significant impact and fire damage, to the point where its pre accident integrity and operability could not be ascertained
 - However, all witnesses consistently reported that the engine continued to operate at high power at least until impact
- The engine could not be rotated manually, even subsequent to removal of a spark plug from each cylinder
- The spark plugs did not exhibit any indications of pre-impact failure or abnormal operation
- The 3 blade Warp Drive composite propeller remained attached to the engine
- Two propeller blades were fracture-separated from the hub; the full lengths of all three propeller blades were identified on scene
- One propeller blade fracture was at about the 8 inch span point
- Another propeller blade fracture was at about the 15 inch span point
 - That blade was found rotated in the hub so that its chordline was parallel to the longitudinal axis of the aircraft/engine
 - The blade was not free to rotate in the hub. The fracture damage, blade rotation, and jamming were consistent with impact effects



Figure 34 - Engine in Wreckage



Figure 35 As-Found Fractured Propeller Blade



Figure 36 - Two Fractured Propeller Blades



Figure 37 - Right View of Engine on Frame



Figure 38 - Left Cylinder Bank with Spark Plugs



Figure 39 - Left Spark Plugs



Figure 40 - Right Cylinder Bank with Spark Plugs