

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR22FA119

INVESTIGATIVE SUPPLEMENTAL MATERIAL

ACCIDENT

Location: Oceanside, California
Date: 06/03/2022
Time: 1347 Pacific daylight time
Airplane: Cessna 208B Supervan 900

INVESTIGATIVE SUPPLEMENTAL MATERIAL

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HISTORY OF FLIGHT

On June 03, 2022, at 1347 Pacific daylight time, a Cessna C208B Supervan 900 airplane, N7581F, was substantially damaged when it was involved in an accident near Bob Maxwell Memorial Airfield, Oceanside, California. The left-seated pilot was fatally injured and right-seated pilot was seriously injured. The airplane was operated as a Title 14 *Code of Federal Regulations* (CFR) Part 91 sky-diving flight.

On the day of the accident, the pilots were performing skydiving flights while the right-seated pilot was training the left-seated pilot on the operation. A flight would consist of the pilots taking a group of approximately 17 skydivers to an altitude of about 11,500 feet mean sea level (msl) to jump out and then they would land back at the airport. The flights started about 1015 and were an average of 17 minutes in duration with about 15 minutes on the ground between each flight; the airplane's engine was operating the entire duration. The pilots completed six flights without incident and departed on the accident flight at 1331.

The right-seated pilot stated that he could not recall many of the details leading up to the accident. He remembered that on the accident flight everything was normal with the departure and the unloading of the skydivers. The airplane was descending as expected with the power at idle. As the airplane turned onto final approach, about 3 miles from the approach end of runway 25, the right-seated pilot attempted to increase the power by slightly nudging the throttle forward. He noticed that the engine power did not increase as expected and moved the throttle lever further forward. The lever was still unresponsive, and he estimated the airplane was about 400 ft above ground level (agl). He aimed for an open dirt field and observed a berm in the immediate flight path. In an effort to avoid the berm, the pilot maneuvered the airplane into a right turn.

Investigators reviewed video recordings, audio recordings, and flight track data covering the area of the accident during the time surrounding the accident using Federal Aviation Administration (FAA) provided Automatic Dependent Surveillance-Broadcast (ADS-B) data. After departing from runway 25, the airplane made a gradual climb to 11,575 ft msl as it circled to the right, back to the airport. The airspeed was reduced (presumably to unload the skydivers) and then made a steep, turning descent reaching 133 kts when transitioning to the downwind leg of the traffic pattern. The airplane was at an altitude of about 2,400 ft msl and 2.6 nautical miles (nm) from the approach end of runway 25 when it turned onto final approach. When the airplane was about 2 nm from the runway, it made a 360° right-turn which was about 0.5 nm in diameter.



Figure 1: Flight Profile from ADS-B

At 1346:10, at about 1,025 ft msl, the airplane rolled out of the 360° turn and continued west toward the runway. For the remainder of the flight (one minute), the airplane was roughly following Highway 76 making a gradual descent toward the runway.

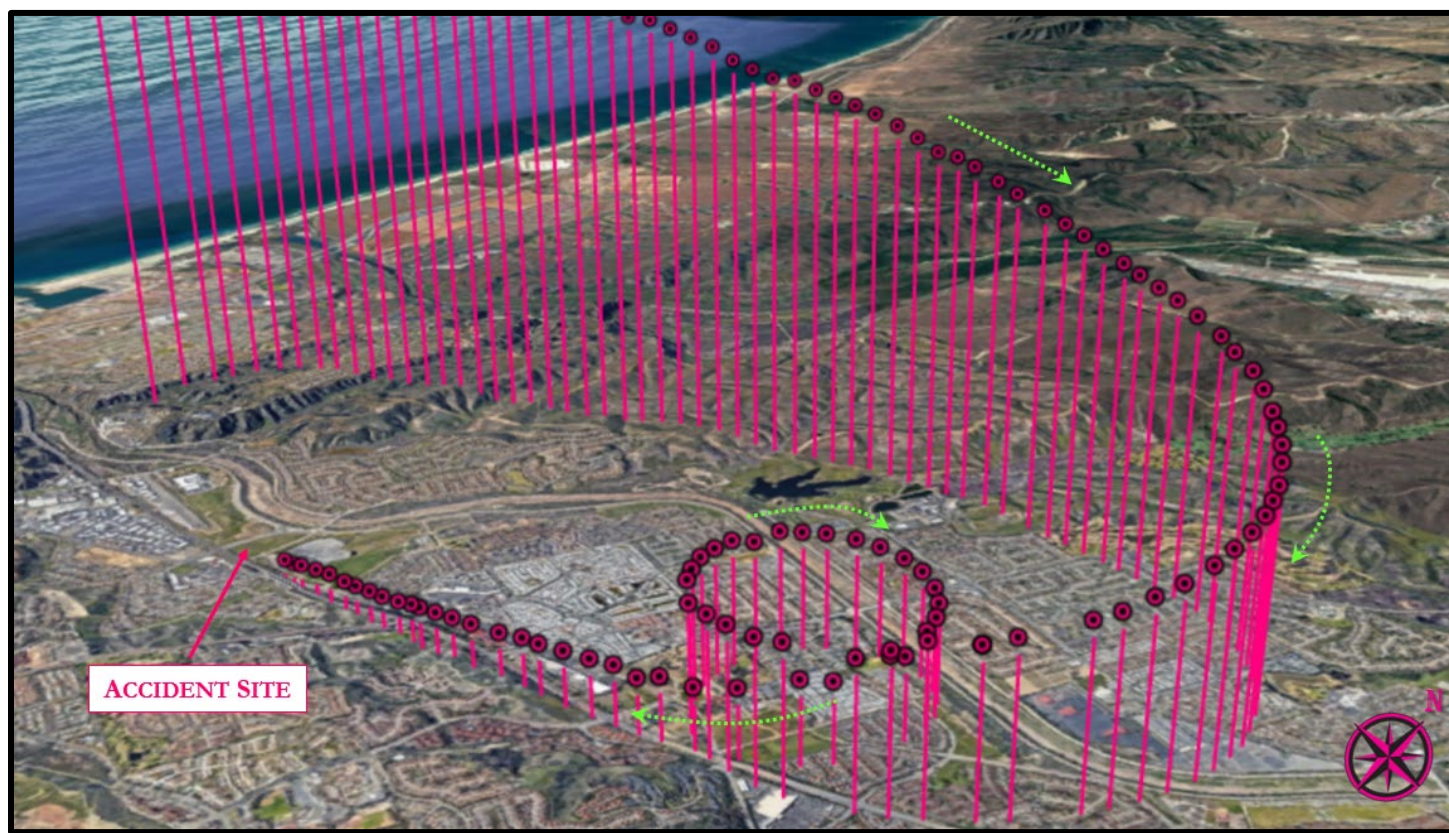


Figure 2: Final Approach Path (showing altitude)

The Safety Board Vehicle Performance division performed a study of the engine thrust during the accident descent. Comparisons were made between the thrust coefficients of the accident descent, the two preceding descents, and descents flown in other Supervans at known power settings. ADS-B data for these flights included time, ground speed, true and calibrated airspeeds, vertical speed, and track angle information. Using this data, the thrust required during each descent was determined based on the altitude and speed profiles of the descent and on the airplane's nominal drag characteristics.

The results revealed that the negative thrust coefficients developed during the accident descent and the three previous descents performed in the airplane are similar. The coefficients are also similar to those developed on the descents for which the power settings are known to have been kept within the operating limitations of the engine (that is, the power lever kept at or above the "flight idle" gate in flight). At the end of the accident descent, the thrust coefficient recovers from a negative value to approximately zero or positive values, as it does on the other flights examined. However, around 1346:36 the thrust coefficient decreases to a negative value and then returns to a positive value at 1346:48. Following this recovery, the computed thrust coefficient reaches negative values again at 1346:55 and then comes up to almost reach a zero value at 1347:07 before going negative again until the end of the data at 1347:10.

The speed oscillations observed in the final 50 seconds of the flight directly correlate to the computed thrust oscillation. It is unknown what the origin of the oscillations was, but if it was pilot-induced in the thrust axis it would be from manipulation of the power lever in the cockpit.

The last recorded hit was located about 975 feet east of the accident site. At that time, the data indicated that the airplane was at 100 msl (equivalent to 60 feet above ground level) at a speed of 68 kts. Witnesses stated that they observed the airplane flying at a very low altitude (see Figure 3). The airplane then pitched down in a nose-low attitude and bank to the right. The airplane impacted terrain and collided with the side of a berm.



Figure 3: Security Camera Images Showing the Turn Just Prior to the Accident

WRECKAGE AND IMPACT

The accident site was located about 1,615 feet east of the approach end of runway 25 on flat terrain composed of soft, dry dirt. The wreckage was found distributed over an approximate 125-foot distance with the nose pointed on a heading of about 335°. The right wing was partially separate from the fuselage root and had folded forward and over upon itself, coming to rest inverted. The first identified piece of debris was fragments of left lens, consistent with the tip of the right wing contacting the ground at the beginning of the accident sequence.



Figure 4: Accident Site in Reference to the Runway

The flaps were found in the retracted position. There was about 50 gallons of fluid, consistent in appearance and odor with JetA fuel, recovered from the right wing; no fluid was recovered from the left wing, but the fuel line had separated from the connection into the fuselage. The fuel system remained unbreeched from the header tank to the engine's fuel nozzles. There was fluid found in the header tank, in the airframe fuel filter, and in several fuel lines before and after the fuel control unit. The preliminary findings from the engine teardown (e.g., several compressor blade tips curled in the opposite direction of rotation and metal splatter on the turbine discs and stators) were consistent with the engine running at a low power setting at the time of impact.



Figure 5: Accident Site Aerial View



Figure 6: Accident Site Showing Berm

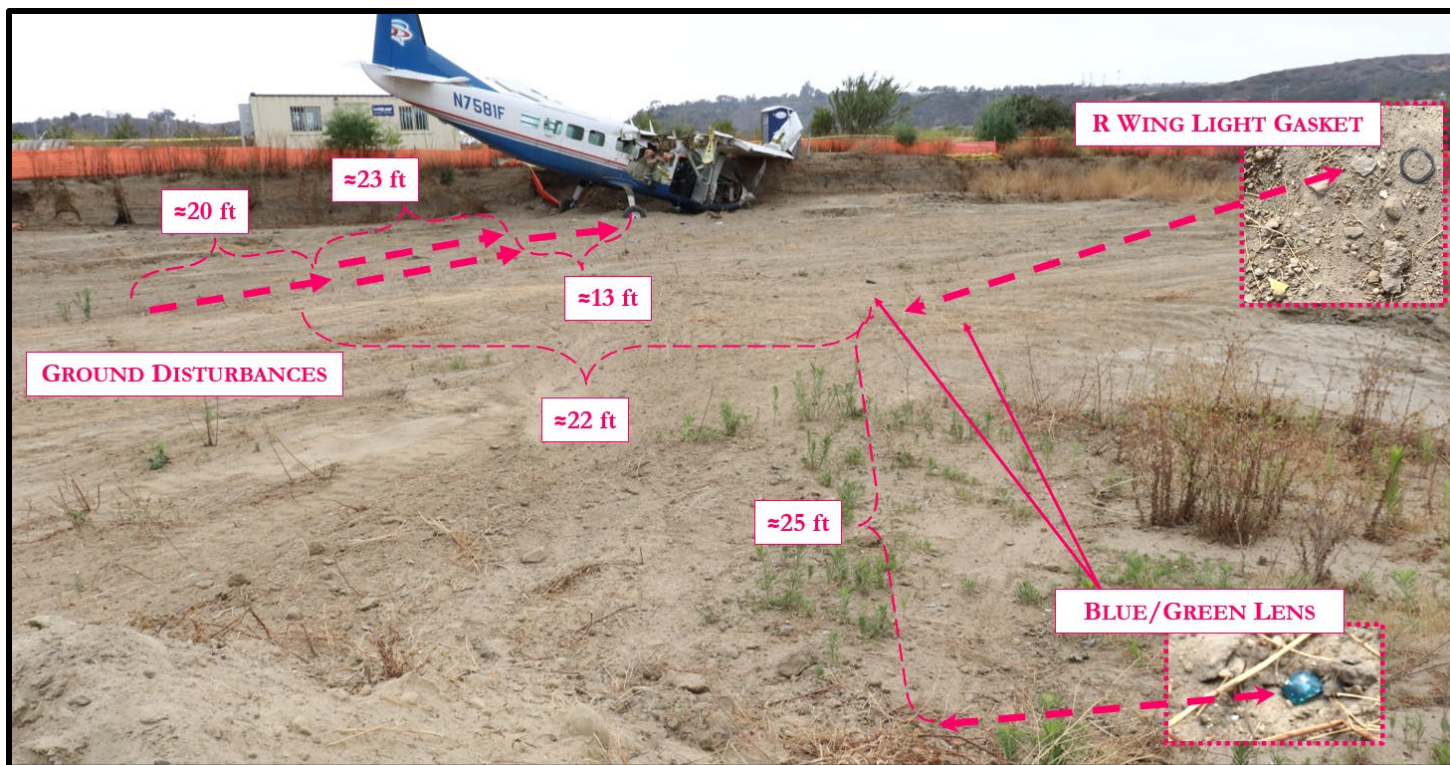


Figure 7: Initial Impact Signatures

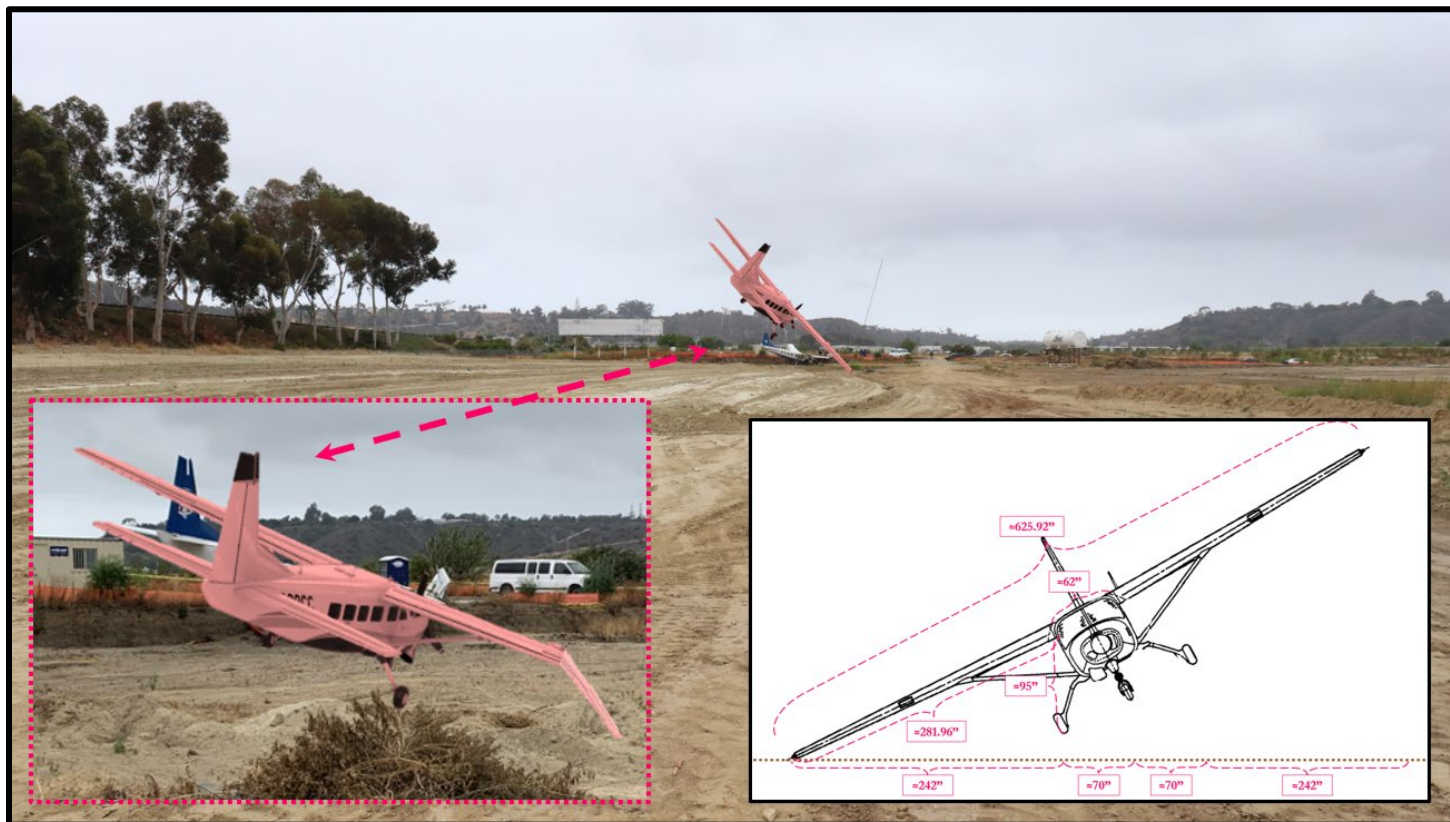


Figure 8: Representation of Likely Impact Angle

AIRFRAME

The airplane was modified in 2020 by the Supervan Systems, Ltd. TPE331 engine installation Supplemental Type Certificate (STC) SA10841SC and composite 4-blade propeller installation by BS Designs Inc. STC SA09872AC.

The left side of the fuselage was damaged between Fuselage Station (F.S.) 100 and F.S. 186. This deformation on the left side displaced the instrument panel and side console, extending into the left side of the cockpit. The left side windshield was broken, and there was deformation in the cockpit floorboard area, resulting in the binding of the elevator control column. Additionally, the left main landing gear strut was displaced inboard. The left wing beyond W.S. 228.50 showed impact damage with upward displacement of the wing tip. Although the left wing integral fuel tank was not breached, no fuel was found in the tank at the accident site. Both wing fuel shut-off valves were observed in the "ON" position. The left fuel tank selector was on and the right fuel selector was off.

The right wing was pivoted forward approximately 130° around the inboard wing leading edge, resting over the engine area. The outboard section of the right wing, beyond Wing Station (W.S.) 228.50, sustained significant impact damage, resulting in the upward displacement of the wing tip. The right wing integral fuel tank remained intact, and contained about 50 gallons of fuel. The rear spar fuselage structure of the right wing separated from the fuselage and remained attached to the wing. The main spar wing fitting lugs on the right wing were also observed to be separated, with the bolt remaining attached to the fuselage side of the fitting. The right wing remained connected to the fuselage by the aileron control cables.



Figure 9: Main Wreckage

The empennage was found undamaged at the site.

All flight control surfaces were at the accident and attached at their respective fittings. The left flap was found in the retracted position, and damage at the inboard end of the right flap was consistent with it being retracted during the event at the time of impact. Continuity of the aileron control cables was verified in the cockpit, connecting both control wheels to the left and right wing bellcranks. The control rods from the bellcranks to the ailerons and spoilers were also connected and undamaged. The aileron trim tab was measured at 1.4" extension, exceeding the limits for the tab down position.

The elevator trim tabs were found nearly neutral at the site. The rudder trim in the cockpit was observed in the full rudder right position, consistent with the actuator's position. The flap handle was observed at the 20° position with a twisted lever. Both elevator and rudder travel stops were intact without any damage noted.

The No. 1 seat restraint system, manufactured by AmSafe with part number 502388-403, remained intact. The assembly showed signs of wear. All belts released when locked in place and then released via the buckle release mechanism. The lap belt portion exhibited signs of stretching.

The No. 2 seat base pedestal was observed separated into two sections: the seat attachment feet and the seat base attachment section; the separation was consistent with happening during extraction. The No. 2 seat restraint system, manufactured by Pacific Scientific, had a data tag with number NA 1101020-22, repaired and inspected on November 14th at their facility in Miami, Florida. The outboard belt remained intact, but the inboard belt lower section adjusted bar was missing. The inboard belt lower half was separated from the upper half installed in the buckle assembly. Additionally, the shoulder harness belt had a repair where two different belt sections were stitched together. The inboard seat belt attachment fitting appeared to having been cut during the extraction of the seat base.

THROTTLE QUADRANT

The airplane's engine is managed by the pilot through the power lever and speed lever located in the cockpit center console. The engine power lever (black) connects to the propeller pitch control and the manual fuel valve. The engine speed lever (blue) connects to the propeller governor and to the underspeed fuel governor (USFG). If the pilot reduces the power lever to idle, blade angle will lower to attempt to remain in the propeller-governing mode until reaching 5.5° (minimum blade low-pitch angle). When it can no longer maintain 100% (1591 rpm) then rpm will decrease until reaching 97% (1543 rpm) at which point the underspeed governor adds power/fuel as-needed to maintain that rpm.

According to a Texas Turbine representative, there are changes in throttle sensitivity (change in thrust per unit of power lever movement) around the transition between the propeller-governing and underspeed-governing modes of the engine, which corresponds to a zero-thrust condition. When at the low speeds (80-100 knots), the TPE331 thrust changes in this transitional area require only small physical movements in the power lever (about ¼ to ½ inch of deflection). The representative stated that this relatively small movement resulting in large speed fluctuations (±10-15 knots) can be challenging for lower-time or inexperienced pilots. He stated that many experienced pilots in this airplane fly with their hand braced on the side pedestal and grip the side of the power lever to help make small power lever movements smoothly, as opposed to placing their hand on top of the power lever. He additionally stated that if the pilot grips the top of the power lever handle, they tend to make larger power inputs and fluctuations due to the thrust changes which would be especially prevalent with the airplane having a lighter load.

A Texas Turbine representative further stated that he has trained over 150 pilots to fly the Supervan. He stated that during the approach, there is a tendency for pilots to create a pilot-induced oscillation because they are not familiar with the response time of the engine. Typically in this scenario he would observe that when the airplane is on approach (about 80 knots) if the power lever were reduced to idle, the drag would increase (as the propeller blade angle goes to the low pitch stop), and the pilot would then advance the power lever in response to the increasing drag. During this response, the pilot would over-correct and add too much power and the airplane would surge forward and accelerate above 80 knots with full flaps. The pilot would then reduce the power lever rapidly in response to the acceleration and that rapid power lever reduction would cause a significant amount of drag and deceleration. The oscillation could occur for several cycles until the pilot could begin to limit the amount of power lever movement during the power on and off applications.

According to Hartzell, the zero thrust condition required about 150-170 horsepower depending on airspeed. Both positive thrust conditions required about 300 horsepower to generate the approximate thrust. From looking at the last approximate one minute of the flight, there were three thrust reversals between idle and 300 horsepower (equating to 30% change in torque), all of which were done rapidly (without a pause) which is consistent with making aggressive power-lever handle changes.

Following the accident, the power and speed levers were observed in a full forward position. The top of the knob on the speed control lever was observed to have markings in the plastic, matching the pattern of knurling from the silver beta control knob. Additionally, there was blue material transfer from the speed control lever knob to the knurled beta control knob.

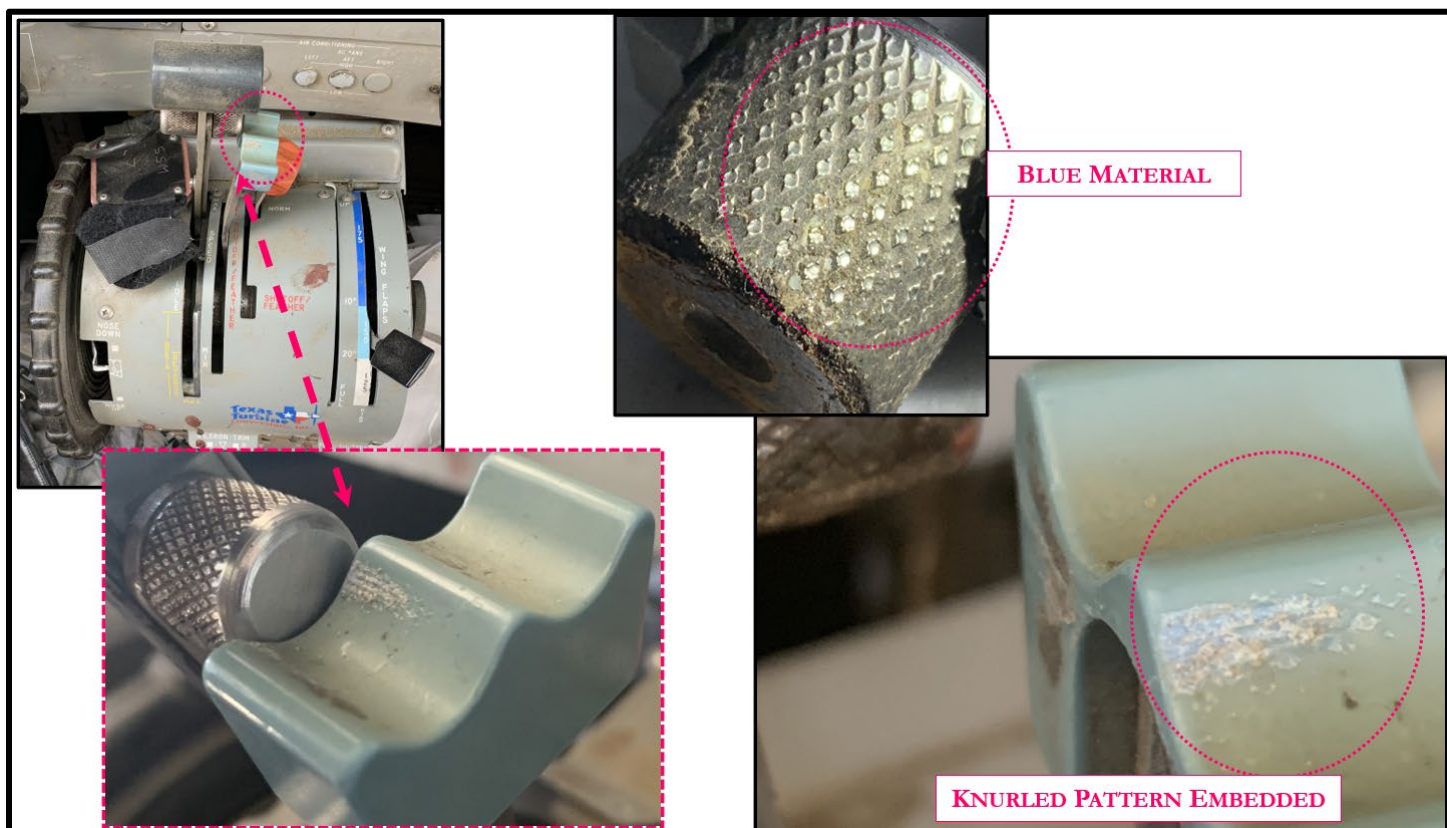


Figure 10: Accident Airplane Throttle Quadrant

COCKPIT GAUGES

The barometric setting on the right altimeter read 30.75 inHg, which was .89 higher than indicated in the most recent weather report. This would result in the altimeter showing 890 feet higher than the airplane was. According to Texas Turbines, it is common for skydiving airplane to have an altimeter set to read feet above the ground rather than msl.

The tachometer read 9005.6; the wing flap indicator was in the 0° position, but the flap handle was in the 20° position; The nose trim was in the neutral position; the rudder trim was in the full right position.

The following circuit breakers were tripped: fuel switch (bus 1); standby power (bus 2)

An annunciator panel from the accident aircraft was submitted to the Materials Laboratory for examination. The panel contained twenty-four (24) individual annunciators. Each annunciator contained two (2) bulbs. The panel was intact and visually appeared to have had limited impact-related damage. The individual annunciator lights were removed from the panel and x-rayed to determine the status of the filaments inside each of the bulbs. The status of each light is listed in the chart below.

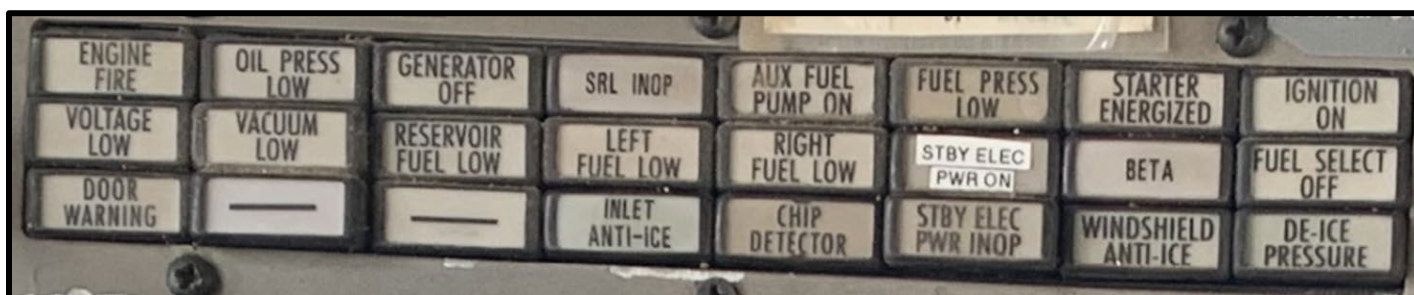


Figure 11: Annunciator Panel

ENGINE FIRE	OIL PRESS LOW	GENERATOR OFF	SRL INOP	AUX FUEL PUMP ON	FUEL PRESS LOW	STARTER ENERGIZED	IGNITION ON
INS INS	INS INS	INS INS	INS INS	INS INS	INS INS	INS INS	INS INS
VOLTAGE LOW	VACUUM LOW	RESERVOIR FUEL LOW	LEFT FUEL LOW	RIGHT FUEL LOW	STBY ELEC PWR ON	BETA	FUEL SELECT OFF
INS INS	INS BNS	INS INS	INS INS	INS INS	Both Bulbs Missing	INS INS	INS INS
DOOR WARNING			INLET ANTI-ICE	CHIP DETECTOR	STBY ELEC PWR INOP	WINDSHIELD ANTI-ICE	DE-ICE PRESSURE
INS INS	INS INS	INS INS	INS INS	INS INS	BNS BNS	BNS BNS	INS INS

Legend

INS-Intact, not stretched

BNS-Broken, not stretched

ENGINE

The examination revealed that the magnetic drain plug (chip detector) remained undamaged, indicating its structural integrity. Moreover, metal particles were noted on the magnetic drain plug (chip detector), which were subsequently submitted for metallurgical analysis to determine their composition and potential implications. Among the debris was a large piece identified as iron-based, similar to 4340 steel, and several smaller pieces with the same composition. Some smaller pieces also showed traces of aluminum and nitrogen, resembling a Nitralloy alloy. Additionally, very fine metallic debris believed to be 9310 steel was found. The exact source of this debris was not able to be definitely determined but was likely the result of impact damage with rotation of the internal gearbox components.

Additionally, examination of the first-stage compressor impeller shroud revealed a shroud rub through approximately 270 degrees at the exducer area, accompanied by corresponding rotational scoring on the impeller shroud line edge. It was also noted that dirt had adhered to the first-stage compressor impeller vanes and flow path surfaces. Rotational scoring on the shroud line edge at the exducer area of the first-stage compressor impeller vanes was observed, along with corresponding rotational scoring on the first-stage compressor impeller shroud. Further examination showed that the leading edges of six vanes on the first-stage compressor impeller were bent opposite to the direction of rotation.

In the second-stage compressor, earthen debris was found adhering to the flow path surfaces in the transition area of the housing. There was evidence of a shroud rub through 360 degrees on the exducer surface of the second-stage compressor housing, with corresponding rotational scoring on the second-stage compressor impeller vanes. Similarly, a shroud rub through 270 degrees was observed on the inducer surface of the second-stage compressor housing, along with corresponding rotational scoring on the second-stage compressor impeller vanes.

An examination of the fuel control unit (FCU) revealed that adjustment settings on the exterior of the unit had been changed since last leaving the manufacturer in 2012. On the test bench several parameters were out of limits including the minimum and maximum speed. The speed setting screws were then adjusted and the unit was tested within limits.

In summary, the impeller vanes were rotationally scored, the turbine blade tips were rotationally scored, there was evidence of metal spray on the turbine blades, all of which was consistent with rotation during impact.

The propeller, a McCauley HC-B4TN-5QL/LT10891N was manufactured in May 2011.

The propeller was a 109.5-inch diameter, 4-blade, single-acting, hydraulically operated constant speed model with feathering and reverse pitch capability. Oil pressure from the propeller governor is used to move the blades to the low pitch (blade angle) direction. A force from a feathering spring and centrifugal twisting moments from the blade counterweights are used to move the blades to the high pitch/feather direction in the absence of governor oil pressure. The propeller incorporates a Beta tube mechanism that provides blade angle information to the prop pitch control when angles are lower than the flight idle position. The propeller utilizes aluminum blades. The hub and blade retention clamps are steel. Rotation is counterclockwise as viewed from the rear.

All four blades had chordwise/rotational scoring on the camber side. Blade No. 2 had some face-side chordwise/rotational scoring, likely caused by dragging after rotation stopped. Blades No. 3 and No. 4 hit an airframe component during the impact, evidenced by blue paint transfer. The blades were predominantly bent aft. Blades No. 2, No. 3, and No. 4 had significant bending opposite to rotation. All four blades were twisted toward low pitch. Blades No. 2 and No. 4 had significant bends in the leading edge with material deformation toward low pitch. Blade No. 1 had a notable leading edge wave bend in the mid-blade region with material deformation toward low pitch. There were no visible discrepancies that would prevent or degrade normal propeller operation prior to impact. All visible damage was consistent with high impact forces while rotating at low power near the flight idle blade angle.

According to a Hartzell representative, indicators of rotation at low power include all blades exhibiting chordwise/rotational scoring and leading edge gouging on the camber side with some material deformation toward low pitch, predominantly aft bending with compound twisting and significant bending opposite to rotation, measurable slip in the clamps toward low pitch, counterweights not over-rotating sufficiently to contact the spinner bulkhead, and all four pilot tubes being intact with minimal blade-to-hub contact marks. He additionally noted that all damage indicated forceful rotation of the blades towards low pitch, with all three clamp link screws bent and/or fractured opposite to low pitch, link arms bent in compression, and the guide collar gouged/fractured by the link arm/screws.

RECORDS

A review of the FAA records revealed that the airplane was converted to a Texas Turbine Supervan in June 2012 under supplemental type certificate (STC) 10841SC.

Maintenance Summary

Engine Log Book Summary (P-123146)							
Date	ACTT	ACTC	TSN	CSN	TSO	CSO	Comment
4/10/2020	12046.70	25311.00	3782.7	7531.0			Engine was removed for Hot Section inspection and then reinstalled on N7581F)
5/7/2020	12048.10	25312.00	3784.1	7532.0			Annual inspection performed.
7/17/2020	12140.20	25501.00	3876.2	7721.0			100hr inspection
8/21/2020	12219.50	25687.00	3955.5	7907.0			100hr inspection
10/8/2020	12319.10	25880.00	4055.1	8100.0			100hr inspection. Combustion chamber inspection.
11/24/2020	12415.00	26056.00	4151.0	8276.0			100 hr inspection.
1/29/2021	12509.20	26261.00	4245.2	8481.0			100 hr inspection. SOAP sample sent to Honeywell.
3/23/2021	12572.80	26377.00	4308.8	8597.0			Annual inspection performed.
5/14/2021	12664.70	26523.00	4400.7	8743.0			100 hr inspection. OH fuel nozzles installed.
6/22/2021	12762.80	26691.00	4498.8	8911.0			100 hr inspection. Combustion chamber inspection.
7/29/2021	12847.10	26839.00	4583.1	9059.0			100 hr inspection. SOAP sample sent to Honeywell.
9/16/2021	12943.90	27011.00	4679.9	9231.0			100 hr inspection. Combustion chamber inspection.
11/4/2021	13035.20	27194.00	4771.2	9414.0			100 hr inspection. SOAP sample sent to Honeywell.
1/6/2022	13129.50	27395.00	4865.5	9615.0			100 hr inspection.
3/1/2022	13186.30	27457.00	4922.3	9677.0			100 hr inspection. SOAP sample sent to Honeywell. Combustion chamber inspection.
4/15/2022			5017.8	9718.0			100 hr inspection.
4/26/2022	13320.60	27509.00	5056.6	9729.0			Fuel nozzles replaced
6/2/2022			5115.9	9755.0			100 hr inspection. SOAP sample sent to Honeywell.

Figure 12: Engine Logbook Summary

The day of the accident, the following times were recorded:

Load	Takeoff	Land	Flying Time	Ground Time	Refuel (65 gals)
1	1018	1036	18	x	
2	1051	1108	17	15	
3	1123	1140	17	15	
4	1155	1210	15	15	
5	1227	1244	17	17	
6	1300	1315	15	16	
7	1331	1347	16	x	
*Takeoff and Land in PDT					

Figure 13: Day of Accident Flight Time

The fueling records showed the following fuel was added:

DESCRIPTION	DATE	GALLONS
JET A FUEL	5/1/2022	130
JET A FUEL	5/2/2022	190
JET A FUEL	5/5/2022	340
JET A FUEL	5/6/2021	315
JET A FUEL	5/7/2022	200
JET A FUEL	5/9/2022	295
JET A FUEL	5/13/2022	215
JET A FUEL	5/14/2022	375
JET A FUEL	5/15/2022	290
JET A FUEL	5/16/2022	235
JET A FUEL	5/19/2022	51
JET A FUEL	5/22/2022	180
JET A FUEL	5/26/2022	109
JET A FUEL	5/27/2022	145
JET A FUEL	5/29/2022	189
JET A FUEL	5/30/2022	270
TOTAL		3529

6.2	CODE	586921	587193	272
6.2	CODE	587193	587258	65

Figure 14: Fuel for May and Written for June

Date	START	END	Gallons (calculated)	Gallons (written)	ADSB	Hours Logged	Cycles Logged	Loads Flown	Loads/Hour	Load/Hr (ADSB)	Pilot Entry	Gal/Hr	Gal/Load
5/1/2022		583332	130	130	2.1	2.9	3	9	3.10	4.35	--	14.44	62.90
5/2/2022	583332	583522	190	190	3.4	3.2	1	10	3.13	2.97	--	19.00	56.44
5/5/2022	583522	583862	340	340	4.7	7.3	1	13	1.78	2.76	--	26.15	72.08
5/6/2022	583862	584177	315	315	5.7	4.6	1	14	3.04	2.45	--	22.50	55.10
5/7/2022	584177	584377	200	200	3.0	3.1	2	10	3.23	3.30	--	20.00	65.93
5/9/2022	584377	584672	295	295	3.3	3.8	1	12	3.16	3.69	--	24.58	90.77
5/12/2022	584672	584862	190	190	2.6	2.7	1	9	3.33	3.44	--	21.11	72.61
5/13/2022	584862	585077	215	215	3.3	3.4	1	10	2.94	3.03	--	21.50	65.15
5/14/2022	585077	585452	375	378	4.7	4.9	1	15	3.06	3.23	--	25.00	80.65
5/15/2022	585452	585742	290	290	4.2	4.6	1	16	3.48	3.79	--	18.13	68.77
5/16/2022	585742	585977	235	238	3.2	3.3	2	11	3.33	3.49	--	21.36	74.60
5/17/2022	--	--	--	--	--	--	--	--	--	--	4.1	--	--
5/19/2022	585977	586027	50	50	--	--	--	--	--	--	--	--	--
5/22/2022	586027	586207	180	180	2.7	2.8	2	10	3.57	3.77	4.5	18.00	67.92
5/25/2022	586207	586317	110	110	PAX Airplane								
5/27/2022	586317	586462	145	148	2.4	2.5	1	7	2.80	2.96	3.9	20.71	61.27
5/28/2022	--	--	--	--	0.2	0.2	1	1	5.00	4.29	0.8	--	--
5/29/2022	586462	586651	189	190	2.5	2.4	2	9	3.75	3.55	--	21.00	74.61
5/30/2022	586651	586922	271	271	4.3	4.4	1	14	3.18	3.27	7.7	19.36	63.27
6/1/2022	586922	586921	-1	--	--	--	--	--	--	--	--	--	--
6/2/2022	586921	587193	272	272	2.8	2.9	3	9	3.10	3.25	4.8	30.22	98.31
6/3/2022	587193	587258	65	65	2.0	--	1	7	--	3.56	--	9.29	33.05

Figure 15: Recent Flight History for N7581F

PILOT INFORMATION

MATTHEW WAMPLER (RIGHT-SEATED PILOT)

Pilot Certificate: COMMERCIAL PILOT ASEL, AMEL, INSTRUMENT; FLIGHT INSTRUCTOR; GROUND INSTRUCTOR), was a 52-year-old male. This pilot reported civil flight experience that included 6880 total and 161 hours in last six months as of exam dated 3/29/2022. This pilot was 72 inches tall and weighed 206 lbs. at the time of the last exam. This pilot was issued a Second Class Medical Certificate with the following limitation: “Must have available glasses for near vision”.

PAIGE HALBERT (LEFT-SEATED PILOT)

The left-seated pilot was undergoing training; she had six days of experience flying a modified Cessna 208, equating to 25.8 hours. This was her third day in the left seat. All of her training in the airplane was conducted by the right-seated pilot. Application on her iPhone indicated she had amassed 804.7 hours total flight experience, of which 725.3 was in the capacity of pilot in command. She had accumulated 133.8 hours in the last 90 days and 57.4 in the last 30 days

Date	Tail #	Departure	Destination	Duration	Landings	Remarks
5/17/2022	N7581F	KOKB	KOKB	4.1	6	Job interview - GOT IT
5/22/2022	N7581F	KOKB	KOKB	4.5	9	Jump ops goj
5/27/2022	N7581F	KOKB	KOKB	3.9	6	Jump runs
5/28/2022	N7581F	KOKB	KOKB	0.8	1	One jump run
5/30/2022	N7581F	KOKB	KOKB	7.7	14	14 loads jump runs
6/2/2022	N7581F	KOKB	KOKB	4.8	9	---
				25.8		

Figure 16: Pilot's Experience in N7581F

Pilot Certificate: COMMERCIAL PILOT ASEL, AMEL, INSTRUMENT; FLIGHT INSTRUCTOR), was a 24-year-old female. This pilot reported civil flight experience that included 530 total and 150 hours in last six months as of exam dated 6/11/2021. This pilot was 69 inches tall and weighed 109 lbs. at the time of the last exam. This pilot was issued a First Class Medical Certificate without limitation.

According to the pilot's iPhone application, she was listening to music in her Bose A20 Aviation headset at about 79 decibels during the accident flight. The headset is designed such that the primary source of audio is from the airplane's intercom and the secondary source of audio is the device connected (in this case, the iPhone). Only one source can be heard at a time and the audio from the secondary source will never override intercom communications.

dB	
78	Jun 3, 1:47 PM >
0	Jun 3, 1:23 PM >
66	Jun 3, 12:20 PM >
72	Jun 3, 12:20 PM >
0	Jun 3, 12:19 PM >
0	Jun 3, 11:44 AM >
83	Jun 3, 11:44 AM >
76	Jun 3, 10:46 AM >
77	Jun 3, 10:38 AM >
82	Jun 3, 10:36 AM >
84	Jun 3, 10:23 AM >
84	Jun 3, 10:23 AM >

SAMPLE DETAILS	
Headphone Audio Levels	
78 dBA SPL	
Start Time	Jun 3, 2022 at 1:29:41 PM
End Time	Jun 3, 2022 at 1:47:23 PM
Source	iPhone
Date Added to Health	Jun 3, 2022 at 1:40:41 PM
Media Sources	Spotify
DEVICE DETAILS	
Name	Bose A20
Manufacturer	0x9e
Model	0x400b

	Quantities	
80 dB	Jun 3, 2022 at 1:43:52 PM	
81 dB	Jun 3, 2022 at 1:43:55 PM	
80 dB	Jun 3, 2022 at 1:43:58 PM	
78 dB	Jun 3, 2022 at 1:44:01 PM	
78 dB	Jun 3, 2022 at 1:44:28 PM	
80 dB	Jun 3, 2022 at 1:44:31 PM	
79 dB	Jun 3, 2022 at 1:44:34 PM	
78 dB	Jun 3, 2022 at 1:45:01 PM	
76 dB	Jun 3, 2022 at 1:45:29 PM	
76 dB	Jun 3, 2022 at 1:45:56 PM	
78 dB	Jun 3, 2022 at 1:46:23 PM	
80 dB	Jun 3, 2022 at 1:46:32 PM	
78 dB	Jun 3, 2022 at 1:46:35 PM	
79 dB	Jun 3, 2022 at 1:47:02 PM	

Figure 17: Excerpts of the Pilot's iPhone Decibel Recordings

AIRPORT INFORMATION

The traffic pattern altitude (TPA) is 1,028 feet (1,000 feet above the airport).

Parachute Landing Area

There is a parachute landing area on the north side of the airport located west of the segmented circle and airport service road where it turns from heading west to heading north. This area is outside of the San Luis Rey River floodplain zone and covers approximately an acre. The area is open space with little vegetation other than mowed grass. The parachute pattern is similar to that traffic pattern of aircraft. The downwind follows Alex Road. Approximately abeam to Runway 24 the parachute pattern turns to base and on final approach flies between the segmented circle and wind sock and Runway 6-24.

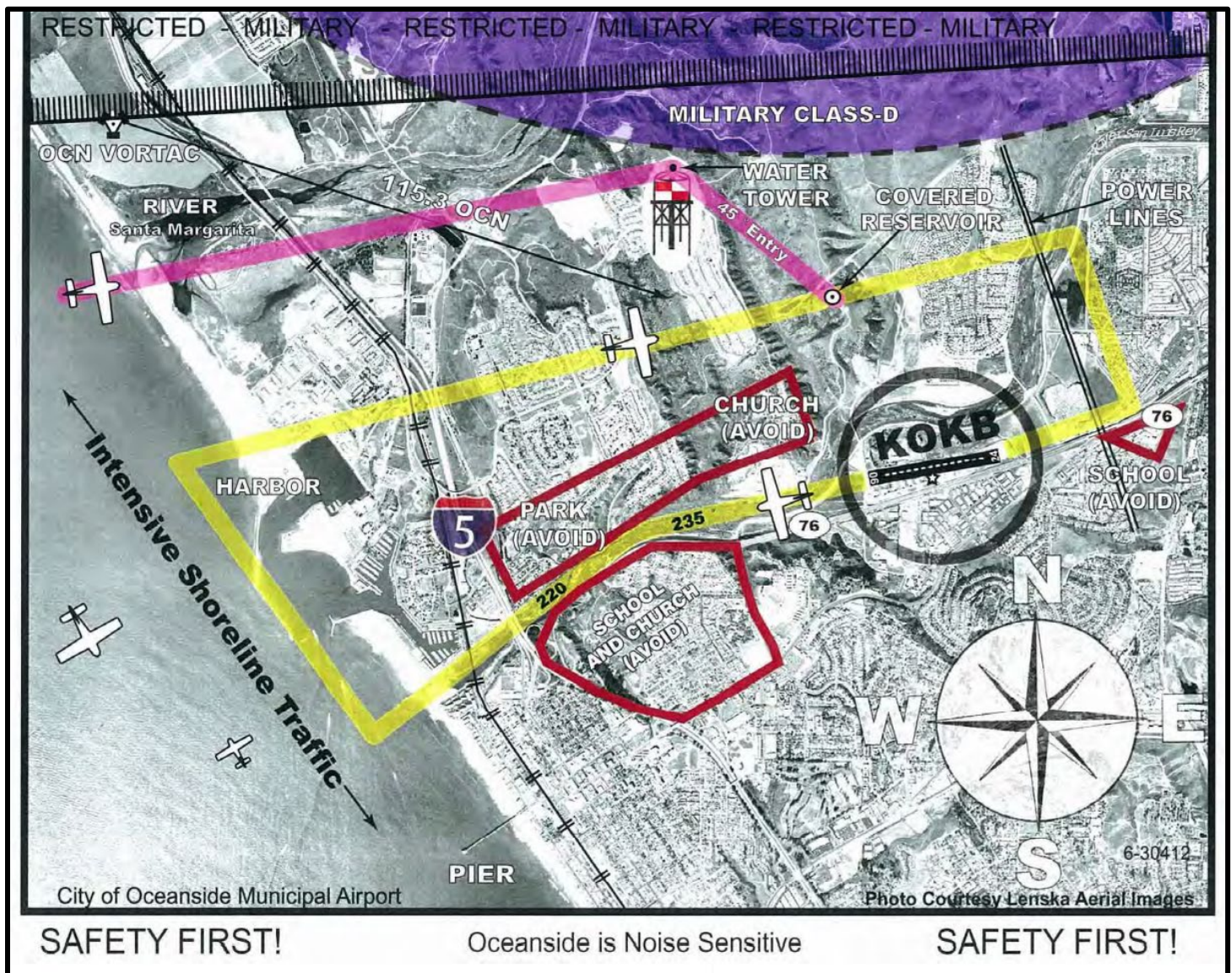


Figure 18: Landing Specifications

WEATHER INFORMATION

The following were the METARS surrounding the accident time:

KOKB 031952Z AUTO 28008KT 8SM CLR 21/13 A2986 RMK AO2 SLP112 T02110128

KOKB 032352Z AUTO 25008KT 8SM CLR 20/13 A2986 RMK AO2 SLP109 T02000133 10222 20194 51001

KOKB 032252Z AUTO 27008KT 8SM CLR 21/13 A2985 RMK AO2 SLP109 T02060133

KOKB 032152Z AUTO 25012KT 8SM CLR 21/13 A2987 RMK AO2 SLP113 T02110133

KOKB 032052Z AUTO 23008KT 210V270 8SM CLR 21/13 A2985 RMK AO2 SLP108 T02110128 56010
KOKB 031952Z AUTO 28008KT 8SM CLR 21/13 A2986 RMK AO2 SLP112 T02110128
KOKB 031852Z AUTO 25005KT 8SM CLR 20/13 A2987 RMK AO2 SLP115 T02000128
KOKB 031752Z AUTO 27010KT 8SM FEW021 SCT026 19/13 A2988 RMK AO2 SLP118 T01940128 10200 20161
KOKB 031748Z AUTO 26009KT 7SM FEW021 SCT026 20/13 A2988 RMK AO2
KOKB 031652Z AUTO 00000KT 7SM OVC022 19/13 A2987 RMK AO2 SLP114 T01940128
KOKB 031552Z AUTO 22005KT 7SM OVC017 18/13 A2987 RMK AO2 SLP116 T01780128
KOKB 031505Z AUTO 00000KT 6SM HZ OVC015 17/13 A2987 RMK AO2 T01670128
KOKB 031452Z AUTO VRB03KT 6SM HZ OVC014 17/13 A2986 RMK AO2 SLP110 T01670128 53007
KOKB 031352Z AUTO 00000KT 6SM HZ OVC013 17/13 A2985 RMK AO2 SLP106 T01670128
KOKB 031252Z AUTO 14004KT 8SM OVC012 16/13 A2983 RMK AO2 SLP099 T0161012