Cessna Aircraft Company
Aircraft Incident/Accident Technical Report

Aircraft and Incident/Accident Information			
Year: 2002	Model: 208B	Serial number: 208B1002	Registration: N687MA
Location: Kalaupapa, Molokai, HI		Date: 12-11-13	Time: 1522 HAST

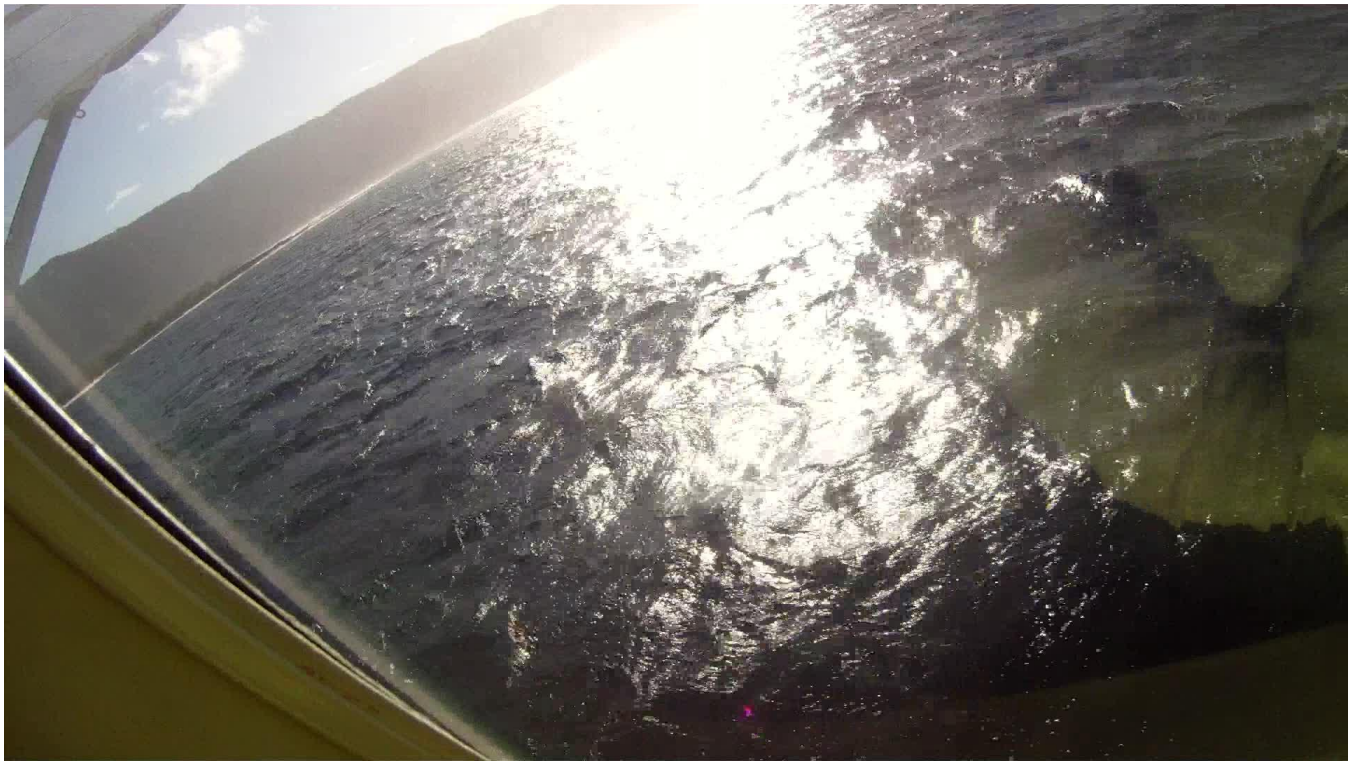
Aircraft Owner	Aircraft Operator
Leis Air, LLC C/O Hawaii Premier Realty 2265 Hoonee Pl Ste 110 Honolulu, HI 96819	Makani Kai Air 130 Iolana Pl Honolulu, HI 96819

Report Information		
Senior Air Safety Investigator: Henry J. Soderlund	Report #: 14-CZIN-T	Report date: 05-19-14

Airframe

Impact Sequence and Airframe Structure

Video taken by a passenger shows the aircraft impacting the water in a wings level, slight nose-high attitude. The nose of the aircraft slowly lowered after the aircraft came to rest and the occupants exited out the rear passenger door. The aircraft remained intact after contacting the water. The aircraft subsequently sank and the occupants were rescued. The aircraft was substantially damaged by repeated contact with the ocean floor between the time it sank and the time it was recovered.



Still image from video taken by Ferdinand Puentes

Airframe Systems

Flight Control System Information		
Control lock: Not installed		
Flight Control Cable Continuity		
Ailerons: Not established	Elevators: Not established	Rudder: Not established
Aileron tab: Not established	Elevator tab: Not established	Rudder tab: Not established
Flap and Trim Positions		
Flap actuator: Undetermined	Flap indicator: Up	Flap handle: 10°
Stand-by flap system:	Direction switch: Undetermined	Motor control: Undetermined
Elevator trim:	Actuator: Undetermined	Indicator: Unknown due to damage
Rudder trim:	Actuator: Undetermined	Indicator: Between neutral and full left
Aileron trim:	Actuator: Undetermined	Indicator: Full left

Remarks:
The pilot did not report flight control issues. Video taken by a passenger during the ditching showed the flaps to be partially deployed. The condition of the wreckage after it was recovered precluded a check of the control cable system. The flap actuator motors had separated from the flap actuator, which was not observed in the wreckage. The stand-by flap system switches were damaged and their positions could not be determined.

Airframe Fuel System Condition, Controls, and Read Outs				
Fuel strainer screen: Undetermined		Fuel strainer bowl: Undetermined		
Main fuel tank gauge:	Left: 0		Right: Not recovered	
Fuel selector handle:	Left: Off	Fuel selector valve:	Left: Undetermined	Fuel boost pump: Undetermined
	Right: Off		Right: Undetermined	
Firewall fuel shutoff: Open				

Remarks:
The pilot did not report any fuel system issues. The pre-recovery damage to the aircraft precluded an examination of the fuel system.

Landing Gear System Condition and Controls			
Gear position:	Nose: Fixed	Left: Fixed	Right: Fixed
Landing gear selector: Not applicable			

Environmental System Controls and Read Outs		
Left side vent: On		Right side vent: Undetermined
Temp selector knob: Undetermined	Bleed air heat: Off	Mixing Air: In
Aft/Fwd cabin: In	Defrost: In	Air conditioner: Off
Left AC fan: Low	Aft AC fan: High	Right AC fan: High

Icing System Information and Switches		
Certified into known icing? Undetermined	Type of ice protection installed? Boots, including cargo pod	
Pitot/Static heat: On	Stall heat: On	Wing light: Off
Deice/Anti-ice: Windshield: Off	Propeller: Off	Boot press: Off

ELT Information			
Installed? Yes	Manufacturer: Pointer	Model: Undetermined	Type: (AF)
Serial number: 331499	Battery due date: 01-31-14	Armed: Undetermined	Activated: Undetermined

Remarks:
None.

Cabin and Equipment/Furnishings

Restraint System Information						
Seat	Occupied	Restraint type	Restraint used	Condition	Manufacturer	
1	Yes	4-Point	Yes	Intact	Non-Cessna	
2	No	4-Point	N/A	Intact	Non-Cessna	
3	Yes	2-Point	Yes	Intact	Non-Cessna	
4	Yes	2-Point	Yes	Intact	Non-Cessna	
5	Yes	2-Point	Yes	Intact	Non-Cessna	
6	Yes	2-Point	Yes	Intact	Non-Cessna	
7	Yes	2-Point	Yes	Intact	Non-Cessna	
8	Yes	2-Point	Yes	Intact	Non-Cessna	
9	Yes	2-Point	Yes	Intact	Non-Cessna	
10	Yes	2-Point	Yes	Intact	Non-Cessna	

Seat Condition Information					
Seat	Orientation	Feet intact	Back intact	Base intact	Rail intact
1	Forward facing	Yes	Yes	Yes	Yes
2	Forward facing	Yes	Yes	Yes	Yes
3	Forward facing	Yes	Yes	Yes	Yes
4	Forward facing	Yes	Yes	Yes	Yes
5	Forward facing	Yes	Yes	Yes	Yes
6	Forward facing	Yes	Yes	Yes	Yes
7	Forward facing	Yes	Yes	Yes	Yes
8	Forward facing	Yes	Yes	Yes	Yes
9	Forward facing	Yes	Yes	Yes	Yes
10	Forward facing	Yes	Yes	Yes	Yes

Remarks:

The information in the chart above is based on video footage of the cabin after the accident took place but before the aircraft sank. The cabin remained intact during the accident sequence. After the aircraft sank but before it was recovered the wave action caused the aircraft to repeatedly contact the ocean floor. During that time the cabin was substantially damaged and a majority of the seats separated from the aircraft.

Based on the pre-impact passenger video, some life vests were located in the seat pockets.

Only one of the two inflation cartridges on the life vest being using by the occupant in seat 5 discharged.

Instrument Panel

Navigation Instruments					
Analog Primary Instruments			Autopilot type: Undetermined		
Suction Gage: 0			Magnetic compass: Undetermined		Clock: Undetermined
	Left side	Right side		Left side	Right side
Airspeed:	100	Undetermined	Turn coordinator (airplane):	90 degrees	Undetermined
Attitude (pitch):	Undetermined	Undetermined	Turn coordinator (ball):	Left	Undetermined
Attitude (roll):	Undetermined	Undetermined	Heading indicator:	Undetermined	Undetermined
Altimeter:	Undetermined	Undetermined	Heading “bug”:	Undetermined	Undetermined
Altimeter setting:	Undetermined	Undetermined	Vertical speed indicator:	3,000 Down	Undetermined

Communication and Navigation Radios							
Radio	Control	Active frequency	Stand-by frequency	Radio	Control	Active frequency	Stand-by frequency
Com 1:	Undt	Undetermined	Undetermined	Com 2:	Undt	Undetermined	Undetermined
Nav 1:	Undt	Undetermined	Undetermined	Nav 2:	Undt	Undetermined	Undetermined
Obs 1:	Undetermined			Obs 2:	140		
Transponder:	Mode: Undetermined			Active code: Undetermined		Stand-by code: Undetermined	

Electrical Switch Positions		
External power: Undetermined	Battery: Undetermined	Generator: On
Stby alt pwr: Off	Avionics stby pwr: Off	Avionics bus tie: Undetermined
Avionics 1: Off	Avionics 2: Off	

Lighting Switch Positions		
Left landing: On	Taxi/recognition On	Right landing On
Strobe: On	Navigation: On	Beacon: On
No smoke: Undetermined	Seat belt: On	Cabin: On

Engine Starter and Ignition Switches	
Starter: Off	Ignition: Undetermined

Remarks:
None.

Powerplant Description

Engine Instruments					
Hour meter:	Undetermined	Ng RPM:	Undetermined	Np RPM:	Undetermined
Torquemeter:	Undetermined	Oil temp:	Undetermined	Oil press:	Undetermined
ITT:	Undetermined	Fuel flow:	Undetermined	Ammeter:	0
Voltmeter:	Undetermined	Standby torquemeter:	Undetermined		

Engine Control Positions					
	Cockpit	Engine		Cockpit	Engine
Power:	Idle	Undetermined	Emer. power:	Safetied	Undetermined
Fuel control:	Low idle	Undetermined	Inertial sep:	Unlocked	Undetermined
Propeller:	Min stop	Undetermined	Cowl flaps:	Undetermined	Undetermined

Engine Condition	
Engine attached to airframe: Yes	Propeller attached to engine: Yes

Remarks:
The engine stayed attached to the airframe after the accident. When the aircraft was recovered from the water it was found that the wave action and ocean floor contact had separated the engine from the airframe.

During the engine examination it was observed that the engine failure appeared to have originated at the compressor turbine wheel. A compressor turbine blade was removed and examined. Possible rafting (a precursor to blade creep) was observed, however solutioning of the blade removed the grain structure to such an extent that the level of the rafting could not be determined. Other blades were examined which also exhibited solutioning.

Propeller
All of the blades remained attached to the propeller hub. The propeller blades exhibited some bending.

Research & Testing
The infant life vest used by the fatally injured passenger reportedly meets FAA TSO-C13d requirements. Those requirements list a minimum buoyant force in fresh water at 70°F of 20 pounds for a wearer weighing less than 35 pounds.