

ASRS Database Report Set

Commuter and GA Icing Incidents

Report Set Description.....A sampling of aircraft icing encounter reports from GA and Commuter flight crews.

Update Number36

Date of UpdateOctober 5, 2023

Number of Records in Report Set.....50

Records within this Report Set have been screened to assure their relevance to the topic.



TH: 262-7

MEMORANDUM FOR: Recipients of Aviation Safety Reporting System Data

SUBJECT: Data Derived from ASRS Reports

The attached material is furnished pursuant to a request for data from the NASA Aviation Safety Reporting System (ASRS). Recipients of this material are reminded when evaluating these data of the following points.

ASRS reports are submitted voluntarily. Such incidents are independently submitted and are not corroborated by NASA, the FAA or NTSB. The existence in the ASRS database of reports concerning a specific topic cannot, therefore, be used to infer the prevalence of that problem within the National Airspace System.

Information contained in reports submitted to ASRS may be clarified by further contact with the individual who submitted them, but the information provided by the reporter is not investigated further. Such information represents the perspective of the specific individual who is describing their experience and perception of a safety related event.

After preliminary processing, all ASRS reports are de-identified and the identity of the individual who submitted the report is permanently eliminated. All ASRS report processing systems are designed to protect identifying information submitted by reporters; including names, company affiliations, and specific times of incident occurrence. After a report has been de-identified, any verification of information submitted to ASRS would be limited.

The National Aeronautics and Space Administration and its ASRS current contractor, Booz Allen Hamilton, specifically disclaim any responsibility for any interpretation which may be made by others of any material or data furnished by NASA in response to queries of the ASRS database and related materials.

A handwritten signature in blue ink, appearing to read "B. Hooey".

Becky L. Hooey, Director
NASA Aviation Safety Reporting System

CAVEAT REGARDING USE OF ASRS DATA

Certain caveats apply to the use of ASRS data. All ASRS reports are voluntarily submitted, and thus cannot be considered a measured random sample of the full population of like events. For example, we receive several thousand altitude deviation reports each year. This number may comprise over half of all the altitude deviations that occur, or it may be just a small fraction of total occurrences.

Moreover, not all pilots, controllers, mechanics, flight attendants, dispatchers or other participants in the aviation system are equally aware of the ASRS or may be equally willing to report. Thus, the data can reflect **reporting biases**. These biases, which are not fully known or measurable, may influence ASRS information. A safety problem such as near midair collisions (NMACs) may appear to be more highly concentrated in area “A” than area “B” simply because the airmen who operate in area “A” are more aware of the ASRS program and more inclined to report should an NMAC occur. Any type of subjective, voluntary reporting will have these limitations related to quantitative statistical analysis.

One thing that can be known from ASRS data is that the number of reports received concerning specific event types represents the **lower measure** of the true number of such events that are occurring. For example, if ASRS receives 881 reports of track deviations in 2010 (this number is purely hypothetical), then it can be known with some certainty that at least 881 such events have occurred in 2010. With these statistical limitations in mind, we believe that the **real power** of ASRS data is the **qualitative information** contained in **report narratives**. The pilots, controllers, and others who report tell us about aviation safety incidents and situations in detail – explaining what happened, and more importantly, **why** it happened. Using report narratives effectively requires an extra measure of study, but the knowledge derived is well worth the added effort.

Report Synopses

ACN: 1997985 (1 of 50)

Synopsis

PC-12 Captain reported loss of pitot static anti ice systems during cruise and unreliable air data information on both the Captain's and First Officer's air data systems. The flight crew diverted to a nearby airport.

ACN: 1990995 (2 of 50)

Synopsis

ZAN Controller reported an aircraft encountered icing conditions and descended below ATC published routing which resulted in the aircraft flying below the MIA and a CFIT event.

ACN: 1971761 (3 of 50)

Synopsis

Flight Instructor on training flight with student reported engine power loss due to carburetor icing.

ACN: 1970350 (4 of 50)

Synopsis

Pilot reported loss of both alternators in flight during turbulence and icing conditions. The Pilot requested priority handling and diverted to make a precautionary landing.

ACN: 1969169 (5 of 50)

Synopsis

C-172 pilot reported a runway excursion during landing rollout thought to be the result of a patch of ice with poor directional control.

ACN: 1969117 (6 of 50)

Synopsis

C208 flight crew reported encountering severe icing conditions that had overwhelmed the anti-icing system on the aircraft. After landing, significant ice was discovered on the airframe along with one inch of mixed ice on the leading edges of the wings.

ACN: 1968950 *(7 of 50)*

Synopsis

Multiengine aircraft pilot reported a runway excursion after touchdown on an ice-covered runway in gusty wind conditions. The pilot reported no damage and no injuries.

ACN: 1968790 *(8 of 50)*

Synopsis

C402 Captain reported during climb, ice began to accumulate on the wings and the boots did not deploy. The Captain diverted and landed.

ACN: 1968272 *(9 of 50)*

Synopsis

GA IFR pilot reported a flight in heavy IMC conditions. The 328 hour pilot with little IFR experience reported heading deviations, altitude deviations and slow reaction time to changing weather conditions.

ACN: 1965711 *(10 of 50)*

Synopsis

Instructor pilot reported violent flight control fluttering after takeoff and elected to land on the remaining runway rather than chance a flight around the pattern. The aircraft had been deiced prior to takeoff.

ACN: 1964493 *(11 of 50)*

Synopsis

Pilot reported a Pitot Probe Heat failure during descent in IMC, resulting in loss of air speed data and autopilot pitch down. Pilot regained aircraft control and continued to destination airport for landing.

ACN: 1963927 *(12 of 50)*

Synopsis

PA-30 flight crew reported difficulties maintaining airspeed and altitude in icing conditions. The flight crew requested vectors to land at destination airport.

ACN: 1962479 *(13 of 50)*

Synopsis

Pilot reported encountering downdrafts in icing conditions resulted in loss of thrust and an uncommanded descent. After reaching a lower altitude where VFR conditions prevailed, control was regained and the flight continued safely.

ACN: 1961479 *(14 of 50)*

Synopsis

Beechjet 400 flight crew reported Tail Ice Protection failure during IMC conditions. Flight crew was unable to restore Ice Protection for the Horizontal Stabilizer and continued the approach to landing at destination airport.

ACN: 1961478 *(15 of 50)*

Synopsis

Airliner 99 pilot reported severe icing conditions resulting in flight cancellation.

ACN: 1961141 *(16 of 50)*

Synopsis

A Center Controller reported an aircraft encountering icing descended below the Minimum Vectoring Altitude.

ACN: 1961081 *(17 of 50)*

Synopsis

AC50 pilot reported a runway excursion resulted during landing roll out due to runway icing.

ACN: 1958413 *(18 of 50)*

Synopsis

Challenger 350 flight crew reported a loss of directional control during the take-off roll. The pilots rejected the take-off and returned to the FBO.

ACN: 1957535 *(19 of 50)*

Synopsis

A TRACON Controller reported an aircraft encountering icing could not maintain altitude and descended below the Minimum Vectoring Altitude.

ACN: 1950306 *(20 of 50)*

Synopsis

M20M pilot reported experiencing a rapid accumulation of unexpected icing despite icing equipment and reported other equipment failures, which resulted in deviation.

ACN: 1938259 *(21 of 50)*

Synopsis

Epic LT pilot reported systems failures and a failure to recognize a configuration issue caused a loss of control during landing, causing a propeller strike.

ACN: 1937766 *(22 of 50)*

Synopsis

C-150 pilot reported engine failure in flight and diverted to a safe landing.

ACN: 1931988 *(23 of 50)*

Synopsis

TBM pilot reported the aircraft started to vibrate during climb in icing conditions. Pilot descended to warmer conditions which caused the propeller to sling off accumulated ice and the vibrations to stop.

ACN: 1927855 *(24 of 50)*

Synopsis

Pilot reported a fuel pressure fuel pump light illuminated during approach. The standby fuel pumps did not activate as expected and the Pilot made a precautionary landing and turned the aircraft over to Maintenance.

ACN: 1910425 *(25 of 50)*

Synopsis

C172 pilot reported carburetor icing at 5,400 feet MSL. While trouble shooting, the engine shut off, but the pilot was able to re-start it in flight and safely landed at nearest airport.

ACN: 1907996 *(26 of 50)*

Synopsis

SR22T Pilot reported encountering icing conditions climbing through FL200 that resulted in power loss and necessitated a descent into warmer air.

ACN: 1904957 *(27 of 50)*

Synopsis

C182 Pilot reported alternator failure while in IMC resulted in pitot tube icing, electrical failure and diversion.

ACN: 1901763 *(28 of 50)*

Synopsis

C172 Pilot reported carburetor icing during flight. The Pilot took immediate action and turned on carburetor heat, the icing problem dissipated and the Pilot continued the flight to destination airport.

ACN: 1899346 *(29 of 50)*

Synopsis

PA-28 pilot reported engine misfiring at 14,000 feet then losing the engine completely for several minutes before eventually starting back up at 5,200 feet.

ACN: 1884954 (30 of 50)

Synopsis

Captain reported a bleed air valve malfunction affecting the anti icing systems occurred in cruise flight and resulted in a diversion.

ACN: 1862012 (31 of 50)

Synopsis

Center Controller reported an aircraft had a heater problem, aircraft was icing up, and could not hold altitude.

ACN: 1854765 (32 of 50)

Synopsis

Lancair Evolution pilot reported pitot static system icing in climb. The pilot diverted and landed without incident.

ACN: 1853202 (33 of 50)

Synopsis

Pilot flying C-150 aircraft reported loss of engine power in cruise. The pilot applied carburetor heat but the engine eventually lost more power. Pilot diverted and made a precautionary landing.

ACN: 1847319 (34 of 50)

Synopsis

C140 pilot reported the engine lost power while applying full throttle for a climb and could not be restarted. Pilot conducted a safe off-airport landing. Post-flight, it was determined that carburetor ice was the likely cause of power loss.

ACN: 1836138 (35 of 50)

Synopsis

Flight Instructor reported engine roughness and a loss of power during the student pilot's climb-out after completing a maneuver.

ACN: 1835114 *(36 of 50)*

Synopsis

Three Instructor Pilots reported an engine failure while on a familiarization flight in a single engine aircraft. The PF landed off airport in a nearby field. It was later determined the engine probably failed due to carburetor icing.

ACN: 1832562 *(37 of 50)*

Synopsis

Captain reported diverting due to HSDI FAIL message caused by inflight icing.

ACN: 1831782 *(38 of 50)*

Synopsis

C172 pilot reported loss of engine power and requested priority handling to expedite arrival at destination airport.

ACN: 1826177 *(39 of 50)*

Synopsis

PC-12 Pilot reported the Propeller Heat System failed while climbing through icing conditions causing a temporary loss of control.

ACN: 1803489 *(40 of 50)*

Synopsis

PA-28 Single Pilot reported encountering inflight icing resulting in altitude loss as well as loss of Comm 1 and Nav 1. Reporter requested ATC routing assistance and completed effective trouble shooting to execute an uneventful landing at destination.

ACN: 1803484 *(41 of 50)*

Synopsis

Single Pilot reported flying into icing conditions and the control surfaces freezing.

ACN: 1801136 *(42 of 50)*

Synopsis

Air carrier flight crew reported icing and engine vibration after takeoff.

ACN: 1798022 *(43 of 50)*

Synopsis

ZBW Center Controller reported an aircraft that reported light rime ice and a malfunctioning auto pilot descended instead of climbing and flew below the Minimum IFR Altitude. The aircraft diverted to the nearest airport and landed safely.

ACN: 1797490 *(44 of 50)*

Synopsis

Pilot reported loss of situational awareness and entering an unusual attitude after inadvertently entering unforecast IMC conditions and icing.

ACN: 1793296 *(45 of 50)*

Synopsis

Light Transport Single Pilot reported failing to cross arrival fix at assigned altitude resulting in a loss of ATC separation. Reporter also reported late descent clearance and inflight icing as contributing causes.

ACN: 1789976 *(46 of 50)*

Synopsis

C182 pilot reported receiving terrain alerts when his aircraft was unable to maintain safe altitude because of ice accumulation.

ACN: 1787169 *(47 of 50)*

Synopsis

Pilot flying V35B aircraft reports icing inflight.

ACN: 1786936 *(48 of 50)*

Synopsis

Pilot flying C-172 aircraft reported inflight icing.

ACN: 1786917 *(49 of 50)*

Synopsis

Pilot flying TBM 700 aircraft reported icing and severe turbulence on approach.

ACN: 1784113 *(50 of 50)*

Synopsis

Air taxi pilots reported that after entering icing conditions, the boots and propeller heat failed. Pilots diverted and during postflight discovered clear ice on the wings.

Report Narratives

Time / Day

Date : 202305

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Relative Position.Angle.Radial : 100

Relative Position.Distance.Nautical Miles : 40

Altitude.MSL.Single Value : 23000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Rain

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Turbulence

Weather Elements / Visibility.Visibility : 10

Light : Daylight

Ceiling.Single Value : 6000

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Air Taxi

Make Model Name : PC-12

Operating Under FAR Part : Part 135

Flight Plan : IFR

Mission : Passenger

Flight Phase : Cruise

Route In Use : Vectors

Airspace.Class A : ZZZ

Component : 1

Aircraft Component : Pitot/Static Ice System

Aircraft Reference : X

Problem : Malfunctioning

Component : 2

Aircraft Component : Pitot-Static System

Manufacturer : Captain's Side

Aircraft Reference : X

Problem : Malfunctioning

Component : 3

Aircraft Component : Pitot-Static System

Manufacturer : First Officer's Side

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Air Taxi
Function.Flight Crew : Captain
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Flight Instructor
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 5519
Experience.Flight Crew.Last 90 Days : 247
Experience.Flight Crew.Type : 170
ASRS Report Number.Accession Number : 1997985

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Automation : Aircraft Other Automation
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.General : Maintenance Action
Result.Flight Crew : Diverted
Result.Flight Crew : Landed As Precaution
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

During the cruise at flight level 230 in IMC with icing and light chop conditions in PC 12/45, several unusual events occurred as follows. There was no CAWS (Central Advisory & Warning System) message in any of these events. 1. Sudden loss of First Officer's side airspeed indication 2. A few minutes later, suddenly lost the First Officer's side altimeter indication. (Enter rain conditions for about a few minutes.) 3. A few minutes later, after departing in rainy conditions, the Captain's side airspeed indication gradually lost. 4. Upon reaching zero airspeeds on the Captain's side of airspeed indication, experienced control wheel shaking (much lighter shake than stick shaker but no verbal stall warning. I used the pitch/power method to estimate and maintain the speed and altitude.) Contact the Center and request a lower altitude due to the loss of airspeed indicators. The Center provided us with some airports available and we requested a vector to ZZZ as we know there is a [maintenance center] in that field. Radar vector and descent instruction was given and LOST CAPTAIN's side ALTIMETER INDICATION during descending to the assigned altitude. We reported we lost both altimeters as well. We are about to request when to level off based on radar reading from the center, and we got out of the cloud and entered VMC. A few minutes later out of the clouds, the following events occurred at almost the same time. 1. The First Officer's airspeed and altimeter recovered to normal indications. 2. Captain's airspeed and altimeter recovered to normal indications. Reported

Center that all indications are normal, but still request to vector to ZZZ to full stop. Enter right downwind, base, and make a full stop landing at Runway XXR.

Synopsis

PC-12 Captain reported loss of pitot static anti ice systems during cruise and unreliable air data information on both the Captain's and First Officer's air data systems. The flight crew diverted to a nearby airport.

Time / Day

Date : 202304

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZAN.ARTCC

State Reference : AK

Altitude.MSL.Single Value : 5000

Environment

Weather Elements / Visibility : Icing

Aircraft

Reference : X

ATC / Advisory.Center : ZAN

Aircraft Operator : Air Taxi

Make Model Name : Small Transport

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 135

Flight Plan : IFR

Flight Phase : Cruise

Airspace.Class E : ZAN

Person

Location Of Person.Facility : ZAN.ARTCC

Reporter Organization : Government

Function.Air Traffic Control : Enroute

Qualification.Air Traffic Control : Fully Certified

ASRS Report Number.Accession Number : 1990995

Events

Anomaly.ATC Issue : All Types

Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : CFTT / CFIT

Detector.Automation : Air Traffic Control

When Detected : In-flight

Result.Flight Crew : Returned To Departure Airport

Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings

Contributing Factors / Situations : Procedure

Contributing Factors / Situations : Weather

Primary Problem : Weather

Narrative: 1

Shortly after achieving level flight after departure from DLG, Aircraft X requested his approach clearance into ZZZ and then requested a higher altitude prior to IAF due to icing. A few minutes later he requested to return to DLG and that he was in too much icing to continue the approach into ZZZ. I cleared him to DLG and issued a 30B80 to allow him to climb out of the icing since the MIA (Minimum IFR Altitude) in that area is 50. He then stated that he was accumulating clear icing as well as a reduction in airspeed and requested lower. I informed him of the MIA and he restated that he needed lower. I cleared him to 40 to keep him at least 1000 ft above the mountainous terrain and allow him to get to an altitude to stop accumulating the clear icing. Eventually he got established on the approach at DLG and was able to land without further incident. DLG FSS reported that the aircraft was experiencing severe clear ice. I could have been more suggestive with the altitude assignment as it was below the MIA but there were no other published routings or procedures available to allow for assignment of a lower altitude.

Synopsis

ZAN Controller reported an aircraft encountered icing conditions and descended below ATC published routing which resulted in the aircraft flying below the MIA and a CFIT event.

Time / Day

Date : 202301

Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.TRACON

State Reference : US

Relative Position.Angle.Radial : 045

Relative Position.Distance.Nautical Miles : 15

Altitude.AGL.Single Value : 600

Environment

Flight Conditions : VMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Turbulence

Light : Daylight

Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Personal

Make Model Name : PA-28 Cherokee/Archer/Dakota/Pillan/Warrior

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : VFR

Mission : Training

Flight Phase.Other

Airspace.Class E : ZZZ

Component

Aircraft Component : Reciprocating Engine Assembly

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : FBO

Function.Flight Crew : First Officer

Function.Flight Crew : Instructor

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Commercial

Qualification.Flight Crew : Flight Instructor

Experience.Flight Crew.Total : 400

Experience.Flight Crew.Last 90 Days : 80

Experience.Flight Crew.Type : 45

ASRS Report Number.Accession Number : 1971761

Human Factors : Communication Breakdown

Human Factors : Human-Machine Interface

Human Factors : Situational Awareness
Human Factors : Distraction
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : Flight Crew

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation / Discrepancy - Procedural : FAR
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Landed As Precaution
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Returned To Departure Airport

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Human Factors

Narrative: 1

Practicing low level Ground Reference Maneuevers (GRM) with student, who was having difficulty due to turbulence over trees and constantly changing reference points. Decided to head out over the coast to find small buoys and islands to do GRMs off of. Flying through small amounts of light sea scud. Did not consider Carb Icing to be a factor. CFI was distracted due to EFB troubleshooting, and Student was focusing outside on reference points. Did not notice sputtering engine until power was significantly reduced. After a 5 second reaction time, immediately ran through check list items and [requested priority] as the A/C was 600 ft. AGL over water. Regained engine power after 10-15 seconds and immediately cancelled [priority request]. Returned to airport with carb heat on and leaned mixture. Carburetor icing is a real threat to Lycoming engines. PA-28-140 POH states that Carb Heat should not be applied until signs of carburetor icing become apparent. In areas of likely carb ice formation, manufacturer direction should perhaps be ignored and Carb Heat applied regardless. GRM should always be performed over an area that offers survivable landing spots.

Synopsis

Flight Instructor on training flight with student reported engine power loss due to carburetor icing.

Time / Day

Date : 202302

Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Relative Position.Angle.Radial : 270

Relative Position.Distance.Nautical Miles : 13

Altitude.MSL.Single Value : 15000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Fog

Weather Elements / Visibility : Rain

Weather Elements / Visibility : Turbulence

Weather Elements / Visibility.Visibility : 10

Light : Dusk

Ceiling.Single Value : 2000

Aircraft

Reference : X

Aircraft Operator : Personal

Make Model Name : Chancellor 414A / C414

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Cruise

Route In Use : Vectors

Route In Use : Direct

Component : 1

Aircraft Component : AC Generator/Alternator

Manufacturer : Left

Aircraft Reference : X

Problem : Malfunctioning

Component : 2

Aircraft Component : AC Generator/Alternator

Manufacturer : Right

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal
Function.Flight Crew : Pilot Flying
Function.Flight Crew : Single Pilot
Qualification.Flight Crew : Commercial
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 610
Experience.Flight Crew.Last 90 Days : 75
Experience.Flight Crew.Type : 100
ASRS Report Number.Accession Number : 1970350
Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Automation : Aircraft Other Automation
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.General : Maintenance Action
Result.General : Flight Cancelled / Delayed
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Landed in Emergency Condition
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

Aircraft X with two souls on board departed ZZZ on Date on its first flight after 100 hour inspection and prop overhaul. Conditions were MVFR for departure on an IFR flight to ZZZ1. Initial climb to 15,000 feet then to 17,000 feet. The flight encountered moderate to severe turbulence which disconnected the autopilot. We turned the autopilot back on after we deviated left of course. Once we initiated the descent into ZZZ1 we encountered icing so I turned on all the appropriate heats and deployed boots. I turned on windshield anti-ice and prop de-ice and both alternator annunciation lights illuminated. ATC was advised and ATC recommended ZZZ2 so we turned south and were given vectors and clearance to descend to 2,000 feet. Upon descent we began to load-shed and requested priority handling and then a total electric failure ensued. Continued descent and turned on emergency backup power and was cleared to land Runway XX. Needing to bleed off some speed, we circled the area and was advised no traffic in the vicinity. Once slowed tried to extend gear and heard nothing so manually cranked down the landing gear and landed with no lights or flaps. Once on the ground we asked tower to ask the Airport Rescue and Firefighting (ARFF) vehicles lead us into the ramp and shut the aircraft down once parked. After shut down turned off all electrical and fuel valves and put the airplane in a hangar at [Company]. No injuries or damage reported. IFR route given for the flight was ZZZ-ZZZZZ-ZZZ1.

Synopsis

Pilot reported loss of both alternators in flight during turbulence and icing conditions. The Pilot requested priority handling and diverted to make a precautionary landing.

Time / Day

Date : 202301

Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.AGL.Single Value : 0

Environment

Flight Conditions : VMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Snow

Weather Elements / Visibility.Visibility : 10

Ceiling.Single Value : 2200

Aircraft

Reference : X

ATC / Advisory.Tower : ZZZ

Aircraft Operator : Personal

Make Model Name : Skyhawk 172/Cutlass 172

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : None

Mission : Personal

Flight Phase : Landing

Route In Use : Visual Approach

Airspace.Class D : ZZZ

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Total : 1936

Experience.Flight Crew.Type : 1500

ASRS Report Number.Accession Number : 1969169

Events

Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy

Anomaly.Ground Excursion : Runway

Anomaly.Ground Event / Encounter : Weather / Turbulence

Anomaly.Ground Event / Encounter : Loss Of Aircraft Control

Detector.Person : Flight Crew

Result.Flight Crew : Regained Aircraft Control

Assessments

Contributing Factors / Situations : Human Factors

Contributing Factors / Situations : Weather

Primary Problem : Human Factors

Narrative: 1

No icing reports, no runway condition reports or PIREPS that would indicate any runway contamination. The only PIREP at the time was for rime ice in the clouds. Obtained ATIS several times that morning. Called the Tower and they mentioned that snow was moving in but was not yet over the airport. I taxied to Runway XXL and also commenced a run-up. I was then cleared for take-off on Runway XXL and stayed in the left traffic pattern. Once airborne I noticed snow coming down from the clouds (virga) about 4 miles west of the airport. After 1 touch and go, I heard another airplane was cleared for take-off and they also decided to stay in the pattern. I was 'Cleared for the option' a second time while turning on downwind. Tower asked the [the other aircraft] how close the snow/virga looked. They said that it was "pretty close". Then the Tower amended my clearance to "Clear to land". At this point virga had not yet reached the airport area. At about 300 - 500 ft. after touchdown and while applying normal brake pressure the plane started to fish-tail. I took my feet off the brakes and the plane veered sharply to the left and exited the runway and onto the grass. While on the grass I was able to keep directional control with the rudder and brought the plane to a full stop. After receiving taxi clearance from the Tower I taxied on to the taxiway and back to the FBO. After parking I examined the aircraft and found no visible damage to any part of the aircraft including the propeller. I wrote up the incident on the Maintenance Squawk Sheet and then called the Tower to converse about the incident. I communicated with the maintenance department of the company that rented me the aircraft as well as their management. I have also been in contact with a person from the FAA who reached out to me after the incident. Since I didn't experience any issues with either steering or braking at any other time except at the time of the incident, I concluded that I must have hit a patch of frozen water that had not been previously reported or noticed by anyone.

Synopsis

C-172 pilot reported a runway excursion during landing rollout thought to be the result of a patch of ice with poor directional control.

Time / Day

Date : 202301

Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Relative Position.Distance.Nautical Miles : 30

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 9

Light : Night

Ceiling.Single Value : 1500

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Air Carrier

Make Model Name : Caravan 208A

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 135

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Approach

Route In Use : Vectors

Airspace.Class E : ZZZ

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

Function.Flight Crew : Captain

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Commercial

Experience.Air Traffic Control.Supervisory : 18416

Experience.Flight Crew.Total : 1300

Experience.Flight Crew.Type : 500

ASRS Report Number.Accession Number : 1969117

Events

Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control

Detector.Person : Flight Crew

When Detected : In-flight
Result.General : None Reported / Taken

Assessments

Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

Prior to leaving ZZZ, First Officer (FO) and I checked current weather observations and forecasts en route and for ZZZ1. There was no icing PIREPs and nothing was forecast near the airport. There was light icing depicted on the current chart on the weather website near the ZZZ airport at 3000 - 5000 ft. Based on PIREPs, cloud cover on the iPad, and our inbound flight, we determined that the cloud deck was only a thousand or so feet thick and not a concern for this flight. FO and I verified our TKS fluid was still full since we had just added fluid in ZZZ1, and briefed icing procedures and the flight profile. As we began descending for the RNAV XX approach, I charged the TKS system prior to entering IMC, and it coated the wing with fluid. We entered the clouds at about 4800 ft. I began noticing some trace ice and I activated the TKS system again to "Norm". Since I was pilot flying, FO was watching the wings and air frame, and called out light icing. By the time I was able to look out my window, the left wing leading edge was covered with about a half-inch thick of rime ice. This ice was slowly shedding on the outboard part of the wing, but the inboard icing was still built up. I asked FO to look at the tire, the wing, and tie down hook and tell me what they were getting and they advised me of an icing buildup everywhere. At this point as I was preparing to level from the descent, we hit SLDs (super cooled large droplets) which looked like a water balloon hit the windscreen. The water spread across the windshield and froze, obscuring my view outside. I activated TKS max flow air frame and windshield TKS fluid. Even on high, ice kept accumulating. I told FO to let ATC know we were in severe icing, which they did. ATC asked if we wanted to descend below the approach altitude and I said no because we were still IMC, and [requested priority handling] direct vectors to the final approach fix. ATC gave us a heading and I proceeded to turn. FO ran the remaining checklists while I verified the aircraft configuration, I disengaged the autopilot and began flying the course intercept, and pointed out our airspeed. We had been cruising at 147 kts. and were now at 143 kts. As we began descending on the glide path, our flaps-up airspeed further decayed to 130 kts. as the fastest we could get. I introduced flaps 10 degrees and they were introduced with no noticeable change in flight characteristics. There was no wind or turbulence of note. Inbound from the final approach fix, the aircraft rolled un-commanded to the right, left, and began shaking. I cycled the prop quickly to shed ice to 1600 RPM and back full. I crossed the threshold at 119 kts. I was able to land firmly on the 1000 ft. markers and only after landing turned off the TKS fluid. As we pulled into the gate there was still significant airframe icing and about 1 inch of mixed ice on the leading edge of the wings.

Synopsis

C208 flight crew reported encountering severe icing conditions that had overwhelmed the anti-icing system on the aircraft. After landing, significant ice was discovered on the airframe along with one inch of mixed ice on the leading edges of the wings.

Time / Day

Date : 202301

Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.AGL.Single Value : 0

Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Air Taxi

Make Model Name : Light Transport, Low Wing, 2 Turboprop Eng

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 135

Flight Plan : IFR

Mission : Cargo / Freight / Delivery

Flight Phase : Landing

Airspace.Class E : ZZZ

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Taxi

Function.Flight Crew : Captain

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1968950

Human Factors : Workload

Human Factors : Time Pressure

Human Factors : Communication Breakdown

Human Factors : Situational Awareness

Communication Breakdown.Party1 : Flight Crew

Communication Breakdown.Party2 : Ground Personnel

Events

Anomaly.Ground Excursion : Runway

Anomaly.Ground Event / Encounter : Weather / Turbulence

Anomaly.Ground Event / Encounter : Loss Of Aircraft Control

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Detector.Person : Flight Crew

Were Passengers Involved In Event : N

When Detected : In-flight

Result.General : Maintenance Action

Result.General : Flight Cancelled / Delayed

Assessments

Contributing Factors / Situations : Airport
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Staffing
Contributing Factors / Situations : Weather
Primary Problem : Ambiguous

Narrative: 1

My flight and route information: ZZZ1 to ZZZ with continuation to ZZZ2 ETE: 29 minutes / Estimated Fuel Burn: 383 pounds / Fuel Onboard: 2,400 pounds / Distance: 94nm
Weather Briefing - Initial PROGS: - LO pressure area North with Warm front & TROF extending south through the States forecasting Snow in Location. AIRMETS: ZULU - Possible moderate icing from Surface to 7,000 ft. with Top at 18,000 ft. / TANGO-LO - Possible low-level moderate turbulence / LLWS - Possible low level wind shear at or below 2,000 ft. SKEW-T/LOG-P: ZZZ area - Forecast cloud tops around 7,000 ft.-9,000 ft. / cloud bases around 4,000 ft.-5,000 ft. / wind shear at approximately 2,000 ft. ZZZ1 METAR -: 240@14 / 10sm / CLR / 00 / -05 / A2999 TAF - Not available MOS - 270@23G35 / +6sm / 040 BKN NOTAMS: ZZZ DME OTS / ROTATING BCN - GREEN ONLY. ZZZ METAR -: 230@15 / 10sm / CLR / -01 / -04 / A2985 TAF -: 250@19G30 / 4sm / -SN BLSN / 050 BKN // TEMPO - XA00 to XE00: 1sm / -SN BLSN / 015 BKN** NOTAMS: RUNWAY-XX REIL OTS / ZZZ NDB NOT MONITORED ** Note that there is no mention of Surface/Runway conditions, contamination or FICON report Weather Briefing - Pre-Departure ZZZ1 (Called ASOS for latest 1-minute report) XA15: 210@13 / 10sm / CLR / 00 / -05 / A2991. ZZZ (Called ASOS for latest 1-minute report) XA17: 270@24G38 / 3/4sm / -SN BR / 028 BKN 047 OVC / 00 / -01 / A2979 Note: Below landing minimums for the ZZZ Runway-XX GPS RNAV Approach which requires 1sm visibility. ZZZ (Called ASOS for latest 1-minute report) XA22: 270@21 / 1/2sm / -SN BR / VV 1,500 ft. / 00 / -01 / A2979 Note: Still below landing minimums for the ZZZ Runway-XX GPS RNAV Approach. Note: Radar was indicating the Snow band was moving southeast and would soon clear the ZZZ area Called ZZZ2 Dispatcher to check-in and discuss possible Release when ZZZ weather improved. Reported that my risk assessment was acceptable, Aircraft X had no deferred maintenance items or any maintenance issues and I had 2,400 pounds of fuel onboard. I informed Dispatcher that I was aware of the current weather conditions, forecasts, AIRMET's and NOTAM's. Obviously we would have to wait for the visibility to improve before Release, but Dispatcher gave me a full briefing discussing the AIRMET's and surface winds with the possibility using ZZZ Runway-XY if necessary. We discussed the lack of any NOTAM reporting Surface conditions or FICON. We decided I would continue to monitor the ZZZ visibility for improvement and try to contact ZZZ airport for Surface conditions/FICON then call back for Release. Called ZZZ Airport Manager for Surface conditions/FICON - No answer only voicemail ZZZ (Called ASOS for latest 1-minute report) XA54: 280@21 / 1sm / -SN BR / 011 BKN 045 OVC / 00 / -01 / A2979. Called ZZZ2 Dispatch and reported er that ZZZ had improved to legal landing minimums and the wind was favoring Runway-XX. I informed Dispatcher that I was ready for departure awaiting my cargo and had no concerns for this flight. Dispatcher released our flight for departure. Nearing departure time the delivery driver had not arrived so I called ZZZ2 Dispatcher to determine customer status. Dispatcher said he would find out and call be right back. Dispatcher called and informed me that there wasn't any ZZZ1 cargo and to proceed. Blocked Out. Departed. Contacted ZZZ Center - requested and received ATC IFR clearance direct ZZZ at 8,000 ft. Weather conditions: Light turbulence / Entered IMC approximately 10nm north ZZZ1 / Trace rime ice. Soon after: Unable to receive ZZZ ASOS via Radio / checked NEXRAD weather on aircraft scope - Latest NEXRAD was 26 minutes old /ZZZ ASOS - XB14: 270@20 / 8sm / -SN / 044 OVC / 00 / -01 / A2976. Handed off to next Center sector ZZZ

ASOS - XB50: 280@22 / 10sm / 065 BKN 090 OVC / 01 / -01 / A2976 Contacted ZZZ Center / Reported level 8,000 ft. and that I had the current ZZZ automated weather, NOTAM's and requested the ZZZ Runway-XX RNAV-GPS. Approach via direct the Initial Approach Fix ZZZZZ. ATC cleared me direct ZZZZZ direct ZZZ Airport and to Standby for Approach clearance. Began Approach briefing and preparation for descent and landing. **Note: I knew I would be "visual" with ZZZ within minutes based on the Reported ceiling, but continued the plan to use the GPS for a safe approach/descent. ZZZ Center cleared me for the RNAV-GPS Runway-XX Approach into ZZZ to maintain at or above 5,000 ft. until ZZZZZ inbound. Weather conditions: Light occasionally moderate turbulence during initial descent / Entered VMC at 7,400 ft. / Nearing 5,000 ft. - Moderate turbulence. Center cleared me to contact Advisory frequency and to cancel IFR with ZZZ Center or FSS. Advised Center I would cancel inside ZZZZZ which was 10.5 NM from the airport. Switched momentarily to Advisory to activate Runway/Taxiway lights and advise ZZZ traffic of my position then Monitored that frequency. Reported to Center that I had ZZZ airport in sight and was going to continue the GPS-XX Approach and cancel inside ZZZZZ. Approximately 10 nm from ZZZZZ listened to the 1-minute weather update ZZZ ASOS - 290@19 / 9sm / 070 BKN / 095 OVC / 01 / 02 / A2975 Note: Within our aircraft maximum crosswind component of 25 knots. Assured Descent and Approach Checklists were completed. 2 NM from ZZZZZ1 FAF cancelled IFR and switched to Advisory frequency and announce my position to ZZZ traffic. The Approach was stable with Moderate turbulence / Gear down and Landing Checklist complete / Altitude call-outs standard Crosswind correction maintained directional control on runway center line and continued through left main gear touchdown and right main gear touchdown. During touchdown of the nose gear a wind gust caused my aircraft to weathervane to the left and begin to slide sideways. I corrected with opposite rudder and the aircraft re-aligned with the runway center momentarily. A second, stronger gust caused the aircraft to weathervane beyond my control movements of full rudder and full aileron. The aircraft began to slide at an approximate 45 degree angle to the runway. I was unable to correct on the ice-covered / snow-covered surface causing the Nose Wheel excursion into a snow bank adjacent to the west of Runway-XX. I immediately moved both Condition Levers to Cutoff and both Propeller Levers to Feather. Fortunately neither Propeller hit the snowbank. Contacted ZZZ Center and advised of the excursion and that Runway-XX was blocked. Contacted ZZZ2 Dispatcher advising of the situation and that there were no injuries to me and no apparent damage to the aircraft. Note: Upon exiting the aircraft I realized that the main gears were still on the runway surface and only the nose gear had exited the runway. I also realized that the runway surface was covered with a thin layer of ice under approximately 1/2" of crusty snow. I then examined the Propeller tips finding no damage and looked at the Nose Gear and Over-Steering block also finding no damage. Approximately one day later: Further examination of the aircraft by Maintenance Supervisor revealed no damage and aircraft was released for return to service. This mishap happened immediately after touchdown. Runway Surface Contamination: Runway 100% contaminated with Ice and covered with Snow. Estimate FICON NIL-- Not reported / No NOTAM issued regarding Runway conditions. During touchdown a wind gust caused my aircraft to weathervane to the left and begin to slide sideways. I corrected with opposite rudder and aircraft re-aligned with the runway center momentarily. A second, stronger gust caused the aircraft to weathervane beyond my control movements of full rudder and full aileron. The aircraft began to slide at an approximate 45 degree angle to the runway. I was unable to correct on the ice-covered / snow-covered surface causing the Nose Wheel excursion into a snow bank adjacent to the west of Runway-XX. If I had been informed of the Runway Surface conditions being NIL I would have proceeded to my Alternate. At our other small airport Out-Stations we have individuals on-sight at the airports we can call to receive first-hand verbal information regarding surface/runway conditions. This flight into ZZZ is a new destination used sporadically during peak times and only recently did it become a

permanent stopover. While running this route, at no time has anyone been available for me to talk to. Calls to the airport manager result in voicemail. We need to find someone available for information. Talking with the airport manager the night of the incident he appeared reluctant to issue any NOTAMS. During the review meeting the Chief Pilot suggested that we might change the training to reflect a higher emphasis on Runway contamination/FICON Reports. Weather-description: Wind: 290@19 & Gusting / Visibility: 9sm / Ceiling: 7000 ft. Broken / Temperature: 0 degrees Celsius / Low Level Wind Shear below 2000 ft. / Moderate Turbulence

Synopsis

Multiengine aircraft pilot reported a runway excursion after touchdown on an ice-covered runway in gusty wind conditions. The pilot reported no damage and no injuries.

Time / Day

Date : 202301

Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 8000

Environment

Flight Conditions : IMC

Light : Daylight

Aircraft

Reference : X

Aircraft Operator : Air Taxi

Make Model Name : Cessna 402/402C/B379 Businessliner/Utiliner

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 135

Flight Plan : IFR

Mission : Passenger

Flight Phase : Climb

Component

Aircraft Component : Aerofoil Ice System

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

Function.Flight Crew : Captain

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Air Transport Pilot (ATP)

ASRS Report Number.Accession Number : 1968790

Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Critical

Anomaly.Deviation / Discrepancy - Procedural : Maintenance

Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy

Anomaly.Deviation / Discrepancy - Procedural : Clearance

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Detector.Automation : Aircraft Other Automation

Detector.Person : Flight Crew

Were Passengers Involved In Event : N
When Detected : In-flight
Result.General : Maintenance Action
Result.General : Flight Cancelled / Delayed
Result.Flight Crew : Diverted
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Landed As Precaution
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Procedure
Primary Problem : Aircraft

Narrative: 1

After being deiced in ZZZ, departed in IFR conditions into known icing conditions (light icing expected). Started picking up ice about 2,000 feet AGL. Climbing to 8,000 feet AGL I deployed the boots when I thought it was approximately 1/2 inch thick. Green ready light did not come on and the boots did no deploy. Checked circuit breakers and none had tripped. Tried again with the same results. With ice continuing to build, I diverted to ZZZ1. Weather was deteriorating in ZZZ. [Requested priority handling] and flew the approach into ZZZ1. I had to do a 360 degree turn to lose altitude (had reached VFR conditions) and landed in ZZZ1. It was a hard landing. Visually checked the aircraft after landing with no obvious damage. All passengers and crew were OK. After passengers were taken care of and phone calls were made, I did another run up on the aircraft and the boots checked normal as they did in the previous ground checks. Mechanical issue not being resolved. To my knowledge the same problem has been written up 3 previous times this winter.

Synopsis

C402 Captain reported during climb, ice began to accumulate on the wings and the boots did not deploy. The Captain diverted and landed.

Time / Day

Date : 202101

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.TRACON

State Reference : US

Altitude.MSL.Single Value : 3000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Rain

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Turbulence

Weather Elements / Visibility.Visibility : 0

Light : Dusk

Ceiling.Single Value : 2400

Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Personal

Make Model Name : Small Aircraft, Low Wing, 1 Eng, Fixed Gear

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Final Approach

Flight Phase : Initial Approach

Route In Use : Vectors

Airspace.Class B : ZZZ

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Private

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Total : 328

Experience.Flight Crew.Last 90 Days : 29

Experience.Flight Crew.Type : 308

ASRS Report Number.Accession Number : 1968272

Human Factors : Communication Breakdown

Human Factors : Confusion

Human Factors : Distraction

Human Factors : Situational Awareness

Human Factors : Time Pressure

Human Factors : Training / Qualification
Human Factors : Workload
Human Factors : Human-Machine Interface
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Altitude : Overshoot
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : Unstabilized Approach
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Automation : Air Traffic Control
Detector.Person : Air Traffic Control
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Became Reoriented
Result.Flight Crew : Regained Aircraft Control
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Human Factors

Narrative: 1

I am a fairly new 350 hour instrument rated private pilot in this airplane. This flight, a short 20 minute return flight, at dusk in moderate precipitation and light to moderate icing, started with a failure to activate vectors to final and blowing through the final approach course for an ILS, which then went into some challenges in maintaining heading and altitude while being vectored in hard IMC, in what felt like un-commanded roll due to possible icing, but also could have just been poor piloting. The initial buttonology failure in the avionics came from unfamiliarity and an ill-advised and ill-timed change in habit. My training was to always load the approach with an initial fix, and then activate the leg if vectored in, the smart logic being that ATC could always send you out to a fix. But this was a short flight over some mountains with expected light icing, and ATC let me know I'd be getting vectors early in the flight before I had loaded the approach or even gotten the weather. I was pointed right at the final approach course, was already feeling behind since I had just completed the departure procedure and needed weather and brief the approach, and was in moderate icing and fixated a bit on the wing, looking for ice. So I went ahead and chose vectors instead of an initial fix when loading the approach while also requesting lower from 6,000 ft., hoping to descend out of the icing layer. I didn't know which fix would even make sense since I hadn't briefed the approach, so that just seemed faster. That should have immediately followed with activate vectors to final procedure to turn the entire final into an intercept magenta line to get the approach out of standby, but I didn't do this, and it somehow didn't occur to me that I needed to activate the leg. I got the

weather, briefed the approach, I had it in my mind that if I activated the approach with the APR button, as soon as I got clearance, that activating the approach would do three things, 1- arm the glideslope, 2- activate vectors to final, and 3- intercept the final approach course. In hindsight, that seems so basic and obvious that I skipped a step and that the plane wasn't going to intercept a leg that hadn't been activated to be next in sequence. It had been four months since an IPC, which didn't include any vectors to final, and 10 months since my IFR checkride, and was just enough nuanced from my normal practice of loading a fix that I wasn't sharp enough or proficient enough to have caught my mistake. I could see in the scoreboard that I was still direct to the initial VOR I was pointed at before switching to heading mode to the assigned heading, so there was a slight spidey tingle, but I just thought APR would arm everything and bring up the green needles, some expectation bias. I probably could have corrected quickly by matching my heading to the final, activating vectors to final, I was still within the final approach corridor. But I chose to completely turn off the automation and disconnect, which is probably the right thing to do in many circumstances, but maybe wasn't the most helpful step in this case, where the rain was pouring down, the ice was mostly cleared from the wings from the high mode, not max mode, TKS, skirting right at freezing level. ATC inquired if I was established, and I let the controller know, which I figured they could probably see, that I had blown through final. As I recall, I was on a heading of about 120 and was given a right heading of 300 degrees. The correction of completely disengaging the Autopilot was compounded by what I believe was ice impacted ailerons and possibly elevator impacting roll and pitch control in the subsequent attempt to get vectored back to the ILS, because I found each turn to be going into a bigger roll than expected with a quick loss of altitude. Again, I was running my TKS in high, but not boost mode, and it looked to have sloughed the light to moderate icing that I could see accumulated, but the plane definitely was not handling as crisply as I had ever experienced and I was, no other way to put it, frazzled. The plane was banking to about 45 degrees, dropping altitude at over 2000 fpm, and I would bring it back and try and ascend and on the next turn, same thing, more roll, altitude drop, with a resulting reacting over correction. I think this happened at least 4 times, and two 360's to rejoin the final, with clearly concerned controllers. I could see I had gotten to about 1500 ft. AGL, so knew I had gone below the MVA/MEA. While I believe the controls may not have been responding quite as usual due to some wing contamination, I also recognize that it was me at the controls and I was not maintaining the control necessary to fly the assigned heading and altitudes. They say lizard brain steps in and your arms get shorter, and I was literally shocked with each turn that I was not holding altitude and banking, and was certainly task saturated loading headings, talking to ATC, trying to maintain situational awareness, checking wings for icing, but I knew I was now flying by the seat of my pants. Power inputs felt late, corrections were too strong, attempts to get back onto Autopilot were clumsy, there was nothing pretty about the flying I was doing. I have to accept that in that moment, I was only ready for things to go right, and soon as I made a buttonology mistake, and as soon as I was hand flying in IMC with the next steps not already loaded, my controls of the plane were crude at best and my instrument scan not brisk and systematic enough. Single pilot IFR is no joke. The conditions at my intended airport were MVFR with I think ceilings of about 2,300 ft., but the floor of the icing layer, approximately 2,800 ft., was above the MVA/MEA of 4,500 ft., which meant I didn't have an out to get below the icing without [requesting priority handling] and taking terrain risk into my own hands. I knew I had plenty of TKS for the short flight with no severe icing forecast, but I did hit a very heavy, to me, precipitation cell, and that added to the IMC experience. I feel obligated to read most accident reports, and probably most people reading this one can sense a few other factors. They say mountains, night, IMC, pick one. I transferred some of my luck bucket to the experience bucket, and cannot say that my ADM is what it needed to be, or that my instrument flying skills were where they need to be, so lots of take aways. The ones I've

got are: 1) Get weekly avionics practice 2) In hard IMC, maybe consider small step downs in automation without complete step off, or at least be very prepared with a flow to get back on if nothing more than heading and alt select. 3) Force a rigorous instrument scan cycle, it took a few seconds to figure out the roll and descent each time, and should have been babying the plane into each turn. 4) Get real or simulated hard IMC practice with an instructor regularly to practice just these scenarios. 5) Don't plan a flight with known icing where you cannot have ATC descend you below the icing layer. 6) Talk to ATC to buy some time with a delay vector to get back set up. Thanks for reading and hope this helps someone avoid finding themselves in a similar situation because it was an uncomfortable sequence.

Synopsis

GA IFR pilot reported a flight in heavy IMC conditions. The 328 hour pilot with little IFR experience reported heading deviations, altitude deviations and slow reaction time to changing weather conditions.

Time / Day

Date : 202301

Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Relative Position.Distance.Nautical Miles : 0

Altitude.AGL.Single Value : 100

Environment

Flight Conditions : VMC

Weather Elements / Visibility.Visibility : 10

Light : Daylight

Ceiling.Single Value : 2900

Aircraft

Reference : X

Aircraft Operator : FBO

Make Model Name : DA20-C1 Eclipse

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : None

Mission : Training

Flight Phase : Takeoff / Launch

Component

Aircraft Component : Aeroplane Flight Control

Aircraft Reference : X

Problem : Malfunctioning

Problem : Improperly Operated

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : FBO

Function.Flight Crew : Instructor

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Commercial

Experience.Flight Crew.Total : 697

Experience.Flight Crew.Last 90 Days : 25

Experience.Flight Crew.Type : 39

ASRS Report Number.Accession Number : 1965711

Human Factors : Communication Breakdown

Communication Breakdown.Party1 : Flight Crew

Communication Breakdown.Party2 : Ground Personnel

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.General : Maintenance Action
Result.General : Flight Cancelled / Delayed
Result.Flight Crew : Landed in Emergency Condition

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Procedure
Contributing Factors / Situations : Weather
Primary Problem : Procedure

Narrative: 1

During the pre-flight, there was icing observed on the control surfaces that was carefully and thoroughly removed. The icing was a result of rain from the previous day that had frozen over night. I would like to emphasize that all of the ice was removed during the pre-flight phase. During takeoff, after rotating and becoming airborne, and while increasing airspeed, there was a violent fluttering of the flight controls observed that negatively affected the controllability of the aircraft. The effects were severe enough that I do not believe that we would have been able to successfully complete an entire lap in the traffic pattern to land back at the airport. Fortunately, the runway was long enough that we were able to make a successful landing on the remaining runway and terminate the flight without further incident. It was concluded after the flight that the most likely cause was that some of the rain from the day before had made its way into some of the flight control surfaces and caused the fluttering once we reached a high enough airspeed for the imbalance to cause the fluttering. After temperatures warmed up above freezing, the airplane was flown again without issue. My biggest issue with this occurrence is that there is really no way to check for icing inside of the control surfaces on any airplane that I have ever flown. As far as I'm aware, the only way to detect this issue is to fly the airplane and observe the fluttering. Proper corrective action if this is observed in the future would be to abort the takeoff, if able, and if unable to abort, reduce to an airspeed that prevents the fluttering and return to land at or below that particular airspeed.

Synopsis

Instructor pilot reported violent flight control fluttering after takeoff and elected to land on the remaining runway rather than chance a flight around the pattern. The aircraft had been deiced prior to takeoff.

Time / Day

Date : 202301

Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Relative Position.Distance.Nautical Miles : 50

Altitude.MSL.Single Value : 16000

Environment

Weather Elements / Visibility : Fog

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Rain

Weather Elements / Visibility : Turbulence

Light : Daylight

Ceiling.Single Value : 7000

Aircraft

Reference : X

Aircraft Operator : Personal

Make Model Name : PA-46 Malibu/Malibu Mirage/Malibu Matrix

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Descent

Component : 1

Aircraft Component : Pitot/Static Ice System

Aircraft Reference : X

Problem : Malfunctioning

Component : 2

Aircraft Component : Pitot-Static System

Aircraft Reference : X

Problem : Malfunctioning

Component : 3

Aircraft Component : Autopilot

Aircraft Reference : X

Problem : Malfunctioning

Component : 4

Aircraft Component : Airspeed Indicator

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Personal
Function.Flight Crew : Single Pilot
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Private
Experience.Flight Crew.Total : 580
Experience.Flight Crew.Last 90 Days : 35
Experience.Flight Crew.Type : 80
ASRS Report Number.Accession Number : 1964493
Human Factors : Situational Awareness
Human Factors : Troubleshooting
Human Factors : Confusion

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Automation : Aircraft Other Automation
Detector.Person : Flight Crew
Miss Distance.Horizontal : 1000
When Detected : In-flight
Result.General : Flight Cancelled / Delayed
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Overcame Equipment Problem
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Primary Problem : Aircraft

Narrative: 1

I experienced a Left Pitot heat failure. Relatively new plane for me and I believe I underestimated the situation I was in. I so no other issues at the time so I did not take any corrective action.....And at the time I'm not sure I knew any corrective actions to take. A short time later the Pitot froze up and my airspeed dropped to zero. This caused my autopilot to pitch me down. I disengaged the autopilot and notified ATC of my situation. I quickly found myself off course and altitude low while trying to manage the plane and my airspeed. I have never been in this situation, complete IMC with icing and no primary airspeed indicator. I do believe my steam guage was working but at the time I was focused on using ground speed off the GPS not thinking of the backup. I was getting multiple different CAS messages that I was unfamiliar with and then also lost Cabin pressure at about 14,000 ft. so my anxiety given my situation was elevated. ATC gave me some priority which was very nice of them. I don't believe I deviated a great deal off course but ATC was aware of my deviation and assisting me in getting back on track. I did my best to correct the plane back to proper altitude and course based on my GPS position. Eventually I broke free of the clouds during my descent and could immediately see ZZZ Runway and landed uneventfully. I have since talked with multiple pilots to discover

corrective actions that I could have taken in this situation and overall it has been very educational.

Synopsis

Pilot reported a Pitot Probe Heat failure during descent in IMC, resulting in loss of air speed data and autopilot pitch down. Pilot regained aircraft control and continued to destination airport for landing.

Time / Day

Date : 202301

Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZZZ.TRACON

State Reference : US

Altitude.MSL.Single Value : 5000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 6

Light : Night

Ceiling.Single Value : 1800

Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Personal

Make Model Name : PA-30 Twin Comanche

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Training

Flight Phase : Descent

Route In Use : Direct

Airspace.Class E : ZZZ

Component : 1

Aircraft Component : Airspeed Indicator

Aircraft Reference : X

Problem : Malfunctioning

Component : 2

Aircraft Component : Pitot/Static Ice System

Aircraft Reference : X

Problem : Malfunctioning

Person : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Instructor

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Flight Engineer / Second Officer

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Flight Instructor
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 25000
Experience.Flight Crew.Last 90 Days : 240
Experience.Flight Crew.Type : 200
ASRS Report Number.Accession Number : 1963927
Human Factors : Confusion

Person : 2

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Personal
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Commercial
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 410
Experience.Flight Crew.Last 90 Days : 60
Experience.Flight Crew.Type : 190
ASRS Report Number.Accession Number : 1963929
Human Factors : Confusion

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Speed : All Types
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Automation : Aircraft Other Automation
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Landed As Precaution

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

Flying IFR at passing 7,000 feet during descent we encountered icing conditions. As we were leveling off at 5,000 feet our airspeed started dropping quickly. We were attempting to maintain our airspeed and request a lower altitude from Approach Control but the frequency was busy. At that point our airspeed indication went out and was unavailable. We may have deviated off our altitude before we got a clearance to descend and maintain 3,000 feet from ZZZ Approach. It was a busy time in night IMC conditions. We were subsequently handed off to ZZZ1 Approach and cleared to 2,600 feet and then 2,400 feet on our approach to the ZZZ Airport.

Narrative: 2

Flying IFR at night passing 7,000 feet during descent we encountered icing conditions. As we were leveling off at 5,000 feet our airspeed started dropping quickly. We were attempting to maintain our airspeed and request a lower altitude from approach control

but the frequency was busy. At that point our airspeed indication went out and was unavailable. We may have deviated from our altitude before we got a clearance to descend and maintain 3,000 feet from ZZZ Approach, it was a busy time in night IMC conditions. We were subsequently handed off to ZZZ1 Approach and cleared to 2,600 feet and then 2,400 feet on our approach to the ZZZ Airport.

Synopsis

PA-30 flight crew reported difficulties maintaining airspeed and altitude in icing conditions. The flight crew requested vectors to land at destination airport.

Time / Day

Date : 202212

Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.MSL.Single Value : 14000

Environment

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 10

Light : Daylight

Ceiling.Single Value : 12000

Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Personal

Make Model Name : Small Aircraft

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : SVFR

Mission : Personal

Flight Phase : Cruise

Route In Use : Vectors

Airspace.Class E : ZZZ

Component

Aircraft Component : Instrument and Control Panels

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Total : 4700

Experience.Flight Crew.Last 90 Days : 25

Experience.Flight Crew.Type : 2000

ASRS Report Number.Accession Number : 1962479

Human Factors : Troubleshooting

Human Factors : Time Pressure

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Detector.Person : Flight Crew
Miss Distance.Vertical : 2000
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Took Evasive Action

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

Took off IFR from ZZZ at XA: 36 with destination of ZZZ1. Flew SSE to cruise climb and avoid cloud building and reported turbulence over the [mountains]. Received clearance to fly VFR on top in order to have directional and altitude autonomy as we approached the [mountains]. I was originally going to go south of Lake and I noticed that I had what appeared to be a clear shot of lower-level clouds to cross the [mountains] toward a passage area. I began the path as the windward clouds seemed to be ascending with us as we also began to feel increasing light up to moderate turbulence. I kept our climb toward my goal of 14,000 ft when I experienced a sudden downdraft that I resisted as our climb and airspeed began to dwindle. We began to losing altitude and entered into the top of the cloud below us around XB: 20. I immediately turned right toward lower terrain anticipating break-out toward apparent earlier clearing, but we continued to descend while picking up immediate rime ice. I notified [approach of] our icing dilemma the windshield immediately occluded building to about a quarter inch over the leading wing edge as we also began losing prop thrust. I was instructed to turn left and attempted but my attitude indicators were in disagreement, secondary showing left 25 and primary showing 35-degree left bank. I began descending to avoid stalling and informed [approach] that I needed to concentrate on keeping wings level as we dropped over two thousand ft. and broke back out into the clear. I maneuvered to stay clear of clouds and terrain tops as I arrested the descent, regained airspeed, and ice began to slowly diminish from all surfaces and we progressed on to ZZZ1. I commend ATC for advisories and assistance. I admonish myself for taking the "sucker hole" clearing over the valley to avoid the restricted areas. My "do overs" would be the following: Lighter on the fuel weight, further southern crossing and get my AI looked at.

Synopsis

Pilot reported encountering downdrafts in icing conditions resulted in loss of thrust and an uncommanded descent. After reaching a lower altitude where VFR conditions prevailed, control was regained and the flight continued safely.

Time / Day

Date : 202301

Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.MSL.Single Value : 7000

Environment

Flight Conditions : IMC

Light : Daylight

Aircraft

Reference : X

Aircraft Operator : Corporate

Make Model Name : Beechjet 400

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Passenger

Flight Phase : Descent

Route In Use : Vectors

Component : 1

Aircraft Component : Horizontal Stabilizer Control

Aircraft Reference : X

Problem : Malfunctioning

Component : 2

Aircraft Component : Aerofoil Ice System

Aircraft Reference : X

Problem : Malfunctioning

Person : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Corporate

Function.Flight Crew : Pilot Not Flying

Function.Flight Crew : Captain

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

ASRS Report Number.Accession Number : 1961479

Human Factors : Troubleshooting

Human Factors : Situational Awareness

Person : 2

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Corporate
Function.Flight Crew : Pilot Flying
Function.Flight Crew : First Officer
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Air Transport Pilot (ATP)
ASRS Report Number.Accession Number : 1961482
Human Factors : Situational Awareness
Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Automation : Aircraft Other Automation
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.General : Maintenance Action
Result.General : Flight Cancelled / Delayed
Result.Flight Crew : Landed As Precaution

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Primary Problem : Aircraft

Narrative: 1

On descent into ZZZ setting up for the ILS XX passing through 7,000 ft., the Icing Light had Illuminated. Power was retarded and Wing Heat and Tail Ice Protection was applied. Immediately on Tail Ice Selection the Red Warning Light Illuminated indicating that there was a Tail Ice Failure. Captain recognized light and turned off and re selected Tail Ice after confirming Tail Ice Protection circuit breaker was in. Again Tail Ice failed. The Captain being Non Flying Pilot, used QRH for the Tail Ice Failure procedure. Approach was briefed along with the differences of QRH. New landing distance was calculated. Approach was completed with a landing. After clearing the Runway, advised Tower some tests were completed and advised Maintenance.

Narrative: 2

On descent into ZZZ we had ATC reports of tops and bottoms and negative icing. We encountered icing conditions and began to configure airplane for flight in icing. Upon turning on H Stab Anti/deice, Master Warning immediately went off and H Stab Fail Annunciator came on. Name continued Pilot Flying duties and Name1 as Pilot Monitoring, grabbed the QRH and ran through our H Stab Failure checklist, followed by approach to land 10 degrees flaps checklist. After landing and taxiing off the Runway, we reset systems and tested the H Stabilizer Failure Light illuminated and stayed on, test was a failure. No suggestions, not a preventable occurrence. Procedures were followed and safe conclusion of flight.

Synopsis

Beechjet 400 flight crew reported Tail Ice Protection failure during IMC conditions. Flight crew was unable to restore Ice Protection for the Horizontal Stabilizer and continued the approach to landing at destination airport.

Time / Day

Date : 202212

Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.AGL.Single Value : 0

Aircraft

Reference : X

Aircraft Operator : Air Taxi

Make Model Name : Airliner 99

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 135

Flight Plan : IFR

Flight Phase : Parked

Person

Location Of Person : Gate / Ramp / Line

Reporter Organization : Air Taxi

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Captain

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Commercial

Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1961478

Human Factors : Situational Awareness

Events

Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy

Anomaly.Ground Event / Encounter : Weather / Turbulence

Anomaly.Ground Event / Encounter : Loss Of Aircraft Control

Detector.Person : Flight Crew

When Detected : Pre-flight

Result.General : Release Refused / Aircraft Not Accepted

Result.General : Flight Cancelled / Delayed

Assessments

Contributing Factors / Situations : Company Policy

Contributing Factors / Situations : Human Factors

Contributing Factors / Situations : Procedure

Contributing Factors / Situations : Weather

Primary Problem : Company Policy

Narrative: 1

Plane was in the hangar overnight after the ice storm impacting ZZZ, and was clean without ice when cargo was loaded. When cargo was finished loading and I called for

release, we noted that the ATIS was now showing moderate freezing rain and thus according to GOM was not allowed to dispatch. After a 1:30-2 hour long delay the ATIS showed moderate rain, however the outside air temp was -1, but we reached a decision to attempt de-ice of the plane and launch, if I was comfortable with conditions on the taxiway and runway. The ramp was covered with about 1-2 inches of solid ice, with slush and snow present. Aircraft X was towed out into the alleyway between planes, and deice was started. The deice fluid melted through thin portions of ice before sliding in between the ice layer and the ramp surface, causing an extremely slick surface on top of ice that could move on top of the ramp ground. I was in the process of doing a surface contamination check on the left horizontal tail surface when the crosswind picked up, however I was not looking at the plane and only felt myself getting knocked down into the ice from the tail. No injuries were felt, the plane slid around 85-90 degrees into the wind. The plane only had one pair of chocks on the left main at that time. I called off deice and concurred with Dispatch that operations were cancelled for the remainder of the day. When I got knocked into the ground by the plane. Bad icing weather, an attempt to push for departure even with unsafe ramp conditions, and indecisiveness on whether or not all flights should be cancelled. Plane also only had one pair of chocks for deice in windy conditions. Immediately rechocked the plane when it was safe to do so, and told the deice truck to leave the area and told Dispatch it was not safe on the ramp with current winds. There should be a defined condition where all operations on ramp cease. Operations and Dispatch agreed that weather was bad enough that some planes would be grounded and flights cancelled, but other planes loaded and attempt to launch. Ramp was also slick, with heavy ice accumulation, and consideration should be given to using the hangar for cargo load in order to prevent further ice buildup on plane.

Synopsis

Airliner 99 pilot reported severe icing conditions resulting in flight cancellation.

Time / Day

Date : 202212

Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Personal

Make Model Name : Piper Single Undifferentiated or Other Model

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Flight Phase : Cruise

Airspace.Class E : ZZZ

Person

Location Of Person.Facility : ZZZ.ARTCC

Reporter Organization : Government

Function.Air Traffic Control : Enroute

Qualification.Air Traffic Control : Fully Certified

Experience.Air Traffic Control.Time Certified In Pos 1 (yrs) : 5

ASRS Report Number.Accession Number : 1961141

Human Factors : Workload

Human Factors : Time Pressure

Events

Anomaly.ATC Issue : All Types

Anomaly.Deviation - Altitude : Overshoot

Anomaly.Deviation - Track / Heading : All Types

Anomaly.Deviation / Discrepancy - Procedural : Clearance

Anomaly.Ground Event / Encounter : Loss Of Aircraft Control

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : CFTT / CFIT

Detector.Person : Air Traffic Control

When Detected : In-flight

Result.Flight Crew : Requested ATC Assistance / Clarification

Result.Air Traffic Control : Issued New Clearance

Result.Air Traffic Control : Issued Advisory / Alert

Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Airspace Structure

Contributing Factors / Situations : Chart Or Publication

Contributing Factors / Situations : Human Factors

Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

Aircraft X came to me from ZZZ Approach reporting light icing. I had informed ZZZ approach that due to my MIA's I would not be able to turn or descend this aircraft until the vicinity of ZZZ1. I let the pilot know I would descend them to my lowest usable altitude of 8000 ft. in less than two minutes. Shortly after, Aircraft X showed descending to 8700 ft. in the 9000 ft. MIA block. I asked them to verify level at 9000 ft. and the altimeter, as this commonly happens in this area as they change altimeters. They said they were unable to maintain their altitude due to icing. I called a low altitude alert and told them to maintain 9000 ft. if possible. Once they entered the 8000 ft. block I descended them to 8000 ft. They were supposed to turn south, which would keep them clear of a neighboring 9000 ft. block, but they did not make the turn. I turned them XXR at first, then eventually put them on a 150 heading when they turned too slow to miss the block and called a low altitude alert for the 9000 ft. block they had turned in to. At this point they were still slowly descending and it became clear they needed to land now. I offered them ZZZ2, as it was the closest airport, and they accepted. I called ZZZ3 and told them the situation and coordinated 7000 ft. altitude and 090 heading to get them to ZZZ2. The aircraft was still descending so I asked them to try to maintain 7000 ft. for the next sector and called another low altitude alert. I put them on the 090 heading and eventually changed them to ZZZ3's frequency. The pilot was clearly in distress so I did not ask them the type of icing while I had them, but later called ZZZ3 for a report and was told the icing was severe mixed icing. I put in the PIREP and informed that other aircraft in my sector that may be affected by this. We had no other reports of icing in this area today, so there was no way of knowing it was going to happen. In the future I could inform ZZZ approach perhaps to have the aircraft return to ZZZ if they were getting bad icing at 9000 ft. my lowest usable altitude.

Synopsis

A Center Controller reported an aircraft encountering icing descended below the Minimum Vectoring Altitude.

Time / Day

Date : 202212

Local Time Of Day : 0001-0600

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Environment

Flight Conditions : Mixed

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Rain

Weather Elements / Visibility.Visibility : 3

Light : Night

Ceiling.Single Value : 800

Aircraft

Reference : X

ATC / Advisory.Tower : ZZZ

Aircraft Operator : Air Taxi

Make Model Name : Aero Commander 500 Series

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 135

Flight Plan : IFR

Mission : Cargo / Freight / Delivery

Flight Phase : Landing

Airspace.Class D : ZZZ

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Taxi

Function.Flight Crew : Captain

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Total : 8400

Experience.Flight Crew.Last 90 Days : 264

Experience.Flight Crew.Type : 300

ASRS Report Number.Accession Number : 1961081

Events

Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy

Anomaly.Ground Excursion : Runway

Anomaly.Ground Event / Encounter : Loss Of Aircraft Control

Anomaly.Ground Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Regained Aircraft Control

Assessments

Contributing Factors / Situations : Airport

Contributing Factors / Situations : Human Factors

Contributing Factors / Situations : Weather

Primary Problem : Weather

Narrative: 1

I ran into heavy freezing rain and icing on approach to Runway XX, the TKS (Aircraft Deicing System) handled airframe icing normal, windshield deicing became minimal. there was a strong north crosswind on landing. Slowing to a taxi speed with the crosswind on a glazed iced runway, the steering became nil at slow speed and the aircraft slowly drifted off the edge of the runways landing surface. Braking effectiveness became nil. Aircraft slid slowly sideways after rudder control at a low taxi speed became ineffective. TKS required continuous use from MLI and was at 3 gallons remaining on approach. It was safer to land in these conditions, than attempt a flight on with minimal deicing TKS fluid remaining, while in moderate to heavy icing. Windshield became 80% iced over precluding adequate visibility to circle to Runway XY. Tower reported braking action 5 good. No aircraft damage occurred, and nothing was struck, just simply had a drifting excursion off the side of the runways main tarmac. Did not get into soft soil and was on reinforced tarmac edge. After inspection while parked, then with the assistance of airport personnel, I was able to restart and slowly exit the runway and taxi onto the ramp.

Synopsis

AC50 pilot reported a runway excursion resulted during landing roll out due to runway icing.

Time / Day

Date : 202212

Local Time Of Day : 0001-0600

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.AGL.Single Value : 0

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Snow

Weather Elements / Visibility.Visibility : 1.5

Ceiling.Single Value : 700

Aircraft

Reference : X

ATC / Advisory.Tower : ZZZ

Aircraft Operator : Air Taxi

Make Model Name : Challenger 350

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 135

Flight Plan : IFR

Mission : Passenger

Flight Phase : Takeoff / Launch

Airspace.Class C : ZZZ

Person : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Pilot Not Flying

Function.Flight Crew : Captain

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Total : 6500

Experience.Flight Crew.Last 90 Days : 200

Experience.Flight Crew.Type : 2500

ASRS Report Number.Accession Number : 1958413

Human Factors : Workload

Human Factors : Situational Awareness

Human Factors : Time Pressure

Person : 2

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

Function.Flight Crew : First Officer

Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Last 90 Days : 60
Experience.Flight Crew.Type : 250
ASRS Report Number.Accession Number : 1958434
Human Factors : Workload
Human Factors : Situational Awareness
Human Factors : Time Pressure

Events

Anomaly.Ground Event / Encounter : Loss Of Aircraft Control
Anomaly.Ground Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Regained Aircraft Control
Result.Flight Crew : Rejected Takeoff
Result.Flight Crew : Returned To Gate

Assessments

Contributing Factors / Situations : Airport
Contributing Factors / Situations : Weather
Primary Problem : Ambiguous

Narrative: 1

Our flight blocked out and proceeded to the de-icing pad. The weather was winds 050 at 14 kts, 1 ½ miles visibility, light snow, and braking action. Once de-icing procedures were completed, we continue taxiing for a Runway XX departure. Once we received our take-off clearance and completed all checklist, we lined up for departure. I observed the Pilot Flying, the First Officer (FO) slowly advancing the throttles to take-off power and we began take-off roll. The FO had the yoke turned into the wind for crosswind control. I the Non-Flying, pilot call "power set", as we began to accelerate, I called "airspeed alive", and all operations were normal and maintaining a center line track. I made the 80 kt. call out and was confirmed by the FO. Moments later the aircraft began to veer to the left, at approximately 2000 ft. down the runway. At this point the FO began to put inputs to maintain center line alignment. Realizing the continued input were not helping and we were unable to maintain directional control, we initiated an aborted take-off. At this time the aircraft continued move toward the left edge of the runway. The FO continued to attempt to regain control. As we were on the left edge of the runway, the FO was able to gain minimal directional control that kept the aircraft from exiting the runway. Once the aircraft was under control, we came to a stop, advised the Control Tower we aborted take-off due to loss of directional control. We exited the runway via the taxiway, completed the rejected take-off and after landing checks, then taxied back to parking.

Narrative: 2

We initiated a take-off on Runway XX at ZZZ. The reported weather at the time had winds of 050 at 14 kts, visibility of 1.5 miles with light snow. Runway braking action was reported as 3/3/3. We had just completed ground deice and anti-ice procedures and experienced no delays in our taxi to the runway. During the taxi, we completed all required checklist. As we were taxiing, ground crews were performing contamination removal procedures of the runway. At this time, directional control and braking were

normal. As we neared the Runway XX for departure, we received our take-off clearance. As the Pilot Flying, I called for the runway lineup checklist. As the Non-Flying pilot, the Captain completed the checklist and announced that it was complete. At this point we had no indication of any faults with the aircraft. Next, I slowly advanced the power levers, applied crosswind corrections and called for the Captain to set take-off power to which Captain replied "power set." The aircraft tracked center line and accelerated normally. The Captain then stated, "airspeed alive." Captain then made the 80 kts. call out which I confirmed. Shortly after this, about 2000 ft. down the runway, the aircraft began to veer to the left. I slowly decreased crosswind control and applied right rudder in an attempt to maintain center line. The plane continued to the edge of the runway. It was at this point that I realized that I did not have control of the aircraft and I initiated the abort. We continued toward the edge of the runway and I was able to keep the right main landing gear on the pavement as we tracked down the runway for approximately 2000 ft. We crossed the intersection of taxiway X and I was able to slowly bring the aircraft back to center line, regain control, and came to a stop. We advised Tower that we had aborted the take-off due to a loss of directional control and that we needed to return to the FBO ramp. Upon clearing the runway, we completed the rejected take-off checklist and after landing checks. We checked with our Flight Attendant (FA) to ensure our passengers were ok. After parking on the ramp, we completed a shutdown check.

Synopsis

Challenger 350 flight crew reported a loss of directional control during the take-off roll. The pilots rejected the take-off and returned to the FBO.

Time / Day

Date : 202212

Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZZZ.TRACON

State Reference : US

Altitude.MSL.Single Value : 2100

Environment

Flight Conditions : Marginal

Weather Elements / Visibility : Icing

Aircraft

Reference : X

ATC / Advisory. TRACON : ZZZ

Aircraft Operator : Personal

Make Model Name : Tobago TB-10

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Flight Phase : Descent

Route In Use : Vectors

Airspace.Class E : ZZZ

Person

Location Of Person.Facility : ZZZ.TRACON

Reporter Organization : Government

Function.Air Traffic Control : Approach

Experience.Air Traffic Control.Time Certified In Pos 1 (yrs) : 4

Experience.Air Traffic Control.Time Certified In Pos 1 (mon) : 6

ASRS Report Number.Accession Number : 1957535

Human Factors : Distraction

Human Factors : Time Pressure

Human Factors : Workload

Human Factors : Human-Machine Interface

Events

Anomaly.Aircraft Equipment Problem : Less Severe

Anomaly.ATC Issue : All Types

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude

Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : CFTT / CFIT

Detector.Automation : Air Traffic Control

Detector.Person : Flight Crew

Detector.Person : Air Traffic Control

When Detected : In-flight

Result.Flight Crew : Returned To Clearance

Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Issued Advisory / Alert
Result.Air Traffic Control : Provided Assistance
Result.Air Traffic Control : Issued New Clearance

Assessments

Contributing Factors / Situations : Environment - Non Weather Related
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Procedure
Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

I was working ZZZ's radar position with all sectors combined to one because traffic was low mainly due to bad weather in the area. There were low ceilings throughout the airspace (around 800 ft. at ZZZ, ZZZ1, ZZZ2) and reports of rime icing mainly at 5000 ft. and higher. As I was scanning the scope I suddenly noticed that a target that ZZZ Center was working at 9000 ft. had descended to below 8700 ft. and begun flashing to me. I assumed there was an issue with the aircraft as an amended flight plan printed off and showed ZZZ as their new destination. After checking on the frequency, and me briefly coordinating with ZZZ Center the pilot advised that they were encountering rime icing and were descending. Based off of earlier PIREPs I believed the icing would improve around 5000 or 4000 ft. I ultimately issued 4000 ft. After a short time, I noticed the aircraft still had a rapid rate of decent and was below 4000 ft. The MVA in that area is 3000 ft. so I asked the pilot if they could maintain 3000 ft. and told them that 3000 ft. was my lowest usable altitude. The pilot responded that they would try but were still getting icing. Unfortunately the pilot was unable to maintain 3000 and continued to descend below my MVA. At this point I started communicating with the pilot in plain English because I really needed them to understand that my MVA was 3000 ft. which meant that obstructions were around 2000 ft. Once the scope created the low altitude alarm, I started to issue a Low Altitude Alert but before I could fully finish the full phraseology I said disregard. I'm not sure why this happened in the moment but it was probably because myself and the Supervisor were discussing the best course of action, and I wanted to finish hearing their thoughts before transmitting more in case they didn't agree with the current transmission. Ultimately I went right back to the pilot and issued an immediate climb. Proper phraseology was slightly broken up, but I feel the important info got to the pilot. The lowest I saw the aircraft was around 2000 ft, and because I knew this was a situation, and the pilot was also trying to prevent a stall situation I used more plain English to simply tell the pilot to maintain above 2100 ft. no matter what to avoid whatever terrain/obstructions might be there. At that point it was clearly a priority, especially since the bases throughout the airspace were so low. After a few minutes the pilot seemed to recover and start a slow climb, so I thought it best to leave the pilot be and waited a few more minutes to confirm maintain 3000 and asked if they were ready for vectors to the ILS XX at ZZZ. The pilot ultimately landed safely after an ILS approach, and also advised that they lost their airspeed indicator during the event. In summary, I had to use plain English and issue a "soft" clearance to tell this aircraft to maintain what I knew to be an altitude clear of terrain and obstructions, but it was below my MVA. Additionally, by low altitude alert phraseology was broken up over the course of the event, but I feel it still conveyed the proper information to the pilot in a way that didn't overload them. I hope the pilot of the aircraft had the proper weather forecast and knew the conditions they would be experiencing. This weather system was forecasted several days in advance. Not taking a

plane without the proper de-ice and anti-ice into this weather would have prevented this situation. I am glad that the pilot took action when they did.

Synopsis

A TRACON Controller reported an aircraft encountering icing could not maintain altitude and descended below the Minimum Vectoring Altitude.

Time / Day

Date : 202211

Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Relative Position.Angle.Radial : 330

Altitude.MSL.Single Value : 6000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 12

Light : Daylight

Ceiling.Single Value : 4100

Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Personal

Make Model Name : M-20 M Bravo

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Climb

Route In Use.Other

Airspace.Class G : ZZZ

Component : 1

Aircraft Component : Autopilot

Aircraft Reference : X

Problem : Failed

Component : 2

Aircraft Component : Speedbrake/Spoiler

Aircraft Reference : X

Problem : Improperly Operated

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Single Pilot

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Commercial

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine
Experience.Flight Crew.Total : 1174
Experience.Flight Crew.Last 90 Days : 30
Experience.Flight Crew.Type : 120
ASRS Report Number.Accession Number : 1950306
Human Factors : Workload
Human Factors : Time Pressure
Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Ground Event / Encounter : Loss Of Aircraft Control
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Diverted
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

Departed ZZZ2 under VFR and a 4100 ft. ceiling with the intention to climb to FL 230 while presumably still north of forecast icing south and east of ZZZ1. This was all to occur before turning east on course, by then well above the forecast icing of between 6000 and 20000 ft. in the area south and east of ZZZ1. While I filed to overfly ZZZ then ZZZ3, ATC cleared a route to the south, which I rejected with clearance delivery as too close to the airmet boundaries. They instead agreed to have me overfly ZZZ4 then ZZZZZ, which likely made no difference in my overall judgement error and outcome. Climbing through 5000 I noted light rime building on the leading edges and windscreen. Pitot heat was on before becoming IMC and I activated weeping wing, defrost and windscreen deice. At the same time the Autopilot had malfunctioned and not engaged either heading or navigation modes and repeated cycling of its power toggle failed to achieve navigation capture. Further, I inadvertently extended the speed brakes while level at 6000 with too brick hand movements and when I noticed I found they had frozen extended and asymmetrically and could not be retracted. I asked ATC for an immediate climb above 10000, the reported tops, but they could not due to conflicting ZZZ1 traffic. I then [requested priority handling] and asked for an immediate descent and nearest airport landing which they gave me. With the brakes out, the windscreen obscured and no Autopilot to lean on, I nearly lost control. I focused on keeping wings level, small turns to maintain direction and a gentle descent, no more than 500 fpm. Upon breaking out at 2500 I was in VMC and had an otherwise uneventful arrival at ZZZ5. Tower cleared me to their Runway XX but Runway X was straight ahead and I queried them on final and landing was approved, any runway. After arrival at the FBO there was still rime ice on small areas of the leading edges and the speed brakes which eventually retracted as the ice melted. Lessons learned: icing forecasts are not geographically exact, flight into known icing capability may not save

one's life, avoid rapid hand movements that could extend speed brakes at a bad time, delay departure until icing forecasts are well away from climb to cruise altitude.

Synopsis

M20M pilot reported experiencing a rapid accumulation of unexpected icing despite icing equipment and reported other equipment failures, which resulted in deviation.

Time / Day

Date : 202209

Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Relative Position.Distance.Nautical Miles : 0

Altitude.AGL.Single Value : 0

Environment

Flight Conditions : VMC

Weather Elements / Visibility.Visibility : 10

Light : Daylight

Ceiling.Single Value : 7000

Aircraft

Reference : X

Aircraft Operator : Personal

Make Model Name : Epic LT

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Landing

Route In Use : Visual Approach

Component : 1

Aircraft Component : Propeller Ice System

Aircraft Reference : X

Problem : Malfunctioning

Component : 2

Aircraft Component : Autoflight System

Aircraft Reference : X

Problem : Malfunctioning

Component : 3

Aircraft Component : Air Data Computer

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Flight Instructor
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 3100
Experience.Flight Crew.Last 90 Days : 75
Experience.Flight Crew.Type : 42
ASRS Report Number.Accession Number : 1938259
Human Factors : Situational Awareness
Human Factors : Troubleshooting
Human Factors : Confusion

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Ground Event / Encounter : Loss Of Aircraft Control
Anomaly.Ground Event / Encounter : Ground Strike - Aircraft
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Automation : Aircraft Other Automation
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.General : Maintenance Action
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Regained Aircraft Control
Result.Aircraft : Aircraft Damaged

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Aircraft

Narrative: 1

The incident occurred during the final landing of a three segment, daytime trip involving actual instrument conditions. The en route portion was conducted at FL340. Descent to landing would require descent through a region of moisture above the freezing level on the upwind side of the ZZZ1. ATC was queried prior to the descent for any active icing reports with none reported in the area of the flight. The approach over the mountains and into the sea level airport would require multiple step down altitudes increasing the time spent in potential icing conditions. Pitot heat is routinely used in this aircraft when operating at high altitude whether or not there is visible moisture. During the initial descent a fault was detected in the inertial separator mechanism and an error message displayed to the pilot on the Crew Alerting System (CAS). As per the PIM the circuit breaker was pulled rendering the system inoperative. The temperature at the airport was +19 C and any inadvertent ice accumulated during the descent was expected to dissipate. As a precaution propeller heat was turned on prior to entering the clouds. AWOS at the destination airport was monitored several times during the descent. The last report included wind at 210/6 kts, 4500 ft. scattered, 7000 ft. overcast. A request was made for a possible visual approach along with a fallback RNAV approach. The aircraft exited the cloud deck around 6400 ft., but the lower level scattered clouds obscured portions of the ground and airport initially. At 5200 ft. the conditions were good enough to allow for VFR continuance and cancellation of the IFR clearance was made prior to descending into the airport traffic area. The aircraft had been appropriately slowed with take-off flaps selected and the prelanding

checklist run during the descent in clouds. There was no traffic in the area at or below 5200 ft. and altitude was lost by performing a series of turns with the autopilot disengaged while extending the gear and selecting landing flaps ending with proper positioning for a 2 - 3 mile final approach. The final approach was stabilized with an IAS of 95 - 100 kts. Over the threshold power was completely reduced and a round out-to-flare was commenced. As the nose started to pitch up an aural warning of an impending stall started followed rapidly by an aural "Push Push" with stick pusher engagement. The nose pitched down and the nose gear wheel barrowed with continuous stick down pressure which could not be overcome by the Pilot in Command (PIC). The PIC held down the AP/Trim disengagement switch and expected this to result in disengagement of the stick shaker/pusher. When the stick pusher stopped the back pressure exerted by the PIC on the control column led to ballooning and the aural "Push Push" with stick pusher engagement immediately started again. The PIC re-asserted the AP disengagement switch which did stop the process from occurring a third time and the final porpoise was controlled manually without further incident. Reverse thrust was used after stabilization on the ground, the aircraft handled normally on taxiing all the way to its regular tie down spot over a mile from the runway turnoff. Following a normal shutdown sequence with stable engine instrument indications, inspection of the propeller demonstrated limited damage to the distal tips of the composite blades. After securing the aircraft the runway was walked and closely inspected for evidence of damage or FOD neither being found. Discussion with the manufacturer's representative after the incident pointed to the use of propeller deice automatically engaging the ICE PUSHER MODE leading to the strong stick shaker/pusher action when the aircraft is slowed to what would otherwise be a normal approach speed. The rapid unexpected sequence of stick pusher engagement at a probable 5 ft. or less over the runway during round out was the proximate cause of the incident. The commanded pitch down was exacerbated by the deployment of landing flaps during the last phase of the circle-to-land while failing to note a CAS message which would have announced the ICE PUSHER MODE engagement. While the PIC thought that he had managed to stop the first stick pusher sequence by holding the AP/Trim disengagement switch the required 2 seconds, this proved not to be the case. The secondary incipient stall caused by the initial automated disengagement of the stick pusher led in turn to re engagement of the system and a second porpoise which the PIC was not able to overcome in time to avoid a repeat of the nose wheel first contact. The final ballooning was controlled by the PIC without significant difficulty after he had managed to disengage the system. The entire sequence of events leading up to the incident started with a concerning distraction (INERT SEP FAILURE) during descent into possible icing conditions. The CAS message warning of the automated ICE PUSHER MODE would have occurred proximate to the final phases of the flight during which additional distractions contributed to increased pilot workload: 1) the series of step down altitude clearances while dealing with mountain turbulence/airspeed variations; 2) the combination of an overcast with lower scattered clouds leading to a position where the aircraft needed to lose additional altitude close in to the airport in order to complete a visual approach; 3) the rapid transition from an IFR descent with potential icing to marginal VFR conditions followed by the final visual approach. While the aircraft is not currently certified for flight into known icing conditions it has a complete suite of functions needed to achieve icing certification including the automated ICE PUSHER MODE. Ground school includes instruction on the proper configuration of the aircraft when the ICE PUSHER MODE automatically engages, but there is limited additional discussion of the anti-ice systems for context since the aircraft is not currently certified. No further specific training in these features was offered in the simulator or in the actual aircraft. The ICE PUSHER MODE system clearly exists for an important reason, but akin to other automated systems (e.g. Boeing MCAS) formal instruction in and introduction to recovering from an inadvertent triggering are very important for the new trainee. Increased emphasis should probably be placed on the actual consequences of the ICE PUSHER MODE: an approach to

landing can rapidly convert to a significant control situation during round out with little or no prior aerodynamic or aural warning. Simulator training might demonstrate the best way to recover from this situation during the final landing stages is to add go around power when the first unexpected aural warning is heard or that the application of power is a poor choice to be avoided.

Synopsis

Epic LT pilot reported systems failures and a failure to recognize a configuration issue caused a loss of control during landing, causing a propeller strike.

Time / Day

Date : 202209

Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 7500

Environment

Flight Conditions : VMC

Weather Elements / Visibility.Visibility : 10

Light : Daylight

Ceiling.Single Value : 25000

Aircraft

Reference : X

Aircraft Operator : Personal

Make Model Name : Cessna 150

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : None

Mission : Personal

Flight Phase : Cruise

Route In Use : Direct

Component

Aircraft Component : Reciprocating Engine Assembly

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Private

Experience.Flight Crew.Total : 320

Experience.Flight Crew.Last 90 Days : 25

Experience.Flight Crew.Type : 216

ASRS Report Number.Accession Number : 1937766

Human Factors : Troubleshooting

Human Factors : Human-Machine Interface

Events

Anomaly.Aircraft Equipment Problem : Critical

Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Diverted

Result.Flight Crew : Inflight Shutdown

Result.Flight Crew : Landed in Emergency Condition

Result.Flight Crew : Overcame Equipment Problem

Assessments

Contributing Factors / Situations : Aircraft

Contributing Factors / Situations : Human Factors

Contributing Factors / Situations : Weather

Primary Problem : Aircraft

Narrative: 1

Observed partial power loss in flight followed by repeated intermittent complete power loss and corresponding descent. [Requested priority handling with] ATC upon complete power loss and spent approximately 13 minutes in forced descent above ZZZ1 trying to regain power with different mixture settings and carb heat settings. Checked fuel valve, primer, magnetos, carb heat operation, mixture settings, oil pressure and temperature with no change in performance. Lost roughly 4000 feet of altitude in descent and was able to regain marginal climb (50-100 fpm) at reduced power with use of carb heat. Selected ZZZ as target destination for runway length and services available and available airport spacing within glide distance along route. Climbed to 10,000 feet and followed route near airports to ZZZ. Observed slightly diminished cruise performance. Landed and back taxied with no apparent issues. Had A&P mechanics inspect fuel system and called multiple A&Ps to describe issues. Performed run-up and observed normal static RPM. After viewing carb icing chart and discussing with A&P mechanics it was determined atmospheric conditions were 90-100% relative humidity and likely caused severe carb icing. Proximity to water and dam spillways may have introduced additional moisture into the air. Coupled with poor carb heat performance known on O-200 engines, carb ice likely took a long time to melt. Future operations could avoid carb ice by periodic application of carb heat when operating in conditions with high relative humidity as determined in pre-flight planning from winds and temperatures aloft.

Synopsis

C-150 pilot reported engine failure in flight and diverted to a safe landing.

Time / Day

Date : 202209

Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Relative Position.Distance.Nautical Miles : 30

Altitude.MSL.Single Value : 28000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Light : Daylight

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Personal

Make Model Name : TBM 700/TBM 850

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Cruise

Route In Use : Direct

Airspace.Class A : ZZZ

Component

Aircraft Component : Propeller

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Private

Qualification.Flight Crew : Instrument

Experience.Air Traffic Control.Supervisory : 611

Experience.Flight Crew.Total : 900

Experience.Flight Crew.Last 90 Days : 40

Experience.Flight Crew.Type : 300

ASRS Report Number.Accession Number : 1931988

Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Diverted
Result.Flight Crew : Returned To Clearance
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

As I climbed to altitude in IMC I encountered light rime icing between FL200 and FL280 temps -5 to -22 C. Climb performance was decreased from use of the inertial separator. Deicing equipment was all turned on and working properly. Vibration of the airplane arose and was unexplained. I changed the propeller RPM and found the vibration to worsen. The CAS did not show any abnormality but because of the vibration it was decided that immediate descent and landing were appropriate. I [requested priority] and started a descent to ZZZ1 the nearest large airport. As I descended through VMC and warmer temperatures I saw the propeller sling ice off to the side and the vibration immediately disappeared. It was obvious to me what the cause and resolution to the vibrations were. The propeller had accumulated an unbalanced ice load causing the vibration. Once it had warmed the ice had melted off and the problem was resolved. I notified ATC via ZZZ Approach and asked to continue to original destination of ZZZ2. After landing I contacted my training CFI who confirmed that this was a normal procedure and information for future flights.

Synopsis

TBM pilot reported the aircraft started to vibrate during climb in icing conditions. Pilot descended to warmer conditions which caused the propeller to sling off accumulated ice and the vibrations to stop.

Time / Day

Date : 202208

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.TRACON

State Reference : US

Relative Position.Angle.Radial : 030

Relative Position.Distance.Nautical Miles : 8

Altitude.MSL.Single Value : 3000

Environment

Flight Conditions : VMC

Weather Elements / Visibility.Visibility : 30

Light : Daylight

Ceiling.Single Value : 25000

Aircraft

Reference : X

Aircraft Operator : Personal

Make Model Name : PC-12

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Descent

Route In Use : Visual Approach

Component : 1

Aircraft Component : Fuel

Aircraft Reference : X

Problem : Malfunctioning

Component : 2

Aircraft Component : Fuel Booster Pump

Aircraft Reference : X

Problem : Malfunctioning

Component : 3

Aircraft Component : Engine Fuel Filter

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Captain

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Flight Instructor
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Air Transport Pilot (ATP)
Experience.Flight Crew.Total : 14000
Experience.Flight Crew.Last 90 Days : 100
Experience.Flight Crew.Type : 3000
ASRS Report Number.Accession Number : 1927855

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : FAR
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Fuel Issue
Detector.Automation : Aircraft Other Automation
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.General : Maintenance Action
Result.General : Flight Cancelled / Delayed
Result.Flight Crew : Diverted
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Landed As Precaution
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Procedure
Primary Problem : Aircraft

Narrative: 1

While on the ZZZZZ arrival for landing at ZZZ fuel pressure fuel pump light came on. Stand-by pumps did not activate. Made precaution landing at ZZZ1 airport as required by the pilot operation quick reference check list. Aircraft landed with 220 gallons remaining. Maintenance personal thinks the fuel may have Gel in fuel particle separator. Aircraft fuel did have fuel anti icing agent prior to departure.

Synopsis

Pilot reported a fuel pressure fuel pump light illuminated during approach. The standby fuel pumps did not activate as expected and the Pilot made a precautionary landing and turned the aircraft over to Maintenance.

Time / Day

Date : 202206

Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.MSL.Single Value : 5400

Environment

Weather Elements / Visibility : Icing

Aircraft

Reference : X

ATC / Advisory.Tower : ZZZ

Aircraft Operator : Personal

Make Model Name : Skyhawk 172/Cutlass 172

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Route In Use : Direct

Airspace.Class D : ZZZ

Component

Aircraft Component : Carburetor

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Commercial

ASRS Report Number.Accession Number : 1910425

Events

Anomaly.Aircraft Equipment Problem : Critical

Anomaly.Deviation / Discrepancy - Procedural : FAR

Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Diverted

Result.Flight Crew : Overcame Equipment Problem

Result.Flight Crew : Took Evasive Action

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Weather
Primary Problem : Ambiguous

Narrative: 1

Possibly experienced severe carburetor icing during flight, in 70+ degree weather and about 50% humidity. During the procedures of pulling the carb heat, the aircraft continue to sputter, and when adding mixture the aircraft engine shut off, was able to restart in-flight and land at the nearest airport, with no damage to aircraft or personnel.

Synopsis

C172 pilot reported carburetor icing at 5,400 feet MSL. While trouble shooting, the engine shut off, but the pilot was able to re-start it in flight and safely landed at nearest airport.

Time / Day

Date : 202206

Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 20000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Rain

Light : Daylight

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Personal

Make Model Name : SR22

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Training

Flight Phase : Climb

Route In Use : Direct

Airspace.Class A : ZZZ

Component

Aircraft Component : Engine

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Instructor

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Commercial

Experience.Flight Crew.Total : 1260

Experience.Flight Crew.Last 90 Days : 190

Experience.Flight Crew.Type : 150

ASRS Report Number.Accession Number : 1907996

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Issued New Clearance
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

During a climb from 17,000 ft to FL250, intense rime icing was encountered at FL200. This led to a rapid buildup of ice on all surfaces at a rate that the onboard anti-icing system could not handle. Ice also accumulated in the engine air intake, leading to a reduction of thrust and an "alternate air open" CAS message. The decision was made to [ask ATC for assistance] and descend to 10,000. During the descent we advised ATC that we wanted XXL at ZZZ1 and asked for as low as possible. The icing that had accumulated on the wings fell off when descending through 15,000 ft. Intake icing and the Alt Air CAS message cleared at 7,000 ft. [ATC was advised we no longer needed assistance] and, after running the appropriate checklists and system checks, we continued on to [original destination] at 7,000 ft.

Synopsis

SR22T Pilot reported encountering icing conditions climbing through FL200 that resulted in power loss and necessitated a descent into warmer air.

Time / Day

Date : 202204

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.TRACON

State Reference : US

Altitude.AGL.Single Value : 1000

Environment

Weather Elements / Visibility : Fog

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 0

Ceiling.Single Value : 5000

Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Personal

Make Model Name : Skylane 182/RG Turbo Skylane/RG

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Climb

Airspace.Class C : ZZZ

Component

Aircraft Component : AC Generator/Alternator

Aircraft Reference : X

Problem : Failed

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Single Pilot

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Total : 2300

Experience.Flight Crew.Last 90 Days : 30

Experience.Flight Crew.Type : 50

ASRS Report Number.Accession Number : 1904957

Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Speed : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
Miss Distance.Vertical : 1000
When Detected : In-flight
Result.General : Maintenance Action
Result.Flight Crew : Diverted
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Landed in Emergency Condition

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

I was climbing in clouds over the ZZZ1 from ZZZ2 and my indicated airspeed started dropping. The airspeed indicator showed me losing airspeed so I put the plane in a dive so I wouldn't stall in IMC. I was about 2000 ft. AGL over the mountains at the time. The airspeed continued to drop off. I lost about 1000 ft. before I realized my pitot tube must be iced up. I turned on the pitot heat. I leveled the plane using the artificial horizon with zero airspeed indicating. The airspeed came back but as I made it out of the clouds but I realized my alternator had dropped off line. I turned it on and there was no difference. I realized it was not producing any amperage. The battery was slowly draining. I turned off what avionics I could but still didn't have enough power to make it to ZZZ3. I notified ATC that I could only make it to ZZZ4 and that I was gradually losing electrical power and would lose comms soon. They eventually approved me through the ZZZ5 class C. I dropped my gear and flaps and then lost all power including comms. As I flew into ZZZ4 I looked for the green lights from the Tower but could not find the Tower in my two attempts. I decided to look out for other planes and did a no electrical power landing. Once I was on the ground I saw the flashing green lights and taxied to transient parking at the FBO. One of the mechanics there Name fixed the problem. It was a wire connected to the alternator had broken off because it was over tightened and broke off when the alternator was installed.

Synopsis

C182 Pilot reported alternator failure while in IMC resulted in pitot tube icing, electrical failure and diversion.

Time / Day

Date : 202205

Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Relative Position.Angle.Radial : 270

Relative Position.Distance.Nautical Miles : 5

Altitude.MSL.Single Value : 6500

Environment

Flight Conditions : VMC

Weather Elements / Visibility : Haze / Smoke

Weather Elements / Visibility.Visibility : 10

Light : Dusk

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Personal

Make Model Name : Skyhawk 172/Cutlass 172

Operating Under FAR Part : Part 91

Flight Plan : VFR

Mission : Personal

Flight Phase : Cruise

Route In Use : Direct

Airspace.Class E : ZZZ

Component

Aircraft Component : Carburetor Heat Control

Aircraft Reference : X

Problem : Improperly Operated

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Captain

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Private

Experience.Flight Crew.Total : 155

Experience.Flight Crew.Last 90 Days : 17

Experience.Flight Crew.Type : 139

ASRS Report Number.Accession Number : 1901763

Human Factors : Confusion

Human Factors : Situational Awareness

Human Factors : Training / Qualification

Human Factors : Workload
Human Factors : Human-Machine Interface

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation / Discrepancy - Procedural : FAR
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Took Evasive Action
Result.Air Traffic Control : Provided Assistance
Result.Aircraft : Equipment Problem Dissipated

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Procedure
Contributing Factors / Situations : Weather
Primary Problem : Procedure

Narrative: 1

I was on a solo cross country flight in VFR conditions en route from ZZZ to ZZZ1. VFR conditions prevailed except for high winds (210 @ 15-19). There was a light haze and no ceiling along the entire route. The purpose of the flight was time building, and to have dinner with a friend in ZZZ1. I did not file a VFR flight plan, opting for VFR flight following. The surface winds at ZZZ initially gave me pause, but I calculated my crosswind component and conducted a crosswind takeoff procedure on Runway XX without incident. I was vectored south of ZZZ2 to avoid commercial traffic landing south, and then resumed own navigation to ZZZ1. The winds aloft were stronger than forecast in my briefing and I burned more fuel than planned due to the strong headwind flying westbound. I would have landed at ZZZ1 with less than 45 minutes of fuel remaining, which violates my personal minimums, so I opted to land at ZZZ3 to quickly refuel and continue on my journey. I took a normal fuel sample after refueling at ZZZ3, and quickly performed my checklists to continue on my journey, as I was already late for dinner in ZZZ1. I was back on course after refueling, cruising at 6,500 Ft. at 2450 RPM, with dusk quickly turning to night. I had leaned the mixture and I had the right wing fuel tank selected. I had deviated slightly north to avoid the active restricted area (artillery) and to stay under [the restricted area] on the approach into ZZZ1. I was approximately 5 miles west of ZZZ4. Suddenly and without warning the engine began to run very rough, followed by a loss of power all the way back to between 12-1300 RPM. My first real immediate situation as a pilot, but my training quickly kicked in. Aviate, I stabilized the aircraft in a low power glide. Navigate, I used the GPS and ForeFlight on my iPad to determine that ZZZ4 was the nearest airport and directly behind me. I turned the airplane to begin setting up for a precautionary landing into ZZZ4. Communicate, I requested priority handling with Center. Center quickly confirmed that ZZZ4 was my nearest and best available airport. I had the airport in sight, and more than enough altitude to make the runway. At this point I had several thoughts: 1. This is really happening. 2. I can make the airport, I am going to be ok, the engine is still running, do not panic. 3. Is there something wrong with the fuel I just put in the airplane? There was nothing wrong with the sample I took. 4. How am I getting home

now? My dog is unattended and I have to be at work in the morning. Checklist and Troubleshooting, I had a paper checklist available, but it was folded up, so I opted for memory items instead. Mixture rich, fuel selector both, move the throttle, carburetor heat out. When I applied carburetor heat, the engine RPM initially dropped further, but then spontaneously went back to full power. This is when I realized that I was encountering an extreme case of carburetor icing. With ZZZ4 still an option, I tested and was satisfied with the responsiveness of the throttle. With power restored, I decided that my situation no longer existed, aborted my precautionary landing, and continued to my destination, albeit slightly rattled by the event. I returned the aircraft to ZZZ later that evening without further incident. Aeronautical Decision Making (ADM): ADM that I am satisfied with: Obtaining a weather briefing in ForeFlight prior to the flight. Multiple and accurate crosswind component calculations before a crosswind takeoff. Flying with a ForeFlight Sentry ADS-B receiver to enhance situational awareness. Obtaining VFR flight following on every flight. Verifying the maintenance status of the rental aircraft that I was flying. Conducting a good pre-flight inspection and following checklists. Ensuring the aircraft is full fuel and oil before leaving on a long flight. Flying at high VFR altitudes to allow for better options in a priority situation. Calling minimum fuel and refueling at ZZZ3 rather than risking a fuel priority by continuing to ZZZ1 in a strong headwind. Verifying that my flight path would not violate the restricted areas around ZZZ1. Completing a deferred discrepancy report for the aircraft to be inspected by a licensed mechanic following this event. ADM that I can improve: Failure to recognize that conditions were favorable for carburetor icing. Failure to take steps to prevent carburetor icing, such as monitoring the carburetor temperature gauge and applying small amounts of carburetor heat as needed. The majority of my flight training occurred in fuel-injected aircraft where carburetor icing is not an issue. Do not be complacent. The decision to abort a precautionary landing and continue to my destination. Developing the opinion that the aircraft was airworthy again once the aircraft was operating normally and the situation condition ceased to exist. Reluctance to delay or cancel flights External Factors and Pressures: Wanting to be on time for dinner in ZZZ1. Wanting to impress the friend that I was flying to ZZZ1 to meet. Needing the flight time for my next airman certificate. Needing to return to my origin in a timely manner so that my dog would not be left unattended for an unreasonable amount of time. Needing to return to my origin in a timely manner so that I would be on time for work the next morning. Having to pay and be reimbursed for any aircraft expenses incurred while it is away from the home airport ("wet rental"). Being responsible for transportation back to the origin should the aircraft become unairworthy away from the home airport. Someone had the aircraft reserved after me. In the end, I get to learn a valuable lesson from this experience and apply that knowledge to be a better pilot. This report would be incomplete if I did not compliment the professionalism of the air traffic controllers at Center, Approach, and ZZZ1 Tower for contributing to the positive outcome of this experience.

Synopsis

C172 Pilot reported carburetor icing during flight. The Pilot took immediate action and turned on carburetor heat, the icing problem dissipated and the Pilot continued the flight to destination airport.

Time / Day

Date : 202205

Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Relative Position.Angle.Radial : 090

Relative Position.Distance.Nautical Miles : 37

Altitude.MSL.Single Value : 14000

Environment

Flight Conditions : IMC

Weather Elements / Visibility.Visibility : 1

Light : Daylight

Ceiling.Single Value : 15000

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Personal

Make Model Name : PA-28 Cherokee/Archer/Dakota/Pillan/Warrior

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Cruise

Route In Use : Direct

Airspace.Class E : ZZZ

Component

Aircraft Component : Engine

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Private

Experience.Flight Crew.Total : 711

Experience.Flight Crew.Last 90 Days : 67.6

Experience.Flight Crew.Type : 706

ASRS Report Number.Accession Number : 1899346

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

While flying at 14,000 in IMC the engine began to misfire - there was some very minor icing on the window at the time - OAT approximately - minus 19 degrees C - applied carb heat and richened mixture which made the misfiring more pronounced - asked for a descent and heading to nearest airport. Lost engine completely for several minutes and eventually was able to re-start at approx 5,200 feet.

Synopsis

PA-28 pilot reported engine misfiring at 14,000 feet then losing the engine completely for several minutes before eventually starting back up at 5,200 feet.

Time / Day

Date : 202203

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.TRACON

State Reference : US

Altitude.MSL.Single Value : 9400

Environment

Flight Conditions : Mixed

Weather Elements / Visibility : Rain

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Snow

Weather Elements / Visibility.Visibility : 5

Light : Daylight

Ceiling.Single Value : 5000

Aircraft

Reference : X

Aircraft Operator : Personal

Make Model Name : Embraer Legacy 600 (EMB135BJ)

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Initial Climb

Route In Use.STAR : ZZZZZ

Component

Aircraft Component : Pneumatic Valve/Bleed Valve

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Captain

Experience.Flight Crew.Total : 8200

Experience.Flight Crew.Last 90 Days : 48

Experience.Flight Crew.Type : 5200

ASRS Report Number.Accession Number : 1884954

Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : FAR
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Automation : Aircraft Other Automation
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Weather
Primary Problem : Aircraft

Narrative: 1

Upon departure from ZZZ airport, the non-flying pilot performing the after takeoff flow and checklist. After completed not long after takeoff, the aircraft entered icing conditions. I was still hand flying the aircraft as is normal procedure for that phase of flight. Noticing the 4 valves required to open in icing conditions to ensure that the aircraft was properly receiving bleed air to the appropriate surfaces I returned back to hand flying the airplane. A few seconds after entering icing conditions, we got a master caution warning and a Bleed 1 Leak. The non-flying Pilot was monitoring the bleed leak temperatures and commented that the Bleed Leak notification even before the bleed temperatures heated up. We ran the Bleed Leak Checklist. While running the bleed one leak checklist a bleed 2 overheat occurred and I reduced thrust lever angle and that seemed to resolve the issue. We exited icing conditions and the aircraft returned to normal operation however the bleed 1 leak remained. After running the bleed leak checklist we reduced the #1 engine thrust lever angle, as the checklist instructed and approximately 15 minutes after #1 engine TLA (Thrust Lever Angle) to idle, the Bleed 1 Leak notification went away. After the non-flying Pilot and I conferred about our options, we asked ATC to remain at 25,000 ft. and instructed ATC that we would be diverting from our original destination of ZZZ1 to ZZZ2. We did not [request priority handling] and we continued for approximately 45 minutes to ZZZ2 and landed without further incident at ZZZ2 airport.

Synopsis

Captain reported a bleed air valve malfunction affecting the anti icing systems occurred in cruise flight and resulted in a diversion.

Time / Day

Date : 202111

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZBW.ARTCC

State Reference : NH

Altitude.MSL.Single Value : 8000

Aircraft

Reference : X

ATC / Advisory.Center : ZBW

Make Model Name : Small Aircraft, Low Wing, 2 Eng, Retractable Gear

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Flight Phase : Cruise

Airspace.Class E : ZBW

Component

Aircraft Component : Aircraft Heating System

Aircraft Reference : X

Problem : Malfunctioning

Problem : Failed

Person

Location Of Person.Facility : ZBW.ARTCC

Reporter Organization : Government

Function.Air Traffic Control : Enroute

Qualification.Air Traffic Control : Fully Certified

Experience.Air Traffic Control.Time Certified In Pos 1 (yrs) : 6

ASRS Report Number.Accession Number : 1862012

Human Factors : Time Pressure

Events

Anomaly.Aircraft Equipment Problem : Less Severe

Anomaly.ATC Issue : All Types

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude

Anomaly.Deviation - Track / Heading : All Types

Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy

Anomaly.Deviation / Discrepancy - Procedural : Clearance

Anomaly.Ground Event / Encounter : Ground Equipment Issue

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : CFTT / CFIT

Detector.Person : Air Traffic Control

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Overcame Equipment Problem

Result.Air Traffic Control : Issued New Clearance

Result.Air Traffic Control : Issued Advisory / Alert

Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft

Contributing Factors / Situations : Weather

Primary Problem : Weather

Narrative: 1

Training on Sector X when the CIC told me there was an emergency at [Sector Y] and my pilot skills might be needed. I immediately terminated training and proceeded to Sector Y, where I plugged in with the Radar Controller and offered to assist. The previous sector had coordinated a malfunctioning heater. However, it was quickly apparent that we had a small aircraft that was icing up, at MIA, and could not hold altitude. Over the next 45 minutes, the Radar Controller, CIC, OM, Radar Associate, CWSU meteorologist, and myself worked the aircraft north and west toward lower MIA's and better weather. On several occasions the aircraft entered turns and descents without instruction to do so, and each time the Radar Controller provided simple, pertinent instructions that helped the pilot regain/maintain control of the aircraft. Another Controller team came back and took the airspace and other frequencies, so our team could concentrate solely on assisting the emergency aircraft. The aircraft was below MIA the entire time, and with no obstructions depicted I obtained a sectional chart and spent most of the emergency tracking the aircraft on the chart and calling out obstructions to the Radar Controller, who relayed that information to the pilot. Eventually the aircraft dropped out of communication and radar coverage, so we placed another aircraft on the frequency to act as a relay. Wheeler-Sack Airbase also called several times with position updates, as their radar could see him while ours could not. Eventually we were able to get confirmation that the aircraft had safely landed. We only then discovered that the aircraft was a small aircraft [type X], not a small aircraft [type Y] as the flight plan indicated. This incident happened because the aircraft flew into icing conditions. Our job was made significantly more difficult by the lack of depicted obstructions on our video maps. An Emergency Obstruction Video Map needs to be created for the facility.

Synopsis

Center Controller reported an aircraft had a heater problem, aircraft was icing up, and could not hold altitude.

Time / Day

Date : 202111

Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Relative Position.Distance.Nautical Miles : 15

Altitude.MSL.Single Value : 24000

Environment

Flight Conditions : VMC

Light : Daylight

Aircraft

Reference : X

Aircraft Operator : Personal

Make Model Name : Lancair Evolution

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Climb

Route In Use : Direct

Route In Use.Airway : DAG

Component

Aircraft Component : Pitot-Static System

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Single Pilot

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Private

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Total : 720

Experience.Flight Crew.Last 90 Days : 111

Experience.Flight Crew.Type : 55

ASRS Report Number.Accession Number : 1854765

Human Factors : Human-Machine Interface

Human Factors : Situational Awareness

Human Factors : Troubleshooting

Human Factors : Confusion

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation - Speed : All Types
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Landed As Precaution
Result.Flight Crew : Diverted
Result.Aircraft : Equipment Problem Dissipated

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Human Factors

Narrative: 1

Flew my plane from ZZZ to ZZZ1 to have lunch and get the plane washed. After lunch and wash, preflighted plane, filed to fly to ZZZ2 at FL270 (Note: It was in the mid 90sF at ZZZ and the low 80s in ZZZ1). Departed ZZZ1 and activated autopilot. Conditions were clear and at FL180 I turned the pitot heat on per check list. I did note that when I turned the pitot heat on, OAT temps were already -10c and thought nothing further. As we approached FL240 the plane began to pitch up nose high and airspeed dropped to zero. I disconnected autopilot, hand flew the plane and began to trouble shoot the issue. Since the pitot heat was on from FL180 to FL240 (2 mins?) I incorrectly assumed that the heat caused an issue. ATC cleared me for FL270 and my copilot correctly told them unable. We checked in with ATC and told them we lost airspeed and altitude indications. ATC said MODE C was reporting an altitude that we knew was what the airplane was showing but no longer correct. We knew we had a Pitot static issue but needed to determine why. My pilot/passenger correctly suggested that the appropriate action was to actually leave the pitot heat on and he was ultimately correct. We got a little airspeed indication on the instruments but was not enough to feel comfortable so co-pilot requested priority handling with ATC. We received vectors to an arrival procedure back to ZZZ. After about 5 mins all instruments returned to normal and we cancelled the priority handling. I landed without incident. ZZZ Airport Fire and Operations met us at my parking space to make sure we were OK. We suspect that the cause of the incident was water in the pitot tube from getting the plane washed at ZZZ1 exacerbated by me not turning on the pitot heat before the water in the pitot tube froze. Consider always flying with pitot heat on. Make OAT a more regular part of my scan

Synopsis

Lancair Evolution pilot reported pitot static system icing in climb. The pilot diverted and landed without incident.

Time / Day

Date : 202111

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Relative Position.Angle.Radial : 001

Relative Position.Distance.Nautical Miles : 12

Altitude.MSL.Single Value : 6500

Environment

Flight Conditions : VMC

Weather Elements / Visibility.Visibility : 50

Weather Elements / Visibility.Other

Light : Dusk

Aircraft

Reference : X

Aircraft Operator : Personal

Make Model Name : Cessna 150

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : None

Mission : Personal

Flight Phase : Cruise

Route In Use : Direct

Component

Aircraft Component : Reciprocating Engine Assembly

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Commercial

Experience.Flight Crew.Total : 1050

Experience.Flight Crew.Last 90 Days : 120

Experience.Flight Crew.Type : 250

ASRS Report Number.Accession Number : 1853202

Human Factors : Troubleshooting

Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Diverted
Result.Flight Crew : Landed As Precaution

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Weather
Primary Problem : Aircraft

Narrative: 1

We were flying in cruise and the engine began to run rough. I started my troubleshooting by turning on the carburetor heat. The engine started to run smooth so I turned the carburetor heat off. As soon as I turned it off the engine almost quit so I turned it back on. At this point it didn't seem to matter and the engine had lost most of its power. It never completely shutoff but I had a very significant loss of power. The engine would give me little bursts of power and then almost shutoff. I diverted and made a precautionary landing in fear I was going to have to land in a field. Luckily we had enough altitude to make it to ZZZ. When we landed we did a couple engine run ups on the ground. The engine seemed to run fine. We are waiting until tomorrow to fly it and are going to have a mechanic look at it to determine what went wrong and what actions need to be taken. We will not be flying it until that is done. I personally suspect carburetor icing that the carburetor heat could not keep up with. In the future I will be turning on carburetor heat every couple mins to prevent any trace of ice.

Synopsis

Pilot flying C-150 aircraft reported loss of engine power in cruise. The pilot applied carburetor heat but the engine eventually lost more power. Pilot diverted and made a precautionary landing.

Time / Day

Date : 202110

Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Relative Position.Angle.Radial : 260

Relative Position.Distance.Nautical Miles : 11

Altitude.MSL.Single Value : 2200

Environment

Flight Conditions : VMC

Light : Daylight

Aircraft

Reference : X

Aircraft Operator : Personal

Make Model Name : Cessna 140

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : None

Mission : Personal

Flight Phase : Cruise

Route In Use : None

Component

Aircraft Component : Carburetor Heat Control

Aircraft Reference : X

Problem : Improperly Operated

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Single Pilot

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Private

Experience.Flight Crew.Total : 300

Experience.Flight Crew.Last 90 Days : 75

Experience.Flight Crew.Type : 180

ASRS Report Number.Accession Number : 1847319

Human Factors : Time Pressure

Human Factors : Troubleshooting

Human Factors : Human-Machine Interface

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Detector.Person : Flight Crew
When Detected : In-flight
Result.General : Flight Cancelled / Delayed
Result.General : Maintenance Action
Result.Flight Crew : Landed in Emergency Condition

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Primary Problem : Aircraft

Narrative: 1

Cessna 140 departed ZZZ with two occupants. The flight plan was to do air work in the area NNE of ZZZ bounded roughly by ZZZ1 and ZZZ2. After climbing to approximately 2200 feet MSL we practiced turns, dutch rolls and coordination exercises for about 25 minutes at 2200+/-100 MSL and groundspeed between 80 and 100 MPH per ADS-B tracking. At this time ZZZ2 winds were 6 MPH, Temp 69F and Dewpoint 58F for RH 68%. Engine RPMs were approximately 2200, consistent with these speeds and level flight. No engine roughness or loss of power was observed. Airspeed and altitude were maintained without noticeable changes in throttle or retrimming/loss of airspeed. About [30 minutes in to flight] we were near the dragstrip on a roughly NW heading and decided to climb to 3000 ft. When the throttle was advanced power was substantially or totally lost. Power loss occurred when the throttle was advanced, not prior to or after throttle advance and a power loss, not merely a failure to increase was observed. No sputtering, backfiring, roughness, surging or any engine change except a loss of power was observed. The aircraft had an annual signed off the day before and as part of that annual the throttle linkage end link had been upgraded from a ball and socket style to a rod end style per Cessna SE79-6. The throttle seemed to be disconnected with no response over the full range from idle to full. This motion was repeated several times to confirm. The failure to respond led me to conclude the throttle had failed in some way associated with the maintenance and I began a descent at about 65 MPH and 600 FPM and turned N toward the dragstrip. At this point I began the engine out checklist with fuel (tank, mixture and CH (carb heat)) and then checked the mags. These checks had no noticeable effect. The engine seemed to be operating at either idle, very low power or windmilling. Based on the fact that it stopped on roll out I believe that it was windmilling at this time. At this point we were at approx. 1,500 feet MSL/1,300 feet AGL and I decided that the field was preferable to the dragstrip being less obstructed and we began a 180 turn to reach the field. At the end of this turn we were at about 500 ft. and well above standard glidepath and began slipping to reach the field and not overrun it. During this turn we contacted ZZZ Tower, which was the last frequency set in our comm radio, though we were well outside their airspace. At no point during this descent and turn did the engine make any noises indicating an attempt/willingness to restart. After the first diagnostic attempt and after choosing the field as target no more attempts to troubleshoot or restart were made. The engine continued to windmill and the prop was never stopped. We touched down approximately ½ way through the field and rolled out without hard braking. The engine was dead on rollout. We attempted to contact ZZZ when on the ground and were unable and then managed to make a weak connection on 121.5 to an aircraft and requested relay of message but didn't hear if this actually got through. Then managed to google ZZZ Tower telephone and made cell call. Soon after the authorities arrived and we made provisions to secure the aircraft. Before leaving that night I tested for fuel flow at the

gascolator in the as-landed state and got fuel flow. The following day the engine controls (throttle, mix, CH) were determined to be operational. Fuel flowed to gascolator. The aircraft left ZZZ with 9.5 and 10 Gals (L/R) and on the ground had 7.25 and 9.5. These measurements are based on a calibrated stick and approximate. Tanks were sumped and no water observed, fuel blue. The aircraft had been fueled in the morning and flown 1.3 hours before this flight, on both tanks. This flight had a Hobbs duration 0.8. The first 30-35 mins were run on left tank, the last several minutes before the failure on the right tank. Fuel flow was observed to gascolator from both tanks. Gascolator screen appeared clean. Oil level 3 3/8 qts. No damage or evidence of bird strike or obstruction on aircleaner. The engine was then started, warmed up and run up with no issues. Static run up was ok. [Later] the aircraft was inspected by an A&P/IA and these checks were repeated. Compression was observed on all cylinders, the magnetos were checked and the gascolator screen, carb inlet screen were checked and cleaned with no obstructions found. The carb bowl was drained and flushed. Fuel flow from both tanks to the bowl was confirmed. The carb inlet was checked and boroscoped with no problems found. The engine was again started and run up, passing all tests. Having eliminated all mechanical possibilities, the aircraft was signed off and was flown out of the field and back to ZZZ. I believe we were operating at all times within the POH and standard practice, at least as I was instructed. My instruction was CH on descent and when RPM <2,000, and when icing is observed. The Cessna 140 POH lists 2,100 RPM as a cruise setting and does not call for CH during cruise. We flew extensively prior to losing power at constant altitude and generally constant airspeed (discounting variations due to maneuvering). This profile in this airplane requires about 2,200 RPM and this is where we were operating for the 20+ minutes prior to losing power. The Cessna 140 POH is not very detailed, but the Cessna 150 has essentially the same engine (O-200 vs C-85) and its POH has similar guidance. It does not call for CH for cruise flight unless symptoms noted and cruise flight is listed as 2,000-2,750 RPM (which corresponds to the green tach arc). The FAA knowledge test and PHAK identify below 70F and high humidity (80%) thus we were operating (68F and 70%) just inside or on the boundary. Conditions at altitude would be more conducive to carb icing of course. Flying in the northeast one rarely flies outside the "icing" zone on the standard temp/dewpoint chart. However, the only conclusion is that we did encounter carb icing with no symptoms. We did not notice any engine roughness prior to loss of power, nor does the flight path indicate a loss of power through either descent or loss of airspeed that was not detected in the cockpit. Given that we did have carb icing, had we detected symptoms and followed the Cessna 150 POH guidance "to clear the ice" we would have "applied full throttle and pulled the CH knob fully out". This is what we inadvertently did when we opened the throttle to climb. This killed the engine. Had we then immediately applied CH it is possible that sufficient heat existed to clear the problem, however the C-85 has straight exhaust pipes and low thermal mass. The time delay between the failure required to establish glide, find a preliminary landing spot and confirm that there was in fact a problem was probably 15 seconds, during which the exhaust may have cooled sufficiently that no carb heat was available and no recovery of power possible. The checklist checks were performed quickly, but given that an acceptable landing spot had been identified I believe the proper course of action was to cease attempts to fix the issue and focus on a successful landing.

Synopsis

C140 pilot reported the engine lost power while applying full throttle for a climb and could not be restarted. Pilot conducted a safe off-airport landing. Post-flight, it was determined that carburetor ice was the likely cause of power loss.

Time / Day

Date : 202108

Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.MSL.Single Value : 1500

Environment

Flight Conditions : VMC

Weather Elements / Visibility.Visibility : 10

Light : Daylight

Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator.Other

Make Model Name : Small Aircraft, High Wing, 1 Eng, Fixed Gear

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : None

Mission : Training

Flight Phase : Cruise

Route In Use : None

Airspace.Class E : ZZZ

Component

Aircraft Component : Engine

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : FBO

Function.Flight Crew : Pilot Not Flying

Function.Flight Crew : Instructor

Qualification.Flight Crew : Glider

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Commercial

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Total : 830

Experience.Flight Crew.Last 90 Days : 250

Experience.Flight Crew.Type : 800

ASRS Report Number.Accession Number : 1836138

Human Factors : Distraction

Human Factors : Situational Awareness

Human Factors : Time Pressure
Human Factors : Troubleshooting
Human Factors : Workload
Human Factors : Confusion

Events

Anomaly.Aircraft Equipment Problem : Critical
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Diverted
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Landed in Emergency Condition
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

I departed the ZZZ in the afternoon on a training flight with a student who I had been working with in Aircraft X. I had been flying this aircraft most of the day and had observed that we had seven quarts of oil and 25 gallons of fuel, plenty for the local training flight, before we departed. Leaving the airport, we proceeded southbound to practice stalls and steep turns at altitude. At this point in the flight, the aircraft's engine was running smoothly, and the engine instruments were indicating normally. Having spent several hundred hours teaching in this particular aircraft, nothing seemed amiss. After completing these maneuvers, I tactfully asked my student to realign the directional gyro and smoothly pulled the throttle to idle as soon as his right hand left it, simulating an engine failure. As my student completed his required tasks and circled above his selected field, I periodically "cleared" the engine - smoothly increasing the power to 1500 RPM to ensure that it was running normally during the exercise. When [we] reached an altitude of roughly 800 ft. AGL, I instructed my student to go around. He applied full power and the engine performed normally as we began to climb out. After gaining several hundred ft., the engine began to shake violently with almost no warning, and a significant loss in power was noted. I reduced the power as the engine felt as if it were going to shake itself off of its mounts. I took control, pitched for best glide, and ran the memory items from the engine failure inflight checklist without success. Gliding towards a field, I began to adjust the power setting and after increasing power from idle several times, the shaking began to dampen. Nearing the field, the engine began to run smoothly again and I elected to climb away from my landing point and proceed to ZZZ1, a X,XXX ft.-long grass strip 3 or 4 miles away. I figured that the much safer landing at ZZZ1 was worth the risk of another "engine failure" on the two-minute trip over. On the way, my student tuned in ATC and [explained our situation]. After an uneventful landing under power at ZZZ1, I was met by a breathtaking amount of firefighters, EMTs, and [other public officials]. After hearing that I had landed at ZZZ1, the aircraft's owner, who happens to be an A&P Mechanic, drove out to the field. After inspecting the airplane and performing a run-up, the owner determined that there was nothing visibly wrong with the aircraft or the engine and elected to fly it back to its home base of ZZZ. The next morning, it was flown to a repair station in ZZZ2 where we are currently waiting for a diagnosis of the problem. In my opinion, engine roughness and power loss of the duration that I experienced 30 seconds to a minute could

either be carburetor icing or fuel contamination. The air temperature was nearly 80°F with a very high temperature/dewpoint spread, making carb icing unlikely. Furthermore, carburetor heat had no effect on the engine shaking and power loss. Fuel contamination could be another possibility. However, I did observe my previous student sump the tanks when the aircraft was last refueled and we were an hour into the flight when the power loss occurred, which makes contamination seem unlikely. Regardless, I was happy with my decision to land on a nearby grass strip instead of attempting to get a suspect airplane back to the airport and feel that I set the right example for my student.

Synopsis

Flight Instructor reported engine roughness and a loss of power during the student pilot's climb-out after completing a maneuver.

Time / Day

Date : 202108

Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Relative Position.Angle.Radial : 160

Relative Position.Distance.Nautical Miles : 6

Altitude.MSL.Single Value : 2500

Environment

Flight Conditions : VMC

Light : Daylight

Ceiling.Single Value : 7000

Aircraft

Reference : X

Aircraft Operator : FBO

Make Model Name : Skyhawk 172/Cutlass 172

Crew Size.Number Of Crew : 3

Operating Under FAR Part : Part 91

Flight Plan : None

Mission : Training

Flight Phase : Cruise

Airspace.Class E : ZZZ2

Component

Aircraft Component : Engine

Aircraft Reference : X

Problem : Malfunctioning

Problem : Failed

Person : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : FBO

Function.Flight Crew : Instructor

Function.Flight Crew : Pilot Not Flying

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Commercial

Experience.Flight Crew.Total : 817

Experience.Flight Crew.Last 90 Days : 120

Experience.Flight Crew.Type : 750

ASRS Report Number.Accession Number : 1835114

Human Factors : Situational Awareness

Human Factors : Time Pressure

Human Factors : Troubleshooting
Human Factors : Workload
Human Factors : Confusion

Person : 2

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : FBO
Function.Flight Crew : Instructor
Qualification.Flight Crew : Flight Instructor
Experience.Flight Crew.Total : 625
Experience.Flight Crew.Last 90 Days : 60
Experience.Flight Crew.Type : 300
ASRS Report Number.Accession Number : 1835159
Human Factors : Workload
Human Factors : Troubleshooting
Human Factors : Situational Awareness
Human Factors : Time Pressure

Person : 3

Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : FBO
Function.Flight Crew : Instructor
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Flight Instructor
Qualification.Flight Crew : Commercial
Qualification.Flight Crew : Instrument
Experience.Flight Crew.Total : 818
Experience.Flight Crew.Last 90 Days : 120
Experience.Flight Crew.Type : 760
ASRS Report Number.Accession Number : 1835156
Human Factors : Troubleshooting
Human Factors : Time Pressure
Human Factors : Situational Awareness
Human Factors : Workload

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.General : Evacuated
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Landed in Emergency Condition
Result.Flight Crew : Diverted

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors

Contributing Factors / Situations : Weather
Primary Problem : Human Factors

Narrative: 1

Familiarization flight with the airspace around ZZZ and carbureted C172 model with another instructor onboard. Departed ZZZ at approximately XA:00 local; After landing at ZZZ1, we departed southwest bound at 2,500'. I was flying the aircraft when we experienced a sudden loss of engine power, followed by complete engine loss. I gave controls to the other instructor and began troubleshooting / running checklists - Checked fuel selector / gauges, mixture/throttle, carb heat, and were unable to get it restarted. We turned south for a cornfield and began preparing for an off field landing while I contacted ZZZ Tower to let them know of our situation. The other instructor onboard maneuvered for a safe landing on the cornfield. Once the aircraft was secured, we exited the plane and inspected everything. No injuries or damage to the aircraft / property. I called Clearance Delivery and asked them to let ZZZ Tower know that we were okay. I spoke with various agencies over the next 30 minutes. I let them know we were okay and the plane was undamaged. We shared our location with flight school management, who then drove out and brought extra fuel. We began straining fuel, which all came back clean. Then added approx 5 gallons to each fuel tanks and did a thorough run up on the engine - All gauges were green and no issues seen. After discussing we came to the conclusion of carburetor icing affecting engine performance. We were at a relatively low cruise setting with high humidity due to showers/storms in the area. When troubleshooting in the air earlier, pulling the carb heat had no affect on engine RPM. We commenced a soft/short field takeoff from the cornfield and landed safely back at ZZZ.

Narrative: 2

Loss of RPM, suspected Carb icing. Insufficient power. Ran checklist, restart and shutdown checklist. No damage to aircraft or landing site. No injury.

Narrative: 3

Familiarization flight with the airspace around ZZZ with another instructor onboard. Departed ZZZ at approximately XA:00 local; After landing at ZZZ1, we departed southwest bound at 2,500'. I was flying the aircraft when we experienced a sudden loss of engine power, followed by complete engine loss. I gave controls to the other instructor and began troubleshooting / running checklists - Checked fuel selector / gauges, mixture/throttle, carb heat, and were unable to get it restarted. We turned south for a cornfield and began preparing for an off field landing while I contacted ZZZ Tower to let them know of our situation. The other instructor onboard maneuvered for a safe landing on the field. Once the aircraft was stopped/secured, we exited the plane and inspected everything. No injuries or damage to the aircraft / property. I called Clearance Delivery and asked them to let ZZZ Tower know that we were okay. I spoke with various agencies over the next 30 minutes. I let them know we were okay and the plane was undamaged. We shared our location with flight school management, who then drove out to us. We began straining fuel, which all came back clean. Then did a thorough run up on the engine - Everything was functioning normally. After discussing we came to the conclusion of carburetor icing affecting engine performance. We were at a relatively low cruise setting in an environment of high humidity. We obtained permission from corn field owner to takeoff from his property. We then did a soft/short field takeoff from the field and landed safely back at ZZZ. Due to our low altitude we were unable to troubleshoot the issue quick enough to maintain flight and were forced to do an off field landing. Going forward, we will pay much closer attention to the green arc on the tachometer, especially in environments that are favorable to carb icing.

Synopsis

Three Instructor Pilots reported an engine failure while on a familiarization flight in a single engine aircraft. The PF landed off airport in a nearby field. It was later determined the engine probably failed due to carburetor icing.

Time / Day

Date : 202108

Local Time Of Day : 0001-0600

Environment

Flight Conditions : VMC

Light : Night

Ceiling.Single Value : 28000

Aircraft

Reference : X

Aircraft Operator : Corporate

Make Model Name : Commercial Fixed Wing

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Passenger

Flight Phase : Cruise

Route In Use : Vectors

Component : 1

Aircraft Component : Attitude Indicator(Gyro/Horizon/ADI)

Aircraft Reference : X

Problem : Malfunctioning

Component : 2

Aircraft Component : Ice/Rain Protection System

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Function.Flight Crew : Captain

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1832562

Human Factors : Troubleshooting

Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Critical

Anomaly.Deviation / Discrepancy - Procedural : FAR

Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy

Detector.Automation : Aircraft Other Automation

Detector.Person : Flight Crew

Were Passengers Involved In Event : N
When Detected : In-flight
Result.General : Flight Cancelled / Delayed
Result.General : Maintenance Action
Result.Flight Crew : Became Reoriented
Result.Flight Crew : Diverted
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Overcame Equipment Problem
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

On a flight from ZZZ to ZZZ1 while in icing conditions we received an HSDI FAIL CAS message. We started reviewing the QRH for HSDI FAIL when the HSDI FAIL ON appeared and the HSDI FAIL went out. We ran the HSDI FAIL ON QRH procedure twice with no results. We had exited icing at that point so we continued to ZZZ1. The HSDI FAIL ON CAS stayed on until shutdown in ZZZ1. We powered the plane up in ZZZ1 via a GPU and then started the right engine, we did not receive any HSDI CAS messages, we did cycle the HSDI system on and off and the valve seems to work normally on the ground. We departed ZZZ1 to ZZZ2 and climbing out we entered icing conditions, the IPS (Ice Penetration System) turned on automatically. We received both an HSDI FAIL and a HSDI FAIL ON CAS while in icing conditions. We exited icing conditions and diverted to ZZZ3, the HSDI FAIL ON CAS stayed on until shutdown in ZZZ3.

Synopsis

Captain reported diverting due to HSDI FAIL message caused by inflight icing.

Time / Day

Date : 202108

Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.TRACON

State Reference : US

Relative Position.Distance.Nautical Miles : 26

Altitude.MSL.Single Value : 7500

Environment

Flight Conditions : VMC

Light : Daylight

Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Personal

Make Model Name : Skyhawk 172/Cutlass 172

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : None

Mission : Personal

Flight Phase : Cruise

Route In Use : Direct

Airspace.Class E : ZZZ

Component

Aircraft Component : Reciprocating Engine Assembly

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Private

Experience.Flight Crew.Total : 150

Experience.Flight Crew.Last 90 Days : 14

Experience.Flight Crew.Type : 80

ASRS Report Number.Accession Number : 1831782

Human Factors : Troubleshooting

Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.General : Flight Cancelled / Delayed
Result.General : Maintenance Action
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Landed As Precaution
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Procedure
Primary Problem : Aircraft

Narrative: 1

During cruise at 7,500 feet MSL with a properly leaned engine and (nearly) full fuel, the engine on the aircraft suddenly lost power. The engine struggled to maintain idle speed at full power. I [requested priority handling] when the fuel controls (mixture and throttle) were checked and the problem persisted. When enroute to the closest landing location it was found that the engine could be coaxed to approx 2/3 power by pumping the throttle in and out. Upon landing, a mechanic looked over the fuel system (to include sumps and fuel strainer) but found no issues. During a subsequent run-up, the engine performed as expected without issue. When the in-air engine issue occurred the outside air temperature was noted to be approximately 45 degrees. Based upon the lack of issues found with the fuel system, the subsequent successful run-up and the noted temperature, it is believed that the aircraft experienced carb-icing which caused the issue. After review with the mechanic, the aircraft was returned to service. No damage or injury was experienced as a result of this issue. Approach was notified via the approach frequency when the aircraft successfully landed and no subsequent actions/communication was requested.

Synopsis

C172 pilot reported loss of engine power and requested priority handling to expedite arrival at destination airport.

Time / Day

Date : 202107

Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 23000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Light : Daylight

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Corporate

Make Model Name : PC-12

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Passenger

Flight Phase : Climb

Route In Use : Direct

Airspace.Class A : ZZZ

Component

Aircraft Component : Propeller Ice System

Problem : Failed

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Corporate

Function.Flight Crew : Single Pilot

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Captain

Qualification.Flight Crew : Commercial

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Sea

Experience.Flight Crew.Total : 1675

Experience.Flight Crew.Last 90 Days : 35

Experience.Flight Crew.Type : 707

ASRS Report Number.Accession Number : 1826177

Human Factors : Troubleshooting

Human Factors : Workload

Human Factors : Distraction
Human Factors : Human-Machine Interface

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Track / Heading : All Types
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Detector.Person : Flight Crew
Miss Distance.Horizontal : 1
Miss Distance.Vertical : 500
When Detected : In-flight
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Regained Aircraft Control
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Returned To Clearance
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Weather
Primary Problem : Aircraft

Narrative: 1

Flying from ZZZ to ZZZ1 the Propeller Heat System Failed. I was still climbing through a layer which appeared to top at about 24000 feet. I was assessing the warning and CAWS (Central Advisory and Warning System) indicating that the Prop Heat failed and following the QRH, when the autopilot began banking the aircraft to the right and nose down. I disconnected the autopilot and hit the trim interrupt switch to ensure to have full control over the aircraft. Once I was back straight and level, ATC inquired why we had descended and if we were okay. I was able to climb out of icing and proceeded back on course.

Synopsis

PC-12 Pilot reported the Propeller Heat System failed while climbing through icing conditions causing a temporary loss of control.

Time / Day

Date : 202104

Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZZZ.TRACON

State Reference : US

Altitude.MSL.Single Value : 4000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 1

Ceiling.Single Value : 4000

Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Personal

Make Model Name : PA-28 Cherokee/Archer/Dakota/Pillan/Warrior

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Cruise

Flight Phase : Climb

Route In Use : Direct

Airspace.Class E : ZZZ

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Single Pilot

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Flight Instructor

Experience.Flight Crew.Total : 6040

Experience.Flight Crew.Last 90 Days : 40

Experience.Flight Crew.Type : 920

ASRS Report Number.Accession Number : 1803489

Human Factors : Workload

Human Factors : Human-Machine Interface

Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Overcame Equipment Problem
Result.Air Traffic Control : Provided Assistance
Result.Aircraft : Equipment Problem Dissipated

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Human Factors

Narrative: 1

IFR cross country coming up V1 at 5,000 feet. Started icing up. Lost some altitude. Requested 3,000 feet. [Local] approach gave me 4,000 ft. Ice melted. Northeast of ZZZ started icing up again lost altimeter, airspeed, vertical speed, comm 1, and all navigation equipment. Used a spare cockpit altimeter to restore the altitude. ATC let us go down to 3,000 feet. Direct to ZZZ1. Ice melted so altimeter, airspeed, and vertical speed restored. Still no comm 1 and no nav aids. Used the comm 2 and my Foreflight pro to shoot an ILS into ZZZ1 where it was raining at the time.

Synopsis

PA-28 Single Pilot reported encountering inflight icing resulting in altitude loss as well as loss of Comm 1 and Nav 1. Reporter requested ATC routing assistance and completed effective trouble shooting to execute an uneventful landing at destination.

Time / Day

Date : 202104

Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 17000

Environment

Flight Conditions : Mixed

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Rain

Weather Elements / Visibility : Snow

Weather Elements / Visibility.Visibility : 10

Ceiling.Single Value : 17000

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Personal

Make Model Name : RV-10

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Cruise

Airspace.Class E : ZZZ

Component

Aircraft Component : Elevator ControlSystem

Aircraft Reference : X

Problem : Improperly Operated

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Single Pilot

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Commercial

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Total : 1625

Experience.Flight Crew.Last 90 Days : 245

Experience.Flight Crew.Type : 294

ASRS Report Number.Accession Number : 1803484

Human Factors : Workload

Human Factors : Fatigue
Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Diverted
Result.Flight Crew : Landed As Precaution
Result.Flight Crew : Regained Aircraft Control
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Ambiguous

Narrative: 1

I was in cruise on IFR flight plane in VMC talking with Center at 15000 ft. The cloud tops were rising and I requested a climb to 17000 ft. to avoid the tops. The sun had set and light was fading. I initiated a slow climb and monitored my wing leading edges with a flashlight as I flew in and out of a few thin tops. I observed a trace, to light amount of mixed ice. Center advised a jet reporting tops at FL190 and asked if I wanted FL190. I replied I could try but did not think I'd make it due to aircraft performance. Upon reaching 17000 ft., the aircraft did not level off while the autopilot was engaged. I had been monitoring my AoA [Angle of Attack], 200-300 FPM climb resulted in AoA active, but well above donut, and noticed the aircraft remaining in a 200 FPM climb. I disconnected the autopilot (AP) as the AP commanded full nose down trim. I commanded a nose down control input via the control stick and could not move the stick in a fore or aft motion. I still had roll control but had no pitch control. I applied considerable force - I was afraid of pushing too hard and breaking something, not knowing what had frozen the controls - and could not induce a nose down attitude. I asked for an immediate descent with Center and was granted an altitude of 15000 ft. ADSB weather indicated a heavy to extreme precipitation below my position with bases of 6 - 8000 ft. I commanded full up elevator trim and confirmed movement via trim indication and a reduction in climb rate. I visually confirmed the elevators were stuck in an approximate 10-degree nose up position and could see the counterweights below the horizontal stabilizer. I reduced power slowly and kept considerable forward pressure on the stick, which resulted in a 600-800 FPM descent rate with the same AoA and attitude. I was able to maintain roll control and kept wings level. Yaw control was adequate. I made minimal yaw and roll control inputs to avoid a spin and [requested priority handling] with Center, advising loss of control. They asked which airport I requested and I replied I just need to get lower and asked for the freezing level. I observed OAT at 17000 ft. to be approximately 18-20°F and watched it steadily increase as I descended. I found a power setting that would keep the AoA above [the] donut, keeping an adequate IAS while getting 800-1000 FPM descent. At 14000, precipitation was heavy snow and I observed static discharging on the leading edges of the wings via sparks. Around 11000 ft., I was preparing for the elevators to become unfrozen,

as I suspected ice had formed and frozen them in position during the slow climb, and was prepared for a rapid nose down movement. The elevators did break loose and I was able to recover the nose down attitude quickly and accurately with the maneuver similar to a power-on stall recovery. While still descending, I commanded several nose up and nose down control inputs with increasing force to ensure controls were still functioning and ensuring I had not broken anything. I then worked with Center to pick my destination and requested lower to get into rain. I observed light to moderate mixed and clear icing at that time on the wings and increased my IAS. Once I was in the heavy rain, the ice melted and the aircraft remained responsive to all controls with the engine performing nominally. I asked and was given vectors for the RNAV XX approach but was only cleared down to 6000 ft. at ZZZZZ, 3000 ft. higher than the approach depicted. Upon reaching 6000 ft. and turning inbound, I was switched to Advisory and was VMC with the field in sight. I executed a 360 turn to lose altitude and then flew the pattern to further reduce altitude, executing a normal landing in heavy rain on Runway XX. I called Center on the phone to cancel IFR. On the ground, I visually inspected all control surfaces, tested trim and autopilot functions, and removed several panels to inspect the control push-rods, finding no abnormalities. I checked weather, refilled, and continued to my destination at a lower altitude. My desire to stay above the tops at night near the upper limits of adequate climb performance resulted in inadvertent flight into icing conditions. I believe the slow, sustained climb resulted in minimal elevator inputs and adequate time for ice to build up on the counterweights, freezing the elevators in place. I believe I had more clear ice than I could observe via flashlight. I should have avoided the situation by either climbing earlier to ensure [that I] remained clear of the clouds or descended into warmer temperatures. I could have also diverted or turned around. I had already flown 6.5 hours for hire in IFR and hazardous weather conditions in the PC-12 and fatigue was a factor. I was on supplemental oxygen and remained alert and coherent during the entire event. I credit excellent training - power for altitude, pitch for speed - and upset recovery training during PC-12 initial training, to keeping limited control of the aircraft and avoiding a stall, which would have most likely resulted in a stall/spin and fatal crash.

Synopsis

Single Pilot reported flying into icing conditions and the control surfaces freezing.

Time / Day

Date : 202104

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.TRACON

State Reference : US

Altitude.MSL.Single Value : 4500

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Aircraft

Reference : X

ATC / Advisory.ATC Facility : ZZZ

Aircraft Operator : Air Carrier

Make Model Name : Cessna Twin Piston Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Passenger

Flight Phase : Climb

Airspace.Class B : ZZZ

Component

Aircraft Component : Reciprocating Engine Assembly

Aircraft Reference : X

Problem : Malfunctioning

Person : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

Function.Flight Crew : Pilot Not Flying

Function.Flight Crew : Captain

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument

ASRS Report Number.Accession Number : 1801136

Person : 2

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

Function.Flight Crew : First Officer

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Commercial

Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1801137

Person : 3

Location Of Person.Aircraft : X
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Commercial
Qualification.Flight Crew : Instrument
ASRS Report Number.Accession Number : 1801138

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Flight Deck / Cabin / Aircraft Event : Smoke / Fire / Fumes / Odor
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Returned To Departure Airport
Result.Flight Crew : Landed in Emergency Condition

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

On climb out through 4,500 feet right engine began running rough with black smoke.
Returned to ZZZ and landed after notifying ATC. Black smoke indicated a mixture issue.

Narrative: 2

During climb out, aircraft performance began to deteriorate. Full power was set and the aircraft struggled to maintain greater than 110 KIAS and climb beyond 200-300 FPM. Shortly after initiating full power an unusual vibration was noticed by Captain, and I noticed an unusual amount of black smoke trailing from the engine. Given the icing weather conditions and potential engine issue the Captain made the decision to return to ZZZ as we had only gotten to VOR 1 at time of incident. With the amount of ice accumulating on the aircraft, full power was necessary to maintain a safe airspeed. Conferred with Maintenance post-flight and they believe smoke was due to a mixture-rich situation. Icing + over rich engine mixture.

Narrative: 3

During climb out, aircraft performance began to deteriorate. Full power was set and the aircraft struggled to maintain greater than 110 KIAS and climb beyond 200-300 FPM. Shortly after initiating full power an unusual vibration was noticed by Captain, and I noticed an unusual amount of black smoke trailing from the engine. Given the icing weather conditions and potential engine issue the Captain made the decision to return to ZZZ as we had only gotten to VOR 1 at time of incident. With the amount of ice accumulating on the aircraft, full power was necessary to maintain a safe airspeed. Conferred with Maintenance post-flight and they believe smoke was due to a mixture-rich situation. Icing + over rich engine mixture. Event caused by mostly unpredictable circumstances.

Synopsis

Air carrier flight crew reported icing and engine vibration after takeoff.

Time / Day

Date : 202104

Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZBW.ARTCC

State Reference : NH

Altitude.MSL.Single Value : 6000

Environment

Flight Conditions : Marginal

Weather Elements / Visibility : Icing

Aircraft

Reference : X

ATC / Advisory.Center : ZBW

Aircraft Operator : Personal

Make Model Name : Small Aircraft

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Descent

Route In Use : Direct

Airspace.Class E : ZBW

Component

Aircraft Component : Autopilot

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location Of Person.Facility : ZBW.ARTCC

Reporter Organization : Government

Function.Air Traffic Control : Enroute

Qualification.Air Traffic Control : Fully Certified

Experience.Air Traffic Control.Time Certified In Pos 1 (yrs) : 1

ASRS Report Number.Accession Number : 1798022

Human Factors : Situational Awareness

Human Factors : Confusion

Events

Anomaly.Aircraft Equipment Problem : Less Severe

Anomaly.ATC Issue : All Types

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : CFTT / CFIT

Detector.Person : Air Traffic Control
Result.Flight Crew : Diverted
Result.Flight Crew : Landed in Emergency Condition
Result.Air Traffic Control : Provided Assistance
Result.Air Traffic Control : Issued Advisory / Alert
Result.Air Traffic Control : Issued New Clearance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Airspace Structure
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Aircraft

Narrative: 1

Aircraft X checked on my frequency as a pop up IFR requesting a clearance to ALB. He requested 4,000 feet for altitude, I told him he would need to climb to 5,000 feet for a clearance to ALB. I cleared him reaching 6,000 feet cleared to ALB airport via direct. Reaching 6,000 feet he told me he was picking up icing and requested 8,000 feet. I climbed him to 8,000 feet and asked him the type and intensity of ice. He said Light Rime. I had my Supervisor put the pilot report in the computer. I then noticed Aircraft X descending instead of climbing. I verified he was in the climb. He said he was having a problem with his auto pilot. I told him he was descending and that he needs to climb. He continued descending at which point I gave him a low altitude alert and told him my minimum IFR altitude in the area is 3600 feet an he needs to climb to 6000 feet. He continued to descend so I asked him if wanted vectors to the closest airport. He said he had the airport in front of him in sight. I asked if he wanted to land there. He said yes. I cleared him for a Visual Approach. I asked if he was requesting priority handling. He said yes. I read him the NOTAMs. I asked him how many people were on board. He didn't reply. He was low and close to the airport. I told him to change to advisory frequency and report his cancellation.

Synopsis

ZBW Center Controller reported an aircraft that reported light rime ice and a malfunctioning auto pilot descended instead of climbing and flew below the Minimum IFR Altitude. The aircraft diverted to the nearest airport and landed safely.

Time / Day

Date : 202103

Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Relative Position.Angle.Radial : 090

Relative Position.Distance.Nautical Miles : 25

Altitude.MSL.Single Value : 10500

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Fog

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 5

Light : Daylight

Ceiling.Single Value : 2000

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ3

Aircraft Operator : Personal

Make Model Name : RV-10

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : None

Mission : Personal

Flight Phase : Cruise

Route In Use : Direct

Airspace.Class E : ZZZ

Airspace.Class G : ZZZ

Component

Aircraft Component : Pitot-Static System

Aircraft Reference : X

Problem : Malfunctioning

Problem : Improperly Operated

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Private

Experience.Flight Crew.Total : 1076

Experience.Flight Crew.Last 90 Days : 43

Experience.Flight Crew.Type : 81

ASRS Report Number.Accession Number : 1797490

Human Factors : Time Pressure

Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Critical

Anomaly.Deviation / Discrepancy - Procedural : Clearance

Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : VFR In IMC

Detector.Person : Flight Crew

Were Passengers Involved In Event : N

When Detected : In-flight

Result.Flight Crew : Overcame Equipment Problem

Result.Flight Crew : Requested ATC Assistance / Clarification

Result.Flight Crew : Took Evasive Action

Result.Flight Crew : Landed in Emergency Condition

Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft

Contributing Factors / Situations : Human Factors

Contributing Factors / Situations : Procedure

Contributing Factors / Situations : Weather

Primary Problem : Human Factors

Narrative: 1

Was flying to ZZZ from ZZZ1 for aerial sightseeing trip in newly built (72 hrs) RV-10. Have always wanted to fly over the Canyon. Approximately 75% of the way there, conditions began to slowly deteriorate. Reported ceilings at destination were fine, and from nearest weather reporting airport (ZZZ2). But no weather reported in between on my route. Clouds kept getting lower and terrain kept rising. About 40 miles from ZZZ, I should have turned back to ZZZ2 and landed. But, I was under the clouds and could see the ground just fine. Conditions kept getting worse, then better, then worse then better. I pressed on. At one point, I found myself getting too close to ground (about 1,000 ft AGL) when the clouds "engulfed me". I was now in IMC. I should have turned around, but decided that I could see some sunlight peeking through and decided to climb up to get on top of clouds and out of possible rising terrain. At 10,300 [ft.] I still was in IMC conditions. Decided then to get an air-borne clearance for IFR into ZZZ. I contacted ZZZ3 Center, and proceeded to get clearance for RNAV [Runway] XX into ZZZ. I was being vectored for entry into approach when auto pilot suddenly disengaged, I lost airspeed indication and my AOA stall warning buzzer was going off! When I informed controller of the situation that just erupted, he [provided assistance] to help get me down. It was VERY unsettling! It took a good 4 minutes to realize that these things were happening due to a frozen pitot tube! I live in [the] south and NEVER have to worry about freezing temps. In the current situation, I didn't realize outside temps had fallen to 27 degrees. When I finally realized what happened, I turned on pitot heat, and airspeed indication was restored within 10 seconds. I was then vectored for a visual approach and landed safely at ZZZ. What led to situation? Bad decision making. I should have turned around before getting into full bore IMC. I think my instrument rating gave me TOO MUCH confidence. Entering IMC unexpectedly, put me behind the airplane and my situational awareness deteriorated to near zero! I also found myself overwhelmed when alarms went off and auto pilot kicked off

and in trying to figure out why, I failed to "aviate" the airplane. At one point I realized I was in a steep left turn (about 45 degrees) which could have led to more problems. Once I saw this, I did correct, but it could have ended in a loss of control quickly! Another lesson is to WATCH the temps! A frozen pitot might not have become my only problem. I realize now I was also at risk for ice on wings. Another dangerous situation. Many lessons learned, but main one is to not push limits in unfamiliar terrain. I should have turned around and avoided the layering of consequences that followed from that one bad decision.

Synopsis

Pilot reported loss of situational awareness and entering an unusual attitude after inadvertently entering unforecast IMC conditions and icing.

Time / Day

Date : 202103

Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : SLC.Airport

State Reference : UT

Altitude.MSL.Single Value : 9600

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Snow

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Turbulence

Weather Elements / Visibility.Visibility : 10

Light : Daylight

Ceiling.Single Value : 10000

Aircraft

Reference : X

ATC / Advisory.TRACON : S56

Aircraft Operator : Corporate

Make Model Name : Small Transport, Low Wing, 2 Turbojet Eng

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Passenger

Flight Phase : Initial Approach

Route In Use : Direct

Route In Use.STAR : QUENN 5 RNAV

Airspace.Class E : ZLC

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Corporate

Function.Flight Crew : Single Pilot

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Captain

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Flight Instructor

Experience.Flight Crew.Total : 4415

Experience.Flight Crew.Last 90 Days : 49

Experience.Flight Crew.Type : 1550

ASRS Report Number.Accession Number : 1793296

Human Factors : Workload

Human Factors : Communication Breakdown

Human Factors : Time Pressure
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.ATC Issue : All Types
Anomaly.Conflict : Airborne Conflict
Anomaly.Deviation - Altitude : Crossing Restriction Not Met
Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation - Altitude : Overshoot
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Returned To Clearance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Human Factors

Narrative: 1

The Deviation event occurred over or around the HLMET intersection on the LDA Runway 35 approach into Salt Lake City International. ATC instructions were to proceed direct to HLMET, Cross HLMET at 11,000, cleared for the approach. Somewhere just seconds before or after crossing HLMET I descended to an altitude of approximately 9,600 MSL. The altitude on approach after crossing HLMET is 10,000 MSL until crossing the next fix PEDLE. However after becoming distracted (which I will explain later), I noticed my altitude got down to that approximately 9,600 MSL for which I knew was not right, and immediately began corrective action while simultaneously ATC queried my altitude and I made mention of correcting. I saw I was just passed HLMET and quickly climbed back up to the crossing altitude of 10,000 MSL. Shortly later the controller mentioned the possible pilot deviation may have led to a loss of separation, although no TA/RA's were issued by either aircraft. Here is where I want to bring to attention the possible safety issue as related to the situation and what resulted in me becoming distracted and task saturated. Starting at an ATC controller back before TRACON, which was Salt Lake Center and while on the QWENN 5 RNAV Arrival off the MLF VORTAC transition, I was left extremely high by the center controller, for which I was expecting to receive the 'Expect' crossing restriction at FRNZY intersection at 15,000 MSL on the chart. I could hear multiple aircraft in front of me getting the FRNZY at 15,000 MSL restriction, but also complaining of being left very high and possibly not being able to make it. As I started to see the FMS computer show a required 3,500 FPM decent to make that restriction, I thought I better ask the controller for a descent, however the frequency was congested and it took many more minutes until finally the controller just issued me to now cross FRNZY at 16,000 MSL and 250 KTS. I replied that I would do by best, but it would be tight to make. Mind you that this new altitude required my attention to reprogram the altitude into the FMS as I anticipated and setup for 15,000, and still it showed a required 3,800+FPM decent to make it. I immediately initiated the decent for which I used the VNAV mode in the FMS/autopilot to

make the crossing, which also required idle power and the activation of the aircraft's speed brake system to induce drag to not over-speed in the decent. During the decent on the arrival there was also light to bordering on moderate rime icing in IMC and snow showers. When the engines are at idle power they do not produce enough bleed air to keep the Anti-Ice/De-Ice systems operating, for which I got warning that they were not being kept hot enough, so I was trying to introduce small amounts of power to try and get more bleed air flowing to those systems, all the while trying not to over-speed and setup for the instrument approach. Being single-pilot this induced a very high work load, which caused me to become task saturated and behind on preparing for the approach. After finally passing FRNZY at the 16,000 MSL altitude and still in icing conditions and IMC I was simultaneously passed to TRACON approach control which issued me the direct HLMET, cross at 11,000 MSL, cleared approach restriction. I continued the decent down out of 16,000 MSL to 11,000 MSL still using VNAV on the autopilot (more on that later). I noticed I was still nearing around idle power and adding what I could but was still having trouble keeping the speed under control and still behind on setting up the approach. Somewhere around 12,000 MSL I got an indication that the speed brake panels went down, even though I didn't select it. Wondering what happened I looked out the pilot side window at the wing and noticed they were in fact still up, just no longer indicating it in the cockpit. This distracted me, as I knew I needed them extended to maintain my speed and help to try and keep power up and bleed air flowing. It took my brain a few moments to try and figure out what was going on as there is no abnormal procedure for that in the checklist. I decided to recycle the speed brake switch, for which they then operated normally (retracted and extended), and then gave all normal indications. Throughout that situation is when the altitude deviation occurred, as after I was confident there was not a problem with the speed brakes and they just needed a reset, I accidentally went through the 11,000 MSL attitude down to the approximately 9,600 MSL altitude. Upon speaking with Maintenance later on the ground they feel that the system was activated for so long throughout the decent continuously, they work trapping hydraulic pressure to hold it up, that logically that pressure must have bleed down some, causing them to blow in-trial/down just enough to give an indication in the cockpit that they were sent fully down, and that this was not a malfunction or cause for investigation for repair, especially since they functioned normally after the reset. The indication only looks for full up or full down deflection, so if they blew down a little due to reduction in trapped pressure, it made sense to them. Again they continued to function and indicated correctly the rest of the flight. Back to the VNAV function I used on the autopilot to meet the crossing restriction, as that is the recommended function to meet crossing restrictions, and the function I always use to reduce pilot workload. Somewhere during the sequence of the approximate 3,800-4,000FPM required descent the VNAV system apparently kicked off and defaulted back to just a raw pitch autopilot decent, in which with everything else going on I failed to notice. I can only attribute this to it not liking or taking issue with that rapid of a required decent, and thus defaulted out of it. With 1500+ hours in type, I cannot recall ever descending so rapidly, to were I would have seen or noticed its inability to function through that rapid of a decent. Had VNAV stayed activated, it would have saved the deviation from happening as the approach was loaded with all crossing restriction altitudes and it would have followed them; for which I was also expecting it to do. Although this 'event' happened in Tracon airspace, I feel the safety issue started back in Salt Lake Centers airspace by being left very high on the arrival. ATC needs to be cognizant especially when icing conditions are possible/present some or most aircraft cannot descend that rapidly and keep critical anti-ice/de-ice systems operating properly with idle power descent. Additionally, giving instruction to meet a crossing restriction that requires 3,500+FPM descents is unsafe and not conducive to being able to setup and properly execute a stabilized approach, and leads pilots to get behind. After giving this event thought I am recommending to our flight department to not use the VNAV function of the FMS/autopilot for required descents over

3,000 FPM, but rather use vertical speed mode and monitor carefully. In addition, we will no longer accept any crossing restrictions from ATC that would require over 3,000 FPM, and rather state unable and require a re-sequence back on the arrival via a course reversal to help lose altitude and keep from the pilot getting behind the aircraft and task saturated. Us pilot use the term 'slam dunk' when ATC tries to do this, where they keep you very high and then plop you right on the arrival/approach. This condition does present safety issues due to the above mentioned items.

Synopsis

Light Transport Single Pilot reported failing to cross arrival fix at assigned altitude resulting in a loss of ATC separation. Reporter also reported late descent clearance and inflight icing as contributing causes.

Time / Day

Date : 202102

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Relative Position.Angle.Radial : 094

Relative Position.Distance.Nautical Miles : 47

Altitude.MSL.Single Value : 11000

Environment

Weather Elements / Visibility : Icing

Light : Daylight

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Personal

Make Model Name : Skylane 182/RG Turbo Skylane/RG

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Ferry / Re-Positioning

Flight Phase : Cruise

Route In Use : Direct

Airspace.Class E : ZZZ

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Commercial

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Total : 1378

Experience.Flight Crew.Last 90 Days : 112

Experience.Flight Crew.Type : 30

ASRS Report Number.Accession Number : 1789976

Human Factors : Situational Awareness

Events

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : CFTT / CFIT

Detector.Automation : Aircraft Terrain Warning

When Detected : In-flight

Result.Flight Crew : Took Evasive Action

Result.Flight Crew : Requested ATC Assistance / Clarification

Result.Air Traffic Control : Issued New Clearance

Assessments

Contributing Factors / Situations : Human Factors

Contributing Factors / Situations : Weather

Primary Problem : Weather

Narrative: 1

During flight unexpected moderate rime ice was encountered. Upon encountering the ice I requested a higher altitude of 13,000 [feet] to attempt to escape the conditions which ATC approved. However, at that point, buildup had accrued and the aircraft was struggling to maintain 12,000 [feet]. I then requested 11,000 [feet] which Center also approved. The aircraft continued to have difficulty maintaining altitude and fell below the minimum IFR altitude for the area several times resulting in a terrain alert and several terrain vectors from ATC. An aircraft coming from the other direction advised that the area a couple miles ahead from the aircraft's current position was clear, so I elected to get to that area and the rest of the flight was completed normally. Lack of positive icing PIREPs in the vicinity of the route of flight informed that encountering icing would be unlikely. In the area where the icing occurred it seemed that the combination of location and temperature were contributing factors.

Synopsis

C182 pilot reported receiving terrain alerts when his aircraft was unable to maintain safe altitude because of ice accumulation.

Time / Day

Date : 202102

Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.MSL.Single Value : 4000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 4

Light : Daylight

Ceiling.Single Value : 1500

Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Personal

Make Model Name : Bonanza 35

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Cruise

Route In Use : Direct

Airspace.Class C : ZZZ

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Flight Engineer

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Air Transport Pilot (ATP)

Experience.Flight Crew.Total : 7500

Experience.Flight Crew.Last 90 Days : 100

Experience.Flight Crew.Type : 500

ASRS Report Number.Accession Number : 1787169

Events

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Diverted

Result.Flight Crew : Requested ATC Assistance / Clarification

Result.Flight Crew : Landed in Emergency Condition

Assessments

Contributing Factors / Situations : Human Factors

Contributing Factors / Situations : Weather

Primary Problem : Weather

Narrative: 1

While flying from ZZZ to ZZZ1 I experienced light rhyme icing at 6,000 ft., -10C about 125 miles SE of ZZZ2. I could see the sun above and tried to climb above the deck to get above it. I went up to 11,000 ft., -20C, but was still IMC and now picking up Rhyme. I descended back to 6,000 ft. and it got worse. I descending to 4,000 ft., -10C, and now had about 1.5 inches of ice on all leading edges and the wind screen. ATC recommended several airports 20 miles off my nose, but these were smaller airports, shorter runways, and no ATC. I elected to fly 65 miles west to ZZZ2 due to longer runway, ATC, and ground support (including emergency vehicles). I never [advised ATC], but I began to lose power and had a difficult time maintaining 4,000 ft., ZZZ2 Approach provided priority handling for me and I was unaware. I flew the ILS to Runway XX (VFR conditions) because I could not see out my wind screen. I carried an extra 30 kts. on final and delayed lowering the landing gear until 1 nm landing with approach flaps only. I was able to land safely but had to flare out the side windows. ZZZ2 approach and tower were outstanding. My flight planning showed I'd be well west of the forecast icing, but several aircraft were reporting icing in my area from 6-10,000 ft. I landed without incident, terminated the priority handling, and had no damage to aircraft.

Synopsis

Pilot flying V35B aircraft reports icing inflight.

Time / Day

Date : 202102

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.TRACON

State Reference : US

Altitude.MSL.Single Value : 6000

Environment

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 10

Light : Daylight

Ceiling.Single Value : 3000

Aircraft

Reference : X

Aircraft Operator : Personal

Make Model Name : Skyhawk 172/Cutlass 172

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Cruise

Route In Use : Direct

Airspace.Class E : ZZZ

Component

Aircraft Component : Pitot-Static System

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Single Pilot

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Private

Experience.Flight Crew.Total : 1008

Experience.Flight Crew.Last 90 Days : 37

Experience.Flight Crew.Type : 650

ASRS Report Number.Accession Number : 1786936

Human Factors : Human-Machine Interface

Human Factors : Situational Awareness

Human Factors : Confusion

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Became Reoriented
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Returned To Clearance
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Aircraft : Equipment Problem Dissipated

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

Initially, cruised at 7,000 ft. From ZZZ to about the ZZZZZ intersection on V185, I was between layers. ATC requested that I change altitude to an even thousand because I was now westward bound and gave me a choice of up or down. Up would have put me in the clouds. So, I requested down to 4,000 ft. because I knew that should be below the freezing level and below the ceiling as I progressed. Upon reaching 6,000 ft., I requested to stay at that altitude because I was still between layers and 4,000 ft. would have put me in the clouds for some time before reaching the higher ceilings. Eventually, the layers merged and I was in the clouds at 6,000 ft. A short time later, rime ice began to form. In about a minute, I lost my airspeed indicator. Just prior to a red X appearing over the G5's airspeed partition, the G5's airspeed tape quickly unwound and a stall indication began flashing. Also, the GFC 500 autopilot had disengaged. I told ATC I was in icing and received clearance to descend. The stall indication did not make sense. But, I was confused by what was happening and pushed forward on the yoke so as to not take any chances. A recovery from a rapid descent and 180 degree turn was executed as I realized a stall was not happening and the auto pilot had disengaged. ATC offered a 2,000 ft. altitude to get out of the clouds and in warmer temperatures. I had turned on the pitot heat and the airspeed was functioning on both the airspeed steam gauge and the G5. The plane was iced but flying without difficulty and the ice was melting rapidly. I turned back on course and continued without further incident below the clouds. In retrospect, I should have descended to 4,000 ft. instead of stopping at 6,000 ft. This would have put me in the clouds for awhile, but beneath the freezing level.

Synopsis

Pilot flying C-172 aircraft reported inflight icing.

Time / Day

Date : 202102

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.TRACON

State Reference : US

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Turbulence

Weather Elements / Visibility : Windshear

Weather Elements / Visibility. Visibility : 8

Ceiling. Single Value : 2000

Aircraft

Reference : X

ATC / Advisory. TRACON : ZZZ

Aircraft Operator : Personal

Make Model Name : TBM 700/TBM 850

Crew Size. Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Initial Approach

Route In Use : Vectors

Airspace. Class B : ZZZ

Person

Location Of Person. Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function. Flight Crew : Pilot Flying

Function. Flight Crew : Single Pilot

Qualification. Flight Crew : Instrument

Experience. Flight Crew. Total : 891

Experience. Flight Crew. Last 90 Days : 13

Experience. Flight Crew. Type : 91

ASRS Report Number. Accession Number : 1786917

Events

Anomaly. Deviation - Altitude : Excursion From Assigned Altitude

Anomaly. Deviation - Track / Heading : All Types

Anomaly. Deviation / Discrepancy - Procedural : Clearance

Anomaly. Inflight Event / Encounter : Weather / Turbulence

Detector. Automation : Aircraft RA

Detector. Person : Flight Crew

When Detected : In-flight

Result.General : None Reported / Taken

Assessments

Contributing Factors / Situations : Weather

Primary Problem : Weather

Narrative: 1

On a flight from ZZZ to ZZZ1 in my TBM 700 (Aircraft X), I experienced moderate icing and severe turbulence and wind shear. On the approach to ZZZ1 moderate icing was reported to ATC which allowed me to descend to 2,000 ft. MSL. This got me out of IMC temporarily. I visually flew directly over ZZZ2. Shortly after I reentered IMC and experienced severe turbulence and wind shear. I had difficulty maintaining heading and altitude. It also caused me to be disoriented. I got heading and altitude warnings from ATC. I reported the severe turbulence and requested a vector twice. The second time registered and by then I was in moderate turbulence, icing and intermediate wind shear. ATC suggested an immediate landing at ZZZ2. I wanted no part of going close to whatever I had just passed thru and proceeded to ZZZ1. The airport came into view and I landed hot with one notch of flaps because of the wind shear and the fact that the plane was iced up. ATC was very helpful.

Synopsis

Pilot flying TBM 700 aircraft reported icing and severe turbulence on approach.

Time / Day

Date : 201811

Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Light : Night

Aircraft

Reference : X

Aircraft Operator : Air Taxi

Make Model Name : PC-12

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Ferry / Re-Positioning

Flight Phase : Cruise

Component : 1

Aircraft Component : Propeller Ice System

Aircraft Reference : X

Problem : Failed

Component : 2

Aircraft Component : Ice/Rain Protection System

Aircraft Reference : X

Problem : Failed

Person : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Taxi

Function.Flight Crew : First Officer

Function.Flight Crew : Pilot Not Flying

Qualification.Flight Crew : Commercial

ASRS Report Number.Accession Number : 1784113

Human Factors : Troubleshooting

Person : 2

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Taxi

Function.Flight Crew : Captain

Function.Flight Crew : Pilot Flying
Qualification.Flight Crew : Commercial
ASRS Report Number.Accession Number : 1784140
Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Result.General : Flight Cancelled / Delayed
Result.Flight Crew : Landed in Emergency Condition
Result.Flight Crew : Diverted

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : Weather
Primary Problem : Aircraft

Narrative: 1

Departed ZZZ on IFR flight to ZZZ1 as first leg of a reposition. Deice systems were inspected on the ground and tested prior to departure with no apparent failures. Boots and prop heat were activated upon entering icing conditions in cruise and both failed within a few minutes. OAT was within boot operation limits. Ran appropriate checklists and were unable to clear the failures. We elected to divert initially selecting ZZZ2. In the descent to ZZZ2 we discovered that our EFBs (electronic flight bags) did not have any approach procedures for the area downloaded. ZZZ2 showed VFR conditions so we attempted a visual approach but were unable to find the airport beacon light. ATC issued delay vectors while we worked on a new plan. It appeared that ice accumulation had stopped and that the layer of rime ice accumulated in cruise had been removed, but the OAT was still below freezing and we were still encountering precipitation and clouds. At this point we [advised ATC] and opted to land at ZZZ3. Upon nearing ZZZ3 It became clear that a visual approach was not going to be possible so we copied the RNAV RWY XX Approach at ZZZ3 from ATC and successfully completed the approach. After shutdown we discovered a layer of clear ice on the wings behind the boots that had not been visible in flight.

Narrative: 2

Deice equipment tested on ground prior to departure with no issue. During cruise, light ice was encountered, and plane was configured appropriately. De-ice boot message appeared, and was troubleshooted, but could not be rectified. Propeller deice failed shortly after, was troubleshooted, and could not be rectified. ATC was notified to coordinate descent out of icing conditions. Conditions persisted in descent, and decision was made to divert as altitude in positive temperatures could not be established. Vectors were given for ZZZ2, but airport lights could not be confirmed as on in marginal conditions. New vectors were given for approach into ZZZ3. Approach assisted in vectors onto course as EFB issue (unable to pull up approach plate) prevented standard ID of approach. Landing was safely achieved and flight was terminated and calls were made to Dispatch, Director of operations, and Maintenance. Crew believed aircraft to be free of ice on approach descent through visual inspection. Upon landing, patches of clear ice were found on the top of each wing behind the boots. Boots were clear of ice on approach and upon landing.

Synopsis

Air taxi pilots reported that after entering icing conditions, the boots and propeller heat failed. Pilots diverted and during postflight discovered clear ice on the wings.