

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 Number35

Date of UpdateMarch 29, 2022

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: 1862012 *(1 of 50)*

Synopsis

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

ACN: 1854765 *(2 of 50)*

Synopsis

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

ACN: 1853202 *(3 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 *(4 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 *(5 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 *(6 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 *(7 of 50)*

Synopsis

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

ACN: 1831782 *(8 of 50)*

Synopsis

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

ACN: 1826177 *(9 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 *(10 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 *(11 of 50)*

Synopsis

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

ACN: 1801136 *(12 of 50)*

Synopsis

Air Carrier Flight Crew reported icing and engine vibration after takeoff.

ACN: 1798022 *(13 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 *(14 of 50)*

Synopsis

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

ACN: 1793296 *(15 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 *(16 of 50)*

Synopsis

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

ACN: 1787169 *(17 of 50)*

Synopsis

Pilot flying V35B aircraft reports icing inflight.

ACN: 1786936 *(18 of 50)*

Synopsis

Pilot flying C-172 aircraft reported inflight icing.

ACN: 1786917 *(19 of 50)*

Synopsis

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

ACN: 1784113 *(20 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.

ACN: 1782995 *(21 of 50)*

Synopsis

Cessna Twin Piston aircraft pilot reported the windshield anti-ice system was inoperative in icing conditions.

ACN: 1780834 *(22 of 50)*

Synopsis

Piper pilot reported encountering IMC during VFR flight in mountainous location.

ACN: 1780466 *(23 of 50)*

Synopsis

C182 Pilot reported loss of engine thrust caused aircraft to sink and strike two approach lights during landing.

ACN: 1780052 *(24 of 50)*

Synopsis

A flight instructor on a VFR flight reported encountering unexpected IMC weather and momentarily climbed to 14,500 feet to avoid clouds without oxygen.

ACN: 1779947 *(25 of 50)*

Synopsis

PC-12 Captain reported an uneventful mechanical diversion due to Ice & Rain Protection system malfunction during icing conditions.

ACN: 1779578 *(26 of 50)*

Synopsis

Pilot was flying instrument approach after having ice build up on aircraft. During landing a vehicle entered the runway. Instead of going around, pilot chose to land long instead of returning to icing conditions.

ACN: 1779262 *(27 of 50)*

Synopsis

GA pilot reported inadvertent VFR flight into IMC that resulted in an airspace incursion.

ACN: 1778026 *(28 of 50)*

Synopsis

Single Air Taxi Pilot in IMC and icing conditions reported an alternator failure.

ACN: 1777608 *(29 of 50)*

Synopsis

First Officer reported during climb out both airspeed indicators began giving erroneous readings.

ACN: 1777113 *(30 of 50)*

Synopsis

BE-65 pilot reported difficulty maintaining altitude on approach after encountering severe icing conditions.

ACN: 1773838 *(31 of 50)*

Synopsis

UH-60 Pilot reported encountered icing, received accumulation warning, but failed to understand and activate the rotor ice protection system. Pilot reference UH-60 Operator's Manual suggestion.

ACN: 1766784 *(32 of 50)*

Synopsis

Center Controller reported a helicopter descended through minimum IFR altitude due to icing.

ACN: 1766771 *(33 of 50)*

Synopsis

Center Controller reported an aircraft experienced icing, stalled, and could not maintain altitude. Aircraft recovered below the Minimum IFR Altitude.

ACN: 1764327 *(34 of 50)*

Synopsis

Air taxi pilot reported pitot static system anomaly.

ACN: 1753188 *(35 of 50)*

Synopsis

EMB505 flight crew reported descending due to lack of radio establishment, engine icing indications in icing conditions, and moderate turbulence.

ACN: 1746169 *(36 of 50)*

Synopsis

PA28 pilot reported an icing encounter that necessitated a deviation from an assigned altitude.

ACN: 1739398 *(37 of 50)*

Synopsis

Navion Single Pilot reported entering icing conditions causing altitude and airspeed loss resulting in a stall. Pilot landed with ATC assistance.

ACN: 1729890 *(38 of 50)*

Synopsis

Pilot reported diverting due to severe icing and aircraft unable to climb out of icing conditions.

ACN: 1727044 *(39 of 50)*

Synopsis

C172 student pilot reported returning to departure airport after encountering unforecast icing conditions.

ACN: 1705401 *(40 of 50)*

Synopsis

C172 Instructor reported multiple errors precipitated by not thoroughly considering the weather prior to flight, then encountering icing conditions during flight.

ACN: 1703392 *(41 of 50)*

Synopsis

C182 instructor reported severe icing resulting in an immediate descent to exit the conditions.

ACN: 1703385 *(42 of 50)*

Synopsis

C172 Pilot reported weather diversion due to inflight icing conditions with aircraft not equipped with anti-ice protection.

ACN: 1688653 *(43 of 50)*

Synopsis

Falcon 20 First Officer reported a dual engine rollback while encountering icing conditions, which required a descent and diversion to the nearest suitable airport.

ACN: 1686301 *(44 of 50)*

Synopsis

A Lancair Evolution pilot reported unreliable altitude and airspeed indications while in icing conditions and ATC echoing false readings, resulting in a diversion and CFTT before landing.

ACN: 1681854 *(45 of 50)*

Synopsis

G-V Captain reported Pitot Static System anomalies due to high altitude icing.

ACN: 1669653 *(46 of 50)*

Synopsis

A Cessna Citation Excel Captain reported an anomaly with the pitot static system, suspected to be due to icing, which affected the air data computers.

ACN: 1650460 *(47 of 50)*

Synopsis

Learjet 60 Captain reported dual generator failure, left engine computer master caution, and intermittent stab heat fail in descent through clouds and icing.

ACN: 1639604 *(48 of 50)*

Synopsis

ZID ARTCC Controller reported that an aircraft was in icing conditions and the process that was taken to get the aircraft safely on the ground.

ACN: 1622053 *(49 of 50)*

Synopsis

PA-28 flight instructor reported encountering unexpected icing during IFR training flight.

ACN: 1619731 *(50 of 50)*

Synopsis

CE550 Captain reported overshooting a cleared altitude while descending in icing conditions with a failure of the left engine anti-ice system.

Report Narratives

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 : ZLC.ARTCC

State Reference : UT

Altitude.MSL.Single Value : 23000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Light : Daylight

Aircraft

Reference : X

ATC / Advisory.Center : ZLC

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 : ZLC

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 : Troubleshooting

Human Factors : Workload

Human Factors : Human-Machine Interface

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 and 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.

Time / Day

Date : 202101

Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.MSL.Single Value : 5000

Environment

Flight Conditions : IMC

Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Air Taxi

Make Model Name : Cessna Twin Piston Undifferentiated or Other Model

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 135

Flight Plan : IFR

Mission : Passenger

Nav In Use : FMS Or FMC

Nav In Use : GPS

Flight Phase : Cruise

Route In Use : Direct

Airspace.Class E : ZZZ

Component

Aircraft Component : Window Ice/Rain System

Aircraft Reference : X

Problem : Failed

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Taxi

Function.Flight Crew : Pilot Not Flying

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Commercial

ASRS Report Number.Accession Number : 1782995

Human Factors : Distraction

Human Factors : Human-Machine Interface

Human Factors : Situational Awareness

Human Factors : Time Pressure

Human Factors : Other / Unknown

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
Were Passengers Involved In Event : N
When Detected : In-flight
Result.Flight Crew : Diverted
Result.Flight Crew : Returned To Departure Airport
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

We took off from ZZZ into what I knew would be consistent icing to our destination. From my pre-flight weather brief I knew the icing was at all altitudes. After departing ZZZ we actually got into the clear at about 5,000 feet with very little ice. About 15 minutes into the flight we again entered the clouds and started picking up light to moderate ice. My windshield began picking it up, so I went to turn on the electric windshield. When I did the switch broke off in my hand and the electric windshield was stuck in the off position. I decided to turn around immediately because I knew that it was clear behind me at 8,000 feet. I knew everywhere around me was overcast with an icing layer below me, so I decided to return to ZZZ. I notified ATC because I knew I was going to have to descend through ice and may get some on the windshield. I wanted to spend as little time in it as possible. We landed in ZZZ with no further incident. We only picked up a small amount of ice, but I was able to see just fine to land. The plastic switch broke, and I could not get the windshield heat on.

Synopsis

Cessna Twin Piston aircraft pilot reported the windshield anti-ice system was inoperative in icing conditions.

Time / Day

Date : 202012

Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Relative Position.Angle.Radial : 020

Relative Position.Distance.Nautical Miles : 11

Altitude.MSL.Single Value : 9500

Environment

Flight Conditions : Mixed

Weather Elements / Visibility : Icing

Light : Daylight

Ceiling.Single Value : 4000

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Personal

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

Operating Under FAR Part : Part 91

Flight Plan : VFR

Mission : Personal

Flight Phase : Descent

Route In Use : Direct

Airspace.Class E : ZZZ

Component

Aircraft Component : Laptop Computer (performance, planning, etc.)

Aircraft Reference : X

Problem : Improperly Operated

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Air Transport Pilot (ATP)

Experience.Flight Crew.Total : 2500

Experience.Flight Crew.Last 90 Days : 60

Experience.Flight Crew.Type : 200

ASRS Report Number.Accession Number : 1780834

Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Deviation / Discrepancy - Procedural : FAR
Anomaly.Inflight Event / Encounter : VFR In IMC
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Became Reoriented

Assessments

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

Narrative: 1

Flying direct to ZZZ I had an iPad drop off the side window and I bent down to pick it up. Unfortunately the screen cracked and I attempted to assess the damage as well as re-mount it to the window. As I did this, the aircraft (no autopilot) inadvertently descended into a cloud layer I'd had intentions of passing over (I was within VFR mins above it) and suddenly I was IMC. I had mountainous terrain below, so I couldn't immediately descend, I tried climbing back to 10,500 feet, but at that point was still in the cloud. The airplane being a single engine piston I didn't have extra power to climb much higher so I watched my map closely to ensure I was moving past terrain, then began a descent. I advised ATC because I wanted to be sure I was heard in case something happened (ATC can't talk with me where I was due to rad and radio limitations from terrain). I descended and noticed my windscreen was icing up, and the wings began accumulate icing also. I continued descent until under the cloud layer and was able to safely land aircraft without incident.

Synopsis

Piper pilot reported encountering IMC during VFR flight in mountainous location.

Time / Day

Date : 202012

Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.Tower

State Reference : US

Relative Position.Distance.Nautical Miles : 1

Altitude.AGL.Single Value : 200

Environment

Flight Conditions : VMC

Weather Elements / Visibility.Visibility : 10

Light : Dusk

Ceiling.Single Value : 4100

Aircraft

Reference : X

ATC / Advisory.Tower : ZZZ

Aircraft Operator : Personal

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

Operating Under FAR Part : Part 91

Flight Plan : None

Mission : Personal

Flight Phase : Landing

Airspace.Class C : ZZZ

Component

Aircraft Component : Reciprocating Engine Assembly

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Commercial

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Total : 525

Experience.Flight Crew.Last 90 Days : 24

Experience.Flight Crew.Type : 4

ASRS Report Number.Accession Number : 1780466

Events

Anomaly.Aircraft Equipment Problem : Critical

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

Anomaly.Ground Event / Encounter : Object

Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control

Detector.Person : Flight Crew

When Detected : In-flight

Result.General : Maintenance Action

Result.General : Flight Cancelled / Delayed

Result.Flight Crew : Landed in Emergency Condition

Result.Aircraft : Aircraft Damaged

Assessments

Contributing Factors / Situations : Aircraft

Primary Problem : Aircraft

Narrative: 1

On a normal approach to landing Runway XX at ZZZ airport, the aircraft experienced a temporary loss of engine power. We were on the middle glide path of the PAPI (2 red, 2 white) on runway centerline at approximately 200 ft. AGL. Approach speed was approximately 85 mph with 20 degrees of flaps deployed. The throttle was at a low power setting and the aircraft was sinking slightly below glideslope, so I pushed it in a bit to increase power. There was no increase in power so I pushed the throttle in further, eventually to full. With no change in engine sound or perceived power I continued the descent maintaining airspeed to the ground. As the aircraft was already low, we struck two approach lights (MALSR) and knocked them over. In inspection afterwards it appears that the lights struck the lower engine cowling and dented it. The plane touched down and at this point I contacted the tower letting them know we had a loss of power. During rollout engine power came back due to the pushed in throttle. I opted to shut the engine down at this point as the state of the airplane was not known. Once crews arrived I had already exited the plane and did not see much visible damage. With the fire crews there we opted to restart the engine to taxi off the runway with no further issue. I believe this incident could be caused by carburetor icing or perhaps a contaminant in the fuel system. The aircraft should have had approximately 20 gallons of fuel remaining at time of landing, and was in a stabilized decent so I would rule out temporary interruption of fuel supply. There was no indication of low fuel on either gauge and the fuel selector was set to both. A contaminant in the fuel system seems possible, though I am not sure what would make this kind of incident transitory. It's hard to say for sure, but I believe we were still hearing the engine running and not just the windmilling prop the entire time, so I don't believe the engine had shut off entirely at any point. Carburetor icing seems like the most likely explanation I can think of, but the symptoms are not consistent with how I was trained to detect it. At no time did we experience engine roughness during the flight, which I believed was a characteristic sign of carb icing. Prior to the descent to land, the aircraft was circling at 10,000 ft. for aerial observation. Power settings during the decent were reduced and I remember thinking that the throttle position used during the cruise descent was further in than I would expect for the observed manifold pressure. I had only flown this plane briefly before, so I didn't think much more of it, but if carb ice was the blame this was probably the main indication. At 2,000 ft. I was reducing to lower power settings and I activated carburetor heat. There was no roughness after this point that I would expect to associate with carb icing as it cleared. The fact that the landing after sunset and starting to get dark was not a major factor, aside from difficulty seeing what was below (besides the lights) as the plane came down short of the runway. Maintaining the approach speed close to best glide after power loss was important in avoiding any injury or more significant damage to the aircraft. Given the long length of the runway (9,800 ft.) I could have avoided hitting anything by planning to land above the PAPI glidepath.

Synopsis

C182 Pilot reported loss of engine thrust caused aircraft to sink and strike two approach lights during landing.

Time / Day

Date : 202012

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 14500

Environment

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Rain

Weather Elements / Visibility : Snow

Weather Elements / Visibility.Visibility : 15

Light : Daylight

Ceiling.Single Value : 10000

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : FBO

Make Model Name : DA42 Twin Star

Operating Under FAR Part : Part 91

Flight Plan : VFR

Mission : Training

Flight Phase : Cruise

Route In Use : Direct

Airspace.Class A : ZZZ

Airspace.Class E : ZAB

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Instructor

Function.Flight Crew : Pilot Not Flying

Qualification.Flight Crew : Commercial

Qualification.Flight Crew : Flight Instructor

Experience.Flight Crew.Total : 1700

Experience.Flight Crew.Type : 1000

ASRS Report Number.Accession Number : 1780052

Human Factors : Time Pressure

Human Factors : Training / Qualification

Human Factors : Situational Awareness

Events

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

Anomaly.Deviation / Discrepancy - Procedural : FAR

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : VFR In IMC
Detector.Person : Flight Crew
Result.Flight Crew : Took Evasive Action

Assessments

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

Narrative: 1

The weather enroute to ZZZ1 wasn't too bad. I would characterize the clouds as scattered around 9,000 to 1,0000 feet with periodic cells of precipitation. Low temperatures meant icing conditions so we avoided all precipitation. Preflight planning weather briefing was in agreement with what we were observing, and we listened to each Automated Weather of the airports we passed. The area was nearly clear skies. Few clouds if any and no observed precipitation within 20 miles. Winds and clouds were moving east, following a cold front which passed the day prior. We encountered one broken cell at 10,000 feet off our left and few clouds off our right. We climbed to 11500 feet and passed above and well clear of that cell within a short period of time. We stayed VFR, away from known icing conditions and moisture. The ride was uneventful. On the ride back, I expected the same weather. Conditions at my destination were VFR with scattered clouds up high, and a nearby airport was reporting the same. I did not check one of the airports enroute. Radar returns on the map showed the same few cells scattered without only light precipitation. In the same region we encountered what I believed to be the same cell we crossed over in the previous flight. We took note of precipitation left, right and ahead to the left. With a large enough gap of scattered clouds ahead to the right. We continued, and I made the decision to climb up to 10,500 feet to determine the height of the clouds. The clouds which were still only 500 feet in height, were now based around 10,500 feet. I made the decision then to climb to 12,500 feet to cross over them. I knew we were less than 30 minutes from an area which previously was nearly clear skies. Upon reaching 12,500 feet, I started the timer and we continued to cross well above the layer. I would describe this layer to be 6/8 to 7/8 as there were often breaks where we could see ground and see that the layer was not very thick in height. Roughly 10 to 15 miles, 5 to 8 minutes we noticed the clouds were becoming higher altitude, and we were losing spacing from them. We maneuvered around them as best we could, but would need to climb to stay above them and away from icing conditions. I absolutely knew that we would not be putting the airplane into known icing conditions. At this point, turning back didn't seem to be any more promising than continuing on course. We had confidence that the weather in the area was better beyond this cell, and we just witnessed the weather make a change of heart behind us. At this point, I knew that things could turn worse. As contingency, we began direct course for an airport with good weather. In the event that we reached 30 minutes above 12,500 feet or encountered any ice, we would immediately descend through the nearest break and land the airplane. As we continued, the clouds continued to rise. Still broken and overcast beneath us, we were faced with few options. Climb higher, enter known icing, or drop through a break and hope there is not precipitation around which would become ice. Entering icing conditions was not an option, or if anything a very last resort. Hypoxia was our biggest threat at altitude, and we were well aware and cautious of any symptoms. Luckily, I have had the experience of an altitude chamber and know my symptoms and signs. But we had to climb higher to avoid the icing conditions. We climbed up to 14,500 feet briefly and descended back down when able. Then the weather cleared up, the clouds became scattered, and we were able to descend back down to 8,500 feet. A total time of 24 minutes was observed above 12,500 feet. I would

estimate that only 2-3 minutes were spent above 14,000 feet. No signs or symptoms of hypoxia were observed. The remainder of the flight was VFR and uneventful. The challenge was the lack of weather reporting equipment to determine the weather enroute, but this is not an excuse. I will exercise more resources such as a phone briefing or additional charts next time. I will also remember to never expect the weather to remain the same. Next time I will remember my favorite motto; Plan for the worst, and hope for the best.

Synopsis

A flight instructor on a VFR flight reported encountering unexpected IMC weather and momentarily climbed to 14,500 feet to avoid clouds without oxygen.

Time / Day

Date : 202012

Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 22000

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 : 2

Operating Under FAR Part : Part 135

Flight Plan : IFR

Mission : Ferry / Re-Positioning

Flight Phase : Cruise

Airspace.Class A : ZZZ

Component

Aircraft Component : Ice/Rain Protection System Indicating & Warning

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Corporate

Function.Flight Crew : Captain

Function.Flight Crew : Pilot Not Flying

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Air Transport Pilot (ATP)

ASRS Report Number.Accession Number : 1779947

Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Critical

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
When Detected : In-flight
Result.General : Maintenance Action
Result.General : Flight Cancelled / Delayed
Result.Flight Crew : Diverted
Result.Flight Crew : Landed As Precaution
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft
Primary Problem : Aircraft

Narrative: 1

The incident occurred during an otherwise uneventful reposition flight from ZZZ - ZZZ1. The PIC was acting as Pilot Monitoring, and the FO as Pilot Flying. The filed altitude was FL200, but the flight had requested and received FL220 approximately 45 minutes to an hour prior to the incident to escape some moderate turbulence. At the time of the incident, the conditions were IMC with intermittent patches of VMC, light turbulence, and trace to light icing at about -23 deg C. The aircraft was on the western edge of the occluded segment of a frontal low. The first indication was the De-Ice Boots CAS. The FO remained Pilot Flying, and PIC attempted to troubleshoot the problem with the QRH. In addition, the QRH checklist was cross checked by the FO. Unfortunately, the problem did not reset, so the crew determined that it was not safe to remain in icing conditions without wing De-ice capability. The crew then examined alternates, eventually deciding on ZZZ2 due to the availability of a runway greater than 10,000 feet in length, its position behind (west) the front, and the prevailing conditions of unrestricted visibility and a 900 foot ceiling. The PM then informed ARTCC of the need to divert and received a vector for the ILS XX. During the descent, the PM calculated the required landing distance for the Flaps 0 deg Boot Fail scenario, the approach was set up and briefed, and the appropriate checklists were run. Due to the failure of the De-ice Boots, some mixed icing on the leading edge, clear runback ice on inside third of the upper surface, and rime on the underside of the airfoil accumulated during descent and approach. The crew monitored the accumulation visually and by referencing the trim indicators to ensure that abnormal force was not required to control the aircraft. The approach and landing was conducted at Flaps 0 deg and in accordance with procedure for landing with inoperative boots.

Synopsis

PC-12 Captain reported an uneventful mechanical diversion due to Ice & Rain Protection system malfunction during icing conditions.

Time / Day

Date : 202012

Local Time Of Day : 0001-0600

Place

Locale Reference.Airport : CID.Airport

State Reference : IA

Altitude.MSL.Single Value : 2000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Snow

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Turbulence

Weather Elements / Visibility.Visibility : 3

Light : Night

Ceiling.Single Value : 1200

Aircraft

Reference : X

ATC / Advisory.Center : ZAU

ATC / Advisory.CTAF : CID

Aircraft Operator : Air Taxi

Make Model Name : Small Transport

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 135

Flight Plan : IFR

Mission : Cargo / Freight / Delivery

Flight Phase : Landing

Route In Use : Vectors

Component

Aircraft Component : Air/Ground Communication

Aircraft Reference : X

Problem : Improperly Operated

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Taxi

Function.Flight Crew : Single Pilot

Function.Flight Crew : Captain

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Commercial

Experience.Flight Crew.Total : 2100

Experience.Flight Crew.Last 90 Days : 100

Experience.Flight Crew.Type : 500

ASRS Report Number.Accession Number : 1779578
Human Factors : Situational Awareness
Human Factors : Workload
Human Factors : Communication Breakdown
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : Ground Personnel

Events

Anomaly.Aircraft Equipment Problem : Less Severe
Anomaly.Conflict : Ground Conflict, Critical
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Miss Distance.Horizontal : 0
Miss Distance.Vertical : 1000
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Overcame Equipment Problem

Assessments

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

Narrative: 1

I was on a instrument approach to CID talking with Chicago Center and picking up ice. Chicago asked me to cancel IFR clearance as early as possible because a (Company) plane was landing behind me. I changed to the CTAF frequency and made a 10 miles out announcement. I broke out around 2,000 ft msl/1,200 ft. AGL and change back to Chicago Center and cancelled my IFR clearance with ATC. I switched the comm back to CTAF and continued the approach, however; the button push failed to change to CTAF and stayed on Chicago Center and I missed that. During the approach I was stunned to see a vehicle pull out onto the approach end of the runway and stop at the very end just beyond the runway end lighting. I was still approximately 1-1 1/2 miles out. I had to make a decision to land or go back up into the icing. As the runway was 8,000 ft. long I elected to extend and land in the 2nd half of the runway as opposed to risk picking up excessive ice and endangering my aircraft.

Synopsis

Pilot was flying instrument approach after having ice build up on aircraft. During landing a vehicle entered the runway. Instead of going around, pilot chose to land long instead of returning to icing conditions.

Time / Day

Date : 202012

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 : 18200

Environment

Flight Conditions : Marginal

Weather Elements / Visibility : Icing

Light : Daylight

Ceiling.Single Value : 18700

Aircraft

Reference : X

ATC / Advisory.Center : 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 : None

Mission : Personal

Flight Phase : Cruise

Route In Use : None

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 : Multiengine

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Private

Experience.Flight Crew.Total : 1117

Experience.Flight Crew.Last 90 Days : 45

Experience.Flight Crew.Type : 998

ASRS Report Number.Accession Number : 1779262

Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Less Severe

Anomaly.Airspace Violation : All Types

Anomaly.Deviation / Discrepancy - Procedural : FAR

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

When Detected : In-flight

Result.Flight Crew : Requested ATC Assistance / Clarification

Result.Air Traffic Control : Provided Assistance

Result.Air Traffic Control : Issued Advisory / Alert

Result.Air Traffic Control : Issued New Clearance

Assessments

Contributing Factors / Situations : Human Factors

Contributing Factors / Situations : Weather

Primary Problem : Weather

Narrative: 1

Pre-flight planning with ForeFlight didn't show icing conditions where I encountered them in flight. The ZZZ1 live weather cams looked promising too. I should've used multiple resources instead of just ForeFlight. Years of multiple flights on this route gave me a false sense security. I was aware of a small storm moving in. I pushed my limits, trying to arrive before the storm while taking advantage of tail winds. These are all examples of what lead up to my problem. I encountered MVFR conditions over the mountains approximately 40 miles southwest of ZZZ2 at approximately 14,500 ft. I noticed light rime icing, air temp -20c. I climbed and notified ATC I would return to ZZZ due to weather. This was a safe decision. While Heading back at 17,500 ft., it appeared I could make it safely over the top of the weather. I planned to overfly ZZZ2 and look for a safe opening in the weather. I had done this many times before and was still feeling complacent and confident. I informed ATC of my plans to turn around. This was NOT a safe or intelligent decision and caused my problem. I should have acknowledged my original weather concerns and continued back home. While close to ZZZ2 clouds built up vertically rapidly. I started icing up and informed ATC of my situation and needed to climb to FL 18,500 ft. I was at my service ceiling, with few options. Despite pitot heat and MVFR, my pitot tube froze up. I lost all primary instruments, switched to secondary steam gauges, also my O2 tank malfunctioned. This all happened in a matter of minutes. Lack of practice on partial instrument panel failures did not help my situation. I informed ATC I was unable to copy IFR clearances at this time. Maneuvering around building IMC icing conditions, on steam gauges, at my service ceiling, without O2, and now fighting headwinds was very challenging. Flying the plane had to be my sole focus and ATC understood. ATC made me a priority aircraft for me due to my unwillingness to copy my IFR clearance. As I headed southwest my instruments came back online and the weather improved. I subsequently picked up an IFR clearance. I requested lower, plus cancellation of IFR from ZZZ Center. ZZZ Center asked if I was still in distress. I assured ATC everything was fine now. I was no longer considered an aircraft in a priority handling situation. As a preventative safety measure, planes without deicing equipment should not fly near icing conditions even in VMC. Traditional VFR cloud separation rules, while legal are not always safe, especially when potentially hazardous conditions exist. A good preventative measure would have been not to fly at all that day.

Synopsis

GA pilot reported inadvertent VFR flight into IMC that resulted in an airspace incursion.

Time / Day

Date : 202012

Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ2.ARTCC

State Reference : US

Relative Position.Angle.Radial : 090

Relative Position.Distance.Nautical Miles : 15

Altitude.MSL.Single Value : 8000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Light : Daylight

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ2

Aircraft Operator : Air Taxi

Make Model Name : Small Aircraft

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 135

Flight Plan : IFR

Mission : Cargo / Freight / Delivery

Flight Phase : Initial Approach

Flight Phase : Cruise

Route In Use : Direct

Airspace.Class E : ZZZ2

Component

Aircraft Component : AC Generator/Alternator

Aircraft Reference : X

Problem : Failed

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Taxi

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

Experience.Flight Crew.Total : 1920

Experience.Flight Crew.Last 90 Days : 80

Experience.Flight Crew.Type : 39

ASRS Report Number.Accession Number : 1778026

Human Factors : Troubleshooting

Human Factors : Workload

Human Factors : Situational Awareness

Human Factors : Time Pressure

Events

Anomaly.Aircraft Equipment Problem : Critical

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.Flight Crew : Became Reoriented

Result.Flight Crew : Diverted

Result.Flight Crew : Requested ATC Assistance / Clarification

Result.Flight Crew : Returned To Departure Airport

Result.Flight Crew : Landed in Emergency Condition

Result.Air Traffic Control : Issued New Clearance

Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Aircraft

Contributing Factors / Situations : Weather

Primary Problem : Aircraft

Narrative: 1

I departed ZZZ on an IFR flight plan to ZZZ1. The aircraft had sat for roughly 3 days over the weekend before this flight and was difficult to start that morning (battery seemed weak). 40 minutes into the flight, the first symptoms of an electrical malfunction began to show up. I was roughly 15 nm from the IAF for the RNAV XX approach into ZZZ1 at 8,000 feet MSL, in actual IMC with light to moderate rime icing. I had just switched from ZZZ2 Center to the CTAF for the ZZZ1 airport when the auto-pilot for the aircraft unexpectedly disconnected. All of the lights on the autopilot control panel went dark, and the autopilot would not turn back on. Initially, I decided to continue the approach by hand and have maintenance check the autopilot malfunction on the ground. After briefly troubleshooting the autopilot, I returned to my instrument scan. At first glance, my HSI indicated that I was on Heading/Course. Needles were centered and heading bug was situated at the top of the instrument. But when I looked over at the Garmin 430 GPS, it indicated that I was off heading by 20-30 degrees. By the time I looked back towards my HSI, there was a "HDG" flag starting to flicker in the top right hand corner. I looked across the panel at the co-pilot's instrument cluster and noted that the co-pilot's artificial horizon was flopped over, indicating a 45* right bank and 20* nose up attitude. The co-pilot's side DG was also off by 90* from my magnetic compass. As I looked back towards the pilot's side instrument cluster, my HSI began spinning around and around like a top. At this point, I had obviously determined that several of my gyroscopic instruments had failed, and I had difficulty determining which instruments were trustworthy and which were not. From this point on, I did my best to maintain straight and level flight with my remaining instruments and the Garmin 430 GPS ground track. I looked out the window at my wings (I was still in IMC and light to moderate icing [at] this point) and saw that during my troubleshooting I had enough ice accumulation that small "horns" of rime ice were begging to grow on the

leading edges and my de-ice boots were mostly white with a layer of ice. When I pressed the switch on the overhead panel to activate my de-ice boots, nothing happened. I immediately switched back to ZZZ2 Center and [received priority], advising them that I had gyroscopic instrument failures and inoperative anti-icing equipment. I requested an immediate climb in an attempt to escape the icing conditions and find visual flight conditions before my remaining instrumentation failed, along with vectors back to ZZZ (which I knew had good VFR weather conditions...ZZZ1 conditions appeared to be worsening when I had last listened to the automated weather). ATC was extremely helpful and professional. Immediately offering any assistance they could, giving me no-gyro vectors towards ZZZ and approving a climb to 12,000 feet MSL. I had difficulty maintaining a heading and climb pitch-attitude initially, but got vaguely stabilized within a few minutes. Once stabilized, I noticed that the left alternator light was on, I attempted to re-cycle the alternator master switch twice without success. I then began to load-shed all electrical equipment which was not absolutely necessary for the continuation of the flight, and I advised ATC that I had experienced an alternator failure. I initially broke out of the top of the cloud layer and entered VMC around 10,000 feet roughly 15 minutes after the first indication of electrical failure. I had to request a higher altitude shortly thereafter as the tops of the clouds sloped higher towards ZZZ. ATC cleared me for a block altitude 8,000 feet to 12,000 feet, then eventually up to 14,000 feet, and authorized any course deviations necessary for me to remain in VFR conditions. Upon leveling off, I was initially concerned about what appeared to be a fairly significant performance loss. My first assumption was that it was due to ice build up on the wings/tail. In a level flight attitude, at 38" of manifold pressure and 2400 rpm (typical climb power) I was only getting 120 knots indicated airspeed. 160 knots to 170 knots indicated is more typical during cruise flight at a much lower power setting (30"/2300rpm). I alerted ATC that I was seeing abnormally low air speeds. But after a quick glance at my GPS (which was showing a 230 knots ground speed) I realized that the airspeed discrepancy was most likely due to pitot icing. ATC confirmed that they were showing me with a ground speed in the high 220's. By this point, the aircraft was out of icing conditions and flying just fine in VMC. So most of the potential danger had past. The last thing I had to do was search around for a hole in the clouds so that I could get back into ZZZ (there was an overcast layer between my aircraft and the ground). With the help of ZZZ3 Approach, ZZZ Tower, and several other aircraft in the area giving pilot reports, I found an opening near ZZZ4 and circled down for a visual approach into Runway XXL at ZZZ. The vast majority of the ice which had accumulated on the aircraft came off in the decent due to higher airspeeds and increasing temperatures. I landed without further incident, parked the aircraft, and immediately took down notes regarding the order of events while they were still fresh in my mind. I then called the Chief Pilot to relay what happened.

Synopsis

Single Air Taxi Pilot in IMC and icing conditions reported an alternator failure.

Time / Day

Date : 202012

Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZ.TRACON

State Reference : US

Environment

Flight Conditions : IMC

Aircraft

Reference : X

Aircraft Operator : Fractional

Make Model Name : Citation X (C750)

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 135

Flight Plan : IFR

Nav In Use : FMS Or FMC

Nav In Use : GPS

Flight Phase : Initial Climb

Flight Phase : Climb

Route In Use : Direct

Component

Aircraft Component : Airspeed Indicator

Aircraft Reference : X

Problem : Malfunctioning

Person

Location Of Person.Aircraft : X

Reporter Organization : Fractional

Function.Flight Crew : First Officer

Function.Flight Crew : Pilot Not Flying

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1777608

Human Factors : Troubleshooting

Human Factors : Situational Awareness

Human Factors : Confusion

Events

Anomaly.Aircraft Equipment Problem : Less Severe

Anomaly.Ground Event / Encounter : Weather / Turbulence

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Overcame Equipment Problem

Result.Aircraft : Equipment Problem Dissipated

Assessments

Contributing Factors / Situations : Aircraft

Contributing Factors / Situations : Company Policy

Contributing Factors / Situations : Human Factors

Contributing Factors / Situations : Procedure

Contributing Factors / Situations : Weather

Primary Problem : Ambiguous

Narrative: 1

This event had to do with both Primary Flight Displays airspeed indications giving crew error readouts. The aircraft had been sitting outside during the snowstorm we had in the northeast. We followed deice and anti-ice procedures per Cold Weather Ops. Checklist. Passing through 210 kts (211) both IAS indications turned red indicating we were in a overspeed indication. Both landing gear and flaps/slat were verified up by checklist usage and visually from the cabin. With our resources we verified IAS were correct even though they were indicating in the Red. We ran appropriate checklist and verified aircraft performance characteristics utilizing all aircraft instrumentation. We advised the maintenance (coordinating with cessna) and agreed continuing on to destination would be the right decision with our situation. Both of us agreed with solution and agreed we we're safe to continue. Upon slowing in to ZZZ at 210 kts both Primary Flight Display IAS indications returned to Green Normal color. We landed with all normal indications. With my XX years of aviation commercial experience, I don't agree with the Cold Weather Checklist. It tells us to extend flaps to 35 for de-ice and 0 degrees for anti-ice. My experience has always kept Flaps up during both these procedures, so to prevent fluid getting on full flap area that sits under wing when retracted. Selecting Flaps once nearing runway so to prevent snow and slush from getting on Full Flap area would be a better practice, while protecting a major portion of flap area from icing conditions waiting to takeoff. Suggest looking at how we perform de/anti-icing procedures on the fleet.

Synopsis

First Officer reported during climb out both airspeed indicators began giving erroneous readings.

Time / Day

Date : 202012

Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 5300

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Light : Night

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Air Taxi

Make Model Name : Queen Air 65/70 (Seminole)

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 135

Flight Plan : IFR

Mission.Other

Nav In Use : GPS

Flight Phase : Initial Approach

Airspace.Class E : ZZZ

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Function.Flight Crew : Single Pilot

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Commercial

ASRS Report Number.Accession Number : 1777113

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude

Anomaly.Deviation / Discrepancy - Procedural : Clearance

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Detector.Person : Flight Crew

When Detected : In-flight

Result.General : None Reported / Taken

Assessments

Contributing Factors / Situations : Weather

Primary Problem : Weather

Narrative: 1

Encountered severe ice and could not exit the conditions before losing ability to maintain altitude. Continued on with the approach to landing starting the approach 400 feet low.

Synopsis

BE-65 pilot reported difficulty maintaining altitude on approach after encountering severe icing conditions.

Time / Day

Date : 202011

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.TRACON

State Reference : US

Relative Position.Angle.Radial : 150

Relative Position.Distance.Nautical Miles : 20

Altitude.MSL.Single Value : 8500

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Cloudy

Weather Elements / Visibility.Visibility : 0

Light : Dusk

Ceiling.Single Value : 8500

RVR.Single Value : 0

Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Military

Make Model Name : S-70/UH-60 Blackhawk/Seahawk/Pavehawk/Knighthawk

Crew Size.Number Of Crew : 3

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Passenger

Flight Phase : Climb

Route In Use : Direct

Airspace.Class E : ZZZ

Component

Aircraft Component : Aerofoil Ice System

Aircraft Reference : X

Problem : Improperly Operated

Person

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Government

Function.Flight Crew : Pilot Flying

Function.Other.Other

Qualification.Flight Crew : Commercial

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Rotorcraft

Qualification.Other

Experience.Flight Crew.Total : 1217
Experience.Flight Crew.Last 90 Days : 68
Experience.Flight Crew.Type : 898
ASRS Report Number.Accession Number : 1773838
Human Factors : Troubleshooting
Human Factors : Time Pressure
Human Factors : Training / Qualification

Events

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude
Anomaly.Deviation / Discrepancy - Procedural : Clearance
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Regained Aircraft Control
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

On [Date], I was acting as Pilot in Command (PIC) of a UH-60 L Army National Guard Helicopter conducting a round-trip air movement of crew and passengers from ZZZ1 to ZZZ. I was sitting left seat, my Co-pilot (PI) sat right seat. I had two crewmembers in the gunner's seats (Row 2), and one passenger in Row 3. Total: 5 souls on board. Earlier in the day, we had flown IFR from ZZZ1 to ZZZ2 for a fuel stop before heading to ZZZ. We had received a military weather briefing and were aware of an AIRMET Zulu for moderate icing along the route. We monitored PIREPS and determined as a crew that the risk of anything beyond moderate icing was minimal, as the few PIREPS observed were for light rime ice at flight levels above our planned flight altitude. The conditions observed on the flight from ZZZ2 to ZZZ were very stable. There was a stratiform cloud layer, approximately 1,000 to 2,000 ft. thick, that we either flew below or above the cloud layer the entire way to ZZZ. We observed no icing. We were on the ground for approximately two hours after landing at ZZZ. I continued to monitor weather conditions, and it appeared they had not changed from the time we landed. I observed the same AIRMET Zulu and a couple of PIREPS reporting light rime above our planned flight level. Prior to departure, my crew and I conducted de-ice checks in accordance with our aircraft's technical manual, which all passed. After an uneventful climb to our requested flight level of 7,000 ft. MSL, we leveled off. At this time the annunciator panel gave us a warning of "MR ICE DETECTED". We had discussed this as an expected possibility, acknowledged the caution, and monitored our ice rate meter, which read "Light Icing Detected". At this time, I asked ATC if they knew where the cloud tops were. We were informed that they were at approximately 8,000 ft. MSL. Faced with the decision to climb approximately 1,000 ft. through visible moisture, or descend approximately 4,000 ft. through visible moisture, I requested to climb to 10,000 ft. MSL. ATC gave a clearance to 9,000 ft. MSL. We began our climb. In approximately 1.5 minutes, our icing condition worsened. Our ice rate meter pegged out at its maximum indication of severe icing. The helicopter began to shake, and we lost a dangerous amount of our main rotor RPM (a true [anomaly]). I immediately

pressed down on the collective to preserve our rotor RPM, took the controls from my co-pilot, [advised ATC] by announcing "PAN PAN PAN" on ZZZ Approach frequency. I asked the controller to help me get out of the icing situation and was ultimately cleared down to 2,500 ft. MSL. My crew and I flew the helicopter well, in a level attitude at approximately 2,500 ft. per minute. We maintained 100% rotor RPM during our decent and exited the cloud layer at approximately 3,000 ft. MSL. I tested the controls as we got closer to the surface to ensure I would be able to arrest the helicopter's rate of decent. Upon exiting the clouds, the icing condition improved, and the rest of the flight home was uneventful and under VFR conditions. Chain Of Events: How the problem arose: The problem arose from the unexpected encounter into severe icing. How it was discovered: The severe icing was detected by on the on-board ice detection system, severe vibrations were felt by the crew, and the low rotor warning alarm sounded. Corrective actions: The Good: The crew responded to the [situation] well by manipulating the flight controls to preserve rotor RPM, communicating the [anomaly] to ATC, and flying the aircraft out of the icing conditions. The Bad: The crew did not respond correctly to the initial "ICE DETECTED" caution. In accordance with the UH-60 Operators Manual, "The ice rate meter activates the ICE DETECTED caution when the BLADE DE-ICE POWER switch is turned off, informing the pilot of the requirement to turn on the system". Contributing Factors: Neither the UH-60 Operating Manual or checklist clearly emphasizes the immediate memory item actions required in the event of an icing [situation]. An updated -1 weather brief was not obtained from the Air Force Operational Weather Squadron by the Pilot in Command. Human Performance Considerations: The perception of the Pilot in Command that the "AUTO" function on the ice rate meter meant that the system will "automatically operate upon detection of ice" was incorrect. The perception of the Pilot in Command that the weather conditions would be the same on the return flight as they were on the first portion was incorrect. The actions of both the Pilot in Command and Co-pilot ultimately saved the lives of the crew, however their inaction to turn the de-ice system on was detrimental to the safe operation of the aircraft. Factors affecting the quality of human performance: Neither the Pilot or Co-pilot complained of fatigue or other exogenous factors prior the flight. Both had a good night's rest and were well within the confines of their duty day at the time of the incident. Recommendations: Ensure aircrew are intimately familiar with the de-ice equipment and capabilities on their aircraft. Recommend that changes be made to the UH-60 Operator's Manual and checklist to emphasize the seriousness of an icing [situation] and the immediate response required. This should be an underlined step. Once the ICE DETECTED caution appears, the immediate action required is for the blade de-ice switch to be turned ON.

Synopsis

UH-60 Pilot reported encountered icing, received accumulation warning, but failed to understand and activate the rotor ice protection system. Pilot reference UH-60 Operator's Manual suggestion.

Time / Day

Date : 202010

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 5000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Cloudy

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Government

Make Model Name : S-70/UH-60 Blackhawk/Seahawk/Pavehawk/Knighthawk

Operating Under FAR Part : Part 91

Flight Plan : IFR

Flight Phase : Cruise

Component

Aircraft Component : Ice/Rain Protection System

Aircraft Reference : X

Problem : Malfunctioning

Person

Reference : 1

Location Of Person.Facility : ZZZ.ARTCC

Reporter Organization : Government

Function.Air Traffic Control : Enroute

Qualification.Air Traffic Control : Fully Certified

ASRS Report Number.Accession Number : 1766784

Events

Anomaly.Aircraft Equipment Problem : Critical

Anomaly.Deviation - Altitude : Overshoot

Anomaly.Deviation / Discrepancy - Procedural : Clearance

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control

Anomaly.Inflight Event / Encounter : Fuel Issue

Detector.Person : Air Traffic Control

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Diverted

Result.Air Traffic Control : Provided Assistance
Result.Air Traffic Control : Issued New Clearance

Assessments

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

Narrative: 1

Aircraft X departed originally VFR under IFR conditions. TRACON was able to give IFR clearance. Aircraft X was level at 5000 ft. Upon entrance into the sector, they encountered icing conditions. Aircraft X was [issued a] climb to 8000 ft. and got out of the icing. Enroute to original destination, pilot asked for a diversion to ZZZ airport due to fuel. I cleared and gave aircraft pilot's discretion clearance to 5000 ft. That put aircraft back into icing conditions of which then icing equipment malfunctioned. Pilot asked for a descent out of the icing conditions. I issued a descent to 4900 ft. which was the lowest MIA (Minimum IFR Altitude). Pilot took the descent but continued to descend. Pilot was not able to maintain altitude and continued descending. We were looking for a safe place for the helicopter to land. Also, wanted to keep aircraft out of the clouds due to icing. Aircraft X requested priority handling. I tried to assist the best way I could due to the conditions. Pilot reported being in moderate to heavy icing conditions and was unable to maintain altitude.

Synopsis

Center Controller reported a helicopter descended through minimum IFR altitude due to icing.

Time / Day

Date : 202010

Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 15000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Aircraft

Reference : X

ATC / Advisory.Center : 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 : Cruise

Route In Use : Vectors

Airspace.Class E : ZZZ

Person

Reference : 1

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) : 11

ASRS Report Number.Accession Number : 1766771

Human Factors : Workload

Human Factors : Time Pressure

Events

Anomaly.ATC Issue : All Types

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

Anomaly.Inflight Event / Encounter : CFTT / CFIT

Detector.Person : Flight Crew

Detector.Person : Air Traffic Control

When Detected : In-flight

Result.Flight Crew : Requested ATC Assistance / Clarification

Result.Air Traffic Control : Separated Traffic

Result.Air Traffic Control : Issued New Clearance
Result.Air Traffic Control : Issued Advisory / Alert
Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Chart Or Publication
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Airspace Structure
Contributing Factors / Situations : Weather
Contributing Factors / Situations : Procedure
Primary Problem : Weather

Narrative: 1

I took over from the previous controller who didn't build what I considered enough space for the ZZZ1 arrivals. I started vectoring and building space between them. I had a lot of other things going on with most of the aircraft in the sectors needing approach services and help with rides icing.

Aircraft X was overflying the ZZZZZ mountain range and ZZZ2 which is the IAF (Initial Approach Fix) for the active runway at ZZZ1. He was picking up ice so I tried to climb him out of the conditions. He came back and said that he couldn't continue the climb to 17000 ft. and would need to go back down to 15000 ft. He then had said he needed lower and I told him I had opposite direction traffic at 14000 ft. so if he needed lower I would need to turn him to the south. He said okay so I turned him to a 160 heading and gave him 14000 ft. He then said "I stalled" and I noticed he began a rapid descent. I still had other aircraft and did a quick traffic scan and thought he was in a dive to regain airspeed to pull out of the stall. I thought the most helpful transmission I could give was to tell him what my MIA (Minimum IFR Altitude) in the area was so if he was IMC he would know roughly what altitude he would impact the ground so he could plan his stall recovery dive accordingly. I decided in that moment to say only that and not use radio time/overwhelm him with the low altitude alert. I also wanted to leave the frequency open so he could make any requests like is there a road nearby to crash on or ask for a pilots assistance or recommendations. I thought he had seconds to a minute to live and felt like I needed to leave the frequency open. I also looked around for a topographical map of the ZZZ1 area which has disappeared or our atlas which is hard to locate so if he made a request of where the lowest possible terrain area or roads were.

He pulled out of the dive, came back up on frequency, mentioned he didn't want to climb back into the clouds so I instructed him that I couldn't leave him IFR under the MIA. I asked if he was VMC, he said yes so I quickly gave him the option of canceling IFR and switching to VFR flight following so he could stay below the clouds and remain clear of ice. He lived.

Synopsis

Center Controller reported an aircraft experienced icing, stalled, and could not maintain altitude. Aircraft recovered below the Minimum IFR Altitude.

Time / Day

Date : 202010

Place

Altitude.MSL.Single Value : 16000

Environment

Flight Conditions : VMC

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Air Taxi

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

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 135

Mission : Cargo / Freight / Delivery

Flight Phase : Cruise

Component

Aircraft Component : Pitot-Static System

Aircraft Reference : X

Problem : Malfunctioning

Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Taxi

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Captain

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1764327

Events

Anomaly.Aircraft Equipment Problem : Less Severe

Anomaly.Deviation - Altitude : Excursion From Assigned Altitude

Anomaly.Deviation / Discrepancy - Procedural : Clearance

Detector.Person : Air Traffic Control

When Detected : In-flight

Result.Flight Crew : Overcame Equipment Problem

Assessments

Contributing Factors / Situations : Aircraft

Primary Problem : Aircraft

Narrative: 1

I had just leveled off at 16,000 [feet] when ATC asked for what my assigned altitude was. I responded 16,000 [feet] [feet] and they informed me that I was showing 17,500 [feet]. I verified that I was showing 16,000 [feet] on my altimeter and then looked at my co-pilot altimeter and realized it was showing 17,600 [feet] and climbing. I communicated this discrepancy to ATC and began to troubleshoot while trying to maintain 16,000 [feet] on my altimeter until I had verified where the discrepancy lay. ATC had me turn off the mode C part of my transponder at this time. My first reaction was to run the icing encounter in flight do list in case it was an issue with icing. I then consulted the QRH (Quick Reference Handbook) and ran the static instrument malfunction do list. This 16,000 [feet] helped by raising my altimeter to approximately 16,700 [feet]. ATC then gave me a descent to 11,000 [feet]. At this time I looked at my airspeed indicator and noticed that while the captain speed was showing 160 knots the co-pilot airspeed was showing approximately 230 knots. I reduced power and referenced the co-pilot airspeed indicator for my speed in the descent. I leveled out at 11,000 [feet] on the 17,600 [feet] pilot altimeter and indicating 12,000 [feet] on the co-pilot altimeter. I requested to turn the mode C on my transponder back on and asked ATC for a readout on my altitude. They advised I was showing 12,000 [feet]. I then advised I was continuing my descent to 11,000 [feet] based off of my co-pilot altimeter. I subsequently flew the aircraft based on the co-pilot instruments. While descending I noticed that the airspeed and altitude on the pilot side was more closely matching to the co-pilot side as I got lower. I was able to visually identify the airport of destination and used the PAPI (Precision Approach Path Indicator) to verify my glide slope to the airport. Upon landing my speeds were within approximately 5 knots of each other and the altimeter was less than 200 foot difference. After shutdown the altimeters are less than 30 feet off of each other.

I became aware of the event as I was leveling off at what I thought was 16,000 [feet] ft when ATC queried what my assigned altitude was. I then started to work the problem and work to rectify the instrument mismatch.

There was a mismatch between the pilot static systems of my aircraft.

I advised ATC that I was having an instrument mismatch and began working the problem to find a solution. I initially thought it might be an icing issue so I run the icing in flight do list. When that failed to resolve the issue I went to the QRH and ran the Static source malfunction do list. When that partially solved the issue I asked ATC to verify altitudes to work to determine what instruments were reading the most accurate information so I could plan and execute a plan of action as safely as possible.

Not so much how to keep this from happening again but additional steps I could have taken. Once it became obvious to me that I was having an instrument mismatch and potential malfunction I should have declared an emergency. ATC was extremely helpful and assisted me completely but this could have been much more dangerous if the weather had been worse. I should also have requested the ILS (Instrument Landing System) to the opposite direction runway to have had that as a reference to the landing and terrain clearance instead of just the PAPI. I initially opted not to do this because it would have put me back in the clouds while getting vectored out for it.

Synopsis

Air taxi pilot reported pitot static system anomaly.

Time / Day

Date : 202007

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 45000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Rain

Weather Elements / Visibility : Turbulence

Light : Daylight

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Fractional

Make Model Name : EMB-505 / Phenom 300

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Passenger

Flight Phase : Cruise

Airspace.Class A : ZZZ

Component

Aircraft Component : Ice/Rain Protection System

Aircraft Reference : X

Problem : Malfunctioning

Person : 1

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Fractional

Function.Flight Crew : Captain

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Total : 5284

Experience.Flight Crew.Last 90 Days : 54

Experience.Flight Crew.Type : 1865

ASRS Report Number.Accession Number : 1753188

Human Factors : Workload

Human Factors : Communication Breakdown
Human Factors : Troubleshooting
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Person : 2

Reference : 2
Location Of Person.Aircraft : X
Location In Aircraft : Flight Deck
Reporter Organization : Fractional
Function.Flight Crew : First Officer
Function.Flight Crew : Pilot Not Flying
Qualification.Flight Crew : Air Transport Pilot (ATP)
Qualification.Flight Crew : Instrument
Qualification.Flight Crew : Multiengine
ASRS Report Number.Accession Number : 1753186
Human Factors : Communication Breakdown
Human Factors : Troubleshooting
Human Factors : Workload
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.Aircraft Equipment Problem : Less Severe
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.Automation : Aircraft Other Automation
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

Assessments

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

Narrative: 1

During flight, at FL450, we had abnormal engine icing indications in conjunction with moderate turbulence and lost communications. Finding warmer temperatures and smoother air was increasingly becoming a concern. I stayed on Comm1 trying to get a descent clearance but there was no ability to hear each other. My copilot went on Comm2 and [requested priority handling] after multiple attempts of reaching someone on other frequencies. The [priority handling] call was due to the start of a decent with lack of radio establishment, engine icing indications in icing conditions, and moderate turbulence. We started a decent to FL320 because we were needing to get to warmer temperatures, and as we descended it offered better transmission clarity. I flew the plane while copilot got communication and position identification established.

Once we were in a safe position, with warmer temperatures and communication established, I went to the previous frequency to get a phone number to call Center to review the situation, they gave a number. When we were on the next frequency, center gave us a different number to call once on the ground. We called and spoke to ZZZ Center, reviewing what had happened on our end and on theirs. She said they would fill out an in-house document called the "Mandatory Occurrence Report" and not report anything regarding pilot deviations due to my copilots [priority handling] call. She said it wasn't necessary to take names or certificate numbers because the document was for their training purpose only. She explained she agreed with our decision and did not see any wrong doing on our end.

During flight, at FL450, we had abnormal engine icing indications in conjunction with moderate turbulence and lost communications. Finding warmer temperatures and smoother air was increasingly becoming a concern. I stayed on Comm1 trying to get a decent clearance but there was no ability to hear each other. My copilot went on Comm2 and [requested priority handling] after multiple attempts of reaching someone on other frequencies. The [priority handling] call was due to the start of a decent with lack of radio establishment, engine icing indications in icing conditions, and moderate turbulence. We started a decent to FL320 because we were needing to get to warmer temperatures, and as we descended it offered better transmission clarity. I flew the plane while copilot got communication and position identification established.

Once we were in a safe position, with warmer temperatures and communication established, I went to the previous frequency to get a phone number to call Center to review the situation, they gave a number. When we were on the next frequency, center gave us a different number to call once on the ground. We called and spoke to ZZZ Center, reviewing what had happened on our end and on theirs. She said they would fill out an in-house document called the "Mandatory Occurrence Report" and not report anything regarding pilot deviations due to my copilots [priority handling] call. She said it wasn't necessary to take names or certificate numbers because the document was for their training purpose only. She explained she agreed with our decision and did not see any wrong doing on our end.

Narrative: 2

[Report narrative contained no additional information].

Synopsis

EMB505 flight crew reported descending due to lack of radio establishment, engine icing indications in icing conditions, and moderate turbulence.

Time / Day

Date : 202006

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.Tower

State Reference : US

Relative Position.Angle.Radial : 57

Relative Position.Distance.Nautical Miles : 10

Altitude.MSL.Single Value : 5000

Environment

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : .1

Light : Daylight

Ceiling.Single Value : 4000

RVR.Single Value : 10

Aircraft

Reference : X

ATC / Advisory.Tower : ZZZ

Aircraft Operator : Personal

Make Model Name : PA-28R Cherokee Arrow All Series

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 C : ZZZ

Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Total : 484

Experience.Flight Crew.Last 90 Days : 19

Experience.Flight Crew.Type : 479

ASRS Report Number.Accession Number : 1746169

Human Factors : Communication Breakdown

Human Factors : Distraction

Human Factors : Situational Awareness

Human Factors : Troubleshooting

Human Factors : Workload

Human Factors : Training / Qualification

Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.ATC Issue : All Types
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
Anomaly.Inflight Event / Encounter : Loss Of Aircraft Control

Assessments

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

Narrative: 1

ATC requested that I descend from 8,000 ft. I entered the clouds and picked up ice very quickly. Pitot iced over and lost altitude & VSI (Vertical Speed Indicator) gauges. I began trouble-shooting, immediately turned on pitot heat. Immediately turned on defroster for windscreen de-icing (very busy in a bumpy situation) and most important to keep cool and wings level. Lost altitude and was reminded by ATC (Air Traffic Control) not to deviate from assigned altitude. I informed ATC that I was rapidly picking up ice and was busy resolving. I was aviating and navigating, but possibly not communicating as clearly I could have. I was busy being safe... Losing my altimeter was not helpful at that time. ATC requested that I call them after landing at ZZZ airport. Proceeded to perform the RNAV 1 (Area Navigation) and called ATC on the ground. It was summer and I was not expecting ice to build up so fast.

Synopsis

PA28 pilot reported an icing encounter that necessitated a deviation from an assigned altitude.

Time / Day

Date : 202004

Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZLA.ARTCC

State Reference : CA

Relative Position.Angle.Radial : 180

Relative Position.Distance.Nautical Miles : 50

Altitude.MSL.Single Value : 12000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Turbulence

Weather Elements / Visibility.Visibility : 0

Light : Daylight

Aircraft

Reference : X

ATC / Advisory.Center : ZLA

ATC / Advisory.TRACON : SBA

Aircraft Operator : Personal

Make Model Name : Navion Aircraft Corp Undifferentiated or Other Model

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 : ZLA

Person

Reference : 1

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 : Air Transport Pilot (ATP)

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Total : 5000

Experience.Flight Crew.Last 90 Days : 120

Experience.Flight Crew.Type : 300

ASRS Report Number.Accession Number : 1739398

Human Factors : Workload

Human Factors : Human-Machine Interface

Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Critical
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.Flight Crew : Requested ATC Assistance / Clarification
Result.Flight Crew : Regained Aircraft Control
Result.Flight Crew : Landed As Precaution
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

Flight was a morning repositioning flight from ZZZ to SBP. [I] used self brief and a call to Flight Service to determine if clouds in SoCal were a solid deck or layers as icing was a factor. In discussions with the briefer the briefer commented that the Graphical Forecasts for Aviation tool showed both solid clouds and layers and that it was purely computer generated. I lamented the loss of the area forecast and asked for pireps, but none were available. I attempted to get on top by climbing to 12000 ft. and that worked until just E of PMD VOR. Initial entry into IMC produced no ice due to very little moisture and was able to receive vectors around radar returns of moisture. At some point north of RZS VOR, I picked up trace rime ice and noted an indicated airspeed decay and based on aircraft performance, suspected pitot ice. I cross-referenced indicated altitude with GPS altitude and ensured it was reliable. Not too long after that I experienced a downdraft and countered with pitch, unfortunately it was enough that I got down below Vs and was mushing downhill in a power on stall with no airspeed indicator. I told LA Center I was unable to maintain altitude and requested 10k, and set about -700VSI in order to get airspeed back and level at 10. This worked until another downdraft repeated the problem, I was able to get it leveled back at approx 9600 ft. and ATC issued an altitude alert for MVA, I had already selected the terrain display on the GPS. LA handed me off to Santa Barbara Approach who had lower MVAs and I was able to stabilize at about 9000 ft. Uneventful recovery via RNAV 29 at SBP and the airspeed came back to life at about 200 ft. AGL.

Bring back the area forecast. The meteorologists narrative on flight conditions beats a computer model. Decision to take off into suspect icing with an unclear forecast and no PIREPS was foolhardy for an aircraft not FIKI equipped. Loss of reliable airspeed is worthy of advising ATC, not just recognizing and dealing with it. Not wanting to divert to an airport I hadn't prepared for, in IMC was the rationale, but again, poor. LA Center did a fantastic job of getting me to Santa Barbara approach as early as possible to get [a] lower MVA and he had briefed the Approach Controller who was ready with a vector and an altitude.

In both my airline and military careers we train to unreliable airspeed but we usually do so where the aircraft has plenty of performance margin. I owned this plane for 3+ years and knew what the indicators of decreasing airspeed were without an indicator but at 12k, (which is as high as I've ever flown it and near the service ceiling) there wasn't any more

power to add to arrest the descent from a downdraft. Fortunately I have flown that plane deep into stalls and knew that's what was happening. I let the new owner know the pitot heater is INOP and recommended he install a separate ammeter or indicator light to show the pitot heater is energized. Because of the static sources aft on the fuselage, there were no static pressure problems.

The decision not to fly was clearly missed. Pitot heaters should have some indicator of operational status. Training to know pitch and power settings for flight is a glorious thing but it's never done at the edge of the performance envelope. AoA gauge here would have made this a non-event IF it was installed in an icing resistant position. (Heated vane or pressure ports on top and bottom of wing well aft of leading edge. Stall training needs to be to [a] fully developed stall (not FAA's current posture of 'first indication'. Many old and experimental aircraft have no indication but small buffet and nose drop. In this case in the Navion, I was making about 50% rated hp and was in a full power-on stall, if I hadn't recognized it by feel, I'd have likely kept pulling aft because I knew my airspeed was bad. A bad decision to fly put me in a bad situation of my own making, in a single engine aircraft, in IMC, with no airspeed indicator, at high altitude and no performance reserve, STALLED.

Synopsis

Navion Single Pilot reported entering icing conditions causing altitude and airspeed loss resulting in a stall. Pilot landed with ATC assistance.

Time / Day

Date : 202002

Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Relative Position.Angle.Radial : 180

Relative Position.Distance.Nautical Miles : 15

Altitude.MSL.Single Value : 10000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 1

Light : Daylight

Ceiling.Single Value : 1000

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Corporate

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

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Personal

Flight Phase : Cruise

Route In Use : Direct

Airspace.Class E : ZZZ

Person

Reference : 1

Location In Aircraft : Flight Deck

Reporter Organization : Corporate

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Private

Experience.Flight Crew.Total : 850

Experience.Flight Crew.Last 90 Days : 25

Experience.Flight Crew.Type : 700

ASRS Report Number.Accession Number : 1729890

Events

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

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Took Evasive Action
Result.Flight Crew : Landed in Emergency Condition
Result.Flight Crew : Diverted
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

Direct flight from ZZZ to ZZZ1 at 10,000 ft. Icing was projected from freezing level to 14,000 ft., however headwinds were very strong so the plan was to fly at 10,000 ft. until visible moisture was encountered and then climb above the clouds. Immediately upon noticing frost forming, requested [a] climb to 14,000 ft. Within minutes ice buildup was so severe that even at full throttle [the] aircraft was unable to climb. Requested diversion to closest airport, ZZZ2, as the ice buildup was continuing and loss of control would have been imminent. Due to low ceiling and severe ice buildup making very shallow turns and several approaches were required to finally make a successful landing.

Synopsis

Pilot reported diverting due to severe icing and aircraft unable to climb out of icing conditions.

Time / Day

Date : 202002

Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.MSL.Single Value : 4000

Environment

Flight Conditions : Marginal

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 5

Light : Daylight

Ceiling.Single Value : 6000

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 : VFR

Mission : Personal

Flight Phase : Cruise

Route In Use : Direct

Airspace.Class E : ZZZ

Person

Reference : 1

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 : Student

Experience.Flight Crew.Total : 41

Experience.Flight Crew.Last 90 Days : 14

Experience.Flight Crew.Type : 41

ASRS Report Number.Accession Number : 1727044

Human Factors : Training / Qualification

Human Factors : Situational Awareness

Events

Anomaly.Deviation / Discrepancy - Procedural : FAR

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : VFR In IMC

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Took Evasive Action

Result.Flight Crew : Returned To Departure Airport

Assessments

Contributing Factors / Situations : Human Factors

Contributing Factors / Situations : Weather

Primary Problem : Human Factors

Narrative: 1

I was on a solo cross country. All forecasts showed overcast clouds at 6,000 ft. my route was 4,500 ft. [outbound] and 3,500 ft. on the return flight. [Enroute] I realized the clouds were not at 6,000 ft. as forecast. I continued as I was still under the cloud level, just inland I contacted Departure that I was descending down to 4,000 ft. to continue VFR. As I descended the clouds descended with me. Just a few miles into the land I flew into a cloud accidentally as the layer was much lower. I then put the pitot heat and carb heat on and descended out of the cloud.

At 2,500 ft. I came out of the cloud [and] noticed the visibility wasn't much better and the field might go IFR soon. [I] also noticed visible moisture on the windshield and texted my instructor that I had possible icing and that I was returning to [home base]. I then contacted Approach saying I was [experiencing] possible icing. They then gave me straight into the runway with no delay.

Thankfully I was first in line and didn't need to declare an emergency. I flew straight towards [the airport] and rounded off my approach for the shortest distance. I put ten degrees of flaps in and kept my airspeed at 90 until I was within range of [the airport], coming in faster and a bit high to ensure not needing a go-around.

Once over the runway I pulled the power and dumped in full flaps, landed safely and taxied to [the ramp]. Once back I showed my instructor the icing and discovered moderate mixed icing along all leading edges. I was able to stay calm and make a quick decision, with the help of my instructor's instructions to this point. This experience was very humbling and the decision to go was probably wrong but I trusted the forecast.

Synopsis

C172 student pilot reported returning to departure airport after encountering unforecast icing conditions.

Time / Day

Date : 201911

Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : SSF.Airport

State Reference : TX

Relative Position.Angle.Radial : 120

Relative Position.Distance.Nautical Miles : 10

Altitude.MSL.Single Value : 3500

Environment

Flight Conditions : VMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 10

Light : Daylight

Ceiling.Single Value : 12000

Aircraft

Reference : X

Aircraft Operator : FBO

Make Model Name : Skyhawk 172/Cutlass 172

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : None

Mission : Training

Flight Phase : Cruise

Route In Use : Visual Approach

Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : FBO

Function.Flight Crew : Instructor

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Commercial

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Total : 1300

Experience.Flight Crew.Last 90 Days : 100

Experience.Flight Crew.Type : 500

ASRS Report Number.Accession Number : 1705401

Human Factors : Communication Breakdown

Human Factors : Situational Awareness

Human Factors : Time Pressure

Human Factors : Training / Qualification

Human Factors : Distraction

Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : Flight Crew

Events

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 : Returned To Departure Airport
Result.Flight Crew : Landed As Precaution

Assessments

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

Narrative: 1

It had been a cold day for Texas, and I'd already canceled my first lesson for frost that had frozen on the planes overnight. Our school's deicing equipment consists of moving planes in/out of a heated hangar and/or waiting for the sun to melt any ice. While waiting at the flight school for my next lesson to start, I'd started working on homework. I'd gotten a standard weather briefing prior to the start of my first lesson, and didn't think much of the weather as the show-time for my next lesson approached. The email from FSS for the standard briefing.

I spent more time than anticipated working on the school work, and barely finished the assignment I'd been doing right before my lesson time. The student and I had been trying to get in a review flight (unsuccessfully -- weather cancels) for an upcoming stage check several times. We had walked through the brief for the flight a number of times prior, so I rushed the preflight discussion and summed it up to something like "we're going to do what we'd planned last time."

The student went to the plane to start the preflight, and I followed after using the restroom. I did not double-check the weather prior to walking to the plane. The briefing I'd received earlier that day had an AIRMET Z for higher altitudes, with a forecasted end time that aligned with my scheduled departure time for that lesson. This was obviously my first mistake. Upon return to the airport, I checked AWC and found several key indicators that would have warned me of the conditions I was about to subject myself and the student to. I am confident in saying I would not have flown had I updated my initial brief. This was my first huge mistake and lapse in judgment.

Once in the plane, we begin to experience some light drizzle. My student opted to turn on the pitot heat. I checked the OAT, and we were about 5 degrees Celsius. As we climbed, the temperature stayed about the same. We climbed to 3500 ft., leveled off, and I noted the temperature to be a few degrees above freezing. We were still getting the drizzle. I asked my student to descend back down to 3000 ft. in an attempt to get to warmer temperatures. Once we did so, the temperature was right at/above freezing instead, so we climbed back up to 3500 ft. At this point, I had started to monitor the AWOS of nearby airports (PEZ/CVB), in an attempt to find somewhere to work outside of the precipitation. Both airports were reporting drizzle and near-freezing temperatures.

Around this same time, I heard another one of our training aircraft on frequency call San Antonio approach and state they were returning to the airport. I told my student that we needed to do the same thing. We had pitot heat, cabin heat, and carburetor heat on, but at this point, we had acquired a decent amount of rime ice on the windshield. I could not see any on ice the wings but was worried that we might have a trace amount. We asked to return to Stinson, were shortly directed to switch to the Tower, and instructed to enter left downwind for Runway 14. I let my student enter the pattern, then took the controls.

I made a no flap landing with a target approach speed of 70 kts. I came in much faster though (about 80) and ended up high on final. I opted to forward slip the airplane down with the extra speed, then floated about 1/2 down the runway bleeding it all off in the flare. We landed without incident and turned off at the end of the runway. After clearing the runway, tower asked if we had encountered icing. I answered that we had in the practice area, and gave them a report on the drizzle and temperatures at various altitudes. There was no further communication between the Tower and us during the taxi to park/shutdown. After stepping out of the plane, I immediately checked the wings and elevator. I did not see any ice, but at this point, most of what had built up on the windshield had already melted.

I took responsibility for my error and explained to my student why I did what I did during the approach/landing. I did not fly for the remainder of the day, although conditions improved sufficiently.

Synopsis

C172 Instructor reported multiple errors precipitated by not thoroughly considering the weather prior to flight, then encountering icing conditions during flight.

Time / Day

Date : 201911

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

Light : Daylight

Aircraft

Reference : X

ATC / Advisory.TRACON : ZZZ

Aircraft Operator : Personal

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

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Training

Flight Phase : Descent

Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Instructor

Function.Flight Crew : Pilot Not Flying

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Total : 2807

Experience.Flight Crew.Last 90 Days : 26

Experience.Flight Crew.Type : 1150

ASRS Report Number.Accession Number : 1703392

Events

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 : Diverted

Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Weather

Primary Problem : Weather

Narrative: 1

During descent on an IFR flight plan we were cleared to 4,000 feet MSL. We entered the clouds at 4,300 feet MSL. After a couple minutes I noticed light rime ice forming on struts and wheel fairings. I informed ATC of the ice and requested lower knowing freezing level was 3,000 feet MSL. ATC was working 2 other aircraft not in our vicinity so there was a delay getting back to me. In the meantime we entered an area where mixed ice was rapidly accumulating. I again informed ATC, this time specifically stating we were picking up heavier ice and we needed lower now. We were cleared to 2,600 feet MSL. At that altitude I had ground contact looking straight down but we were still in IMC and still rapidly accumulating ice. Our airspeed was 89 kts with full power, we had heavy ice build up on the wings. Windshield was iced over. At that point I made the decision request priority handling and was immediately given instruction "altitude your discretion." We descended and broke out at 2,300 feet MSL into VFR conditions approximately 12 miles from ZZZ. We cancelled IFR flight plan and proceeded VFR to ZZZ where we landed safely.

Synopsis

C182 instructor reported severe icing resulting in an immediate descent to exit the conditions.

Time / Day

Date : 201911

Local Time Of Day : 0601-1200

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Relative Position.Angle.Radial : 180

Relative Position.Distance.Nautical Miles : 1

Altitude.MSL.Single Value : 10000

Environment

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 1

Ceiling.Single Value : 10000

Aircraft

Reference : X

Aircraft Operator : Personal

Make Model Name : Skyhawk 172/Cutlass 172

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Ferry / Re-Positioning

Flight Phase : Cruise

Airspace.Class E : ZZZ

Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Commercial

Experience.Flight Crew.Total : 2400

Experience.Flight Crew.Last 90 Days : 80

Experience.Flight Crew.Type : 1000

ASRS Report Number.Accession Number : 1703385

Human Factors : Workload

Events

Anomaly.Deviation / Discrepancy - Procedural : Clearance

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Detector.Person : Flight Crew

When Detected : In-flight

Result.Flight Crew : Landed As Precaution

Result.Flight Crew : Diverted

Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Weather

Primary Problem : Weather

Narrative: 1

We were flying 10,000 MSL, on the VXX from ZZZ - ZZZ1. Along our route we were paralleling a few cells, unsure if it was rain or snow. Closer to ZZZ the freezing level was around 9000 ft. As we continued on our route the temperatures began to drop. We were maintaining clear of the clouds until we found ourselves in-between 2 layers with no presence of rain snow. All of a sudden, we began to notice that there was precipitation in between the two layers, we attempted a 30 degree heading change to the left to exit conditions. Prior to flying in-between cloud layers, the area to the left of the VXX appeared clear. As we continued on our heading, we began to pick up ice very quickly. We continued the turn 90 degrees and started a shallow descent down. At this point ATC was requesting us to climb to 10,000 ft for the MIA (Minimum IFR Altitude) and we were unable as our performance was decreasing due to the increase in structural ice and what I assume was induction ice since we also lost about 300 RPMs. We continued a turn to 180 as ATCs vector to a west heading for lower terrain was not putting us in warm enough temps to melt off the ice and we were unable to maintain the current altitude and descending below 9,000 ft. At this point we were flying back towards the an area were mountains would not be an issue, while still continuing to descend and trying to maintain a safe airspeed. After a few minutes of flying and descending, we found some VMC conditions near a mountain top that had a very flat area. We cancelled IFR and decided to descend down into that area and remained clear of the terrain and began to circle and descend into warmer temperatures to try and melt the ice off. We circled at least 10 times and for about 15 minutes before the structural icing was off the wings. At this point, this pocket of VMC conditions was closing up and we made a decision to fly east through a corridor of VMC conditions towards ZZZ2 since it was the closest airport. After flying around the area, the only way in was following the GPS approach in. We were able fly in between layers on the course and eventually found a hole to descend down to minimums through. Once at minimums, we saw the runway and made the circle to land for Runway 24 and although we observed no more structural ice, we still conducted a zero flap approach to land.

Synopsis

C172 Pilot reported weather diversion due to inflight icing conditions with aircraft not equipped with anti-ice protection.

Time / Day

Date : 201910

Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Altitude.MSL.Single Value : 27000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 0

Aircraft

Reference : X

Aircraft Operator : Air Taxi

Make Model Name : Falcon 20FJF/20C/20D/20E/20F

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 135

Flight Plan : IFR

Mission : Cargo / Freight / Delivery

Flight Phase : Cruise

Route In Use : Direct

Component

Aircraft Component : Turbine Engine

Aircraft Reference : X

Problem : Malfunctioning

Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Contracted Service

Function.Flight Crew : First Officer

Function.Flight Crew : Pilot Flying

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Commercial

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Total : 1400

Experience.Flight Crew.Last 90 Days : 100

Experience.Flight Crew.Type : 300

ASRS Report Number.Accession Number : 1688653

Human Factors : Workload

Human Factors : Troubleshooting

Human Factors : Distraction

Human Factors : Time Pressure

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Diverted
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
Contributing Factors / Situations : Weather
Primary Problem : Weather

Narrative: 1

On route to our destination ZZZ Airport, we started to accumulate ice at FL270. The Captain proceeded to switch on both Engine anti-ice switches as well as airframe anti-ice. A couple seconds later our left engine began to roll back. About a minute or so after that, the right engine began surging but did not roll back completely. We then [Requested Priority Handling] and asked ATC for help to the nearest suitable airport. We then were cleared to descend to 11,000 ft. I started my descent and tried to keep the right engine turning by keeping a low power setting. Meanwhile, the left engine kept surging so I pulled the left throttle to flight idle. While in the descent the Captain ran the emergency checklist items and handled communications with ATC. ATC then cleared us to descend to 4000 ft. and vectored us for the ILS Runway XX at ZZZ. Passing through 10,000 ft. we noticed that the right engine had stabilized and was able to provide sufficient power for landing while the left engine would also provide sufficient power at a lower power setting. The landing phase was uneventful.

Synopsis

Falcon 20 First Officer reported a dual engine rollback while encountering icing conditions, which required a descent and diversion to the nearest suitable airport.

Time / Day

Date : 201909

Local Time Of Day : 1801-2400

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 25000

Environment

Flight Conditions : Mixed

Weather Elements / Visibility : Thunderstorm

Weather Elements / Visibility : Cloudy

Weather Elements / Visibility : Rain

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 10

Work Environment Factor : Poor Lighting

Light : Night

Ceiling.Single Value : 14000

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

ATC / Advisory.TRACON : ZZZ

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 : Descent

Flight Phase : Cruise

Airspace.Class A : ZZZ

Airspace.Class E : ZZZ

Component

Aircraft Component : Pitot/Static Ice System

Aircraft Reference : X

Problem : Malfunctioning

Person

Reference : 1

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 : Glider

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Commercial
Qualification.Flight Crew : Multiengine
Qualification.Flight Crew : Sea
Experience.Flight Crew.Total : 2000
Experience.Flight Crew.Last 90 Days : 85
Experience.Flight Crew.Type : 45
ASRS Report Number.Accession Number : 1686301
Human Factors : Communication Breakdown
Human Factors : Distraction
Human Factors : Physiological - Other
Human Factors : Situational Awareness
Human Factors : Time Pressure
Human Factors : Troubleshooting
Human Factors : Confusion
Communication Breakdown.Party1 : Flight Crew
Communication Breakdown.Party2 : ATC

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.ATC Issue : All Types
Anomaly.Deviation - Altitude : Overshoot
Anomaly.Deviation / Discrepancy - Procedural : Published Material / Policy
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Anomaly.Inflight Event / Encounter : CFTT / CFIT
Detector.Person : Flight Crew
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 : Landed in Emergency Condition
Result.Flight Crew : Diverted
Result.Flight Crew : Became Reoriented
Result.Air Traffic Control : Provided Assistance
Result.Air Traffic Control : Issued New Clearance

Assessments

Contributing Factors / Situations : Aircraft
Contributing Factors / Situations : ATC Equipment / Nav Facility / Buildings
Contributing Factors / Situations : Human Factors
Contributing Factors / Situations : Procedure
Contributing Factors / Situations : Weather
Primary Problem : Aircraft

Narrative: 1

The plane had been at ZZZ for the previous two days for maintenance (replaced batteries, adjusted landing gear and landing gear warning system, and performed 411 and 413 IFR certifications). I departed ZZZ at about XA: 30 local. There were rain showers in the area with patchy cloudy conditions and some localized thunderstorms and cumulus clouds. Expected conditions at the time of landing at my destination ZZZ1 were clear with light winds. This was my first night flight in the airplane but I felt comfortable flying the plane - departing in daylight and landing in clear night conditions. I consulted with my instructor prior to departure and he confirmed he felt the flight was manageable.

Flight plan was filed for 23,000 ft. Climbout was normal through several cloud layers and deviations right of course to avoid thunderstorms. Some IFR, but mostly VFR between clouds and layers up to 23,000 ft. Pitot heat was turned on shortly after departure.

It was getting dusk as I leveled off. I could see a stratus deck of clouds ahead at what appeared to be between 23,000 ft [and] 24,000 ft. I requested an altitude change to 25,000 ft which was immediately granted. My interior windows began to fog up and became coated with light ice. I turned on the defrost, but the fog and ice were growing and defrost didn't seem to do much good. Upon leveling at 25,000 ft in clear air I began to wipe down the interior windscreen with a towel to remove the fog and ice.

I noticed my airspeed became erratic and then began to drop. I suspected ice in the pitot / static system. I confirmed the pitot heat was on. I assumed I was picking up ice. I could not visually detect any ice on the wings, but it was difficult to see because of the interior fogged and iced windows. When I wiped the interior of the windscreen it did not show any ice on the outside of the windscreen. Nevertheless, I turned on the de-ice, propeller heat, initial separator, and alternator (as discussed earlier that afternoon with mechanics as the proper procedure). By now it was mostly dark.

My location was about 15 miles south of ZZZZZ heading direct to ZZZ1. The AOA (Angle of Attack indicator) began blaring loudly "PUSH, PUSH" as my indicated airspeed dropped. The loud blaring "PUSH" was constant and so distracting, it was hard to concentrate on anything else. I believed the problem was ice blocking the pitot / static system and that perhaps my pitot heat was not working, and, although I couldn't detect any exterior ice, perhaps some ice had accumulated thereby slowing my airspeed. I requested a lower altitude of 17,000 ft thinking that a lower altitude with warmer temperatures would help when combined with the de-ice systems I had turned on a few minutes earlier.

Center was talking to me about a new altitude and heading but it was very hard to hear with the blaring AOA. The autopilot would not work with the indicated airspeed and my altitude began to fluctuate. I explained to Center I was having instrument problems and requested delaying vectors to sort out the issues. I couldn't hear most of what Center was saying, but attempted straight and level flight by hand as I evaluated the situation. Center approved delayed maneuvering in my current area.

In the dark it took some time to find the AOA circuit breaker, which I pulled and the blaring "PUSH, PUSH" finally stopped. At some point my instruments seemed to become more stable and reliable so I requested to resume flight to my destination but at a lower altitude of 17,000 ft thinking the ice issue had been resolved. However, quickly I realized the problems were not resolved and I requested a return to ZZZ. I [requested priority handling] with Center. They cleared me back to ZZZ. Soon, Center switched me over to Approach. I repeated my [priority request] and requested vectors to ZZZ.

I realized my backup L3 instrument was giving me the same airspeed and altitude readings as the PFD so it was not useful. I erroneously believed the altitude indicator was working, but knew the airspeed was not reliable. I repeatedly asked Center and then Approach to confirm my altitude. In each instance they confirmed my altitude as being the same as shown on my altimeter. Flying back to ZZZ, Approach began giving me lower altitudes. As I pushed the nose over I had the distinct sense of descending but the altimeter either did not move or moved erratically. After several queries to Approach about my altitude, they asked me if I was suffering from vertigo. I'm not sure I could diagnose it under the circumstance, but I said no.

The night was dark with overhead clouds and no ground references. At some point heading back to the ZZZ2 area and flying by hand since the autopilot would not work given the erratic instrument readings, I moved my attention to the cockpit trying to continue to trouble shoot and diagnose the problems. When I looked back at my heading indicator I realized I was turning in a spiraling descent. I quickly leveled the wings and corrected my flight path but it reminded me how easy it is to fall into a death spiral without any visual references.

As I approached ZZZ3, Approach said I needed to begin descending and advised me not to worry about the restricted area because they had asked the military to turn it cold. I said I had been trying to descend for several minutes by pushing the nose down, but other than intuition I was unsure whether I was descending because of the erratic airspeed and altitude readings. I continued to periodically ask Approach what they showed as my altitude and they continued to repeat 17,000 - 18,000 ft.

Soon some ground lights came into view. As I passed over them it was clear my altitude was no more than 2,000 - 3,000 ft above the ground. I immediately stopped my descent and again asked Approach about my altitude. When the Controller said 17,000 ft. I replied that his information was wrong and that my altitude was no more than 3,000 ft. He immediately told me to climb to 4,500 ft which was the minimum vectoring altitude in the area. I initiated a climb and enabled GPS altitude on my iPad ForeFlight which confirmed I was climbing through 3,500 ft. A few moments later, Approach said he realized he was only getting my ADS-B / Transponder altitude and was just reading back to me what my instruments were telling him. The Controller had no other radar altitude available to him.

About this point, I concluded, given the difficulty of flying the plane with inaccurate instruments in night mostly visual, but some IFR, conditions, that trying to proceed to ZZZ was not wise. I told Approach I wanted to divert and land at ZZZ2. They instructed me to turn north and look for the airport beacon. I immediately saw the beacon and headed for it. As I approached they cleared me to land on Runway XXL. I could hear on the radio as ATC cleared other traffic and asked an [aircraft] on final to go-around.

I was unable to immediately spot the runway because of the highway and other city lights, but I had the airport on ForeFlight and turned into a left downwind at what seemed about the right distance. I set my torque at the settings I learned in training less than two weeks before to deliver the desired pattern and landing speeds. On the downwind I saw the runway, turned base and then final. Although my instruments were reading crazy numbers, the final approach was smooth and stable and on the VASI visual glidepath. Landing was uneventful. Tower told me to stop on the runway, and switch to Ground who would guide me to the FBO. When I stopped on the runway, I took a picture of my instruments - they showed airspeed of 410 kts and altitude of 13,000 ft.

Fire and rescue trucks followed me as I then taxied to [company] where the plane was hangered overnight. When I climbed out of the plane, the fire and rescue personnel asked if I was okay. I replied yes, thanked them, and they then departed. In the hangar, I powered on and off the system twice. Both times the system gave similar reading on the instruments as I had seen stopped on the runway. I also checked the pitot tube heat. It quickly got hot when turned on.

Synopsis

A Lancair Evolution pilot reported unreliable altitude and airspeed indications while in icing conditions and ATC echoing false readings, resulting in a diversion and CFTT before landing.

Time / Day

Date : 201908

Local Time Of Day : 0601-1200

Place

Locale Reference.ATC Facility : ZZZZ.ARTCC

State Reference : FO

Relative Position.Angle.Radial : 310

Relative Position.Distance.Nautical Miles : 335

Altitude.MSL.Single Value : 43000

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 0

Light : Daylight

Ceiling.Single Value : 50000

Aircraft

Reference : X

ATC / Advisory.Center : ZZZZ

Aircraft Operator : Government

Make Model Name : Gulfstream V / G500 / G550

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : IFR

Flight Phase : Cruise

Route In Use : Direct

Component

Aircraft Component : Pitot/Static Ice System

Aircraft Reference : X

Problem : Malfunctioning

Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Government

Function.Flight Crew : Captain

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Total : 7000

Experience.Flight Crew.Last 90 Days : 100

Experience.Flight Crew.Type : 1000

ASRS Report Number.Accession Number : 1681854

Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Critical
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Landed As Precaution

Assessments

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

Narrative: 1

While cruising enroute along our planned flight path at FL430 we had experienced several hours of calm high cirrus IMC conditions. We were approximately 50 NM from the closest radar echoes of a significant and widespread storm system when we experienced a partial loss of flight control systems including autopilot/ auto-throttles and yaw damper. The system reset properly and we decided to abort our mission and look for the clearest path to our destination. Shortly thereafter the partial system failure happened again along with a loss of both P (Pilot) and CP (Co-Pilot) airspeed systems (The standby KIAS, TAS and GS appeared to be working normally at this point, however). Again we reset the system leading to a partial recovery of some flight control systems.

Deciding to stay at altitude until VMC to avoid descending into inclement weather we were nearly over our destination when commencing our initial descent. At that point we once again lost our primary air data indications (CP's was reading near Mach 1 and P's was reading an impending stall condition before eventually just showing "red X's for KCAS/ Alt and VV). Furthermore the right engine started significant surging which led to severe yaw oscillations on the aircraft. We were also getting erroneous GS indications (showing 200kt tailwind) but our TAS, standby KIAS and AOA indicator seemed correct. We had ATC provide us with updated GS readouts to ensure we were within parameters.

At approximately 23,000' the air data systems returned to normal and the thicker air reduced the yaw oscillations until a safe landing could be completed normally.

Our belief, in agreement with the aircraft manufacturer who completed a thorough checkout of the pitot/static systems along with electrical continuity, is that we experienced a relatively rare high ice water situation. Extremely fine particles of very dry ice particles (that do not show on radar nor trigger icing indications) led to a partial blockage of our pitot/static systems. This led to a miscompare in all 3 air data computers eventually shutting down our primary air data display information, causing our flight control malfunctions, and leading to the right engine's compressor valve cycling as designed to shed ice from the engine to prevent a compressor stall/ potential flame-out. The aircraft checklists are designed for the loss of one air data computer where redundant systems can fix a mis-compare but not for the loss of all 3.

Lessons learned are avoidance of prolonged exposure to high cirrus clouds whenever possible is imperative along with backup plans to control the aircraft with whatever air data systems you can validate as still operational, and failing that, resorting to AOA readouts to ensure you are within speed parameters could be the only reliable information you have. At the end of the day, descending as soon as possible to warmer thicker air is the most likely action which will hopefully restore the air data systems and enable a normal landing.

Synopsis

G-V Captain reported Pitot Static System anomalies due to high altitude icing.

Time / Day

Date : 201907

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZZZ.ARTCC

State Reference : US

Altitude.MSL.Single Value : 36400

Environment

Flight Conditions : VMC

Light : Daylight

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Make Model Name : Citation Excel (C560XL)

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 91

Flight Plan : IFR

Nav In Use : FMS Or FMC

Flight Phase : Cruise

Airspace.Class A : ZZZ

Component

Aircraft Component : Pitot-Static System

Aircraft Reference : X

Problem : Malfunctioning

Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Function.Flight Crew : Captain

Function.Flight Crew : Pilot Not Flying

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

ASRS Report Number.Accession Number : 1669653

Human Factors : Troubleshooting

Human Factors : Situational Awareness

Events

Anomaly.Aircraft Equipment Problem : Less Severe

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Detector.Person : Flight Crew

When Detected : In-flight

Result.General : Maintenance Action

Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Requested ATC Assistance / Clarification
Result.Air Traffic Control : Provided Assistance

Assessments

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

Narrative: 1

At FL370, we were about 20 minutes from ZZZ, we noticed we had a mis-compare between the ADC 1 and 2 readout. We notified ATC about the problem and requested a descent to find warmer air suspecting we had freezing moisture in our static lines. We worked with ATC the whole way into ZZZ advising them of our misleading altitudes and speeds. We crossed traffic and received a traffic advisory but not an RA. ATC did not mention any issues. We landed and had mx look at the static system. The problem was a large amount of moisture in the static lines. We are working with maintenance to find a static port cover for the plane. We've also mentioned to the plane owner that we could start hangaring the plane to reduce this chances of this problem again.

Synopsis

A Cessna Citation Excel Captain reported an anomaly with the pitot static system, suspected to be due to icing, which affected the air data computers.

Time / Day

Date : 201905

Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Rain

Weather Elements / Visibility : Turbulence

Light : Daylight

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Air Carrier

Make Model Name : Learjet 60

Crew Size.Number Of Crew : 2

Operating Under FAR Part : Part 135

Flight Plan : IFR

Mission : Passenger

Flight Phase : Descent

Route In Use : Direct

Airspace.Class A : ZZZ

Component : 1

Aircraft Component : Generator Drive

Aircraft Reference : X

Problem : Malfunctioning

Component : 2

Aircraft Component : Ice/Rain Protection System

Aircraft Reference : X

Problem : Malfunctioning

Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Air Carrier

Function.Flight Crew : Captain

Qualification.Flight Crew : Instrument

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Multiengine

Experience.Flight Crew.Total : 2800
Experience.Flight Crew.Last 90 Days : 35
Experience.Flight Crew.Type : 667
ASRS Report Number.Accession Number : 1650460
Human Factors : Troubleshooting

Events

Anomaly.Aircraft Equipment Problem : Critical
Anomaly.Inflight Event / Encounter : Weather / Turbulence
Detector.Automation : Aircraft Other Automation
Detector.Person : Flight Crew
When Detected : In-flight
Result.Flight Crew : Overcame Equipment Problem
Result.Flight Crew : Landed in Emergency Condition
Result.Flight Crew : Landed As Precaution
Result.Air Traffic Control : Provided Assistance
Result.Aircraft : Equipment Problem Dissipated

Assessments

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

Narrative: 1

We were IMC on initial descent in the high 20s or low 30s, between ZZZ and ZZZ1, going through some rain/ice and light, borderline moderate turbulence. The Master Caution flashed so I checked the annunciator panel and saw that both generator lights were on. I called my First Officer's attention to it and told him it looks like we have a dual generator failure and called for the generator fail checklist. I also called Center and [advised them] and requested assistance with weather as we focused on the aircraft. We completed the checklist, which included reducing the electrical load. I only had cabin fans and lights to turn off. With the icing conditions I did not want to risk turning off any anti-ice. The checklist had us press the generator reset buttons, and when we did, both generators came back on line. I confirmed with seeing 28 VDC on the EIS. Shortly after, we got an amber Stab Heat annunciator, showing there was a disagreement and may not be working. We did the Stab Heat light checklist. At some point around then, I don't remember exact timing, we got a white L ENG COMPUTER light and an aural alarm of some sort. We did not know what the alarm was and could not find a way to mute it. We completed the checklist for the engine computer light.

In the meantime we were descended further by ATC and ended up in the clear with layers above and below. I turned off the anti-ice after a couple of minutes and addressed my passengers. We still could not determine what the alarm was. Prior to entering the layers below us, I turned the anti-ice back on, and the Stab Heat light did not come on, indicating it was working. With all systems appearing to be working as they should be, I advised ATC that I was expecting a normal landing and [advising them] was more precautionary at this point. We landed without incident and the alarm finally stopped when I turned off the main batteries after engine shutdown. We have since determined the alarm was the SelCal going off, however, I don't know what set it off.

Synopsis

Learjet 60 Captain reported dual generator failure, left engine computer master caution, and intermittent stab heat fail in descent through clouds and icing.

Time / Day

Date : 201904

Local Time Of Day : 1201-1800

Place

Locale Reference.ATC Facility : ZID.ARTCC

State Reference : IN

Altitude.MSL.Single Value : 6000

Aircraft

Reference : X

ATC / Advisory.Center : ZID

Make Model Name : Small Aircraft

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Flight Phase : Cruise

Airspace.Class E : ZID

Person

Reference : 1

Location Of Person.Facility : ZID.ARTCC

Reporter Organization : Government

Function.Air Traffic Control : Enroute

ASRS Report Number.Accession Number : 1639604

Human Factors : Communication Breakdown

Human Factors : Situational Awareness

Communication Breakdown.Party1 : ATC

Communication Breakdown.Party2 : Flight Crew

Events

Anomaly.ATC Issue : All Types

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : CFTT / CFIT

Detector.Person : Air Traffic Control

When Detected : In-flight

Result.Flight Crew : Landed As Precaution

Result.Air Traffic Control : Provided Assistance

Assessments

Contributing Factors / Situations : Human Factors

Contributing Factors / Situations : Weather

Primary Problem : Weather

Narrative: 1

Aircraft X contacted ZID to report they were picking up light rime icing and requested a descent. I looked at the MVA and the lowest for his course of flight would eventually be 4,500 ft. MSL. Aircraft X started to descend. At 4,500 ft. MSL, Aircraft X got out of the

icing temporarily. I issued weather to the pilot to expect moderate precipitation for next 100 miles. I asked the pilot if they had any de-icing or anti-icing equipment on board. They said Negative. I suggested to the pilot an airport at their 8-7 o'clock and 5 miles, to land at due to the weather up ahead. I also said there were 4-5 airports he could land at along his route. He came back with they were just getting out of the icing and a +1 degree Celsius and liked lower. I descended them to 4,000 ft. MSL. Another aircraft, Aircraft Y, requested to speak, I let them, Aircraft Y spoke and told the aircraft to "take his advice, land, it's not worth it." I descended Aircraft X to the MVA 3,700 ft. MSL. I told Aircraft X about the several airports he could land at including Scott Municipal at a 200 heading and 18 miles. I told the pilot that if he were to continue to SCX, that the lowest I could go in that area was 4,500 ft. MSL unless he [advised ATC]. Aircraft X decided that he wanted to divert to SCX and [advised ATC]. I read the SCX airport weather to him, there was only 1 NOTAM not pertinent to the safety of flight that was not read. I asked if he could climb to at least 4,500 MSL to attempt the approach (The approach actually required to be started at 4,800 MSL). Aircraft X said negative. I cleared Aircraft X to COPEP and told him to expect the RNAV 23 approach into SCX. He read it back, but never turned. COPEP turned Aircraft X back into the weather and kept him in the freezing conditions longer. Aircraft X started to descend. I asked Aircraft X if they had ground contact. They said no, and then when the aircraft was leaving 2,800 ft. MSL they said they could see the ground. I told them that the SCX airport was now a 195 heading and 4.8 miles. They called the airport in sight at 2,500 ft. MSL. I said Roger, paused, key up and cleared Aircraft X for the visual approach. I attempted to ask several times for the souls on board and fuel on board remaining. I was able to get 2 souls on board, but no report of FOB remaining. I called in the blind for Aircraft X Charlie a few times to ask their progress, and a [air carrier] keyed up to say they could hear Aircraft X trying to call Center on our frequency to say they landed safely.

SME airport was another option the aircraft could navigate to, with better weather and the possibility of not descending below the MVA to reach the airport and stay out of icing conditions. I did not call a Low Altitude Alert clearance to Aircraft X when he descended below the MVA. Given the situation would rise again, I should take all the options into consideration.

Synopsis

ZID ARTCC Controller reported that an aircraft was in icing conditions and the process that was taken to get the aircraft safely on the ground.

Time / Day

Date : 201902

Local Time Of Day : 1201-1800

Place

Locale Reference.Airport : CXY.Airport

State Reference : PA

Altitude.MSL.Single Value : 1200

Environment

Flight Conditions : IMC

Weather Elements / Visibility : Icing

Weather Elements / Visibility : Rain

Weather Elements / Visibility.Visibility : 1

Light : Dusk

Ceiling.Single Value : 1000

Aircraft

Reference : X

ATC / Advisory.Tower : CXY

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 : IFR

Mission : Training

Flight Phase : Final Approach

Airspace.Class D : CXY

Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Personal

Function.Flight Crew : Instructor

Function.Flight Crew : Pilot Not Flying

Qualification.Flight Crew : Flight Instructor

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument

Experience.Air Traffic Control.Military : 2

Experience.Flight Crew.Total : 10300

Experience.Flight Crew.Last 90 Days : 120

Experience.Flight Crew.Type : 2000

ASRS Report Number.Accession Number : 1622053

Human Factors : Situational Awareness

Events

Anomaly.Inflight Event / Encounter : Weather / Turbulence

Anomaly.Inflight Event / Encounter : CFTT / CFIT

Detector.Person : Flight Crew

When Detected : In-flight

Result.Air Traffic Control : Issued Advisory / Alert

Assessments

Contributing Factors / Situations : Weather

Primary Problem : Weather

Narrative: 1

Filed IFR for an instrument training flight. During weather briefing no reports of icing or potential icing were seen on 1800wxbrief.com. Departed from ZZZ in VMC conditions, but entered IMC at cruising altitude of 4,000 feet MSL. Temperature at 4,000 feet was +2 degrees C. The winds aloft, checked via ADDS (Aviation Digital Data Service), had forecast +2 degrees C up to 6,000 feet. Descending into destination airport (CXY) started picking up ice after descending through 3,000 feet while being vectored for the ILS approach to Runway 8 at CXY. Despite defrost being set at max, the windshield iced over. Approaching minimums I was focused on trying to sight the runway and approach lights and my student diverted his attention from the ILS display to the windshield as well, resulting in a low altitude alert from the Control Tower. While descending through 1,000 feet MSL the ice began melting. Surface temperature was +1 degrees C. As there was an apparent temperature inversion, decided to check latest weather via ADDS and saw that temperature at CXY and at planned [cruising] altitude (5,000 feet MSL) was positive. Conducted return flight to ZZZ and briefly picked up light icing while climbing through 2,000-3,000 feet. At cruise altitude OAT showed +2 degrees and there was no icing for the return flight beyond the climb-out phase.

Synopsis

PA-28 flight instructor reported encountering unexpected icing during IFR training flight.

Time / Day

Date : 201902

Local Time Of Day : 1801-2400

Place

Locale Reference.Airport : ZZZ.Airport

State Reference : US

Relative Position.Angle.Radial : 300

Relative Position.Distance.Nautical Miles : 50

Altitude.MSL.Single Value : 21000

Environment

Weather Elements / Visibility : Icing

Weather Elements / Visibility.Visibility : 10

Light : Night

Ceiling.Single Value : 15000

RVR.Single Value : 10000

Aircraft

Reference : X

ATC / Advisory.Center : ZZZ

Aircraft Operator : Corporate

Make Model Name : Citation II S2/Bravo (C550)

Crew Size.Number Of Crew : 1

Operating Under FAR Part : Part 91

Flight Plan : IFR

Mission : Passenger

Flight Phase : Descent

Route In Use : Vectors

Airspace.Class A : ZZZ

Component

Aircraft Component : Intake Ice System

Aircraft Reference : X

Problem : Failed

Person

Reference : 1

Location Of Person.Aircraft : X

Location In Aircraft : Flight Deck

Reporter Organization : Corporate

Function.Flight Crew : Captain

Function.Flight Crew : Pilot Flying

Function.Flight Crew : Single Pilot

Qualification.Flight Crew : Air Transport Pilot (ATP)

Qualification.Flight Crew : Multiengine

Qualification.Flight Crew : Instrument

Experience.Flight Crew.Total : 13500

Experience.Flight Crew.Last 90 Days : 120

Experience.Flight Crew.Type : 2500
ASRS Report Number.Accession Number : 1619731
Human Factors : Situational Awareness
Human Factors : Workload
Human Factors : Distraction

Events

Anomaly.Aircraft Equipment Problem : Less Severe
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 : Returned To Clearance
Result.Flight Crew : Became Reoriented
Result.Air Traffic Control : Issued New Clearance

Assessments

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

Narrative: 1

While on descent out of FL250 it was reported there was light rime ice just about 50 miles NW of ZZZ. I acknowledged. About 2 minutes later we entered the clouds and I turned my anti ice systems on. I then began picking up ice. My left engine ice failed and I immediately asked for lower stating that I was having deice systems issues. Center descended me immediately to FL210. Once I started the descent I began reading checklists and working the system. I then noticed the autopilot altitude select didn't arm and I descended below my assigned altitude. Once I realized it I was starting back up but Center just cleared me to 13,000 feet. They never said anything to me and there wasn't another aircraft in the area. No deviations or conflicts. The main issue was dealing with the deice problem while getting ice in the descent. I was descending at 2500 ft min to get below the ice which was around 19,500 feet.

Synopsis

CE550 Captain reported overshooting a cleared altitude while descending in icing conditions with a failure of the left engine anti-ice system.