Transportation Safety Board of Canada

Bureau de la sécurité des transports du Canada

AVIATION INVESTIGATION REPORT
A10W0155

LOSS OF CONTROL AND COLLISION WITH TERRAIN

CIRRUS DESIGN CORPORATION SR22, C-FGLA
SUNDRE, ALBERTA, 5 NM NW
24 SEPTEMBER 2010

Canada

Aviation Investigation Report

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Report Number A10W0155

Synopsis

The privately operated Cirrus Design Corporation SR22 (registration C-FGLA, serial number 1681) was on a round robin, visual flight rules flight from the Calgary/Springbank Airport to the area of Sundre, Alberta, with 3 persons on board. About 5 nautical miles northwest of Sundre, the aircraft entered a steep turning descent from about 1600 feet above the ground, striking the ground in a field at 1347, Mountain Daylight Time. The aircraft was destroyed by impact forces and a severe post-impact fire. No emergency locator transmitter signal was received. The 3 occupants were fatally injured.

Ce rapport est également disponible en français.

Other Factual Information

History of Flight

The history of the flight was determined from onboard data recordings from the aircraft instrumentation, and NAV CANADA radar and data records (see Appendix A and B).

The aircraft departed Springbank (CYBW) at 1319, [1] for a planned 1.5 hour flight. The aircraft travelled northwest toward the Sundre Airport (CFN7), 40 nautical miles (nm) north of Springbank, at a maximum altitude of 6500 feet above sea level (asl), and a maximum ground speed of 160 knots. A descent was commenced 21 nm southeast of CFN7. Due to terrain masking, the last air traffic control radar return produced by the Calgary radar source, at 1336, showed C-FGLA descending through 5700 feet asl.

C-FGLA overflew CFN7 and conducted a right hand circuit, followed by a touch-and-go landing on Runway 32 at 1341. After the touch-and-go, as the aircraft crossed the departure end of the runway, it oscillated slightly in the pitch axis.

The aircraft then climbed to approximately 5600 feet asl, on a north-westerly heading, between 105 knots and 109 knots indicated airspeed (KIAS). At 1343:50, the aircraft turned left to a heading varying between 220° and 227° magnetic (M). The aircraft maintained a relatively stable attitude with the bank angle varying between 5° left and right, and a pitch angle of approximately 5° nose up. At 1344:21, the aircraft began to pitch to a maximum of 15° nose up with no increase in either vertical speed or normal acceleration [2] and gradually descended to 5500 feet asl, or 1650 feet above ground level (agl). [3] During this time, the airspeed gradually decreased from 130 KIAS to 67 KIAS.

At 1345:35, the aircraft entered a right turn which increased in rate to a maximum of 11° per second. Airspeed increased to 98 KIAS, accompanied by an 80° nose-down pitch and a rapidly increasing rate of descent. Characteristics of this turn were consistent with the early stages of a spin. [4] When the turn reached 329° M at 1100 feet agl, the aircraft rolled to the left. At 1345:48, the onboard recording quality was compromised due to extreme attitudes, resulting in loss of valid pitch and roll information. At that time, the heading was decreasing to 120° M, an airspeed of 103 KIAS and a vertical descent rate over 5000 feet per minute (fpm) with a positive loading in the vertical axis of 2.4 g. At 1345:51, the last recorded data showed the aircraft 160 feet laterally from the impact point, with airspeed increasing through 132 KIAS, vertical descent rate increasing through 6900 fpm and vertical acceleration reaching approximately 3.5 g. The engine was running throughout the descent to the ground.

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1 All times are Mountain Daylight Time (Coordinated Universal Time minus 6 hours).

2 An aircraft experiences normal acceleration along the vertical axis, expressed in gravities, or "g".

3 Ground elevation at the accident site was approximately 3850 feet asl.

4 Transport Canada *Aeroplane Flight Training Manual, 4th Edition* describes the incipient spin stage as occurring from the time the aircraft stalls and rotation starts until the spin axis becomes vertical, or nearly vertical. The spin results from an automatic rolling tendency developed following a stall. A spiral dive resembles a spin with the main difference being rapidly increasing speed.

Wreckage

The majority of the wreckage was contained within 60 feet of the first point of impact. The compactness of the main wreckage area and the high degree of damage indicated that the aircraft had struck the ground at a steep flight path angle and a nose-low attitude. The wings and fuselage, forward of the tail section including the cockpit and cabin, were consumed by the severe post-impact fire. This limited detailed examination of the wreckage. Although no pre-existing defects were detected, it could not be conclusively determined whether any airframe failure or system malfunction contributed to the accident.

The aft tail section was the only major airframe component to survive the post-impact fire. The rudder had separated from the vertical fin on impact. Wing flaps were retracted. All control surfaces were present, and to the extent that the flight control system could be examined, no pre-impact discontinuities were identified. Mechanical damage to all cabin door latches was consistent with both doors being in the closed position at impact.

Weather

The weather at the time of the occurrence featured unlimited visibility, high broken cloud, with light ground level winds from the southwest. Evidence of smoke and flame drift at the crash site confirmed the wind observation. Pilots flying in the area in the morning experienced winds above ground level from the northwest at about 15 knots with light turbulence.

The nearest location providing aviation weather reports was Red Deer Regional Airport, located 40 nm northeast of the accident site. The 1400 Aviation Routine Weather Report (METAR) for Red Deer was as follows: wind 240° True (T) at 2 knots; visibility 15 statute miles; high cloud; temperature 17°C, dew point 0°C; altimeter setting 29.99 inches of mercury (in. Hg).

Pilot and Passenger History

The pilot-in-command, who occupied the left front seat, was issued a private pilot license in early 2005, following training on the Cessna 172. He held a valid group 3 instrument rating, as well as multi-engine and night ratings. Available records indicate that, at the time of the occurrence, the pilot had accumulated about 567 hours total time, with 448 hours on the Cirrus Design Corporation [5] SR22. Prior to taking delivery of C-FGLA in 2005, he was enrolled in an SR22 transition training program which normally consists of 7-10 hours of ground instruction and 10-15 hours of flight instruction. After 5.5 hours of ground instruction and 3.9 hours of flight instruction, weather conditions precluded completion of the training. He elected to take possession of C-FGLA and fly it to Springbank accompanied by a Cirrus-certified instructor who was experienced in the SR22. He subsequently received at least 50 hours of dual instruction on his aircraft and later flew with the instructor for about 150 hours to improve his skills and remain current. The pilot was characterized as competent and cautious in his approach to flying.

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[5] Cirrus Design Corporation is the legal designation of the manufacturer of C-FGLA. Further reference to the company in the report will use the name Cirrus, which is the commonly used term by which the company and its products are known.

The other 2 occupants were pilots who had purchased C-FGLA on the morning of the accident. One held a private pilot license for fixed wing aircraft since 1985 and a glider pilot license since 1984. His total flight time in powered aircraft was about 165 hours, with no hours in the SR22. The second occupant was a student pilot on fixed wing aircraft. He had completed most of the private pilot training program with 63 flying hours total flight time. His experience in the SR22 was limited to a 2 hour flight accompanying the owner from Springbank to Edmonton and return, and a 1 hour familiarization flight with an instructor at Springbank.

It was not determined which occupant sat in the right front seat on the accident flight. There were no outstanding medical issues with the occupants, and the recent rest/work cycles of the 3 occupants could not be determined with certainty.

Aircraft Information

Flight Controls

The SR22 is equipped with dual controls, consisting of a single yoke handle protruding from the left and right sides of the instrument panel (see Photo 1). Pitch control is accomplished by pushing and pulling the yoke in and out of the panel. For aileron roll control, the handle is rolled laterally from side to side. Spring forces in the system centralize the yoke in the neutral position in pitch and roll, and compensate for increased feedback forces to the pilot as airspeed increases. The control principles are similar to most other light general aviation aircraft. However, some differences in the action and feedback forces usually require a short adjustment period for new pilots.

Photo 1. Cockpit and flight controls of an SR22
Source: Steve Pellegrino 2004; Reprinted with permission

Avionics

C-FGLA was equipped with an Avidyne Entegra instrumentation system, consisting of flat panel liquid-crystal displays integrating all flight instruments and navigation systems. The primary flight display (PFD) was situated in front of the left pilot position, with a multi-function display (MFD) to the right. The PFD included airspeed and altitude tapes, vertical speed, horizontal situation indicator, attitude indicator, and compass information. Engine parameters were displayed digitally on the MFD along with navigation information.

The PFD and MFD are capable of holding non-volatile memory after aircraft electrical power is removed. Data was extracted from the non-volatile memory of the PFD from which some details of the aircraft's last flight could be reconstructed. The MFD sustained substantial impact and fire damage which obliterated information related to engine operation.

Backup analog instruments, consisting of altimeter, airspeed and attitude indicator, were installed in the left side of the instrument panel below the PFD. The damaged airspeed indicator and artificial horizon were examined at the TSB laboratory in order to determine readings on impact. The airspeed needle was trapped between 115 knots and 120 knots. The attitude indicator and altimeter did not contain useful information.

C-FGLA was equipped with an S-TEC 55X 2 axis flight director/autopilot which included heading, navigation, altitude and vertical speed modes. The software version operating the Avidyne Integra system did not allow for storage of autopilot operational data.

Cirrus Airframe Parachute System

C-FGLA was factory-equipped with a Cirrus Airframe Parachute System (CAPS), offered as standard equipment on all aircraft manufactured by Cirrus. It is designed to protect occupants by lowering the aircraft to the ground in the event of an in-flight emergency including midair collision, structural failure, loss of control, landing in inhospitable terrain, and pilot incapacitation (see Appendix C). The system consists of a 2400 square-foot parachute which is attached to the aircraft and deployed by a rocket. The Pilot's Operating Handbook indicates that the system is manually activated by clasping both hands on an overhead T-handle and pulling straight down in a strong, steady and continuous motion. Pull forces up to, or exceeding 45 pounds may be required. The handle is secured by a safety pin when the aircraft is on the ground. Bending of the bracket which retains the handle is to be expected.

Section 5 of the SR22 Safety Information Training Guide states:

> There is no minimum deployment altitude. This is because the actual altitude loss during a particular deployment depends upon the airplane's speed, altitude and attitude at deployment as other environmental factors. As a guideline, the demonstrated altitude loss from entry into a one-turn spin until under a stabilized parachute is 920 ft. Altitude loss from level flight deployments has been demonstrated at less than 400 ft. The recommended cut-off decision altitude is 2,000' agl.

In a quiz based upon Section 10, Safety Information of the Pilot's Operating Handbook, the pilot-in-command listed scenarios when activation of CAPS might be appropriate. These were: midair collision, structural failure, loss of control, no landing terrain, and pilot incapacitation.

During rocket deployment of the CAPS system, the T-handle is gripped and forcefully pulled downward, resulting in the deformation of an aluminum bracket which attaches the cable and handle assembly to the cabin roof. In the wreckage of C-FGLA, the T-handle was found to be fully stowed and there was no deformation of the bracket. No deformation of the bracket is an indication, although not always reliable, that the T-handle had not been pulled.

Although the rocket had launched from the aircraft, the parachute lines were grouped together and draped over tree branches forward of the main wreckage. The parachute lay on the ground, neatly folded, adjacent to its containment bag, thus indicating that the system had activated on impact. The safety pin was not in place and was not found in the wreckage. The pilot was in the habit of removing the pin prior to flight which was in accordance with the normal procedures section of the SR22 Pilot's Operating Handbook.

Spin Recovery Procedure

In 2002, Cirrus certified the SR20, the predecessor to the SR22, according to the U.S. Federal Aviation Administration (FAA) *FAR23.221* which set standards for spin recovery for single-engine, normal category airplanes. This standard was based on a demonstrated resistance to spinning, and/or the ability to recover from a 1-turn, or 3-second spin, whichever takes longer, in not more than 1 additional turn after the controls have been applied for recovery.

During certification of the SR20, the FAA granted an Equivalent Level of Safety to *FAR23.221* based on stall characteristics and installation and activation of the CAPS system as a recovery method from an inadvertent spin. The SR22 was certified under a similar Equivalent Level of Safety applied to the SR20, and the Aircraft Flight Manual Emergency Procedures section, revision A7 states that:

> The SR22 is not approved for spins and has not been tested or certified for spin recovery characteristics. The only approved and demonstrated method of spin recovery is activation of the Cirrus Airframe Parachute System...Because of this, if the aircraft departs controlled flight, the CAPS must be deployed.
>
> While the stall characteristics of the SR22 make accidental entry into a spin extremely unlikely, it is possible. Spin entry can be avoided by using good airmanship: coordinated use of controls in turns, proper airspeed control following the recommendations of this Handbook, and never abusing the flight controls with accelerated inputs when close to the stall.
>
> If, at the stall, the controls are misapplied and abused accelerated inputs are made to the elevator, rudder and/or ailerons, an abrupt wing drop may be felt and a spiral or spin may be entered. In some cases, it may be difficult to determine if the aircraft has entered a spiral or the beginning of a spin.
>
> WARNING
>
> In all cases, if the aircraft enters an unusual attitude from which recovery is not expected before ground impact, immediate deployment of the CAPS is required.

> The minimum demonstrated altitude loss for a CAPS deployment from a one-turn spin is 920 feet. Activation at higher altitudes provides enhanced safety margins for parachute recoveries. Do not waste time and altitude trying to recover from a spiral/spin before activating CAPS.

The checklist section indicates that in the event of inadvertent spin entry, the CAPS system is to be activated. There is no mention of recovery through use of flight controls.

At the time that the pilot of C-FGLA took delivery of his aircraft in 2005, a cabin mock-up was available at Cirrus which provided pilots with an opportunity to become familiar with the steps involved in a CAPS deployment. Scenario-based simulator training was not available at that time. In recent years, commercial training organizations have developed programs consisting of classroom and realistic simulator sessions which demonstrate situations in which CAPS deployment is necessary. This training reinforces the necessity of timely decision-making, and allows pilots to mentally and physically practice the execution of CAPS in simulated emergency conditions.

Record of CAPS Deployments

From January 1999 to March 2011, Cirrus has documented 28 CAPS activation events worldwide. Some events were under conditions not suitable for successful deployment, such as at altitudes insufficient for successful activation. Although the potential outcomes cannot be evaluated with certainty, Cirrus estimates that 48 lives have been saved by CAPS deployments. Recent deployments without serious injury have been accomplished following engine failure and loss of control. In one occurrence [6], activation was at approximately 1000 feet agl and in another at approximately 500 feet agl.[7] The CAPS was successfully deployed in the United Kingdom in an August 2010 occurrence involving a Cirrus SR20. The aircraft had entered a spiral dive and at the time of activation, the airspeed was 187 knots, bank angle at 45°, pitch 9° nose down, and acceleration forces at 4 g.[8]

The National Transportation Safety Board (NTSB) database for the same period cites 68 occurrences in which it is estimated that, in 15 occurrences with 32 fatalities, there was potential for a successful CAPS deployment. Except for 1 occurrence in which a surviving passenger was able to recount that the pilot did not activate the system, reasons for non-deployment were not determined. In most occurrences, the system activated on ground impact.

Maintenance History

C-FGLA was manufactured in November 2005, and purchased new by the pilot. The last annual inspection, by a local aircraft maintenance organization, was carried out on 25 August 2010 at 438 hours total airframe time.

On 22 September 2010, the aircraft was flown to Edmonton, Alberta, for a pre-purchase inspection. That inspection revealed that the 24-month altimeter inspection required by *Canadian Aviation Regulation* (CAR) 625 for flight under IFR or in transponder airspace had not been

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6 National Transportation Safety Board occurrence number ERA10LA506.

7 National Transportation Safety Board occurrence number CEN11LA164.

8 United Kingdom Air Accidents Investigation Branch occurrence number EW/C2010/08/03.

entered as completed. In addition, service of a filter associated with the CAV Aerospace TKS™ airframe anti-ice system, and replacement of the auxiliary aircraft battery was overdue. This battery provides emergency power in the case of total generator failure.

Service Bulletins and Airworthiness Directives

Early models of SR22 aircraft, produced prior to 2007, were equipped with a rudder-aileron interconnect system which augmented roll stability of the aircraft in turbulence. The system consisted of a cable interconnect arm, bungee cord and clamps.

On 09 May 2007, Cirrus issued Mandatory Service Bulletin (SB) 2X-27-14, which combined a maintenance manual revision for rigging requirements with a design change of the rudder-aileron interconnect mechanism. This was in response to a ground incident in which controls became locked with full left aileron and full right rudder input, in combination with mis-rigging. [9] Maintenance records indicated that this SB had been carried out on C-FGLA.

A revised SB, 2X-27-14R3 was issued on 10 October 2007. It was the basis for Airworthiness Directive (AD) 2008-03-16 issued by the U.S. Federal Aviation Administration (FAA) effective 11 March 2008. The AD stated:

> This AD requires you to inspect the rudder, aileron, and rudder-aileron interconnect rigging; correct any out-of-rig condition; replace the attaching hardware for the rudder-aileron interconnect arm; and report any out-of-rig conditions found. This AD results from a jamming of the aileron and rudder controls on a Model SR20 airplane, which resulted in loss of rudder and aileron flight controls. We are issuing this AD to prevent the possibility of jamming of the rudder–aileron interconnect system, which may result in loss of rudder and aileron flight controls.

Field examination of the rudder-aileron interconnect mechanism in C-FGLA determined that the mechanism had not been modified with the installation of updated hardware in accordance with AD 2008-03-16. There was no record in the maintenance logs to indicate that the AD had been complied with, and no record of the owner having applied for an exemption to the AD, or for approval of an alternative means of compliance.

Another airworthiness directive, AD 2007-14-03, had not been entered in the logs although the service bulletin to which it referred had been entered as being completed. A check of airworthiness directive completions was not signed off on the pre-purchase inspection forms.

Compliance with manufacturer's service bulletins and service letters is not mandatory unless they are accompanied by an AD. CAR 605.84 states that persons with legal custody and control of an aircraft, by definition aircraft owners, are responsible for ensuring that the aircraft is not flown with any outstanding ADs. A Transport Canada Airworthiness Notice - B056, Edition 1 - 14, *Applicability of Foreign Airworthiness Directives in Canada,* issued in July 2000, states:

> In accordance with Airworthiness Manual Chapter 593 (Appendix B) of the CARS, "owners of foreign manufactured products should ensure that they receive all continuing airworthiness information directly from the state having jurisdiction over the type design",

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9 National Transportation Safety Board occurrence number NYC07IA092.

> and "...owners are responsible for obtaining directly from their manufacturers all continuing airworthiness information, including service bulletins, be they mandated by the state or not".

Although not required to do so, as a service to owners and maintenance personnel, Transport Canada's (TC) Continuing Airworthiness Web Information System (CAWIS) provides a list of ADs which are known to TC to be applicable to Canadian registered aircraft. The website states that aircraft owners and maintainers can be assured this is the most comprehensive publicly available source of such information.

At the time of the last annual inspection, and at the time of the accident, the CAWIS list for C-FGLA referenced SB 2X-27-14, rather than SB 2X-27-14R3 as the document on which AD 2008-03-16 was based. Another airworthiness directive, AD 2007-14-03, applicable to a CAPS modification, did not appear on CAWIS in reference to individual SR22 registrations, including C-FGLA.

In addition to the website, TC also notifies owners of applicable ADs via postal service. TC documentation indicates that applicable ADs, including AD 2008-03-16, had been mailed to the owner of C-FGLA. TC does not require proof of delivery of the mailed notifications.

Aircraft Performance

Weight and Balance

The maximum gross takeoff weight of the SR22 is 3400 pounds. At the time of the accident, the weight was estimated at 3390 pounds with a longitudinal center of gravity arm between 144.7 inches and 145.2 inches aft of the reference datum. The longitudinal centre of gravity range is between 143.8 inches and 148.1 inches aft of the datum, placing it within 21% to 32% of the most forward limit. At this centre of gravity position, and with flaps retracted, stall speed was 70 KIAS.

Engine and Propeller Examination

The engine and propeller incurred substantial damage at impact. Examination of the engine and propeller revealed no discrepancies or conditions that would have significantly affected performance. There were indications that the engine was operating at the time of the occurrence.

The following TSB Laboratory reports were completed:

LP143/2010 – PFD and Instrument Analysis
LP167/2010 – Engine Cylinder Analysis
LP173/2010 – Propeller Blade Examination
LP174/2010 – Engine Exhaust Examination
LP011/2011 – Flight Data Analysis

These reports are available from the Transportation Safety Board of Canada upon request.

Analysis

The deceleration of C-FGLA after the turn to the southwest, accompanied by a slight descent, is consistent with the engine operating at a reduced power setting, and with the pilot attempting to maintain a more or less constant altitude. The slight loss of altitude and variation in heading suggests that the autopilot was disengaged.

The airspeed deteriorated to the point of aerodynamic stall, which was followed by entry to a spin to the right with a heading change of 90°. The aircraft behaviour in the continued descent indicates an over-recovery into a spiral dive in the opposite direction which featured rapid rotation, speed build-up and increasing positive vertical g loading. Insufficient altitude remained for recovery. The debris field and ground scars indicate that most of the rotation was stopped and a pull-up had begun immediately before the aircraft struck the ground at high speed in a nose down, slight left wing down attitude.

The investigation considered several factors to explain the reason for the reduction in power and the subsequent loss of control. Weather conditions and aircraft performance were not considered to have been factors.

Incapacitation or Distraction

Pilot incapacitation could neither be proven nor eliminated due to limitations of the autopsy processes. Distraction from a cockpit door opening in flight was discounted, since examination of the door latches indicated that both doors were closed and latched on impact.

Aircraft Handling by a Passenger/Pilot

With nearly 500 hours on the SR22, the pilot in the left seat, who is considered to be the pilot-in-command, would have been familiar with the handling characteristics and operation of C-FGLA. The passengers, who were also pilots, were relatively unfamiliar with the aircraft control and display systems, and had little or no experience in flying from the right seat. Since the style and placement of the side-stick flight control and flight instruments were different from what either of the prospective owners were accustomed to, maintaining precise control of the aircraft from the right seat would have presented a challenge. Since the purpose of the flight was likely to familiarize the new owners with their aircraft, it is reasonable to assume that the right seat occupant was allowed to manipulate the flight controls. The behaviour of the aircraft during the departure from the touch-and-go at CFN7 was consistent with a pilot experiencing difficulty in maintaining precise control in the pitch axis. This would suggest that one of the purchasers, occupying the right seat, was in control at the time. The gradual deceleration while maintaining a constant altitude is consistent with engaging in slow flight. With the airspeed deteriorating to stall speed, mishandling of the controls could result in a wing dropping and a departure from controlled flight.

Control Cable Interference

It is unlikely that control cable interference in the aileron-rudder interconnect system had a bearing on the occurrence. Although the airworthiness directive AD 2008-03-16 had not been completed, the reversal of direction after the initial spin entry indicates that control operation was sufficient to allow application of the over-correction. Mis-rigging of controls was not found at the pre-purchase inspection 1.5 flight hours before the occurrence. Also, wreckage examination did not reveal control cable abnormalities. In addition to mis-rigging, control locking would have required the application of full cross controls, which would have been an extreme action during normal flight operations.

Non-deployment of the CAPS

Early recognition of situations justifying the use of CAPS, and subsequent activation, has been very effective in reducing the severity of injuries and damage to aircraft. When C-FGLA entered the initial spin at least 1600 feet agl, there was adequate height for a successful deployment as demonstrated by Cirrus research and past occurrences. In this occurrence, the condition of the T-handle retention bracket, combined with the location and condition of the deployed parachute in the wreckage indicates that the system did not activate until ground impact. It could not be determined why the system was not activated.

AD Distribution

The TC CAWIS website listing the airworthiness directives applicable to C-FGLA did not refer to the correct manufacturer's service bulletin for AD 2008-03-16. Since mailed documentation to the owner referred to the correct service bulletin, it is not likely that this contributed to non-compliance of the AD.

Findings as to Causes and Contributing Factors

1. For undetermined reasons, the aircraft decelerated to the point of aerodynamic stall, followed by entry into a spin.

2. The aircraft recovered from the initial spin entry and entered a spiral dive from which recovery was not accomplished before ground impact.

3. For undetermined reasons, the Cirrus Aircraft Parachute System was not activated after the aircraft departed controlled flight.

Finding as to Risk

1. The listing of airworthiness directives in the Transport Canada Continuing Airworthiness Web Information System for Canadian registered SR22 aircraft contained incomplete service bulletin reference and was incomplete in listing airworthiness directives applicable to the SR22. Although it was not the official source of AD lists, there was a potential of misleading owners in regard to current maintenance requirements.

Other Findings

1. C-FGLA was recently flown under instrument flight rules and in transponder airspace with incomplete maintenance actions.

2. An airworthiness directive which applied to flight controls was not complied with in C-FGLA. Although this was not shown to have had a bearing on the accident, safety was not assured.

3. It could not be determined who was flying the aircraft at the time of the loss of control.

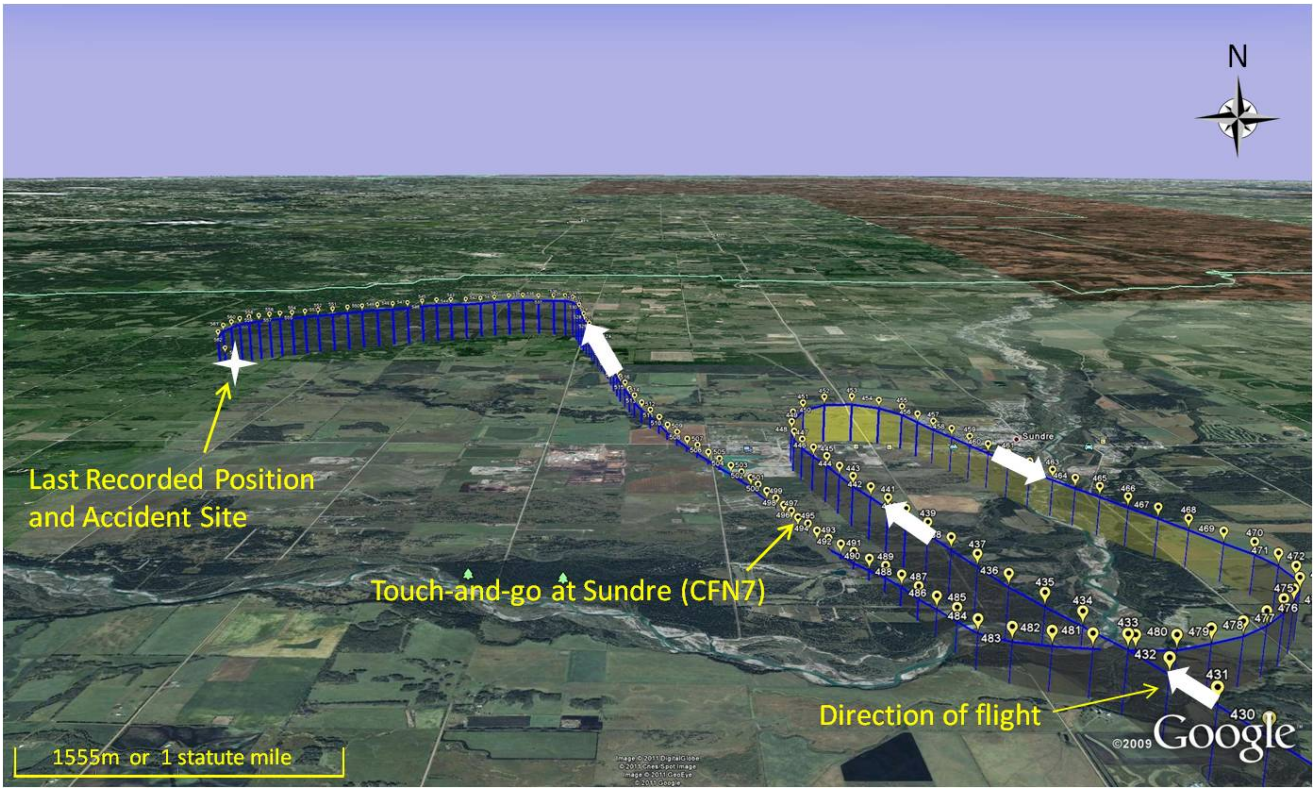
Safety Action Taken

After this occurrence, Transport Canada revised the listing of airworthiness directives for the SR20/SR22, and referenced Cirrus Service Bulletins to accurately reflect the current information contained in the Continuing Airworthiness Web Information System.

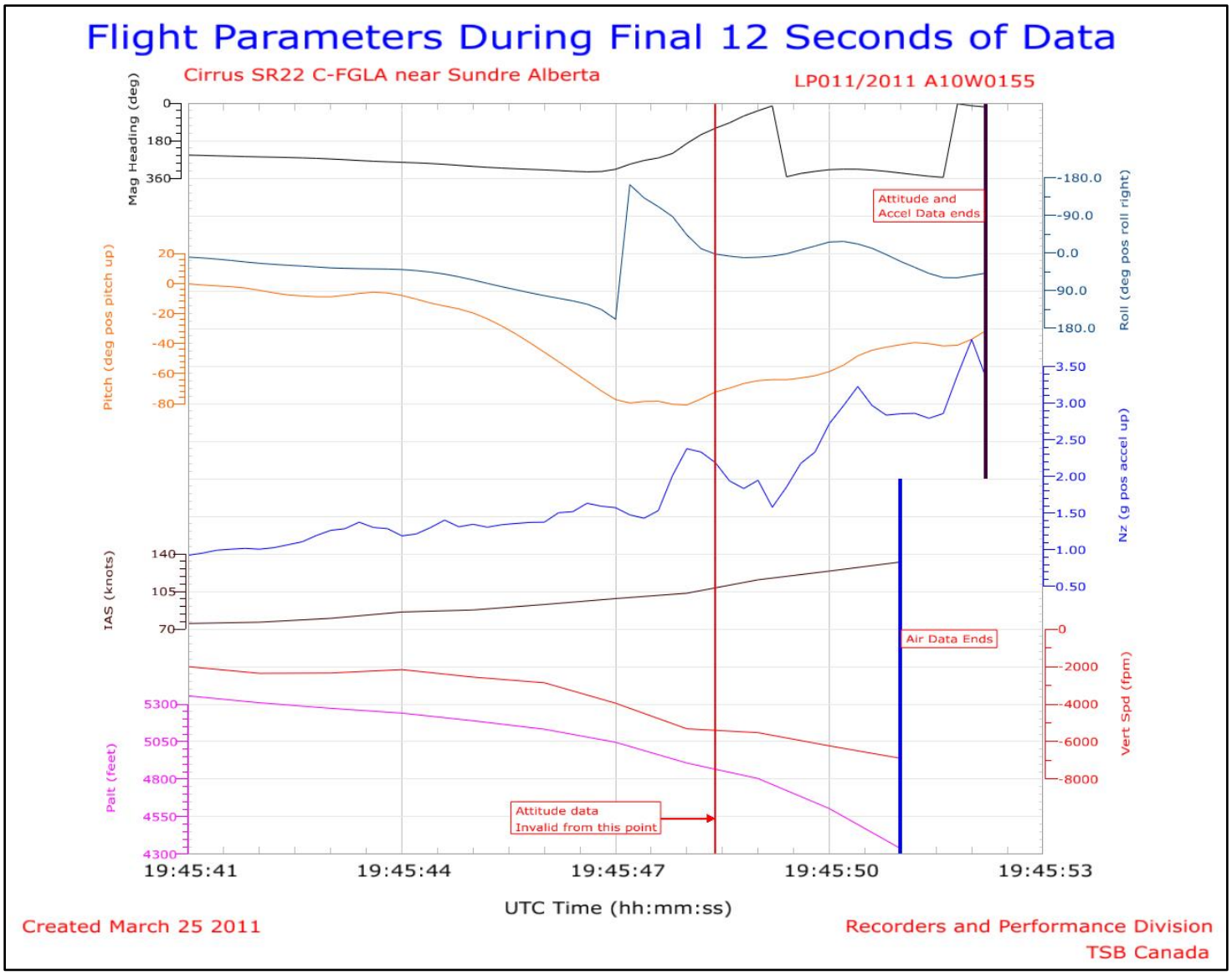
This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board authorized the release of this report on 24 November 2011.

Visit the Transportation Safety Board's website (www.bst-tsb.gc.ca) for information about the Transportation Safety Board and its products and services. There you will also find links to other safety organizations and related sites.

Appendix A – Map of Last Nine Minutes of Flight



Appendix B – Primary Flight Display Recorded Data



Appendix C – CAPS Deployment Sequence

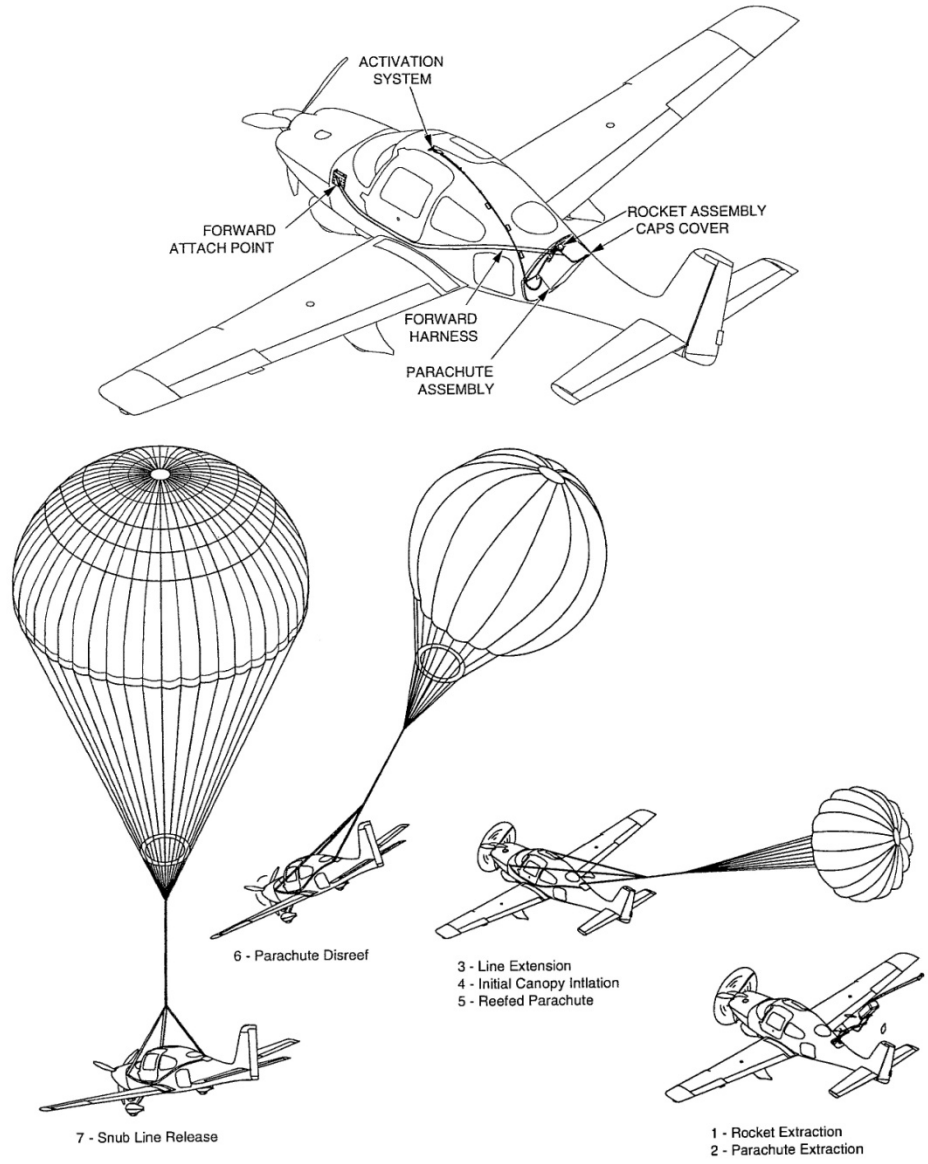


Figure 95-001
CAPS Deployment