ACCIDENT

Aircraft Type and Registration:	Schleicher ASW 20 L, G-CFRW
Year of Manufacture:	1978 (Serial no: 20202)
Date & Time (UTC):	24 September 2022 at 0856 hrs
Location:	Near Pulborough, West Sussex
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - 1 (Fatal) Passengers - N/A
Nature of Damage:	Aircraft destroyed
Commander's Licence:	UK Part-FCL Sailplanes/Powered Sailplanes Flight Crew Licence
Commander's Age:	21 years
Commander's Flying Experience:	454 hours (of which 201 were on type) Last 90 days - 71 hours Last 28 days - 14 hours
Information Source:	AAIB Field Investigation

Synopsis

Shortly after an aerotow takeoff and during a noise abatement turn to the left, the glider released the tow at approximately 300 ft agl. The glider then pitched down rapidly and struck the ground in a nose low attitude at high speed. The pilot was ejected from the aircraft during the accident sequence and was found approximately 26 m from the aircraft. He sustained fatal injuries.

An on-site inspection of the aircraft revealed that the elevator was not connected to the elevator control rod. Two Safety Recommendations have been made; the first to mandate Positive Control Checks and the second to amend the Flight and Operations Manual to include relevant information on the limitations of pitch control using flaps.

History of the flight

The accident pilot and a friend, also a glider pilot, both trailered gliders from Lasham Airfield to Parham Airfield on the morning of the accident. They arrived at Parham at approximately 0640 hrs, parked their glider trailers on the edge of the airfield and then immediately began to rig their aircraft. Working together the two pilots first rigged the non-accident glider which was a different type. After rigging the first aircraft they conducted a Daily Inspection (DI) and a positive check of that aircraft's flying controls.

The friend then helped the accident pilot to attach the wings to G-CFRW. When that was completed he returned to his own glider to position his parachute in the cockpit and check

the electrical systems on his aircraft. The pilots, again working together, towed both of the now rigged gliders to the launch point on the grass Runway 04.

Once the two gliders had been positioned on the launch point both pilots went to the clubhouse for coffee. Members of the local gliding club began arriving at the airfield at around 0730 hrs and recalled seeing the two gliders already rigged and at the launch point. After coffee the two visiting pilots assisted the local club members in getting aircraft out of the hangar. They then worked together to conduct a DI of one of the club gliders, including positive checks of the flying controls.

The pilots then attended the morning brief which was conducted by the club Duty Instructor. The briefing covered the weather forecast and issues arising from it. The Duty Instructor discussed factors which might affect gliders ridge flying as the day progressed and the prospect of increasing cloud cover reducing lift. He also refreshed to those present airmanship points for flying on the ridge and covered touch drills for releasing a tow.

After the main briefing the Duty Instructor gave an additional brief to visiting pilots, including the two from Lasham Airfield. In this he discussed field landing options to the north of the airfield in the event of a failed aerotow and re-join procedures for the airfield, he then completed temporary membership forms for the visitors.

The club operates two launch lines, one for club aircraft and one for private and visiting gliders. The accident aircraft was second to launch in the private aircraft line. G-CFRW took off at 0855 hrs and was witnessed by numerous people. The witnesses described the initial stages of the takeoff as normal but then as speed increased noted that the glider seemed to be more nose down than usual. The tug aircraft left the ground before the glider which was also considered unusual. After becoming airborne following a longer ground run than usual, the glider pitched down and bounced twice. Once it became airborne again witnesses described the glider as being in a low towing position.

The pilot of the tug aircraft also noted the two bounces of the glider and considered this unusual. As the tug pilot began the planned noise abatement turn to the left, he was looking in his mirrors in case the glider flew wide. He saw the glider move to a “low tow” position. The tug pilot considered this abnormal but was not unduly concerned as he knew the glider pilot was experienced. The tug pilot then lost sight of the glider and shortly after felt the glider release the tow. He asked for confirmation via RTF that the glider pilot had released the tow but he received no reply. The tug pilot continued to turn left to check that the glider had released the tow and then saw the damaged glider in a field. He informed the launch point of the accident via RTF and orbited the accident site to assist with co-ordination of the ground response.

Eyewitnesses on the ground saw the glider release the tow in the left turn. After the release they described the glider pitching down at a steep angle until they lost sight of it behind trees. Personnel from the gliding club called the emergency services and made their way to the accident site with the airfield fire vehicle. On scene they conducted CPR on the injured pilot, but he had sustained fatal injuries.

Aerodrome information

Parham Airfield is located to the north west of Shoreham Airport (Figure 1).

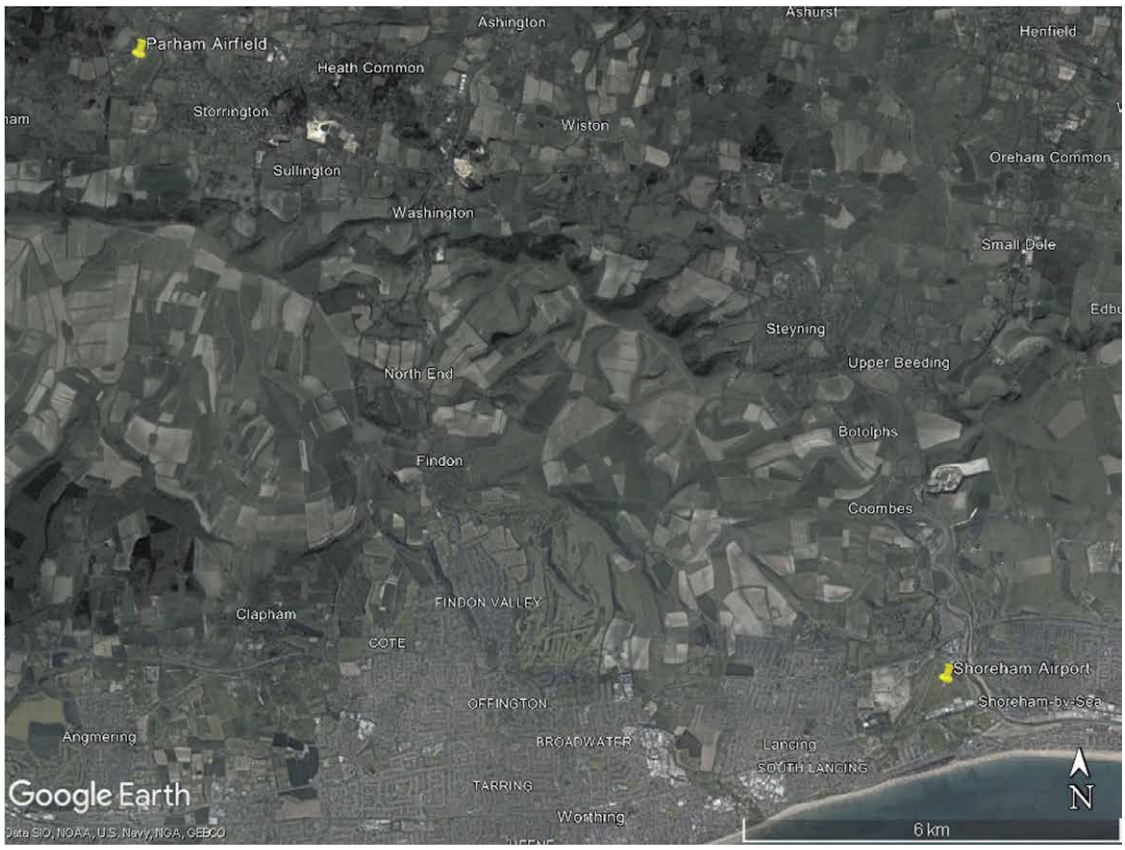

Figure 1
Location of Parham Airfield

It is a grass airfield with one Runway 04/22 which is 650 m long. The operating club has divided the surface into a glider landing area and an aerotow strip (Figure 2).

The operating club have established local procedures to avoid noise sensitive areas near the airfield. Runway 04 was in use for the accident flight and the suggested route is at Figure 3.

Figure 2

Airfield layout – contained in operating club's documents

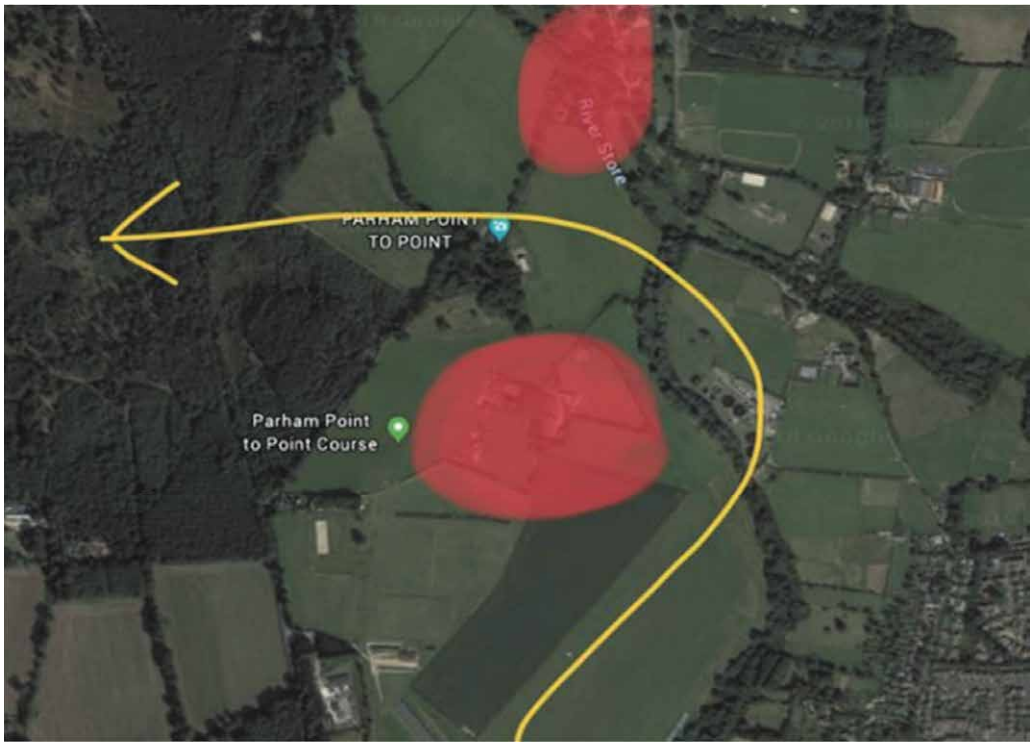

Figure 3

Noise abatement route for Runway 04 – contained in operating club's documents

Accident site

The aircraft wreckage was found in a field north of Parham Airfield (Figure 4).

Figure 4
Location of accident site

The ground marks and damage to the aircraft structure indicated that the aircraft struck the ground with the right wing slightly low and in a steep nose-down attitude. Ground marks and scratches found on the lower surface of the left wing showed that after the right wing and nose had struck the ground, the aircraft rotated to the right, dragging the left wing along the ground as the aircraft's momentum carried it forwards. The aircraft came to rest pointing towards the initial impact point with the tail boom structure disrupted in two places and bent towards the right wing (Figure 5). The nose and cockpit structure were fragmented, leaving only the severely damaged flight controls, some twisted cockpit structure and the

two uppermost seat harness shoulder straps still anchored to the aircraft. The lower two seat harness anchor points had been torn from the structure as the cockpit broke apart.

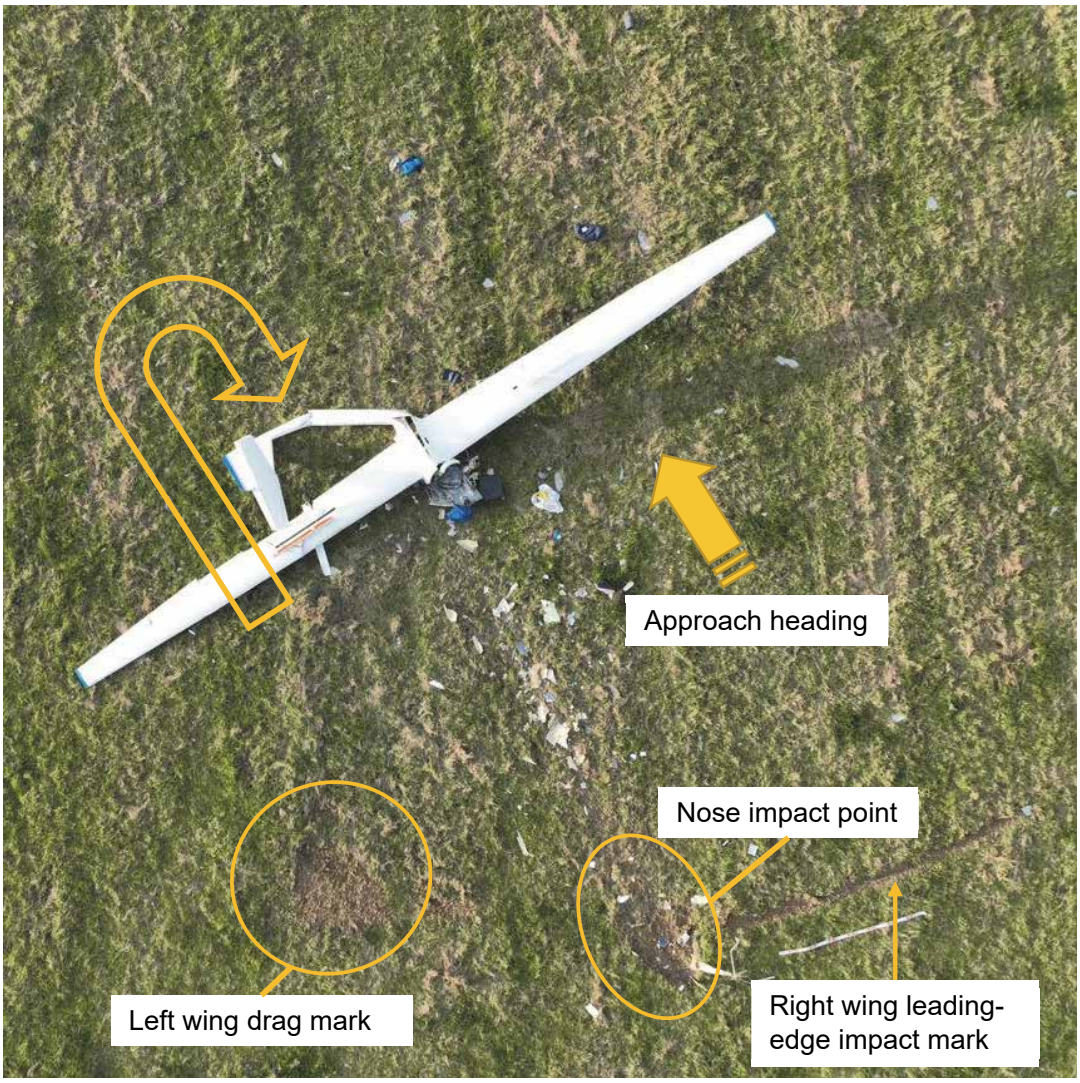

Figure 5

Overhead picture of wreckage showing ground marks

The upper surface of the fuselage skin had split longitudinally from the cockpit to the middle of the tail boom. Both wings were still attached to the fuselage and the right wing airbrake was deployed, but had been bent forwards by the force of the initial impact. The left airbrake also deployed but had not bent forwards.

The canopy transparency shattered as the canopy was thrown ahead of the aircraft landing approximately 14 m away. The pilot was found 26 m forward of the aircraft in a direct line with the aircraft's approach heading. Given the extent of the injuries sustained by the pilot and documented in the post-mortem report, this accident was not survivable.

Aircraft information

General

The ASW 20/20 L is a single seat sail plane (Figure 6) of composite construction. It features trailing edge flaps which interconnect with the ailerons to allow the entire trailing edge to operate as a flap.

Figure 6

Schleicher ASW 20

The wings and horizontal stabiliser are removable for storage and transportation in a trailer. After removal from the trailer and prior to flight, the wings and horizontal stabiliser need to be assembled to the fuselage, and the ailerons, flaps, spoilers and elevator controls connected to their respective control surfaces. This process is known as rigging the aircraft.

Elevator connection

The elevator pushrod on G-CFRW was capped with a L'Hotellier cup connector.

The elevator has a ball fitting attached to its lower surface which is inserted into the L'Hotellier cup connector to connect the control pushrod to the control surface (Figure 7).

Pressing the spring-loaded lock plate in allows the latch in the cup to move into the barrel of the connector to make room for the ball to fit into the cup. Once the ball is inserted and the lock plate released, the latch clamps onto the ball holding it in place. To ensure the

latch remains seated against the ball, an 'R' shaped spring clip is inserted into the lock plate to prevent it from dislodging and allowing the latch on the cup to release the ball. The pin on the ball protrudes through the slot in the L'Hotellier cup when properly connected. There are six other manually connected L'Hotellier connections on the ASW 20 for the ailerons, flaps and airbrakes. These L'Hotellier connections are secured with a safety device known as a Wedekind sleeve, and do not use a spring clip, thus the elevator connection was the only control connection on G-CFRW which required the use of a spring clip. The presence of a spring clip is checked as part of the annual maintenance check.

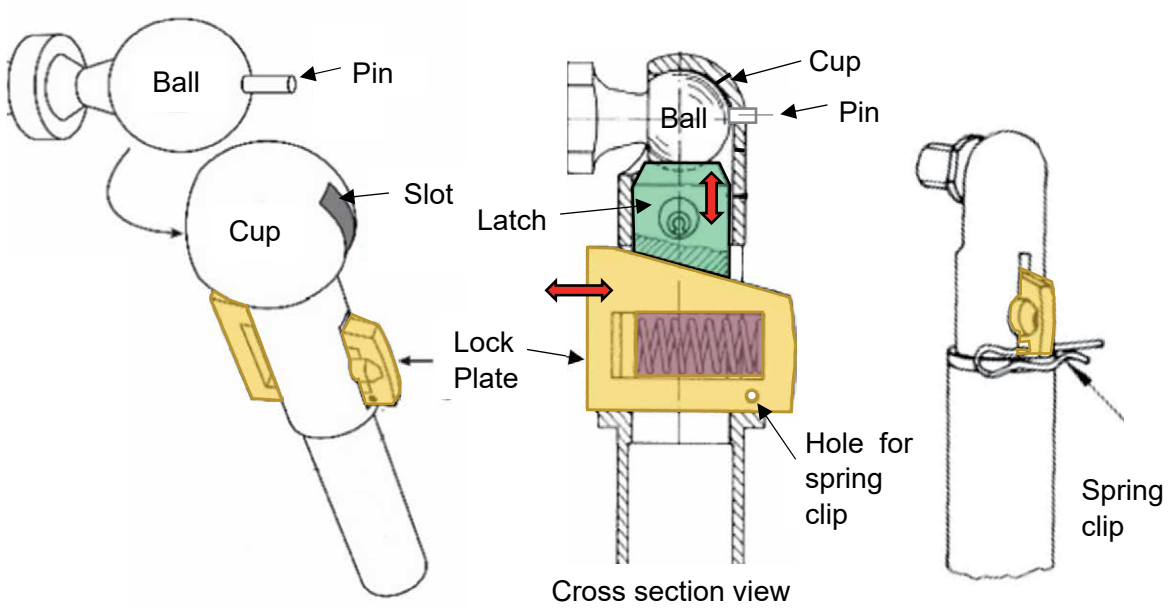

Figure 7

Diagrams showing details of the L'Hotellier cup and ball connection

Flight and Operations Manual elevator rigging

Page 36, Section 2.1 of the aircraft's Flight and Operations Manual (FOM) includes the following information when fitting the horizontal stabilizer or horizontal tail:

> *'The horizontal tail, first, is only inserted into the vertical tunnel of the fin. Then the ball fitting at the elevator is connected. And now the horizontal tail is pushed back until the Allan bolt at the nose can be screwed in.'*

Further information on how the L'Hotellier quick-release connectors should be checked and secured correctly is given on page 44b[1] of the FOM (Figure 8).

Footnote

[1] Issue 16.02.98 '*Jumtow*' Revision TN No.39.

Checking and securing the L'HOTELLIER quick-release connectors in the control linkages

1. Securing

Past experience showed that the quick-release connectors in the control linkages, particularly the one at the elevator, were incorrectly assembled or their assembly was even completely forgotten. A sticker fixed to the fin serves to remind the pilot of the correct assembly. In addition all quick-release connectors **must** be secured by means of safety pins, spring clips etc.. With the older type of connectors their check hole must be drilled to approx. 1.2 mm dia. for this purpose. The aileron, flap and airbrake connectors in the fuselage must be secured analogously.

Figure 8

Paragraph 1 of page 44b of the FOM

No fin sticker was found on G-CFRW or two other exemplar ASW 20 gliders. The manufacturer was not able to provide any information about the fin sticker. Diagrams of the correct and incorrect connection of the L'Hotellier quick-release connectors and location of the spring clip are shown in Figure 9.

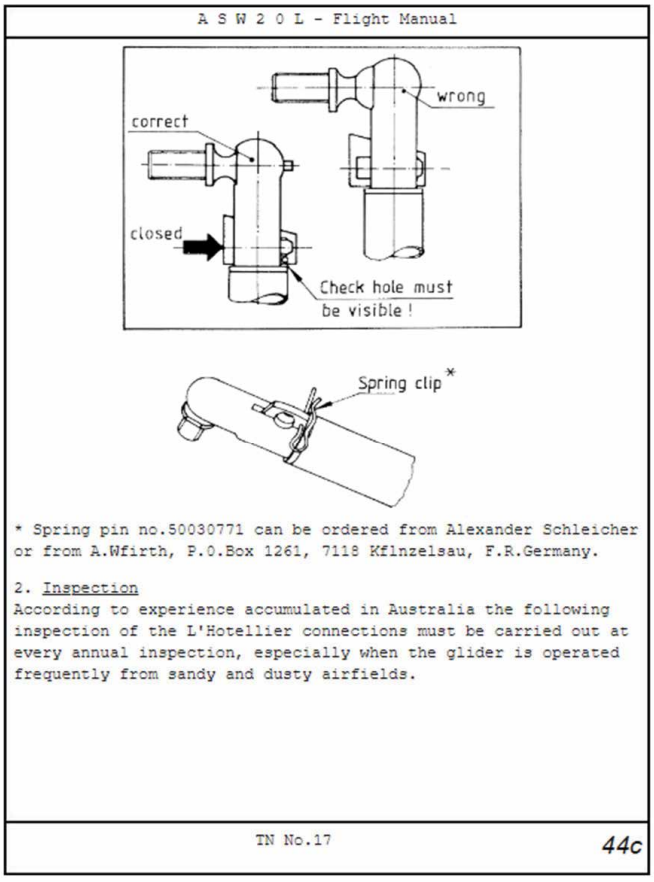

Figure 9

Page 44c of G-CFRW's FOM

Automatic elevator connection

On 6 November 1986, the aircraft manufacturer released optional modification ASW 20/20 L Technical Note No 29 which introduced an automatic elevator connection to the ASW 20/20 L aircraft series. The modification also became a factory standard installation on ASW 20 B and C models and subsequent variants.

The modification replaces a section of the elevator actuating hinge with a 'T-fitting' which is glued onto the tail fin upper surface forward of the elevator pushrod box section. At the top of the T-fitting is a 'bearing mounting' with a mid-section of elevator actuating hinge attached (Figure 10).

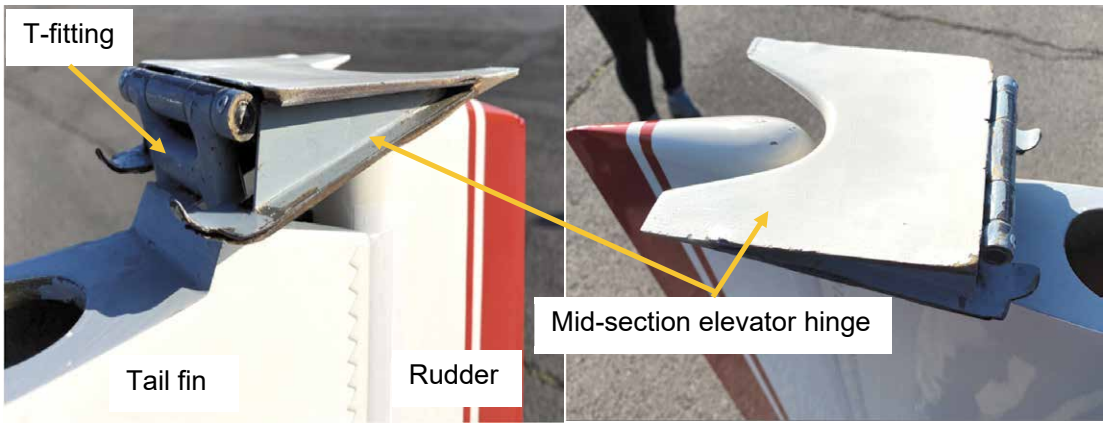

Figure 10

Automatic elevator connection showing T-fitting (Left)
and mid-section elevator hinge (Right)

This mid-section of elevator hinge is slid into place between elevator hinge ribs as the horizontal stabilizer is mounted onto the tail fin (Figure 11).

Figure 11

Horizontal stabilizer sliding aft onto mid-section elevator hinge (Left)
and elevator hinge section in place (Right)

To actuate the elevator hinge, an 'elevator pushrod' replaces the L'Hotellier cup connection and is fixed to the elevator control surface by a bracket (Figure 12). The modification may be considered expensive and potentially cost prohibitive by owners when compared to the cost of purchasing the glider. Whilst this optional modification was available, it had not been adopted on the accident aircraft.

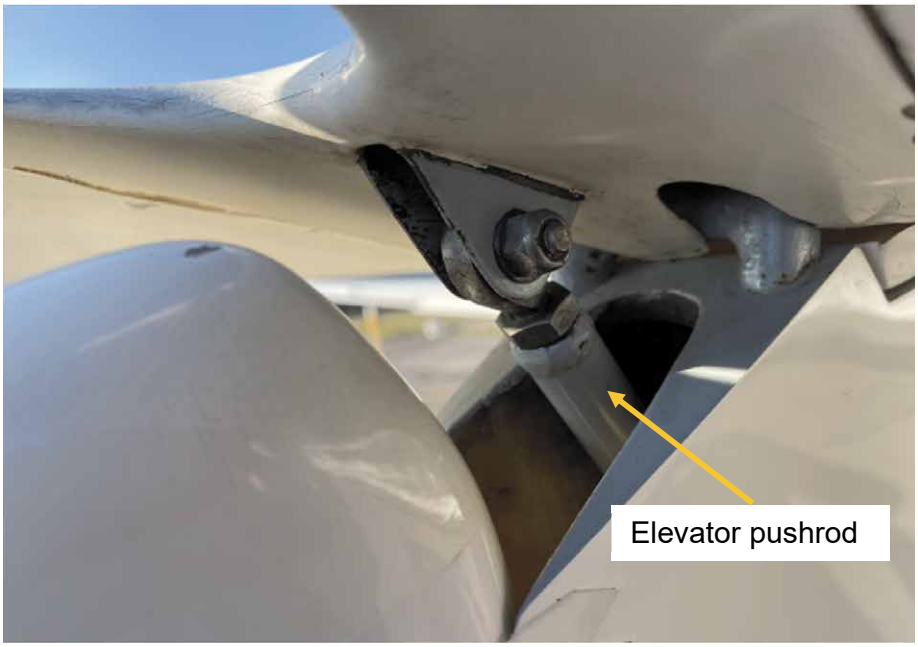

Figure 12

Elevator pushrod connection to the elevator control surface

Aerotow cable examination

Examination of the tow cable, which was still attached to the tug aircraft after the accident, and the weak link did not reveal any defects or breaks in the cable.

ASW 20 L Emergency Procedures

The FOM for the ASW 20 L contains a sub-section entitled 'Jammed Elevator Control Circuit' in the 'Emergency Procedures' section (Figure 13) which states that the aircraft is controllable in pitch by use of the flaps when the elevator control circuit is jammed.

Jammed Elevator Control Circuit

A jammed flap control system will convert the ASW20L into a 'rigid profile' sailplane. However, not every pilot will remember that he still has pitch control by use of flaps even though the elevator control circuit is jammed. Thus he probably still can improve his situation for an emergency bailout or even avoid bailout entirely.

Figure 13

Jammed Elevator Control Circuit procedure

When asked to expand, the manufacturer stated that flap control cannot replace the elevator and that only small corrections are possible. The manufacturer was not able to provide detailed information about the aircraft's response to flap input, however it did state:

> *'In the event that the elevator control is stuck in neutral, it may be possible to initiate a controlled descent. If the elevator is not connected or is stuck in another position, control of the flight is no longer possible.'*

It is not known if the pilot was aware of this procedure or if he attempted its use during the accident flight.

Elevator control connection examination

Examination at the accident site of G-CFRW revealed that all the flight controls other than the elevator were correctly connected. The elevator was found disconnected at the L'Hotellier joint (Figure 14).

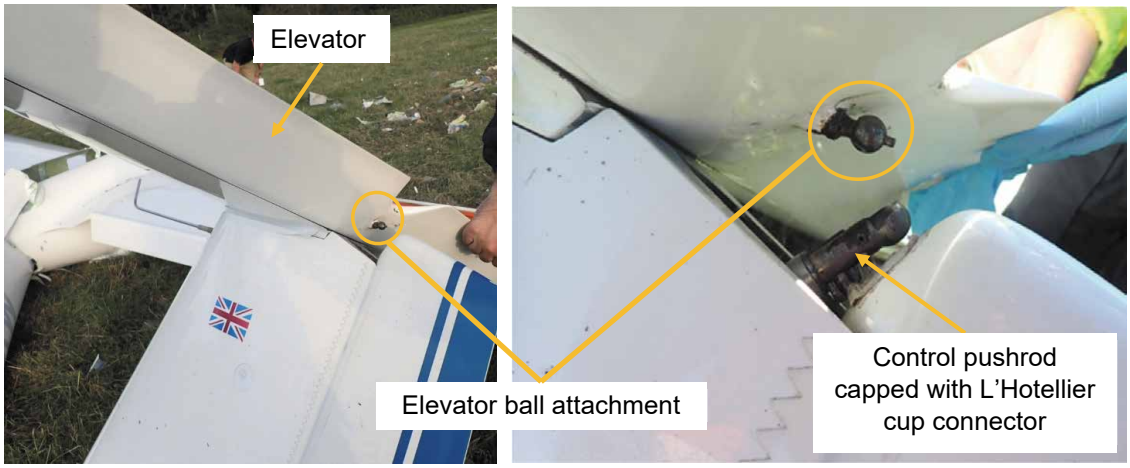

Figure 14

Images at the accident site showing that the L'Hotellier ball and cup were not connected

For comparison, Figure 15 shows an example of how the connection should look on a similar aircraft when correctly assembled. The red string attached to the spring clip was a personal modification by the owner of that aircraft to prevent the spring clip from dropping into the tail fin. It also helped the clip to remain visible and attached to the L'Hotellier cup connector when not fitted to the lock plate.

Detailed examination of the accident aircraft's elevator control mechanism revealed that it was free from any defects which would have prevented its proper assembly.

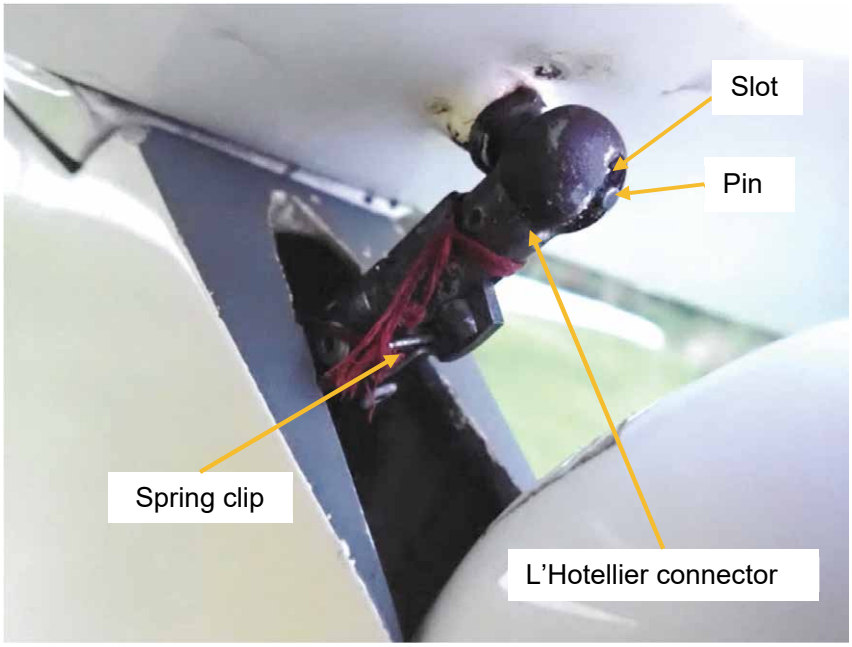

Figure 15

An example of correct elevator connection with spring clip fitted

No spring clip was found in G-CFRW's elevator L'Hotellier lock plate, although there were vertical scratch marks present on the inside of the fin, aft of the vertical tunnel, which may have been evidence of contact with the legs of the spring clip from previous fittings. Spare spring clips were found in a tool roll in the glider's trailer, along with the tool for fitting the Allan bolt[2] to the horizontal stabilizer. A packet of spare spring clips was also found in the pilot's car.

Incorrect elevator rigging tests

As part of the investigation several tests were undertaken to incorrectly rig the elevator L'Hotellier connector on the accident aircraft. The tests included partial location of the ball into the L'Hotellier cup. Whilst it was possible to partially locate the ball into the cup, even slight movement of the elevator control resulted in the ball either audibly 'snapping' back into the cup or disconnecting. In addition, when partially connected, the spring clip hole was hidden by the cup connector as the latch was forced into the barrel of the cup connector by the diameter of the ball. During these tests it was not determined whether a partial connection, which could subsequently have become disconnected, could be achieved.

Meteorology

The weather was fine with light winds and was not a contributory factor in the accident.

Footnote

[2] The Allan bolt secures the horizontal stabiliser to the tail fin once the stabiliser has been inserted into the vertical tunnel of the fin and pushed aft into place.

Pilot information

The pilot was an experienced glider pilot with 454 hours and 396 launches. He had considerable cross-country experience and had been selected as a member of the BGA Junior British Team. He was also a qualified Basic Instructor on gliders and held an EASA PPL(A).

The pilot had purchased G-CFRW in September 2021 and had operated it since then. It was routinely stored in a trailer. As part of the investigation, it was determined that the pilot was aware of the need for spring clips on the elevator L'Hotellier connection.

British Gliding Association guidance

The BGA publishes a Safety Briefing entitled *'Is Your Glider Fit for Flight'*[3] which highlights the importance of preparing correctly for flight and gives guidance on how to do so. It also identifies glider types and control mechanisms which are considered especially vulnerable to rigging errors. To avoid flying with an unprepared aircraft, the briefing suggests the following:

- *'Rigging should be directed by a person experienced on the type, in accordance with the flight manual, without interruption or distraction.*
- *A newly rigged glider should always have a Daily Inspection (DI).*
- *The DI should be conducted by a person experienced on the type, without interruption or distraction.*
- *Positive Control Checks*[4] *should be carried out every time for every rigging of a glider.*
- *It is essential for Positive Control Checks to be carried out every time for every rigging of a glider without automatic control connections.*
- *The pilot should carry out proper pre-flight checks, again without interruption or distraction.'*

While the briefing suggests that a DI should always be conducted, there is no BGA requirement for such checks to be recorded.

Footnote

[3] BGA Safety Briefing https://members.gliding.co.uk/library/safety-briefings/is-your-glider-fit-for-flight [accessed June 2023].

[4] A Positive Control Check requires the control surfaces to be restrained lightly by one person while the flying controls are moved by another person. It can reveal issues with control connections that have been only partially engaged.

The briefing also contains the following warning:

'SHORTCOMINGS IN PREPARING A GLIDER FOR FLIGHT CAN BE LETHAL AND ARE COMPLETELY AVOIDABLE.'

The briefing recognises that errors in rigging are frequently caused by interruption, distraction, forgetfulness and the making of unwarranted assumptions. The BGA stresses the importance of conducting rigging, DIs and pre-flight checks without interruption or distraction. The briefing suggests that to minimise such risks post rigging, a glider should be checked ideally by another qualified person but at least by someone with a *"fresh frame of mind"*. The BGA suggests that pilots maintain a DI book to record inspections and while many clubs and individuals follow the guidance, it is not mandated. No DI book was found for the accident aircraft and subsequent enquiries revealed that the pilot did not use one.

ASW 20 gliders are identified in the briefing as vulnerable to elevator rigging errors and particular attention is drawn to the L'Hotellier connectors. The briefing states:

> *'In all cases, check the connection carefully, and perform a Positive Control Check to ensure there is more linking the elevator to the control mechanism than just gravity. If the neutral position or range of travel looks strange, it could be the sign of an unconnected elevator.'*

A check of flying controls is also taught as part of the BGA Gliding Training Syllabus[5]. However, on an ASW 20 L, it is likely that if the elevator controls were left disconnected, the control surface would still move in the correct sense due to gravity and in response to control column movement. Therefore, such a check without resistance applied to the control surface would be unlikely to reveal the presence of the disconnected elevator control mechanism.

In another Safety Briefing entitled Aerotow Performance[6], the BGA suggests identifying a takeoff decision point. It defines this as follows:

> *'It makes sense to identify a runway point at which the tug and the glider can be safely stopped in the event of engine or other malfunction, eg low engine rpm, lack of acceleration or dragging brakes. If the grass is wet or damp, anticipate the extra space needed to stop. Do NOT become committed to a 'go-mode' to the exclusion of all else. If the tug is still on the ground and not accelerating, stick to the decision-point and abandon the launch.'*

In this case witnesses reported that the glider had become airborne after the tug aircraft and that was considered to be unusual. Glider pilots interviewed stated that at Parham if they were not airborne from Runway 04 abeam the windsock, they would release the tow and reject the takeoff. This suggestion was not discussed as part of the morning brief.

Footnote

[5] https://members.gliding.co.uk/library/pilot-training/bga-gliding-syllabus/ [accessed June 2023].
[6] BGA Safety Briefing Aerotow Performance Aerotow-Performance.-pdf.pdf (gliding.co.uk) [accessed June 2023].

Safety Actions

As a result of this accident the BGA has taken the following safety action:

> Published an online 'Safe Rigging Toolkit'[7] with significant emphasis on the human factors associated with mis-rigging.

At the time of publication of this report the BGA is planning an animated video to provide guidance to BGA members for rigging gliders.

The BGA is also reviewing the DI book format to include a dedicated box to record a Positive Control Check. A signatures box for when 'rigging is complete' and 'independent rigging checks if required' are also being considered.

Analysis

Introduction

The aircraft most likely became airborne with the elevator control disconnected. The tow was released shortly after takeoff, and the aircraft pitched down rapidly. The tow cable remained attached to the aerotow aircraft after the accident and there was no defect or break in the tow cable or the weak link, hence it was likely that the glider pilot released the cable during the aerotow takeoff. The distribution of the wreckage and ground marks were consistent with the aircraft striking the ground in a nose down attitude at a high rate of descent resulting in an accident that was not survivable.

The investigation did not identify any defects with the elevator control connection which would prevent it being properly connected. It is therefore considered that the connection had not been correctly made when the glider was assembled prior to the accident flight. It was not determined whether the task of connecting the elevator control was omitted during the rigging, or whether a partial connection was achieved, which may subsequently have become disconnected. But the investigation was not able to replicate a partial connection on the accident glider or other similar gliders.

Preparation for the flight

On arrival at Parham the pilot helped rig his friend's glider. Once the rigging was complete, they conducted a Positive Control Check on this glider in accordance with the BGA guidelines. Both then worked together to attach the wings to the accident aircraft. Once the wings were attached the friend went to work on his own glider leaving the pilot to complete the rigging of the accident aircraft by himself. The friend conducted other checks on his own aircraft and when they both came together again, they towed both aircraft to the launch point.

Footnote

[7] Safe Rigging - Pilot & Club Info (https://members.gliding.co.uk/bga-safety-management/managing-flying-risk-index/safe-rigging/) [accessed June 2023].

After towing the aircraft to the launch point the accident pilot and his friend went to the clubhouse for coffee and then assisted club members in preparing other gliders. They both worked together to conduct a DI of a club glider. No witnesses recalled taking part in a Positive Control Check with the pilot on the accident aircraft and, given that the task requires two people, it is probable that it was not conducted. One possibility is that the pilot was distracted which interrupted the process after rigging and that the pilot forgot to conduct the Positive Control Checks on his aircraft. It is further possible that by conducting those checks on a different aircraft he was cognitively satisfied that the checks were complete on his own aircraft.

It was not determined if, as part of his pre-flight checks, the pilot conducted a walk round inspection of the aircraft. It is not known whether the pilot performed a full and free control check at the launch point; however, as the control rod can still push the elevator surface up and it can fall under gravity, this would be unlikely to have detected a disconnected elevator control.

Aircraft rigging

L'Hotellier connections are fitted to many glider types and are known to be vulnerable to mis-rigging. Several safety devices exist to make L'Hotellier connections more robust and prevent them from disconnecting in flight. These include spring clips to secure the lock plate, Wedekind sleeves (such as fitted to G-CFRW's aileron, flap and airbrake connections) and Uerling sleeves. Of these safety devices, the spring clip is the simplest but offers the least protection as it is not an integral part of the L'Hotellier connection and is required to be fitted separately.

The ASW 20 L FOM states that the controls should be 'safe tied' by inserting spring clips through holes in the L'Hotellier connector lock plates. The spring clips can only be inserted when the mechanism of the L'Hotellier connector is correctly assembled and attached to their respective flying controls. No spring clip was found in the elevator's L'Hotellier lock plate, although the possibility of it being lost in the accident sequence could not be discounted. The vertical scratch marks present on the inside of the fin may have been evidence of contact with the legs of spring clips previously fitted to the elevator's L'Hotellier lock plate.

Unlike many other glider types, the elevator connection on the ASW 20/20 L is visible when the elevator control surface is lifted. This enables a secondary post-rigging visual inspection which, if performed, could identify a disconnected or partially connected L'Hotellier connection or a mis-installed or absent spring clip. The pin on the elevator ball protrudes through the slot in the L'Hotellier cup when properly connected (Figure 7). This, together with the position of the lock plate provides visual and tactile cues to verify correct engagement of the L'Hotellier connection. Pulling the control rod or trying to depress the lock plate can provide further indications of correct connection.

On the ASW 20/20 L, the likelihood of mis-rigging the elevator connection can be fully mitigated by installing the optional automatic elevator connection modification ASW 20/20 L Technical Note No 29. However, the high cost of the modification discourages many owners from embodying this option. Without the protection provided by automatically connecting

controls, mitigation for mis-rigging relies entirely on rigging procedures, secondary checks and Positive Control Checks.

BGA rigging guidance

The BGA guidelines recommend that a newly rigged glider should have a DI and that it is essential for gliders without automatically connecting controls to have a Positive Control Check, although there is no formal requirement for a record of such checks. If a glider's flight controls have been mis-connected during rigging, the only reliable ways to identify this condition prior to flight are a secondary check of the control connections and a Positive Control Check. The guidelines also suggest that post-rigging checks should be carried out with *'fresh eyes'* by another person. Similarly, there is no formal requirement for this independent check. The BGA Briefing, *'Is Your Glider Fit for Flight'*, refers repeatedly to the risks posed to correct rigging by interruption or distraction during the rigging process.

As a result of this accident the BGA have taken the safety action of publishing of a '*Safe Rigging Toolkit*'. It is planning to publish an animated video about safe rigging. It is also drafting an update to the content and format of the DI book to include a dedicated box to record a Positive Control Check. The most effective barrier to prevent mis-rigging is by robust design at the outset, or retrospective approved modification, which can be a costly option for glider owners. Whilst the BGA's Safety Actions are likely to be beneficial for the safe rigging of gliders, an independent Positive Control Check is an effective barrier against mis-rigging. As this is not a formal requirement for BGA members, to increase the likelihood of Positive Control Checks being conducted before flight the following Safety Recommendation is made:

Safety Recommendation 2023-026

It is recommended that the British Gliding Association should mandate the conduct and documenting of Positive Control Checks as part of glider Daily Inspections.

Emergency procedures and pitch control

In the ASW 20 L FOM, the manufacturer refers to an alternative means of pitch control in the event of a failure of the elevator circuit. It is not known if the pilot was aware of this procedure or if he attempted its use during the accident flight. However, there is insufficient information for a pilot to understand the extent of the reversionary control and how to achieve it.

During the investigation the manufacturer stated *"In the event that the elevator control is stuck in neutral, it may be possible to initiate a controlled descent. If the elevator is not connected or is stuck in another position, control of the flight is no longer possible"*. Such limitations on pitch control by flap are not made clear in the FOM. The FOM does not give a procedure for controlling pitch with flap but the manufacturer stated that downward flap deflection would cause a pitch up moment on the aircraft.

In order to address the lack of clarity in the FOM regarding the level of pitch control available for a range of elevator control circuit failure scenarios, the following Safety Recommendation is made:

Safety Recommendation 2023-027

It is recommended that Alexander Schleicher GmbH & Co Segelflugzeugbau amend the Jammed Elevator Control Circuit section of the ASW 20 Flight and Operations Manual to include relevant information on the limitations of pitch control using flaps and its likelihood of allowing a safe landing.

Conclusion

The aircraft took off with the elevator control disconnected and control of the aircraft was lost shortly after becoming airborne. The aircraft struck the ground in a steep nose-down attitude and the pilot sustained fatal injuries.

Regardless of the type of control connection used on a glider, Positive Control Checks offer the ability to detect a mis-rigging condition before flight. In the case of G-CFRW, it is unlikely that Positive Control Checks, were carried out.

Published: 31 August 2023.