
Riggers' Subcommittee

Minutes of the meeting held on

Thursday 9 June 2022 at 1600

at British Skydiving HQ, 5 Wharf Way, Glen Parva, Leicester LE2 9TF

Present:

| | | |
|--------------------------|---|------------------------|
| Pete Sizer (RE) | - | Chair |
| Mark Bayada (PR) | - | Council |
| Rick Boardman (RE) | | |
| Josh Clark (AR) | | |
| Liam Goddard (PR) | - | Communications Manager |
| Dave Major (AR) | | |
| Jo Oosterveer (AR) | | |
| George Panagopoulos (RE) | | |
| Noel Purcell (RE) | | |
| Karen Saunders (RE) | | |
| Andy Shaw (RE) | | |
| Gary Stevens (AR) | | |

Key:

AR = Advanced Rigger

PR = Parachute Rigger

RE = Rigger Examiner

Apologies: None

In Attendance:

| | | |
|-----------------|---|-----------------------------------|
| Liz Ashley | - | Editor, Skydive the Mag |
| Tony Butler | - | Chief Operating Officer (COO) |
| Dr John Carter | - | British Skydiving Medical Adviser |
| Jeff Montgomery | - | STO/Chair STC |
| Trudy Kemp | - | Assistant to COO/STO (Secretary) |

Observers:

ITEM

WELCOME & OPENING ADDRESS

The Chair welcomed members and guests to the British Skydiving Riggers' Subcommittee meeting. He stated that as this was a Hybrid meeting, with some members present and some attending virtually, he gave the meeting details of the procedures for those wishing to speak, voting etc.

The Chair stated that the meeting would be recorded to assist with preparation of the minutes after which the recording would be deleted.

1. DECLARATIONS OF INTEREST

Any declarations of interest would be made at the item/s to which they relate.

2. MINUTES FROM THE RIGGERS' SUBCOMMITTEE MEETING OF 28 JANUARY 2022

It was proposed by Rick Boardman, seconded by Andy Shaw that the Minutes of the Riggers' Subcommittee Meeting of 28 January 2022 be accepted as a true record.

Carried Unanimously

3. MATTERS ARISING FROM THE RIGGERS' SUBCOMMITTEE MEETING OF 28 JANUARY 2022

There were no matters arising from the previous meeting.

4. MATTERS ARISING FROM THE MINUTES OF THE STC MEETINGS OF 10 FEBRUARY 2022 & 8 APRIL 2022

There were no matters arising from the previous meetings of STC.

5. PROPOSAL TO ALLOW RESERVES TO BE SEALED BY THE FAA METHOD IN ADDITION TO BRITISH SKYDIVING FORM 215 METHOD

The Chair reported that proposal had been included with the agenda to allow reserves to be sealed by the FAA Method in addition to British Skydiving acceptable reserve sealing method as detailed on Form 215.

The Chair stated that there have been a number of reports from UK jumpers going to the States where they are encountering problems with sealed rigs, which have been sealed using the UK method. These jumpers have been required to have their reserves re-packed by an FAA qualified Rigger and sealed using the FAA method.

The United States do not recognise the UK method of sealing reserves, which has been an ongoing problem for a number of years.

Several Riggers present reported that they had also encountered similar problems in the past and have had to seal reserves using the FAA method for those rigs going abroad.

The STC Chair reported that he had spoken to his equivalent safety counterpart at the USPA regarding this matter, but this matter was outside of their remit as it is an FAA ruling.

The COO also provided further clarification on the ruling for jumpers travelling to the States. He stated that those using TSO'd equipment will need to have their reserve packed by an FAA-certified rigger before it can be jumped. For jumpers using non-TSO'd equipment, providing the equipment meets their own country's re-pack rules then the equipment is acceptable to be jumped.

Following further consideration, it was proposed by George Panagopoulos, seconded by Gary Stevens that the FAA method of sealing reserves be accepted.

For: 10 Against: 1 Abstentions: 0

Carried

The Chair stated that Form 215 would be updated to include full details and drawings of both reserve sealing methods. The Rigging Technical Manual and Reserve Packing Guide would also be amended accordingly.

6. CHAIR TO REPORT ON RECENT RIGGER EXAMINERS MEETING

The Chair reported on the recent Rigger Examiner meeting that was held virtually. He stated that the Examiners had discussed the various rigging course syllabuses and that once available the various draft forms would be made available for consideration.

7. EQUIPMENT RELATED INCIDENT REPORTS RESUMÉ

A resumé of equipment related Incident Reports had been included with the Agenda:

- 8.1 An Equipment incident report had been submitted to British Skydiving in December 2021, which was mentioned as part of the incident resume during the Riggers Safety Day which took place at Skydive the Expo on 28 January this year. However, the information was not included in the minutes of the Riggers' subcommittee meeting held on the same day. This resumé provides details of the incident reported in December last year.

The incident involved an issue that was found on an Icon container parachute system which was booked in for a routine inspection and repack. Prior to carrying out the inspection, the rigger pulled the reserve handle out of the velcro and pulled the handle to pop the reserve extractor. The handle did not pull and felt quite solid. The rigger tried a second time and still did not manage to pull the handle. As a result, the rigger used the scales and filmed the deployment by placing his foot in the yoke and pulling the handle. The scales went up to 35lbs when the pin jumped slightly. The scales then went up to 45 lbs when the pin finally released. The Rigger placed the system in isolation until a further inspection could be carried out, subject to another rigger being available to do so. The test pull annotated on the Record of Inspection (ROI) from the previous repack was 20 lbs. The packer who packed the reserve, was not informed of the issue and British Skydiving was informed via an equipment incident report (F298A).

The container was an Icon container, and reserve was a smart 150.

On 3 January, an Advanced Rigger inspected the equipment and found that the reserve loop may have been too small and was marked at an even shorter length but had probably slipped a bit. The condition of both the grommet and the reserve pin were found to be rough.

The equipment was then repacked with the correct size loop as stated in the manual for the size of the reserve and both the grommet and the reserve pin were polished. A test pull was conducted and 20lbs of pressure was recorded. The equipment was placed back into circulation.

British Skydiving contacted the packer who took the matter very seriously. Subsequently, the packer changed the process in which he packed and recorded the pressure force, by having where possible the owner counter sign the ROI. If this is not possible, an experienced jumper will countersign the ROI. This is also applied to student equipment where, a minimum of a CSBI will also countersign the ROI and routine test pulls will be independently conducted at random by the equipment manager, as part of a Safety Management System audit review.

British Skydiving also carried out an audit of those processes in May this year and were found to be as reported.

From the discussion that ensued, it appeared that there could be an issue with Icon containers if there is a lot of material in the top corners of the free-bag which has the potential to create more bulk as it lies in the area of the shoulders which may contribute to higher poundage force.

Packers were asked if they are coming across an issue with increased pull force with these containers, they should inform us with details.

- 8.2 An injury report has been received for a male skydiver with a total of 314 descents who after carrying out a 6 way formation skydive, deployed his parachute and experienced a hard opening. As a result of the hard opening, the skydiver suffered some whiplash and some groin pains from the leg straps.

After inspection of the equipment, it was noted that the main canopy left steering line had not been routed through the slider grommet.

The equipment was privately rented and not the responsibility of the PTO. The main canopy had been jumped on that jump for the first time since the reserve had been repacked and the main installed on to the container, which were both packed on 4 May 2022.

The container was a javelin, the reserve was a tempo 120 with a triathlon 120 main canopy and a vigil AAD (see details below):

| | | | | |
|-----------|---------------|--------------|--------------------|----------------------------------|
| Container | Javelin | S/N: 15707 | DoM: Nov 1998 | Packed: 4 th May 2022 |
| Reserve | Tempo 120 | S/N: 193173 | DoM: November 1998 | Packed: 4 th May 2022 |
| AAD | Vigil Quatro | S/N: 40453 | DoM: May 2014 | Packed: 4 th May 2022 |
| Main | Triathlon 120 | S/N: Unknown | DoM: Unknown | Packed: 4 th May 2022 |

The STC Chair reported that with respect to the misrouting of the brake line, the person responsible for the mistake has been informed and deeply regrets that they made the error and is fully apologetic.

To prevent the error from re-occurring, the packer has introduced an independent continuity check for all assemblies. Should nobody be available to conduct the check, then a mandatory 5-minute interval between checks must be followed. All personnel working on the equipment inspections and processes have been informed of the change in procedure.

8. ADVANCED PACKER (AP) COURSE REPORTS

A resumé of the Advanced Packer Courses held since the last meeting had been circulated with the Agenda:

- i) An Advanced Packers Examination Course has been run by Andy Page at Beccles Skydivers from 18 January 2022. The Course was attended by Archie Glazebrook.

Archie successfully completed the Course and was awarded Advanced Packer (Grade S) status.

- ii) An Advanced Packers Training Course has been run by Karen Saunders at Skydive Langar from 17 – 21 January 2022. The Course was attended by Kayleigh Garbett, Viola (Debi) Fehete and Shaun Dyer.

All candidates were advised to practice under supervision in preparation for the examination phase of the Course at a later date.

- iii) An Advanced Packers Tandem Upgrade Course has been run by Karen Saunders at Skydive Langar from 24 – 28 January 2022. The Course was attended by Colin Stephenson and Ryan Garner.

Unfortunately, Colin was forced to withdraw from the Course on the first day and he was advised to attend another Tandem upgrade Course at a later date.

Ryan Garner successfully completed the examination phase of the Course and was awarded Advanced Packer (Grade T) status.

- iv) An Advanced Packers Training Course had been run by Gary Stevens from 3 – 6 February 2022. The Course was attended by Gareth Mooney and Richard Bremner. Both candidates were advised to practice under supervision in preparation for the examination phase of the Course at a later date.

- v) An Advanced Packers Examination Course had been run by Allan Hewitt at Skydive Tilstock from 14 – 15 February 2022. The Course was attended by Barry John Cox.

Barry successfully completed the Course and was awarded Advanced Packer (Grade S) status.

- vi) An Advanced Packers Tandem upgrade Training & Examination Course had been run by Karen Saunders from 14 – 18 February 2022. The Course was attended by Andy Clark, Aaron Cosbey and Rafal Kacprzyk. All candidates completed the examination phase of the Course and were awarded Advanced Packer (Grade T) status.

- vii) An Advanced Packers Training Course had been held at Rhomech Rigging from 24 – 27 February 2022. The Examiners running the Course were Gary Stevens and Rick Boardman.

The Course was attended by Frank Burton and Chantal Warren. Both candidates were advised to practice under supervision in preparation for the examination phase of the Course at a later date.

- viii) An Advanced Packers Examination Course had been run by Karen Saunders at Skydive Langar from 27 – 28 February 2022. The Course was attended by Viola (Debi) Fechete, who successfully completed the Course and was awarded Advanced Packer (Grade S) status.

- ix) An Advanced Packers Examination Course had been run by Noel Purcell at Skydive Hibaldstow on 28 & 30 March 2022. The Course was attended by Paul Champollion. Paul successfully completed the Course, and was awarded Advanced Packer (Grade S) status.

- x) An Advanced Packers Tandem Upgrade Course has been run by Andy Page from 4 – 7 April 2022. The Course was attended by Archie Glazebrook. Archine successfully completed the Course and was awarded Advanced Packer (Grade T) status.

- xi) An Advanced Packers Examination Course had been run by Karen Saunders at Skydive Langar from 5 – 6 April 2022. The Course was attended by Kayleigh Garbett and Ruby Watkins. Both candidates were successful and were awarded Advanced Packer (Grade S) status.

9. BRITISH SKYDIVING SAFETY NOTICES/INFORMATION BULLETINS

There had been no British Skydiving Safety Notices or Information Bulletins issued since the last meeting.

10. MANUFACTURER'S SAFETY NOTICES/INFORMATION BULLETINS

The Chair reported that an Information Bulletin had been received from UPT, which had been included with the Agenda. He stated that UPT has increased the weight limit capability of all Sigma and Sigma II Tandem main canopies (SG) to 550 Lbs.

A copy of the fully Information Bulletin will be attached to the outgoing Minutes for information. (Addendum A)

11. A.O.B.

11.1 Fatality – Board of Inquiry Resume

The Chair STC reported that the Board of Inquiry Report into the fatal accident of a British Skydiving member in September 2021 had now been completed. He stated that the Board resumé had been sent out to Riggers on 7 June, along with an Urgent Safety Advice notice, and also a relevant Safety Advisory Notice, issued by the USPA/PIA, which may be relevant.

The Chair STC asked Riggers that this information remain confidential and that they do not share this information outside of the Subcommittee.

Resume of the Board Report:

In September 2021, British Skydiving member (the deceased) boarded a parachuting aircraft along with 7 other skydivers including two Tandem pairs. This was the fourth Skydiving sortie and the Deceased's fourth jump of the day.

The aircraft climbed to approximately 12,100ft AGL, and took approximately 12- 15 minutes to reach the required exit altitude. Once the aircraft was at the correct Exit Point, the first skydiver was dispatched to carry out a solo jump. Shortly after that the first Tandem pair left the aircraft with their videographer, followed 16 seconds later by the second Tandem pair, their videographer and the deceased, all exiting together as a group. The deceased was the last skydiver to exit the aircraft.

The deceased proceeded to carry out the planned descent, videoing the Tandem pair and the other videographer. The deceased flew in proximity and in front of the Tandem pair for the majority of the skydive. 41.8 seconds after exit, the Tandem instructor deployed the Tandem main parachute. The deceased and the other videographer continued in free fall and the second videographer initiated the deployment of his main parachute approximately 49 seconds after his exit. This is known after examination of the video footage from the second videographer on the skydive.

The second videographer's main parachute deployed in the correct manner. Shortly after, the main parachutes of three solo skydivers and two Tandem pairs (total 5 parachutes) were seen to have deployed normally, and all were observed to be flying correctly. The deceased's parachute was not seen and remained unaccounted for.

From the analysis of the deceased's video footage, after filming the deployment of the second Tandem pair it is known that the deceased continued in free fall and at approximately 48 seconds after exiting the aircraft, at which point the deceased fell through a thin layer of cloud. Approximately 1.5 seconds later, she was clear of the cloud and once she was in sight of the ground, she made what appears to be a deliberate left turn, stopping when she was facing the PLA.

The Board believe that she made two attempts to deploy her main canopy, between approximately 2400ft and 2100ft, neither of which were successful. The Board are unsure whether she was unable to locate or to pull her main canopy deployment toggle, which remained in the BOC pocket throughout. The video showed that the deceased then promptly carried out a full reserve drill, as both the cutaway cables and the reserve eyelet from the reserve ripcord were seen in her footage. The Board believe that the deceased may have carried out her emergency procedures prior to the AAD firing at 820ft AGL. This height is known after receiving the AAD data graph and report from the AAD manufacturer.

The deceased's video footage indicates her looking over her shoulder approximately three seconds after carrying out a full reserve drill. The reserve pilot chute was seen to be distorted or restricted, preventing the pilot chute from fully inflating to its normal functioning shape and full size. Approximately two seconds later the deceased appeared to look again over her shoulder and the pilot chute was seen to remain in the same distorted configuration. It was seen to remain in this configuration, with most of the bridle line visible but without any evidence of free-bag extraction, up to and including the final video frame before the camera contacts the ground. Although it is possible that the deceased's two changes of body position to look up at her reserve pilot chute may have reduced the effect of any burble and increased the slipstream force on the pilot chute, any such effect was insufficient to allow extraction of the free-bag by the distorted pilot chute within the few seconds available.

The Board have seen no evidence to suggest that the packing of the reserve pilot chute contributed in any way to the malfunction. The Board believes that the restriction/distortion of the reserve pilot chute may have occurred in one of two ways.

1. The pilot chute spring may have launched unevenly and in doing so become caught in the bridle or on some other part of the pilot chute's own structure.
2. The pilot chute may have failed to launch and clear the burble immediately and whilst still in the turbulence of the burble, tumbled and became entangled in the bridle.

In each instance there may not have been enough drag for the distorted pilot chute to deploy the reserve. Following a reserve deployment when the main canopy is still in the container, the pilot chute can become distorted as it lifts off from the container, reducing the effectiveness of the spring. The equipment is rigorously tested by the manufacturers and has never before been known to fail to clear the burble and to affect the reserve deployment. However, in this instance the size of burble may have been exacerbated by the use of the camera wings and the stable position the deceased was in. The stable position could be inferred from the video and the data graph from the AAD manufacturer which shows a much slower rate of descent during this time

The Board were unable to determine as to whether the pilot chute in its distorted configuration would have created sufficient drag to extract the reserve free bag from the reserve container even if the emergency drills would have been carried out at a higher altitude. The shape of the pilot chute was a unique malfunction that the Board have not previously seen, and the Board are not aware of any reported incidents of this nature. This means that the Board are unable to state "on the balance of probabilities" whether full reserve parachute opening would eventually have occurred with more height. It is not clear whether the change in the pilot chute from distorted back to normal configuration occurred due to lack of slipstream after ground contact, due to ground contact itself or due to handling during attempts to save life.

The Board believe that this was a tragic accident uncomplicated by negligence or by external interference with equipment. Parachute systems sometimes fail to operate correctly, even when manufactured, assembled, packed and operated correctly.

The Board reiterate the recommendations made in the Interim Report, issued on 22 September 2021.

- a. Skydivers should be reminded of their pull priorities and of carrying out their reserve drills as high as possible.
- b. If skydivers are using camera suits or jackets, they should do what they can to reduce the effect of burble when deploying their main or reserve parachutes.

It is also British Skydiving policy that on completion of a Board of Inquiry, a Safety & Training Committee (STC) Panel of Inquiry is formed they consider the peripheral aspects of the fatality and as to whether any contraventions of the Operations Manual had taken place and report back to the STC via the Chair of STC.

The Board also recommends that the Panel of Inquiry considers the following:

- c. A review of the British Skydiving Camera Flying Coaching Manual takes place to update any training requirements for skydivers and how this will be documented. Areas to be considered:

- i. The use of camera suits or jackets and the effect of the burble when deploying a main or reserve canopy.
 - ii. A minimum suggested deployment altitude for Camera flyers.
 - iii. As to whether there is a need for a camera flying and/or a camera suit/jacket qualification?
 - iv. A need for observed practice pulls on the ground after any change in camera suit wing, wing attachment method or parachute system.
- d. A review of the Emergency drills procedures with regard to body positioning and actions.
 - e. Whether the firing heights of AADs should be increased from the default altitude setting depending on the type of equipment and type of descent to be carried out.
 - f. Clarifying the wording for opening height requirements contained in the British Skydiving Operations Manual.

The Defence Safety Authority (DSA), has issued an 'Urgent Safety Advice' document to military PTOs and Team, concerning sport parachuting spring activated reserve parachute systems. British Skydiving has been given permission by the DSA to inform the membership of any potential additional risk that this may bring to our sport. A copy of this Safety Advice would also be attached to the outgoing Minutes for information. (Addendum B).

The STC Chair reported that a Panel of Inquiry is in the process of being formed and will be chaired by the Chair of Riggers' Subcommittee

11.2 Permission to Renew Rigger Examiner Rating

The Chair reported that due to a breakdown in communication, Rick Boardman had not been able to attend either of the two Rigger Courses this winter and with no courses being run the previous winter has fallen short of the requirement to examine on a course in the past two years. He stated that last year due to the pandemic REs were given an extra year to comply, so he therefore requested that Rick Boardman continue as an RE and be permitted to examine on a course in the coming year.

The meeting was informed that Rick Boardman has continued to participate in the discussions held between the Rigger Examiners over the past two years.

Following consideration, it was proposed by Gary Stevens, seconded by Josh Clark, that the above request be accepted.

Carried Unanimously

11.3 Request from Rick Boardman

Rick Boardman reported that within the Riggers Technical Manual there are two approved methods for testing reserve pilot chute deployment, and freebag extraction forces. He stated that he is currently gathering information for a project that he is working on in relation to spring loaded pilot chutes, freebag extraction etc, and gave further details.

Rick Boardman said that he would be extremely grateful for those packers and riggers who have used these two methods (as promulgated in the Riggers Technical Manual) to contact him, with any general or specific findings or data that they may have, which would assist him with this project.

ricksriggery@aol.com

12. DATE OF NEXT MEETING

The Chair reported that as stated at the last meeting, we are going to look at the way forward with regard to the frequency of Riggers' Subcommittee Meetings. It had been suggested that the number of meetings be reduced to 3 a year (every other STC), with the option of ad-hoc meetings should the need arise.

The next meeting therefore is scheduled to take place on **Thursday 29 September 2022**. Whether this will be held virtually by Teams will also need to be considered.

The meeting closed at 16:50 (duration 00:50)

Attached:

Addendum 1 - UPT Information Bulletin

Addendum 2 - DSA Urgent Safety Advice - Sports Parachuting Spring Activated Reserve Parachute Systems

Distribution:

Chair Riggers' Subcommittee, All CIs, All Riggers, APs, Council, CAA, Editor - Skydive

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UNINSURED **UNITED PARACHUTE TECHNOLOGIES, LLC.**



1645 LEXINGTON AVENUE ♦ DELAND FL 32724-2106 ♦ TELEPHONE +1 386 736 7589 ♦ FAX +1 386 734 7537
WWW.UPTVECTOR.COM

To: Tandem System Owners and Operators

Uninsured United Parachute Technologies has increased the weight limit capability of all Sigma and Sigma II tandem main canopies (SG) to **550 Lbs.** The limiting factor of the Sigma Tandem System will continue to be determined by the reserve canopy used in the system as listed below.

VR-360 Reserve Canopy weight limit is 500 Lbs.
SR 340 and SR 370 weight limit is 550 Lbs.

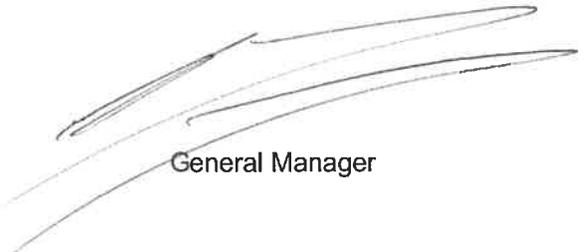
The previous weight limit of the SG range of main canopies was 500 lbs.

Please keep this official weight-change authorization in your files for future reference because the SG range of main canopies you currently jump are placarded for 500 lbs.

If you have any questions, please contact our office.

Authorizing Authority – uninsured United Parachute Technologies

Mark Procos



General Manager

Annex A to
DAIB/12368/01/2017
02 June 2022

Urgent Safety Advice – Sports Parachuting Spring Activated Reserve Parachute Systems

1. High Speed Digital Video trials conducted as part of an ongoing investigation have identified a potential issue with the spring extractor deployed reserve parachute system of the Sun Path Javelin Odyssey parachute container.
2. Early analysis indicates that the pilot chute may be susceptible to reduced deployment efficiency following a total malfunction. Trials imagery shows that this is primarily due to interaction between the reserve bottom flap¹, top cap² and pilot chute. When combined with the turbulent airflow around the container, it is assessed that this could prevent the reserve pilot chute immediately entering clear air, thus increasing the likelihood of entanglement with the bridle assembly.
3. It is accepted that the specific scenario described above requires many factors to align in order to be realised. However, users should be aware of the increased risk associated with this malfunction. It should be noted that the trial has only considered Sun Path Odyssey and Student containers. **These observations might not be isolated to this OEM**; therefore, it is advised that users should apply equal rigour when assessing any associated risks to include other OEM parachute containers with spring extractor systems.
4. The issue is demonstrated in the following still pictures of two Sun Path Odyssey containers of the same specification and similar canopy sizes. Container A images are with the main canopy removed from the container; container B images are with the main canopy in the container, as would be the case with a total malfunction:

¹ [Sun Path Odyssey Manual](#)

² Also referred to as the pop top or end cap.

Figure 1 below shows the initial interaction between the reserve bottom flap and the reserve pilot chute top cap. Container A, with the main canopy removed, allows full rotation of the reserve bottom flap, with the lower part of the flap assembly entering the empty cavity. Clearance with the top cap and pilot chute is maintained whilst they are being ejected. Container B has the main canopy still in the container, preventing the reserve bottom flap from fully rotating, which then interacts with the reserve pilot chute top cap, causing it to rotate.

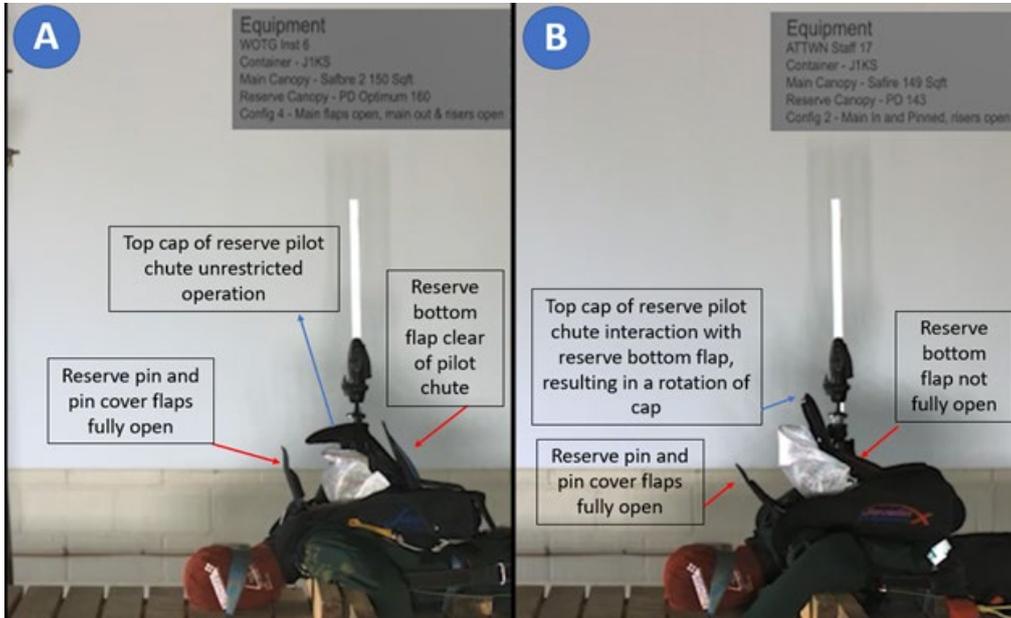


Figure 1 - WOTG SI Trial - Top cap and bottom flap interaction

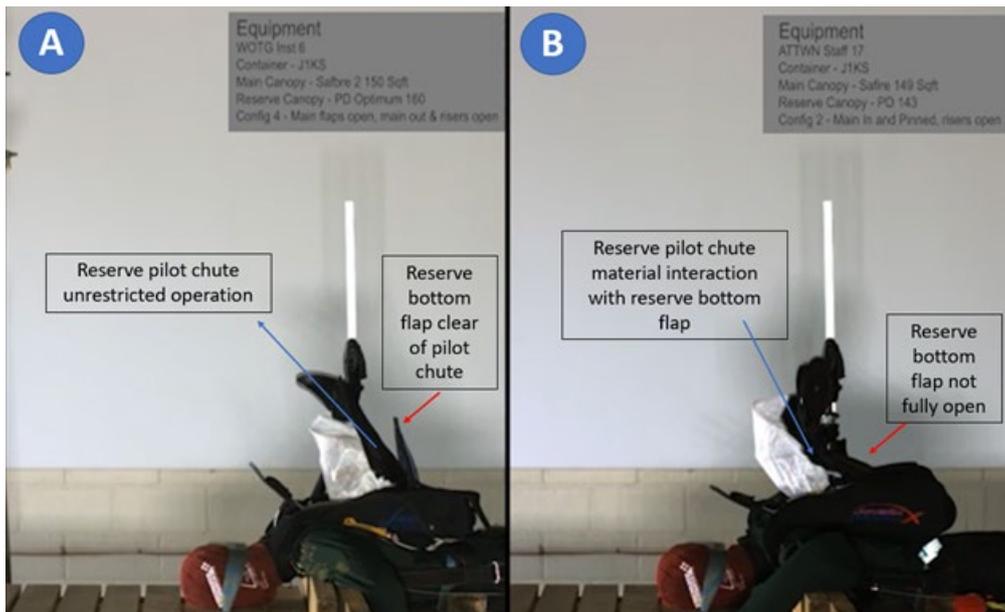


Figure 2 - WOTG SI Trial - Reserve pilot chute material and bottom flap interaction

Figure 3 shows a successful deployment of the reserve pilot chute in container A. Container B demonstrates the result of the interaction with the reserve bottom flap, with less observed height gain and rotation of the spring and pilot chute.

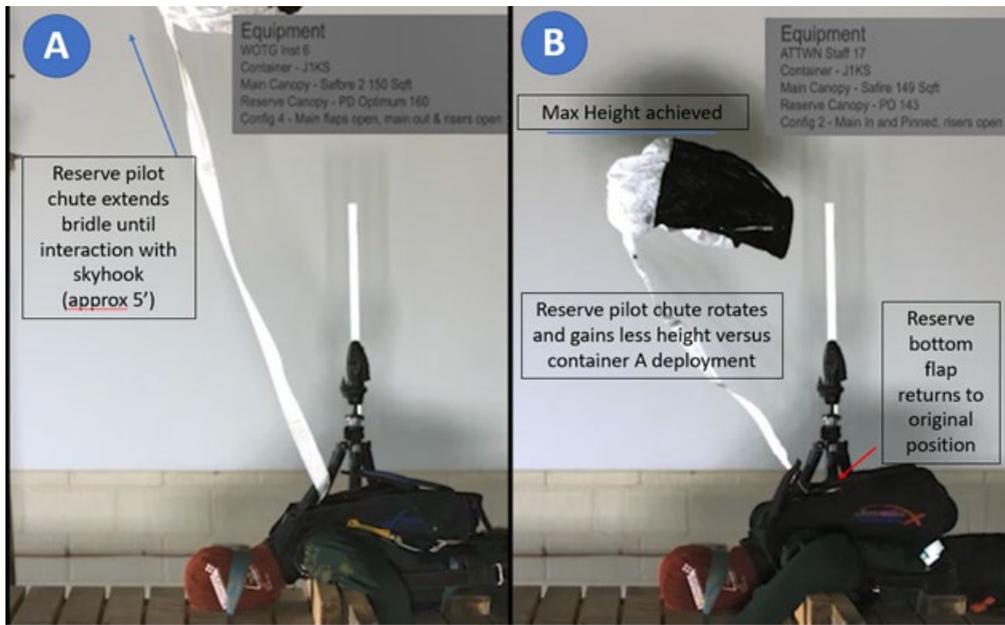


Figure 3 - WOTG SI Trial - Max height achieved

5. The chaotic airflow directly above a parachutist is commonly known as burble, as indicated at Figure 4 below. The exact size of this burble depends on many factors but it is attributed to the surface area presented to the relative airflow as the parachutist descends. Changes in body position or the use of ancillaries³ will change the shape and size of this burble; this should be considered and, if possible, mitigated against, particularly during emergency drills. The overarching factor is the total surface area presented to the airflow. As an example, a large-framed person or an individual wearing a loose fitting jump suit could produce the same size burble as a person who is much smaller wearing a camera jacket or using other ancillaries.

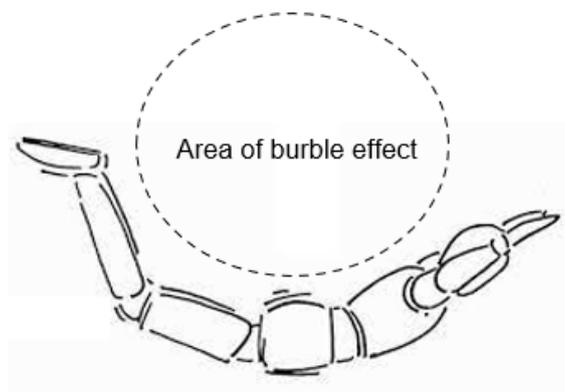


Figure 4 - Burble Effect

³ Ancillaries include any equipment which may be carried by parachutists, other than parachute equipment, e.g. altimeters, helmets, flags, sky-surfing boards, cameras and smoke canisters. ([Civil Aviation Authority, Civil Aviation Publication 660](#))