European Union Aviation Safety Agency

Comment Response Document (CRD) to SC-CS31HB.28-01

1. Summary of the outcome of the consultation

In accordance with 21.B.75(a)(3) EASA has determined to raise a Special Condition for a new balloon TC project, as occurrence reporting has indicated that operating without a launch restraint or inadequate equipment, unsafe conditions may develop.

The public consultation revealed a certain interest in the data behind this decision. The main events that were considered are the following:

1. *Uncontrolled launch with subsequent impact during the event Château-d'Œx in January 2023, no launch restraint has been used.*
2. *Fatal incident near Beelitz, Germany, a 69 year-old was killed by a trailer. Contributing factors were improper equipment and exceeding wind limitations.*
3. *Several occurrences lifting crew or by-standers, using the hands-off hands-on technique, off the ground. In some instances, this has resulted in severe injuries or even ended fatal.*

The proposed Special Condition was primarily based on existing requirements in CS 31HB addressing Tethered Flight Loads 31HB.28 and Tethered Flight 31HB.67, as well as LBA requirements (ref. I 431 - 523.2/88) established for Schroeder Fire Balloons dated 28 June 1988. Most comments raised and highlighted in the summary below address items already established in CS31HB.

Several comments addressed the concern that this Special Condition will be applicable to all balloons and operators leading to an unjustified replacement of existing equipment. I should be noted that in accordance with 21.A.101 this Special Condition is only applicable to existing designs in case applicants intend to apply for a change with the launch restraint being part of the affected area.

The public consultation resulted in a total of 37 comments. Two NAAs (LBA and FOCA/BAZL) commented and agreed with the proposed Special Condition. 8 comments were received from four commentors representing operators and federations. The comments range from agreement to disagreement and concern from additional burden. The remaining comments were received from manufacturers, one from Ballons Chaize, 18 from Cameron Balloons, 7 from Kubíček and one from Ultramagic. The manufacturers highlighted that the requirement to use a launch restraint should be an OPS requirement and cautioned against the use of weak links in the design as well as underestimating good pilot judgement in assessing the operating limitations during the launch phase.

EASA would like to point out that the use of a weak links is considered optional, and the intent is not to mandate designs with a weak link. Also AMC 31HB.67 already makes reference to rated weak links as appropriate devices or instruments to indicate an operational limit has been reached. Alternatives are wind socks or anemometer. Based on the comments, further discussion highlighted that the anchor point is outside of the airworthiness control. Consequently, EASA has amended the proposed Special Condition and removed the AMC for the launch restraint itself, following a similar concept as in sailplane operations for aero tow ropes and winch cables.

As proposed in comments #20 and #26 EASA will continue to work with the manufacturers to harmonise and standardise a common model to infer drag stresses in a simple manner, which may be published as AMC.

Several commenters suggested to review Part BOP with regards to the launch restraint, EASA will take these comments under advice.

In responding to the comments, the following terminology is applied to attest EASA's position and the related text should be used to prepare the response:

(a) **Accepted** — it means that EASA agrees with the comment and any proposed change is incorporated into the text:

(b) **Partially accepted** — it means that EASA either partially agrees with the comment or agrees with it but the proposed change is partially incorporated into the text.

(c) **Noted** — EASA acknowledges the comment, but no change to the text is considered necessary:

(d) **Not accepted** — EASA does not agree with the comment or proposed change:

2. Individual comments (and responses)

comment *1* comment by: *Fédération Française d'Aérostation, ATO task force*

Comment: What we see here is, again, an attempt to 'solve' bad pilot behaviour (attempts to take off in conditions that are too windy and especially, too gusty, because there is a lot of money to be gained from flying with a high number of passengers and too much to lose when cancelling the flight) by inventing a technical solution.
In this case, it seems we will all be steered towards the purchase of new types of launch restraints that include a 'weak link' parallel to the main restraint, which is what most systems in use today do not have.

I am afraid that restraints with built-in weak links will only lead to increased complexity of said restraint systems, and complexity has a tendency to create its own problems that can cause accidents. From a technical point of view this means that every size/model balloon needs its own dedicated launch restraint, as the forces on the restraint will be different depending on the size of balloon (and of the object it is attached to; heavy truck, fixed anchoring point in concrete, lighter vehicle... the heavier the attachment point and the larger the balloon, the greater the forces on the restraint, so ropes and weak-link parts should be calibrated to the balloon in question and probably assuming a totally unmovable attachment point (bolted in tons of concrete).
Balloonists use vehicles positioned in line behind the balloon so they can start to roll forward slowly against their brakes/gear when the force of the wind is too high, instead of 100% restraining the balloon.
This dampens the force on the entire system and gives time to the pilot to abort the operation by opening the main vent and emptying the balloon. Change the vehicle and the forces change. Calibrating a weak link to precisely 120% of the maximum force on the balloon will be unrealistic, even if theoretically possible.
If the weak link is a lot stronger than the 120 percent, it will no longer be 'weak' and take-off attempts in unreasonably high wind conditions will still take place; if the weak link then does not break, the pilot takes off and has an accident during landing, he/she can claim not to have exceeded the limits because the restraint's weak link did not break... Then what solution will be invented?

The real solution is to lower wind speed limits for commercial passenger balloons, especially the larger ones above Group B.

Note that the most used flight manuals (Cameron Balloons for ex.) clearly indicate that at the moment of launch, there should be as little tension on the launch restraint system as possible; essentially the anchoring line should not be under tension at all. This document steers towards launching balloons from a restraint under full tension against winds up to and beyond the advised maximum wind speeds, which to be honest is very bad practice and the main cause of accidents down the line, i.e. provoking hard landings with injuries.

Frank Schweppe (balloon pilot, personal opinion)

response

Accepted

Thank you for your comment. EASA has revised the text and amended structural and design requirements for the launch restraint itself.

comment

2 comment by: *Frank Schwepp*

This regulation seems to steer us towards the purchase of new and more complex launch restraint systems that include 'calibrated' weak links. Calibrating a weak link to precisely 120% of the maximum force on the balloon will be unrealistic, even if theoretically possible.
Generally, trying to introduce new technical solutions to solve a problem of irresponsible behaviour (taking off in windy/gusty conditions way beyond reasonable and formal limits and then breaking a launch restraint) is wrong. Pilots should be better trained and unsafe behaviour penalized instead of waiting for accidents.

Flight manuals tell pilots to launch a balloon with as little tension on the launch restraint rope as possible, thus preferably with the rope slack and so little wind on the launch site that a few crew members can keep the balloon down by hand (classic hands on, hands off method of 'weighing' the balloon). The launch restraint is to prevent an unforeseen gust from ripping the balloon from the helpers' hands or from taking off while a person is still holding on to the basket. However, a dogma has been introduced by some schools of instryuction, against the flight manual, to let the ground crew stand back and the balloon build up lift against a launch restraint rope under tension, until the basket leaves the ground with the rope still attached, as in a short-duration captive situation. The pilot then activates the quick release system and the balloon launches fast. This does not allow the fine control over lift that the crew-assisted method does, but does not require the pilot to maintain good control over the ground crew, as the commander he/she should be. Also, a launch restraint is not a rig for captive flying, and generally, captive flying is done in far lower wind speeds than the maximum for free flight. A launch restraint used under full tension for every takeoff can cause damage to vital load-bearing parts of the balloon structure (basket/burner frame attachment points and carabiners in particular).

Some points in the suggested text are reasonable, such as a maximum length for the restraint rope; mandatory use of ropes and carabiners than can take similar loads as the balloon carabiners is reasonable as well (most 8 to 10 mm marine quality rope in good condition will be sufficient; swap them for new rope every ten years or when they start fraying). Parallel weak links that are supposed to break at or just above the wind speed limit in the flight manual will incite some pilots to go to that limit, and over it, claiming no fault if they take off and later have a violent landing with injured passengers. An intact weak link will be used by them as proof they stayed within limits and then 'the wind increased'...

(As a sidenote, no restraint system should be stronger than the lateral force a balloon carabiner can withstand, as one should always avoid the possibility of the balloon breaking loose and taking off with a broken corner carabiner between the basket and the balloon envelope - if it accidentally takes off, it should remain in 100% airworthy condition so the pilot

	can fly it to a safe landing downwind. Again, launching with the restraint rope slack avoids this but always implies launching in relatively calm conditions at ground level, which does not please the wallets of commercial operators...) The real solution is to lower ground-level wind speed limits for commercial passenger balloons, especially the larger ones above Group B. I suggest 8 knots maximum (gust speed) for such balloons. You will see far less broken bones during landings that way. Frank Schweppe balloon pilot (since 1986)
response	Accepted Thank you for your comment. EASA has revised the text and amended structural and design requirements for the launch restraint itself.

comment	*3* comment by: ***Paul Spellward*** (INTRODUCTION) Please justify the statement that Occurence reporting has shown an increase in break-aways during rigging and inflation. Please share statistics and narratives.
response	Noted, please refer to the summary of the CRD.

Comment	*4* comment by: ***Paul Spellward*** ITEM 4 “The quick-release device, after activation by the operator must not expose the occupants”. BAD ENGLISH, assuming you mean “must not be able to hit or injure any occupant of the basket” then use that text.
Response	Accepted Thank you for your comment. EASA has revised the text accordingly.

comment	*5* comment by: ***Paul Spellward*** ITEM 3 - the AMC is flawed, the decision on maximum length of restraint line must be taken by the operator depending on basket geometry, vehicle arrangement and other factors. DELETE AMC3, delete reference to any AMC in the Rule.

response	Accepted Thank you for your comment. EASA has revised the text accordingly.

Comment	*6* comment by: *Paul Spellward* ITEM 2. The AMC is flawed. CS31HB.57(a)(2) and €(2) refer to control lines, not6echanicalcal device like a quick release. Detailed study would be needed to know an appropriate force. DELETE AMC, DELETE REFERENCE TO AMC2
response	Accepted Thank you for your comment. EASA has revised the text and removed AMC2.

comment	*7* comment by: *LBA* LBA has no comments
response	Noted

comment	*8* comment by: *European Ballooning Federation* On behalf of the European Ballooning Federation. We would like to comment on your proposal to add a quick release to CS 31 HB. We would be grateful to hear more about the occurrence reports that you have received which shows quote "an increase in break-away balloon rigging and inflation" unquote. We think that adding a quick release to CS 31 HB is in itself a good idea. We should however provide guidance material in respect of the strength of the rope and quick release and attachments for different balloon groups and type. Adding to the wording that a rope must be 5 meters long is not helpful and should depend on the group of balloons and the manufacturer and the system used. We would suggest to include the safety-managers or operator in the detailing of the length of the rope. CS31HB.57(a)(2) and (e)(2) refer to control lines, not a mechanical device like a quick release. We would be able to assist in providing more detailed calculations. If a quick release is added to the MEL this should be mentioned in Part BOP. And we would suggest that in Part BOP words are included to make sure that the quick release is stimulated in its used and brought where applicable, into the routine of the pilots checklist and safety handbook and Operations Manual.

	We as European Ballooning Federation would have been able to provide you with advice from practitioners in member states who are on a daily basis involved in ballooning. We have offered to help making good rules and regulations. kind regards European Ballooning Federation Karel Abbenes
response	Accepted Thank you for your comment. EASA has revised the text and amended structural and design requirements for the launch restraint itself.

comment	*9* comment by: *FOCA (Switzerland)* Many thanks for the opportunity to comment. The new requirement is supported from our side.
response	Noted

comment	*10* comment by: *Kubíček Factory* Kubicek Factory, the producer of Kubicek Balloons under EASA TC No. EASA.BA.003, generally agrees with the idea of introducing launch restraint equipment as certified equipment, due to the significant added value it brings to overall hot air balloon operation safety. Launch restraint is critical item of every balloon takeoff for the following reasons: Firstly, it prevents unexpected and nearly unstoppable movement of the balloon forward caused by wind. Secondly, it prevents unintentional lifting of the ground crew who hold the basket on the ground during the takeoff procedure. Lifting of the crew, who hang outside of the basket, often leads to deadly injuries. The correct use of the launch restraints practically eliminates the risk of this scenario. Furthermore, the correct use of the launch restraint helps to achieve the correct rate of climb after takeoff, minimizing the risk of collision with ground obstacles such as trees or tall buildings. However we feel there are few issues in the proposed rule which needs to be addressed. Please see the further comments. As there are no segments definied within the document all commets will be placed in the general section
response	Noted

comment	*11*	comment by: *Cameron Balloon Ltd*
	(INTRODUCTION) Please justify the statement that Occurrence reporting has shown an increase in break-aways during rigging and inflation. Please share statistics and narratives.	
response	Please refer to comment #3	

comment	*12*	comment by: *Cameron Balloon Ltd*
	Is it EASA's intention to amend part BOP to mandate the use of launch restraints?	
response	Noted EASA acknowledges that the use of launch restraints should be an OPS requirement, internal discussions regarding an amendment of Part BOP are ongoing. As of today there is no formal rulemaking established nor plan identified in EPAS.	

comment	*13*	comment by: *Cameron Balloon Ltd*
	(ITEM 4) *"The quick-release device, after activation by the operator must not expose the occupants".* This requirement is poorly written, presumably the intention is that the occupants should not be hit by the launch restraint after release.	
response	Please refer to comment #4	

comment	*14*	comment by: *Cameron Balloon Ltd*
	(ITEM 5) *The operator must be aware when operating limitations are exceeded and the launch must be aborted.* I suggest that EASA should Delete this requirement. Generally, behaviour of the balloon (rocking & swaying etc) limits the launch, not absolute windspeed. Pilot Judgement should remain the primary method for determining whether the limitations have been exceeded.	

Any indication can only inform the pilot of an unexpected wind gust after the event, rather than beign a useful warning.

response

Accepted

Thank you for your comment. EASA has revised the text accordingly.

comment

15 comment by: *Cameron Balloon Ltd*

(ITEM 5) Cameron experience of the weak link is that it adds complexity and its operation is unpleasant to the occupants and shock loads the tether system. The weak Link reference should be removed or moved to the AMC.

Failure of a weak link will provide an unwelcome distraction to a pilot at a time of high wokload and stress.

response

Not Accepted

Thank you for your comment.
EASA does not agree with the comment. The proposed SC needs to address all possible designs, a good weak link design (e.g. including a damper) does not show the highlighted concerns in service. The text remains unchanged.

comment

16 comment by: *Cameron Balloon Ltd*

(ITEM 2) *The force required to operate the quick-release device should comply with the figures of CS 31HB.57(a)(2) and (e)(2).*

Delete Reference to CS 31HB.57(a)(2) (Maximum force).

Loads on the restraint line at limiting windspeed can be very high and releasing the quick-release at maximum load is undesirable and dangerous. Generally, the motion of the balloon allows release of the restraint line at lower loads.

response

Please refer to comment #6

comment

17 comment by: *Cameron Balloon Ltd*

	(AMC ITEM 3) The AMC flawed. - the decision on maximum length of restraint line must be taken by the operator depending on basket geometry, vehicle arrangement and other factors. DELETE AMC3. Delete reference to line length in the AMC
response	Please refer to comment #5

comment	*18* comment by: *Kubíček Factory* Comment to SC-CS31HB.28-01 point 3 "The launch restraint must prevent uncontrolled movement (see AMC 3" Kubicek Factory generally agress with the idea but the wording needs to be changed. to prevent "uncontrolled movement" does not seem possible to achieve only by using restraint - under windy conditions there will be always left-.right side bouncing movement (it would have to be tethered flight with several attachment points to prevent side movement, such configuration would make the take off impossible). However we belivie it is meant to prevent uncontrolled drag of the balloon through the launch site and causing damage/injuries which we agree with. The rule shall be rewriten to e.g.: prevent downwind uncontrolled drag of the balloon, unintentional takeoff and excessive side movement.
response	Please refer to comment #5

comment	*19* comment by: *Kubíček Factory* Comment to SC-CS31HB.28-01 AMC 3 "The launch restraint should not be longer than 5 m" The limitation of 5 m seems to us questionable – the correct dimension of the restraint depends on geometry of the basket and burner frame and needs to be calculated with respect to that. So, why less then 5 meters? And 5 m from where – length of the line from ground/car to the release mechanism? Distance of the release mechanism from the pilot? Or the total length from ground/car to the attachment points on the frame? We do not feel that it is necessary to introduce such AMC and we propose to delete it.
response	Please refer to comment #5

comment	*20* comment by: *ULTRAMAGIC, S.A. (JVT)* A) INTRODUCTION. IDENTIFICATION OF ISSUE

	Comment: The latest Annual Safety Review publications from EASA do not seem to reflect such increase. Is the information reported accessible? B) ADDITIONAL REQUIREMENT #1. Loads Comment: Ultramagic agrees that design must consider the loads associated to the initial restraint. However, applying the requirements for tethers can be contradictory or overdimensioned (e.g. single-failure proof designs). Suggesting a common model to infer drag stresses in a simple manner might be interesting and help harmonizing. Further consensus from manufacturers on this point might be appreciated. C) ADDITIONAL REQUIREMENT #2. Ease to disconnect the launch restraint Comment: A maximum force requirement is found inappropriate in this application. The most popular release systems in the market do not offer a maximum operating force, since this is proportional to the tension upon which the system is subjected. D) ADDITIONAL REQUIREMENT #3. Uncontrolled movements Comment: From experience, different balloon sizes and different launch locations may require slightly different gear or techniques. Adding a lenght limitation is considered a poor approach, and the AMC proposed might be conflictive or even hazardous in certain circumstances. Factors such as making sure that the restraint rope is fully extended (and ideally with some tension in it) is much more relevant than the length of the restraint line itself. E) ADDITIONAL REQUIREMENT #5. Identifying whenever operational limitations are exceeded Comment 1: By introducing fuses / weak links or similar devices as part of a mandatory gear could, in practice, relegate the pilot's judgement to a secondary role. Comment 2: The use of a weak link system might easily add shock-load to such lines and trigger a failure of the rigging that would not occur under a static load. Bear in mind that the gear normally used for the ground restraint is static or semi-static. F) ADDITIONAL REQUIREMENT #6. Introduction of a launch restraint in the minimum equipment Comment: This might seem sound but can also be a burden and unnecessary requirement if introduced as a final requirement, especially for private owners of small balloons. Under calm and stable conditions, small balloons can safely be inflated using a restraint without launch system (the use of karabiners with the help of ground crew). This has been and continues to be an extended practice, and many leisure pilots choose not to fly whenever this is not possible because of light winds.
response	Partially accepted Thank you for your comment. EASA partially agrees and has amended the text accordingly. EASA has addressed A in the introductory note, EASA agrees with B however in the absence of a common model the tether loads are considered as an AMC, EASA agrees with C and has removed the corresponding reference, EASA acknowledges D and amended the text accordingly, regarding E please refer to #15, EASA disagrees with F as the hands on hands off

	method for launch bears risk for the ground crew which easily can be mitigated by a launch restraint.

comment	*21* comment by: *Kubíček Factory* Comment to SC-CS31HB.28-01 point 4 "The quick-release device, after activation by the operator must not expose the occupants" seems to be uncomplete sentence. We suggest following wording: “The quick-release device, after activation by the operator must not bounce back creating danger to the occupants nor the balloon”.
response	Please refer to comment #4

comment	*22* comment by: *Kubíček Factory* Comment to SC-CS31HB.28-01 point 1 and related AMC 1 point b and AMC5 The attachment points of the launch restraint at the balloon (e.g. burner frame) should comply with CS 31HB.28. It means the load factor for the calculation shall be 3. There is contradiction in the requirements, where **AMC 1 (a)** requires load factor (for landing) 3, whereas **AMC 5** requires load factor of at least 2. We do not undertand why two different load factors shall be used in the same load path. In general, use of load factors 2 (or even 3) seems excessive – leading to overdimensioned products without having any actual impact on the safety of the balloon. For decades the load factor 1.4 (CS 31HB.23) was used without resulting in any incident/accident/unsafe condition. Based on our experience it is impossible to reach such strengths to make the launch restraint fail without first dragging the chase vehicle(s) along.Moreover the rope between car and balloon is always dynamical - i.e. able to abosrb the dynamical shock. With that the load factor 1.4 is succifient. We propose • to delete AMC 5 as it has no different meaning to AMC 1 (b) • rewrite AMC 1 (b) so the load factor 1.4 can be used. Our experience proved good use of the value. • Add limitation that the used rope must be able to absorb dyanmical shock as this is essential from the safety point of view

response	Accepted Thank you for your comment. EASA has revised the text accordingly.

comment	*23* comment by: *Kubíček Factory* Comment to SC-CS31HB.28-01 point 6 We agree that launch restraint (although it remains on ground) is a critical part and we believe this regulation leads to increase of safety. We agree with adding of the launch restraint to the minimum equipment list (AMC 6). We also agree to consider it a certified aircraft part and in addition to that we prefer restraint being a part only supplied by manufacturer as a whole, not allowing changing any of its subparts (guaranteeing only use of fully allowed parts and full strength of connections/knots). General remark Use of launch restrains should be included also in Part-BOP (equally to pilot harness) making it mandatory to use launch restraint for every take off to prevent incidents/accidents caused by unintentional take-off or dragging of the balloon across the launch site.
response	Partially accepted Thank you for your comment. EASA partially agrees and has amended the text accordingly. EASA agrees that the use should be addressed by Part-BOP, however EASA disagrees that the entire restraint needs to be controlled by the manufacturer. It is EASA's position that the manufacturer may publish information for the operator to identify suitable equipment.

comment	*24* comment by: *Kubíček Factory* Comment to SC-CS31HB.28-01 point 4 and AMC 4 Weak link (Item 5 and/or AMC 4) is not just impractical (its operation causes shock loads the tether system) but also impossible – all manufacturers of carabiners, ropes, wires, etc. declare MINIMUM strength of their products, not the EXACT one. And for the weak link to work properly, the exact value must be known. Having minimum strength would not help with possible overloading of the neighbouring parts and knowing only maximum value would mean the weak link may basically break at any time. Also, there is large variety of strengths that the various balloons may generate – considering the number of sizes of envelopes, their different ground wind speed limitations and variety of burner frames they can be combined with. That means there would have to be specifically calculated weak link with exactly known load bearing capacity for each combination of envelope-burner frame.

For assessing the flight conditions the pilot judgement should remain the primary method, because the balloon will become very difficult to control and inflate way before it actually reaches the strength limits of the burner frame or launch restraint. All major balloon brands have introduce wind limitation 15 kts. Balloons at this wind speed are very difficult to inflate and clearly tels the pilot that he/she should rally cancel the inflation.

Moreover why the weak link shall be used on the launch restrain? Pilot shall keep other limitations (e.g. MTOW, minimum floor area in the basket) and he/she is not warned about the excessing it. The pilot should not simply cross the wind speed. He has many means how to know the actual wind speed - met reports, anenometer, local wind stations....

We think we should take different approach to this and thus we reccomend to delete all sections considering the weak link.

response

Not accepted

Thank you for your comment.
EASA does not agree to the comment. The text remains unchanged.

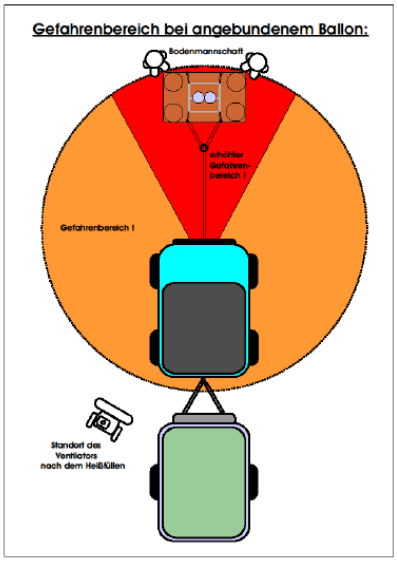
EASA disagrees, sailplane weak links are readily available off the shelf and consistently have a specified break force.

comment

25 comment by: *Klaus Hartmann*

Comment to SC-CS31HB.28-01 point 3 and AMC 3

1. Der Gefahrenbereich ergibt sich als Radius in der Länge der Startfessel +der Korbbreite um den Punkt der Anbindung in Form einer Halbkugel. Dieser Gefahrenbereich in dem sich der Korb bei ungünstigen Verhältnissen bewegen kann, ist von allen Personen und Gegenständen freizuhalten und ist umso größer, je länger die Startfessel ist.



Windgeschwindigkeit (kt)	*praller Ballon cw = 0,4 Kraft (kg)*	*verformter Ballon cw = 1,6 Kraft (kg)*
2	7	
4	28	112
6	63	252
8	112	448
10	175	700
12	252	1008
14	343	1372
16		1782
18		2268
20		2800

2. Die in der oben dargestellten Tabelle angegebenen Werte beziehen sich auf einen Ballon mit 3000 m³ der bereits knapp über dem Boden schwebt an straff gespannter Startfessel, also in einer statischen Situation. In einer dynamischen Situation, in der der Ballon z.B. durch Böen oder false Lift Einflüssen in Bewegung kommt, gelten weitaus kritischere Bedingungen: Je länger die Startfessel ist, desto mehr kann der Ballon beschleunigen und Fahrt aufnehmen. Mit der zurückgelegten Strecke in der die Geschwindigkeit zunimmt steigen die Kräfte, die an einem ruckartig erreichten Endpunkt zur Wirkung kommen exponentiell an. Die Endpunkte sind das Erreichen der gespannten Startfessel bzw. der Anbindepunkt, z.B. ein Fahrzeug. Die entstehenden Schäden dort wachsen somit ebenfalls exponentiell mit der Länge der Startfessel an. An den Endpunkten der Startfessel wirken dann nicht mehr die aus der Tabelle entnommenen Werte in der statischen Situation sondern vielfache Kräfte, die evtl. durch eine im Seil vorhandene Elastizität etwas gemildert werden kann. Ohne vorhandene Elastizität wird die vorgeschlagene Bruchlast der Startfessel mit großer Wahrscheinlichkeit nicht ausreichend sein und ein Reißen des Seils bewirken. Bei einem seitlichen Pendeln des Ballons mit 5 m Länge hat der Ballon im ungünstigen Fall 10 m Strecke um zu beschleunigen und Fahrt aufzunehmen mit entsprechenden Folgen.
Für eine unfallfreie/sichere Aufrüstung, sicher für am Startplatz Anwesende, für die Struktur der Ballonkomponenten und den Anbindungspunkt (häufig ein Kraftfahrzeug) sollte die Startfessel so kurz wie möglich gehalten werden, evtl. abhängig von der Position des Fesselpunktes am Ballon. Bewährte Längen für Ballone mit Quick-Release am Korb = 3 bis 3,5 m, für Quick-Release am Brennerrahmen = 4 bis 4,5 m.

response

Please refer to comment #5

comment

26 comment by: *Benjamin Cleyet-Marrel, Ballon Chaize*

Comment to SC-CS31HB.28-01 point 3 and AMC 3

AMC1

I think EASA should standardize the formula used to calculate the maximum strength that would apply to all manufacturer

AMC2

31HB.57(a)(2) should be tested at maximum tension.

It also refers to 31HB.57(e)(2) for minimum force i.e. 110N. Quick release does not operate well when no tension . should this be tested at max tension as well ?

Also, I think 110N it is a lot for the minimum force on a quick release. That is 11Kg. on wichard type of quick release we are closer to 1 or 2Kg. It is not a rope you pull like a parachute it is a small quick release string. try to pull 11Kg with a small string you hold with 3 fingers !

About AMC6 if this make the usage of the launch restraint compulsory I think it could be an issue. I see some case where you cannot use lauche restraint (mountain on the snow for instance) or where 5m would be too small due to complexe launch area.

not everybody take off on approved and certify launch platform.

My opinion: I am not in favor of making it compulsory for everybody. If I am not mistaken it is already for commercial flight but for none commercial operations I would not enforce it.

response

Partially accepted

Thank you for your comment. EASA partially agrees and has amended the text accordingly.

EASA agrees for industry to agree on a common model, also refer to #20. EASA has removed reference to required forces, refer to #20. Regarding AMC 6 EASA disagrees, it is EASA's opinion that launch restraints should be mandatory in general, deviating only in exceptional cases.

comment

27 comment by: *Don Cameron*

Comment to SC-CS31HB.28-01 point 5

In general, I have no objection to the proposal (it is little more that current practice) but I would caution against the following condition:

5. The launch restraint must support normal operating conditions up to the maximum wind limitations. The operator must be aware when operating limitations are exceeded and the launch must be aborted.

People who are not balloon pilots often imagine that the criterion for safe flying is windspeed. In fact, it is much more complicated than that.

In deciding whether it is safe to fly, the pilot must take into account a number of factors.

a) whether the wind is steady or has significant gusts.

b) The atmospheric lapse rate can have a large effect on controllability in flight. This can be inferred from the time of day and cloud forms e.g. cumulus.

c) It is often safe to take off in conditions in which landing would be unsafe. A pilot will be thinking of that in the decision whether to fly.

d) The nature of the countryside in the planned direction of flight will affect a pilot's decision. If there are many large open easy landing areas, a higher wind is acceptable.

e) If taking off in the morning, it is likely that wind and turbulence will increase by the time of landing. When flying in the evening, landing conditions are likely to be calmer. So, a higher wind speed might be accepted in the evening, but not in the morning.

f) The behaviour of the balloon during an inflation will give the pilot a guide to the nature of the atmospheric turbulence. But that is a subjective observation.

g) The nature of the take-off site, wind shelter and downwind obstacles must be considered by the pilot.

I believe it will be very difficult to write a condition to define when a launch must be aborted. But it is impossible as well as unnecessary and undesirable, to replace all matters of pilot judgement with regulation.

Another question is that we need to slow the constant growth of regulation and the increasing burdens placed on those who have to demonstrate compliance. The current proposal is a good rule, but why not take a bad one out at the same time? One-in-one-out would be a good principle.

I propose that CS31-17 is deleted. Every balloon complies easily as has been shown by calculation and repeated tests. Yet it results in wasteful requests for unnecessary test flights.

response

Please refer to comment #5

comment

28

comment by: *Dave Cameron*

Comment to SC-CS31HB.28-01

At the Manufacturers conference in Cologne 15/11/2022 the question of adding Launch Restraint to the CS was raised. It was unanimously decided by delegates that it was not considered a desirable addition.
Since this time, what occurrence reporting has been submitted to motivate EASA to work against the consensus of the manufacturers conference?
Can the increase in occurrence reporting be substantiated?

	Were failed tether restraints of the type supplied by manufacturers or were they improvised? Will the reports and suspected root cause be communicated publicly? It is noted that the minimum time period for consultation was enforced for this Special Condition.
response	Please refer to comment #3

comment	*29* comment by: *Dave Cameron* Comment to SC-CS31HB.28-01 Point 1 This is already covered by CS 31HB.28. Concern that this SC would be incorrectly enforced against the design of all load frames. Suggest deletion.
response	Not accepted Thank you for your comment. EASA does not agree to the comment. The effects of the loads introduced by a launch restraint must be considered, AMC 31HB.27(e) is considered an acceptable means of compliance to design and test the attachment point(s) of the launch restraint to the balloon structure. Please also refer to #20. EASA will not change the text.

comment	30 comment by: *Dave Cameron* Comment to SC-CS31HB.28-01 AMC2 Pulling a control line and operating a current quick release are very different operations. This may be considered a somewhat clumsy reference to CS31.
response	Please refer to comment #6

comment	31 comment by: *Dave Cameron* Comment to SC-CS31HB.28-01 Point 3 Movement of the balloon (swaying) during a launch is inherently uncontrolled. If this is a realistic expectation, clear definition is needed. The launch restraint has to allow for a basket to go from a horizontal to a vertical position. It is unclear what the requirement is and is likely to be open to a wide range of interpretations.

response	Please refer to comment #5

comment	32 comment by: *Dave Cameron* Comment to SC-CS31HB.28-01 AMC3 How has this length been determined? And did the consideration take into account basket geometries from small sport balloons to large rides balloons?
response	Please refer to comment #5

comment	33 comment by: *Dave Cameron* Comment to SC-CS31HB.28-01 Point 4 Intention unclear. Needs rewriting.
response	Please refer to comment #4

comment	34 comment by: *Dave Cameron* Comment to SC-CS31HB.28-01 AMC4 (d) This is a Part-BOP requirement.
response	Please refer to comment #8

comment	35 comment by: *Dave Cameron* Comment to SC-CS31HB.28-01 Point 5 Identification of exceeded limitations appears misplaced as part of a SC for Launch Restraints. This requirement is more suited to Part-BOP. A weak link is not a fool-proof means of ascertaining as to whether limitations have been exceeded or not.
response	Not accepted Thank you for your comment, EASA acknowledges the comment, but will not change the text.

	EASA disagrees, please refer to CS 31HB.67 and associated AMC.

comment	36 comment by: *Dave Cameron* Comment to SC-CS31HB.28-01 Point 6 Is it EASA intention to mandate certified launch restraints for all flight? This is not the case in Part-BOP.
response	Please refer to comment #12

comment	37 comment by: *Dave Cameron* Comment to SC-CS31HB.28-01 General The SC appears to be trying to solve an operational issue and appears unsuited to Initial Airworthiness.
response	Not accepted Thank you for your comment, EASA acknowledges the comment, but will not change the text. The SC addresses launch restraints in the same manner as tether systems, pleaser refer to CS 31HB.28 and 31HB.67 as well as associated AMC.