Australian Government
Civil Aviation Safety Authority

MULTI-PART ADVISORY CIRCULAR AC 105-03 AND AC 131-05 v1.0

Parachute descents from a hot air balloon

File ref: D24/390994

August 2025

Acknowledgement of Country

The Civil Aviation Safety Authority (CASA) respectfully acknowledges the Traditional Custodians of the lands on which our offices are located and their continuing connection to land, water and community, and pays respect to Elders past, present and emerging.

Artwork: James Baban.

Advisory circulars are intended to provide advice and guidance to illustrate a means, but not necessarily the only means, of complying with the Regulations, or to explain certain regulatory requirements by providing informative, interpretative and explanatory material.

Advisory circulars should always be read in conjunction with the relevant regulations.

Audience

This advisory circular (AC) applies to:

- pilots of hot air balloons
- parachutists.

Purpose

This AC provides guidance to pilots who wish to facilitate parachute drops from a hot air balloon.

For further information

For further information or to provide feedback on this AC, visit CASA's contact us page.

Status

This version of the AC is approved by the National Manager, Flight Standards Branch.

Table 1: Status

Version	Date	Details
v1.0	August 2025	Initial Multi-Part AC.

Unless specified otherwise, all subregulations, regulations, Divisions, Subparts and Parts referenced in this AC are references to the *Civil Aviation Safety Regulations 1998 (CASR)*.

Contents

1 Reference material

1.1 Acronyms

The acronyms and abbreviations used in this AC are listed in the table below.

Table 2: Acronyms

Acronym	Description
AC	advisory circular
AGL	above ground level
AFM	aircraft flight manual
AIP	Aeronautical Information Publication
AMSL	above mean sea level
AOC	air operator certificate
ASAO	approved self-administering aviation organisation
ATS	air traffic services
CAR	*Civil Aviation Regulations 1988*
CASA	Civil Aviation Safety Authority
CASR	*Civil Aviation Safety Regulations 1998*
CP(B)L	Commercial Pilot (Balloon) Licence
DZSO	drop zone safety officer
MOS	manual of standards
PIC	pilot in command
SZ	sensitive zone
ROC	rate of climb
ROD	rate of descent
VFR	visual flight rules
VHF	very high frequency (30-300 MHz)

1.2 Definitions

Terms that have specific meaning within this AC are defined in the table below. Where definitions from the civil aviation legislation have been reproduced for ease of reference, these are identified by 'grey shading'. Should there be a discrepancy between a definition given in this AC and the civil aviation legislation, the definition in the legislation prevails.

Table 3: Definitions

Term	Definition
aircraft loading record	is a loading sheet that must include all the information required (for a Part 131 aircraft) by section 7.04 of the Part 105 MOS.
aircraft flight manual	The manufacturer's aircraft flight manual. **Note:** There is a legal definition of *flight manual* in clause 37 of Part 2 of the CASR Dictionary.
balloon transport operation	See regulation 131.010.
certified aerodrome	means an aerodrome in respect of which an aerodrome certificate is in force.
CAR certificate of validation	means a certificate issued under regulation 5.27. *[sic - of CAR]*
certified parachutist	means a holder of a parachutist certificate from a Part 105 ASAO who meets the recency requirements of the ASAO
cost sharing (for Part 131 aircraft)	flight is a cost-sharing flight if: a. the flight is conducted using a Part 131 aircraft and does not carry more than 6 persons; and b. the pilot in command is not remunerated for the flight; and c. the pilot in command pays an amount of the direct costs of the flight that is at least equal to the amount that would be paid by each person if the direct costs were evenly divided between all persons on board; and d. the flight is not advertised to the general public. Example 1: For paragraph (c), if the direct costs of a flight are $3,000 and the flight has 5 persons on board, including the pilot, the pilot must pay at least $600 towards the direct costs. Example 2: For paragraph (d): (a) an advertisement in a daily national newspaper is an advertisement to the general public; and (b) an advertisement in a flying club newsletter is not an advertisement to the general public. **Note:** This Note is not part of the legal definition. CASA guidance related to the kinds of advertising considered to be advertising to the general public is available on the CASA webpage for cost sharing flights.
direct supervision	by a drop zone safety officer, in relation to a parachute descent, means supervision where the drop zone safety officer is present throughout all phases of the operation, whether at the drop zone or in the aircraft that is facilitating the descent.
display descent	means a parachute descent conducted for the purpose of a parachuting display

Term	Definition
display organiser	means a person who holds an authorisation issued by a Part 105 ASAO under procedures mention in section 5.46 of the Part 105 MOS
drop zone	means the area, specified by the drop zone safety officer who is performing duties for a parachute descent, intended for the landing of a person undertaking the parachute descent.
drop zone safety officer	(a) in relation to a parachute descent undertaken by a trainee parachutist or tandem parachutist: (i) means the holder of an endorsement mentioned in paragraph 5.27(2)(a) of the Part 105 MOS who is approved to act as the drop zone safety officer for the descent by the chief parachuting instructor under the procedures mentioned in that paragraph; and (ii) if the descent is a display descent undertaken by a tandem parachutist—means the endorsement holder mentioned in subparagraph (i) who has been nominated to act as the drop zone safety officer for the display descent by the display organiser of the parachuting display; and (b) in relation to a parachute descent other than a descent mentioned in paragraph (a)—means the holder of an authorisation mentioned in paragraph 5.27(2)(b) of the Part 105 MOS that covers that descent.
exposition	for a balloon transport operator: (i) the set of documents approved by CASA under regulation 131.085; or (ii) if the set of documents is changed under regulation 131.095, 131.105 or 131.115—the set of documents as changed.
ground communication panel	are used at the drop zone to signal to the pilot of a jump aircraft.
ground control assistant	has the meaning given by subsection 1.06(4) of the Part 105 MOS
loadmaster	means a person who is nominated by the drop zone safety officer who is performing duties for a parachute descent, to have the responsibilities mentioned in section 5.29 of the Part 105 MOS in relation to the descent.
loading sheet	See Aircraft loading record
maximum rate of climb	Is the maximum allowable rate of climb as specified in the aircraft flight manual.
maximum rate of descent	Is the maximum allowable rate of descent specified in the aircraft flight manual.
restricted area	(a) has the same meaning as in Annex 11 to the Chicago Convention; and (b) in relation to Australian territory—includes an area designated as a restricted area by a declaration made under subregulation 6(1) of the Airspace Regulations 2007.
parachute	has the meaning affected by regulation 105.010.
parachute operator	see regulation 105.010.
parachuting activity	see regulation 105.010.
parachute descent	is parachuting activity listed in regulation 105.010.
parachuting display	means organised parachuting performed before a public gathering.

Term	Definition
parachute (vent) stall	is when the parachute valve (vent panel) in a hot air balloon does not achieve its correct position sealing the vent, and the internal pressure falls to such an extent that the seal between the envelope edge and the parachute is not maintained.
public gathering	means an assembly of people at a place on the basis of a general public invitation to attend at that place, whether or not a charge is made for attendance.
tandem parachutists	means a person undertaking a parachute descent in which the person's harness is attached to the harness of another person who is in control of the descent.
trainee parachutist	is a person who is undertaking a parachute descent in the course of receiving parachutists training for the purpose of: (a) if the person holds a student parachutist certificate - obtaining a parachutist certificate; or (b) if the person holds a parachutist certificate--obtaining a rating or endorsement (however described) on the parachutist certificate.

1.3 References

Legislation

Legislation is available on the Federal Register of Legislation website https://www.legislation.gov.au/

Table 4: Legislation references

Document	Title
Part 91 of CASR	General operating and flight rules
Part 105 of CASR	Parachuting from aircraft
Part 131 of CASR	Balloons and hot air airships
Part 91 MOS	Part 91 (General Operating and Flight Rules) Manual of Standards 2020
Part 105 MOS	Part 105 (Parachuting from Aircraft) Manual of Standards 2023
Part 131 MOS	Part 131 (Balloons and Hot Air Airships) Manual of Standards 2024

Advisory material

CASA's advisory materials are available at https://www.casa.gov.au/publications-and-resources/guidance-materials

Table 5: Advisory material references

Document	Title
AC 131-02	Part 131 Aircraft - Operations

1.4 Forms

CASA's forms are available at http://www.casa.gov.au/forms

Table 6: Forms

Form number	Title
	Application - Air Operator's Certificate (balloon operations) / Associated Approvals

2 Introduction

2.1 Why do parachutists wish to jump from a balloon?

2.1.1 For most parachutists, jumping from a balloon is a novelty jump and offers a very different experience to jumping from an aeroplane. Balloon pilots may be approached by parachutists who wish to jump from their balloon.

2.1.2 One of the attractions for jumpers is the differences between an aeroplane and a balloon. An aeroplane slows to about 70 kts for the jumper to exit, and with the noise of the engine the parachutist is in a very noisy and windy position as they leave the aircraft. A balloon is quiet and only travelling at the speed of the wind, so this allows the jumper to experience a very peaceful calm exit. Many jumpers equate this type of exit to a BASE jump.

2.2 The rules

2.2.1 Part 105 of the *Civil Aviation Safety Regulations (CASR)* sets out the operational requirements for aircraft used to facilitate parachute descents. These are in addition to Part 91 of CASR which also applies to parachuting operations. A Manual of Standards (MOS) supports Part 105 of CASR and contains requirements of greater technical detail. The rules in Part 131 of CASR and the Part 131 MOS also apply.

2.2.2 To facilitate a parachute descent from a balloon, the pilot must hold a CP(B)L or hold a PP(B)P with 75 hrs of experience as a pilot in command (PIC) in a manned free balloon[1].

2.2.3 Civil Aviation Order (CAO) 95.54 contains an exemption relating to subregulation 105.105(1) of CASR. This subregulation states that a pilot in command (PIC) must provide restraint devices to a person that is not a flight crew member that is carried in the aircraft including parachutists.

2.2.4 CAO 95.54 contains an exemption relating to section 5.52 of the Part 105 MOS. This MOS section states that a Part 131 ASAO must include procedures in its exposition for the safe conduct of a parachute descent.

2.2.5 The exemption is conditional on the pilot in command complying with any relevant procedures within the CASA Recreational Ballooning Procedures Manual (CRBPM).

2.2.6 In turn, the CRBPM requires that pilots in command to comply with the procedures in this AC for dropping parachutists from a balloon.

2.3 Manned free balloon is the only Part 131 aircraft that can be used to facilitate a parachute jump

2.3.1 A manned free balloon is included as an aircraft that can facilitate a parachute descent[2]. Therefore, by definition, a hot air airship must not be used to facilitate a parachute descent.

[1] Subregulation 105.155 (2) of CASR.

[2] Subregulation 105.080 (1) of CASR.

2.4 Trainee parachutists or tandem parachutists must not jump from a manned free balloon

2.4.1 A PIC of a manned free balloon must not facilitate a parachute descent by either or both of a trainee parachutist or a tandem parachutist unless the PIC meets the pilot training requirements prescribed by the Part 105 MOS[3]. These requirements refer to a jump pilot authorisation issued by a Part 105 ASAO. There is currently no jump pilot authorisation available for a balloon pilot.

2.5 Carrying of passengers other than parachutists

2.5.1 Passengers who are not certified parachutists must not be carried on an aircraft being used to facilitate a parachute jump.

2.6 Minimum heights for parachute opening

2.6.1 The minimum height at which the main parachute is fully open is set by the Part 105 ASAO in their exposition.

2.6.2 For all descents from a balloon, where the Australian Parachute Federation is the Part 105 ASAO that administers the parachute descent, the main parachute must be open by 2,000 ft AGL.

2.7 PIC must carry a knife

2.7.1 The PIC must ensure that a knife suitable for emergency situations is carried on board the aircraft and is readily available to the PIC[4].

2.7.2 The knife must be readily available and appropriately stored in the aircraft. Should a parachutist be hung up on part of the balloon, communicate with the parachutist with regards to what parts of the equipment can be cut. Consider discussing this with the parachutist before the flight.

2.8 Night parachute jumps

2.8.1 Facilitating a parachute descent at night as a Part 131 recreational activity is not permitted[5].

2.9 Cost sharing

2.9.1 Parachutists may wish to contribute to the cost of the flight. The maximum number of passengers that may be carried for a Part 131 recreation activity that is a cost sharing fight is 5[6], noting that if more than 1 crew member is onboard then the number of passengers must be reduced to ensure the overall cost-sharing flight limit of 6 persons on board is maintained.

2.9.2 The pilot must not be remunerated for the flight and the pilot must contribute to the direct costs of the flight that is at least equal to the amount that would be paid by each person if the direct costs were evenly divided between all persons on board[7].

[3] Subregulation 105.080 (3) of CASR.

[4] Section 5.40 of the Part 105 MOS.

[5] Paragraph 5.58 (1) of the Part 105 MOS.

[6] Paragraph 25.03 (b) of the Part 131 MOS.

[7] CASR dictionary Part 1 —Definitions.

2.10 Balloon transport operation for facilitation of parachute drops

2.10.1 If an AOC holder wished to hire a balloon and pilot to a group of parachutists, they would need to conduct operations under their AOC and detail their procedures in their exposition.

2.10.2 If a flight is to be flown above 10,000 ft AMSL, an AOC holder must hold a regulation 131.035 approval[8]. An application for the approval can be made using the form Application - Air Operator's Certificate (balloon operations) / Associated Approvals.

[8] Regulation 131.320 of CASR.

3 Equipment and procedures

3.1 Radio equipment

3.1.1 A radio must be carried when facilitating parachute descents. A VHF hand-held radio is suitable[9]. It may be prudent to carry more than one radio depending on the frequencies to be monitored and the calls to be made.

3.2 Radio procedures for balloon pilot – outside controlled airspace

3.2.1 The PIC must make a radio broadcast advising of the intention to drop parachutists at least 2 mins before a parachutist will exit the balloon[10].

3.2.2 The broadcast must be made of all relevant frequencies for the airspace through which a parachutist is to descend and in which the balloon is operating. For example, if the jump commences in Class G airspace and will land at a non-controlled aerodrome, the PIC should make advisory calls on both the area frequency and the CTAF.

3.2.3 The radio broadcast must give notice of the:

- location of drop zone
- altitude at which parachutists will exit the balloon
- number of parachutists canopies expected[11].

Table 7: Example of broadcasts for parachute jumps

Situation	Example broadcast
PIC: 2 minutes before parachutists exit the balloon	• Benalla traffic • Balloon Juliet Sierra Delta • 5 miles North • at six thousand five hundred • 2 minutes to parachute jump • 2 canopies • Benalla
PIC: after parachutists exit the balloon	• Benalla traffic • Balloon Juliet Sierra Delta • 5 miles North • at five thousand five hundred • parachutists away • 2 canopies • Benalla

[9] Section 8.02 of the Part 105 MOS.

[10] Paragraph 5.24 (1) of the Part 105 MOS.

[11] Paragraph 5.24(3) of the Part 105 MOS.

3.2.4 A ground control assistant is appointed by the drop zone safety officer to undertake ground control during the parachute operation[12]. A ground control assistant may make the following announcements via the radio in relation to the parachute descent:

- that it is safe to jump
- do not jump
- that experienced parachutists only are safe to jump
- that it is unsafe to jump, land the aircraft[13].

3.2.5 The use of 119.20 MHz is available to jump aircraft to communicate with ground stations involved in parachuting. Some parachute operations may use a company frequency[14].

3.2.6 At a dedicated drop zone, communication by the ground control assistant could also be via ground communication panel configurations as per Figure 1[15]:

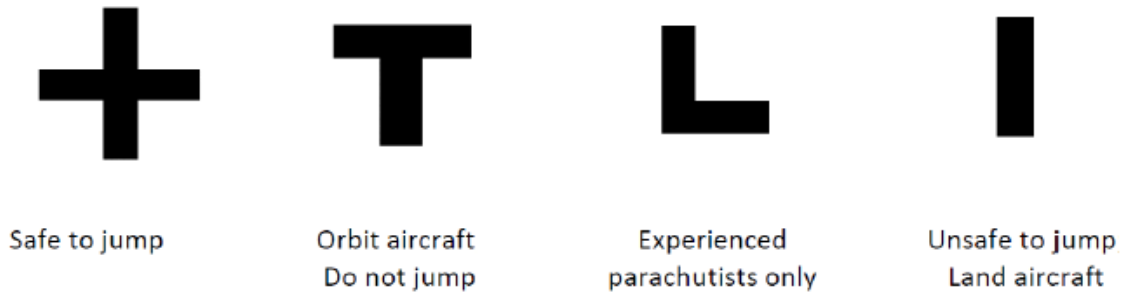

Figure 1: Ground communication panel configurations

3.3 Procedures for balloon pilot – controlled airspace

3.3.1 The PIC must obtain a clearance to drop when the operation is conducted in, or parachutists will enter, a Restricted or Military Operating Area or Classes A, C or D airspace. The drop clearance request must be made at least 5 mins before the proposed exit[16].

3.3.2 A broadcast must be made at least 2 mins before a parachutist is to exit the aircraft as outlined in 3.2.2 and 3.2.3 above.

3.3.3 A broadcast need not be made by the PIC if an ATS provider makes the broadcast[17].

3.3.4 The PIC must ensure that no parachutists exit the ballon in controlled airspace until the PIC has received clearance. The clearance may be in the form of '[Aircraft call-sign] clear to drop' or some other form allowing parachutists to exit the balloon[18].

[12] Section 1.06 of the Part 105 MOS.
[13] Paragraph 5.49 (2) of the Part 105 MOS.
[14] Paragraph 5.24 (2) of the Part 105 MOS.
[15] Paragraph 5.49 (9) of the Part 105 MOS.
[16] AIP ENR 1.1 - 6.1.7(a).
[17] Paragraph 5.24 (4) of the Part 105 MOS.
[18] Paragraph 5.24 (5) of the Part 105 MOS.

3.4 Procedures for balloon pilot – certified aerodrome

3.4.1 The operator of the balloon must ensure that the aerodrome operator has given approval for the parachute descent at the aerodrome[19].

3.4.2 If ground communication panels are used for the parachute descent, they must be located clear of any aircraft movement area and the PIC must ensure this is the case[20]. This is to reduce the risk of the communication panels being mistaken for runway markings.

3.4.3 The PIC must not give permission for a parachute descent at a drop zone located at a certified aerodrome unless the PIC is satisfied that the parachute descent will not conflict with any aircraft operating on the live side of any circuit at the aerodrome or using any apron, taxiway or runway at the aerodrome. The live side of a circuit of an aerodrome means those parts which aircraft are operating for the propose of taking-off or landing[21].

3.5 Balloon retrieve crew communications

3.5.1 Balloon pilots almost always use UHF radios to communicate with balloon retrieve crew. This communication method can also be used to inform ground crew that parachutists have exited the balloon and communicate expected landing site so the parachutists can be retrieved.

[19] Paragraph 5.56 (2) and subparagraph 5.56 (3)(a) of the Part 105 MOS.

[20] Paragraph 5.56 (2) and subparagraph 5.56 (3)(b) of the Part 105 MOS.

[21] Paragraph 5.56 (5) of the Part 105 MOS..

4 Oxygen equipment and procedures

4.1 The Part 131 MOS states the rules relating to oxygen equipment that must be carried on aircraft and the circumstances in which the equipment must be used applies to balloons facilitating parachute descents.

4.2 Part 131 rules regarding oxygen apply to a balloon flight facilitating parachute drops

4.2.1 Paragraph 8.03 of the Part 105 MOS states that the operator of an unpressurised aircraft (other than a Part 103 aircraft) being operated to facilitate a parachute descent must ensure that supplemental oxygen is provided in accordance with the requirements of Division 26.11 of the Part 91 MOS. Division 26.11 is empowered by subregulation 91.810(1) of CASR, which is in Subpart 91.K of CASR.

4.2.2 However, Subpart 91.K of CASR does not apply to the operation of Part 131 aircraft[22]. The applicable oxygen rules for Part 131 aircraft are contained in Chapter 10 of the Part 131 MOS.

4.2.3 The following table provides a comparison of the oxygen requirements for a Part 131 aircraft flight that is a balloon transport operation and other Part 131 aircraft flights.

Table 8: Oxygen requirements for facilitating a parachute drop from a balloon

Role	Part 131 aircraft flight that is NOT a balloon transport operation	Part 131 balloon transport operation
Flight crew member or cabin crew member (in this context, the balloon pilot)	(a) Any period exceeding 30 mins at FL 125 but less than FL 140 (for the flight member performing duties). (b) Any period at least FL140 or above, member performing duties must use and available for use for each flight member not performing duties.	(a) Above 10,00 AMSL supplemental oxygen must be used if the PIC considers impairment possible.
Passenger (for the Part 105 flight, the parachutist)	(a) FL125 oxygen must be available for each passenger.	(a) Above 10,000 AMSL supplemental oxygen must be available to each passenger.

4.3 Parachute descents must be supervised by a drop zone safety officer (DZSO)

4.3.1 All parachute descents must be supervised by a drop zone safety officer (DZSO), either on the ground or in the air. This person must have an authorisation that authorises the holder to act as DZSO for a parachute descent by the ASAO[23]. This is the person who ensures all parachuting regulations are complied with.

[22] Paragraph 91.030 (3)(p) of CASR.

[23] Subparagraph 5.27(2)(b) of the Part 105 MOS

4.3.2 The DZSO must have direct supervision of the descent, must nominate a loadmaster for the descent and must nominate a ground control assistant to conduct ground control for the descent[24]. The DZSO and loadmaster may be the same person.

4.3.3 Direct supervision by a DZSO, in relation to a parachute descent, means supervision where the DZSO is present throughout all phases of the operation, whether at the drop zone or in the aircraft that is facilitating the descent.

4.3.4 Drop zone means the area, specified by the DZSO who is performing duties for a parachute descent, intended for the landing of a person undertaking the parachute descent.

4.3.5 The DZSO is responsible for sighting documents related to airworthiness standards of parachute equipment, sighting documents confirming that the compatibility assessment of the main parachute and the parachute container has been conducted and retaining copies or making a record of the sighting[25].

4.4 Duties of a loadmaster

4.4.1 A loadmaster for a parachute descent must conduct a pre-descent briefing for all persons on board the aircraft that addresses all aspects necessary to ensure the safe conduct of the descent. This include the balloon PIC who should be briefed on the number of parachutists who will be jumping and the intended landing area of the parachutists.

4.4.2 A loadmaster for a parachute descent must also confirm the:

- surrounding airspace and drop zone is clear of conflicting air traffic and any necessary clearances have been obtained by the PIC, from the controlling authority and the person responsible for ground control of the descent
- integrity of the exit point[26].

4.4.3 The loadmaster must ensure, before the commencement of the descent, that the drop zone is clearly visible to the person undertaking the descent[27]

4.5 Duties of a ground control assistant

4.5.1 The ground control assistant for a parachute descent and the PIC of the aircraft facilitating the descent, must maintain communications by means of radiocommunications or visual signals, until the commencement of the parachute descent.[28] See section 3.2.5 of this AC for the radio frequencies commonly used.

[24] Paragraph 5.28 (1) of the Part 105 MOS.

[25] Paragraph 5.28 (2) of the Part 105 MOS.

[26] Paragraph 5.29 (1) of the Part 105 MOS.

[27] Paragraph 5.29 (2) of the Part 105 MOS.

[28] Section 5.39 of the Part 105 MOS.

5 Balloon loading

5.1 The operator of an aircraft operated to facilitate a parachute descent, and the PIC must each ensure an aircraft loading record (a **loading sheet**) is completed before the departure of the aircraft for a flight[29].

5.2 For a manned free balloon, the loading sheet must contain the information listed in Part 105 MOS 7.04 as listed below[30].

5.3 The loading sheet for a manned free balloon must include the following information:

a. name of the PIC

b. date and the time of the flight

c. type and size of the balloon, and its registration mark

d. place of departure

e. intended place of release of each person undertaking a parachute descent on the flight

f. calculated aircraft loaded weight on take-off

g. maximum allowable weight for the flight, having regard to the prevailing environmental conditions

h. calculated aircraft loading weight on landing:

i. A statement by the person responsible for planning the loading of the aircraft, that the load and its distribution are in accordance with the aircraft loading system and any applicable requirement of the Part 131 Manual of Standards.

ii. If the person making the statement mentioned in paragraph (i) is not the PIC—a written acknowledgement by the PIC, that the PIC accepts the aircraft has been loaded as specified in the loading sheet.

5.4 The operator and the PIC must ensure that the loading sheet:

- is carried in the aircraft
- copy is given to the drop zone safety officer
- the information on the loading sheet is retained by that the operator and PIC for a period of 3 months after completion of the flight[31].The loading sheet may be retained in electronic form or hard copy.

5.5 A parachute system weighs about 10 kg. This must be factored into the weight and balance calculations. Parachutists must provide their exit weight, which includes their parachute system and parachuting equipment. With respect to parachuting equipment, there are times when a parachutist may wear weights (to increase freefall speeds), larger camera gear, helmets, jumpsuits etc which must be included in the weight of the parachutist.

5.6 It is important to consider that your aircraft flight manual may require a minimum landing weight, for example, 50% of Gross Certificated Weight (GCW). Sandbags may be carried as long as the requirements of regulations 131.425 (Restraint of cargo) and 91.600 (Carriage of cargo – general) of CASR are met.

[29] Paragraph 7.02 (1) of the Part105 MOS.

[30] Paragraph 7.02(3) of the Part105 MOS.

[31] Paragraph 7.02 (4) of the Part105 MOS.

6 Sudden load reduction – understanding the balloon reaction

6.1 Maximum rate of climb for the balloon must not be exceeded

6.1.1 The PIC of a balloon being operated to facilitate a parachute descent must ensure that the maximum rate of climb for the balloon, specified in the aircraft flight manual, is not exceeded when the load is suddenly reduced following the exit from the aircraft of one or more parachutists[32].

6.1.2 Therefore, when facilitating a parachute jump from a balloon as a balloon transport operation for a group of parachutists an operator must also include information about not exceeding the balloon's maximum rate of climb in their documented exposition procedures.

6.1.3 The loss of weight will alter the buoyancy of the balloon. To counter this, you must place the balloon in a descent before releasing the parachutists. The rate of descent will depend on the number of jumpers that will leave at the same time. The AFM may include a recommended descent rate but if not, the minimum descent rate should be:

- 1 parachutist at least 200 ft/min
- 2 parachutists at least 400 ft/min
- 3 parachutists at least 800 ft/min.

6.1.4 If there are more than three parachutists to be released, you should consider staggering the release.

6.2 Recommended jump procedure

6.2.1 The following is the recommended procedure for a jump:

a. Climb to about 1,000 ft higher than the height you want the parachutist(s) to jump from. For example, if you have planned to have the parachutist(s) exit the balloon at 7,000 ft AGL you need to round out at about 8,000 ft AGL.

b. Instruct the parachutist(s) to climb up on the side of the basket when you have finished burning but not yet rounded out. This must only be the number of parachutists that you have decided during the preflight preparation will jump at that time. It should be noted that parachutists can take longer than you think to get ready so remind them you will be losing altitude.

c. Make the appropriate radio calls.

d. Initiate the descent by venting or natural cooling.

e. Give a direction ‘clear to drop’ when you are at your desired rate of descent, and you are ready for the parachutist to exit.

f. Monitor your height and rate of climb or descent. Pilots must always look up to monitor the envelope.

g. Remember to aviate, navigate and communicate.

h. If you have other parachutists on board yet to jump, the process is repeated.

[32] Paragraph 5.58 (2) of the Part 105 MOS (also see regulations 91.095 and 131.255 of CASR).

6.2.2 When the parachutists exit, the descent rate of the balloon will slow due to the loss of weight. You should continue to closely monitor your balloon for any sign of vent panel (parachute valve) stall.

6.3 Balloon parachute valve stall

6.3.1 During high climb and descent rates, noting the requirements mentioned in section 6.1, the envelope profile (shape) may experience deformation. This deformation may be more likely to occur when operating close to the minimum landing mass.

6.3.2 Severe envelope deformation may cause a parachute valve stall. A parachute valve stall is when the parachute valve does not achieve its correct position, and the internal pressure falls to such an extent that the seal between the envelope edge and the parachute is not maintained. If the parachute cannot reseal, and the valve stalls the balloon envelope can collapse.

6.3.3 More detailed information is set out in AC 131-02 - Part 131 Aircraft - operations.

7 Pre-flight preparation

7.1 The aircraft flight manual (AFM)

7.1.1 Check the aircraft flight manual for any conditions regarding dropping of parachutists.

7.2 Insurance

7.2.1 Check that your balloon insurance covers dropping parachutists. Dropping parachutists may need to be listed on your insurance policy.

7.3 Parachutists must be authorised

7.3.1 A person undertaking a parachuting activity must hold an authorisation from a Part 105 ASAO authorising the person to undertake the activity and must carry out the parachuting activity in accordance with the authorisation[33].

7.3.2 It is the DZSO's responsibility to ensure that the parachutists are suitably qualified, equipped and briefed for their jump.

7.4 Weight and loading checks for parachuting

7.4.1 The balloon weight must not exceed the maximum loading weight permitted by the aircraft flight manual[34] The method to be used it outlined in the Section 7.04 of the Part 105 MOS. A loading sheet must be completed as outlined in sections 5.2 and 5.3 of this AC. This must be done before the flight.

7.5 Airspace / ATC requirements

7.5.1 If you are going to operate in controlled airspace you must hold an authorisation to fly in controlled airspace, carry a transponder, lodge a flight plan with ATC informing them of your intention to perform parachute operations and obtain a clearance before entering the controlled airspace.

7.5.2 Only recreational balloon pilots who hold a current pilot licence with an aircraft category rating (under Part 61 of CASR), with valid privileges that include operating in controlled airspace or at a controlled aerodrome, or holders of a current CP(B)L or a CAR certificate of validation issued under Part 5 of CAR, may fly in controlled airspace[35].

7.5.3 It would be prudent to contact ATC via telephone the night before the flight, for the controlled airspace you intend to fly in, to discuss the flight plan and the intention to drop parachutists.

7.6 Weather forecast/VFR/cloud height

7.6.1 The PIC must ensure that the parachute descent will be made in meteorological conditions in which the drop zone is clearly visible[36].

[33] Regulation 105.065 of CASR.

[34] Subregulation 131.445(1) of CASR.

[35] CAO 95.54, and sections 15.06 and 15.08 of the Part 131 MOS.

[36] Section 5.38 of the Part105 MOS.

7.7 Height in AGL planned for the jump

7.7.1 Most parachute jumps are conducted at the same location as they take off from. In this instance the parachutist will set their altimeter to zero before boarding the aircraft. With a balloon jump, they may not be landing in the same location that the balloon launched from. It is important to know that parachutists refer to height above the ground (AGL) and not above sea level (AMSL). If your flight path takes you over significant topography where the altitude of possible landing areas would vary from the take-off site altitude you should mention this to the loadmaster.

7.8 Fuel Management

7.8.1 Plan the trip fuel required for the flight taking into consideration the loaded weight of the balloon, including all parachutists, at take-off.

7.8.2 Consider what fuel you would require if, for any reason, the parachutists were unable to drop.

7.9 Launch site

7.9.1 The launch site should take into consideration the planned flight including the flight over land that is suitable for landing of parachutists and a suitable place for the PIC to land the balloon.

7.10 Planned drop zone

7.10.1 Regular jumps from aircraft allow jumpers to be quite precise about the exit point to plan their landings on a nominated drop zone. This is often not possible from a balloon, so jumpers need to be comprehensively briefed on possible alternative landing options and reminded of the associated hazards (especially powerlines). The DZSO should ensure that this is done.

7.10.2 You may need to select an alternative landing area in communication with the loadmaster when the parachutists are getting ready to jump. You may be able to select an alternative landing area based on your ballooning experience. If possible, you should select a large open area that you could land your balloon in and that has a road nearby that they can walk to.

7.10.3 Parachute descents into a drop zone that is in a populous area or is less than 600 m from a populous area may be required to be conducted as a parachuting display[37] under the control of a display organiser.

7.11 Parachutist retrieval

7.11.1 Discuss with loadmaster who will pick up the parachutists once they have landed. It is recommended that you determine whether the balloon retrieve crew is used to pick up the parachutists or a separate ground crew is used.

7.12 Final landing area

7.12.1 You should plan your flight with a suitable landing area in mind.

[37] See the definitions section of this AC for a definition of 'parachuting display'.

8 Operations

8.1 Rigging of the balloon

8.1.1 The jumpers will be wearing a parachute which could snag on your fuel hoses or control lines. It is recommended to route your hoses, control lines and crown line away from where the parachutists will exit the basket to prevent inadvertent opening of the parachute inside the basket.

8.2 Pilot and parachutist precautions

8.2.1 You and each parachutist on board an aircraft being used to facilitate a parachute descent must take all necessary steps to:

- mitigate any risk of any part of the aircraft becoming fouled by the parachutists undertaking a parachute descent
- ensure the activity of a parachutist will not impose any adverse stress on any part of the aircraft structure
- ensure there are no loose objects carried on the aircraft that, if dropped, would constitute a danger to persons or property on the ground[38].

8.2.2 You and each parachutist on board the balloon during operations must take all reasonable precautions to ensure that there is no risk of any part of the burner system, or the balloon control lines, becoming fouled by a parachutist or parachutist's equipment[39].

8.2.3 The exit order should have been established in the pre-flight preparation. The first parachutist(s) to exit will need to be in a position to access the side of the basket you want them to climb up on and jump from.

8.3 Parachutists briefing

8.3.1 A person must not create a hazard to an aircraft that is being operated to facilitate a parachute descent[40]. This includes that parachutists who must always follow the PIC's instructions.

8.3.2 The DZSO must brief the parachutists thoroughly on all parachuting aspects of the exercise. Most parachutists are quite familiar with fixed wing aircraft and the procedures to be followed in and around them, but maybe unfamiliar with balloons.

8.3.3 The balloon PIC should brief the parachutists as they would for any balloon passenger, including:

- any special requirements relating to climbing onto the edge of the basket and jumping from the basket including, for example, avoiding grabbing hold of ropes and hoses, and when/if holding onto the burner frame not to grab hold of the burner can
- not to move about the basket and point out potential snag points to avoid the possibility of the parachute opening in the basket
- making special mention in the briefing by the pilot to the parachutist(s) that the balloon will be in descent at the rate of about 300 - 600 ft per min, as the parachutist may feel that, unlike jumps out of aircraft, there is no hurry to exit.

[38] Subparagraph 5.52(1) of the Part105 MOS.

[39] Subparagraph 5.52(2)(b) of the Part 105 MOS.

[40] Regulation 105.025 of CASR.

8.3.4 You may wish to agree on hand signals between you and the parachutist for aspects of the jump procedure. For example, climb up on the side of the basket, clear to drop, do not drop and re-enter the basket.

8.3.5 Just before the jump, brief the parachutists on the anticipated wind direction on the ground so they can land into wind. You may be able to ask your ground crew to release a small helium filled balloon (a pibal) close the anticipated drop zone to provide the surface wind direction. It is a good idea to put it in terms of the sun. For example, a southerly wind flow would see them land with the sun on their right-hand side for an afternoon flight.

8.4 Restraint of parachutists not required

8.4.1 An exemption is provided in CAO 95.54 for regulation 105.105(1) of CASR which states that a PIC must provide restraint devices to a person that is not a flight crew member that is carried in the aircraft including parachutists. This is because balloons do not generally have restraint devices for passengers.

8.5 Dropping of things

8.5.1 A parachutist may wish to check the wind speed and direction at various layers and close to the ground for similar reasons that balloon pilots do. Subregulations 105.090(1) and 105.095(1) of CASR, and sections 4.01 and 4.02 of the Part 105 MOS, allow for a paper or fabric streamer, or other similar object to be dropped over a populous or non-populous area if used solely as a wind drift indicator and does not have weights attached to it such that it would create a hazard to another aircraft, a person or property.

8.6 Pilot must give permission to jump

8.6.1 A parachutist must not exit the aircraft unless the PIC, or a person nominated by the PIC, has given permission for the parachutist to exit the aircraft[41].

8.7 Flight after the parachutists have exited the balloon

8.7.1 Once the parachutists have exited, the flight continues as normal. If the purpose of the flight was the parachute jump, you may be looking to get back on the ground as soon as you can. If the parachute jump is just part of your flight you may want to continue flying. Either way, you need to keep in contact with your ground crew and ensure the jumper/s are safe and have been picked up.

8.8 Debrief with the parachutists

8.8.1 It is important to talk to the jumpers about their experience and any landowner issues they may have encountered. You may need to lend your diplomatic skills to resolve any adverse landowner issues. You may also wish to note any acceptable landing zones for future reference.

[41] Regulation 105.075 of CASR.