



Revision of the European operational rules for balloons

RELATED NPA/CRD: N/A — RMT.0674 — 6.1.2016

EXECUTIVE SUMMARY

This Opinion addresses a proportionality issue related to balloon operations. Its specific objective is to establish a simpler, 'lighter' and proportionate air operations regulatory framework for balloons.

For this purpose, this Opinion proposes the extraction of the operational rules for balloons from Regulation (EU) No 965/2012, except for the authority requirements specified in Annex II (Part-ARO), and the issue of a new regulation on operational rules for balloons. The scope of this new regulation may be extended at a later stage to include other areas related to balloons. The final goal would then be to develop — at least to a certain extent — a single 'balloon book'.

With the new draft regulation, EASA proposes operational rules for balloons which should be accepted as being less complex (i.e. the rules are easier to understand and to apply), and which should avoid any overregulation (i.e. the rules are reduced to what is needed not to compromise safety).

In summary, the proposed changes are expected to maintain safety while reducing the regulatory burden especially to operators.

Applicability		Process map	
Affected regulations and decisions:	Regulation (EU) No 965/2012; Decision 2014/025/R (Part-ARO); Decision 2014/017/R (Part-ORO); Decision 2014/015/R (Part-CAT); Decision 2014/016/R (Part-NCO); Decision 2014/018/R (Part-SPO)	Concept paper:	No
		Rulemaking group:	No, but expert group
		RIA type:	Light
		Technical consultation during NPA drafting:	N/A
		Publication date of the NPA:	N/A
		Duration of NPA consultation:	N/A
Affected stakeholders:	Operators; national aviation authorities (NAAs)	Review group:	N/A
Driver/origin:	Efficiency/proportionality	Focused consultation:	Yes
Reference:	Regulation (EC) No 216/2008	Publication date of the Opinion:	2016/Q1
		Publication date of the Decision:	2017/Q1



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1. Procedural information

1.1. The rule development procedure

The European Aviation Safety Agency (hereinafter referred to as the 'Agency') developed this Opinion in line with Regulation (EC) No 216/2008¹ (hereinafter referred to as the 'Basic Regulation'), but by derogating from the Rulemaking Procedure^{2,3}.

This rulemaking activity is included in the Agency's [4-year Rulemaking Programme](#) under RMT.0674. The scope and timescale of the task were defined in the related terms of reference (see process map on the title page).

The draft text of this Opinion has been developed by the Agency, supported by the RMT.0674 expert group. All interested parties were consulted through a focused consultation (1-day public workshop).

The final text of this Opinion (i.e. Explanatory Note and draft regulations) has been developed by the Agency, taking into consideration the input of the RMT.0674 expert group and the outcome of the focused consultation.

The process map on the title page summarises the major milestones of this rulemaking activity.

1.2. The structure of this Opinion and related documents

Chapter 1 of this Opinion contains the procedural information related to this task. Chapter 2 'Explanatory Note' explains the core technical content. The draft rule text proposed by the Agency is published on the Agency's website⁴.

1.3. The next steps in the procedure

This Opinion contains proposed changes to Union regulations, and is addressed to the European Commission which shall use it as a technical basis to prepare a legislative proposal.

For information, the Agency published the draft text for the Agency Decision containing the acceptable means of compliance (AMC)/guidance material (GM) associated to the new regulation on operational rules for balloons. The final Decisions adopting the AMC/GM to the new regulation and to the

¹ Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.3.2008, p. 1).

² In general, the Agency is bound to follow a structured rulemaking process as required by Article 52(1) of the Basic Regulation. Such process has been adopted by the Agency's Management Board and is referred to as the 'Rulemaking Procedure'. See Management Board Decision 01-2012 of 13 March 2012 concerning the procedure to be applied by the Agency for the issuing of opinions, certification specifications and guidance material ('Rulemaking Procedure').

³ Due to the tight time frame, the Agency derogated from the Rulemaking Procedure as follows:

- (a) Instead of a rulemaking group, an informal expert group was established with representatives from operators, competent authorities and manufacturers;
- (b) No notice of proposed amendment (NPA) and, consequently, no comment-response document (CRD) have been issued. Instead, a public workshop with stakeholders and NAAs has been organised in the context of a focused consultation.

⁴ <http://www.easa.europa.eu/document-library/opinions>.



amended Regulation (EU) No 965/2012⁵ will be published by the Agency once the European Commission has adopted the implementing rules.

⁵ Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1).



2. Explanatory Note

2.1. Issues to be addressed

At present, the European operational rules for balloons in force are laid down in Regulation (EU) No 965/2012. However, this Regulation does not only contain rules on balloons, but also the technical requirements and administrative procedures related to air operations for all aircraft. In this respect, stakeholders have continuously raised the following concerns as regards balloon rules:

- The Regulation is too complex to handle: For different balloon operations, such as CAT, NCO or SPO⁶, different parts and different paragraphs within the Regulation are applicable, sometimes ‘hidden’ and not easy to be identified⁷.
- Many operational rules for balloons have been ‘downgraded’, e.g. from the rules for large passenger aeroplanes. This resulted in an overregulation for balloons which, compared to large passenger aeroplanes for example, are simple aircraft.
- From the way the rules are written it is not always clear whether they are applicable to balloons, and in cases they are, to which extent (e.g. rules on the operations manual, on the minimum equipment list (MEL), task specialist, etc.).

In the context of the General Aviation Road Map, the Agency took into consideration the concerns raised and decided to develop simpler, ‘lighter’ and proportionate operational rules for balloons. This includes the following major measures:

- To establish a new regulation for balloons. The present Opinion only contains draft rules in the area of air operations. However, the scope of the new regulation may be extended to include further areas (e.g. flight crew licensing) to have — at least to a certain extent — a single ‘balloon book’ with rules on balloons under ‘one roof’.
- To restructure, amend and simplify the rules, extracted from Regulation (EU) No 965/2012, to establish a ‘lighter’ and proportionate regulatory air operations framework for balloons.

As regards the structure of the new regulation, the Agency is proposing two annexes to the new cover regulation: Annex I contains the definitions used, while Annex II contains Part-BOP, that is ‘balloon air operations’. Part-BOP is split in two subparts:

- Subpart BAS ‘Basic operational requirements’: This Subpart establishes the rules to be followed by an operator conducting balloon operations.
- Subpart ADD ‘Additional requirements for commercial operations’: For commercial operations, in addition to the requirements of Subpart BAS, the requirements of Subpart ADD have to be fulfilled.

The Agency is of the opinion that the simple structure of Part-BOP with two subparts meets the needs of stakeholders. This especially holds, since the basic rules of Subpart BAS are contained on 12 typed pages

⁶ CAT = commercial air transport, NCO = non-commercial operations with other-than complex motor-powered aircraft, SPO = specialised operations.

⁷ In a first analysis of the implementing rules and AMC/GM, the Agency identified approximately 120 typed pages which are applicable to balloons. These rules and provisions are spread over a total of approximately 1 600 pages of Commission Regulation (EU) No 965/2012 and the associated AMC/GM.



only, while the additional rules of Subpart ADD are laid down on additional 11 typed pages only. Operators are expected to be able to handle such concise regulatory framework, which does not compromise safety, easier than the present rules.

2.2. Objectives

The overall objectives of the EASA system are defined in Article 2 of the Basic Regulation. This proposal will contribute to the achievement of the overall objectives by addressing the issues outlined in Chapter 2. The specific objective of this proposal is to establish a simpler, 'lighter' and proportionate air operations regulatory framework for balloons, whilst ensuring appropriate requirements for the protection of commercial passengers.

2.3. Outcome of the consultation

As described in Chapter 1, the new draft operational rules for balloons were intensively discussed with the dedicated RMT.0674 expert group during five meetings and during a focused consultation (1-day public workshop). The discussion on the major issues can be summarised as follows:

- **Prescriptive vs performance-based rulemaking:** The majority of the expert group members emphasised that for the balloon community prescriptive rulemaking may in many cases be a better solution, since it gives clear 'instructions', while performance-based rulemaking to some extent may be more difficult to understand.
- **No redelegation at national level:** The majority of the expert group members made it clear that they prefer uniform European rules. Consequently, the proposed rules do not contain any redelegation at national or regional level.
- **Hot-air airships to be included:** Hot-air airships are included in the new regulation on balloons due to the following reasons:
 - As for hot-air balloons, hot air is mandatory for hot-air airships to produce the lift. A hot-air airship would never lift off just by using the engine.
 - As for balloons, a hot-air airship will have its envelope inflated before and deflated and packed away after every flight.
 - The Agency permits hot-air airship class ratings on the balloon pilot licence (BPL) and on the light aircraft pilot licence for balloons (LAPL(B)) within Part-FCL of Regulation (EU) No 1178/2011⁸.
- **Tethered gas balloons and tethered balloon flights:** Regulation (EU) No 965/2012 does not cover tethered gas balloons and tethered balloon flights. Following the advice of the majority of the expert group members, the Agency decided to include tethered-balloon flights in the new regulation on balloons. The main reason is that some balloons may conduct tethered flights at certain times. It is not appropriate to exclude the balloons during these times from the new regulation. Besides, for tethered balloon flights, no major additional rules are needed.

⁸ Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 311, 25.11.2011, p. 1).



On the other hand, the Agency decided not to include tethered gas balloons in the new regulation. Tethered gas balloons can be seen as a separate subcategory of aircraft which require additional and, in parts, different rules.

- **Authority requirements:** After a substantial discussion, the Agency decided not to transfer the authority requirements (Part-ARO) of Regulation (EU) No 965/2012 to the new regulation on balloons. The reason is that all air operation authority requirements should remain under ‘one roof’, and should not be split for different aircraft categories.
- **Terminology for commercial passenger operations:** The majority of the expert group members proposed that instead of ‘commercial air transport (CAT)’ the term ‘commercial passenger ballooning (CPB)’ should be used, with a definition as follows:

‘Commercial passenger ballooning (CPB)’ means the carriage of passengers on balloon sightseeing or experience flight for remuneration or other valuable consideration.’

The main reasons are to:

- express that ballooning is a different activity;
- avoid the term ‘transport’ which does not fit to balloons; and
- better allow the development of domain-tailored rules.

On the other hand, introducing the term ‘CPB’ would have the following (possible) disadvantages:

- Other rules would need to be amended to include CPB (e.g. Part-FCL and Part-MED of Regulation (EU) No 1178/2011).
- Confusion about the terminology may be created (e.g. How is CPB related to CAT operations?).
- Similar requests may be expected for other operations (e.g. sailplanes, sightseeing flights with light propeller-driven aeroplanes, zero-G flights).

Taking into account the different arguments raised, the Agency finally decided to introduce the term ‘CPB’ instead of ‘CAT’.

- **Conditions and procedures for commercial operations (air operator certificate (AOC) vs declaration):** During the substantial discussion on how to administer commercial passenger ballooning, the Agency proposed the following:
 - a declaration for up to six passengers; and
 - an AOC for more than six passengers.

However, during the focused consultation the vast majority of the external experts strongly requested that either an AOC or a declaration for all commercial passenger ballooning should be required to establish a level playing field. While some experts are in favour of an AOC, others prefer a declaration — with no clear majority towards either of the options. The following is also worth mentioning:



- In some EASA Member States national AOCs have been proven to be good, while some other EASA Member States successfully introduced a (kind of) declaration or a similar procedure.
- As regards balloon accidents and serious incidents, the Agency's balloon safety analysis⁹ did not give any clear indication in favour of one of the options.

Further discussion made it clear that the main advantages of introducing an AOC are as follows:

- Authorities may have better (administrative) control over the operator.
- 'Regulatory shopping' is more difficult.
- An AOC may be seen as being more appropriate when considering potential significant exposure (e.g. up to 35 paying passengers).

On the other hand, it can be argued that a declaration is the preferred approach when considering the spirit of the General Aviation Road Map in light of:

- less administrative burden; and
- more flexibility¹⁰.

Considering the pros and cons, the Agency finally decided to require a declaration for all commercial ballooning, including commercial specialised operations.

- **Cost-sharing:** In Regulation (EU) No 965/2012, cost-shared operations by private individuals are permitted under the following conditions:

- sharing of direct costs; and
- six persons or less.

During the substantial discussion it became clear that cost-shared operations should be permitted in supporting balloon sport activities, but any profit should be avoided. Following this approach, the Agency decided to reduce the number of persons to four or less and to prescribe that the costs are equally shared (pilot included). On the other hand, it is proposed that not only direct costs but also a proportionate contribution of annual costs is permitted to be equally shared.

- **Management system:** The majority of the expert group members raised serious concerns as regards the need to fulfil the management system requirements. This especially holds for one-person operators or operators with only few employees. The Agency made it clear that the management system is required by Annex IV of the Basic Regulation¹¹ as an important element for regulating commercial operations which cannot be deleted. However, the text on the management system has been substantially simplified, adjusted and rephrased to better address the needs of balloon operators. Simplifications include the following major items, mainly documented in the envisaged AMC/GM:

⁹ EASA Member States over the period 2010–2014.

¹⁰ This approach is in line with the performance-based environment requiring competent authorities to dimension their oversight based on the risks associated with a particular activity.

¹¹ See paragraph 8.a.4 of Annex IV.



- There is no need any longer for an independent audit of the operator's management system every year. The operator decides on the frequency.
 - An operator with five or less full-time equivalents (FTEs) may choose to replace the independent audit by an organisational review which does not contain any requirement as regards independence.
 - The provisions for personnel requirements of nominated persons have been substantially reduced as regards qualification and experience.
- **Dangerous goods:** Dangerous goods are not 'transported' with balloons. In addition, the expert group members made it clear that in general dangerous goods should not be 'carried' on board. The rules on dangerous goods have been adjusted and simplified accordingly.
- **Restraint system:** According to Regulation (EU) No 965/2012, a balloon must be equipped with a restraint system only, when the balloon is equipped with a separate compartment for the pilot-in-command and CAT operations are conducted. As a result of the consultation, the requirements on restraint systems have been expanded as follows:
- A restraint system is prescribed for all operations, when the balloon is either equipped with a separate compartment for the pilot-in-command or when it is equipped with turning vents.
 - For such balloons the pilot-in-command must wear the restraint system at least during landing.
- **Lease-in:** The majority of the expert group members pointed out that in specific cases balloons are leased-in from a third country. Therefore, appropriate requirements need to be established. The Agency decided to keep these rules simple and to delegate the main responsibility to the operator.
- **Task specialist:** The majority of the expert group members agreed with the Agency that task specialists do not play an important role for specialised operations with balloons. Consequently, the Agency decided not to introduce any implementing rules for task specialists.
- **Operations manual:** In agreement with the expert group members, the requirements for the operations manual have been adjusted and simplified.
- **Minimum equipment list (MEL):** According to Annex IV of the Basic Regulation¹², the operator must establish a MEL for commercial operations. However, for balloon operations the importance of the MEL is low since the equipment that may be temporarily inoperative is very limited. Contrary to large passenger aeroplanes for example, most of the equipment of balloons is operative at all times. Consequently, the Agency decided not to introduce any specific requirements on the MEL.
- **Additional crew members:** According to Regulation (EU) No 965/2012, an additional crew member is required when a balloon carries more than 19 passengers. While some external experts requested to delete this requirement, others stated that the additional crew member is

¹² See paragraph 8.a.3 of Annex IV.



needed since the pilot will not be able to fly the balloon and to also ‘oversee’ the passengers. Based on the latter opinion, the Agency decided to keep the requirement.

Further information on the modifications introduced, based on the input received, is provided in **Table A1.1** of Appendix 1. As regards the new Annex II (Part-BOP), this table provides a comparison between each new paragraph and the existing paragraph of Regulation (EU) No 965/2012 concerning the content of the rule.

2.4. Overview of the proposed new regulation

Cover regulation

The basis for the cover regulation was the cover regulation of Regulation (EU) No 965/2012, now containing only the rules applicable to air operations of balloons. The cover regulation contains the following six articles:

- Article 1 ‘Subject matter and scope’: It describes that the regulation lays down detailed rules for air operations with balloons, including rules as regards the declaration.
- Article 2 ‘Definitions’: Several definitions for terms used in the cover regulation are provided.
- Article 3 ‘Air operations’: It regulates the applicability of the different subparts of Annex II to the regulation as regards non-commercial operations, CPB, commercial specialised operations and training organisations.
- Article 4 ‘Derogations’: Derogations from Article 3 are specified for flights related to the introduction or modification of balloons, cost-shared operations, competition flights or flying display, introductory flights and parachute dropping.
- Article 5 ‘Flight time limitations’: It lays down that balloon operations are to be conducted in accordance with national flight time limitations until European rules are adopted and apply.
- Article 6 ‘Entry into force’: The date of entry into force and the applicability date are specified.

Annex I (Part-DEF) — Definitions

In addition to Article 2 of the cover regulation, Annex I contains numerous definitions related to balloon operations which are used in Annex II.

Annex II (Part-BOP) — Basic operational requirements (Subpart BAS)

As explained above, Subpart BAS contains the rules to be followed by all operators conducting balloon operations. The rules of this Subpart have been mainly extracted from Part-NCO of Regulation (EU) No 965/2012. Some text from Part-NCO has been copied unchanged, while other text has been amended and simplified (for details see **Table A1.1** of Appendix 1). Subpart BAS is further subdivided into the following four sections:

- Section 1 ‘General requirements’: It contains the basic organisation and operating requirements, including rules as regards the scope, competent authority, alternative means of compliance, responsibility and authority of the pilot-in-command, crew responsibilities, compliance with rules, documents and information to be carried, etc.
- Section 2 ‘Operating procedures’: It contains all basic rules as regards operating procedures. This includes the use of operating sites, passenger briefing, flight preparation, meteorological



conditions, etc. In addition, requirements for specialised operations (concerning checklists) are included.

- Section 3 ‘Performance and operating limitations’: This short section contains rules concerning operating limitations, weighing, and performance in general.
- Section 4 ‘Instruments, data and equipment’: It contains all necessary rules on instruments, data and equipment. This includes numerous items such as operating lights, flight and navigational instruments, restraint system, supplemental oxygen, etc.

Annex II (Part-BOP) — Additional requirements for commercial operations (Subpart ADD)

Subpart ADD contains the additional requirements for CPB and commercial specialised operations. These rules have been extracted from Part-ORO, Part-CAT and Part-SPO of Regulation (EU) No 965/2012. As for Subpart BAS, some text of this Subpart has been copied unchanged, while other text has been amended and simplified (for details see **Table A1.1** of Appendix 1). Subpart ADD is further subdivided into the following seven sections:

- Section 1 ‘General organisation requirements’: In addition to the corresponding requirements of Section 1 of Subpart BAS, this Section contains further general organisation rules for commercial operations. This includes rules as regards the scope, operator responsibilities, alternative means of compliance, management system, personnel requirements, etc.
- Section 2 ‘Declaration’: It contains rules on the declaration and also requirements on lease-in of a third-country balloon.
- Section 3 ‘Manuals and records’: It contains rules on the operations manual, documentation requirements and record-keeping.
- Section 4 ‘Flight crew’: It contains rules on the composition of flight crew, designation as pilot-in-command, and training and checking.
- Section 5 ‘General operating requirements’: In addition to the general operating requirements of Section 1 of Subpart BAS, this Section contains further general operating rules for commercial operations. This includes rules on the responsibilities and authority of the pilot-in-command, additional crew member, documents and information to be carried, etc.
- Section 6 ‘Operating procedures’: It contains additional rules on operating procedures (in addition to Section 3 of Subpart BAS), namely on fuel or ballast supply and planning, on carriage of special categories of passengers, and on standard operating procedures for specialised operations.
- Section 7 ‘Performance and operating limitations’: In addition to the requirements on performance and operating limitations of Section 4 of Subpart BAS, this Sections contains rules for a system for determining the mass.

2.5. Regulatory impact assessment (RIA)

2.5.1 Issues to be assessed with the impact assessment

Background



Regulation (EU) No 965/2012 provides the regulatory air operations requirements for all the aviation sectors covered by the Basic Regulation. The main focus was to elaborate the safety requirements to ensure safe CAT aeroplane operations and consistency of the safety approach across the aviation sectors. Requirements for CAT operations of large passenger aeroplanes were adapted to other aviation sectors¹³ and different transition periods were introduced.

In the context of the present rulemaking task, a survey was sent to national aviation authorities (NAAs) in June 2015 to gather general information on the balloon sector in EASA Member States. Based on this survey, the balloon activity in EASA Member States in 2015 can be summarised as follows (see **Table A2.2** and **Figure A2.1** of Appendix 2 for more details):

- 6 000 balloons exist, of which 60 % are private balloons;
- 130 000 balloons flights per year, of which 25 % are private balloon flights;
- on average 10 annual flights per private balloon and 50 annual flights per commercial operator balloon;
- slightly more than 1 000 operators¹⁴; and
- approximately 50 % of the operators are one-person operators¹⁵.

General issue

The Agency's Management Board adopted the 'European General Aviation Safety Strategy' in September 2012¹⁶. The aim was to analyse whether the existing regulatory framework for General Aviation in Europe is adequate, to highlight deficiencies, and to make proposals for improvements.

According to the general survey performed, only one EASA Member State (Poland¹⁷) has implemented Regulation (EU) No 965/2012 for balloon operations, while the rest of the EASA Member States are using the possibility to postpone the introduction of the European air operation requirements and to wait for the outcome of the present rulemaking task. As a consequence, the assessment of this rulemaking proposal may be perceived from two different angles:

- From the Agency's point of view, the 'official' baseline scenario foresees the implementation of Regulation (EU) No 965/2012 for the balloon sector in 2016 and 2017.
- However, the vast majority of the EASA Member States has not yet started implementing Regulation (EU) No 965/2012. Therefore, the 'practical' baseline scenario, to which the EASA Member States and the balloon community will compare the regulation impacts, are the EASA Member States' national rules.

In addition, the expert group members confirmed that none of these baseline scenarios are the way forward, and that common, proportionate European rules to ensure safety and level playing field are imperative. As a consequence, the general issue is to establish a new regulation on operational rules

¹³ It should be noted from NPA 2009-02g that the impact assessment contained little information on the balloon sector (see Table A2.1 of Appendix 2). This shows that it was very difficult at that time to gain a complete overview of the balloon activity at EU level.

¹⁴ According to Table A2.2 of Appendix 2, a number of 970 operators have been estimated. Due to missing data from several EASA Member States, the overall number of operators in all EASA Member States can be estimated to be above 1000.

¹⁵ Based on data provided by nine EASA Member States (see Figure A2.1 of Appendix 2).

¹⁶ <http://easa.europa.eu/system/files/dfu/European%20GA%20Safety%20Strategy.pdf>

¹⁷ In Poland, two operators have an AOC (there are eight applications pending).



for balloons which will address the concerns raised by the General Aviation Road Map and the balloon sector in terms of:

- level of details in the rules;
- threshold between non-commercial and commercial operations;
- conditions and procedures for commercial operations (AOC vs declaration); and
- demands of the management system for commercial operations.

Level of details in the rules: lack of accessibility and proportionality

As explained in Section 2.1, it is firstly difficult to identify the relevant rules for balloon operations in Regulation (EU) No 965/2012. Secondly, it is difficult to apply rules which are not proportionate for the balloon sector, e.g. requirements on dangerous goods, task specialists, MEL, operations manual, etc.

Threshold between non-commercial and commercial operations

Currently, the ways to authorise balloon operations in Europe vary significantly. There are EASA Member States requiring a national certificate for:

- all private and commercial operations (e.g. Finland);
- all commercial operations (e.g. Belgium, Czech Republic, Germany, United Kingdom);
- commercial balloon operations with more than four persons, pilot included (e.g. France).

In the background of this discussion lies the definition of setting the threshold with cost-shared operations by private individuals. Regulation (EU) No 965/2012 allows to share only direct costs¹⁸ of private operations, whereas other EASA Member States authorise the sharing of annual costs¹⁹ (e.g. Germany), or consider it should be authorised (Austria, Poland, Lithuania, Norway). Similarly to the cost-shared operations, France permits commercial balloon operations with a maximum of four persons without certification, while Regulation (EU) No 965/2012 requires a certificate irrespective of the number of passengers. These are some of the possibilities that allow people to enjoy ballooning as a hobby and that makes it easier affordable. The concern was raised that the current Regulation (EU) No 965/2012 does not support adequately the development of the balloon sector.

Conditions and procedures for commercial operations (AOC vs declaration)

While in some EASA Member States national AOCs are required (see above), other EASA Member States have made positive experience with a (kind of) declaration or a similar procedure. During the establishment of the new rules no clear majority emerged among the external experts in favour towards either the AOC or the declaration.

The demands of the management system for commercial operators

During the process of establishing the new rules it became clear that the requirements concerning the management system for balloon commercial operations, as laid down in Regulation (EU) No 965/2012, are too demanding and would lead to overregulation.

¹⁸ Direct costs include fuel, airfield charges and rental fee.

¹⁹ Annual costs include the cost of keeping, maintaining and operating the balloon over a period of 1 calendar year.



The Agency's balloon safety analysis²⁰

While **Table A2.3** and **Figures A2.2 and A2.3** of Appendix 2 indicate that the severity per accident is indeed very low (maximum two fatalities on average per fatal accident), fatal accidents in commercial operations may be much more severe: there was one fatal accident with six persons during the period 2010–2014. However, it is worth noting that the commercial balloon operations' fatal accident rate per flight is estimated to be significantly above the one for CAT operations of large passenger aeroplanes operations: 6×10^{-5} per flight vs 1.8×10^{-7} per flight²¹.

In the case of balloon non-commercial operations, accident rates are estimated to be approximately two times higher than for balloon commercial operations as regards fatal accidents, and approximately four times higher as regards non-fatal accidents.

How could the situation evolve?

Without establishing a new air operations regulation for balloons there is a significant risk for balloon operations to decrease in EASA Member States. For example, in Germany private balloon pilots could reduce their activities because according to Regulation (EU) No 965/2012 annual costs are not integrated anymore in cost-shared operations. The risk of decreasing balloon activities could also include commercial operators due to non-proportionate requirements and since they would need an AOC.

2.5.2 Objectives

As indicated in Section 2.2, the overall objectives of the EASA system are defined in Article 2 of the Basic Regulation. This proposal will contribute to the achievement of the overall objectives by addressing the issues outlined in Chapter 2. The specific objective of this proposal is to establish a simpler, 'lighter' and proportionate air operations regulatory framework for balloons, whilst ensuring appropriate requirements for the protection of commercial passengers.

2.5.3 List of options

Options for the air operations regulatory framework for balloons:

- Option 0: to implement Regulation (EU) No 965/2012;
- Option 1: to establish a new regulation for air operations with balloons with proportionate European rules (see Section 2.4 for more details);
- Option 2: to stop the implementation of Regulation (EU) No 965/2012 and keep national rules instead.

Option 0 is overregulating the balloon sector as explained in Sections 2.1 and 2.5.1.

Option 1 is the way forward to establish simpler, 'lighter' and proportionate European rules.

Option 2 would be the extreme case: to repeal Regulation (EU) No 965/2012 for balloon operations and keep national rules. In order to have common, proportionate European rules to ensure safety and a level playing field, this option is, therefore, discarded.

²⁰ EASA Member States for the period 2010–2014.

²¹ However, it should be noted that for CAT operations of large passenger aeroplanes, the average per fatal accident is 40 fatalities.



2.5.4 Impact analysis

Safety impacts

Option 0: Safety benefits could be gained with the strict safety requirements of Regulation (EU) No 965/2012. These safety requirements are much more demanding than the current safety requirements of most of the national regulations.

Option 1: Balloon non-commercial accident rates are approximately two times higher than accident rates for commercial operations as regards fatal accidents, and approximately four times higher as regards non-fatal accidents. This supports the need to limit the number of passengers in cost-shared operations to minimise the maximum severity of a fatal accident for these flights. Fatal accidents in commercial operations may be much more severe²² (a basket may contain more than 30 passengers), and the fatality rate is deemed to be significantly higher for balloons than for aeroplanes. Hence, there is a need to have additional safety requirements for commercial operations (e.g. CAT operations with more than four persons in France are currently not subject to management system requirements).

Safety benefits may be expected with the proportionate requirements of Option 1 in line with the safety risks for different types of operations:

- cost-shared operations are limited to four persons (including the pilot); and
- all commercial operations are to be conducted with a declaration and under the oversight of the competent authority.

Conditions and procedures for commercial operations (AOC vs declaration)

It should be noted that concerning commercial operations, the Agency's balloon safety analysis did not give any clear indication in favour of either an AOC or a declaration as regards the impact on safety.

Conclusion

Option 0 and 1 could have positive safety impacts. However, it is not possible to distinguish further the potential increase in safety for these two options.

Environmental impacts

Not applicable.

Economic impacts

Option 0: As indicated in Section 2.5.1 under the heading 'How could the situation evolve?', the economic impact might be detrimental for the balloon sector and the workload of the competent authorities.

Option 1: Option 1 specifies that commercial operations require a declaration. Proportionate requirements have been established accordingly.

The economic impacts will be diverse depending on the present situation in each EASA Member State. Operators may have to implement a management system, and update or develop an operations manual. To prevent high initial costs and workload, the rules have been made proportionate to ensure that this workload remains feasible to avoid disruption of the commercial operations. In the long run, the recurrent costs implied by such requirements will be rather minor.

²² Figure A2.2 of Appendix 2 shows that there was one fatal accident with six persons during the period 2010–2014.



Commercial operators with a declaration may operate across the EASA Member States²³. This is an increase in terms of business opportunities.

Conditions and procedures for commercial operations (AOC vs declaration)

For both, balloon operators and competent authorities, the administrative burden and the associated costs are expected to be lower for a declaration than for an AOC. In addition, when a declaration is required, it is worth mentioning one other possible advantage in the initiation phase: apart from the safety risk priorities, competent authorities can plan the oversight of operators according to their resources without preventing commercial operations.

Conclusion

As regards the cost impact, Option 1 provides a benefit in comparison with Option 0.

Impacts on General Aviation

Threshold between non-commercial and commercial operations

The European balloon sector consists of approximately 3 700 private balloons and 2 300 commercial balloons, operating respectively 30 000 and 100 000 flights per year (see **Table A2.2** of Appendix 2). In order for a pilot with a non-commercial pilot licence to get his/her commercial pilot licence, he/she needs to gain sufficient basic experience. Therefore, non-commercial balloon activity is a key contributor to ensure commercial balloon activity.

Ballooning as a private hobby comes with a cost²⁴. EASA Member States have developed different ways of allowing the recovery of these costs (see Section 2.5.1) to support the balloon activity. The stake with cost-shared operations is to avoid profitability with non-commercial flights. This would be an unfair competition with commercial operators who have to meet more demanding safety requirements.

Table A2.4 of Appendix 2 indicates under which circumstances cost-shared operations are usually non-profitable and how they could become profitable. There is clearly no profit when two passengers on average are carried per flight, EUR 60 is the cost per passenger, and 13 flights are performed per year²⁵. The activity would still be non-profitable with three passengers per flights, costs of EUR 80 per passenger, and 20 flights performed per year (see also **Table A2.4** of Appendix 2).

The average of 10 flights per year for non-commercial operations indicates that most of the cost-shared operations will be non-profitable. Overall, there is little to gain with a maximum of four persons on board.

There are also other general economic aspects with a threshold. Some persons who would not accept to pay the price of a commercial flight, could opt for a cost-shared operation due to the lower price: this has a positive economic impact. However, some persons who could have flown with a commercial operator, may prefer a cost-shared operation due to the price²⁶: this has a negative impact for

²³ The same would hold if an AOC would be required.

²⁴ Approximately EUR 4 000 for 13 flights per year for a private pilot owning his/her second-hand balloon (using a second-hand balloon is a frequent situation to minimise the costs).

²⁵ According to the evidence provided to the Agency.

²⁶ General Aviation pilots are not authorised to publicly advertise their activity: these persons need to get the information from word-of-mouth advertising.



commercial operators. A full assessment of these impacts is not feasible in the framework of this rulemaking task²⁷.

Option 0: Only direct cost may be shared with passengers when conducting non-commercial operations. This would have a detrimental impact on non-commercial activities.

Option 1: By limiting cost-shared operations to a maximum of four persons, Option 1 ensures that non-commercial and commercial operations are 'separated' appropriately.

Proportionality impacts

Conditions and procedures for commercial operations (AOC vs declaration)

Option 0: According to Regulation (EU) No 965/2012, an AOC is required.

Option 1: A declaration is required, which addresses proportionality aspects better than Option 0 does in the spirit of the General Aviation Road Map:

- the administrative burden is reduced; and
- more flexibility is given to operators.

The demands of the management system for commercial operators

Option 0: The management system requirements are not proportionate to the balloon sector activities. The impact is significantly negative.

Option 1: Concerns have been addressed with the following amendments to the management system requirements:

Paragraph (b) of BOP.ADD.030 (management system) specifies that the management system shall correspond to the size of the operator and the nature and complexity of its activities. This flexibility is then further addressed in:

- paragraph (c)(2) of AMC1 BOP.ADD.030(a)(6), specifying that the operator decides on the frequency and depth of the compliance monitoring audit according to the volume and complexity of operations, the result of past audits and findings raised by the competent authority;
- paragraphs (a)(2) and (d)(1) of AMC2 BOP.ADD.030(a)(6), specifying that an operator with five or less full-time equivalents (FTEs) may choose an organisational review with no independence required and at intervals not exceeding 12 months;
- GM1 BOP.ADD.040(c) on personnel requirements of nominated persons, where the criteria for qualification and experience have been substantially reduced.

Task specialists

Option 0: According to Regulation (EU) No 965/2012, the pilot has to provide specific briefings and information to a person performing a specific task in the balloon.

Option 1: Requirements on task specialists have been judged to lead to overregulation and, therefore, have been deleted.

²⁷ This assessment would have required very detailed data like the price elasticity of balloon demand.



Better regulation and harmonisation impacts

Regulatory harmonisation across EASA Member States is ensured by both options. However, Option 1 respects the principles of ‘better regulation’ with proportionate requirements, hence it has a higher positive impact.

2.5.5 Conclusion

As summarised in **Table 1**, Option 1 offers the most positive impacts across the different criteria. It will allow the implementation of proportionate requirements for balloon operations.

Table 1 — Summary of impacts per criteria and option

Impact criteria	Option 0	Option 1
Safety	+	+
Environment	Not applicable	Not applicable
Economic	---	+
General Aviation	---	+
Proportionality	---	+
Better regulation and harmonisation	+	++

2.6. Overview of the proposed amendments

As explained above, the Agency proposes the extraction of the operational rules for balloons from Regulation (EU) No 965/2012, except for the authority requirements specified in Part-ARO, and to establish a new regulation on balloons. Therefore, this Opinion contains the following documents:

1. a new draft Regulation (EU) .../... (cover regulation) laying down technical requirements and administrative procedures related to balloons (Annex I to the Opinion);
2. two annexes to the new draft Regulation (EU) .../...;
3. a draft Regulation (EU) .../... (cover regulation) amending Regulation (EU) No 965/2012 to delete or amend the rules related to balloons in the present regulatory framework on air operations for all aircraft (Annex II to the Opinion); and
4. an annex to the draft Regulation (EU) .../... amending the related annexes (Definitions, Part-ARO, Part-ORO, Part-CAT, Part-NCO and Part-SPO) to Regulation (EU) No 965/2012.

In addition, a document, courtesy of the Agency, containing the latest draft AMC and GM to the new draft Regulation (EU) .../... on European operational rules for balloons is provided.

Done at Cologne, 17 December 2015

Patrick KY
Executive Director



3. References

3.1. Affected regulations

- Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1)

3.2. Affected decisions

- Decision 2014/015/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-CAT of Commission Regulation (EU) No 965/2012 and repealing Decision 2012/018/R of the Executive Director of the Agency of 24 October 2012 — ‘AMC and GM to Part-CAT — Issue 2’
- Decision 2014/016/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-NCO of Commission Regulation (EU) No 965/2012 and repealing Decision 2013/022/R of the Executive Director of the Agency of 23 August 2013 — ‘AMC and GM to Part-NCO — Issue 2’
- Decision 2014/017/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-ORO of Commission Regulation (EU) No 965/2012 and repealing Decision 2012/017/R of the Executive Director of the Agency of 24 October 2012 — ‘AMC and GM to Part-ORO — Issue 2’
- Decisions 2014/018/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-SPO of Commission Regulation (EU) No 965/2012 — ‘AMC and GM to Part-SPO’
- Decision 2014/025/R of the Executive Director of the Agency of 28 July 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-ARO of Commission Regulation (EU) No 965/2012 and repealing Decision 2014/014/R of the Executive Director of the Agency of 24 April 2014 — ‘AMC and GM to Part-ARO — Issue 3’

All Decisions are available at <http://easa.europa.eu/agency-measures/agency-decisions.php>



4. Appendices

4.1. Appendix 1 — Comparison between new rules in Annex II (Part-BOP) and existing rules

Table A1.1 — Comparison between paragraphs in the new Annex II (Part-BOP) and existing paragraphs in Regulation (EU) No 965/2012

New paragraph	Existing paragraph	Comparison
Subpart BAS — Basic operational requirements		
Section 1 — General requirements		
BOP.BAS.001 Scope	Not applicable	New text.
BOP.BAS.005 Competent authority	NCO.GEN.100	Text adapted to fit for balloons.
BOP.BAS.010 Alternative means of compliance (AltMoC)	NCO.GEN.101	No change.
BOP.BAS.015 Mixed balloons	NCO.GEN.102(d)	No change.
BOP.BAS.020 Introductory flights	NCO.GEN.103	Text adapted to fit for balloons.
BOP.BAS.025 Immediate reaction to a safety problem	NCO.GEN.145	No changes, except for the detail of the reference.
BOP.BAS.030 Responsibilities of the pilot-in-command	NCO.GEN.105/ CAT.GEN.NMPA.100	Text adapted and expanded. In parts, text transferred from Part-CAT of Reg. 965/2012.
BOP.BAS.035 Authority of the pilot-in-command	NCO.GEN.105	Text extracted from the paragraph on 'responsibilities' and adapted.
BOP.BAS.040 Crew member responsibilities	NCO.SPEC.115/ SPO.GEN.105/ CAT.GEN.NMPA.105	Text adapted and simplified. In parts, text transferred from Part-CAT of Reg. 965/2012.
BOP.BAS.045 Compliance with laws, regulations and procedures	NCO.GEN.110	No changes, except for the reference which has been deleted.
BOP.BAS.050 Documents, manuals and information to be carried	NCO.GEN.135	Text adapted to fit for balloons.
BOP.BAS.055 Dangerous goods	CAT.GEN.NMPA.150/ NCO.GEN.140	Text adapted and simplified, to fit for balloons.
BOP.BAS.060 Release of dangerous goods	NCO.SPEC.160/ NCO.SPEC.PAR.120	Two paragraphs have been merged.
BOP.BAS.065 Balloon logbook	NCO.GEN.150	Text adapted to fit for balloons.
Section 2 — Operating procedures		
BOP.BAS.100 Use of operating sites	NCO.OP.100	Text adapted to fit for balloons.
BOP.BAS.105 Noise abatement procedures	NCO.OP.121	No change.
BOP.BAS.110 Fuel and ballast supply and planning	NCO.OP.127	Text changed into a performance-based rule. Specifics transferred to the AMC.
BOP.BAS.115 Passenger briefing	NCO.OP.130	Only minor editorial changes.



New paragraph	Existing paragraph	Comparison
BOP.BAS.120 Carriage of special categories of passengers (SCPs)	CAT.OP.NMPA.115	Text transferred from Part-CAT of Reg. 965/2012, and adapted to fit for balloons.
BOP.BAS.125 Submission of the air traffic service (ATS) flight plan	CAT.OP.NMPA.130	Text transferred from Part-CAT of Reg. 965/2012, with only minor changes.
BOP.BAS.130 Flight preparation	CAT.OP.NMPA.125	Text transferred from Part-CAT of Reg. 965/2012, and adapted to fit for balloons.
BOP.BAS.135 Smoking on board	NCO.OP.156	Text adapted to fit for balloons.
BOP.BAS.140 Carriage and use of weapons	NCO.SPEC.165	Text adapted to fit for balloons.
BOP.BAS.145 Meteorological conditions	NCO.OP.160	Text adapted to fit for balloons.
BOP.BAS.150 Take-off conditions	NCO.OP.176	Only minor editorial changes.
BOP.BAS.155 Approach and landing conditions	CAT.OP.NMPA.175	Text transferred from Part-CAT of Reg. 965/2012, and adapted to fit for balloons.
BOP.BAS.160 Simulated situations in flight	NCO.OP.180	Text adapted to fit for balloons.
BOP.BAS.165 In-flight fuel management	CAT.OP.NMPA.165	Text transferred from Part-CAT of Reg. 965/2012, with only minor changes.
BOP.BAS.170 Refuelling with persons on board	SPO.OP.155	Text adapted to fit for balloons.
BOP.BAS.175 Use of restraint system	Not applicable	New requirement.
BOP.BAS.180 Use of supplemental oxygen	NCO.OP.190	Text changed into a performance-based rule. Specifics transferred to the AMC.
BOP.BAS.185 Operational limitations at night	NCO.OP.215	Text adapted to fit for balloons.
BOP.BAS.190 Specialised operations — Checklist	NCO.SPEC.105	No change.
Section 3 — Performance and operating limitations		
BOP.BAS.200 Operating limitations	NCO.POL.100	Text adapted to fit for balloons.
BOP.BAS.205 Weighing	NCO.POL.105	Text adapted to fit for balloons.
BOP.BAS.210 Performance — General	NCO.POL.110	Only minor editorial changes.
Section 4 — Instruments, data and equipment		
BOP.BAS.300 Instruments and equipment — General	NCO.IDE.B.100	Text adapted to fit for balloons.
BOP.BAS.305 Minimum equipment for flight	NCO.IDE.B.105	Text simplified to fit for balloons.
BOP.BAS.310 Operating lights	NCO.IDE.B.110	Only one change (one anti-collision light is sufficient).
BOP.BAS.315 Flight and navigational instruments and associated equipment	NCO.IDE.B.115	No change.



New paragraph	Existing paragraph	Comparison
BOP.BAS.320 Restraint system	CAT.IDE.B.120	Text transferred from Part-CAT of Reg. 965/2012, and expanded.
BOP.BAS.325 Supplemental oxygen	NCO.IDE.B.121	No change.
BOP.BAS.330 First-aid kit	NCO.IDE.B.120	No change.
BOP.BAS.335 Hand fire extinguishers	NCO.IDE.B.125	Requirement expanded.
BOP.BAS.340 Flight over water	NCO.IDE.B.130	Text changed into a performance-based rule. Specifics transferred to the AMC.
BOP.BAS.345 Survival equipment	NCO.IDE.B.135	Only minor editorial changes.
BOP.BAS.350 Miscellaneous equipment	NCO.IDE.B.140	Only one change (for gas balloons a trail rope is required).
BOP.BAS.355 Radio communication equipment	NCO.IDE.B.145/ CAT.IDE.B.155	Only minor editorial changes.
BOP.BAS.360 Transponder	NCO.IDE.B.150	No change.
Subpart ADD — Additional requirements for commercial operations		
Section 1 — General organisation requirements		
BOP.ADD.001 Scope	ORO.GEN.005	Text adapted to fit for balloons.
BOP.ADD.005 Operator responsibilities	ORO.GEN.110	Text adapted to fit for balloons.
BOP.ADD.010 Alternative means of compliance (AltMoC)	ORO.GEN.120	Text simplified.
BOP.ADD.015 Access	ORO.GEN.140	Text adapted to fit for balloons.
BOP.ADD.020 Findings	ORO.GEN.150	No change, except for the specifics of the reference provided.
BOP.ADD.025 Occurrence reporting	ORO.GEN.160	Text adapted to fit for balloons.
BOP.ADD.030 Management system	ORO.GEN.200	No change, except for the specifics of the references provided.
BOP.ADD.035 Contracted activities	ORO.GEN.205	Text adapted to fit for balloons.
BOP.ADD.040 Personnel requirements	ORO.GEN.210	Text adapted to fit for balloons.
BOP.ADD.045 Facility requirements	ORO.GEN.215	No change.
Section 2 — Declaration		
BOP.ADD.100 Declaration	ORO.DEC.100	Text adapted to fit for balloons.
BOP.ADD.105 Airworthiness requirements	ORO.SPO.100(b)	Only minor editorial changes.
BOP.ADD.110 Lease-in of a third-country balloon	ORO.AOC.110	Text adapted to fit for balloons. No approval needed from the competent authority.
Section 3 — Manuals and records		
BOP.ADD.200 Operations manual	ORO.MLR.100	Text adapted and simplified.
BOP.ADD.205 Documentation	ORO.AOC.150	Text simplified.



New paragraph	Existing paragraph	Comparison
requirements		
BOP.ADD.210 Record-keeping	ORO.GEN.220	Text simplified, provisions in parts transferred to the AMC.
Section 4 — Flight crew		
BOP.ADD.300 Composition of flight crew	ORO.FC.100	Text adapted to fit for balloons.
BOP.ADD.305 Designation as pilot-in-command	ORO.FC.105	Text adapted to fit for balloons.
BOP.ADD.310 Provision of training and checking	ORO.FC.145	Text adapted to fit for balloons.
BOP.ADD.315 Recurrent training and checking	ORO.FC.130	Text adapted to fit for balloons.
Section 5 — General operating requirements		
BOP.ADD.400 Responsibilities of the pilot-in-command	CAT.GEN.NMPA.100	Text adapted; in parts transferred to Subpart BAS.
BOP.ADD.405 Authority of the pilot-in-command	CAT.GEN.NMPA.110	Only minor editorial changes.
BOP.ADD.410 Additional balloon crew member	CAT.GEN.NMPA.105	Text adapted; in parts transferred to Subpart BAS.
BOP.ADD.415 Common language	CAT.GEN.NMPA.115	No change.
BOP.ADD.420 Alcohol and drugs	CAT.GEN.NMPA.130	No change.
BOP.ADD.425 Endangering	CAT.GEN.NMPA.135	Only minor editorial changes.
BOP.ADD.430 Documents, manuals and information to be carried	CAT.GEN.NMPA.140	Text adapted to fit for balloons.
BOP.ADD.435 Dangerous goods	CAT.GEN.NMPA.150	Text adapted to fit for balloons.
Section 6 — Operating procedures		
BOP.ADD.500 Fuel or ballast supply and planning	CAT.OP.NMPA.110	Text adapted and simplified.
BOP.ADD.505 Carriage of special categories of passengers (SCPs)	CAT.OP.NMPA.115	Text adapted; in parts transferred to Subpart BAS
Section 7 — Performance and operating limitations		
BOP.ADD.600 System for determining the mass	CAT.POL.B.110	Only minor editorial changes.



4.2. Appendix 2 — Information gathered for the RIA

Table A2.1 — Status of the information on the balloon sector for EASA Member States in 2009

State	Number						
	Balloons			Balloon operators			
	used for non-commercial activities	used for commercial activities	TOTAL	Aerial-work-certified operators	CAT-certified operators	Commercial non-certified operators	TOTAL
Austria		100	100		30		30
Czech Republic			134	14			14
Denmark	38	3	41		2		2
Estonia	4				0		0
France		101	907			40 ²⁸	40
Island			0				0
Italy			60	7		0	7
Lithuania		0	76				0
Norway			12		0		0
Sweden		31	140		7		7
Netherlands		430	438			112	112
United Kingdom	520	219	749		62		62
12		TOTAL		21	101	152	284

Source: notice of proposed amendment (NPA) 2009-02g, Table 25: Balloon operators in EASA Member States (Year 2007).

²⁸ In France there is a 'licence to operate', but it does not include safety aspects.



Table A2.2 — Status of the information on the balloon sector for EASA Member States in 2015

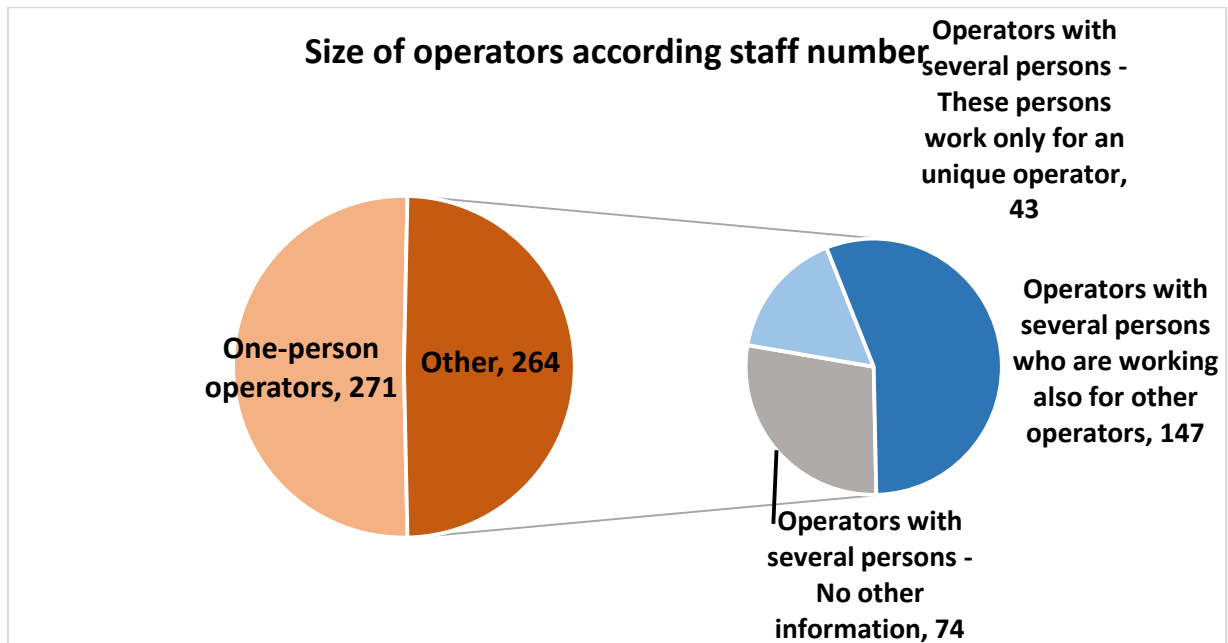
(data underlined and in italics are estimates; no balloon activities in Malta and Iceland, and no information from Liechtenstein)

	Safety occurrences						Grand total	Operators All types	Number of balloons			Flights		
	Aerial work		Commercial air transport operations		Non-commercial operations				CAT	Non-commercial	Total	CAT	Non-commercial	Total
	Fatal	Total	Fatal	Total	Fatal	Total								
Austria						3	3	137	115	234	349	1 350	2 350	3 700
Belgium			1	1			1	57	139	51	190	<u>6 950</u>	<u>459</u>	<u>7 409</u>
Bulgaria								no data	4	10	14	<u>224</u>	<u>86</u>	<u>310</u>
Croatia								no data	3	6	9	<u>144</u>	<u>55</u>	<u>199</u>
Cyprus								no data	0	1	1	<u>16</u>	<u>6</u>	<u>22</u>
Czech Republic		3		1			4	56	184	45	229	15 000	5 000	20 000
Denmark								<u>2</u>	22	46	68	<u>1 088</u>	<u>416</u>	<u>1 504</u>
Estonia								no data	5	10	15	<u>240</u>	<u>92</u>	<u>332</u>
Finland								52	21	45	66	500	500	1 000
France		1	2	11	1	17	29	83	300	500	800	<u>7 000</u>	<u>1 400</u>	8 400
Germany				15		24	39	289	492	702	1 194	<u>24 600</u>	<u>6 318</u>	<u>30 918</u>
Greece								no data	2	3	5	<u>80</u>	<u>31</u>	<u>111</u>
Hungary								no data	44	95	139	<u>2 224</u>	<u>851</u>	<u>3 075</u>
Ireland								no data	5	11	16	<u>256</u>	<u>98</u>	<u>354</u>
Italy	1	1			0	2	3	<u>7</u>	46	97	143	<u>2 288</u>	<u>875</u>	<u>3 163</u>
Latvia								no data	8	18	26	<u>416</u>	<u>159</u>	<u>575</u>
Lithuania								70	111	0	111	<u>5 550</u>	<u>0</u>	<u>5 550</u>
Luxembourg					1	1	1	no data	18	38	56	<u>896</u>	<u>343</u>	<u>1 239</u>
Netherlands				2			2	110	141	299	440	4 350	1 650	6 000
Norway								1	6	0	6	0	200	200
Poland						6	6	2	11	181	192	35	2 260	2 295
Portugal								no data	14	30	44	<u>704</u>	<u>269</u>	<u>973</u>
Romania								no data	5	10	15	<u>240</u>	<u>92</u>	<u>332</u>
Slovakia								no data	15	32	47	<u>752</u>	<u>288</u>	<u>1 040</u>
Slovenia			1	1			1		29	62	91	<u>1 456</u>	<u>557</u>	<u>2 013</u>
Spain		1		4			5	41	200	350	550	3 500	800	4 300
Sweden						2	2	<u>7</u>	15	28	43	<u>750</u>	<u>252</u>	<u>1 002</u>
Switzerland			1	1	1	5	6	no data	120	254	374	<u>5 984</u>	<u>2 289</u>	<u>8 273</u>
United Kingdom				13	1	4	17	56	200	570	770	7 500	5 550	13 050
Grand total	1	6	5	49	4	64	119	970	2 275	3 728	6 003	94 093	33 245	127 338



Figure A2.1 — Estimated relative shares of operator size in terms of staff number (2015)

(Based on nine EASA Member States' answers; source: EASA survey on 'Balloon operations – 2015')

**Table A2.3 — Safety occurrences per type of operations**

(EASA Member States, 2010–2014)

<i>Type of occurrence and operation</i>	<i>Fatal</i>	<i>Serious</i>	<i>Minor</i>	<i>None</i>	<i>Total</i>
Accident	10	76	9	20	115
Aerial work	1	4		1	6
Commercial (passengers)	5	32	3	6	46
Non-commercial	4	37	6	13	60
Missing information on operation type		3			3
Serious incident		1	1	5	7
Commercial (passengers)				3	3
Non-commercial		1	1	2	4
Total	10	77	10	25	122

Source: EASA data on safety analysis for balloon operations.



Figure A2.2 — Fatalities per event and per operation category
(EASA Member States, 2010–2014)

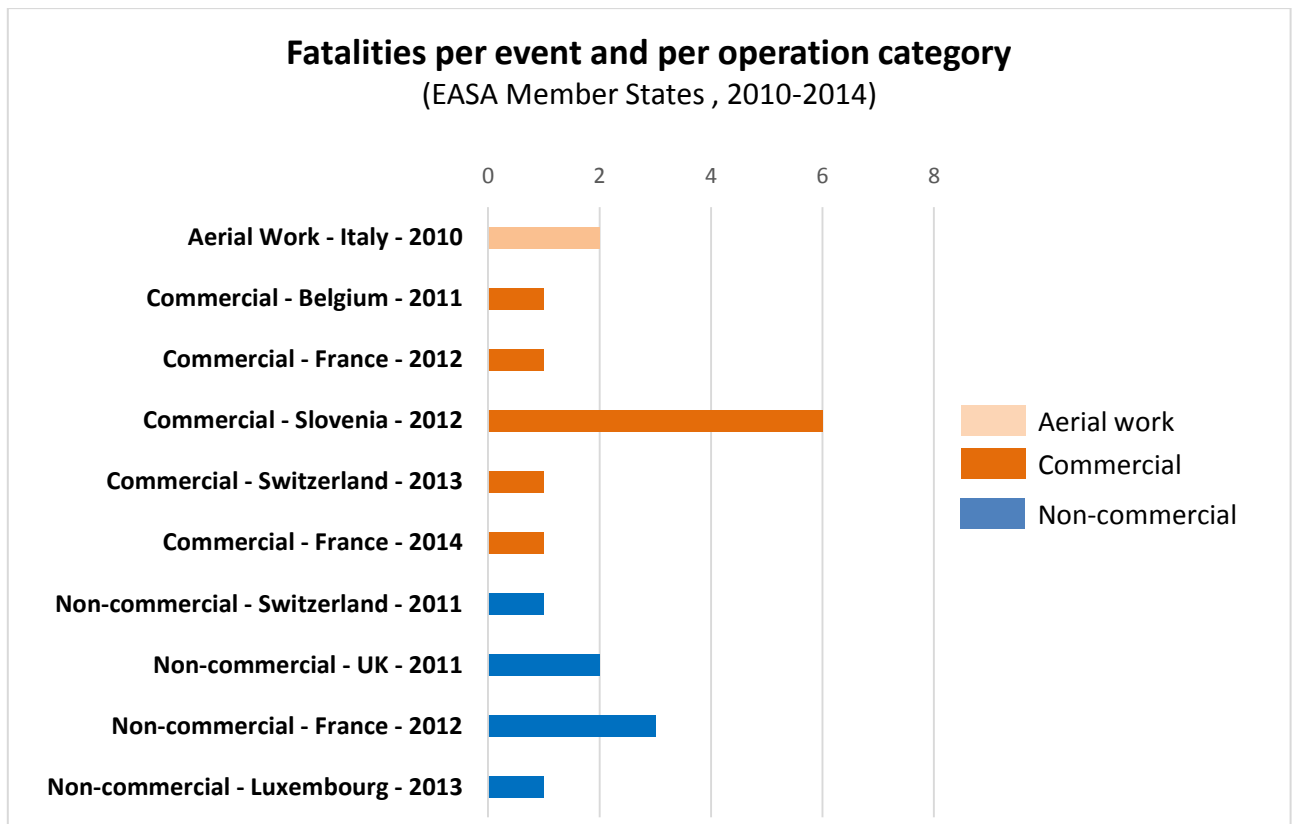


Figure A2.3 — Estimated balloon accident rates
(EASA Member States, 2010–2014)

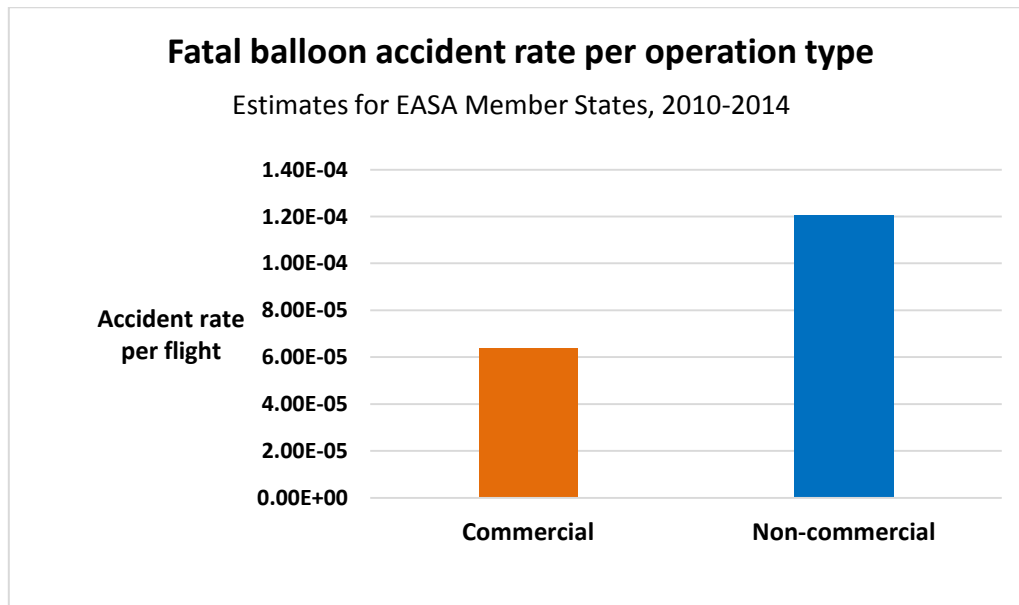


Table A2.4 — Sensitivity analysis for cost-shared operations

Parameters	Number of flights per year	Cost shared per passenger (€)	Passengers	Annual revenues (€)	Annual direct costs (€)	Annual costs (€)	Annual expenses (€)	Profit (€)
Evidence based of average private ballon pilot doing cost-sharing flights	13	60	2	1560	1651	2285	3936	-2376
Sensitivity analysis by modifying number of flights, cost shared in € and passengers per flight								
3 passengers + pilot	13	60	3	2340	1651	2285	3936	-1596
4 passengers + pilot	13	60	4	3120	1651	2285	3936	-816
5 passengers + pilot	13	60	5	3900	1651	2285	3936	-36
Price adapted to compensate all the costs with 2 passengers in average	13	150	2	3900	1651	2285	3936	-36
Price adapted to compensate all the costs with 3 passengers in average	13	100	3	3900	1651	2285	3936	-36
Flights adapted to compensate all the costs with 3 passengers in average	43	60	3	7740	5461	2285	7746	-6
Flights and cost shared adapted to compensate all the costs with 3 passengers in average	20	80	3	4800	2540	2285	4825	-25

Legend:

Yellow cell: the evidence-based data received by EASA, see first line of the table

