

Enclosure 3

SINGLE EUROPEAN SKY
(SES) REGULATIONS

JUSTIFICATION MATERIAL FOR THE

***DRAFT IMPLEMENTING RULE ON THE
DEVELOPMENT OF STANDARDISED
EUROPEAN RULES OF THE AIR***

DOCUMENT CONTROL

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EXECUTIVE SUMMARY

In accordance with Article 8 of Regulation (EC) No 549/2004 of 10 March 2004 laying down the framework for the creation of the Single European Sky, as amended by Regulation No 1070/2009 of 21 October 2009 amending Regulations (EC) No 549/2004, (EC) No 550/2004, (EC) 551/2004 and (EC) No 552/2004 in order to improve the performance and sustainability of the European aviation system (hereafter the framework Regulation), EUROCONTROL was mandated to assist the Commission in the development of implementing rules which adopt appropriate provisions on rules of the air based upon ICAO Standards and Recommended Practices, and harmonise the application of the ICAO airspace classification ("Mandate to EUROCONTROL for support on development of standardised European Rules of the Air (SERA)", hereafter referred to as the "SERA Mandate").

The first deliverable under this mandate is a draft implementing rule which focuses on the transposition of ICAO Annex 2 (Rules of the Air). In view of the subject matter, the draft was developed by EUROCONTROL, EC, ICAO in consultation with EASA. It must be noted that the transposition of other ICAO Annexes and Procedures for Air Navigation Services (PANS), which are expected under the SERA Mandate, will be developed under similar working arrangements.

As part of the formal consultation for this first deliverable, the present document contains the proposed EUROCONTROL justification material. The scope of the document is to, inter alia, explain the approach chosen and to provide information and justification with respect to the options retained in order to facilitate the reading and analysis of the draft implementing rule.

This document also provides an assessment of the impact that may be expected as a result of the adoption of this implementing rule. It assesses the regulatory, safety, economic and environmental impact of the proposed implementing rule from a general pan-European perspective.

One of the main conclusions resulting from the conducted assessments is the need to ensure a clear and comprehensive legal framework during the transition and implementation phases of this implementing rule. This implies, as demonstrated in particular by the safety assessment, the need to have not only Part A (dealing with Rules of the Air) of the implementing rule, but to also have in place other appropriate regulatory material by the date of applicability of the implementing rule. This encompasses the next stages of the SERA developments under the present mandate, but also the additional regulations necessary to cover the whole scope of air operations in the Single European Sky. It should be noted that several areas have been identified where additional regulation will be required to improve the level of standardisation and safety within the Single European Sky.

1. INTRODUCTION

1.1. Scope

In accordance with Article 8 of the framework Regulation, EUROCONTROL was mandated to assist the Commission in the development of implementing rules which adopt appropriate provisions on rules of the air based upon ICAO Standards and Recommended Practices, and harmonise the application of the ICAO airspace classification.

The scope of the European Commission's Mandate is centred on the drafting of Standardised European Rules of the Air. The title "Common rules of the air and operational provisions regarding services and procedures in air navigation" (hereinafter referred as "the SERA IR") has been selected in order to cover the whole scope of relevant rules of the air as described by the mandate. This encompasses, as specified in Article 4 of Regulation (EC) No 551/2004 of the European Parliament and the Council of 10 March 2004 on the organisation and use of the airspace in the Single European Sky, as amended by Regulation No 1070/2009 of the European Parliament and of the Council of 21 October 2009 amending Regulations (EC) No 549/2004, (EC) No 550/2004, (EC) No 551/2004 and (EC) No 552/2004 in order to improve the performance and sustainability of the European aviation system, (hereafter the airspace Regulation), rules of the air based on all relevant ICAO Standards and provisions as well as other relevant ICAO Standards and Recommended Practices (SARPs) and Procedures for Air Navigation Services (PANS); it is not limited to the transposition of ICAO Annex 2 "Rules of the Air". The intention of the mandate is to create a set of regulatory material with a view to supporting implementation of FABs, facilitating free movement of aircraft across Europe's national borders, increasing safety and minimising the inconvenience and risk of misunderstandings caused by varying national sets of rules.

In accordance with the SERA Mandate, the scope of the work also includes provisions intending to ensure an efficient and expeditious flow of international air traffic, which requires a common understanding of signs, collision avoidance procedures, air traffic services instructions, phraseology and similar related matters.

The present formal consultation package covers only the first deliverable of the SERA Mandate, the draft Implementing Rule and Part A of its Annex, focusing on the transposition of ICAO Annex 2, "Rules of the Air".

As a result of the very tight deadline and objective set by this mandate, which is to adopt and standardise under EU law existing international provisions, a formal request for justification material including a detailed impact assessment was not included in the mandate.

However, it was considered that some justification material was relevant in order to support, explain and justify, as required, the approach followed in the drafting process and to provide some visibility on the potential impact of the rule. The justification material is also considered important as it is a valuable element assisting the Member States and the stakeholders in their analysis of the draft rule proposed, and as it forms an essential part of the EUROCONTROL ENPRM (EUROCONTROL Notice of Proposed Rule Making) process.

Therefore, it was decided that limited but relevant justification material would be developed. The principle retained is that the impact assessment should cover the generic aspects of the impact of the implementation of standardised ICAO provisions in the scope of the mandate. The impact assessment will focus on aspects deemed to be relevant for all parties concerned by the rule, without examining the detailed impact of the draft implementing rule on a State-by-State basis.

It must be noted that the present formal consultation applies to the draft SERA implementing rule, and essentially to its content. Other related matters, such as effective dates of applicability, coherence with the wider European and international legal arrangements, functioning of the maintenance mechanism, and in general the issues related to the content and requirements of the mandate itself are not the subject of the formal consultation and should be addressed by the appropriate bodies (e.g. the EC and the Single Sky Committee).

2. DESIGN OF THE IMPLEMENTING RULE

2.1 Objectives and Requirements of the Relevant Single European Sky Basic Regulations

One of the objectives of the framework Regulation (Article 1) is to assist the Member States in fulfilling their obligations under the Chicago Convention by providing a basis for common interpretation and uniform implementation of its provisions and by ensuring that these provisions are duly taken into account in the rules drawn up for the implementation of the Single European Sky.

The European Commission's SERA Mandate is related to the achievement of the objective of Article 4 of the Airspace Regulation which lays down that implementing rules should be established in order to adopt appropriate provisions on rules of the air based upon ICAO Standards and Recommended Practices and to harmonise the application of the ICAO airspace classification, with appropriate adaptation, in order to ensure the seamless provision of safe and efficient air traffic services within the Single European Sky.

Part 1 of the essential requirements for air traffic management and air navigation services of Regulation (EC) No 216/2008 of the European Parliament and the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, as amended by Regulation (EC) No 1108/2009 of the European Parliament and the Council of 21 October 2009 (hereafter the EASA Regulation) foresees the need to develop a common general application of operating rules and procedures in order to ensure the safety of air traffic in Europe. This may be achieved by either binding implementing rules or non-binding Community Specifications (CS) or Acceptable Means of Compliance (AMC).

The SERA Mandate is also related to the achievement of the existing objectives of Regulation (EC) No 552/2004 of the European Parliament and the Council of 10 March 2004 on the interoperability of the European Air Traffic Management network, as amended by Regulation No 1070/2009 of the European Parliament and of the Council of 21 October 2009 amending Regulations (EC) No 549/2004, (EC) No 550/2004, (EC) No 551/2004 and (EC) No 552/2004 in order to improve the performance and sustainability of the European aviation system, (hereafter the interoperability Regulation), which states that one of the objectives is to achieve interoperability between the different procedures existing in the European ATM network, taking due account of the relevant international rules. The Regulation also aims at ensuring the coordinated and rapid introduction of new concepts of operation in air traffic management. Furthermore, Articles 3 and 4 of that regulation foresee the development of binding implementing rules and non-binding material to fulfil the objectives of the regulation.

Based on the characteristics of the transposition to be carried out and the specific requirements of the SERA Mandate, it has been decided that the rule would take the form of a binding implementing rule, which would prioritise ICAO compliant solutions. The ICAO layout has been retained and taken as a common basis, recognising that the mandatory provisions of ICAO Annex 2 must be applied over the high seas without exception. Existing national differences were carefully assessed and some, where appropriate, retained as proposed common differences. However, the majority of the proposed common differences result from the upgrading of notes contained in Annex 2 from interpretative material in Annex 2, to mandatory requirement in the SERA IR.

The draft provisions of the SERA IR Part A are based on the outcome of the extensive work undertaken by the SERA Task Force (SERA TF)". The SERA TF was established on the basis of a joint cooperation between the European Commission and EUROCONTROL, with the participation of ICAO.

2.2 Justification for the Option of an Implementing Rule

Implementing rules are usually developed to ensure harmonised implementation of binding provisions fulfilling the Essential Requirements of the Single European Sky, whereas other non-binding documents (CS or AMC) may be used to complement the binding provisions in establishing voluntary standards specifying more detailed technical or operational solutions.

In the usual development of regulatory material following the European Commission's mandates delivered to EUROCONTROL, a preliminary phase called Regulatory Approach is generally conducted, followed by appropriate consultation of the stakeholders in order to achieve consensus on the best way to create new regulatory material and on its status.

In the case of the SERA Mandate, the situation is different from usual mandates in that the future rule does not primarily aim at creating new obligations on the Member States but intends to standardise the way existing ICAO obligations will be implemented within the Single European Sky.

Furthermore, the SERA Mandate clearly states that the work should lead primarily to the creation of a draft European Commission implementing rule unless it would be considered that full harmonisation is not required. The mandate also provides that the rule should prioritise ICAO-compliant solutions.

On the basis of the work of the SERA Task Force it was considered that harmonisation of the rules of the air at European level was necessary and that acceptable, sustained levels of safety and efficiency could only be achieved through binding provisions i.e. through an implementing rule.

Furthermore, in line with the provisions of the SES legislation and the recognition that its implementation should be without prejudice to the rights and obligations of the Member States under the Chicago Convention, it was considered that an ICAO-compliant approach was the most reasonable and the safest manner to fulfil the Single European Sky requirements and the legal obligations of the Member States.

An implementing rule (regulation) was therefore developed providing the framework for the transposition under EU law of the relevant ICAO provisions. In line with the SERA Mandate, the first deliverable focuses on ICAO Annex 2, which is found at Annex Part A of the draft implementing rule. With respect to Part A, the approach has been to align the text, to the extent possible, with the layout and wording of ICAO Annex 2, taking into account that, over the high seas, Member States are under an obligation to comply with Annex 2 without exception. However, cases exist where modifications to the text, reflecting certain Single European Sky characteristics, or additional obligations, based on existing ICAO notes, were considered justified.

It is submitted that the draft implementing rule proposes an appropriate solution to achieve standardisation of the Rules of the Air at European level. It should lead to a clearer regulatory framework that will support, inter alia, the development of Functional Airspace Blocks (FAB).

Part of the improvement will also come from the withdrawal of existing national differences notified to ICAO with respect to Annex 2 and the introduction of a system of commonly agreed differences. Those so-called common European differences, to be notified by each Member State to ICAO, will be part of the implementing rule.

The justification regarding the proposed transposition of ICAO Annex 2 into Part A of the implementing rule, including the proposed common differences, is addressed in Chapter 3.

2.3 Development Process

One of the particularities of the SERA Mandate is that it will lead to the production of several deliverables that are referred to as final reports. These final reports will be produced and delivered in a phased manner that will take account of the requirements of the mandate as analysed in the initial plan.

An implementing rule (regulation) was therefore developed providing the framework for the transposition under EU law of the relevant ICAO provisions. In line with the SERA Mandate, the first deliverable focuses on ICAO Annex 2, which is found at Annex, Part A, of the draft implementing rule.

It will be followed by further deliverables addressing the requirements and practices that must be considered in order to properly build the Standardised European Rules of the Air. This refers in particular to the provisions of Annex 11, parts of Annexes 3, 6¹ and 10, and other ICAO documents relating to these matters including the Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc. 4444), Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS, Doc. 8168) and the EUR Regional Supplementary Procedures for Europe (SUPPs, Doc 7030/5 EUR). It is foreseen that the requirements resulting from those deliverables will be integrated in Parts B and C of the Annex to the implementing rule.

It is important to note that one of the main conclusions resulting from the assessments conducted with respect to this first deliverable is the need to ensure a clear and comprehensive legal framework for the transition and implementation phase of the implementing rule. As demonstrated in particular by the safety assessment, this implies the need to have in place not only Part A (dealing with Rules of the Air) of the implementing rule but also other appropriate regulatory material by the date of applicability of the implementing rule. This encompasses the next stages of the SERA developments under the present mandate, but also the additional regulations necessary to cover the whole scope of air operations in the Single European Sky. It should also be noted that several areas have been identified where additional regulation will be required to improve the level of standardisation and safety within the Single European Sky. The draft implementing rule has been developed under the assumption that this consistency would be realised in due time.

2.4 Structure of the Draft Implementing Rule

The draft Implementing Rule that is subject to the present formal consultation is built in several parts, in line with the indications of the Joint Practical Guide for the drafting of Union legislation.

¹ ICAO Annex 6 is primarily covered by the EASA OPS proposal but relevant provisions will be considered under the present mandate when appropriate.

These parts are:

- The title and the preamble
- The enacting terms:
 - o Subject Matter and Scope
 - o Definitions
 - o Compliance
 - o Differences
 - o Monitoring of the Differences
 - o Amendments to the Annex
 - o Additional Provisions
 - o Safety Requirements
 - o Amendments to Regulations
 - o Entry into Force
- The Annex

The Annex contains three main parts:

- Part A: Rules of the Air
- Part B: Requirements regarding Services in Air Navigation
- Part C: Requirements regarding Procedures in Air Navigation

In line with the SERA Mandate, the first focus has been on the transposition of ICAO Annex 2 which is found at Part A of the Annex to the draft implementing rule. At this time parts B and C only refer to the obligations of the Member States under the Chicago Convention. These parts will be subject to future developments and amendments in line with further deliverables of the SERA Mandate.

The annex also contains a Supplement which lists the commonly agreed differences which States will have to notify to ICAO further to the entry into force of the implementing rule.

3. DETERMINATION OF REGULATORY PROVISIONS

3.1 General

The SERA Task Force, established in 2007 and comprised of ATM experts from the European Commission, EUROCONTROL and ICAO, carried out a detailed charting and analysis of all existing differences notified by the SES participating States to ICAO Annex 2, as well as an examination of the relevance of the detailed provisions of Annex 2 as regards their suitability for transposition into EU law.

As a result of, and building on, this work, and in line with SES II package, the European Commission mandated EUROCONTROL to support the Commission with the development of standardised European Rules of the Air.

The SERA Task Force was transformed into an Implementing Rule Drafting Group (IRDG) including also the participation of EASA, to ensure appropriate coordination between the various ongoing regulatory activities.

The IRDG has further refined the work of the SERA TF and finalised the provisions, after careful consideration of the obligations of Member States under the Chicago Convention and, in particular, under ICAO Annex 2, the SES environment and the specific requirements of the mandate. The mature provisions and related proposed differences to be commonly agreed are the subject of the present formal consultation.

3.1.1 Principles

The following principles were applied in the drafting of the SERA Implementing Rule:

3.1.1.1 *Paragraph Numbering*

It was decided that the layout of Part A of the implementing rule would remain consistent with the layout and numbering of ICAO Annex 2 to the extent possible. The rationale is to retain consistency, especially having regard to the fact that ICAO Annex 2 remains fully applicable without exception by all Member States in the airspace over the high seas. It has also been considered that this approach would help readers by providing easier access and understanding of the new provisions in a regulatory environment which is changing at a rapid pace.

3.1.1.2 *Notes*

The notes contained in ICAO Annexes provide factual information or relevant references for the standards and recommended practices to which they refer, but they do not constitute part of the standards and recommended practices and therefore have no status. Accordingly, each Annex 2 note was assessed in order to determine if there was added value in elevating the note or elements thereof to form part of the implementing rule and therefore become mandatory or, in the alternative, be included, as appropriate, in related guidance material.

Additional information on those notes which have been elevated is provided in section 3.2.3.3 of the justification material.

3.1.1.3 Definitions

The definitions proposed for the draft implementing rule do not represent a substantive change to the definitions contained in ICAO Annex 2, Chapter 1. Certain definitions with additional text to reflect the SES legislative environment do not conflict with the definitions of ICAO Annex 2. Therefore, unless otherwise specified, the definitions in Article 2 of the draft implementing rule are consistent with the ICAO Annex 2 definitions.

The formatting convention for drafting EU Regulations was applied – each term is in quote marks, followed by the word “mean(s)” followed by the respective definition.

The definitions were compiled from the following:

- ICAO Annex 2, (10th Edition, Amendment 42) Chapter 1 Definitions that are relevant to SERA EC IR Part A. Definitions that do not pertain to the text of Part A were not included.
- Relevant definitions in other ICAO publications within the scope of the SERA Mandate (Annex 6, Annex 10, Vol. II, Annex 11, PANS-ATM (Doc. 4444).
- Definitions of “territory” and “high seas” are based on the Convention on International Civil Aviation (Chicago Convention).
- A definition of the term “glider” is based on the definition in ICAO Annexes 1 and 7.
- A definition of the term “aerodrome” is based on the definition contained in the EASA Regulation.
- A definition of the term “night” is based on the definition in ICAO Annexes 1 and 6.
- “Competent authority”: The use of the term “appropriate ATS authority” as defined and used in ICAO Annex 2 was considered as being subject to two different interpretations:
 - The authority is the State entity designated by the State (e.g. the Minister, the CAA) responsible for establishing and providing the services. It is not *per se* the actual service provider but rather the entity responsible to regulate and/or supervise such service provider. It would reflect the situation at the time the Annex was adopted i.e. pre-corporatisation of ANSP, where the State was both regulating and providing ATS.
 - The authority can be the State entity or the actual service provider, depending on the national relationship between the State and the ANSP and the specific obligations referred to in Annex 2. This would reflect the current environment of corporatised ANSPs and also be compliant with the notion of designation in the SES context.

In order to avoid any ambiguity and to reflect the different national situations and allocations of responsibilities, it was considered appropriate to use the term “*competent authority*”. This term is also used in the EASA context.

Note. When Parts B and C of the draft EC IR is developed, it will be necessary to populate Article 2 of the draft EC IR with additional relevant definitions from appropriate ICAO publications.

In accordance with ICAO practices, differences under Article 38 of the Chicago Convention cannot be notified to ICAO with respect to the definitions contained in the Annexes. In cases where substantive changes are made to a definition, it is necessary to notify a difference to all the provisions affected by the use of the new definition.

3.2 Justification

3.2.1 Title and Preamble

The title has been designed to cover the entirety of the scope of the mandate. The preamble contains the citations and the recitals, providing the legal basis and the necessary complementary elements linked to the requirements of the mandate and to the draft articles of the rule.

3.2.2 Draft Enacting Terms

Article 1 - Subject, Matter and Scope

This article addresses the object of the entire rule and provides the subject and perimeter of applicability. In line with the principle applied when drafting the enacting terms, it is not limited to the scope of the first deliverable (Part A) but is also intended to cover the next steps specified in the mandate, namely Parts B and C.

Article 2 - Definitions

The EU legal drafting practices require in principle that definitions be located in Article 2 of any implementing rule.

Article 3 - Compliance

This article states that the rule shall be applied and the possibility for derogation is not included. The only flexibility envisaged in this implementing rule is that which is embedded in certain provisions of the Annex.

Article 4 - Differences

This article takes into account the existing situation and covers the mandate requirement to establish an appropriate mechanism for the withdrawal and notification of differences to ICAO. It is envisaged that it shall be done in two steps, the first in order to officially withdraw the differences previously notified to ICAO, and the second to officially notify ICAO of the common differences agreed to under this regulation (Supplement to Annex A). Finally, as required by ICAO, this article requires that the Member States publish these “new” differences in their Aeronautical Information Publications.

Article 5 - Monitoring of Amendments

The objective of this article is to provide for the establishment of a process ensuring regular review and analysis of the relevant amendments to ICAO SARPs. As necessary, this process should lead to amendments to the implementing rule in line with the ICAO amendments or by adoption and notification of new commonly-agreed differences to ICAO. The maintenance mechanism itself is not established by the implementing rule.

Article 6 – Amendments to the Annex

This article pertains to the procedure for amending the implementing rule.

Article 7 - Transitional measures

This article addresses the transition phase between the current situation and the end state that the regulator wants to achieve. It means that where the current additional provisions established by the Member States (to complement the Annex 2 provisions) are not superseded by SES regulation, they should remain in force as long as they do not contradict any provisions of the SES regulations and until they are replaced by common provisions standardised at European level. This article is not intended for flexibility or for inclusion of Category A type of differences.

Article 8 – Safety Requirements

In order to ensure the safe implementation of the implementing rule, and taking into account the transition from existing national situations, this article reminds Member States of their obligation to conduct appropriate safety assessments. Since Annex 2 was subject to different national implementations (including various differences), only Member States are able to undertake the necessary safety assessments and apply the appropriate mitigation measures in order to ensure a safe transition.

Article 9 - Amendments to Regulations EC (XX)

This article is listing the identified regulations which will require amendment as a result of the entry into force of the implementing rule. These regulations have been identified and listed in accordance with the current form of the draft implementing rule and the final version of this article may be refined after review of the legal services of the European Commission when the text becomes ready for adoption..

Article 10 - Entry into Force

This article provides the dates for the official entry into force of the implementing rule and the date from when it shall apply. The proposed date of December 2012 is in accordance with the deadline set for the establishment of FABs in the service provision Regulation. These dates will require appropriate refinement in order to guarantee the practicability of the implementation as well as the consistency with the remaining parts of the legal arrangement covering the rules of the air within the Single European Sky. The final sentence recalls the principle of EU regulations as far as applicability is concerned.

3.2.3 The Annex

The Annex contains three parts and one Supplement. The three parts cover all the domains to be addressed under the SERA Mandate:

- The “Rules of the Air” as of ICAO Annex 2, Part A
- The relevant requirements regarding “Services in Air Navigation”, Part B (subject to further development)
- The relevant requirements regarding Procedures in Air Navigation, Part C, (subject to further development)

The Supplement will be divided into 3 sections, each of them related to the respective part of the Annex. The Supplement lists the commonly-agreed differences to be notified by the Member States to ICAO.

3.2.3.1 Draft Part A

With respect to the draft Part A, the approach for regulatory drafting has been to align it, to the extent possible, with the layout and the wording of ICAO Annex 2, taking into account that, over the high seas, Member States are under an obligation to comply with Annex 2 without exception. There are, however, cases where modifications to the text, reflecting certain Single European Sky characteristics, or additional obligations, based on existing ICAO notes, were considered justified.

The main changes in Part A compared to ICAO Annex 2 are addressed below:

Chapter 1 – Flight over the High Seas

The definitions of Chapter 1 of ICAO Annex 2 are found at article 2 of the implementing rule.

It was considered that the particular situation over the high seas warranted a stand-alone provision. This article upgrades the note found at section 2.1 of ICAO Annex 2 and transposes article 2.1.2 of the same Annex.

Chapter 2 – Applicability and Compliance

Paragraph 2.2.1 - Operation of Aircraft

The wording of paragraph 2.2.1 had been initially amended by deletion of “either in flight or on the movement area of an aerodrome”. The aim of this amendment was to better align the provision with EASA JAR OPS 3, and to include aircraft operating at sites other than aerodromes, seeking a higher level of standardisation.

The removal of the words “*either in flight or on the movement area of an aerodrome*” from paragraph 2.2.1 has been the subject of comments during the informal consultation. These comments have shown that the precise wording of the ICAO Annex 2, paragraphs 3.2.3.4 and 3.2.4 could be considered inconsistent with the new text of paragraph 2.2.1. Further evaluation has demonstrated that modifying the wording of paragraph 3.2.3.4 and 3.2.4 would require additional study to ensure safety and applicability. The time and information required for such studies not being available in the scope of the present mandate, it has been decided to conduct this evaluation separately and to envisage a possible modification at a later stage in the life of the SERA IR.

If adopted, the amended provision would be considered a difference to ICAO Annex 2, paragraph 2.2, and would be treated accordingly.

Chapter 3 – General Rules

Paragraphs 3.1.4 – 3.1.7 - Dropping or Spraying, Towing, Parachute Descends and Aerobatic Flight

The changes were introduced to be consistent with EASA Basic Regulations and the EU regulatory framework.

Paragraph 3.3.1.2 – Flight Plan

The changes applied to the flight plan section reflect the obligation to file a flight plan for a VFR flight planned to operate at night, in accordance with the SERA provisions regarding VFR at night (see 4.3), and the ability of Member States to rescind, on the basis of an appropriate agreement, the obligation to file a flight plan for a VFR flight planned to cross their borders. It also includes the obligation to submit a flight plan for all IFR flights. After the formal consultation and the comments received, this specific requirement has been adapted to clarify in paragraph 4.10 that in the case of a VFR flight intending to change to IFR, this submission should be done at the first practicable

opportunity, for example in cases where it is not possible to immediately submit a flight plan in flight due to reasons such as radio limitations, workload of the pilot or availability of ATS. These provisions have been addressed in the supplement presenting the proposed common differences (Supplement to Part A, difference A2-02).

Paragraph 3.6.5.2 - Communication Failure

The current "Communication failure procedures" described in ICAO Annex 2 are considered not to be appropriate by several States, and it may be noted that, among others, the Czech Republic, France, Germany and the UK have notified significant differences to ICAO. These differences are not all the same and there is no consensus on the changes to apply to the current procedures.

Those issues have been discussed in EUROCONTROL, in particular in the APDSG (ATM Procedures Development Sub-Group) and the ANT (Air Navigation Team) where it was recognised that these procedures should be improved. On the basis of the findings of those groups, EUROCONTROL has proposed to ICAO to further study these procedures, but no result is expected in the short/medium term.

Having no available alternative, the draft SERA IR for the formal consultation retained the current ICAO Annex 2 provisions. This option was criticised in several comments received and at the workshop. The possibilities to develop an alternative procedure meeting the requirements have been investigated, but no option has appeared feasible in the time available.

Therefore, it is proposed that the section on "Communication failure procedures" be removed from the current draft implementing rule. The importance of such procedures for the support of FAB's (and inter-FABs) development is well understood and therefore, in order to efficiently support this development, it is proposed that a "fast-track" activity be launched under the EUROCONTROL ANT to develop the necessary material with the intention to have it available before the date of applicability of the SERA IR.

Furthermore, it has been decided to address the communication failure provisions contained in ICAO Annex 10, Volume II, in Part C of the SERA IR.

Paragraph 3. 8 – Interception

To seek a higher level of standardisation the provisions of ICAO Annex 2, Appendix 2 – Interception of Civil Aircraft, were brought forward and inserted in this paragraph. Only the minimum required adaptation has been applied to ensure the transposition without any intention to modify the content and meaning of these Annex 2 provisions. The term "will" in the ICAO Annex 2, Appendix 2, has been changed to "shall" to comply with requirements for drafting EU legislation. The Appendices have been renumbered accordingly.

During the discussions conducted by the IRDG, as well as by the findings of the safety assessment, it has been found that additional work would be required on this issue in order to ensure the best possible result as far as safety and security are concerned. Therefore, it has been determined that EASA and EUROCONTROL should work together at the first practicable opportunity to develop additional material (Acceptable means of Compliance or Guidance Material) based on ICAO Annex 2, Attachment A, in the context of the European environment.

Paragraph 3.9 - VMC Visibility and Distance from Clouds

ICAO Annex 2, Table 3-1, provides the VMC minima in terms of visibility and distance from clouds. This table provides flexibility to the “appropriate ATS authority”, to prescribe lower minima under certain conditions.

Significant work has been carried out in Europe recently, with the intention to harmonise implementation of the ATS classes of airspace, as specified in ICAO Annex 11. This work included extensive consultations and ultimately resulted in the creation of a “toolbox” of means of implementation widely supported by European States.

The table presented in paragraph 3.9 is predicated on ICAO Annex 2, Table 3-1, modified as necessary by the inclusion of items from the above-mentioned “toolbox” which were considered beneficial to the achievement of a satisfactory level of standardisation in Europe. Table 3-2 brings the advantage of allowing authorities to cater for instances where local terrain or other situations make it unwise to use the lowest possible VMC minima.

Table 3-2 has been the subject of a section in the explanatory material associated to the informal consultation. The comments received did not show any clear convergence of views among a significant number of stakeholders. Nevertheless, some imprecise wording has been identified as regards reduced weather conditions for special flights such as medical or search and rescue. Therefore, it has been decided to retain Table 3-2 as was proposed in the draft for the formal consultation, with some adaptations in the text to cover the case of special flights as described above. This version of Table 3-2 is considered as the optimal compromise between safety, flexibility and standardisation.

Other tools developed with the above-mentioned toolbox will be considered when SERA addresses the relevant ATM services and procedures (SERA Parts B and C).

Chapter 4 – Visual Flight Rules

Paragraph 4.3 – VFR Flight at Night

The new provision provides standardised VMC criteria for visibility and distance from clouds in States where such flights are permitted by the competent authority.

The provisions included in paragraph 4.3 are based on the work recently carried out in Europe with the intention to harmonise implementation of the ATS classes of airspace as specified in ICAO Annex 11, leading to the creation of a “toolbox” of means of implementation. This choice is justified by the fact that this toolbox is based on long existing best practices which have been assessed and implemented by the Member States, and then evaluated in order to be retained as a possible tool at European level. It is to be noted that the competent authority retains the authority as to whether or not authorise the VFR flights at night, according to local or national constraints. Nevertheless, these provisions may be subject to improvement during the updating cycles of the SERA IR.

Following the formal consultation, it was recognized that there was a need for an additional obstacle criteria for VFR flights at night which was implemented in countries where such flights are currently allowed. Based on the proposals by some civil aviation authorities, by significant representatives of the general aviation and on the ICAO Annex 2 material, minimum obstacle clearance criteria has been included in the draft rule.

Similarly, some comments highlighted the fact that the rule provided a minimum height for VFR above ground or water, but that no limit was imposed as far as flying close to artificial obstacles. Subsequently, based on these comments and on the common practice, the 150 m minimum has been extended to cover obstacles as well.

The new provisions included in paragraph 4.3 are considered to constitute a difference to ICAO Annex 2, paragraph 4.3, and are therefore proposed as a commonly agreed difference (see Supplement to Part A, Differences A2-08 and A2-09).

Chapter 5 - Instrument Flight Rules

No significant changes have been applied to Chapter 5.

Draft Appendices

Appendix 1 - Signals

In Appendix 1, paragraph 3, it has been decided to modify the wording of the provision in order to allow the competent authority to decide whether or not the provision would be implemented. The reason for this change is that it has been reported that this provision was not applied or even applicable in some Member States. Therefore, it was considered reasonable to include flexibility in the rule with regard to its application. In any case, wherever the signals are going to be used, they shall be used in accordance with the provisions stated in paragraph 3.

Three notes have been elevated to the level of regulatory provision (differences A2-10, A2-11 and A2-12).

Appendix 2 – Table of Cruising Levels

The table of cruising levels applicable in Europe has been selected from the Tables of Cruising Levels contained in ICAO Annex 2, Appendix 3. Based on comments received during the formal consultation, the option of a different organisation of cruising levels based on regional agreement has been considered incompatible with the SERA rule and subsequently removed. It is not considered that this would constitute a difference.

Appendix 3 – Unmanned Free Balloon

No significant changes have been applied to the content or meaning of this appendix. Two notes have been elevated to the level of regulatory provision (differences A2-13 and A2-14).

3.2.3.2 Draft Supplement to Part A

In accordance with the draft implementing rule, Article 4 (Differences), and in order to achieve standardisation in Europe, the Member States must, upon the entry into force of this implementing rule, adopt the provisions of the SERA IR, withdraw any differences previously notified to ICAO, and formally notify ICAO of the common differences specified in the Supplement to Part A.

Except for differences resulting from the inclusion of new provisions based on notes in ICAO Annex 2, the following Community differences represent significant changes to the related ICAO Annex 2 provisions.

- Difference A2-01 (Part A, 3.2.3.2 – Right of Way) is a new provision based on already notified difference to ICAO Annex 2 which is considered beneficial for safety.
- Difference A2-02 (Part A, 3.3.1.2 – Submission of a Flight Plan) contains new provisions. The first is based on an already notified difference to ICAO Annex 2 which is considered beneficial for safety, and expands the requirement to submit a flight plan to any IFR flight in any airspace. The second offers, on the basis of regional or bilateral agreements, the possibility to the Member States to rescind the obligation for a VFR flight planned to operate across international borders to

file a flight plan. Finally, this paragraph also contains an obligation to file a flight plan for a VFR flight planned to operate at night, also described in the difference A2-08 mentioned below.

- Difference A2-04 (Part A, 3.2.3.3.3.1 – Gliders overtaking) introduces the possibility for a glider to overtake another glider to the right or to the left as expressed by numerous comments received on this subject during the formal consultation. This refers, in particular, to hill soaring gliders.
- Difference A2-08 (Part A, 4.3. – VFR flights at night) is a new provision with additional requirements under which VFR flights at night may be permitted. It is based on the outcome of the works conducted for the development of the “airspace classification toolbox” and the comments provided during the consultation. It is considered that this new provision will improve standardisation in Europe.
- Difference A2-09 (Part A, 4.6. – VFR flights) is a new provision with additional requirements regarding minimum distance from obstacles for VFR flights.

The following proposed Community Differences are resulting from the inclusion of new provisions based on notes of ICAO Annex 2:

- Difference A2-03 New Provision. The Union regulation, paragraph 3.3.2.1.1, is based on Annex 2, paragraph 3.3.2, Notes 1 and 2, (flight plan submitted during flight – supplementary information).
- Difference A2-05, New Provision. The Union regulation, paragraph 3.3.4.1.1, is based on Annex 2, paragraph 3.3.4, Note 1 (flight plan – information regarding fuel and total number of persons).
- Difference A2-06 New Provision. The Union regulation, paragraph 3.6.1.1.1, is based on Annex 2, paragraph 3.6.1.1, Note 2 (ATC clearance not acceptable).
- Difference A2-07 New Provision. The Union regulation, paragraph 3.6.5.1.1, is based on Annex 2, paragraph 3.6.5.1, Note 2 (Voice communication watch when CPDLC has been established).
- Difference A2-10 New Provision. The Union regulation, Appendix 1, paragraph 1.1.1, is based on Annex 2, Appendix 1, 1. Note 1 (Aircraft in distress – attract attention).
- Difference A2-11 New Provision. The Union regulation, Appendix 1, paragraph 5.1.1, is based on Annex 2, Appendix 1, 5.1, Note 1 (Signals by signalman/marshaller – illuminated wands).
- Difference A2-12 New Provision. The Union regulation, Appendix 1, paragraph 5.2.1, is based on Annex 2, Appendix 1, 5.2, Note 1 (hand signals by pilot – visible and illuminated as necessary).
- Difference A2-13 New Provision. The Union regulation, Appendix 3, paragraph 5.1.2 j), 2nd sentence, is based on Annex 2, Appendix 4, 5.1.2 j), Note (Unmanned free balloons – pre-flight notification of continuous launch).
- Difference A2-14 New Provision. The Union regulation, Appendix 3, paragraph 5.1.2 k), 3rd and 4th sentences, are based on Annex 2, Appendix 4, 5.1.2 k), Note (Unmanned free balloons – pre-flight notification of location of impact/recovery).

4. IMPACT ASSESSMENT

4.1 Economic Impact

In line with the SERA Initial Plan, the principle retained for the impact assessment is to limit the scope to the general issues without entering into the detailed aspects of implementation or the national specificities of the implementation.

4.1.1 Extent of the Impact

This economic impact assessment is, at this stage of the SERA Mandate development, an assessment, of a generic, pan-European nature, associated solely with SERA Part A. At this stage, the costs concern mostly those costs associated with dissemination of information, training and familiarisation of air navigation service providers and airspace users with the Rule.

The impact analysis may be updated (if required) based on the assessment of those costs together with an assessment of generalised costs, from a European perspective, of changes (if any) to operational procedures necessitated in any States as well as generalised costs of generic hazard mitigation measures (if any) recommended by the local safety analysis related to the SERA Mandate.

Thus, the effect in the various areas of the European airspace could be:

- No change, where national rules are already fully in compliance with SERA Part A;
- Modification of some national rules so as to comply with SERA Part A.

The scale of the impact will depend upon:

- National costs associated with meeting regulatory requirements for undertaking national safety assessments of changes (if any) associated with implementing SERA Part A;
- The number and scope of differences identified between SERA Part A (including its Supplement) and national rules;
- The extent of changes (if any) to operational procedures necessitated in any Member State;
- The scale of hazard mitigation measures (if any) required by the safety analyses.

The costs of the SERA Implementing Rule may comprise:

- The costs of dissemination of information, training and familiarisation with the SERA IR;
- The costs of the changes to operational procedures;
- The costs of hazard mitigation measures.

The impact on regulators, air navigation service providers (ANSPs) and airport authorities will clearly depend on the extent to which their national rules diverge from the SERA Part A. The involvement of ANSPs and airport authorities will comprise the dissemination of information on any rule changes to their staff, training their staff as appropriate and implementing any changes to operational procedures that are required. Competent authorities will have to ensure that their staff is aware of any changes to the rules within their own airspace and to ensure compliance by ANSPs, airport operators and aircraft operators with the amended rules.

By their nature, most commercial aircraft operators and many private operators will have experience of the rules of the air in a range of different countries. Therefore, the effect of this Implementing Rule is unlikely to require procedures with which they are not already familiar. However, they will have to be aware of any local changes to procedures in any of the Member States in which they operate. Thus they will be required to disseminate the information to pilots and support staff and may be required to modify some information within their training packages.

4.1.2 Scale of Changes

A survey carried out with the Member States concerned determined that, at the end of 2008, there were a total of 363 differences notified to ICAO, 131 of which were assessed as actual differences in the ICAO context, between the national rules of those States and ICAO Annex 2, with only a few being common between more than one State. The entry into force of Part A of the implementing rule would result in 13 commonly-agreed differences to Annex 2 to be notified to ICAO by the Member States.

As a consequence, it is considered that the overall impact of the harmonisation process will therefore be minimal.

4.1.3 Cost of Dissemination of Information, Training and Familiarisation

4.1.3.1 Air Navigation Service Providers

ANSPs already have procedures for briefing staff on changes to procedures and for carrying out the required associated training. These have been codified in EC Regulation 2096/2005.

Annex I of this regulation deals with general requirements for the provision of air navigation services and, in section 3.3 dealing with operations manuals, it requires that: *“An air navigation service provider shall provide and keep up-to-date operations manuals relating to the provision of its services for the use and guidance of operations personnel. It shall ensure that:*

- (a) operations manuals contain instructions and information required by the operations personnel to perform their duties;*
- (b) relevant parts of the operations manuals are accessible to the personnel concerned;*
- (c) the operations personnel are expeditiously informed of the amendments to the operations manual applying to their duties as well as of their entry into force.”*

Annex II of the Common Requirements regulation goes on to deal with specific requirements for the provision of air traffic services and, in section 3.1.2, requires that *“...a provider of air traffic services shall ensure that personnel are adequately trained and competent for the job they are required to do...”*.

Thus, all ANSPs should already have in place the necessary procedures to ensure that the appropriate information is fully disseminated to all the necessary personnel. Whilst there will be some administrative impact, given the changes required for each ANSP, the use of these existing procedures to implement the SERA Rule should not have a significant effect on ANSP costs.

With regard to training, whilst there may be some minor costs relating to the update of training materials, the costs of training courses when the new rules are in place should be no different to the present costs.

4.1.3.2 Regulators

Regulators will initially need to be assured that the required changes to the rules have been implemented, which will involve a cost. Thereafter, the costs of ensuring compliance with any amended rules will not differ from the existing costs of ensuring compliance with the current rules.

4.1.3.3 Airport Operators

Airport operators will initially need to be assured that the provisions regarding the SERA Part A rules associated with signalling and emergency services have been implemented. Thereafter, the costs of ensuring compliance with any amended rules will not differ from the costs which existed for ensuring compliance with the current rules.

4.1.3.4 Aircraft Operators

EC Regulation 859/2008 specifies requirements for commercial aircraft operators. In Subpart P, OPS 1.1040, dealing with general rules for operations manuals, it specifies that:

- (a) *An operator shall ensure that the Operations Manual contains all instructions and information necessary for operations personnel to perform their duties.*
- (b) *An operator shall ensure that the Operations Manual is amended or revised so that the instructions and information contained therein are kept up-to-date. The operator shall ensure that all operations personnel are made aware of such changes that are relevant to their duties.*

Additionally, ICAO Annex 2, paragraph 2.3.2, specifies pre-flight action which all pilots, both commercial and private, must comply with and, in paragraph 2.3.2.1, requires that: *Before beginning a flight, the pilot-in-command of an aircraft shall become familiar with all available information appropriate to the intended operation.*

Thus, existing routine procedures for pilot briefing required by ICAO and EC regulations cover the dissemination of information on the proposed Rule. Therefore, this process should be capable of being handled within the current procedures with minimal effect on costs.

With regard to training and examinations, as with the ANSPs, whilst there may be some minor costs relating to the update of training materials, the costs of training when the new rules are in place should not differ from the present costs.

4.1.4 Cost of Changes to Operational Procedures

The final local impact analysis will indicate whether any practical changes to operations will be required by the proposed Rule in any of the implementing states. If so, the costs of changes to operational procedures in support of these changes should be estimated locally.

4.1.5 Cost of Hazard Mitigation Measures

The final SERA justification material will present the results of the SERA safety analysis and, in particular, the identification of any specific hazards related to implementation and the mitigation measures that may be required. If such mitigation measures were required at pan-European level, an estimate of the costs of these measures could be prepared.

4.1.6 Conclusions

The adoption of 13 common differences will, in practice, imply costs which will depend on the situation previously existing within the States.

Where changes are required, there should already be procedures in place for the dissemination of information to the appropriate people and the incremental cost of including information of these proposed rules changes in this process should be minimal.

In the case of training, whilst there may be some costs involved in the modification of training material, there should be no change to the operational cost of training.

In the event of any substantive changes to the final version of the SERA IR and related safety analysis, a final economical impact assessment would have to be conducted to assess whether there could be any costs associated with changes to operational procedures or hazard mitigation measures.

4.2 **Environmental Impact**

4.2.1 Purpose

The purpose of this section is to provide a generic Environmental Assessment (**EA**), from a European perspective, of the implications of operational changes that could arise from the European Standardisation of 'The Rules of the Air'.

4.2.2 Scope

The broad scope used in the EA is as follows:

- The base-case is to be the ICAO version of the Rules of the Air as presently applicable by Member States.
- The future-case to be assessed is solely those instances where a change to the above base-case may be triggered by reason of the new regulations.
- The EA is undertaken from a top-down 'In principle' perspective i.e. generic and qualitative environmental implications only.
- The impacts considered are:
 - Aircraft Noise
 - Air pollution (as this affects Air Quality)
 - Atmospheric emissions (as these affect Climate Change)
 - The conservation of scarce planetary resources (oil)
- The EA will not consider the environmental implications of Differences or Rules that would not change as a result of the standardisation as the environmental impact will be the same in the base and future cases.

4.2.3 Approach

In line with the statements of the EUROCONTROL SERA Mandate Initial Plan, this EA of the Standardisation of European Rules of the Air was undertaken using expert judgement and furthermore, the assessment was approached from a top-down and 'in-principle' perspective. Individual State differences and the consequent modifications which would result from implementation of the SERA IR at national level have not been assessed.

In order to trigger environmental implication the initiative would have to result in:

- a change to aircraft weight or thrust;
- a change to aircraft flight profile (altitude, time or distance);
- a change to horizontal flight track;
- a change to when aircraft fly (e.g. night flights);
- a change to aircraft equipage that could affect the environment (e.g. equipment based restrictions on when or where aircraft will fly); or,
- a change to related ATM operational activities (e.g. apron vehicle operations).

Unless any proposed change to the Rules of the Air or their application triggers one or more of the above, no significant environmental implications would be expected.

The Community differences to the Rules were considered in the light of the above criteria.

4.2.4 Assumptions and Limitations

Assumptions

In undertaking the expert judgement EA and in deciding which impact to be assessed for any rules with significant environmental implications the following key assumptions would be adopted:

- Implications for local air quality would cease to be considered as being potentially significant for aircraft operations over 3.000 ft (reference ICAO LTO cycle) – and are to be considered as being more significant closer to the ground.
- The principle emission species considered for Air Quality purposes would be Oxides of Nitrogen (NO_x), the emission of which depends on both fuel used and thrust.
- Implications for Aircraft Noise would cease to be considered as being potentially significant for aircraft operations over 10.000ft – and would be considered to be more significant from aircraft operating within the significant noise contours around an aerodrome (i.e. that within a few miles of an aerodrome).
- Implications for fuel conservation and climate change would be considered as being potentially relevant throughout the Gate-2-Gate concept.
- Carbon dioxide (CO₂) would be considered as being the principle climate change emissions species and this would be considered as being proportional to fuel use (3.15 tonnes of CO₂ from each tonne of fuel - ICAO).
- The Climate implications for NO_x and Contrail-Cirrus would not be considered as there is still considerable scientific uncertainty concerning the implications of this impact.

Limitations

This assessment was undertaken on the basis of the requirements of the EUROCONTROL SERA Mandate Initial Plan, which called for a limited environmental assessment of a generic, pan-European nature. Therefore, individual national differences have not been taken into account. This limited EA assessment may ultimately be supplemented by national assessments of environmental impact. In that regard, the environmental assessment is limited by virtue of those national assessments still outstanding.

To check the validity of the overall findings, this generic assessment could be broadened to include consideration of the entire set of existing European differences to ICAO Annex 2, albeit from a pan-European perspective, should such requirement be identified during either the SERA formal consultations and/or during the development of SERA Parts B and C.

4.2.5 Impact of SERA Community Differences

High level Environmental Assessment of Community Differences

A2-01

This difference will not change the fact that to avoid collision, one or another aircraft in such an emergency situation will have to give way, with attendant environmental impact. As it cannot be foreseen which of the aircraft would have the greatest impact and since such events should be rare, the environmental implications of this difference can be taken to be negligible. The environmental impact is likely to be less than the environmental harm caused by not having such a Difference and risking collisions.

A2-02

This extends the requirement to submit a flight plan to all IFR flights and VFR flights at night. Furthermore, States will have the possibility to authorise VFR flight across international borders without submitting a flight plan. This will only affect a small number of European flights and it is not possible to estimate and potential efficiency loss or gain without more specific information, but it is anticipated that the flight profile are not likely to be changed by this. It is reasonable to assume therefore, that this Difference will only have a negligible environmental implication (if any).

A2-03

This is a detailed change to text and has no environmental implications.

A2-04

This will have minimal environmental implications.

A2-05

This relates to information exchange and will not affect the flight itself and therefore has no significant environmental implications.

A2-06

The optimisation of clearances to map more closely to aircraft performance (where such clearances were not optimised in the first instance) should enhance aircraft performance and be generally beneficial to environmental performance. The significance of this benefit is not known but is believed to be marginal.

A2-07

This relates to information exchange and will not affect the flight itself and therefore has no significant environmental implications.

A2-08

This relates to permitting VFR flights during the night period. The night period is sensitive for some communities around airports and presently some Member States have restrictions of night-time VFR flights. However, in the proposed Difference, discretion to allow VFR night flights is still permitted by the competent authority but under standardised European conditions of application. It is assumed at this stage that existing national night restrictions will not be eased in those Member States, as a result of this Community Difference. If Member States were obliged to remove such night time restrictions this would be a matter for local assessment. In any case local night-time restrictions (outside of Rules of the Air) that are prevalent at many aerodromes may mean that such restrictions remain in force. As such, the environmental implications are assessed as being minimal.

A2-09

This will have minimal environmental implications.

A2-10, A2-11 and A2-12

This relates to information exchange and will not affect the flight itself and therefore has no significant environmental implications.

A2-13 and A2-14

This relates to information exchange in the context of unmanned free balloons and is not thought to represent a change to existing practices and therefore has no significant environmental implications.

4.2.6 Conclusions

The majority of the Rules of the Air part of the SERA IR cover simple fail-safe separation and expedition requirements based on commonly agreed conventions to facilitate safe and efficient flight. These include flight-‘etiquette’ rules to remove any doubt that could result in conflict (e.g. setting down which types of flights have priority and which should give way under different circumstances). In generic terms, modification to this type of Rule has no significant environmental implications.

Some proposed changes to Rules of the Air or their application however, could potentially have some local Environmental Implications for some individual States (e.g. changes to permissibility of VFR flights at night). Detailed assessment of these would depend on the local application of the changes and the local situation (e.g. other restrictions that may apply, population location etc) which varies widely around Europe and is considered therefore to be a matter of local (i.e.: National/State) interest.

It is intended that SERA IR will improve safety. Since accidents have adverse environmental implications, it would be reasonable to assume that if the risk of accidents is reduced some environmental harm may be prevented. It is not possible to quantify this at this stage.

For local environmental implications, a local environmental assessment should form part of any implementation process and inform any associated consultation and decision making processes.

4.3 Safety Impact

4.3.1 Introduction

In accordance with the EUROCONTROL Initial Plan and with the SERA Mandate, the development of a Regulatory Approach was not required on the basis that the future SERA IR will not aim at creating new obligations on the Member States, but rather intended to ensure a uniform application of the already existing ICAO provisions. In turn, such uniform application will foster improved levels of safety consistent with ICAO's view that:

“The uniform application by Contracting States of the specifications contained in the International Standards is recognized as necessary for the safety or regularity of international air navigation while the uniform application of the specifications in the Recommended Practices is regarded as desirable in the interest of safety, regularity or efficiency of international air navigation”.

Therefore, the SERA Mandate safety impact assessment will not, in contrast to other mandates, address the safety assessment of various regulatory approach options for the purpose of determining, from a safety point of view, the most beneficial manner of transposition of ICAO provisions, as it has already been indicated by the mandate.

Instead, a full safety impact assessment addressing the individual steps of the SERA lifecycle (specification, design, implementation, transition and operation) was directly carried out so as to derive the applicable safety requirements for the SERA IR.

Safety Activities for the development of the SERA draft Implementing Rule were carried out in accordance with the SERA Safety Plan ref. SERA-SAFPLN-2009-0101-A. The product of that assessment is the SERA Mandate Safety Impact Assessment Report (ref. SERA-SAFREP-2009-0101-A).

4.3.2 Aim

4.3.2.1 The aim of this section of the SERA justification material is to present a summary of the processes involved in, and results of, the safety assessment for the development of the SERA IR and to show how the results of that assessment were addressed by the draft SERA IR.

4.3.2.2 The safety assessment activities of the SERA Mandate were undertaken considering:

- the EUROCONTROL ATM Safety Assessment Methodology, and
- ESARR 4 and EC Regulation (EC) No 2096/2005 (CR).

4.3.3 Safety Assessment Process

4.3.3.1 Introduction

The safety assessment approach is argument-driven intended to derive a process to be followed through the entire SERA Part A development lifecycle, for the derivation of safety requirements applicable to each lifecycle stage.

For each safety lifecycle stage (specification, design, implementation,...), safety assurance activities, which are determined by the safety argument, produce evidence that the Argument has been satisfied.

One important point is that this safety assessment considers only the safety aspects of Air operations carried out in accordance with the European transposition of the ICAO Annex 2 (SERA Part A).

Further safety assessments will address, in the context of the next steps of the SERA mandate:

- Safety aspects of the European transposition of ICAO Annex 11 regarding “Services in Air Navigation” (SERA Part B) and,
- Safety aspects of the European transposition of ICAO PANS-ATM regarding “Procedures in Air Navigation” (SERA Part C).

In addition certain aspects associated with training and qualification will not be addressed by SERA (Part A, B or C) but rather by other EC/EASA regulations (e.g. IR-OPS, CS-ADR,...).

This above scoping therefore leads to:

- Safety Requirements directly applicable to SERA Part A and its associated IR enacting terms and,
- Safety requirements which will drive the development of SERA Part B and C and,
- Safety Assumptions which are relative to training and qualification aspects addressed outside SERA scope (Part A, B or C).

In this document, the following terms are defined as:

- **Safety Argument:** A Safety Argument is a statement (or a set of statements) that is used to assert that the service or system concerned is safe, and should be developed as follows.
- **Safety Specification:** A requirement to be taken into account during the design phase.
- **Safety issue:** safety issues are identifying any problem encountered during the safety assessment which must be resolved before the Claim can be considered to be valid.
- **Safety Assumption:** Assumptions usually relate to matters outside of the direct control of the organisation responsible for the Safety Assessment but which are essential to the completeness and/or correctness of this assessment.
- **Safety Requirement:** Safety Requirements are means by which the necessary risk reduction measures are formally specified. Necessary in this context means necessary in order to achieve the required safety levels, as defined by the Safety Criteria.

4.3.3.2 The Safety Argument

The safety Argument is based on a top level claim that “Air Operations” in accordance with SERA Part A will be acceptably safe where acceptably safe means an increased level of safety compared to the current situation.

Air Operations once SERA IR is implemented should be safer than current operations based on local practice with national differences against ICAO Annex 2, the latter being considered by ICAO to be safe for international application.

It should be noted also that in accordance with existing EU/EASA regulations (e.g. framework Regulation, EASA regulation) a “consistent, high level of safety” in air travel is required. A high level of safety will be demonstrated if the “acceptably safe” safety criteria is fulfilled (level of safety will be increased). A consistent level of safety will be demonstrated because SERA Part A will be applicable equally to the totality of civil aviation activities, across the EU member states.

The top level safety claim was subsequently decomposed into the following five principal safety arguments:

- Arg. 1: SERA Part A has been defined/specified to be acceptably safe
- Arg. 2: SERA Part A provisions have been designed to be acceptably safe
- Arg. 3: SERA Part A provisions have been implemented completely and correctly
- Arg. 4: Transition from current state to Operations i.a.w SERA part A will be acceptably safe
- Arg. 5: Operations conducted i.a.w. SERA Part A will be shown to be acceptably safe

4.3.3.3 Summary Result for the Specification Phase

Different safety assurance activities relative to the specification phase were carried out to support Argument 1 (“SERA Part A has been defined/specified to be acceptably safe”). The outcomes from the safety assurance are documented in paragraphs 4.3.3.3.1 to 4.3.3.3.5 below.

4.3.3.3.1 DESCRIPTION OF THE OPERATIONAL ENVIRONMENT

SERA Part A will be applied consistently in the controlled/uncontrolled airspace and on controlled/uncontrolled aerodrome of all Member States. SERA Part A is the transposition of the ICAO Annex 2 and is composed of General Rules, Visual Flight Rules (VFR) and Instrument Flight Rules (IFR).

4.3.3.3.2 EC REQUIREMENTS

EC requirements are expressed in the EC Mandate to EUROCONTROL and are relative to:

- the uniform application of the ICAO Rules of the Air, in association with the uniform application of European common differences to such ICAO standards
- increasing safety and
- minimising the inconvenience and risk of misunderstandings caused by varying sets of national rules of the air

4.3.3.3.3 USER REQUIREMENTS

- a) SERA Part A will be applicable to all GAT (General Air Traffic) flights operating over or manoeuvring within the territory of the Member States. The expected benefit for Air operators, in addition to efficiency, will be an increase in level of safety because a single rule will be applied across all of the E.U.
- b) SERA Part A is also applicable to operators of unmanned free balloons in order to minimise hazards to persons, property or aircraft flying in the unmanned free balloons vicinities. Safety is therefore the main driver for procedures associated to such operation.
- c) Finally SERA Part A is applicable to aerodrome operators for the signal aspect (e.g. procedures for the marshaller), the expected benefit for such procedures is safety related by virtue of provision of the necessary level of interoperability between flight crew and aerodrome ground personnel.

- d) It should be also noted that SERA Part A will impact ATS Units and their Competent Authorities as regards a certain number of SERA provisions (e.g. time, flight plan, ATC service,...), the expected benefit for such provisions is also safety by providing the necessary level of interoperability between flight crew and ATS.

4.3.3.3.4 SAFETY CRITERIA DETERMINATION

The safety criteria were already introduced in § 4.3.3.2 above and are defined by an increased level of safety for Air Operations compared to the current situation. The current situation for Rules of the Air in Europe is characterised by a widely varying set of national rules, which negates the original ICAO intention of increasing safety by way of a uniform application of the relevant ICAO provisions.

To increase the level of safety, the objective is to ensure uniform application of the standardised rules of the air, in association with the uniform application of European common differences to the ICAO Standards (SERA Part A). The first step is to specify properly what should be SERA Part A provisions based on this safety criteria. This step is described in the following paragraph.

4.3.3.3.5 SERA PART A SPECIFICATION

The Specification of SERA Part A, which will be the driver to develop (design) properly SERA Part A provisions, is supported by:

- the description of the operational environment by describing the current situation associated to the application of local Rules of the Air (RoA),
- the consideration of EC requirements described above and,
- the consideration of Users requirements described above

This specification process defines the necessary level of ICAO Annex 2 transposition, i.e.: the precise extent to which the existing ICAO Annex 2 provisions will be directly imported, so as to satisfy, from a safety point of view, the EC and Users' requirements given the targeted operational environment.

It has been determined through the above safety assurance activities (§4.3.3.3.1 to 4.3.3.3.4) that SERA Part A is specified (defined) to be acceptably safe if the following specifications are fulfilled:

SERA Spec1	ICAO Annex 2, complemented and amended by common European differences, shall form SERA Part A, taking into account the current EU Member States' notified differences.
SERA Spec2	SERA Part A shall take into account EU Member States aviation experience (incident/accident) relative to their already promulgated RoA.
SERA Spec3	SERA Part A provisions shall be consistent with future FAB implementation
SERA Spec4	SERA Part A provisions (in particular ICAO Annex 2 amended provisions) shall minimise the risk of different interpretation.
SERA Spec5	A rule exemption to a SERA Part A provision shall be allowed only on the basis of considerations of its assessed relevance
SERA Spec6	Alternative procedure (i.e.: flexibility.) to a SERA Part A provision shall only be allowed if duly justified.
SERA Spec7	Any SERA Part A provision addressing risks inherent to aviation (e.g. CFIT, Mid Air Collision, Taxiway collision, etc...) shall be considered as a safety requirement during the design phase.

4.3.3.4 Summary Result for the Design Phase

Different safety assurance activities relative to the design phase were carried out to support Argument 2 ("SERA Part A provision has been designed to be acceptably safe"). The basic intent is to design SERA Part A provisions in accordance with above described SERA Specifications (SERA Spec 1 to 7).

4.3.3.4.1 FUNCTIONAL DESIGN

Safety functions associated to airspace and aerodrome operations in accordance with SERA Part A have been identified by building Functional Models from the specification phase. Two models have been built, one for the airspace operation and another one for the aerodrome operation.

A certain number of Safety Issues have been determined during this design activity (Safety Issues 1 to 3), they are all relative to the necessity of having adequate regulations in place for procedures outside the scope of SERA Part A to reach an acceptable level of safety and interoperability.

Safety Issue 1	Adequate airspace regulation shall address air traffic services impacted by SERA Part A provisions so as to reach an acceptable level of safety.
Safety Issue 2	Adequate regulation shall address rescue and fire fighting services impacted by the SERA Part A “signal” provisions to reach an acceptable level of safety.
Safety Issue3	Adequate regulation shall address the organisations responsible for marshalling and parking the aircraft, impacted by the SERA Part A “signal” provisions, to reach an acceptable level of safety.

Associated to Safety Issue 1, it is necessary to have a consistent controlled/uncontrolled airspace structure in Europe. Effectively, such airspace structure (including the airspace in the vicinity of aerodromes, e.g.: CTRs) in Europe is necessary to reach the maximum safety benefit associated to the implementation of standardised RoA. This point has to be considered by regulators (e.g. for FAB implementation) in order to have consistent airspace parameters/classes in Europe. Improvements in the area of uniform application of airspace classification (e.g. transition to two categories of airspace (e.g.: managed and unmanaged) with services tailored to the user’s specific capability levels) are described in the European ATM Master Plan.

4.3.3.4.2 LOGICAL DESIGN

Logical Models were built from the Functional Models described previously. The main intent of the logical modelling is to identify the different safety elements where Rules of the Air apply in order to derive Safety requirements associated to these elements. The logical design was supported by a certain number of activities described hereafter.

A logical Model was developed to characterise SERA Part A procedural aspects associated to controlled/uncontrolled airspace and aerodrome operations.

Another logical Model was developed to characterise SERA Part A procedural aspects associated to unmanned free balloons operation.

4.3.3.4.2.1 DESIGN OF SERA PART A PROVISIONS

The two Logical Models highlight respectively the central roles of the flight crew and of the operator of the unmanned free balloons.

Concerning the flight crew and the operator of the unmanned free balloons, it has been determined during the specification phase that all SERA Part A provisions are safety related because the objective is to address risks inherent to aviation (e.g. CFIT, Mid Air Collision, Taxiway collision, etc...).

This means, in accordance with SERA Spec7, that all SERA Part A provisions are considered as Safety Requirements. These provisions are defined in the draft SERA IR.

For traceability reasons, all SERA Part A provisions associated to flight crew are encapsulated under the umbrella of a single Safety Requirement called SR 1. Similarly all SERA Part A provisions associated to operation of unmanned free balloons are encapsulated under the umbrella of a single Safety Requirement called SR 2.

SR1	Provisions applicable to Flight Crew (FCRW) (described in the draft SERA IR with the exception of paragraph 3.1.9.) shall be applied.
SR2	Provisions applicable to Unmanned Free Balloon Operators (UFBO) (described in paragraph 3.1.9 of the draft SERA IR) shall be applied.

However, Logical Models also highlight that a certain number of “external” elements (outside of SERA Part A scope) shall be regulated to satisfy the defined safety criteria. This aspect is covered by Safety Requirements 3 to 7 described in paragraph 4.3.3.4.3 below. SR 3 applies to marshallers, SR 4 applies to the Intercepting Flight Crew, SR 5 and 6 apply to ATS Units and finally SR 7 as regards aerodrome emergency services. SR 3 to 7 shall be addressed outside the scope of SERA Part A. It shall be noted that these Safety Requirements are addressing and mitigating Safety Issues 1 to 3 generated during the functional design.

4.3.3.4.2.2 DESIGN CORRECTNESS

It has been determined that SERA Spec1 to 4 have been addressed satisfactorily when designing SERA Part A provision.

This has been determined on the basis that SERA provisions have been designed taking into account existing EU Member States’ notified differences, EU Member States’ RoA service experience (reported occurrences, as defined by EC Directive 2003/42, which are associated to the local application of the RoA provisions) and the targeted operational environment (e.g. FAB implementation). Furthermore a review was conducted to verify that the risk of misinterpretation of SERA Part A provisions have been reduced as far as reasonably practicable.

As regards the aforementioned EU Member States’ RoA service experience (incident/accident), it should be noted that, at this stage, no adverse in service experience reports (e.g. incident occurrences) associated with the application of existing national RoA have been identified. That is to say that no incident reports indicating potential safety issues associated with the application of ICAO Annex 2 in the E.U. have materialised.

Design correctness activities are supported by several evidences: Results of the SERA Task Force in 2007-2008 which issued two reports and results of the IRDG (IR Drafting Group) in 2009 which developed and reviewed SERA Part A provisions.

A safety impact assessment of the 14 proposed SERA Part A Common Differences has been carried out without identifying any safety issue. The outcome of the assessment can be found below:

- **Difference A2-01**

ICAO Annex 2 Chapter 3 3.2.2

New Provision. The Union regulation, paragraph 3.2.3.2, specifies:

“3.2.3.2 An aircraft that is aware that the manoeuvrability of another aircraft is impaired shall give way to that aircraft.”

a) A2-01 Description of the Difference

In 2008, the SERA Task Force analysed the differences between ICAO SARPs and national regulations/practises. The EC participants to the Task Force also carried out consultations with Member States to gain understanding as to why certain differences had been introduced. This analysis and consultation contributed to a determination of a minimum set of differences which can improve the efficiency and/or safety. This SERA Task Force activity determined that this additional avoidance of collision provision ("*An aircraft that is aware that the manoeuvrability of another aircraft is impaired shall give way to that aircraft*") has a safety benefit if introduced in the rule.

b) A2-01 Options for Addressing this Issue

Option a - Do nothing

Option b - Include in the rule this new provision coming from national regulations/practises

c) A2-01 Safety Impact Analysis

Option a) doesn't address the outcome of the SERA Task Force but is consistent with ICAO Annex 2 and is therefore considered to be safe.

Option b) adds a new rule for operators operating in States that have not notified this difference. This new provision improves the safety by preventing an aircraft with an impaired manoeuvrability to make an avoidance manoeuvre leading to a possible aircraft loss of control (e.g. stall condition).

If this provision is added to the rule, the risk of misinterpretation of this new provision by a pilot has been considered to be very low because the procedure applies only when the aircraft is aware of the adverse situation encountered by the other aircraft. This new provision could be addressed by crew training (See Safety Assumption#1²).

d) A2-01 Conclusion

Option b) was selected by the IR Drafting Group and is considered to be safe as explained above.

• **Difference A2-02**

ICAO Annex 2, 3.3.1.2 is replaced with Union regulation 3.3.1.2. The differences between this ICAO Standard and this Union regulation are as follows:

This ICAO Standard requires that a flight plan be submitted prior to operating any IFR flight within controlled or advisory airspace (airspace Classes A to F). The Union regulation expands the requirement to submit a flight plan prior to operating any IFR flight.

With regards to VFR flights planned to operate across international borders, the Union regulation (3.3.1.2 b) iv) differs from the ICAO Standard in Annex 2, 3.3.1.2 e) with the addition of the underlined text, as follows: "*planned to operate across international borders, unless otherwise prescribed by the States concerned.*"

Note: Union regulation 3.3.1.2 b) v) pertaining to the submission of VFR flight plans, which is also a difference from this ICAO Standard, reads as follows: "*v. planned to operate at night, in accordance with 4.3 a)*". This difference is addressed in **Difference A2-08** below.

a) A2-02 Description of the Difference

In 2008, the SERA Task Force analysed the differences between ICAO SARPs and national regulations/practises. The EC participants to the Task Force also carried out consultations with Member States to gain understanding as to why certain differences have been introduced. This analysis and consultation contributed to a determination of a minimum set of differences which can improve the efficiency and/or safety.

² **Safety Assumption1:** Flight crews shall be trained properly and fully knowledgeable on their relevant SERA part A safety provisions.

The SERA Task Force concluded that the requirement to submit a flight plan to any IFR flight has a positive effect (efficiency/safety) on the services provided by ATS Units to airspace users. In addition it simplifies the rule by having only one criterion for the submission of IFR flight plans.

b) A2-02 Options for Addressing this Issue

Option a - Do nothing

Option b - Modify the flight plan provision of the rule to indicate that a flight plan shall be submitted prior to operating any IFR flight.

c) A2-02 Safety Impact Analysis

Option a) doesn't address the outcome of the SERA Task Force but is consistent with ICAO Annex 2 and is therefore considered to be safe.

Option b) is modifying the rule for operators flying in States that have not notified ICAO of this difference. By submitting the flight plan for all IFR flights, the safety of air operation cannot be degraded and could only be improved by providing more flight data information to ATS unit.

The risk of misinterpretation of this amended provision by an aircraft operator has been considered to be very low because the procedure is clear and non ambiguous. It is however recommended that the Competent Authority considers crew training as a possible means to address more proactively this amended provision in order to prevent operators to forget to submit flight plan for every IFR flights (See Safety Assumption#1³).

Furthermore, ATS units should be prepared to receive flight plan submissions for every IFR flight. This aspect should be further addressed in SERA Parts B and C (See Safety Requirements SR 5⁴).

d) A2-02 Conclusion

Option b) was selected by the IR Drafting Group and is considered to be safe as explained above.

³ **Safety Assumption1:** Flight crews shall be trained properly and fully knowledgeable on their relevant SERA Part A safety provisions.

⁴ **SR5:** A Common set of rules applicable to ATS Unit and their competent Authorities for "Flight Plan" RoA procedural aspect shall be included in the relevant EC regulation.

- **Difference A2-03**

ICAO Annex 2 Chapter 3, 3.3.2

New Provision. The Union regulation, paragraph. 3.3.2.1.1, which is based on ICAO Annex 2, paragraph 3.3.2, Notes 1 and 2, specifies:

“3.3.2.1.1 For flight plans submitted during flight, the departure aerodrome provided shall be the location from which supplementary information concerning the flight may be obtained, if required. Additionally, the information to be provided in lieu of the estimated off-block time shall be the time over the first point of the route to which the flight plan relates.”

a) A2-03 Description of the Difference

ICAO Annex 2 § 3.3.2, Notes 1 and 2, have been merged to form SERA Part A § 3.3.2.1.1 because it was considered that there was an added value in elevating the Notes to form part of this regulation. Indeed this new paragraph clarifies information to be provided by the crew when a flight plan is submitted during the flight.

Furthermore, it should be highlighted that in accordance with the EC advice, notes which are purely explanatory and/or guidance material should not be included in the Rule.

b) A2-03 Options for Addressing this Issue

Option a - Not to include the two notes.

Option b - Merge the two ICAO notes to form a new SERA Part A provision.

c) A2-03 Safety Impact Analysis

Option a) is not satisfactory because uniformity with regards to flight plan submission during flight will not be guaranteed between Member States without providing any information in the rule.

Option b) is not modifying the content of the ICAO notes from a technical point of view. Furthermore, it leads to having a safe uniform provision addressing the information to be provided when a flight plan is submitted during the flight.

d) A2-03 Conclusion

Option b) was selected by the IR Drafting Group and is considered to be safe as explained above.

- **Difference A2-04**

New Provision. The Union regulation specifies:

“3.2.3.3.3.1 Gliders overtaking. A glider overtaking another glider may alter its course to the right or to the left.”

a) A2-04 Description of the Difference

This is an added provision addressing specifically the glider overtaking procedure. The overtaking procedure for other aircraft is not impacted at all.

This added provision is formalising best practises for a glider overtaking another glider. In such case the glider might alter its course to the right or to the left whereas without this new provision the glider would always alter its course to the right. For certain environmental and weather condition, it is safer for a glider to overtake another glider by altering its heading to the left (e.g. presence of terrain preventing to alter its heading to the right except by losing its safety margin as regards terrain).

b) A2-04 Options for Addressing this Issue

Option a - Do nothing

Option b - Authorise gliders to overtake other gliders to the left or to the right

c) A2-04 Safety Impact Analysis

Option a) is not reflecting gliders best practises and may lead to national variants. Furthermore a reduction of safety margins in certain circumstances (e.g. presence of high terrain, wind, glider manoeuvrability, ...) is possible if a glider is altering its heading to the right towards terrain. On the other hand, the overtaking provision remains basic and straightforward because always conducted by altering the heading to the right whatever the airspace user.

Option b) is reflecting Member States best practises for gliders and is considered to be safe. Furthermore, with this new provision and considering representative operational scenarios (e.g. multiple gliders flying in a mountainous area), it could be safer to overtake to the left.

The new provision will have an impact on glider's operations if the national regulation does not presently authorise overtaking 'to the left'. It is therefore important in such case that the applicable qualification and training aspects address this amended provision (Safety Assumption #1⁵).

In addition, it should be made clear that this new provision does not apply to any other airspace users (other than gliders).

d) A2-04 Conclusion

Option b) was selected and is considered to be safe as explained above.

- **Difference A2-05**

ICAO Annex 2 Chapter 3 paragraph 3.4

New Provision. The Union regulation, paragraph 3.3.4.1.1, which is based on ICAO Annex 2, paragraph 3.3.4, Note 1, specifies:

"3.3.4.1.1 Information submitted prior to departure regarding fuel endurance or total number of persons carried on board, if incorrect at time of departure, constitutes a significant change to the flight plan and as such shall be reported."

a) A2-05 Description of the Difference

ICAO Annex 2 § 3.3.4, Note 1 forms SERA Part A § 3.3.4.1.1 because it was considered that there was an added value in elevating the Note to form a part of this regulation.

Furthermore, it should be highlighted that in accordance with the EC advice, notes which are purely explanatory and/or guidance material should not be included in the Rule.

b) A2-05 Options for Addressing this Issue

Option a - Not to include the note

Option b - Consider the ICAO note as a new SERA Part A provision.

c) A2-05 Safety Impact Analysis

Option a) is not satisfactory because important information will not be included in the EU rule.

Option b) is not modifying the content of the ICAO note from a technical point of view. Furthermore, it leads to having a safe uniform provision addressing what is considered a significant change from a flight plan prospective.

d) A2-05 Conclusion

Option b) was selected by the IR Drafting Group and is considered to be safe as explained above.

⁵ **Safety Assumption1:** Flight crews shall be trained properly and fully knowledgeable on their relevant SERA part A safety provisions.

- **Difference A2-06**

ICAO Annex 2 Chapter 3, 3.6.1.1

New Provision. The Union regulation, paragraph 3.6.1.1.1, which is based on ICAO Annex 2, paragraph 3.6.1.1, Note 2, specifies:

“3.6.1.1.1 The pilot-in-command of an aircraft shall inform ATC if an air traffic control clearance is not satisfactory. In such cases, ATC will issue an amended clearance, if practicable.”

a) A2-06 Description of the Difference

ICAO Annex 2 § 3.6.1.1, Note 2, forms SERA Part A § 3.6.1.1.1 because it was considered that there was an added value in elevating the Note to form part of this regulation.

Furthermore, it should be highlighted that in accordance with the EC advice, notes which are purely explanatory and/or guidance material should not be included in the Rule.

b) A2-06 Options for Addressing this Issue

Option a - Not to include the note

Option b - Consider the ICAO note as a new SERA Part A provision.

c) A2-06 Safety Impact Analysis

Option a) is not satisfactory because important information will not be included in the EU rule.

Option b) is not modifying the content of the ICAO note from a technical point of view. Furthermore, it leads to having a safe uniform provision addressing the rejection of an ATC clearance by the pilot.

d) A2-06 Conclusion

Option b) was selected by the IR Drafting Group and is considered to be safe as explained above.

- **Difference A2-07**

ICAO Annex 2 Chapter 3.6.5.1

New Provision. The Union regulation, paragraph 3.6.5.1.1, which is based on ICAO Annex 2, paragraph 3.6.5.1, Note 2, specifies:

“3.6.5.1.1 The requirement for an aircraft to maintain an air-ground voice communication watch shall remain in effect when CPDLC has been established.”

a) A2-07 Description of the Difference

ICAO Annex 2 § 3.6.5.1, Note 2, forms SERA Part A § 3.6.5.1.1 because it was considered that there was an added value in elevating the Note to form part of this regulation.

Furthermore, it should be highlighted that in accordance with the EC advice, notes which are purely explanatory and/or guidance material should not be included in the Rule.

b) A2-07 Options for Addressing this Issue

Option a - Not to include the note

Option b - Consider the ICAO note as a new SERA Part A provision.

c) A2-07 Safety Impact Analysis

Option a) is not satisfactorily because important information will not be included in the EU rule.

Option b) is not modifying the content of the ICAO note from a technical point of view. Furthermore, it leads to having a safe uniform provision addressing the necessity of maintaining

voice communication watch when CPDLC is used (Voice com is considered as the CPDLC safety backup communication means).

d) A2-07 Conclusion

Option b) was selected by the IR Drafting Group and is considered to be safe as explained above.

• **Difference A2-08**

ICAO Annex 2 Chapter 4, 4.3

ICAO Annex 2, 4.3, is replaced with Union Regulation 4.3. The difference is that the Union regulation adds requirements under which VFR flights at night may be permitted, as follows:

“4.3 When so prescribed by the competent authority, VFR flights at night may be permitted under the following conditions:

- a) if leaving the vicinity of an aerodrome, a flight plan shall be submitted;*
- b) flights shall establish and maintain two-way radio communication on the appropriate ATS communication channel, when available;*
- c) the VMC visibility and distance from cloud minima as specified in Table 3-2 shall apply except that:*
 - i) the ceiling shall not be less than 450 m (1 500 ft);*
 - ii) except as specified in 4.3.d), the reduced flight visibility provisions specified in Table 3-2 a) and b) shall not apply,*
 - iii) in airspace classes B, C, D, E, F and G, at and below 900 m (3000 ft) above MSL or 300 m (1000 ft) above terrain, whichever is the higher, the pilot shall maintain continuous sight of the surface;*
 - iv) for helicopters in airspace classes F and G, flight visibility shall not be less than 3 km, provided that the pilot maintains continuous sight of the surface and if manoeuvred at a speed that will give adequate opportunity to observe other traffic or obstacles in time to avoid collision; and*
 - v) for mountainous terrain, higher VMC visibility and distance from cloud minima may be prescribed.*
- d) ceiling, visibility and distance from cloud minima lower than those specified in 4.3 c) above may be permitted for helicopters in special cases, such as medical flights, search and rescue operations and fire-fighting.”*
- e) except when necessary for take-off or landing, or except when specifically authorised by the competent authority, a VFR flight at night shall be flown at a level which is not below the minimum flight altitude established by the State whose territory is overflown, or, where no such minimum flight altitude has been established:*
 - i) over high terrain or in mountainous areas, at a level which is at least 600 m (2 000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft;*
 - ii) elsewhere than as specified in i), at a level which is at least 300 m (1 000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft.*

a) A2-08 Description of the Difference

ICAO Annex 2, Chapter 4, VFR paragraph 4.3⁶ already introduced the notion of VFR flights at night but leave the determination of the associated flight conditions (Visibility/distance from cloud) to the “appropriate ATS Authority”. In Europe several States have already authorised VFR flights at night for a number of years.

The IR Drafting Group determined that “uniform” requirements should be defined under which VFR flights at night might be permitted by a State.

b) A2-08 Options for Addressing this Issue

Option a - Do nothing

Option b – Do not authorise VFR flights at night

Option c - Authorise VFR flights at night by prescribing the minimum requirements for such operation.

c) A2-08 Safety Impact Analysis

Option a) is not satisfactory because it leaves the choice to the State to determine its own requirements for VFR flights at night which is against the necessity of having a uniform level of safety within the EU.

Option b) could be considered safe because operations would not be authorised at all. However for States where such operations have been already authorised, this would be a regression and possibly a safety issue because pilots are used to operate VFR flights at night for many years and may be tempted to continue with the former national rules.

Option c) modifies the rules for operations in States where VFR flights at night are authorised, while still allowing States not to permit VFR flights at night.

The new provision is providing requirements for the following aspects: flight plan, radio communication, VMC visibility and distance from cloud minima and minimum flight altitude. These new provisions are derived from works (airspace classification toolbox) collecting experience and general practices of European States. The prescribed requirements are “designed to be safe”, for instance when a State has not established a minimum flight altitude, the minimum altitude for the flight shall not be less than 2000 ft above the highest obstacle in mountainous areas or 1000ft above the highest obstacle elsewhere.

The new provision might have an impact on operators already authorised to conduct VFR flights at night by prescribing slightly different requirements for such operations. Safety of VFR flights at night considering the prescribed requirement is mainly supported by properly qualified and trained pilots. It is however necessary that Member States consider crew qualification and training as the means to address this provision (Safety Assumption #1⁷).

Effectively, factors in night accidents often include errors in planning, decision-making, and risk management. Fatigue can contribute to such errors. Its effects include: “Channelized” attention; poor judgment; slow reaction time; inattention and ease of distraction. Other errors common in night VFR accidents include: lack of proper equipment (flashlights, batteries); loss of situational awareness; problems with night vision; inadequate traffic scan and vulnerability to optical illusions.

VFR night training an/or proficiency session is therefore necessary to support such operation and the Authority might require pilots to hold a rating or a license allowing them to fly at night in the respective Member State. This type of requirement corresponds to the objective of article 7 of the SERA IR.

It should be noted that, in addition to the requirements of SERA Part A, aircraft flown under VFR at night require additional equipment which must be addressed by the relevant regulation (e.g.

⁶ “4.3 VFR flights between sunset and sunrise, or such other period between sunset and sunrise as may be prescribed by the appropriate ATS authority, shall be operated in accordance with the conditions prescribed by such authority.”

⁷ **Safety Assumption1:** Flight crews shall be trained properly and fully knowledgeable on their relevant SERA part A safety provisions.

National OPS regulation) such as the illumination for all instruments and equipment essential for the safe operation of the aircraft; lights in all passenger compartments; an electric torch for each crew member,...

d) A2-08 Conclusion

Option c) was selected by the IR Drafting Group and is considered to be safe as explained above.

- **Difference A2-09**

ICAO Annex 2 Chapter 4, 4.6

ICAO Annex 2, 4.6 is replaced with Union Regulation 4.6, introducing the obstacle clearance criteria in 4.6 b), as follows:

“4.6 Except when necessary for take-off or landing, or except by permission from the competent authority, a VFR flight shall not be flown:

- a) over the congested areas of cities, towns or settlements or over an open-air assembly of persons at a height less than 300 m (1 000 ft) above the highest obstacle within a radius of 600 m from the aircraft;*
- b) elsewhere than as specified in 4.6 a), at a height less than 150 m (500 ft) above the ground or water, **or 150 m (500 ft) above the highest obstacle within a radius of 150 m (500 ft) from the aircraft.**”*

a) A2-09 Description of the Difference

Clearance against the highest obstacle is added to the provision 4.6.b) to unambiguously indicate that the 150 m (500 ft) clearance is against any kind of obstacle (natural, construction,...).

b) A2-09 Options for Addressing this Issue

Option a – Do nothing (only referring to ground or water)

Option b - modify the rule to clarify that a VFR flight shall not be flown at a height less than 500ft above the highest obstacle in the aircraft vicinity.

c) A2-09 Safety Impact Analysis

Option a) With the present provision, it might be interpreted that the 150 m (500 ft) clearance is not applicable for flights conducted close to obstacles (e.g. tower, wind-farm, buildings,...) because ground and water only are mentioned.

Option b) modifies the rule to clarify that the highest obstacle in the vicinity of the aircraft shall be considered and that such clearance shall be 150 m (500 ft) within a radius of 150 m (500 ft) from the aircraft. This added provision will have a net safety benefit by clarifying the safety margin applicable to the highest obstacles.

d) A2-09 Conclusion

Option b) was selected and is considered to be safe as explained above.

- **Difference A2-10**

ICAO Annex 2 Appendix 1 § 1.

New Provision. The Union regulation, Appendix 1, paragraph 1.1.1, which is based on ICAO Annex 2, Appendix 1, 1. Note 1, specifies:

“1.1.1 Notwithstanding the provisions in 1.2 and 1.3 below, an aircraft in distress shall use any means at its disposal to attract attention, make known its position and obtain help.”

a) A2-10 Description of the Difference

ICAO Annex 2 Appendix 1 § 1, Note 1, forms SERA Part A Appendix 1 § 1.1.1 because it was considered that there was an added value in elevating the Note to form part of this regulation.

Furthermore, it should be highlighted that in accordance with the EC advice, notes which are purely explanatory and/or guidance material should not be included in the Rule.

b) A2-10 Options for Addressing this Issue

Option a - Not to include the note

Option b - Consider the ICAO note as a new SERA Part A provision.

c) A2-10 Safety Impact Analysis

Option a) is not satisfactory because important information will not be included in the EU rule.

Option b) is not modifying the content of the ICAO note from a technical point of view. Furthermore, it leads to having a safe uniform provision addressing the distress and emergency situation of an aircraft.

d) A2-10 Conclusion

Option b) was selected by the IR Drafting Group and is considered to be safe as explained above.

• **Difference A2-11**

ICAO Annex 2 Appendix 1 § 5.1 Note 1

New Provision. The Union regulation, Appendix 1, paragraph 5.1.1, which is based on ICAO Annex 2, Appendix 1, 5.1, Note 1, specifies:

“Appendix 1, 5.1.1 The signals for use by the signalman/marshaller, with hands illuminated as necessary to facilitate observation by the pilot, and facing the aircraft in a position shall be:

- a) *for fixed-wing aircraft, on left side of aircraft, where best seen by the pilot; and*
- b) *for helicopters, where the signalman/marshaller can best be seen by the pilot.”*

a) A2-11 Description of the Difference

ICAO Annex 2 Appendix 1 § 5.1, Note 1 forms SERA Part A Appendix 1 § 5.1.1 because it was considered that there was an added value in elevating the Note to form part of this regulation.

Furthermore, it should be highlighted that in accordance with the EC advice, notes which are purely explanatory and/or guidance material should not be included in the Rule.

b) A2-11 Options for Addressing this Issue

Option a - Not to include the note

Option b - Consider the ICAO note as a new SERA Part A provision.

c) A2-11 Safety Impact Analysis

Option a) is not satisfactory because important information will not be included in the EU rule.

Option b) is not modifying the content of the ICAO note from a technical point of view. Furthermore, it leads to having a safe uniform provision addressing the best location of the marshaller when parking a fixed wing aircraft or helicopter.

d) A2-11 Conclusion

Option b) was selected by the IR Drafting Group and is considered to be safe as explained above.

- **Difference A2-12**

ICAO Annex 2 Appendix 1 § 5.2 Note 1

New Provision. The Union regulation, Appendix 1, paragraph 5.2.1, which is based on ICAO Annex 2, Appendix 1, 5.2, Note 1, specifies:

“Appendix 1, 5.2.1 These signals shall be used by a pilot in the cockpit with hands plainly visible to the signalman/marshaller, and illuminated as necessary to facilitate observation by the signalman/marshaller.”

a) A2-12 Description of the Difference

ICAO Annex 2 Appendix 1 § 5.2, Note 1 forms SERA Part A Appendix 1 § 5.2.1 because it has been considered that there was an added value in elevating the Note to form a part of this regulation.

Furthermore, it should be highlighted that in accordance with the EC advice, notes which are purely explanatory and/or guidance material should not be included in the Rule.

b) A2-12 Options for Addressing this Issue

Option a - Not to include the note

Option b - Consider the ICAO note as a new SERA Part A provision.

c) A2-12 Safety Impact Analysis

Option a) is not satisfactory because important information will not be included in the EU rule.

Option b) is not modifying the content of the ICAO note from a technical point of view. Furthermore, it leads to having a safe uniform provision addressing the best way to provide signal from the aircraft to the marshaller on the ground.

d) A2-12 Conclusion

Option b) was selected by the IR Drafting Group and is considered to be safe as explained above.

- **Difference A2-13**

ICAO Annex 2 Appendix 4 § 5.1.2 j)

New Provision. The Union regulation, Appendix 3, paragraph 5.1.2 j), 2nd sentence, which is based on ICAO Annex 2, Appendix 4, 5.1.2 j), Note, specifies:

“Appendix 3, 5.1.2 j) If the operation consists of continuous launchings, the time to be included shall be the estimated time at which the first and the last in the series will reach the appropriate level (e.g. 122136Z–130330Z);”

a) A2-13 Description of the Difference

ICAO Annex 2 Appendix 4 § 5.1.2.j Note forms the second sentence of the SERA Part A Appendix 3 § 5.1.2.j because it was considered that there was an added value in elevating the ICAO Note to form part of this regulation.

Furthermore, it should be highlighted that in accordance with the EC advice, notes which are purely explanatory and/or guidance material should not be included in the Rule.

b) A2-13 Options for Addressing this Issue

Option a - Not to include the note

Option b - Consider the ICAO note as a new SERA Part A provision.

c) A2-13 Safety Impact Analysis

Option a) is not satisfactory because important information will not be included in the EU rule.

Option b) is not modifying the content of the ICAO note from a technical point of view. Furthermore, it leads to having a safe uniform provision addressing the continuous launching of unmanned free balloons within a time window.

d) A2-13 Conclusion

Option b) was selected by the IR Drafting Group and is considered to be safe as explained above.

• **Difference A2-14**

ICAO Annex 2 Appendix 4 5.1.2 k)

New Provision. The Union regulation, Appendix 3, paragraph 5.1.2 k), 3rd and 4th sentences, which are based on ICAO Annex 2, Appendix 4, 5.1.2 k), Note, specifies:

“Appendix 3, 5.1.2 k) If there is to be more than one location of impact/recovery, each location shall be listed together with the appropriate estimated time of impact. If there is to be a series of continuous impacts, the time to be included shall be the estimated time of the first and the last in the series (e.g. 070330Z–072300Z).”

a) A2-14 Description of the Difference

ICAO Annex 2 Appendix 4 § 5.1.2.k) Note forms the third and fourth sentences of the SERA Part A Appendix 3 § 5.1.2.k because it was considered that there was an added value in elevating the ICAO Note to form part of this regulation.

Furthermore, it should be highlighted that in accordance with the EC advice, notes which are purely explanatory and/or guidance material should not be included in the Rule.

b) A2-14 Options for Addressing this Issue

Option a - Not to include the note

Option b - Consider the ICAO note as a new SERA Part A provision.

c) A2-14 Safety Impact Analysis

Option a) is not satisfactory because important information will not be included in the EU rule.

Option b) is not modifying the content of the ICAO note from a technical point of view. Furthermore, it leads to having a safe uniform provision addressing the multiple unmanned free balloons impact locations and their associated time window.

d) A2-14 Conclusion

Option b) was selected by the IR Drafting Group and is considered to be safe as explained above.

4.3.3.4.2.3 DESIGN ROBUSTNESS

It has been determined that SERA Spec 5 (Rule exemption) and SERA Spec 6 (Rule flexibility) have been addressed satisfactorily. For SERA Spec 5, no rule exemption to SERA Part A provisions is authorised. This aspect shall be considered during the operation phase.

For SERA Spec 6, it has been reviewed that any flexibility associated to a SERA Part A provision (e.g. *procedures using terminology like “Unless otherwise authorised...”, “Except when necessary...”*) does not undermine “high” and “uniform” levels of safety. It has been verified that all introduced flexibilities are necessary to maintain an efficient level of performance for air operations.

4.3.3.4.2.4 DESIGN INTEGRITY

For each SERA Part A provisions the following elements have been determined:

- generated hazards (failure)
- generated hazard cause (e.g. element of the logical design)
- consequence of the occurrence of the generated hazards

Because Rules of the Air are high level safety related procedures, all Hazards are characterised by a failure to adhere to a particular SERA Part A provision. The consequence of the occurrence of such generated hazard will be to significantly reduce the safety of the operations (e.g. It could lead to CFIT, Mid-Air Collision, Taxiway Collision).

The identified generated hazard applicable to all SERA Part A provision is associated to the “failure to respect the procedure” and generated hazard causes are the Flight Crew, the Unmanned Free Balloon Operator or the Marshaller. Adherence to SERA Part A provisions is therefore a key element which is associated to Human Factor aspects.

Because it is not within the scope of SERA Part A to address the training and the qualification aspect associated to the different actors, these aspects have been captured through several safety assumptions (Safety Assumptions 1 to 4) in order to re-enforce the importance of adhering properly to the relevant RoA.

Ref	Title	How it is processed in the draft Implementing Rule
Safety Assumption1	Flight crews are properly trained and are fully knowledgeable on the relevant SERA Part A provisions, both existing and as amended	Addressed A2, Para. 2.3.2 and by SERA IR Part A, Para. 2.3.2 and by EC Reg 859/2008
Safety Assumption2	Unmanned free balloon operators are properly trained and are fully knowledgeable on the relevant SERA Part A provisions, both existing and as amended	Addressed by national rules based on A2 Rule
Safety Assumption3	Marshalls are properly trained and are fully knowledgeable on the relevant SERA Part A provisions, both existing and as amended	Already addressed by SR 3
Safety Assumption4	Intercepting Flight Crew, Fire fighter, Aerodrome operator and Projectile operator are properly trained and are fully knowledgeable on the relevant SERA Part A provisions, both existing and as amended	Already addressed by SRs 4,5,6 and 7

4.3.3.4.2.5 SAFETY REQUIREMENTS ACHIEVABILITY

Because most of the SERA Part A provisions are human procedures, they are relying on the integrity of human tasks and procedures, it is very difficult (not to say impossible) to show in a conclusive way that such procedures will be satisfied during actual operation. Since the Evidence for safety requirements associated to people (human) is indirect, conclusions regarding Safety Requirements satisfaction shall be supported with Evidence that the Safety Requirements are, at least, capable of being satisfied by Human (e.g pilot, balloon air operator, intercepting flight crew, fire-fighter and marshaller).

This point is covered by Safety Assumptions 1 to 4 (described in paragraph 4.3.3.4.2.4) addressing training and qualification aspects of the different “actors”.

For the different actors, training and qualification regulation shall be in place. Such regulation is either national or European. Examples may be considered like:

- Flight Crew (Safety assumption 1): The aircraft operator should comply with its national (for general aviation) or Union rules (for air transport e.g. EU-OPS) and be approved by the competent authority.
- Unmanned free balloon operator (Safety assumption 2): The unmanned free balloon operator should comply with its national rule and with the relevant part of the SERA provisions.
- Marshaller (Safety assumption 3): The marshaller should comply with the training/qualification section of the SERA provision and be approved by the competent authority.
- Intercepting flight crew and projectile operator (Safety Assumption 4): They are regulated through the applicable military regulation framework of the considered Member State.
- Firefighter (Safety Assumption 4): The firefighter should comply with the relevant regulation (based on ICAO Annex 14) and be approved by the competent authority.

4.3.3.4.2.6 SAFETY REQUIREMENT CONSISTENCY WITH SERA PART A IR OBJECTIVE

It has been determined that IR safety Requirements issued during the design phase are consistent with the IR Mandate objective.

However, one issue (Safety Issue 4) associated to marshaller procedures did arise, namely:

Safety Issue 4	It must be clarified if marshaller’s procedures are completely regulated by SERA Part A or if additional regulation is necessary
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This safety issue was solved by confirming/clarifying that marshaller activities are indeed regulated through SERA Part A, even if SERA Part A applicability is towards aircraft. Effectively Member States shall ensure compliance with the common rules and provisions set out in the SERA Part A, including marshaller's responsibilities, training and qualification. Therefore SR 3 which was considered initially outside the SERA Part A scope is in fact considered to be inside the SERA Part A scope. In addition and consequently Safety Assumption 3 is also de-facto endorsed by SR 3.

4.3.3.4.3 OVERVIEW OF THE SERA SAFETY REQUIREMENTS

It has been determined through the above safety assurance activities (§ 4.3.3.4.1 to 4.3.3.4.2) that SERA Part A is designed to be acceptably safe if following safety requirements are satisfactorily implemented:

SR1	Provisions applicable to Flight Crew (FCRW) (described in Part A of the draft SERA IR with the exception of paragraph 3.1.9.) shall be applied
SR2	Provisions applicable to Unmanned Free Balloon Operators (UFBO) (described in paragraph 3.1.9 of Part A of the draft SERA IR) shall be applied.
SR3	Provisions applicable to Marshallers (described in paragraphs 3.4.3, 3.4.4, 3.4.5 and 3.4.6. of Part A of the draft SERA IR) shall be applied.

Furthermore, Safety requirements (SR4 to SR 7), relative to “external” elements, shall be addressed outside the scope of SERA Part A. At that stage, it is necessary to determine the process put in place to address those safety requirements (e.g. through SERA Part B, C, etc....).

SR4	A Common set of rules applicable to ATS for the “ATC service” and “Signal” RoA procedural aspects shall be included in the relevant EC regulation.
SR5	A Common set of rules applicable to ATS for “Flight Plan” RoA procedural aspects shall be included in the relevant EC regulation.
SR6	A Common set of rules applicable to aerodrome emergency services for the “Signal” RoA procedural aspects shall be included in the relevant EC regulation.
SR7:	Rules applicable to the Intercepting Flight Crew and the Projectile operator ⁸ for the “Signal” procedural aspect shall be adopted by the Member States.

4.3.3.4.4 DESIGN COMPLETENESS

It has been determined that design of SERA Part A provision is complete because several reviews have been carried out during IRDG meetings to check this completeness as it is indicated by the relevant minutes of these meetings. Regarding the trustworthiness of this group, it should be emphasised that IRDG was composed of different participants from EASA, the European Commission, ICAO and Eurocontrol with a good knowledge of ICAO Annex 2 Rules of the Air.

4.3.3.5 Summary Result for the Implementation Phase

Different safety assurance activities relative to the implementation phase were carried out to support Argument 3 (“SERA Part A provision has been implemented to be acceptably safe”). Due to the specific nature of SERA Part A, the refinement stage between the design phase and the implementation phase doesn’t exist. It means that SERA Part A provisions (SR1, SR2 and SR3) directly apply in the EU Member States without any possible adaptation/modification. This aspect has been captured by one safety requirement as follows.

SR8	SERA Part A provisions (SR1, SR2 and SR3) shall be implemented directly in all EU Member States without any modification beyond the flexibility inherent and tolerated within the provisions.
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4.3.3.6 Summary Result for the Transition Phase

Partial safety assurance activities relative to the transition phase were carried out to support Argument 4 (“Transition from current state to Air Operation i.a.w SERA Part A will be acceptably safe”).

During the specification phase, one point relative to the transition from the application of the local RoA to the application of SERA Part A was raised. It has been decided that transition between local RoA and SERA Part A shall be managed at national level to prevent any negative safety impact, within a time limit set by the law. A national process has to be put in place to manage this transition which shall be commensurate with the degree of differences between the local RoA and SERA.

Based on this point, each EU Member State shall first determine if their current RoA differs from the SERA Part A to be implemented (SR8). If differences exist, a local safety assessment shall be conducted. This aspect has been captured by two safety requirements:

⁸ People responsible to warn an unauthorised aircraft flying in, or about to enter a Restricted, Prohibited or Danger area by discharging a series of projectiles from the ground.

SR9	When difference exists between local RoA and SERA Part A, local safety assessment shall be conducted to identify possible hazards associated to the “switchover” from the current local RoA to SERA Part A.
SR10	When difference exists between local RoA and SERA part A and if measures shall be put in place to control/mitigate the associated risks during a transition period, such transition period shall be limited in time and determined by law in order to deliver uniform level of safety within an acceptable timeframe in Europe.

4.3.3.7 Summary Result for the Operation Phase

Partial safety assurance activities relative to the operation phase were carried out to support Argument 5 (“Air Operation conducted i.a.w. SERA Part A will be shown to be acceptably safe”).

A “No Rule exemption policy” was identified during the design phase therefore a dedicated safety requirement for the operation phase was issued accordingly to strengthen this aspect.

SR11	No rule exemption for any SERA part A provision is permitted.
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During the operation, the responsibility for controlling changes to SERA Part A, in particular for considering future ICAO Annex 2 amendments, shall be established. A pan-European process has to be put in place to maintain SERA Part A consistent with future ICAO changes.

SR12	A SERA part A maintenance process shall be put in place to consider future ICAO amendments.
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4.3.3.8 Conclusion Associated to the Different Development Phases

The safety impact assessment process was carried out during the different safety lifecycle phase of the transposition of ICAO Annex 2 into SERA Part A (e.g. specification, design, implementation, transition and operation).

4.3.3.8.1 During the specification phase, it has been determined what is considered as an “acceptably safe” SERA Part A provisions. The carried out safety assurance activities resulted in a set of high level SERA safety specifications (Seven SERA Spec) to be respected for the design phase in order to develop properly SERA Part A provisions.

4.3.3.8.2 During the design phase, different SERA safety requirements have been determined.

SERA Safety Requirements are twofold:

- SERA Part A provisions (draft SERA IR) which are considered as Safety requirements for the flight crew, the unmanned free balloon operator and the marshaller. For traceability reason, SR1 is encompassing SERA Part A provisions for flight crew procedures, SR2 for operators of unmanned free balloons and SR 03 for Marshalls.
- Safety Requirements (SR4 to SR7) associated to elements outside of the SERA Part A scope. These elements (e.g. ATS Unit, Intercepting Flight crew, Fire fighter...) shall be regulated outside of the scope of SERA Part A to reach the acceptably safe criteria.

In addition, three Safety Assumptions (Safety Assumptions 1,2 and 4) associated to the Human Factor aspect (e.g. adherence to promulgated procedures) and more precisely the training and qualification aspect have been captured and shall be addressed outside the scope of SERA Part A. Safety Assumption 3 is indeed endorsed by SR 3 (marshaller's procedure, training and qualification).

It should be noted that all Safety Issues have been addressed and closed during the design phase.

- 4.3.3.8.3 During the safety assessment of the implementation phase, it has been shown that the implementation phase shall consist of a direct implementation of SERA Part A (designed) provisions without any possible adaptation/modification by a Member State. Therefore, one safety requirement has been identified (SR8) indicating that SERA Part A provisions shall be implemented directly by EU Member States without any modification.
- 4.3.3.8.4 During the safety assessment of the transition phase, two safety requirements have been identified (SR09 and SR10) indicating that when a difference exists between local RoA and SERA Part A, a local safety assessment shall be conducted.
- 4.3.3.8.5 During the safety assessment of the operation phase, two safety requirements have been identified (SR 11 and SR 12) indicating respectively that no rule exemption is permitted and that a "maintenance" process shall be put in place to consider future ICAO Annex 2 amendment into SERA Part A provisions.
- 4.3.3.8.6 Thanks to this well structured safety assurance process addressing the different safety lifecycle phase, it has been shown that **Air operation in accordance with SERA Part A will be acceptably safe** when:
- Safety requirements fully applicable to SERA Part A (SRs 1, 2, 3, 8, 9, 10, 11 and 12) will be implemented and operational. SR 1, 2 and 3 are encompassing all procedures of the SERA Part A provisions (draft SERA IR) which are applicable to flight crew, unmanned free balloon operator and marshaller.
 - Safety requirements (SR 4 to SR 7) associated to elements outside of the SERA Part A scope will be considered. These elements (e.g. ATS Unit, Intercepting flight crew, Fire fighter...) have to be regulated outside the scope of SERA Part A. At that stage it is necessary to define how they will be regulated (e.g. SERA Part B, SERA Part C or others EC regulations) and to confirm that application of current regulation for these elements is acceptable.

The following table shows how the results of the safety assessment have been addressed by the SERA IR development:

Ref	Title	How it is processed in the draft Implementing Rule
SR1	Provisions applicable to Flight Crew (FCRW) (described in the draft SERA IR with the exception of paragraph 3.1.9) shall be applied.	Included in SERA Part A except paragraphs 3.1.9, 3.4.3, 3.4.4, 3.4.5 and 3.4.6.
SR2	Provisions applicable to Unmanned Free Balloon Operators (UFBO) (described in paragraph 3.1.9 of of the draft SERA IR) shall be applied.	Included in SERA Part A paragraph 3.1.9. and in the Supplement to the Annex to the SERA IR
SR3	Provisions applicable to Marshallers (described in paragraphs 3.4.3, 3.4.4, 3.4.5 and 3.4.6. of the draft SERA IR) shall be applied.	Included in SERA Part A paragraphs 3.4.3, 3.4.4, 3.4.5 and 3.4.6. This SR is associated to Safety Issue 3, Safety Issue 4 and Safety Assumption 3. It was considered initially that marshaller's activities have to be considered outside SERA Part A scope whereas now it has been clarified that SERA Part A relevant procedures are fully applicable to Marshallers.
SR4	A Common set of rules applicable to ATS for the "ATC service" and "Signal" RoA procedural aspects shall be included in the relevant EC regulation.	Not included in SERA Part A but must be addressed by SERA Part B and SERA Part C and/or other regulations
SR5	A Common set of rules applicable to ATS for "Flight Plan" RoA procedural aspects shall be included in the relevant EC regulation.	Not included in SERA Part A but must be addressed by SERA Part B and SERA Part C and/or other regulations
SR6	A Common set of rules applicable to aerodrome emergency services for the "Signal" RoA procedural aspects shall be included in the relevant EC regulation.	Not included in SERA Part A but must be addressed by SERA Part B and/or SERA Part C and/or other regulations
SR7	Rules applicable to the Intercepting Flight Crew and the Projectile operator for the "Signal" procedural aspect shall be adopted by the Member States.	Not included in SERA Part A but addressed by Article 7 ("Transitional measures") of the draft SERA IR
SR8	SERA Part A provisions (SR1, SR2 and SR3) shall be implemented directly in all EU Member States without any modification, beyond the flexibility inherent and tolerated within the provisions.	Not included in SERA Part A but addressed by Article 3 ("Compliance") of the enacting terms of the draft SERA IR

Ref	Title	How it is processed in the draft Implementing Rule
SR9	When differences exist between local RoA and SERA Part A, local safety assessment shall be conducted to identify hazards and mitigate risks associated to the “switchover” from the current local RoA to SERA Part A.	Not included in SERA Part A but addressed by Article 8 (“Safety requirements”) of the draft SERA IR
SR10	When differences exist between local RoA and SERA Part A and if measures shall be put in place to control/mitigate the associated risks during a transition period, such transition period shall be limited in time and determined by law in order to deliver uniform level of safety within an acceptable timeframe in Europe.	Not included in SERA Part A but addressed by Articles 3 (“Compliance”) and 10 (“Entry into Force”) of the enacting terms of the draft SERA IR
SR11	No rule exemption for any SERA Part A provision is permitted.	Not included in SERA Part A but addressed by Article 10 (“Entry Into force”) of the draft SERA IR
SR12	A SERA Part A maintenance process shall be put in place to consider future ICAO amendments.	Not included in SERA Part A but addressed by Article 6 (“Amendments to the Annex”) of the draft SERA IR

Ref	Title	How it is processed in the draft Implementing Rule
Safety Assumption1	Flight crews are properly trained and are fully knowledgeable on the relevant SERA Part A provisions, both existing and as amended	Addressed A2, Para. 2.3.2 and by SERA IR Part A, Para. 2.3.2 and by EC Reg 859/2008
Safety Assumption2	Unmanned free balloon operators are properly trained and are fully knowledgeable on the relevant SERA Part A provisions, both existing and as amended	Addressed by national rules based on A2 Rule
Safety Assumption3	Marshallers are properly trained and are fully knowledgeable on the relevant SERA Part A provisions, both existing and as amended	Already addressed by SR 3
Safety Assumption4	Intercepting Flight Crew, Firefighter, Aerodrome operator and Projectile operator are properly trained and are fully knowledgeable on the relevant SERA Part A provisions, both existing and as amended	Already addressed by SRs 4,5,6 and 7

Ref	Title	How it is processed in the draft Implementing Rule
Safety Issue 1	Adequate airspace regulation shall address air traffic services impacted by SERA Part A provisions to reach an acceptable level of safety.	Already addressed by SR 5 and SR 6
Safety Issue 2	Adequate regulation shall address rescue and fire-fighting services impacted by the SERA Part A “signal” provisions to reach an acceptable level of safety.	Already addressed by SR6
Safety Issue3	Adequate regulation shall address the organisations responsible for marshalling and parking the aircraft, impacted by the SERA Part A “signal” provisions, to reach an acceptable level of safety.	Already addressed by SR 3
Safety Issue 4	It must be clarified if marshaller’s procedures are completely regulated by SERA Part A or if additional regulation is necessary	Already addressed by SR 3

4.3.4 General Conclusion - Safety

The safety impact assessment process was carried out during the different safety lifecycle phase of the transposition of ICAO Annex 2 into SERA Part A: specification, design, implementation, transition and operation phases.

During the specification phase, what is an “acceptably safe” SERA Part A provisions has been determined.

In the design phase, different SERA safety requirements have been determined and several safety Assumptions identified (associated to training and qualification aspect). Furthermore, a safety impact review associated to the differences between SERA Part A and ICAO Annex 2 has been carried out without identifying any safety issue.

Implementation phase has determined that a direct implementation of SERA Part A (designed) provisions without any possible adaptation/modification by a Member State is necessary.

The transition phase has indicated that a local safety assessment shall be conducted to handle properly the transition from the current Member State Rules of the Air to the application of SERA Part A provisions.

Finally the operation phase has determined that no rule exemption is permitted and that a “maintenance” process shall be put in place to consider, into SERA Part A provisions, future ICAO Annex 2 amendment.

To conclude, the application of this well structured safety impact assessment process has shown that Air operation in accordance with SERA Part A will be acceptably safe.

Effectively all Safety requirements identified during the safety assessment process and fully applicable to SERA Part A are properly addressed by the draft SERA IR.

All Safety requirements identified during the safety assessment process but applicable to elements outside of the SERA Part A scope have been carefully reviewed. These elements (e.g. ATS Units, Intercepting Flight crew, Fire fighter...) must be regulated within their appropriate and existing regulatory framework. It is necessary to ensure optimal consistency between SERA Part A and the regulations (SERA Parts B and C, other EU regulations) which must apply to these elements outside the scope of SERA Part A.

5. ISSUES FOR FURTHER CONSIDERATION AND DEVELOPMENT OF ADDITIONAL MATERIAL

In a number of limited cases, it has been identified that some of the ICAO Annex 2 provisions could be subject to potential improvement, at least in the context of a European regional implementation. Those cases were carefully considered; where no satisfactory alternatives were available (e.g. supported by appropriate safety assessment) and/or when the issue concerned was still the subject of ongoing works and discussions in various working arrangements at European or ICAO level, no changes were made or the provision was removed. These issues will be monitored and when the mature solutions become available, they should be considered, assessed and proposed in the context of the normal life and updates of the SERA IR (or faster if necessary). Issues such as UAVs or communication failure fall under this category.

Additionally, a number of issues in Part A of the SERA IR were identified where additional material would be beneficial to support efficient standardisation. The intention is to further study the implications of the current and proposed provisions, and to develop additional material supporting the objectives of the SERA IR. This could lead to proposals for additional material in a form to be later determined which may include Acceptable Means of Compliance (AMC), Community Specifications (CS) or Guidance Material (GM). The intention is that such additional material would be made available before the date of applicability of the SERA implementing rule.

The following Part A provisions were identified as candidate for additional supporting material:

- **Formation flights:**
 - The current text allows the competent authority to prescribe additional conditions for the operation of formation flights in controlled airspace. This may not always provide for a sufficient level of standardisation throughout Europe.
- **Communication failure:**
 - This subject is under consideration as described above and on page 13.
- **Unlawful interference and Interception:**
 - The related paragraphs of ICAO Annex 2 contain notes referring to Annex 2 Attachments where guidance is provided with regards to these subjects. These notes and guidance have been deleted from the above-mentioned paragraphs in the draft Part A, based on the principle explained in this document. Nevertheless, they will be considered for the development of additional material.

During the development phase and as a result of the informal consultation, a number of potential issues which could be the subject of additional/new provisions and/or AMC/GM were identified:

- Problematic use of psychoactive substances (paragraph 2.5)
- Reduced/abbreviated flight plan (paragraph 3.3.2.1.1)
- Appendix 1, Signals (From a Signalman/Marshaller to an Aircraft)
- Other relevant ICAO Annex 2 Notes
- Collision avoidance (Right Hand Rule) (paragraph 3.2.3)
- Surface movement (paragraph 3.2.3.4)
- Holding position (paragraph 3.2.3.4.2)
- Stop bar failure (paragraph 3.2.3.4.3)
- Flight plan (paragraph 3.3)
- Meaning of "surface in sight" (paragraph 3.9)
- Unmanned free balloons (Appendix 3)

6. CONSULTATION

6.1 Process

The development work of the SERA draft Implementing Rule has been conducted by the Implementing Rule Drafting Group, involving experts from ICAO, EUROCONTROL, the EC and EASA, in accordance with the SERA Mandate. Communication and consultation with States and stakeholders have been used as often as possible throughout the development phase. Consultation is considered as an essential aspect of the process and ensures appropriate stakeholder involvement whilst enhancing transparency. In the present case, the development of the SERA draft Implementing Rule has been using two types of consultation processes:

6.2 Informal Consultation Activities

Informal consultation is a more general activity that commences at the start of the process and continues until formal consultation is launched. The 'consultation' aspect is achieved through the involvement of stakeholders and experts in various activities associated with the development of the draft material. This might include, inter alia, participation in working groups, workshops, technical meetings and document reviews.

In respect of this mandate, the informal consultation process started from the beginning of the activities of the SERA Task Force (2007), which has exchanged information with the Single Sky Committee, several EUROCONTROL working groups and made extensive use of the outcome of workshops and regular meetings on subjects relevant to the rules of the air. Relevant information has been regularly posted on the EUROCONTROL SES webpage.

A more comprehensive informal consultation has been launched on the 4th December 2009 in order to communicate on the first mature version of the draft implementing rule. A number of comments were received from 29 participants part of the informal consultation panel established in accordance with the EUROCONTROL rulemaking and consultation processes. These responses have been addressed by the Implementing Rule Drafting Group and used to improve the initial version of the draft to form the current version which is now the subject of the formal consultation.

6.3 Formal Consultation on the Draft Final Report

Formal consultation is a specific and formatted event which submits for widespread 'public' consultation, a mature version of the draft regulatory material (ENPRM) for comment. Stakeholders and other interested parties are invited to submit their formal positions and comments on the documents. **The present consultation is taking place from the 10th February until the 12th April 2010.**

The comments will then be reviewed systematically and can affect the final draft version of the documents. The drafting group will analyse the received comments and may provide further explanation to clarify some points, propose to include or reject an amendment on the basis of an appropriate rationale.

Following the formal consultation process for the proposed draft implementing rule, a Summary of Responses document will be developed as a deliverable part of the final report. A public workshop will be organised in the EUROCONTROL premises, probably at a date to be determined in early June 2010, in order to further discuss the subject and the outcome of the formal consultation.