

**COMMISSION IMPLEMENTING REGULATION (EU) 2021/2082****of 26 November 2021****laying down the arrangements for the implementation of Regulation (EU) No 376/2014 of the European Parliament and of the Council as regards the common European risk classification scheme****(Text with EEA relevance)**

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) No 376/2014 of the European Parliament and of the Council of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil aviation, amending Regulation (EU) No 996/2010 of the European Parliament and of the Council and repealing Directive 2003/42/EC of the European Parliament and of the Council and Commission Regulations (EC) No 1321/2007 and (EC) No 1330/2007 <sup>(1)</sup>, and in particular Article 7(7) thereof,

Whereas:

- (1) In accordance with Regulation (EU) No 376/2014 Member States and the European Union Aviation Safety Agency ('the Agency') are each required to establish a mechanism to independently collect, evaluate, process, analyse and store details of aviation safety occurrences. The competent authorities of the Member States have to draw up occurrence reports on the basis of details of occurrences and store them in a national database. The same obligation exists for the Agency to draw up occurrence reports on the basis of details of occurrences and store them in a database.
- (2) In accordance with Article 9(1) of Regulation (EU) No 376/2014, Member States and the Agency are to participate in an exchange of information by making all information relating to safety stored in their respective reporting databases available through the European Central Repository (ECR).
- (3) Pursuant to Regulation (EU) No 376/2014, occurrence reports are to contain a safety risk classification that is subject to review by the competent authorities of the Member States or the Agency, and are to be transferred into the ECR. To ensure that the occurrence reports contained in the ECR are all classified in a harmonised manner, the competent authorities of the Member States and the Agency should ensure that the classification in those reports is determined in accordance with the common European risk classification scheme (ERCS) as set out in Commission Delegated Regulation (EU) 2020/2034 <sup>(2)</sup>.
- (4) It is now necessary to lay down the arrangements for a harmonised and consistent implementation of the ERCS by the Agency and Member States.
- (5) When occurrence reports contain a risk classification determined by using methodologies other than the ERCS, the competent authorities of the Member States or the Agency should classify the risk of the occurrence concerned in accordance with the ERCS as defined in Commission Delegated Regulation (EU) 2020/2034.
- (6) In cases where the competent authorities of the Member States or the Agency decide to use a conversion procedure to convert the risk classifications referred to in recital 5 into an ERCS classification, and where such methodologies are ARMS-ERC 4x4 or RAT 'ATM Overall', the competent authorities of the Member States or the Agency should use the direct conversion procedure provided in this Regulation.
- (7) Where the direct conversion procedure set out in the Annex is not applicable, the competent authorities of the Member States and the Agency should be allowed to use other conversion procedures as long as an equivalent ERCS classification is achieved.

<sup>(1)</sup> OJ L 122, 24.4.2014, p. 18.

<sup>(2)</sup> Commission Delegated Regulation (EU) 2020/2034 of 6 October 2020 supplementing Regulation (EU) No 376/2014 of the European Parliament and of the Council as regards the common European risk classification scheme (OJ L 416, 11.12.2020, p. 1).

- (8) Continuous monitoring and improvement of the ERCS is necessary to ensure its effective application. It is necessary to lay down detailed rules for such monitoring and improvement and the Agency should assist the Commission in that review and monitoring. For that purpose, Member States should report regularly and within prescribed deadlines to the Agency and the Commission on the use of the ERCS and its assessment.
- (9) The competent authorities of the Member States, and the Agency need to prepare for the application of the ERCS, in particular by adjusting their internal processes and possibly allocating additional resources. However, Article 24(3) of Regulation (EU) No 376/2014 provides that Article 7(2) of that Regulation, which mandates the use of the ERCS by the Member States and the Agency, is to apply once the delegated and implementing acts specifying and developing the ERCS enter into force. Commission Delegated Regulation (EU) 2020/2034 defining the ERCS already entered into force on 31 December 2020. Therefore, it is not possible to delay the applicability of the obligation to use the ERCS beyond the date of the entry into force of this Regulation. Moreover, for the purposes of the annual safety review published by the Agency in accordance with Article 72(7) of Regulation (EU) 2018/1139 of the European Parliament and of the Council<sup>(3)</sup>, it is essential that occurrence reports uploaded to the ECR within a 1 year period are scored in a harmonised way. The obligation to classify the occurrences in accordance with the ERCS should start to apply as of the date of entry into force of this Regulation. Therefore, this Regulation should enter into force on 1 January 2023.
- (10) The measures provided for in this Regulation are in accordance with the opinion of the Committee established by Article 127 of Regulation (EU) 2018/1139,

HAS ADOPTED THIS REGULATION:

#### *Article 1*

#### **Subject matter**

This Regulation lays down the arrangements for the implementation of the common European risk classification scheme ('ERCS') set out in Delegated Regulation (EU) 2020/2034.

#### *Article 2*

#### **Definitions**

For the purposes of this Regulation, the definitions in Article 2 of Delegated Regulation (EU) 2020/2034 apply.

The following definitions also apply:

- (1) 'ARMS-ERC methodology' means the methodology developed by the industry working group 'Airline Risk Management Solutions' (ARMS) for assessing operational risks;
- (2) 'ATM' means air traffic management as defined in Article 2(10) of Regulation (EC) No 549/2004 of the European Parliament and of the Council<sup>(4)</sup>;
- (3) 'ATM airborne severity score' means the part of the RAT methodology that assesses the air operation performance of the occurrence;
- (4) 'ATM ground severity score' means the part of the RAT methodology that assesses the system performance (procedures, equipment and human) of the ATM system;

<sup>(3)</sup> Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1).

<sup>(4)</sup> Regulation (EC) No 549/2004 of the European Parliament and of the Council of 10 March 2004 laying down the framework for the creation of the single European sky (the framework Regulation) (OJ L 96, 31.3.2004, p. 1).

- (5) 'ATM overall severity score' means the ATM ground severity score and ATM airborne severity score combined into one single score;
- (6) 'RAT methodology' means the Risk Analysis Tool methodology developed by Eurocontrol used to classify safety related occurrences in the ATM domain;
- (7) 'Eurocontrol' is the European Organisation for the Safety of Air Navigation set up by the International Convention of 13 December 1960 relating to Cooperation for the Safety of Air Navigation <sup>(5)</sup>.

### Article 3

#### **Review, amendment, and endorsement of the safety risk classification**

1. The competent authority of the Member State or the Agency shall review and, if necessary, amend, and endorse the safety risk classification contained in the occurrence report of the occurrence concerned in accordance with the ERCS as set out in Commission Delegated Regulation (EU) 2020/2034.
2. Without prejudice to paragraph 1, the competent authority of the Member State or the Agency shall use the direct conversion procedure set out in the Annex when converting the safety risk classification determined through ARMS/ERC 4x4 or RAT 'ATM Overall' methodologies. For safety risk classifications determined through other methodologies, the competent authority of the Member State or the Agency may use the manual conversion procedure set out in point 2 of the Annex, or other conversion procedures as deemed appropriate, as long as an equivalent ERCS classification is achieved.

### Article 4

#### **Monitoring and improvement of the ERCS**

1. On 31 March 2026 and every 5 years thereafter, each Member State shall provide the Commission and the Agency with a report on the use of the ERCS.
2. The Agency shall review the information received from Member States in accordance with paragraph 1 of this Article, as well as other information that the Agency may receive regarding the implementation of the ERCS. The review by the Agency may take account of the expertise of the network of aviation safety analysts (NoA) referred to in Article 14(2) of Regulation (EU) No 376/2014 and relevant expert groups if established by the Agency.

### Article 5

#### **Monitoring of compatibility with other risk classification schemes**

1. The conversion procedures set out in the Annex shall be subject to regular review by the Agency to ensure its continuing relevance. The review may take account of the expertise of the NoA and relevant expert groups if established by the Agency.
2. When applicable, Member States shall notify to the Commission and the Agency the use of the manual conversion procedure set out in point 2 of the Annex and other conversion procedures referred to in Article 3(2) of this Regulation.

### Article 6

#### **Entry into force**

This Regulation shall enter into force on 1 January 2023.

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<sup>(5)</sup> Convention modified by the protocol of 12 February 1981 and revised by the protocol of 27 June 1997.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 26 November 2021.

*For the Commission*  
*The President*  
Ursula VON DER LEYEN

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## ANNEX

### Conversion procedures from the Risk Analysis Tool (RAT) and Aviation Risk Management Solutions – Event Risk Classification (ARMS-ERC) scores into the European Risk Classification Scheme (ERCS) scores

This Annex lays down conversion procedures from RAT and ARMS ERC scores to the ERCS score <sup>(1)</sup> defined in Step 2 of the Annex to Commission Delegated Regulation (EU) 2020/2034.

The following conversion procedures provide either a direct or a manual conversion to obtain an ERCS classification equivalent to the RAT and/or ARMS – ERC scores in accordance with Article 3 of this Regulation.

#### 1. DIRECT CONVERSION

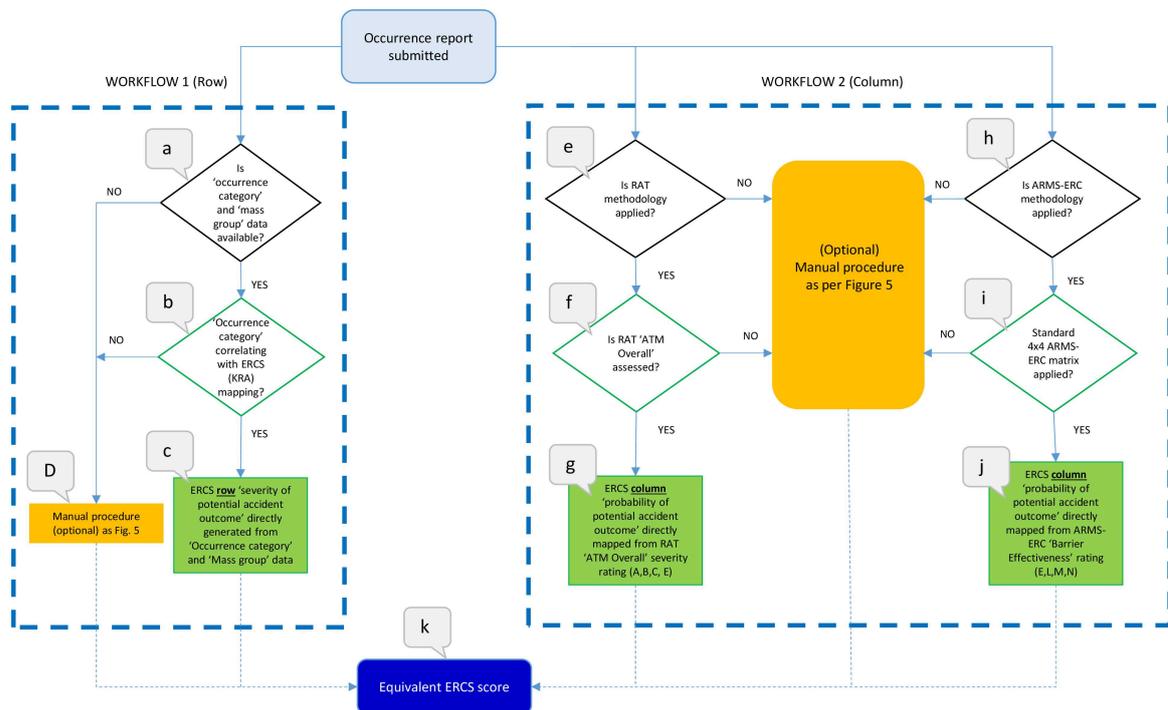
The mandatory conversion procedure consists of the following two workflows:

- Workflow 1 - provides a direct conversion to obtain the ERCS severity score,
- Workflow 2 - provides direct conversion to obtain the ERCS probability score.

Figure 1 shows an overview of the procedures. The starting point of the process is the 'occurrence report submitted' box and the output the 'Equivalent ERCS score' box. The dotted lines in Figure 1 indicate that only one source for each process result is required.

Figure 1

#### Conversion procedures



##### 1.1. WORKFLOW 1 – ERCS severity score

###### a. 'Occurrence category' and 'Mass group' information

- If the occurrence report contains information on the 'occurrence category' of the occurrence and the 'mass group', then these can be converted into the 'Severity of potential accident outcome' ERCS score. The next step is (b) of Figure 1.

<sup>(1)</sup> The ERCS score is a two-digit value where the first digit corresponds to the alphabetic value resulting from the calculation of the severity of the occurrence (severity score A to X) and the second digit represents the numerical value from the calculation of the corresponding score of the occurrence (probability).

- If the occurrence report contains no information about the ‘occurrence category’ or the ‘mass group’, or both, direct conversion is not possible. If the manual conversion described in point 2 of this Annex is used, then next step is (D) of Figures 1 and 5.

**b. ‘Occurrence category’ and ERCS Key Risk Area (KRA) conversion**

- If the ‘occurrence category’ of the occurrence report corresponds directly to the one of the ERCS Key Risk Areas defined in point 1.2 of Annex to Delegated Regulation (EU) 2020/2034 then the next step is (c) of Figure 1.
- For occurrence reports with ‘occurrence categories’ different from the ERCS Key Risk Areas, there is no direct conversion. If the manual conversion described in point 2 of this Annex is used, then the next step is (D) of Figures 1 and 5.

**c. ERCS ‘Severity of potential accident outcome’ score – direct conversion**

- If the occurrence report contains information about ‘occurrence category’ and ‘mass group’ then the severity score is directly converted into an appropriate ERCS ‘severity of potential accident outcome’ score. The result is (k), which gives the first digit corresponding to the alphabetic value resulting from the calculation of the severity of the occurrence (severity score A to X).

**1.2. WORKFLOW 2 – ERCS probability score**

**e. Occurrence report scored using RAT**

If the occurrence report has been scored using the RAT methodology <sup>(2)</sup>:

- Occurrence reports that have a RAT ‘ATM overall’ severity score classification can be mapped directly to the ERCS probability columns as explained in step (g) of Figure 2,
- Occurrence reports that only have a RAT ‘ATM ground’ severity <sup>(3)</sup> score have to be manually converted to provide the ERCS probability score. If the manual conversion described in point 2 of this Annex is used, then next step is (L) of figure 5,
- In the case of occurrence reports coded as ‘ATM-specific occurrence’, conversion between the RAT and ERCS scores is not possible.

**f. RAT ‘ATM overall’ severity score**

- If an occurrence report contains the ‘ATM overall’ severity score, then the next step is (g) of Figure 1.

**g. ERCS column ‘Probability of potential accident outcome’ converted from RAT ‘ATM Overall’ value (relevant only for A, B, C, E values)**

For the occurrence reports with an ‘ATM Overall’ severity score (A, B, C, E) classification, the following direct conversion into ERCS probability categories applies:

<sup>(2)</sup> The RAT methodology classifies Air Traffic Management related occurrences. RAT methodology does not score accidents, as it measures only how close the ATM occurrence was to becoming an accident. The RAT methodology is divided into several main elements (i.e. ‘ATM ground’, ‘ATM airborne’), in which each delivers a part of the input for the final RAT ‘ATM overall’ severity score. In order to achieve ‘ATM Overall’ severity score, both ‘ATM ground’ and ‘ATM airborne’ severity scores must be available.

<sup>(3)</sup> The ‘severity’ under the RAT methodology indicates how bad the actual occurrence was in comparison to other occurrences. The RAT methodology determines ‘severity’ through an assessment of the defences/barriers.

Figure 2

**RAT ‘ATM overall’ severity score conversion onto the ERCS probability score**

ERCS Probability categories										
Corresponding Barrier Score	9	8	7	6	5	4	3	2	1	0
Barrier Weight Sum	17-18	15-16	13-14	11-12	9-10	7-8	5-6	3-4	1-2	0
Probability	$10^{-9}$	$10^{-8}$	$10^{-7}$	$10^{-6}$	$10^{-5}$	$10^{-4}$	$10^{-3}$	$10^{-2}$	$10^{-1}$	1
Description	Remaining barriers predicted to fail 1 in 1,000M times	Remaining barriers predicted to fail 1 in 100M times	Remaining barriers predicted to fail 1 in 10M times	Remaining barriers predicted to fail 1 in 1M times	Remaining barriers predicted to fail 1 in 100,000 times	Remaining barriers predicted to fail 1 in 10,000 times	Remaining barriers predicted to fail 1 in 1,000 times	Remaining barriers predicted to fail 1 in 100 times	Remaining barriers predicted to fail 1 in 10 times	Realised accidents

**h. Occurrence reports classified using the ARMS-ERC methodology**

- For the occurrence reports that have been scored according to the ARMS-ERC, the next step is (i) of Figure 1.
- For the occurrence reports that have not been scored according to the ARMS-ERC methodology, the next step is (M) of Figure 5.

**i. Standard 4x4 ARMS-ERC matrix**

If the 4x4 ARMS-ERC matrix depicted in Figure 3 is used to score the occurrence report, then the next step is (j) of Figure 1.

Figure 3

**Standard 4x4 ARMS-ERC matrix**

Question 2 What was the effectiveness of the remaining barriers between this event and the most probable accident scenario?				Question 1 If this event had escalated into an accident, what would have been the most probable outcome?		Typical accident scenarios
Effective	Limited	Minimal	Not effective	Catastrophic Accident	Major Accident	
50	102	502	2500	Loss of aircraft or multiple fatalities (3 or more)	1 or 2 fatalities, multiple serious injuries, major damage to the aircraft	Loss of control, mid air collision, uncontrollable fire on board, explosions, total structural failure of the aircraft, collision with terrain
10	21	101	500	Minor Injuries or damage	Minor injuries, minor damage to aircraft	High speed taxiway collision, major turbulence injuries
2	4	20	100	No accident outcome	No potential damage or injury could occur	Pushback accident, minor weather damage
1						Any event which could not escalate into an accident, even if it may have operational consequences (e.g. diversion, delay, individual sickness)

**j. ERCS ‘Probability of the potential accident outcome’ score – direct conversion**

If the occurrence report contains an ARMS ‘Barrier Effectiveness’ rating, then to determine the ERCS ‘Probability of potential accident outcome’ score a following direct conversion to the ERCS matrix is used.

Figure 4

Conversion of ARMS-ERC to ERCS probability categories.

		Effective		Limited		Minimal		Not effective		
ERCS Probability categories										
Corresponding Barrier Score	9	8	7	6	5	4	3	2	1	0
Barrier Weight Sum	17-18	15-16	13-14	11-12	9-10	7-8	5-6	3-4	1-2	0
Probability	10 <sup>-9</sup>	10 <sup>-8</sup>	10 <sup>-7</sup>	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>	10 <sup>-2</sup>	10 <sup>-1</sup>	1
Description	Remaining barriers predicted to fail 1 in 1,000M times	Remaining barriers predicted to fail 1 in 100M times	Remaining barriers predicted to fail 1 in 10M times	Remaining barriers predicted to fail 1 in 1M times	Remaining barriers predicted to fail 1 in 100,000 times	Remaining barriers predicted to fail 1 in 10,000 times	Remaining barriers predicted to fail 1 in 1,000 times	Remaining barriers predicted to fail 1 in 100 times	Remaining barriers predicted to fail 1 in 10 times	Realised accidents

k. Equivalent ERCS Score

The combination of the ERCS ‘Severity of potential accident outcome’ and ‘Probability of potential accident outcome’ scores are combined in the ERCS matrix to generate an equivalent ERCS score as laid down in Step 2 of Annex to Delegated Regulation (EU) 2020/2034.

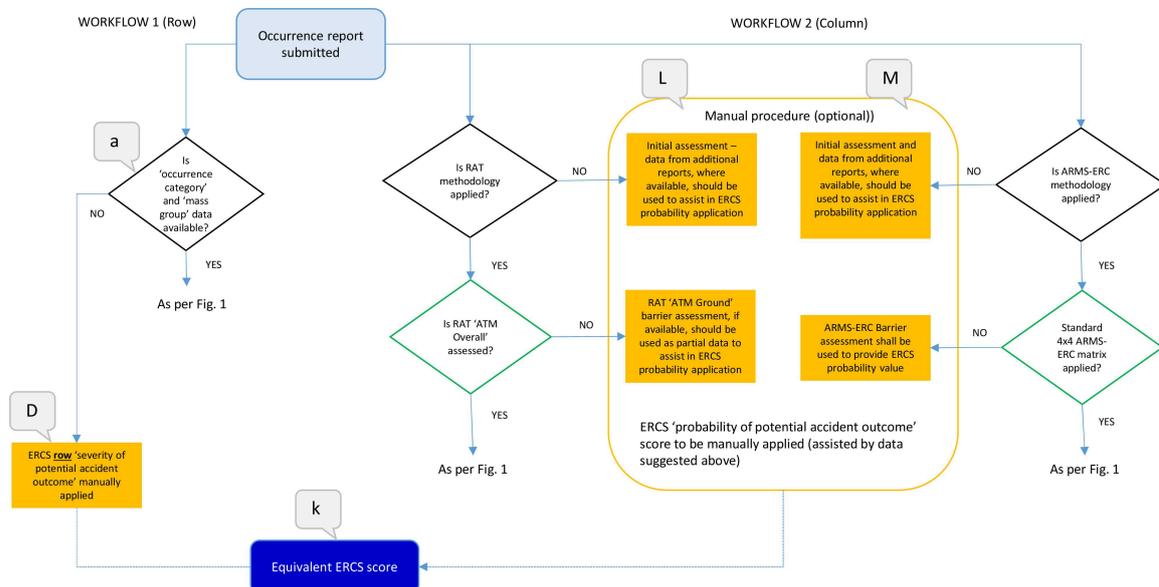
2. MANUAL CONVERSION

This manual conversion consists of the following two workflows:

- Workflow 1 - provides a manual conversion to obtain the ERCS severity score,
- Workflow 2 - provides a manual conversion to obtain the ERCS probability score.

Figure 5

Manual conversion



**2.1. WORKFLOW 1****D. ERCS ‘Severity of potential accident outcome’ score – manual conversion**

- If the occurrence report contains no information about the ‘occurrence category’ or ‘mass group’, or both, then the ERCS methodology defined in Annex to Delegated Regulation (EU) 2020/2034 applies to determine the ‘Potential Accident Outcome’ or Key Risk Area. The final result is (k), which gives the first digit corresponding to the alphabetic value resulting from the calculation of the severity of the occurrence (severity score A to X).

**2.2. WORKFLOW 2****L. ERCS column ‘Probability of potential accident outcome’ – manual procedure**

- For the occurrence reports containing no ‘ATM overall’ severity there is no direct conversion to the ERCS ‘Probability of potential accident outcome’ score.

The ‘ATM ground’ severity can however provide for a partial conversion by mapping the ‘ATM ground’ barrier assessment and the ERCS barrier assessment process defined in point 2.1.3 of Annex to Delegated Regulation (EU) 2020/2034.

**M. ERCS ‘Probability of potential accident outcome’ score – manual process**

If the occurrence reports do not use the 4x4 ARMS-ERC matrix to score the occurrence, to generate an ERCS ‘Probability of potential accident outcome’ score the ARMS-ERC barrier assessment value is converted into the ERCS barrier assessment laid down in point 2.1.3 of Annex to Delegated Regulation (EU) 2020/2034.

**k. Equivalent ERCS Score**

The combination of the ERCS ‘Severity of potential accident outcome’ and ‘Probability of potential accident outcome’ scores are combined in the ERCS matrix to generate an equivalent ERCS score as laid down in Step 2 of Annex to Delegated Regulation (EU) 2020/2034.

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