European Aviation Safety Agency

Explanatory Note to Decision 2014/004/R

CERTIFICATION SPECIFICATIONS MASTER MINIMUM EQUIPMENT LIST

RELATED NPA/CRD 2011-11 — RMT.0104 (21.039(C)) — 31.01.2014

EXECUTIVE SUMMARY

This Decision addresses a safety issue related to Operational Suitability Data (OSD) – Master Minimum Equipment List (MMEL) as required by an Amendment to Commission Regulation (EU) No 748/2012[1] of 3 August 2012 laying down implementing rules for airworthiness and environmental certification of aircraft and related products, parts an appliances, as well as for the certification of design and production organisations.

The specific objective is to achieve a high level of safety by providing end users - National aviation authorities, operators with access to a safe and reliable Master Minimum Equipment List data by providing the Type Certificate Holders with a uniform process and criteria for developing aircraft type specific MMEL data and allow its approval along with the other airworthiness certification activities.

This Decision comprises information related to aircraft type specific elements for master minimum equipment list, as required under the OSD concept.

The Certification Specifications include the following:

a) A uniform process and criteria for the development and approval of MMEL data consistent with the current processes inherited from Joint Aviation Authorities (JAA) Joint Operations Evaluation Board (JOEB).

b) A further defined target level of safety for MMEL accounting for the specific risk and consistent with the recommendation of the Aviation Rulemaking Advisory Committee (ARAC) Airplane-level Safety Analysis Working Group (ASAWG).

c) A guidance material for the coverage of operational requirements related items (previously covered by JAA Temporary Guidance Leaflet No 26) at MMEL level.

The proposed changes are expected to increase safety and to improve harmonisation.

[1] Commission Regulation (EU) No 748/2012 of 03 August 2012 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations and repealing Commission Regulation (EC) No 1702/2003 (OJ L 243, 27.9.2003, p.6-79). Regulation as last amended by Commission Regulation (EU) 69/2014 of 27 January 2014 (OJ L 23, 28.1.2014, p. 12).

Applicability	
Affected regulations and decisions:	Commission Regulation (EU) No 748/2012
Affected stakeholders:	Manufacturers, TC/STC holders, Air operators
Driver/origin:	Regulation (EC) No 216/2008
Reference:	NPA 2011-11, Opinion 07/2011

Process map	
Terms of Reference:	13.09.2007
Concept Paper:	No
Rulemaking subgroup:	Yes
RIA type:	Light
Technical consultation during NPA drafting:	No
Publication date of the NPA:	2011/Q4
Duration of NPA consultation:	3 months
Review group:	Yes
Focussed consultation:	No
Publication date of the Opinion:	N/A
Publication date of the Decision:	2014/Q1

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1. Procedural information

1.1. The rule development procedure

The European Aviation Safety Agency (hereinafter referred to as the 'Agency') developed ED Decision 2014/004/R in line with Regulation (EC) No 216/2008[2] and the Rulemaking Procedure[3].

This rulemaking activity is included in the Agency's 4-year Rulemaking Programme for under RMT.0104 (21.039(c)). The scope and timescale of the task were defined in the Terms of Reference (ToR) 21.039 (RMT.0110 (21.039)).

The draft text of this Decision has been developed by the Agency based on the input of the rulemaking subgroup RMT.0104 (21.039(c)) deriving from the core rulemaking group 21.039 (RMT.0110 (21.039)). All interested parties were consulted through NPA 2011-11[4]. The Agency received 232 comments from interested parties, including industry, national aviation authorities, professional organisations and private companies.

The Agency, with the help of the review group RMT.0104(OLD.21.039(c)) deriving from the core rulemaking group 21.039 (RMT.0110 (21.039)), has carefully reviewed the comments received on the NPA. The comments received and the Agency's responses are presented in the Comment-Response Document (CRD) 2011-11[5]. The CRD was published on 10th July 2012 and the reaction period ended on 10th November 2012.

The final text of this Decision with the Certification Specifications (CS) and Guidance Material (GM) has been developed by the Agency. The changes to the text as compared to the CRD are described in the following paragraphs.

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

1.2. Structure of the related documents

Certification Specifications – Minimum Equipment List is structured into two books.

Book 1 contains three subparts:

Subpart A 'General' describes the scope and applicability of the CS-MMEL. This Subpart also includes definitions related to the terminology within the CS-MMEL and classification of individual paragraphs of CS-MMEL Subpart B within the 'OSD box' concept.

Subpart B 'Master minimum Equipment List' specifies the purpose of the MMEL and specifies its format and content. This subpart also contains specifications on the operational and maintenance procedures associated to an MMEL item.

Subpart C 'Level of safety and justifications of MMEL items' specifies the target level of safety for the MMEL and provide details on the content of the justifications to be developed by the applicant in order to obtain approval of the MMEL associated to the aircraft type.

Book 2 contains Guidance Material (GM) associated to the CS-MMEL paragraphs of Book 1.

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[2] 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, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.3.2008, p. 1), as last amended by Commission Regulation (EU) No 6/2013 of 8 January 2013 (OJ L 4, 9.1.2013, p. 34).

[3] The Agency is bound to follow a structured rulemaking process as required by Article 52(1) of Regulation (EC) No 216/2008). Such process has been adopted by the Agency's Management Board and is referred to as the 'Rulemaking Procedure'. See Management Board Decision concerning the procedure to be applied by the Agency for the issuing of opinions, certification specifications and guidance material (Rulemaking Procedure), EASA MB Decision No 01-2012 of 13 March 2012.

[4] http://easa.europa.eu/rulemaking/r-archives.php#npa-2011.

[5] http://easa.europa.eu/rulemaking/r-archives.php#crd.

2. Explanatory Note

This ED Decision contains Certification Specifications Master Minimum Equipment List to facilitate the implementation of Commission Regulation (EU) No 69/2014[6] Operational suitability data..

2.1. Overview of the issues to be addressed

The ED Decision contains Certification Specifications Master Minimum Equipment List proposed to address the following issues :

1. Provide the Type Certificate Holders with a uniform process and criteria for the development of aircraft type specific MMEL data and allow its approval along with the airworthiness certification as per the OSD concept.
2. Specify the minimum target level of safety applicable for the MMEL and the means to ensure the proposed candidate items for MMEL meet this target.
3. Retain commonality with the previous JAR based process and criteria in order to limit the economic impact of process variations at Type Certificate Holders level while accounting for potential benefits at end-user level (Operator's) of some extensions of the scope of the MMEL.
4. As far as practicable, provide means for replacing former JAA Temporary Guidance Leaflet No26 'Guidance Document for MEL Policy' with regards to alleviations on equipment required by operational requirements.

2.2. Objectives

The overall objectives of the EASA system are defined in Article 2 of Regulation (EC) No 216/2008. This proposal will contribute to the achievement of the overall objectives by addressing the issues outlined in Chapter 2. The specific objective of this proposal is, therefore:

1. To establish high and uniform level of safety when dispatching an aircraft with known inoperative items under Minimum equipment List (MEL) by providing adequate specifications for the target level of safety to be demonstrated by the Type Certificate Holder at the level of the aircraft type Master Minimum equipment List (MMEL). This includes the improvement of the criteria related to quantitative safety assessments consistent with the ARAC ASAWG recommendations.
2. To promote cost-efficiency in the regulatory processes by avoiding duplication of MMEL approval at national level. This objective integrates the continuation of Joint Aviation Authorities (JAA) Joint Operations Evaluation Board (JOEB) that promoted uniformity across National Aviation Authority (NAA) and the JAA Temporary Guidance Leaflet No26 'Guidance Document for MEL Policy', as far as practicable in the new regulatory context.
3. To implement the recommendations of the RMT.0110(OLD.21.039) rulemaking group in the scope of the Operational Suitability Data (OSD). In particular, organize the specifications to fit the existing Type Certification procedures and introduce the OSD box concept in the field of MMEL.

2.3. Outcome of the consultation

A Concerns raised by stakeholders during the NPA consultation process addressed in the CRD:

[6] Commission Regulation (EU) No 69/2014 of 27 January 2014 amending Regulation (EU) No 748/2012 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations (OJ L 23, 28.1.2014, p 12).

Chapter 2 of CRD 2011-11 provides a summary of the main comments received during the public consultation. It also provides a list of all comments received together with the Agency's responses to each of them. The main changes made in the CRD following the comments received are highlighted below.

Level of Safety – as intended by the applicable requirements

Interpretative material was added in the associated GM to the CS-MMEL.140 paragraph to specify that the applicable requirements to be considered for MMEL development include the Type Certification Basis requirements and any operational requirement (including airspace requirements) applicable to the considered item. Furthermore, it is clarified that (b) 'As intended' means that strict compliance with the applicable requirement(s) may not be ensured provided that appropriate mitigation means are proposed ensuring an acceptable level of safety is maintained in line with the overall intent of the requirement(s).

Approval status of MMEL operational and maintenance procedures

The fact that today the content of these procedures is not subject to any approval or recommendation at MMEL level and that their non-availability do not preclude the approval of associated MMEL entries was supported by the Type Certificate Holder's representatives

The Agency believes that the nature of the operational and maintenance procedures and the current MEL procedures in place at operator's level are supporting the use of the BOX2 type of data as per the 'OSD box' concept. Indeed the content of the procedures as issued by the applicant ((S)TC holder) is considered as a non-mandatory data and having the status of a recommendation for the end user. Procedures may be updated at MEL level, subject to the compliance with applicable continuing airworthiness and operational requirements.

Consequently it has been determined that the proposed status regarding MMEL operational and maintenance procedures is adequate to their nature and does not contribute to significant changes in the way the MMEL approval process will address their content in comparison to actual processes. It has been also clarified that only the symbol associated to these procedures and their intent is part of the MMEL content in paragraph CS MMEL.120.

Criteria for evaluation of MMEL item failure consequences

As it was judged not necessary by the Industry to introduce provisions that will imply a systematic categorisation of the consequences of the failure which is not required today, CS MMEL.145 (b) was amended to delete the reference to minor failure condition and to replace it by a reference CS MMEL.140, which should be used as a criterion for the qualitative assessment. The criteria for 'acceptability' as stipulated in the paragraph CS MMEL 140 Level of Safety is complied with will have to be reflected in the justifications provided by the applicant.

MMEL, non-normal and emergency procedures compatibility

In order to better reflect the intent of the requirement proposed in NPA and to take into account various cases highlighted in the comments, the CS MMEL.140 (b) paragraph was deleted and adapted as part of the guidance material to CS MMEL.145 (c). It is there recommended to evaluate the proposed dispatch configuration is compatible with the existing procedures so that an acceptable level of protection against in-flight non-normal operations is maintained.

Guidance Book issues – European specific operational related items

The guidance provided in appendix 1 to GM1 MMEL.145 of the NPA is sometimes reflecting the specific European operational requirements. Some manufacturers expressed their

concerns regarding the use of their type specific MMEL by third country operators, which may consequently at the level of the operator MEL, be bounded by an MMEL which is based on operational requirements not directly applicable to a non-European operator.

Those items were typically addressed by the generic reference to 'As required by regulations' up to now in the Agency accepted MMELs. The use of the TGL 26 was then allowing the EU operators to select their MEL content as appropriate. Third country operators could use different content, as agreed with their competent authority.

In order not to constraint the third country operators using the Agency approved MMELs, it was proposed in the CRD to enable the identification of the MMEL items which have been based on European operational requirements using the associated guidance developed by the Agency. Provisions will be introduced in the MMEL preamble to permit these items to be adapted to the applicable operational requirements when these differ from the European operational requirements. In this case, the MEL content is still considered to be in conformity with the content of this MMEL.

Mandatory and non-mandatory (recommendations) status of data

The terminology related to the status of data has been standardised and reflects the same in Commission Regulation (EU) No 69/2014, in CS Cabin Crew Data (CS-CCD) and in the CS Flight Crew Data (CS-FCD) and in the CS Master Minimum Equipment List (CS-MMEL).

B Concerns raised by stakeholders during the reaction period to the CRD:

MEL/MMEL coverage of items required by operational rules

Previously handled by use of JAA TGL 26 Guidance Document for MEL Policy and 'As required by regulations' statement at MMEL level, these items are now proposed to be fully addressed at MMEL level to:

- Legally allow dispatch below the OPS implementing rules, when appropriate,
- Better adapt to the aircraft design,
- Eliminate the risk of operator taking relief when items are not applicable to them,
- Simplify the process for operators to generate their MEL (less risk of mistakes),
- Align with other regulatory systems that have guidance at MMEL level and not MEL level.

A few stakeholders opposed to the consequence of this approach on managing non airworthiness related items exclusively at MMEL level because specific European requirements will not apply to non-EU operators.

Stakeholders believe this goes beyond the scope of the MMEL which is a document linked to the airworthiness of the aircraft and which should therefore not deal with purely operational items (i.e. instruments or equipment solely required by OPS rules).

After carfeul review of the comments, the Agency decided to maintained the proposed guidance for the following reasons.

Establishing when an item is purely operational is not always possible at a general level, because even when the item is required by operational rules only, depending on the aircraft type and the installation, it may be the case that the failure of that particular item has an effect on airworthiness. Hence the advantage of having such items defined at MMEL level. Ultimately this is considered to be a natural consequence of the OSD implementation.

Moreover additional provisions were added to accommodate the above concerns by identifying those purely operational items as applicable only for EU operators and leaving the possibility to TC holders to have different provisions at MMEL level for third country operators.

The technical content of the proposed relief for certain items is more conservative based on an Agency's review made by panels of experts where justification was provided.

Keeping a 'TGL 26' like approach would need additional extensive alleviative provisions in OPS rules (transfer from CS-MMEL to OPS rules of the guidance for relief on such items) and could create possible regulatory loopholes until the necessary rulemaking task is completed. Furthermore, once in place such GMs could be easily deviated by authorities and operators without a controlled process and lack of standardisation, while inclusion in MMEL ensures EASA involvement and approval.

At the same time it is recognised that in the case of MMELs not under the OSD or for those MMELs where an OSD catch-up process is not completed yet, since they will continue to have the 'as required by the applicable operational requirements', for such items operators (and the NAAS approving the MELS) can base the content of their MELs on the guidance proposed in the CS-MMEL. This will be also addressed in Part-ORO.

Passenger reduction for inoperative emergency exits

The CS-MMEL Appendix 1 to GM1 MMEL.145 incorporates guidance material for computation of the passenger seats number reduction in case of inoperative exit(s) based on a slightly modified draft JAA TGL 47 and the advice of Cabin Safety experts.

Some stakeholders urged EASA to maintain current method ('ARAC' method, CAA-UK FODCOM) which is more permissive in terms of resulting usable seats.

A comparison among the various methods available today (ARAC, UK FODCOM, JAA TGL 47, FAA) to determine a passenger reduction when emergency exit is inoperative (included the solution proposed in CS-MMEL) has been made and is provided in the attachment (the full description documents of each method are available upon request). The criteria upon which each method relies and the relevant certification requirements are also indicated when identified. ARAC and FODCOM methods are mostly based on the rating capacities of the various door types. The CS-MMEL proposed method, in addition to such criterion, retains other important safety aspects from the certification basis not addressed by ARAC and FODCOM. Furthermore is more flexible than the JAA TGL-47 as it removes the 30ft criteria and introduces the 'dead-end zone' 75 % of rated capacity principle. In particular if only one pair of fully operative exits remains, maximum pax offered by the method is 19. Current MEL content is far more alleviative (for example up to 59 pax with one Type I pair on ATR 72). The comparison also shows that the FAA policy is also more conservative than ARAC and FODCOM in the case of a failed emergency exit on single aisle aircraft

Finally the methodology has been maintained in this Decision as per the recommendation of the Cabin Safety experts and the Internal Safety Committee of the Agency.

Security vs. Airworthiness Cockpit Door Locking System (CDLS)

For some aircraft the protection against the potential catastrophic rapid decompression is dependent on the CDLS. Should the system be inoperative under MMEL, the use of an installed deadbolt would jeopardize this protection but ensure compliance with security requirements.

Previous JAA TGL 26 tolerated the use of deadbolt for 4 flights (FAA allows 2 flight days for the same case).

The CS-MMEL guidance makes clear that airworthiness considerations can only be bypassed by State of Operators's decision in accordance with national security programmes, therefore the determination of the repair time interval with deadbolt engaged is done in accordance with the National Security Programme for decompression function dependent on the CDLS.

Some stakeholders are concerned that not all NAAs will approve MEL alleviations using deadbolt. Previous TGL 26 alleviation was requested to be re-introduced.
EASA proposal is based on the consideration that, being not competent on security, the determination should be made in accordance with national security programmes. This proposal was supported by Cabin Safety experts and the Internal Safety Committee of the Agency.

Changes made to the CRD version

CS MMEL.050 'Scope' has been added to Subpart A to introduce the scope of CS-MMEL in consistency with the other OSD Certification Specifications. The text of this paragraph incorporates partially the text of CRD version CS MMEL.107.

CS MMEL.107 'OSD Box Concept - Status of provided data' has been updated to better reflect the 'box concept' following reactions from stakeholders and in consistency with the other OSD Certification Specifications. The paragraphs of CS-MMEL are listed as belonging to specific 'boxes' as illustrated in the associated guidance material diagram. It has also been clarified at this opportunity that the CS-MMEL Subpart C is providing specifications for the development of the MMEL and in particular the content of the justifications to be provided by the applicant along with any MMEL candidate.

CS MMEL.135 'Rectification Interval Extension' wording has been revised for clarity purpose without altering its intent.

CS MMEL.145 'Justification of MMEL items' wording has been improved. In particular the paragraph (b) now clarifies that the methods to justify the MMEL may vary between applicants and are discussed and agreed with the Agency to ascertain they meet the objectives of CS-MMEL applicable requirements.

Paragraph (c) also clarifies that the consequences of an external event for which the item was designed to protect against are evaluated separately from the consequences of the next worst safety-related failure.

Paragraph (d)(2) wording has been modified to 'one or two failures away from a catastrophic failure condition' to align with the final ASAWG recommendation.

GM1 MMEL.105(g) 'Definitions' paragraph (b) has been moved to GM1 MMEL.120 'Format and content of MMEL' paragraph (n).

GM1 CS MMEL.107(a) 'OSD box concept – status of provided data' is added to introduce the OSD Box Concept Diagram.

GM1 MMEL.120 'Format and content of MMEL' paragraph (i) is clarifying that the intent of the maintenance procedure has to be indicated as part of the dispatch conditions, as far as practicable.

GM4 MMEL.120 'Format and content of MMEL' MMEL preamble specimen definition title for 'intended flight route' is updated and this denomination is introduced throughout APPENDIX 1 to GM1 MMEL.145: MMEL ITEMS GUIDANCE BOOK.

GM1 MMEL.130 'Rectification Interval – Use of category D' is clarified to indicate it is applicable to MMEL items installed in excess of the applicable certification and operational requirements.

GM1 MMEL.145 'Justification of MMEL items – Justification content' includes a new paragraph (d) to clarify the extent of the justifications expected for non-safety-related items.

GM2 MMEL.145 'Justification of MMEL items – Use of MMEL Guidance Book' includes a new paragraph (a) to clarify that the guidance material is not exhaustive and relief may be proposed by the applicant for items not listed.

GM2 MMEL.145(d) 'Justification of MMEL items - ELECTRONIC ENGINE CONTROL SYSTEM (EECS) Failures' is complemented by paragraph (B) to specify the rectification interval

associated to a Time Limited Dispatch (TLD) should be of category A as per the previous guidance included in TGL 26 Section 2.10.1.

GM1 MMEL.145(e) 'Justification of MMEL items – Operational and Maintenance Procedure' paragraph (b) is clarified to indicate that the content of a specific procedure may be requested by the Agency if necessary to complement the justification of an item on a case-by-case basis.

APPENDIX 1 to GM1 MMEL.145: MMEL ITEMS GUIDANCE BOOK changes

Item 26-17-1A under Lavatory Smoke Detection System is modified to move the dispatch condition (c) into the content of the associated operational procedure.

Item 26-25-1A under Lavatory Waste Receptacle Fire-Extinguishing System rectification interval is modified to category D for consistency with item 25-40-1 Exterior Lavatory Door Ashtrays.

Item 33-50-1 Cabin Emergency Lighting sub-item 33-50-1-2 is now entitled 'EXIT Marking Signs' and item 33-50-1-3 'EXIT Locator Signs' is created. Item 33-50-1-4 'Floor Proximity Lighting (Electrical or photo luminescent systems)' sub-item 33-50-1-4-1A is clarified to indicate the objective to still 'provide required escape guidance' in the degraded configuration. tem 33-50-1-4-2 is now entitle 'EXIT Markers/Identifiers'. CS 25 references have been added to the additional considerations field to specify the origin of the used terminology.

Item 34-20-3 Standby Attitude Indication is revised to replace the VFR by a VMC limitation.

Item 35-20-1-1A Passenger/Cabin Crew Oxygen System (Supplemental oxygen) - Automatic presentation System rectification interval category is changed from B to C based on additional considerations. A new entry 35-20-1-1B is also introduced to cover specific aircraft system design considerations.

Item 35-50-1A First-Aid Oxygen dispatch condition (b) is updated to delete the requirement to remove the inoperative dispensing unit from the installed location as this may not be appropriate to ensure safe storage.

Item 52-11-1A Door/Exit is renumbered with correct ATA breakdown and condition (d) is clarified to indicate the affected door/exit may be used for emergency purpose if required. Entry 52-11-2C conditions (c) to (f) are clarified. The passenger reduction determination guidance paragraph 2.(b) (2)(i) Calculation method- Individual zone capacity limitation is updated to provide flexibility for the passengers seated on seat rows adjacent to the affected exit(s) for particular layout where it can be shown that the remaining evacuation capability remains acceptable.

2.4. Summary of the Regulatory Impact Assessment (RIA)

The objective of this rulemaking activity resulting in this Decision is the same with the objective laid down in the regulatory impact assessment of NPA 2011-11. Therefore, the impact assessment of the potential options for achieving the objectives is analysed in that NPA and only summarised in the present Explanatory Note.

Safety impact

CS-MMEL recommends a standardised data-driven methodology for guidance on MMEL development that ensuring that a consistent safety level for all applicants will be clearly defined for dispatch under MEL, quantified for certain items

CS-MMEL includes guidance using TGL 26 as basis: MMEL guidance to be incorporated at MMEL level for affected items, thus maintaining flexibility for operators and ensuring that accepted relief is compatible with the aircraft design and applicable airworthiness

requirements. This allows for an acceptable level of safety that can be standardised across European operators and types and accounts for aircraft designs becoming more complex and integrated often leading to difficulties at operator level to know the full consequence the failure of a system may have at aircraft level.

Economic impact

The application of a common methodology for MMEL development can be expected to induce some initial costs for the TC holders in order to apply the quantitative methodology, which also includes an exchange with the Agency. However, as similar processes are already in place, these costs are expected to be relatively low, and in some cases zero, while offering at the same time additional flexibility where previously full compliance with type design Certification Specifications standards had been demonstrated.

The transfer content of TGL 26 into guidance material to CS-MMEL may eventually lead to a reduction of the Operator's efforts to incorporate the corresponding relief at MEL level compared to the present situation and consequently reduce their costs.

Proportionality issues

The CS-MMEL is foreseen to be applicable to complex aircraft only, although elect to comply is possible for non-complex TC holders. A dedicated CS GEN.MMEL has been developed to allow for a less stringent set of certification specifications to be mandatorily applied for non-complex aircraft.

Impact on regulatory coordination and harmonisation

Proposed CS-MMEL provides guidance for reference on the MMEL evaluation of all types, it also allows for possible future harmonisation as both FAA and TCCA have MMEL guidance or policy. It also provides a better foundation for potential harmonisation between the authorities that participated in the ASAWG (ANAC, EASA, FAA and TCCA).

3. References

NPA 2009-01, Opinion 07/2011, NPA 2011-11, CRD 2011-11.

3.1. Related regulations

Commission Regulation (EU) No 69/2014 on Operational suitability data.

3.2. Affected decisions

This proposal is a newly developed ED Decision.

3.3. Reference documents

Commission Regulation (EU) No 965/2012.
ED Decision 2012/017/R.