

Unmanned Aircraft System Operations in UK Airspace – Specific Category Modification Policy for UK SORA Operations

CAP 722L



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Civil Aviation Authority Aviation House Beehive Ring Road Crawley West Sussex RH6 0YR

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Revision History

First Edition

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Initial Issue

Abbreviations and Glossary of Terms

The definitive list of abbreviations and terms/definitions that are relevant to UAS operations within the UK and for the whole CAP 722 series of documents are centralised within CAP 722D UAS Abbreviations and Master Glossary.

chapter 1 Foreword

Aim

CAP 722L offers guidance to support a UAS Operator wishing to modify their UK SORA based operation.

Assimilated Regulation (EU) 2019/947 UAS.SPEC.030(2) requires a UAS Operator to apply for an update to their Operational Authorisation following any **significant change** to the operation.

This policy sets out how to assess whether a potential modification is a significant change under UAS.SPEC.030(2) and therefore requires a new OA.

Policy and scope

This policy is applicable to Specific Category UAS Operators, who want to make modifications to an operation that has been authorised under the UK Specific Operations Risk Assessment (SORA) framework as per AMC1 of Article 11 UK Regulation (EU) 2019/947.

The scope of this policy is limited to those UAS Operators who have an OA under AMC1 to Article 11 Conducting a UK Specific Operation Risk Assessment (UK SORA) UK Regulation (EU) 2019/947.

The UAS modification policy for those UAS Operators operating under the OSC process (CAP722A), is set out in CAP722G.

This policy distinguishes between modifications that require a new application under the UK SORA framework and modifications that do not require a new UK SORA application.

It is a condition of every OA that even minor modifications, which do not require a new UK SORA application, must be notified to the CAA in accordance with this policy.

Point of contact

Unless otherwise stated, all enquiries relating to this CAP should be made to:

FS&I Policy Team Civil Aviation Authority Safety and Airspace Regulation Group Aviation House Beehive Ringroad West Sussex RH6 0YR E-mail: UKSORA@caa.co.uk

CHAPTER 2 Definition of a Modification

2.1 Interpretation of 'significant change'

In UK Regulation (EU) 2019/947, UAS.SPEC.030(2) requires the UAS operator to submit an application for an updated operational authorisation if there are any significant changes to the operation or to the mitigation measures listed in the operational authorisation (OA).

The regulation does not define 'significant change'.

This policy sets out how the CAA will exercise its discretion to determine whether a modification made by the UAS operator to their operation or to the mitigation measures listed in the OA is a 'significant change' for the purposes of UAS.SPEC.030(2).

This policy defines modifications as major and minor. The CAA considers that a major modification is a significant change, and a minor modification is not a significant change.

A modification is any change to a UAS Operation, including a change to the mitigating measures or conditions set out within the OA and the evidence used in support of the UK SORA application, that is not specifically prescribed within the scope of the OA. A change that is specifically envisaged or authorised by the OA is not a modification within the meaning of this policy.

For example, changing one payload to another, both of which are defined within the issued OA, is not a modification.

Changes are **classified** as either minor or major modifications, or not a modification at all.

Modifications are **categorised** as either technical, operational or administrative.

Changes may only be made under this policy where those changes are not prohibited by the Operational Authorisation. If a UAS Operator changes their operation in a way that is prohibited by the Operational Authorisation, the CAA may suspend or revoke that authorisation.

2.2 Classification of a modification

Any modification by a UAS Operator should be classified as:

- 1. Minor modification; or
- 2. Major modification

Wherever there is doubt as to the classification of a modification, CAA should be consulted for clarification.

Classification of a modification as either minor or major, is described in chapter 4.

2.3 Minor modification

A minor modification is defined as a modification that has no appreciable effect on the OA or the mitigation measures identified and evidenced within the OA application and accepted by the CAA.

A minor modification is not considered a significant change to the OA for the purposes of UAS.SPEC.030(2). The UAS Operator must declare minor modifications to the CAA as per Chapter 5 of this policy and as per the conditions of the OA.

2.4 Major modification

Any other modification that is not a minor modification is considered a major modification.

A major modification is considered a significant change to the OA per UAS.SPEC.030(2). Any major modification requires the UAS operator to submit an application for an updated OA. The UAS Operator must submit a new UK SORA application if they wish to make a major technical or operational modification.

The UAS Operator may apply for a new OA using the UK SORA administrative variation process if they wish to make a major administrative modification.

CHAPTER 3 Categories of Modification

3.1 General responsibilities of UAS Operator for a modification

When a UAS Operator decides to make any modification, they should categorise those modifications. The UAS Operator should have an internal change log for any modifications they intend to make.

3.2 Modification Categories

There are three categories of modification for a UAS Operator. They are

- 1. Administrative modifications
- 2. Technical modifications
- 3. Operational modifications

For every modification the UAS Operator intends to make, they should decide which of the three categories above is the most appropriate for that modification. Some modifications could fit into more than one category. In such cases, the modification should be categorised under the primary affected category.

3.3 Administrative modifications

Administrative modifications include changes to the management system of the UAS Operator (including changes of key personnel), its ownership or its principal place of business. This category also includes modifications such as editorial modifications to operational manuals, for example changing format of checklists and manuals, update of contact details, telephone numbers of staff etc.

Most administrative modifications are classified as minor modifications. Minor administrative modifications do not need to be reported to the CAA.

The UAS Operator should inform the UK CAA immediately of the following administrative modifications, which are classified as major:

- 1. Modifications to principal place of business
- 2. Modifications to management system of the UAS Operator or key personnel such as accountable manager
- 3. Changes of ownership

These administrative modifications are not considered by the CAA to be a 'significant change' for the purposes of UAS.SPEC.030(2), but they are required to be immediately notified to the CAA and the UAS Operator must apply for a new OA using the administrative variations to SORA OAs as described in the scheme of charges.

Please note that a new Company Registration Number cannot be classified as a Major

Administrative Variation. A change of Company Registration number constitutes a change of legal identity and is therefore a significant change. It requires a new OA application following the UK SORA process.

3.4 Technical modification

Any of the following changes to the technical features of the UAS is a technical modification (if the change falls within the definition of a modification in section 2.1):

- A modification to the structure.
- A modification to the material.
- A modification to the paint scheme.
- Adding, removing or modifying system functions or sub-functions.
- Adding, relocating, modifying or removing equipment.
- Replacement of parts of the UAS not in accordance with the designer's specification.
- Adding, relocating or removing payload.
- A firmware/software update, where this is considered major.

Note: As described in section 2.1, these changes only fall within the definition of a modification if not already specifically prescribed within the scope of the issued OA. For example, where the scope of an OA includes changing between several payload systems, this is not a modification under this policy.

Additionally, replacement of parts in accordance with the designer's specification is not considered a modification. Technical changes following approved maintenance and/or operational manuals are not considered a modification.

If the UAS Operator prefers to not use this policy for technical modifications, they are advised to declare all intended technical modifications as part of their initial OA application. As an example, if the UAS Operator declares all intended payloads to be used for their operation as part of their OA application, all such declared payloads will be permitted under the OA and will not be considered modifications under this policy.

For any technical modifications, the UAS Operator should follow the classification process for a technical modification in chapter 4 to determine whether they are minor or major.

UAS Software updates

Classification of software updates to the UAS are dependent on whether they have been provided by the UAS designer.

For software updates provided by the UAS designer, the UAS Operator should follow the assessment process in Chapter 4 to classify the modification. If the modification is classified to be minor, the UAS Operator is not required to inform the CAA of that software update. If the modification is classified to be major, the UAS Operator should submit a new application for an OA under UK SORA.

A software update which is not provided by the UAS designer is likely to be considered as a major modification as per this policy and therefore require a new application for an OA under UK SORA. UAS Operators wishing to make a software change to the UAS that are not provided by the manufacturer, should contact their RAE(F) or the CAA for further advice.

Changing UAS within the OA Schedule of UAS

The OA sets out which UAS may be flown within the terms of the OA, in the 'Schedule of UAS'. Changes to the list of UAS in this schedule are treated slightly differently to other modifications, as set out below.

A change to the types of UAS permitted by the OA may be classed as a minor or major technical modification.

If, following the process in Chapter 4, the UAS Operator classifies the modification as minor, they may apply for an **administrative variation** to the OA certificate to update it, to include the new UAS type.

The Operator must submit the minor modification form as part of this application and pay the administrative variation fee as per the scheme of charges. The OA must be re-issued with the new UAS included, before this UAS can be operated under the OA.

If the modification is classified as major following the assessment process, the UAS Operator should submit a new UK SORA application to obtain a new OA.

3.5 Operational modification

An operational modification to the UAS includes any changes to remote pilot competence requirements, changes to operational procedures or conformity procedures and any other operational modifications that could affect the operation of the UAS. Some examples of operational modifications are:

- Non editorial modifications to operational manuals
- Modifications to training procedures of competent crew
- Modifications to the operational mitigation measures identified and evidenced as part of the UK SORA application
- Modifications to the operational environment such as location and weather conditions

As described in section 2.1, these are only considered modifications if not already approved within the scope of the issued OA.

For any operational modifications, the UAS Operator should follow the classification process for an operational modification in chapter 4 to determine whether they are minor or major.

If the UAS Operator prefers to not use this policy for operational modifications, they are advised to declare all such intended modifications as part of their initial OA application. As an example, if the UAS Operator declares all planned operational environments for the operations they intend to undertake as part of their OA approval, they are not required to use this policy when changing environment, within the scope of the approved OA.

3.6 Summary Flow Chart

The flow chart in figure 1 summarises the categorisation of modifications as operational, technical or administrative, and the classification of these as minor or major. Chapter 4 describes how to conduct the assessment process for the modification, referred to in the diagram below.



Figure 1: Specific Category modifications flow chart

CHAPTER 4 Process to classify a Modification

4.1 Assessment process to follow prior to classifying a modification

Once the UAS Operator has determined that the proposed change is a modification, it should classify the modification as minor or major.

This chapter describes the process a UAS Operator should follow to classify a modification. This chapter is only applicable to technical or operational modifications. Section 3.3 describes the process for assessment of administrative modifications.

The UAS Operator should apply this process to classify every modification it intends to make. The UAS Operator should also take into consideration the dependency between the categories for an intended modification. If an intended modification is categorised as an operational modification, its impact on technical areas should also be considered. As an example, a modification categorised as technical may also result in changes to the operational manual, which should then be considered an additional operational modification. The UAS Operator should take all these modifications into account.

At every step in the assessment process below, the UAS Operator should compare the impact of their proposed modification to the scope, limitations, conditions and mitigation measures specified in their OA. As an example, any intended modifications that may impact ground risk mitigation should be compared to the approved mitigation measures in their current OA.

For ground risk and air risk mitigation measures and containment measures, the UAS operator should only classify a modification as minor if there are no deviations from the approved OA for an intended modification.

For OSOs, the UAS operator's intended modification should not reduce the robustness level of integrity and assurance of their OSOs from their OA. As an example, any intended modification should not change the integrity and assurance from a medium robustness to a low robustness. If it did, it would be a major modification.

Process

For every intended modification, the UAS Operator should follow this process:



If the answer to all questions above is 'no', then it can be classified as a minor modification.

All the steps in the assessment should be carried out based on the UK SORA framework as per AMC 1 of Article 11 UK Regulation (EU) 2019/947. The assessment process should contain both theoretical analysis and practical testing where applicable.

The UAS Operator should keep a record of the assessment process for all modifications to comply with UAS.SPEC.050(1)(g) of UK Regulation 2019/947.

4.2 Classifying a modification based on the assessment process

If the assessment process identifies any major modifications at any of the steps in chapter 4.1 when compared to their existing OA, the UAS Operator should classify that modification as a major modification. If no major modifications are identified at any of the steps in chapter 4.1, the UAS Operator should classify that modification as a minor modification.

CHAPTER 5 Declaration of Modifications and Assessment checklist

5.1 Responsibilities of UAS Operator to declare minor modifications

Administrative Modifications

The UAS Operator is not required to inform the CAA of minor administrative modifications. Major administrative modifications defined in section 3.3 should follow the administrative variations to SORA OA under scheme of charges.

Operational and Technical Modifications

Appendix B contains a template that the UAS Operator should use to record and assess every modification in these categories. The UAS operator should submit to the CAA the assessment checklist for all technical and operational minor modifications as per this policy except software changes that have been classified as minor.

The assessment checklist for technical and operational minor modifications should be submitted to the CAA **within 30 days of the modification being made**. The UAS Operator can choose to compile the assessment checklist for multiple minor modifications before sending it to the CAA. The assessment checklist should be sent electronically via email to uassector@caa.co.uk

The CAA may inspect the assessment checklist, the assessment process and the associated evidence used by the UAS Operator to classify a modification, as set out by UAS.SPEC.090 of UK Regulation (EU) 2019/947.

Where the CAA considers that a modification classified by the UAS Operator as minor is in fact a major modification and is therefore a significant change within the meaning of UAS.SPEC.030(2) of UK Regulation (EU) 2019/947, the CAA will require the UAS Operator to change its classification and submit an application for an updated Operational Authorisation. In such cases, the CAA will provide written reasons for its decision.

APPENDIX A

Examples of modifications and the CAP722L process applied

The following table discusses some examples of modifications, assessing their impact on an existing OA under UK SORA and their classification. This table is intended to illustrate how the CAP722L process may be used to classify a modification. The very specific examples in this table are intended only as illustration. They include some cases where the UAS Operator is unable to collect the required evidence to prove a modification is minor. UAS Operators should not interpret this table as definitively classifying the modifications which are given as examples here. For every intended modification, the OA holder should perform the assessment process as per this policy.

UAS modification	Category of modification	Example Assessment of existing approved OA SORA due to modification	Classification of modification
Modification of battery to a different battery type, from a third- party supplier.	Technical	In this example, UAS Operator has changed the battery in their UAS. With a change of battery, to classify it as a minor modification the UAS operator should demonstrate that the new battery does not vary the containment requirements. In their OA, they have been approved for low containment requirements. However, with the new battery, the operator is unable to demonstrate low containment requirements. They cannot demonstrate the loss of control requirements of 10e- 3/FH. The new battery also does not have any specific maintenance instructions or a manual. Therefore, the UAS Operator is unable to satisfy OSO 3 at the required level of robustness in their OA. Hence, the integrity and assurance of the OSO has reduced compared to the OA. Due to these two reasons, they identify they have a major modification in step 8 and 9 of the assessment checklist. This	Major

UAS modification	Category of modification	Example Assessment of existing approved OA SORA due to modification	Classification of modification
		specific battery change is a major modification.	
Modification of location for a VLOS application	Operational	The UAS Operator has an OA which is specific to 3 locations, but the OA conditions do not contain a restriction on addition of new locations, or the OA specifies that addition of new locations shall follow the CAP722L process. They would now like to operate at a location outside of the 3 approved locations. In the assessment checklist, they identify no major modifications at any of the steps. They can add this new location as a minor modification	Minor
Change to a different UAS for the same operation	Technical	The UAS operator wants to use a different UAS which is not in the list of approved UAS in the OA. A different UAS may have a different wingspan, different hardware or software. The Operator goes through the assessment process and classifies it as a minor modification.	Minor but must apply to the CAA for an updated OA using Administrative variations to SORA OA
Decreasing ARC such as moving from VLOS ARC- b to an ARC-a	Operational	In this example, the UAS operator seeks to modify their operation from an ARC-b environment to an ARC-a environment. There are no location restrictions within the OA. They plan to continue to operate VLOS and apply the same tactical and strategic mitigations as they did in their OA. They conduct the other GRC, Containment analysis, apply the same mitigations and find no increase in GRC, no reduction in containment robustness and OSO integrity and assurance.	Minor

UAS modification	Category of modification	Example Assessment of existing approved OA SORA due to modification	Classification of modification
Decreasing ARC from ARC-c to ARC-b	Operational	In this example, the UAS Operator has an OA to operate in an ARC-c environment as they are operating above 500ft AGL. However, they want to make a modification to operate below 500ft AGL. They employ the same strategic and tactical air risk mitigations in their current OA. In all the other steps of the assessment process they don't identify a major modification. They can classify this modification as minor	Minor
Change of location BVLOS under AAE (ARC- a)	Operational	In this example, the UAS Operator holds an OA for BVLOS under AAE for a specific location. The OA specifies the location of the operation and does not contain provisions for the UAS Operator to add new locations, and so changing this would be a major modification.	Major
Software update not from UAS Designer (unverified software update)	Technical	In this example, the UAS Operator is not the designer. The UAS Operator receives a software update that is not an approved software update from the manufacturer. In this example, the UAS operator is either unable to understand the impact of the software update on their UAS and/or unable to develop a test program to validate via flight testing and theoretical analysis any software changes from the manufacturer resulting in major modifications at any of the steps of the assessment process. Therefore, the operator should classify this modification as Major.	Major

UAS modification	Category of modification	Example Assessment of existing approved OA SORA due to modification	Classification of modification
Software update from UAS Designer	Technical	In this scenario, the UAS operator is not the designer or manufacturer. The receive a software update from the manufacturer. They have performed flight testing and theoretical analysis for the software update. This would be considered a minor modification because they are following the instructions from the UAS designer and have tested and validated the update	Minor modification (does not need to inform the CAA)
Change of Remote Pilot	Operational	The names of individual Remote Pilots are not submitted as evidence as part of OSOs and are not contained on OAs. As such, changing Remote Pilots (providing they meet the competence requirements set out in the OA), is not a modification.	n/a – not a modification
Modifications to maintenance procedures	Technical	The UAS Operator is able to validate that all the non-editorial modifications to maintenance procedures have no major modification at any of the steps in the assessment process. Therefore, they classify this modification as minor.	Minor
Changes to maintenance personnel	Operational	The names of individual members of UAS support staff are not submitted as evidence as part of OSOs and are not contained on OAs. As such, changing these staff (providing they meet the competence requirements set out as part of their OA application), is not a modification.	n/a- not a modification
Conformity check procedures modification	Operational	The UAS Operator is able to validate that those modifications to conformity check procedures do not reduce the integrity and robustness of the OSOs, and do not deviate from OA conditions and	Minor

UAS modification	Category of modificationExample Assessment of existing approved OA SORA due to modification		Classification of modification
		limitations. The UAS Operator is able to validate that even with the modifications, the safety of the UAS remains the same as the OA. This modification can be classified as minor.	
Replacement of propellors in a UAS	Technical	In this example, the UAS operator seeks to change the propellors in their UAS. They are replacing a like for like propellor according to the UAS manufacturer specifications and using UAS manufacturer approved spares. The replacement is done as per manufacturer procedures and the UAS operator performs conformity checks and validates that the OSO integrity and assurance has not decreased. This change is not considered a modification.	n/a – not a modification
Repairs of airframe in a UAS	Technical	In this example, the UAS operator seeks to make repairs to a damaged airframe. The Operator has used the manufacturer's repair procedure for the airframe. After the repair, the operator is unable to validate that there is no change in the containment requirements for loss of control. In this case, the modification is classified as major	Major

UAS modification	Category of modification	Example Assessment of existing approved OA SORA due to modification	Classification of modification
Modification of payload not included in the last OA	Technical	In this example, the UAS Operator seeks to add a payload not included in the OA, the payload is not a dangerous good and there are no restrictions in the OA on adding new payload. With the addition of the new payload, the operator is able to demonstrate that there is no increase in GRC, does not exceed the maximum take off mass for the UAS as per manufacturer specification, no change in the max speed of the UAS as per manufacturer specification. They are also able to show there is no change in containment requirements robustness. They apply the same mitigations for ground risk mitigation and air risk mitigation. The Operator has conducted flight testing to show conformity of the payload to the operating procedures. The modification is classified as minor.	Minor
Installation of antennas or other communication devices to the UAS	Technical	In this example, the UAS operator intends to modify the UAS by adding any communication device or antennas. The UAS operator is unable to demonstrate that the addition of such devices does not interfere with remote pilot C2 link OSO required under SAIL and/or its capability to not interfere with flight controls. The modification is classified as major.	Major
Change of Command Unit (remote pilot station) user interface	Operational	In this example, the UAS operator has changed their remote pilot station setup or interface or operation methods. The Operator is unable to validate that there is no decrease in OSO integrity and assurance such as changes to operating procedures, competence of remote crew to operate from new pilot station or the	Major

UAS modification	Category of modification	Example Assessment of existing approved OA SORA due to modification	Classification of modification	
		changes to the pilot station. The modification is classified as Major.		
Addition of dangerous goods to payload not included in last OA	Operational	In this example, the UAS Operator has an OA not approved for carrying dangerous goods. They wish to now carry dangerous goods. The modification is classified as major.	Major	
Change of Accountable manager	Administrative	In this example, the UAS Operator has had a change in accountable manager. They must inform the CAA immediately of this change via the administrative change process. The change of accountable manager is a major administrative modification	Major administrative modification. Requires update of OA using Administrative variations to SORA OA	
Change of business premises	Administrative	In this example, the UAS Operator has had a change in business premises. They must inform the CAA immediately of this change via the administrative change process. The change of business premises is a major administrative modification	Major administrative modification. Requires update of OA using Administrative variations to SORA OA	
Editorial Changes of manuals or procedures	Administrative	In this example, the UAS Operator has made editorial modifications to their manuals or procedures. This is not considered a modification.	n/a - not a modification	

APPENDIX B Modification Assessment form

Name of the organisation:

Operational authorisation (OA) number:

Date of modification:

Category of modification:

Classification of modification:

Completed (name) by:

UAS operators in the specific category operating via an OA issued in accordance with Article 5 of UK Regulation (EU) 2019/947 are requested to complete the self-assessment form below using CAP722L – UAS modification policy. For every intended change, the operator should complete this self-assessment checklist. All the checklists of modifications made should be sent electronically to the CAA within 30 days of the modification, via email to uassector@caa.co.uk.

The UAS Operator should keep a record of the assessment process for all modifications in order to comply with UAS.SPEC.050 of UK Regulation (EU) 2019/947.

Declaration by OA holder

I am submitting my self-assessment checklist for UAS modification as per CAP722L.

I hereby declare that to the best of my knowledge the details contained within this checklist and any other information provided are accurate.

Name of representative from OA holder:

.....

Signature of Authorised Representative

Self-Assessment checklist for modifications under Specific Category (CAP 722L)

Assessment steps	Classification	Brief reason for classification and type of evidence used in assessment	CAA Office use
1. Conduct a complete re-assessment of conditions and limitations of the OA.	Major/Minor		
Is the proposed modification outside the conditions and limitations set out in the OA? Yes – Major modification			
2. Conduct a complete re-assessment of the intrinsic ground risk (iGRC).	Major/Minor		
Does the proposed modification increase the iGRC? (Yes – Major modification)			
3. Apply the same mitigations to reduce GRC which were approved in the OA	Major/Minor		
Are there any deviations from the current approved mitigations? (Yes – major modification)			
4. Conduct a complete re-assessment of the final ground risk and mitigation measures.	Major/Minor		
Does the proposed modification increase the final GRC? (Yes – Major modification)			
5. Conduct a complete re-assessment of the air risk class (ARC).	Major/Minor		
Does the proposed modification increase the initial ARC? (Yes – Major modification)			
6. Apply the same strategic mitigations to reduce ARC which are specified in the OA. Apply the same tactical mitigations which are specified in the OA.	Major/Minor		
Are there any deviations from the last approved mitigations? (Yes – Major modification)			
7. Conduct a complete re-assessment of the final air risk class and mitigation measures.	Major/Minor		
Does the proposed modification increase the final ARC? (Yes – Major modification)			

8. Conduct a complete re-assessment of the final SAIL. Does the proposed modification change the SAIL? (Yes – Major modification)	Major/Minor
 9. Conduct a complete re-assessment of the containment measures which are specified in the OA. Are there any deviations from the current approved containment measures? Yes – Major modification 	Major/Minor
 10. Conduct a complete re-assessment of all the OSOs (Operational safety objectives) associated with the SAIL to determine whether the OSOs are still met at the required level of robustness. Are there any changes in the evidence provided to support OSO compliance that would lower the robustness of any of the OSOs? Yes – Major modification 	Major/Minor

CAA Office Use only

No)	from operator? (Yes/No)	requesting for evidence	Inspector