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| **Идентификация на документа /** File identification |  | **Номера на ревизията /** Revision number |  |

**Приложение/Appendix № 4.2** към Заявление за издаване на разрешение за експлоатация в специфична категория/Application for operational authorisation

Инструкции за попълване

Досие за съответствие с оценката на експлоатационния риск (SORA) се състои от три части: стратегически мерки за смекчаване на наземния риск, изискванията за тактическо смекчаване на въздушния риск и осигуряване постигането на целите за експлоатационна безопасност.

**Част I** се състои от определените по време на оценката мерки за смекчаване на наземния риск (ако е приложимо).

В колона „Мерки, използвани за модифициране на присъщия наземен риск“ се отбелязват номерът и наименованието на мярката.

В колона „Ниво на стабилност“ се отбелязва нивото на стабилност (low/medium/high).

В колона „Критерии в методологията SORA“ се описват критериите, които трябва да бъдат изпълнени, за да се докаже необходимото ниво на интегритет и ново на осигуряване.

В колона „Изпълнение на съответствието“, кандидатът въвежда как отговаря на критериите. Може да се даде само препратка към документацията на кандидата, като например ръководство за експлоатация, стандартни оперативни процедури или подобен документ, или по друг начин да се опише как е изпълнен критерият или кандидатът декларира съответствието.

Колона „Попълва се от ГД ГВА“ не се попълва от заявителя.

***Забележка:*** *за М1 е представен в курсив пример* *за ниско ниво, за улеснение на заявителя как следва да бъде попълнена информацията.*

**Част II** отразява изискванията за тактическо смекчаване на въздушния риск (ако е приложимо).

В колона „Функция“ се отбелязва видът на съответната функция.

В колона „TMPR ново“ се отбелязва нивото на изискванията за тактическо смекчаване (VLOS/No Requirement (ARC-a)/low (ARC-b)/medium (ARC-c)/high (ARC-d)).

В колона „Изисквания за тактическо смекчаване” се описват самите изисквания.

В колона „Критерии в методологията SORA“ се описват критериите, които трябва да бъдат изпълнени, за да се докаже необходимото ниво на интегритет и ново на осигуряване.

В колона „Изпълнение на съответствието“, кандидатът въвежда как отговаря на критериите. Може да се даде само препратка към документацията на кандидата, като например ръководство за експлоатация, стандартни оперативни процедури или подобен документ, или по друг начин да се опише как е изпълнен критерият или кандидатът декларира съответствието.

Колона „Попълва се от ГД ГВА“ не се попълва от заявителя.

***Забележка:*** *за функция Откриване е представен в курсив пример за Low (ARC-b) за улеснение на заявителя как следва да бъде попълнена информацията.*

**Част III** съдържа определените по време на оценката цели за експлоатационна безопасност (OSO) и тяхното ниво.

След приключване на процедурата за оценка на експлоатационния риск за операции в специфична категория, операторът определя SAIL за планираната операция. SAIL е функция от крайното ниво на наземния риск и остатъчното ниво на въздушния риск. В зависимост от SAIL се определят и нивата на стабилност при постигане на целите за планираната експлоатация.

В колона „Цел за експлоатационна безопасност“ се отбелязва номерът и наименованието на целта за експлоатационна безопасност.

В колона SAIL се отбелязва SAIL (I-VI) и нивото на стабилност (low/medium/high).

В колона „Критерии в методологията SORA“ се описват критериите, които трябва да бъдат изпълнени, за да се докаже необходимото ниво на интегритет и ново на осигуряване.

В колона „Изпълнение на съответствието“, кандидатът въвежда как отговаря на критериите. Може да се даде само препратка към документацията на кандидата, като например ръководство за експлоатация, стандартни оперативни процедури или подобен документ, или по друг начин да се опише как е изпълнен критерият или кандидатът декларира съответствието.

Колона „Попълва се от ГД ГВА“ не се попълва от заявителя.

***Забележка:*** *за OSO #1&#3 са представени примери* *в курсив за улеснение на заявителя как следва да бъде попълнена информацията.*

**Част I Мерки, използвани за модифициране на присъщия наземен риск (ако е приложимо)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Мерки, използвани за модифициране на присъщия наземен риск/** Mitigations used to modify the intrinsic GRC | **Ниво на стабилност/**Level of robustness | **Критерии в методологията SORA**Criteria in SORA  | **Изпълнение на съответствието** Compliance | **Попълва се от ГД ГВА**to be completed by BG CAA |
| **M1 — Strategic mitigations for ground risk** | Level of integrity | *Low* | *Criterion #1 (Definition of the ground risk buffer)**A ground risk buffer with at least a 1:1 rule or for rotary wing UA defined using a ballistic methodology approach acceptable to the competent authority.* | *Параграф …. от Ръководство за експлоатация осигурява процедура за правилото 1:1* |  |
| *Criterion #2 (Evaluation of people at risk)**The applicant evaluates the area of operations by means of on-site inspections or appropriate appraisals to justify lowering the density of the people at risk (e.g. a residential area during daytime when some people may not be present or an industrial area at night time for the same reason).* | *……….* |  |
| Level of assurance | *Criterion #1 (Definition of the ground risk buffer)**The applicant declares that the required level of integrity is achieved.* | *Декларирам, че необходимото ниво на интегритет е постигнато.*  |  |
| *Criterion #2 (Evaluation of people at risk)**The applicant declares that the required level of integrity has been achieved.* | *…….*  |  |
| **M2 — Effects of UA impact dynamics are reduced (e.g. parachute)** | Level of integrity |  |  |  |  |
| Level of assurance |  |  |  |
| **M3 — An ERP is in place, UAS operator validated and effective** | Level of integrity |  |  |  |  |
| Level of assurance |  |  |  |
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**Част II Изисквания за тактическо смекчаване на въздушния риск (ако е приложимо)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Функция/Function** | **TMPR ново/**TMPR level  | **Изисквания за тактическо смекчаване/** Tactical mitigation performance requirements (TMPR) | **Критерии в методологията SORA**Criteria in SORA  | **Изпълнение на съответствието** Compliance | **Попълва се от ГД ГВА**to be completed by BG CAA |
| **Откриване** / Detect | Level of integrity | *Low**(ARC-b)* | *The expectation is for the applicant’s DAA Plan to enable the operator to detect approximately 50 % of all aircraft in the detection volume.**This is the performance requirement in the absence of failures and defaults.**It is required that the applicant has awareness of most of the traffic operating in the area in which the operator intends to fly, by relying on one or more of the following:**• Use of (web-based) real time aircraft tracking services**• Use Low Cost ADS-B In /UAT /FLARM/Pilot Aware aircraft trackers**• Use of UTM/U-space Dynamic Geofencing**• Monitoring aeronautical radio communications**(e.g. use of a scanner)* | *Allowable loss of function and performance of the Tactical Mitigation System: < 1 per 100 Flight Hours (1E-2 Loss/FH)**The requirement is considered to be met by commercially available products. No quantitative analysis is required.* | *Използва(т) се следната(ите) технология(и)/система(и)*  |  |
| Level of assurance | *The operator declares that the tactical mitigation system and procedures will mitigate the risk of collisions with manned aircraft to an acceptable level.* | *Декларирам, че ….* |  |
| **Решение** / Decide | Level of integrity |  |  |  |  |  |
| Level of assurance |  |  |  |
| **Команда** / Command | Level of integrity |  |  |  |  |  |
| Level of assurance |  |  |  |
| **Изпълнение** / Execute | Level of integrity |  |  |  |  |  |
| Level of assurance |  |  |  |
| **Обратна връзка** / FeedbackLoop | Level of integrity |  |  |  |  |  |
| Level of assurance |  |  |  |

**Част III Цели за експлоатационна безопасност (OSO) и тяхното ниво**

|  |  |  |  |  |
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| **Цели за експлоатационна безопасност** Operational Safety Objectives (OSOs) | **SAIL II Level of robustness** | **Критерии в методологията SORA**Criteria in SORA for SAIL II | **Изпълнение на съответствието** Compliance | **Попълва се от ГД ГВА**to be completed by BG CAA |
| **OSO #01****Ensure that the UAS operator is competent and/or proven** | Level of integrity | Low | The applicant is knowledgeable of the UAS being used and as a minimum has the following relevant operational procedures: checklists, maintenance, training, responsibilities, and associated duties. |  |  |
| Level of assurance | The elements delineated in the level of integrity are addressed in the ConOps. | *Разработена е концепция за опериране (ConOps)*  |  |
| **OSO #02****UAS manufactured by competent and/or proven entity** | Level of integrity | None | N/A | N/A |  |
| Level of assurance | N/A | N/A |  |
| **OSO #03** **UAS maintained by competent and/or proven entity (e.g. industry standards)** | Level of integrity | Low | (a) The UAS maintenance instructions are defined, and, when applicable, cover the UAS designer’s instructions and requirements. (b) The maintenance staff is competent and has received an authorisation to carry out UAS maintenance. (c) The maintenance staff use the UAS maintenance instructions while performing maintenance. | *а) Параграф …. от Ръководство за експлоатация осигурява процедура за техническо обслужване* *…….**…….* |  |
| Level of assurance | Criterion #1 (Procedure) (a) The maintenance instructions are documented. (b) The maintenance conducted on the UAS is recorded in a maintenance log system1/2. (c) A list of the maintenance staff authorised to carry out maintenance is established and kept up to date.*1 Objective is to record all the maintenance performed on the aircraft, and why it is performed (rectification of defects or malfunctions, modifications, scheduled maintenance, etc.)**2 The maintenance log may be requested for inspection/audit by the approving authority or an authorised representative.* | *а) Параграф … от Ръководство за експлоатация осигурява процедура за техническо обслужване* |  |
|  | Criterion #2 (Training) A record of all the relevant qualifications, experience and/or training completed by the maintenance staff is established and kept up to date. |  |  |
| **OSO #04** **UAS developed to authority recognised design standards** | Level of integrity | None | N/A | N/A |  |
| Level of assurance | N/A | N/A |  |
| **OSO #05****UAS is designed considering system safety and reliability** | Level of integrity | None | N/A | N/A |  |
| Level of assurance | N/A | N/A |  |
| **OSO #06****C3 link characteristics (e.g. performance, spectrum use) are appropriate for the operation** | Level of integrity | Low | (a) The applicant determines that the performance, RF spectrum usage1 and environmental conditions for C3 links are adequate to safely conduct the intended operation. (b) The remote pilot has the means to continuously monitor the C3 performance and ensures that the performance continues to meet the operational requirements2.*1 For a low level of integrity, unlicensed frequency bands might be acceptable under certain conditions, e.g.:**(a) the applicant demonstrates compliance with other RF spectrum usage requirements (e.g. Directive 2014/53/EU), by showing that the UAS equipment is compliant with these requirements; and**(b) the use of mechanisms to protect against interference (e.g. FHSS, frequency de-confliction by procedure).**2 The remote pilot has continual and timely access to the relevant C3 information that could affect the safety of flight. For operations requesting only a low level of integrity for this OSO, this could be achieved by monitoring the C2 link signal strength and receiving an alert from the UAS HMI if the signal strength becomes too low.* |  |  |
| Level of assurance | Consider criteria defined in Section 9The applicant declares that the required level of integrity has been achieved1.The competent authority may request EASA to validate the claimed integrity.*1 Supporting evidence may or may not be available.* |  |  |
| **OSO #07** **Inspection of the UAS (product inspection) to ensure consistency with the ConOps** | Level of integrity | Low | The remote crew ensures that the UAS is in a condition for safe operation and conforms to the approved ConOps. |  |  |
| Level of assurance | Criterion #1 (Procedures) Product inspection is documented and accounts for the manufacturer’s recommendations if available. |  |  |
| Criterion #2 (Training) The remote crew is trained to perform the product inspection, and that training is self-declared (with evidence available). |  |  |
| **OSO #08, OSO #11, OSO #14 and OSO #21** | Level of integrity | Medium | Criterion #1 (Procedure definition) (a) Operational procedures1 appropriate for the proposed operation are defined and, as a minimum, cover the following elements: (1) Flight planning; (2) Pre- and post-flight inspections; (3) Procedures to evaluate the environmental conditions before and during the mission (i.e. real-time evaluation); (4) Procedures to cope with unexpected adverse operating conditions (e.g. when ice is encountered during an operation not approved for icing conditions); (5) Normal procedures; (6) Contingency procedures (to cope with abnormal situations); (7) Emergency procedures (to cope with emergency situations); (8) Occurrence reporting procedures; andNote: normal, contingency and emergency procedures are compiled in an OM. (b) The limitations of the external systems supporting UAS operation2 are defined in an OM.*1 Operational procedures cover the deterioration3 of the UAS itself and any external system supporting UAS operation.* *2 In the scope of this assessment, external systems supporting UAS operation are defined as systems that are not already part of the UAS but are used to:* *(a) launch/take-off the UA;* *(b) make pre-flight checks; or* *(c) keep the UA within its operational volume (e.g. GNSS, satellite systems, air traffic management, U-Space). External systems activated/used after a loss of control of the operation are excluded from this definition.* *3 To properly address the deterioration of external systems required for the operation, it is recommended to:* *(a) identify these ‘external systems’;* *(b) identify the modes of deterioration of the ‘external systems’ (e.g. complete loss of GNSS, drift of the GNSS, latency issues, etc.) which would lead to a loss of control of the operation;* *(c) describe the means to detect these modes of deterioration of the external systems/facilities; and* *(d) describe the procedure(s) used when deterioration is detected (e.g. activation of the emergency recovery capability, switch to manual control, etc.).* |  |  |
| Criterion #2 (Procedure complexity) Contingency/emergency procedures require manual control by the remote pilot2 when the UAS is usually automatically controlled.*2 This is still under discussion since not all UAS have a mode where the pilot could directly control the surfaces; moreover, some people claim it requires significant skill not to make things worse.* |  |  |
| Criterion #3 (Consideration of Potential Human Error)Operational procedures take human error into consideration. |  |  |
| Level of assurance | (a) Operational procedures are validated against standards considered adequate by the competent authority and/or in accordance with a means of compliance acceptable to that authority. (b) Adequacy of the contingency and emergency procedures is proven through: (1) dedicated flight tests; or (2) simulation, provided the simulation is proven valid for the intended purpose with positive results. |  |  |
| **OSO #09, OSO #15 and OSO #22** | Level of integrity | Low | The competency-based, theoretical and practical training is adequate for the operation1 and ensures knowledge of: (a) the UAS Regulation; (b) airspace operating principles; (c) airmanship and aviation safety; (d) human performance limitations; (e) meteorology; (f) navigation/charts; (g) the UAS; and (h) operating procedures. |  |  |
| Level of assurance | Training is self-declared (with evidence available). |  |  |
| **OSO #10 & OSO #12** | Level of integrity | Low | When operating over populated areas or assemblies of people, it can be reasonably expected that a fatality will not occur from any probable1 failure2 of the UAS or any external system supporting the operation.*1 For the purpose of this assessment, the term ‘probable’ should be interpreted in a qualitative way as, ‘anticipated to occur one or more times during the entire system/operational life of a UAS’.**2 Some structural or mechanical failures may be excluded from the criterion if it can be shown that these mechanical parts were designed according to aviation industry best practices.* | N/A |  |
| Level of assurance | A design and installation appraisal is available. In particular, this appraisal shows that: (a) the design and installation features (independence, separation and redundancy) satisfy the low integrity criterion; and(b) particular risks relevant to the ConOps (e.g. hail, ice, snow, electromagnetic interference, etc.) do not violate the independence claims, if any. | N/A |  |
| **OSO #13** **External services supporting UAS operations are adequate for the operation** | Level of integrity | Low | The applicant ensures that the level of performance for any externally provided service necessary for the safety of the flight is adequate for the intended operation. If the externally provided service requires communication between the UAS operator and the service provider, the applicant ensures there is effective communication to support the service provision. Roles and responsibilities between the applicant and the external service provider are defined. |  |  |
| Level of assurance | The applicant declares that the requested level of performance for any externally provided service necessary for the safety of the flight is achieved (without evidence being necessarily available). |  |  |
| **OSO #16** **Multi crew coordination** | Level of integrity | Low | Criterion #1 (Procedures) Procedure(s) to ensure coordination between the crew members and robust and effective communication channels is (are) available and at a minimum cover: (a) assignment of tasks to the crew, and (b) establishment of step-by-step communications. |  |  |
| Criterion #2 (Training) Remote crew training covers multi-crew coordination |  |  |
| Criterion #3 (Communication devices) N/A |  |  |
| Level of assurance | Criterion #1 (Procedures) (a) Procedures do not require validation against either a standard or a means of compliance considered adequate by the competent authority. (b) The adequacy of the procedures and checklists is declared. |  |  |
| Criterion #2 (Training) Training is self-declared (with evidence available) |  |  |
| Criterion #3 (Communication devices) N/A |  |  |
| **OSO #17** **Remote crew is fit to operate** | Level of integrity | Low | The applicant has a policy defining how the remote crew can declare themselves fit to operate before conducting any operation. |  |  |
| Level of assurance | The policy to define how the remote crew declares themselves fit to operate (before an operation) is documented. The remote crew declaration of fit to operate (before an operation) is based on policy defined by the applicant. |  |  |
| **OSO #18** **Automatic protection of the flight envelope from human errors** | Level of integrity | None | N/A | N/A |  |
| Level of assurance | N/A | N/A |  |
| **OSO #19** **Safe recovery from Human Error** | Level of integrity | None | N/A | N/A |  |
| Level of assurance | N/A | N/A |  |
| **OSO #20** **A Human Factors evaluation has been performed and the HMI found appropriate for the mission** | Level of integrity | Low | The UAS information and control interfaces are clearly and succinctly presented and do not confuse, cause unreasonable fatigue, or contribute to remote crew errors that could adversely affect the safety of the operation.*If an electronic means is used to support potential VOs in their role to maintain awareness of the position of the unmanned aircraft, its HMI:**— is sufficient to allow the VOs to determine the position of the UA* during operation; and— does not degrade the VO’s ability to:— scan the airspace visually where the unmanned aircraft is operating for any potential collision hazard; and— maintain effective communication with the remote pilot at all times. |  |  |
| Level of assurance | The applicant conducts a human factors evaluation of the UAS to determine whether the HMI is appropriate for the mission. The HMI evaluation is based on inspection or analyses. The competent authority may request EASA to witness the HMI evaluation of the UAS. |  |  |
| **OSO #23 Environmental conditions for safe operations are defined, measurable and adhered to** | Level of integrity | Low | Criterion #1 (Definition) The environmental conditions for safe operations are defined and reflected in the flight manual or equivalent document. |  |  |
| Criterion #2 (Procedures)Procedures to evaluate environmental conditions before and during the mission (i.e. real-time evaluation) are available and include assessment of meteorological conditions (METAR, TAFOR, etc.) with a simple recording system. |  |  |
| Criterion #3 (Training)Training covers assessment of meteorological conditions. |  |  |
| Level of assurance | Criterion #1 (Definition) Consider the criteria defined in Section 9The applicant declares that the required level of integrity has been achieved1. *1 Supporting evidence may or may not be available.* |  |  |
| Criterion #2 (Procedures) - Procedures do not require validation against either a standard or a means of compliance considered adequate by the competent authority. - The adequacy of the procedures and checklists is declared. |  |  |
| Criterion #3 (Training) Training is self-declared (with evidence available). |  |  |
| **OSO #24** **UAS is designed and qualified for adverse environmental conditions** | Level of integrity | None | N/A | N/A |  |
| Level of assurance | N/A | N/A |  |

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| Обобщение на констатациите: *Попълва се от ГД ГВА* |
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| За и от името на Оператора на БЛС |  |  | Проверено от ГД ГВА |
| Име (отговорен ръководител): |  |  | Име (инспектор): |
| Подпис: |  |  | Подпис: |
| Дата: |  |  | Дата: |