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

**Приложение/Appendix № 4.5** 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 |  |  |  |
|  |  |  |

**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** / Feedback  Loop | Level of integrity |  |  |  |  | |  |
| Level of assurance |  |  | |  |

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Цели за експлоатационна безопасност**  Operational Safety Objectives (OSOs) | | **SAIL V Level of robustness** | **Критерии в методологията SORA**  Criteria in SORA for SAIL V | **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 | High | 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.  In addition, the applicant has an organisation appropriate1 for the intended operation. Also, the applicant has a method to identify, assess, and mitigate the risks associated with flight operations. These should be consistent with the nature and extent of the operations specified.  *1 For the purpose of this assessment, ‘appropriate’ should be interpreted as commensurate with/proportionate to the size of the organisation and the complexity of the operation.* |  |  |
| Level of assurance | The applicant holds an organisational operating certificate or has a recognised flight test organisation. In addition, a competent third party recurrently verifies the UAS operator’s competences. |  |  |
| **OSO #02**  **UAS manufactured by competent and/or proven entity** | Level of integrity | High | The manufacturer complies with the organisational requirements that are defined in Annex I (Part 21) to Regulation (EU) No 748/2012. |  |  |
| Level of assurance | The declared manufacturing procedures are developed to a standard considered adequate by the competent authority and/or in accordance with a means of compliance acceptable to that authority.  In addition, evidence is available that the UAS has been manufactured in conformance to its design.  The competent authority may request EASA to validate the claimed integrity.  In addition: EASA validates compliance with the organisational requirements that are defined in Annex I (Part 21) to Regulation (EU) No 748/2012. |  |  |
| **OSO #03**  **UAS maintained by competent and/or proven entity (e.g. industry standards)** | Level of integrity | High | (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.  In addition:  (a) Scheduled maintenance of each UAS is organised and in accordance with a maintenance programme.  (b) Upon completion, the maintenance log system is used to record all the maintenance conducted on the UAS, including releases. A maintenance release can only be accomplished by a staff member who has received a maintenance release authorisation for that particular UAS model/family.  In addition, the maintenance staff work in accordance with a maintenance procedure manual that provides information and procedures relevant to the maintenance facility, records, maintenance instructions, release, tools, material, components, defect deferral, etc. | *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.  In addition:  (a) The maintenance programme is developed in accordance with standards considered adequate by the competent authority and/or in accordance with a means of compliance acceptable to that authority.  (b) A list of maintenance staff with maintenance release authorisation is established and kept up to date.  In addition, the maintenance programme and the maintenance procedures manual are validated by a competent third party.  *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.  In addition:  (a) The initial training syllabus and training standard including theoretical/practical elements, duration, etc. is defined and is commensurate with the authorisation held by the maintenance staff.  (b) For staff that hold a maintenance release authorisation, the initial training is specific to that particular UAS model/family.  (c) All maintenance staff have undergone initial training.  In addition:  (a) A programme for the recurrent training of staff holding a maintenance release authorisation is established; and  (b) This programme is validated by a competent third party. |  |  |
| **OSO #04**  **UAS developed to authority recognised design standards** | Level of integrity | Medium | The UAS is designed to standards considered adequate by the competent authority and/or in accordance with a means of compliance acceptable to that authority. The standards and/or the means of compliance should be applicable to a medium level of integrity and the intended operation.  *In case of experimental flights that investigate new technical solutions, the competent authority may accept that recognised standards are not met.* |  |  |
| Level of assurance | Consider the criteria defined in Section 9  The applicant has supporting evidence that the required level of integrity is achieved. This is typically done by testing, analysis, simulation2, inspection, design review or through operational experience. The competent authority may request EASA to validate the claimed integrity.  *2 When simulation is performed, the validity of the targeted environment that is used in the simulation needs to be justified.*.  *If the operation is classified as SAIL V, EASA validates the claimed integrity. In all other cases, the competent authority may request EASA to validate the claimed integrity.* |  |  |
| **OSO #05**  **UAS is designed considering system safety and reliability** | Level of integrity | High | The equipment, systems, and installations are designed to minimise hazards1 in the event of a probable2 malfunction or failure of the UAS.  In addition, the strategy for detection, alerting and management of any malfunction, failure or combination thereof, which would lead to a hazard, is available.  In addition:  (a) Major failure conditions are not more frequent than remote3;  (b) Hazardous failure conditions are not more frequent than extremely remote3;  (c) Catastrophic failure conditions are not more frequent than extremely improbable3; and  (d) SW and AEH whose development error(s) may cause or contribute to hazardous or catastrophic failure conditions are developed to an industry standard or a methodology considered adequate by EASA and/or in accordance with means of compliance acceptable to EASA4.  *1 For the purpose of this assessment, the term ‘hazard’ should be interpreted as a failure condition that relates to major, hazardous, or catastrophic consequences.*  *2 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’.*  *3 Safety objectives may be derived from JARUS AMC RPAS.1309 Issue 2 Table 3 depending on the kinetic energy assessment made in accordance with Section 6 of EASA policy E.Y013-01.*  *4 Development assurance levels (DALs) for SW/AEH may be derived from JARUS AMC RPAS.1309 Issue 2 Table 3 depending on the kinetic energy assessment made in accordance with Section 6 of EASA policy E.Y013-01.* |  |  |
| Level of assurance | A functional hazard assessment1 and a design and installation appraisal that shows hazards are minimised, are available.  In addition:  (a) Safety analyses are conducted in line with standards considered adequate by the competent authority and/or in accordance with a means of compliance acceptable to that authority.  (b) A strategy for the detection of single failures of concern includes pre-flight checks.  The competent authority may request EASA to validate the claimed integrity.  In addition, safety analyses and development assurance activities are validated by EASA.  *1 The severity of failure conditions (no safety effect, minor, major, hazardous and catastrophic) should be determined according to the definitions provided in JARUS AMC RPAS.1309 Issue 2.* |  |  |
| **OSO #06**  **C3 link characteristics (e.g. performance, spectrum use) are appropriate for the operation** | Level of integrity | High | (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.  In addition, the use of licensed4 frequency bands for C2 Links is required.  *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.*  *Depending on the operation, the use of licensed frequency bands might be necessary. In some cases, the use of non-aeronautical bands* *(e.g. licensed bands for cellular network) may be acceptable.*  *4 This ensures a minimum level of performance and is not limited to aeronautical licensed frequency bands (e.g. licensed bands for cellular network). Nevertheless, some* *operations may require the use of bands allocated to the aeronautical mobile service for the use of C2 Link (e.g. 5030 – 5091 MHz).*  *In any case, the use of licensed frequency bands needs authorisation.* |  |  |
| Level of assurance | Demonstration of the C3 link performance is in accordance with standards considered adequate by the competent authority and/or in accordance with means of compliance acceptable to that authority.  The competent authority may request EASA to validate the claimed integrity.  In addition, evidence is validated by EASA. |  |  |
| **OSO #07**  **Inspection of the UAS (product inspection) to ensure consistency with the ConOps** | Level of integrity | High | 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.  In addition, the product inspection is documented using checklists.  In addition, the product inspection is validated by a competent third party. |  |  |
| Criterion #2 (Training)  A competent third party:  (a) validates the training syllabus; and  (b) verifies the remote crew competencies. |  |  |
| **OSO #08, OSO #11, OSO #14 and OSO #21** | Level of integrity | High | 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; and  Note: 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)  Operational procedures are simple. |  |  |
| Criterion #3 (Consideration of Potential Human Error)  Operational procedures take human error into consideration.  In addition, the remote crew3 receives crew resource management (CRM)4 training.  *3 In the context of the SORA, the term ‘remote crew’ refers to any person involved in the mission.*  *4 CRM training focuses on the effective use of all the remote crew to ensure safe and efficient operation, reducing error, avoiding stress and increasing efficiency.* |  |  |
| 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.  In addition:  (a) Flight tests performed to validate the procedures and checklists cover the complete flight envelope or are proven to be conservative.  (b) The procedures, checklists, flight tests and simulations are validated by a competent third party. |  |  |
| **OSO #09, OSO #15 and OSO #22** | Level of integrity | High | 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 | A competent third party:  (a) validates the training syllabus; and  (b) verifies the remote crew competencies. |  |  |
| **OSO #10 & OSO #12** | Level of integrity | High | When operating over populated areas or assemblies of people, it can be reasonably expected that a fatality will not occur from any single failure3 of the UAS or any external system supporting the operation. SW and AEH whose development error(s) could directly lead to a failure affecting the operation in such a way that it can be reasonably expected that a fatality will occur, are developed to a standard considered adequate by the competent authority and/or in accordance with means of compliance acceptable to that authority.  *3 Some structural or mechanical failures may be excluded from the no-single failure criterion if it can be shown that these mechanical parts were designed to a standard considered adequate by the competent authority and/or in accordance with a means of compliance acceptable to that authority* |  |  |
| 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.  In addition, the level of integrity claimed is substantiated by analysis and/or test data with supporting evidence. The competent authority may request EASA to validate the claimed integrity.  In addition, EASA validates the level of integrity claimed. |  |  |
| **OSO #13**  **External services supporting UAS operations are adequate for the operation** | Level of integrity | High | 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.  *Requirements for contracting services with the service provider may be derived from ICAO Standards and Recommended Practices (SARPs) that are currently under development.* |  |  |
| Level of assurance | The applicant has supporting evidence that the required level of performance for any externally provided service required for safety of the flight can be achieved for the full duration of the mission.  This may take the form of a service-level agreement (SLA) or any official commitment that prevails between a service provider and the applicant on the relevant aspects of the service (including quality, availability, responsibilities). The applicant has a means to monitor externally provided services which affect flight critical systems and take appropriate actions if real-time performance could lead to the loss of control of the operation.  In addition:  (a) the evidence of the performance of an externally provided service is achieved through demonstrations; and  (b) a competent third party validates the claimed level of integrity. |  |  |
| **OSO #16**  **Multi crew coordination** | Level of integrity | High | 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  In addition, the remote crew2 receives CRM3 training.  *2 In the context of the SORA, the term ‘remote crew’ refers to any person involved in the mission.*  *3 CRM training focuses on the effective use of all the remote crew to assure a safe and efficient operation, reducing error, avoiding stress and increasing efficiency.* |  |  |
| Criterion #3 (Communication devices)  Communication devices are redundant4 and comply with standards considered adequate by the competent authority and/or in accordance with a means of compliance acceptable to that authority.  *4 This implies the provision of an extra device to cope with the failure of the first device.* |  |  |
| Level of assurance | Criterion #1 (Procedures)  (a) Procedures are validated against standards considered adequate by the competent authority and/or in accordance with means of compliance acceptable to that authority.  (b) Adequacy of the procedures is proven through:  (1) dedicated flight tests; or  (2) simulation, provided the simulation is proven valid for the intended purpose with positive results.  In addition:  (a) flight tests performed to validate the procedures cover the complete flight envelope or are proven to be conservative; and  (b) the procedures, flight tests and simulations are validated by a competent third party. |  |  |
| Criterion #2 (Training)  A competent third party:  (a) validates the training syllabus; and  (b) verifies the remote crew competencies. |  |  |
| Criterion #3 (Communication devices) (Section9)  EASA validates the claimed level of integrity |  |  |
| **OSO #17**  **Remote crew is fit to operate** | Level of integrity | High | The applicant has a policy defining how the remote crew can declare themselves fit to operate before conducting any operation.  In addition:  - Duty, flight duty and resting times for the remote crew are defined by the applicant and adequate for the operation.  - The UAS operator defines requirements appropriate for the remote crew to operate the UAS.  In addition:  - The remote crew is medically fit,  - A fatigue risk management system (FRMS) is in place to manage any escalation in duty/flight duty times. |  |  |
| 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.  In addition:  - Remote crew duty, flight duty and the resting times policy are documented.  - Remote crew duty cycles are logged and cover at a minimum:  = when the remote crew member’s duty day commences,  = when the remote crew members are free from duties, and  = resting times within the duty cycle.  - There is evidence that the remote crew is fit to operate the UAS.  In addition:  - Medical standards considered adequate by the competent authority and/or means of compliance acceptable to that authority are established and a competent third party verifies that the remote crew is medically fit.  - A competent third party validates the duty/flight duty times.  - If an FRMS is used, it is validated and monitored by a competent third party. |  |  |
| **OSO #18**  **Automatic protection of the flight envelope from human errors** | Level of integrity | High | The UAS flight control system incorporates automatic protection of the flight envelope to ensure the UA remains within the flight envelope or ensures a timely recovery to the designed operational flight envelope following remote pilot error(s). |  |  |
| Level of assurance | The automatic protection of the flight envelope has been developed to standards considered adequate by the competent authority and/or in accordance with a means of compliance acceptable to that authority.  The competent authority may request EASA to validate the claimed integrity.  In addition, evidence is validated by EASA. |  |  |
| **OSO #19**  **Safe recovery from Human Error** | Level of integrity | Medium | Criterion #1 (Procedures and checklists)  Procedures and checklists that mitigate the risk of potential human errors from any person involved with the mission are defined and used. Procedures provide at a minimum:  - a clear distribution and assignment of tasks, and  - an internal checklist to ensure staff are adequately performing their assigned tasks. |  |  |
| Criterion #2 (Training)  - The remote crew1 is trained to use procedures and checklists.  - The remote crew1 receives CRM2 training.3  *1 In the context of SORA, the term ‘remote crew’ refers to any person involved in the mission.*  *2 CRM training focuses on the effective use of all the remote crew to ensure a safe and efficient operation, reducing error, avoiding stress and increasing efficiency.*  *3 The distinction between a low, a medium and a high level of robustness for this criterion is achieved through the level of assurance (see table below).* |  |  |
| Criterion #3 (UAS design)  Systems detecting and/or recovering from human errors are developed to standards considered adequate by the competent authority and/or in accordance with a means of compliance acceptable to that authority. |  |  |
| Level of assurance | Criterion #1 (Procedures and checklists)  - Procedures and checklists are validated against standards considered adequate by the competent authority and/or in accordance with a means of compliance acceptable to that authority.  - Adequacy of the procedures and checklists is proven through:  = Dedicated flight tests, or  = Simulation, provided the simulation is proven valid for the intended purpose with positive results. |  |  |
| Criterion #2 (Training)  Consider the criteria defined for the level of assurance of the generic remote crew training OSO (i.e. OSO #09, OSO #15 and OSO #22) corresponding to the SAIL of the operation |  |  |
| Criterion #3 (UAS design)  The applicant has supporting evidence that the required level of integrity is achieved. That evidence is provided through testing, analysis, simulation2, inspection, design review or operational experience. If the operation is classified as SAIL V, EASA validates the claimed integrity. In all other cases, the competent authority may request EASA to validate the claimed integrity.  *2 When simulation is performed, the validity of the targeted environment that is used in the simulation needs to be justified.* |  |  |
| **OSO #20**  **A Human Factors evaluation has been performed and the HMI found appropriate for the mission** | Level of integrity | Medium | 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 demonstrations or simulations.1 If the operation is classified as SAIL V, EASA witnesses the HMI evaluation of the UAS. In all other cases, the competent authority may request EASA to witness the HMI evaluation of the UAS.  *1 When simulation is performed, the validity of the targeted environment that is used in the simulation needs to be justified.* |  |  |
| **OSO #23 Environmental conditions for safe operations are defined, measurable and adhered to** | Level of integrity | High | 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 9  EASA validates the claimed level of integrity. |  |  |
| Criterion #2 (Procedures)  - Procedures are validated against standards considered adequate by the competent authority and/or in accordance with a means of compliance acceptable to that authority.  - The adequacy of the procedures is proved through:  = Dedicated flight tests, or  = Simulation, provided the simulation is proven valid for the intended purpose with positive results.  In addition:  - Flight tests performed to validate the procedures cover the complete flight envelope or are proven to be conservative.  - The procedures, flight tests and simulations are validated by a competent third party. |  |  |
| Criterion #3 (Training)  A competent third party:  - Validates the training syllabus.  - Verifies the remote crew competencies. |  |  |
| **OSO #24**  **UAS is designed and qualified for adverse environmental conditions** | Level of integrity | High | The UAS is designed using environmental standards considered adequate by the competent authority and/or in accordance with a means of compliance acceptable to that authority. |  |  |
| Level of assurance | Consider the criteria defined in Section 9  EASA validates the claimed level of integrity. |  |  |

|  |
| --- |
| Обобщение на констатациите: *Попълва се от ГД ГВА* |
|  |

|  |  |  |  |
| --- | --- | --- | --- |
| За и от името на Оператора на БЛС |  |  | Проверено от ГД ГВА |
| Име (отговорен ръководител): |  |  | Име (инспектор): |
| Подпис: |  |  | Подпис: |
| Дата: |  |  | Дата: |