Anlage – SORA – zum Antrag Betriebsgenehmigung

(SORA gem. AMC 1 zu Artikel 11)

Attachement – SORA - Application for operational authorization

(SORA acc. to AMC 1 Article 11)

1 Ground Risk Class

1.1 Bodenrisiko - Intrinsic UAS ground risk class (GRC)

UAS	1m <700J	3m <34kJ	8m <1084kJ	> 8m >1084kJ
Betriebsbereich ***Area of Operation***				
VLOS/BVLOS controlled ground area	1 ☐	2 ☐	3 ☐	4 ☐
VLOS sparsely populated area	2 ☐	3 ☐	4 ☐	5 ☐
BVLOS sparsely populated area	3 ☐	4 ☐	5 ☐	6 ☐
VLOS populated area	4 ☐	5 ☐	6 ☐	8 ☐
BVLOS populated area	5 ☐	6 ☐	8 ☐	10 ☐
VLOS assembly of people	7 ☐			
BVLOS assembly of people	8 ☐			

Typische kinetische Energie bei Einschlag *Typical kinetic energy expected*	**kJ + Formel (*kJ+employed formula)***
Anmerkungen zur Initial GRC und zum Betriebsbereich am Boden *Remarks*	

1.2 Risikominimierungsmaßnahmen Boden - Mitigations for final GRC determination			
Maßnahme (Mitigation)	(Robustness)	Angewendete Maßnahmen und Verfahren *List the specific mitigations*	Referenz im OM *Cross-Reference*
M1 Strategic mitigations for ground risk	☐ None 0 ☐ Low -1 ☐ Medium -2 ☐ High -4		
M2 Effects of ground impact are reduced	☐ Low 0 ☐ Medium -1 ☐ High -2		
M3 An emergency response plan (ERP) is in place	☐ Low +1 ☐ Medium 0 ☐ High -1		

1.3 Final GRC	1

2 Air Risk

2.1 Betroffene Lufträume *Airspaces*	☐ G	☐ E	☐ C
	☐ D		☐ D-CTR
	☐ TMZ	☐ RMZ	☐ ED-R
2.2 Betroffene Flugplätze im OPS Volume oder angrenzend *airports/heliports in the operation environment*	**ICAO-Kennung / Identifier im OPS Volume**	**ICAO-Kennung / Identifier angrenzend** ***(adjacent to the ops volume)***	
2.3 Initial ARC (sh. AMC 1 zu Artikel 11 Nr. 2.4.2. Figure 4 — ARC assignment process)	☐ **ARC-a**	☐ **ARC-b**	☐ **ARC-c** ☐ **ARC-d**
2.4 Strategische Minimierungsmaßnahmen (gem. Annex C geografisch, zeitlich, exposure) List the operational restrictions and air risk strategic mitigations and a cross-reference to the appropriate chapter and page(s) in the OM.	**Maßnahmen (*specific mitigations*)**		**Referenz im OM** ***(Cross-Reference)***

2.5 Betriebsabsprache mit ANSP / Flugplatz falls zutreffend *consultation ANSP / airport operator (if applicable)*	**Maßnahmen / Absprachen(*specific mitigations)***	**Referenz im OM** ***(Cross-Reference)***

2.6 Risidual ARC	☐ **ARC-a**	☐ **ARC-b**	☐ **ARC-c**	☐ **ARC-d**

VLOS / EVLOS [2.7] <u>oder</u> BVLOS [2.8]

2.7 VLOS - EVLOS	**VLOS** ☐ **EVLOS** ☐	Referenz im OM *Cross-Reference*
2.7.1 De-confliction Scheme Checklisten, Verfahren, die angewendet werden, um bemannten Luftverkehr auszuweichen.	**<u>Maßnahmen (*specific mitigations)*</u>**	
2.7.2 Ergänzende Maßnahmen z. B. ADS-B Receiver/Transmitter, FLARM Receiver/Transmitter, Anticoll. Light, Flightradar24 etc. *Additional mitigations*	**<u>Maßnahmen (*specific mitigations)*</u>**	
2.7.3 EVLOS - Kommunikationsverfahren zwischen Pilot:in + Beobachter:innen *Procedures for communication between RP and Observers*		

2.8 BVLOS OPS only!

2.8 BVLOS -TMPR Level (gem. Annex D)	**n/a** ☐ **low** ☐ **medium** ☐ **high** ☐		Referenz im OM *Cross-Reference*
2.8.1 Detection Volume	Altitude: _____m - _____m von (lower limit) bis (upper limit)	Horizontal Radius: _____m	

TMPR-Tabelle	Angaben gem. Annex D *Criteria acc. Annex D*	Umsetzung *Implementation*	Referenz im OM *Cross-Reference*
2.8.2 Detect	**TMPR Criteria**		
	Level of integrity		
	Level of assurance		

2.8.3 Decide	**TMPR Criteria**		
	Level of integrity		
	Level of assurance		

2.8.4 Command	**TMPR Criteria**		
	Level of integrity		
	Level of assurance		

2.8.5 Execute	**TMPR Criteria**		
	Level of integrity		
	Level of assurance		

2.8.6 Feedback Loop	**TMPR Criteria**		
	Level of integrity		
	Level of assurance		

3 Sail (specific assurance and integrity level)

3.1 Final GRC	**1**
3.2 Risidual ARC	☐ **Arc-a** ☐ **Arc-b** ☐ **Arc-c** ☐ **Arc-d**
3.3 SAIL Level	☐ **I** ☐ **II** ☐ **III** ☐ **IV** ☐ **V** ☐ **VI**

SAIL determination				
	Residual ARC			
Final GRC	a	b	c	d
≤2	I	II	IV	VI
3	II	II	IV	VI
4	III	III	IV	VI
5	IV	IV	IV	VI
6	V	V	V	VI
7	VI	VI	VI	VI
>7	Category C operation			

4 Angrenzende Gebiete (adjacent areas)

Nur auszufüllen, wenn zutreffend (specify only if applicable)!

4.1 Angrenzende Gebiete an das OPS Gebiet *Adjacent Aeas*	☐ **Menschenansammlungen** *Assemblies of people* ☐ **Arc-d**
4.2 OPS Volume befindet sich in dicht besiedeltem Gebiet *(OPS Volume in populated area)*	☐ **M1 – Minimierung angewendet** *M1 – Mitigation has been applied* ☐ **OPS in controlled ground area**

Wurde eine Checkbox angeklickt werden weitere technische Anforderungen an das UAS (enhanced containment) gestellt.

4.3 Enhanced containment	**Umsetzung (*Implementation*)**	**Referenz im OM *(Cross-Reference)***

5 Operational Safety Objectives (OSOs)							
OSO #	Robustness				Angaben gem. Annex E *Criteria acc. Annex E*	Umsetzung *Implementation*	Referenz im OM *Cross-Reference*
	O	L	M	H			
1 Ensure the UAS operator is competent and/or proven					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

2 UAS manufactured by competent and/or proven entity					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

3 UAS maintained by competent and/or proven entity					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

4 UAS developed to authority recognised design standards					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

5 UAS is designed considering system safety and reliability					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

6 C3 link performance is appropriate for the operation					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

7 Inspection of the UAS (product inspection) to ensure consistency with the ConOps					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

8 / 14 / 21 Operational procedures are defined, validated and adhered to **11** Procedures are in-place to handle the deterioration of external systems supporting UAS operations					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

9 / 15 Remote crew trained and current and able to control the abnormal situation **22** The remote crew is trained to identify critical environmental conditions and to avoid them					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

10 Safe recovery from a technical issue **12** The UAS is designed to manage the deterioration of external systems supporting UAS operations					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

13 External services supporting UAS operations are adequate for the operation					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

16 Multi-crew coordination					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

17 Remote crew is fit to operate					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

18 Automatic protection of the flight envelope from human error					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

19 Safe recovery from human error					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

20 A human factors evaluation has been performed and the human machine interface (HMI) found appropriate for the mission					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

23 Environmental conditions for safe operations are defined, measurable and adhered to					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		

24 UAS is designed and qualified for adverse environmental conditions					**Level of integrity**		
	☐	☐	☐	☐	**Level of assurance**		