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PROPOSAL

From:	Secretary-General of the European Commission, signed by Ms Martine DEPREZ, Director
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To:	Ms Thérèse BLANCHET, Secretary-General of the Council of the European Union
No. Cion doc.:	COM(2025) 335 annex
Subject:	ANNEXES to the Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the safety, resilience and sustainability of space activities in the Union

Delegations will find attached document COM(2025) 335 annex.

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ANNEXES 1 to 10

ANNEXES

to the

Proposal for a Regulation of the European Parliament and of the Council on the safety, resilience and sustainability of Space activities in the Union

{SEC(2025) 335 final} - {SWD(2025) 335 final} - {SWD(2025) 336 final}

Annex I

SAFETY AT LAUNCH REFERRED TO IN ARTICLES 58, 59 and 60

1. Safety at launch and re-entry

1.1. Coordination requirements

Union launch operators shall implement the following coordination requirements:

(a) Before launch or re-entry, a Union launch operator shall enter into an agreement with:

(i) the European Network Manager and affected Air Navigation Service Providers (ANSPs), in order to agree on the appropriate measures to minimise the impact of the closing of the air routes on air services and set-out the procedures for the issuance of the Notice to Airmen (NOTAM), and the procedures for closing the air routes during the respective launch or re-entry windows and;

(ii) the maritime authorities, to set-out the procedures for the issuance of the Notice to Mariners.

(b) The requirement laid down in point (a) shall not apply where the Union launch site operator has already coordinated with the ANSPs and the maritime authorities the aspects referred to in point (a)(i) and (ii).

(c) The Union launch operators shall provide timely information to the Network Manager and the Air Navigation Service Providers in order assess the size of the airspace to be closed and the routes affected such as to safely and efficiently integrate the space launches into the European Air Traffic System.

1.2. Launch collision avoidance (LCOLA)

1.2.1. The LCOLA shall be carried out before launch.

1.2.2. The LCOLA shall be carried out with the support of the relevant entity referred to in Article 64(1).

The Union launch operator shall ensure that the entity referred to in Article 64(1) obtains the predicated ephemerides for the launcher.

1.2.3. The method for calculating the LCOLA shall be developed by the Commission in accordance with Article 59(3), point (a), considering the probability of the launcher to collide with an object of interest, which shall depend on the following:

(a) whether the spacecraft is habitable;

(a) the size of the object;

(b) whether the spacecraft is active.

1.2.4. The Union launch operator shall assess and mitigate the risks related to collision in line with point 1.3, of Annex II.

1.2.5. The Union launch operator shall define the launch closure window according to the LCOLA assessment.

1.3. Casualty risk

The casualty risk at launch and at re-entry shall be limited by the application of the following measures:

(a) The calculation of the collective risk for casualties due to launch and re-entry shall be performed by using an approved method to be selected among existing methods by the Commission, in accordance with Article 59(3), point (b), or a new method to be developed by the Commission in accordance with Article 59(3), point (b), with due consideration for the following elements:

(i) all the phenomena leading to a risk of catastrophic damage (ascent phase, fallout from stage after separation, re-entry into the atmosphere of a deck put into orbit, recovery phase of a reusable deck);
(ii) pre-fragmentation trajectories (atmospheric or in outer space), depending on the flight times and faults considered;
(iii) the corresponding fragmentation and debris generation scenarios, at the re-entry or at the moment of neutralisation of the launch vehicle and the return to Earth of any element of the launcher;
(iv) the dispersion on the ground of the debris and the evaluation of the effects thereof;
(v) the reliability of the launch vehicle for the launch phase, including, where applicable, during the recovery phase;
(vi) the reliability of the deorbiting manoeuvre of the launcher element put into orbit, in the case of controlled re-entry.

(b) The casualty risk shall be limited to a threshold which shall be specified in the implementing act referred to in Article 59(3), point (b) by duly taking into account the differences in the types of risks entailed by the following risk scenarios:

(i) risk at launch;
(ii) risk at re-entry (controlled and un-controlled);
(iii) risk for the recovery phase of reusable launcher elements.

The implementing act referred to in Article 59(3), point (c), shall set out specific quantitative allocations for a particular risk of catastrophic damage, in particular for the specific cases of sea and air routes.

2. Flight safety system

2.1. Risk assessment

2.1.1. In their risk assessments, Union space operators shall identify potential failure scenarios that could make the launch vehicle hazardous.

2.1.2. The failure scenarios referred to in point 1 shall include scenarios for deviation from the flight corridor, dangerous fall-back phases, non-nominal flight control behaviour, and failure to achieve orbit.

2.1.3. In the risk assessments, Union launch operators shall set out specific rules for controlled or un-controlled re-entry. In the case of controlled re-entry, Union launch operators shall identify failure scenarios related to the propulsion object placed in orbit becoming a hazard, in particular in the case of failure to control the level or direction of thrust.

2.2. Neutralisation

2.2.1. The on-board neutralisation system shall meet at least the following requirements:

(a) The system can be activated remotely or automatically through an on-board algorithm.

(b) For automatic systems, Union launch operators shall submit the detailed data and validation test results to the competent authority.

2.2.2. Specific rules for controlled re-entry shall be in place.

On-board automatic systems shall be in place, and criteria to ensure controlled re-entry shall be defined, in line with point 2.1.3

3. Launcher safety plan

The launcher safety plan shall include at least the following elements:

(a) the confirmation of coordination and agreement between the Union launch operator and the ANSP and maritime authorities in line with point 1.1, point (a), unless an agreement has already been entered between the Union launch site operator and the relevant authorities, in line with point 1.1, point (b), demonstrated by a written confirmation;

(b) the result of the LCOLA, in line with point 1.2;

(c) the result of the calculation of the collective casualty risk at launch and re-entry, in line with point 1.3;

(d) the risk assessment of the failure scenario of the flight safety system, in line with point 2.2.

Annex II

SPACE DEBRIS MITIGATION FOR LAUNCHERS REFERRED TO IN ARTICLE 61

1. Limitation of debris

1.1. Limit the projected generation of debris

1.1.1. Launch vehicles shall be designed to limit the generation of debris during nominal operations in accordance with the following requirements:

(a) For single-spacecraft launches, the total number of launch vehicle orbital stages and resulting debris objects shall not exceed one.

(b) For multi-spacecraft launches, the total number shall not exceed two.

(c) Launch vehicles deployed in GEO protected orbit shall remain outside the GEO protected regions for at least 100 years.

(d) Launch vehicles deployed in MEO shall at the end of its mission, in accordance with the measures and the indicated safe region specified in the implementing act referred to in Article 61(3), point (b).

(e) The orbital lifetime of a launch vehicle deployed in LEO, shall be the one specified in the implementing act referred to in Article 61(3), point (a).

(f) The limitation of the risk of components becoming detached from the launcher and being placed in orbit which shall be carried out through the measures laid down in the implementing act in accordance with Article 61(3), point (a).

1.1.2. The requirements referred to in point 1.1.1., (a) and (b), shall not apply to the pyrotechnic system and to the solid or hybrid propellants.

1.2. Avoiding fragmentation in orbit due to internal causes

1.2.1. The probability of accidental fragmentation due to internal causes shall be limited in the manner specified in the implementing act referred to in Article 61(3), point (c).

1.2.2. The launch vehicle shall be designed and operated in a way so that at the end of the space mission, passivation of all components is carried out in the following manner:

(a) All energy reserves on board shall be permanently depleted or shall be in such a state that their depletion is unavoidable, within a reasonable period of time, or that they do not present a risk of generating debris.

(b) All means of generating energy on board shall be permanently deactivated, or all equipment directly supplied by energy production means shall be placed in a state such that such equipment entails no risk of generating debris.

(c) Following the end of life, the launcher shall be in a stable condition with minimal internal energy.

1.3. Avoiding fragmentation due to collision

In accordance with the requirements in terms of duration and threshold established in the implementing act referred to in Article 61(3), point (d), mitigating measures shall be implemented to limit the likelihood of collision between:

(a) launcher elements and launched objects;

(b) launcher elements and existing space objects in orbit (crewed, un-crewed and debris).

2. End of life disposal

2.1. Design coordination between the Union launch operator and spacecraft mission designer

The Union launch operator shall collaborate with the mission designer of the spacecraft to be launched in the context of the respective space mission with a view to design the launch phase of the space mission in a way that facilitates the disposal of the launch vehicle upper stage and considers the specification of the final injection orbit.

2.2. Disposal of launch vehicle in LEO

The disposal of launchers in LEO shall be performed by one of the following means, chosen in the following order of preference based on technical feasibility:

(a) A launcher in LEO shall be de-orbited by controlled atmospheric re-entry.

The design shall allow for the demise (‘design for demise’) or deliberate destruction of the launch vehicle orbital stage in accordance with the conditions established in implementing act referred to inArticle 61(3), point (e).

(b) If a controlled re-entry is not possible, and the casualty risk for an uncontrolled re-entry is low, the launch vehicle may instead be placed in a decay orbit, for a limited period, in line with point 1.1.1, point (e). In that case:

(i) the casualty risk shall be computed, by using a standardised method with a limited risk on ground, in accordance with the provisions of point 1.3, point (a), of Annex I;

(ii) the design shall allow for the demise (‘design for demise’) or the deliberate destruction of the launch vehicle orbital stage in line with conditions to be specified in the implementing act referred to in Article 61(3), point (e).

2.3. Disposal of launchers in MEO

The disposal of launch vehicles in MEO shall be performed in an orbit that does not interfere with protected regions and valuable orbits for a limited amount of time, in line with point 1.1.1, point (d).

2.4. Disposal of launch vehicles in GEO

The disposal of launch vehicle in GEO shall be performed by placing the launcher in a graveyard orbit, ensuring that it remains outside GEO protected region for a period of at least 100 years, under the effect of natural disturbances.

2.5. Probability of successful disposal

2.5.1. The launch stage of a space mission, and the launch vehicle orbital stage, respectively, shall be designed in such a way to have a high probability of successful completion of the disposal actions.

2.5.2. The probability of successful completion of the disposal actions shall be calculated considering at least the following elements: all relevant systems, subsystems and equipment, including their potential redundancy levels, reliability, and performance

degradation over time, as well as the availability of the necessary energy and resources.

2.5.3. The calculation of the probability of successful disposal actions, and the percentage threshold, shall be done in accordance with the method set out in the implementing act referred to in Article 61(3), point (f).

2.5.4. Union launch operators shall carry out an identification of the systems and capabilities required for successful disposal actions, including:

(a) estimations and uncertainties related to the successful disposal;

(b) the amount of propellant required to support disposal or re-orbit manoeuvre;

(c) the power requirements for disposal or re-orbit manoeuvre;

(d) the control requirements for disposal or re-orbit manoeuvre;

(e) the communication requirements for disposal or re-orbit manoeuvre.

2.6. Failure response plan

2.6.1. In the event of a failure preventing the launch vehicle orbital stage from executing the disposal actions, alternative disposal orbits shall be chosen to minimise the orbital lifetime or risk of interference with protected regions before loss of critical systems.

2.6.2. This shall be specified in a failure response planning before launch.

3. Space debris mitigation plans

3.1. Debris control plan

The debris control plan shall include at least the following elements:

(a) Evidence of compliance to the restrictions on planned debris generation, in line with point 1.1.1, point (a) or point 1.1.1, point (b), as applicable, and point 1.1.1, point (c), as well as with point 1.1.2, including relevant results from testing and analysis.

(b) Evidence of compliance with the orbital lifetime, in line with point 1.1.1, points (d), (e) and (f).

(c) Evidence of compliance with the requirement on probability of accidental fragmentation, in line with point 1.2.1, and measures to mitigate the risk such as choice of materials.

(d) Evidence of compliance with the passivation measures, in line with point 1.2.2, including relevant results from testing and analysis, and to the probability of successful passivation.

3.2. End-of-life mission disposal plan

The end-of-mission disposal plan shall include at least the following:

(a) The description of the planned disposal method, in line with point 2.2, point 2.3 or point 2.4, as applicable, for both nominal and non-nominal scenarios.

(b) The confirmation regarding the collaboration between the Union launch operator and the spacecraft mission designer, in line with point 2.1, including the specification of the final injection orbit.

(c) Evidence of compliance with the description on the adherence to the threshold of probability of successful disposal, including the relevant verification and analysis, in line with point 2.5.1, point 2.5.2 and point 2.5.3.

(d) The identification of systems and capabilities, in line with point 2.5.4.

(e) A failure response plan, in line with point 2.6.

Annex III

TRACKING AND SOFTWARE REFERRED TO IN ARTICLE 63

1. Tracking

A spacecraft shall be trackable, according to the following principles:

1.1. Union spacecraft operators shall either have themselves the technical means, or shall rely on external sources, to transmit the position of the spacecraft to the entity providing the Collision Avoidance service referred to in Article 64(1).

1.2. The capability to transmit the position referred to in point 1.1. shall meet the requirements laid down in points 1.3. and 1.4.

1.3. The tracking of the location in orbit shall be as precise as possible. The level of precision may take into account the existence of variations according to the region concerned and the size of the object.

1.4. The tracking system shall be based on either passive or active tracking.

1.5. As soon as possible after injection, Union spacecraft operators shall share with the relevant entity providing the Collision Avoidance service referred to in Article 64(1) the necessary up-to-date information to monitor the risks of collision with the catalogued space objects that the respective space spacecraft object may encounter.

1.6. The information referred to in point 1.5. shall include, at least, the following elements:

(a) ephemeris, from the Union spacecraft operator's own orbit restitution means, or from the space monitoring systems;

(b) a strategy for action, in line with Article 103;

(c) covariances.

2. Ground-based segment software requirements

2.1. The ground segment shall be capable of providing a daily orbital forecast, including manoeuvres, for the spacecraft, for up to:

(a) 7 days at minute level intervals, and in accordance with the Consultative Committee for Space Data Systems (CCSDS) format in LEO;

(b) 14 days at minute level intervals and in accordance with CCSDS format in MEO;

(c) 14 days at minute level intervals and in accordance with CCSDS format in GEO.

2.2. The ground segment shall provide rank 7 covariance formation (position, velocity, drag) for 7 day trajectory forecasts.

2.3. The ground-based segment shall be able to process CCSDS data format, and in particular Orbital ephemerides Messages (OEM) and Conjunction Data Messages (CDM), for the collision avoidance operations.

Annex IV

COLLISION AVOIDANCE REFERRED TO IN ARTICLES 15 AND 64

1. Requirements for the choice of the collision avoidance (CA) space service provider referred to in Article 15(1), first subparagraph, point (a)(i).

Third country space operators shall ensure that the CA space service provider they subscribe to, pursuant to Article 15(1), first subparagraph, point (a)(i), complies with the following requirements:

1.1. General requirements

(a) The technical means to assess collision – a CA system – and compliance with the requirements of Section 1 of this Annex.

The CA system shall be either external or in-house, provided that in the case of an in-house system, adequate mechanisms are in place to ensure the independence of the respective CA space service provider.

(b) The CA space services provider shall provide to its users a decision with sufficient time to enable manoeuvres on quality conjunction assessment results on an operational timeframe.

(c) The CA space services provider shall ensure CA space service provision for all phases of the mission (from launch to disposal).

1.2. Requirements for the input ingestion

(a) The CA space services provider shall be able to ingest orbits in standard format and associated covariance, including planned manoeuvres.

(b) The CA space services provider shall be able to ingest data from various sources, such as ephemerides provided directly by spacecraft operators, orbits from catalogue of space objects and Conjunction Data Messages (CDMs) provided by external data source.

(c) The CA space services provider shall be able to compute covariance information in exceptional cases when not included in the data source.

1.3. Requirements regarding data Quality Check

(a) The CA space services provider shall perform data quality checks to assess the data from space operators.

(b) The CA space services provider shall perform calibration of sensors' data.

1.4. Requirements for the CA process

(a) The CA space services provider may use existing catalogues and CDMs in the operational CA service.

(b) The CA space services provider shall support the screening of ephemerides, the time histories of both operational and predicted positional and velocities that incorporate all planned manoeuvres.

(c) The CA space services provider shall perform the following tasks for spacecraft operation, by making use of available sources of internal and external information:

(i) identifying conjunctions within the screening volume adapted to the orbit regime of the protected spacecraft;
(ii) assessing the risk of the conjunctions, based on the probability of collision and, when appropriate, on geometry (miss distance and radial distance) criteria;
(iii) generating CDMs;
(iv) providing users with a diverse, user-selectable set of conjunction and CA "Go/No-Go" manoeuvre metrics, to assess the collision risk and to develop an appropriate course of action;
(v) checking that mitigation actions decrease the risk level of the conjunctions to be mitigated, and do not unduly increase the risk level of other conjunctions.

(d) The CA space services provider shall use collision probability estimation techniques whose soundness is generally accepted, such as those used by the Union CA space services provider referred to in Article 64(1), and appropriate for a given encounter.

(e) The CA space services provider shall be able to coordinate with other CA service providers, especially in case of High Interest Event.

1.5. Timeliness requirements

(a) The CA space services provider shall periodically assess the risk of conjunction.

The recommended time interval shall be once per day, per GEO spacecraft, and once per hour, per LEO/MEO spacecraft (provided that new information is available).

(b) The CA space services provider shall have one person available to provide support within 1 hour, on a 24h/7 days basis.

2. Requirements for Union spacecraft operators

2.1. In the case of manoeuvrable spacecraft, Union spacecraft operators shall be able to perform CA manoeuvres.

2.2. In the case of non-manoeuvrable spacecraft, Union spacecraft operators shall cooperate with the Union CA space services provider referred to in Article 64(1) under best efforts.

2.3. Union spacecraft operators shall provide to the Union CA space services provider referred to in Article 64(1) information about its operational orbit(s), in the form of predicted positional and velocities time histories that incorporate all planned manoeuvres, including realistic covariances:

(a) 1 day before performing planned manoeuvres for non-automatic CA system;

(b) as soon as possible for automatic CA systems.

2.4. The Union spacecraft operator shall notify the Union CA space services provider referred to in Article 64(1) about:

(a) any change as regards the active and manoeuvrability status of its spacecraft;

(b) any change regarding the end of the space mission;

(c) any exceptional operations;

(d) any change as regards the re-entry method (controlled / semi-controlled /uncontrolled);

(e) any action planned after a High Interest Event alert.

2.5. The Union spacecraft operator in charge of a manoeuvrable spacecraft shall provide a contact point available to respond:

(a) within 8 hours on a 24h/7 days basis for LEO;

(b) within 24 hours, on a 24h/7 days basis for MEO and GEO.

2.6. The Union spacecraft operator shall provide the Union CA space services provider referred to in Article 64(1) with the radius of the sphere englobing its spacecraft, or an upper-bound estimation.

2.7. Union spacecraft operators and the Union CA space services provider referred to in Article 64(1) shall define at the time of spacecraft service registration:

(a) as regards the elements related to the safety distance requirement, the limit above which the risk of collision is considered high enough to trigger a High Interest Event alert;

(b) specific requirements according to the different phases of the mission (launch, transit, passivation, EOL-operations).

Annex V

SPACECRAFT SPACE DEBRIS MITIGATION REFERRED TO IN ARTICLE 70

1. Limit spacecraft fragmentation

1.1. Limitation of projected generation of debris

To limit the planned generation of debris during nominal operations, the following requirements shall be implemented:

(a) A spacecraft shall be designed to limit the generation of debris, in accordance with the requirements set out in the implementing act referred to in Article 70(3), point (a).

(b) Each planned debris estimated to be in orbit for the period of time specified in the implementing act referred to in Article 70(3), point (a), shall be justified in the Debris Control Plan.

(c) Union spacecraft operators shall put in place measures for the design of pyrotechnic devices and solid rocket motors in line with the requirements laid down in the implementing act referred to in Article 70(3), point (a).

1.2. Avoiding fragmentation due to internal spacecraft causes

1.2.1. To limit the risk of accidental fragmentation caused by on-board source of energy, the following requirements shall be implemented:

(a) The probability of accidental fragmentation of a spacecraft in Earth orbit shall be limited, in accordance with the requirements laid down in the implementing act referred to in Article 70(3), point (b)(i), until its end of life.

The calculation of the risk of accidental fragmentation of a spacecraft shall follow a standardised method, taking into account all known failure modes.

(b) The spacecraft on-board sources of energy shall be designed to be robust and take into account the following factors:

(i) the expected nominal environmental extremes;

(ii) the nominal mechanical and chemical breakdown;

(iii) the potential impact of system spacecraft failure modes; and

(iv) the impact of on-board sources of energy on the spacecraft's ability to passivate.

(c) The spacecraft shall be designed taking into consideration the specificities of its subsystems, such as the electrical and propulsion systems, or the pressurized systems' risk of fragmentation during their orbit lifetime.

(d) The in-orbit operation of spacecraft shall include procedures for the monitoring of the relevant parameters of each subsystem identified as a potential source of space debris generation, in order to detect malfunctions.

(e) Spacecraft shall be passivated in accordance with the following principles:

(i) Measures taken to implement the requirement regarding passivation shall take into account specificities related to the type of propulsion.

(ii) When electric passivation is used, the design of spacecraft shall ensure that schematics of electrical passivation are established and specified.

(iii) Union spacecraft operators shall, before the end of life of the spacecraft, update the passivation procedures to check if the passivation capabilities of the spacecraft are still nominal.

(iv) Except for Cubesats, the design of spacecraft shall ensure it contains a redundancy function for passivation.

(v) Union spacecraft operators shall deplete energy reserve in either of the following ways:

(1) through hard passivation, whereby a Union spacecraft operator shall put in place controls with parameters set to a level which cannot cause an explosion or deflagration large enough to release orbital debris or fragmentation of the spacecraft;

(2) through soft passivation in accordance with the conditions set out in the implementing act referred to in Article 70(3), point (b).

(vi) Union spacecraft operators shall deactivate the parts of the spacecraft that produce energy.

(vii) Following the passivation there shall be no more radioelectric emissions of the platform and the payload.

(viii) Passivation shall not generate space debris larger to 1 mm, with the exception of the ventilation of propellant.

(f) In the case of electrical passivation, energy sources shall be isolated and the battery drained.

Specific rules regarding passivation for re-entry shall be specified in the implementing act referred to in Article 70(3), point (d).

1.3. Avoiding fragmentation due to collision

To limit the fragmentation caused by collision, the following requirements shall be implemented:

(a) Spacecraft shall be designed and manufactured, and space missions shall be respectively designed, in a way that limits the risk of collision, in accordance with the requirements laid down in the implementing act referred to in Article 70(3), point (b).

(b) Spacecraft shall be designed and manufactured to limit the risk that a space debris or meteoroids causes the spacecraft or its component(s) to fragment, and, where tethers are used, additional measures shall be implemented to mitigate the risk of collision with space objects and meteoroids, in accordance with the requirements laid down in the implementing act referred to in Article 70(3), point (b).

(c) The probability of collision with a space object and meteoroids shall be calculated before launch for the entire lifetime of the spacecraft, and the risks shall be limited, in accordance with the threshold laid down in the implementing referred to in Article 70(3), point (b).

(d) The calculation of the probability of collision shall follow the standardised method laid down in the implementing act referred to in Article 70(3), point (b).

2. Reliability design and control

2.1. Provisions concerning the reliability of the design

2.1.1. The design and manufacture of spacecraft and of its components and sub-systems shall be:

(a) verified, through testing, analysis, demonstration or inspection;

(b) validated, through acceptance testing, demonstration or inspection; and

(c) tested, analysed and demonstrated, where such testing, analysis and demonstration may vary based on the type of equipment and the criticality of the functions.

2.1.2. Control of the design, manufacture, integration and implementation of spacecraft systems shall be put in place, in order to manage hazards, especially those arising from critical activities.

2.2. Operational procedures for quality and reliability control

Union spacecraft operators shall implement a quality management system.

2.2.1. Union spacecraft operators shall implement a quality management system.

The implementation of a quality management system shall cover at least quality assurance, RAMS (reliability, availability, maintainability, safety), including health monitoring, failure prognostics and configuration management.

2.2.2. The monitoring and controlling of any deviation in the manufacturing and implementation of the space mission shall include the following:

(a) implementation of a system to monitor and control deviations in manufacturing and implementation, including amongst other things the following:

(i) deviations in relation to configuration (definition, launch system, production and implementation process);

(ii) deviation resulting from the utilisation of in-flight data;

(iii) the operational sequences involving the spacecraft control shall be tested before launch, for the critical phases of a space mission (including but not limited to launch and early operation phase, decommissioning, critical operations in orbit);

(iv) pressure and temperature in the engines, tanks, pressure vessels;

(v) parameters (temperature and voltage) of batteries to detect failures;

(vi) parameters to detect failure modes of the orbit and attitude control system.

(b) ensuring the traceability of technical and organisation events affecting the engineering and manufacturing processes.

2.2.3. Definition of procedures to assess critical functions, using in-flight data.

(a) The procedures shall foresee a re-evaluation to be carried out at least the following times:

(i) upon request of the component authority, during nominal lifetime and during time of mission extension;

(ii) upon detection of an anomaly which could affect the successful deorbiting;

(iii) when evaluating a space mission lifetime extension;

(iv) upon occurrence of a major change on the space environment (for example a catastrophic fragmentation) with a significant impact on the operational orbit or disposal approach;

(b) At least the following parameters shall be re-assessed in the procedures referred to in point (a):

(i) the monitored and updated probability of successful disposal with flight data, to ensure that the probability of successful disposal is high;

(ii) the foreseen probability of successful disposal as referenced in Section III, Part A, for the remaining time in orbit;

(iii) the foreseen number of collision avoidance manoeuvres up to the end of life, with updated environmental models (and respective Delta V);

(iv) the disposal orbit and the respective risk of collisions from the foreseen deorbit time up to re-entry (and guarantee that the respective Delta V is available).

3. End of life

3.1. Probability of successful disposal

3.1.1. Union spacecraft operators shall calculate and adhere to assigned limits on the probability of successful disposal.

3.1.2. The probability of successful disposal shall be high and shall be calculated according to the requirements set out in the implementing act referred to in Article 70(3), point (c).

3.1.3. At the design phase, the calculation by Union spacecraft operators of the probability of successful disposal shall be based on recognised method, based on state of the art, set out in the implementing act referred to in Article 70(3), point (c), and shall include:

(a) an assessment of the probability that a space debris or meteoroid impact prevents the successful disposal of the spacecraft;

(b) an assessment of uncertainties in the availability of resources, such as propellant, required for the disposal;

(c) the inherent reliability of equipment necessary to conduct the disposal, and a monitoring of the equipment, including the subsystems, units and functions used solely for disposal;

(d) probability of collisions on appendages, unless demonstrated that they do not affect the disposal functions;

(e) passivation operations, even after loss of command or loss of contact.

3.1.4. The probability of successful disposal shall be reassessed after launch, taking into consideration any changes in the operational status of the spacecraft.

3.1.5. If propellant is used:

(a) The probability, calculated prior to launch, of having the propellant needed for the end-of-life manoeuvres, at each moment during the space mission, and up to the initiation of successful decommissioning manoeuvres, shall be maximal.

(b) Before disposal, the Union spacecraft operator shall check that it has to the necessary propellant to perform the disposal.

3.2. Design of the spacecraft in view of end of life disposal

3.2.1. Spacecraft shall be designed to support end of life disposal through the means referred to in point 3.3, point 3.6 or point 3.7, as applicable.

3.2.2. Disposal capabilities shall be planned and checked at the design stage. For LEO space missions, this shall include designing for the type of planned re-entry.

3.2.3. Disposal capabilities shall be available at any time of the space mission.

3.2.4. Protection of disposal systems from space debris and meteoroids shall be demonstrated.

3.2.5. Union spacecraft operators shall be able to maintain communication links and active tracking during disposal phase.

3.3. Removal of spacecraft in LEO

The removal of spacecraft in LEO shall be performed by one or more of the following means, chosen in the following order of preference based on technical feasibility:

(a) Performing a controlled re-entry with a well-defined impact footprint on the surface of the Earth, to limit the casualty risk;

(b) Performing a semi-controlled re-entry after the end of mission, in case the design complies with the casualty risk;

(c) Performing an immediate uncontrolled re-entry after the end of mission, in case the design complies with the casualty risk;

(d) Allowing its orbit to decay naturally, in accordance with the limit of cumulative accidental collision probability, maximum orbital lifetime, and the limit for casualty risk;

(e) In exceptional justified cases, for Very High LEO, disposal can take place in an orbit not interfering with protected regions and valuable orbits;

(f) Removal by ISOS.

3.4. Maximum orbital lifetime before re-entry for LEO

3.4.1. The Union spacecraft operator of spacecraft in LEO shall disclose the expected time in orbit following:

(a) the end of the space mission;

(b) the completion of the passivation procedure.

3.4.2. For LEO, the orbital lifetime, after the end of the mission, and before re-entry into the atmosphere, shall be limited in accordance with the requirements set out in the implementing act referred to in Article 70(3), point (c).

3.5. Rules for re-entry for LEO

3.5.1. For spacecraft being disposed in accordance with the rules laid down in Part 3.4, Union spacecraft operators shall consider design for demise as one of the steps to minimise the casualty risk.

3.5.2. Union spacecraft operators shall demonstrate that there is no risk of on-orbit collision with crewed stations following three days after the de-orbiting and return to Earth manoeuvres.

3.5.3. Union spacecraft operators shall carry out an assessment as to whether parts of the spacecraft will survive atmospheric re-entry and impact the surface of the Earth and shall set out the measures to be taken to reduce the casualty risk, in line with point 3.5.4.

3.5.4. The probability of casualties per re-entry shall be further specified in the implementing act referred to in Article 70(3), point (c)(iii), considering the following requirements:

(a) be as low as possible;

(b) be expressed as a maximum probability of having at least one victim (collective risk);

(c) include casualties on ground, as well as regards air traffic and maritime traffic;

(d) in the case of premature or accidental re-entry, Union spacecraft operators shall, as a matter of priority, implement all measures to reduce the risk to the ground.

3.5.5. The re-entry shall analyse the risk for the environment due to the substances which might survive the re-entry.

3.5.6. In case the spacecraft contains radio-active materials, the conditions set out in the implementing act referred to in Article 70(3), point (c)(iii), shall be followed.

3.5.7. Spacecraft that cannot perform a controlled re-entry as planned, shall be passivated, provided that passivation can be carried out in a safe, timely and controlled manner.

3.5.8. For a spacecraft that survives a planned re-entry and is of a size determined in accordance with the implementing act referred to in Article 70(3), point (c)(iii), Union spacecraft operators shall register to a re-entry service, able to:

(a) follow the re-entry;

(b) make predictions on potential landing site.

3.5.9. The re-entry service referred to in point 3.5.8 shall inform the relevant air traffic and maritime authorities of any expected re-entry.

3.6. Removal of spacecraft in MEO

Removal from Earth orbits outside of the protected orbital regions to an orbit not interfering with protected regions and valuable orbits within a number of years specified in the implementing act referred to in Article 70(3), point (c).

3.7. Removal of spacecraft in GEO

Removal from Earth orbits outside of the protected orbital regions in an orbit not interfering with protected regions and valuable orbits within 100 years after its end of life.

3.8. Failure response

3.8.1. The Union spacecraft operator shall draw up a failure response plan in line with point 4.3.

3.8.2. The Union spacecraft operator shall implement the failure response if a critical system for the disposal process fails.

4. Space debris mitigation plans

4.1. Debris control plan

4.1.1. A fragmentation prevention plan shall be developed by considering each item containing stored energy. When developing such plans, Union spacecraft operators shall have due regard to systems that are most likely to cause accidental fragmentation of a spacecraft, such as notably:

(a) the electrical systems, especially batteries;

(b) the propulsion systems and associated components;

(c) the pressurized systems;

(d) the rotating mechanisms.

4.1.2. When drawing-up the fragmentation prevention plan, a system level risk assessment approach shall be used.

4.1.3. The debris control plan shall list at least the following:

(a) a description of adherence to the restrictions on the planned debris generation, in line with point 1.1.

(b) a description of adherence to the requirement on probability of accidental fragmentation, in line with point 1.2.

(c) a description of adherence to limiting the risk of fragmentation due to collision, in line with point 1.3.

(d) a description of the adherence to space reliability of design, in line with point 2.1.

(e) a description of the operational procedures for quality and reliability control, in line with point 2.2.1 and point 2.2.2.

4.2. End of life disposal plan

The end of life disposal plan shall contain at least the following:

(a) a description of adherence to the threshold of successful disposal laid down in point 3.1.2.

(b) for Union spacecraft operators in LEO, a description of the selected disposal method, in line with the options laid down in point 3.3, point 3.4 and point 3.5.

(c) for Union spacecraft operators in MEO, a description of the adherence to the requirements laid down in point 3.6.

(d) for Union spacecraft operators in GEO, a description of the adherence to the requirements laid down in point 3.7.

4.3. Failure response plan

The Union spacecraft operator shall develop a failure response plan that shall include at least the following elements:

(a) the criteria for selecting, from the alternative disposal methods, the one showing the lowest level of risk for a spacecraft being left in an operational orbit;

(b) the criteria for initiating the passivation contingency actions;

(c) for Union spacecraft operators in MEO and GEO, steps to remove spacecraft to an alternative orbit, and passivate it before any further critical systems are lost;

(d) steps to ensure the safe re-entry of the spacecraft from LEO, and to passivate it before any further critical systems are lost;

(e) the component of existing or future spacecraft that share components that could lead to a similar failure of the critical system (lessons learned);

(f) a removal plan that assesses the possibility of removal to be carried out by an ISOS service provider, including:

  (i) a dedicated operational mode for the service operation (removal), and making use of the integrated removal interface (if applicable) to de-risk a provided in-space service by the servicer spacecraft;

  (ii) the technical means and the specific mission mode;

  (iii) if the removal plan is not successful, or if it excludes the use of ISOS providers in mitigating risks and leaves the spacecraft in a protected orbit without manoeuvrability, spacecraft operators shall include the dedicated spacecraft service interfaces (SSI) referred to in Article 101(3), in future spacecraft as part of the authorisation requirements.

Annex VI

CONSTELLATIONS REFERRED TO IN ARTICLE 73

1. Intra-constellation requirements

1.1. For constellations, mega-constellations and giga-constellations, the debris control plans referred to in Article 70(2), point (a), shall, with a view to address the collision risk during orbital lifetime, include a report on intra constellation collision risks, listing the measures taken for mitigating that risk.

1.2. For mega-constellations and giga-constellations the following shall apply:

(a) the spacecraft design and operations shall enable the implementation of automated processes as part of the collision avoidance strategy;

(b) Union spacecraft operators shall consider orbits that minimise the intra-constellation collision risk, including in cases of in-orbit failure, Launch and Early Operations (LEOP) and disposal;

(c) during the disposal phase and after the end-of-life, Union spacecraft operators shall analyse the risk of intra-constellation collisions and keep it at the lowest level possible, to be specified in the implementing act referred to in Article 73(4), point (a).

2. Additional reporting requirements

2.1. For constellations, mega-constellations and giga-constellations, Union spacecraft operators shall take specific measures to ensure limitation of light and radio pollution to be specified in the implementing act referred to in Article 73(4), point (b), first subparagraph;

2.2. For mega-constellations and giga-constellations that following shall apply:

(a) the debris control plan referred to in Article 70(2), point (a), shall include an analysis that demonstrate that specific care has been taken to avoid collision with the international space stations for any phase of the space mission;

(b) a report shall analyse, after one year of operation, the probability of intra and inter-collision risks, and compare it with the one calculated at the time of the granting of the authorisation;

(c) Union spacecraft operators shall, after one year of operation, demonstrate the effectiveness of measures taken to address the light and radio pollution which have been explained in their application for authorisation. If such measures are not effective, Union spacecraft operators shall initiate the development of technical solutions through research to diminish the measured pollution for their next generation spacecraft in the respective constellation;

(d) Union spacecraft operators shall in case of transit from the injection orbit to the final orbit:

(i) prepare a plan for transit and demonstrate that the probability of collision is limited;

(ii) report on the functioning of vital systems is due before reaching operational orbit.

Annex VII

RESILIENCE ANNEX VII

1. **RISK ASSESSMENT**

1.1. In their risk assessments, Union space operators shall cover the key lifecycle stages referred to in Article 76(4), first subparagraph.

1.2. Union space operators applying a simplified risk management shall cover the key lifecycle stages referred to in Article 76(4), first subparagraph only in relation to critical assets and critical functions referred to in Article 79(1), first subparagraph.

1.3. A risk assessment shall evidence and document that for the respective segments, systems or subsystems, as applicable, Union space operators have set sufficient and adequate treatments to cover the identified risked.

1.4. A risk assessment shall be carried out at least prior to the launch. The risk assessment shall include at least the following elements:

(a) the risk source, whether malicious acts such as attacks, or accidents and natural disasters;

(b) the description of the risk context to which the respective segment, system or subsystem, as applicable, may be vulnerable, including for instance in the context of reconfigurable satellites;

(c) an outline of the risk assessment process;

(d) the description of the electronic communication networks;

(e) the security objectives, including criteria scales and the risk appetite which shall be tailored to the respective space mission;

(f) the risk scenarios covering at least the attack vectors that are well-known at that point in time;

(g) the applicable treatment for each identified risk and scenario, including comprehensive corporate information security policies and system specific security requirements.

Union space operators shall have in place risk assessment registers after the application of the treatments referred to in point (g).

1.5. The risk assessments shall be reviewed annually and whenever necessary subsequently considering the developments of the threat landscape.

Union space operators shall review the risk assessments:

(a) after each test campaign performed in accordance with Article 88;

(b) after each major change in the network and information systems;

(c) after each significant incident;

(d) following supervisory instructions.

2. **ASSET MAPPING**

2.1. Identification, listing and categorization of assets, including systems and subsystems, as well as functions, operations, and technologies with the following characteristics:

(a) assets deemed critical for carrying out space activities, by considering all relevant criteria, such as the key role played in the performance of the respective space mission, in maintaining effective control of the space segment, or in ensuring the functionality and integrity of the payload;

(b) assets identified as a single point or common mode of failure, within the risk assessment;

(c) assets that generate, use or store sensitive data;

(d) assets that require use of highly specialised skills or know-how.

2.2. Setting-out procedures for the handling of assets of space infrastructure identified in point 2.1, including during transitional stages, such as transport, or throughout testing and validation phases.

3. **PHYSICAL RESILIENCE**

3.1. In taking all necessary measures to ensure the resilience of the ground stations, Union space operators shall at least:

(a) adequately secure the launch sites and premises;

(b) maintain all physical assets, notably the equipment, in adequate condition, so as to ensure its integrity and availability, and in particular, as regards the spacecraft, in adequate conditions during manufacturing, testing, transport, commissioning and launch phases, as well as during the command, control and telemetry and the generation and transmission systems for all phases;

(c) place assets used by the command, control and telemetry, and the generation and transmission systems, in a way that limits access and reduces the risk of interferences, intentional or not;

(d) ensure, at nominal level, hardening and shielding against natural radiation and determine radiation threat levels on the space segment following supervisory instructions;

(e) secure assets during all transitional stages, such as notably, transport, testing, as well as at the launching sites, in particular to avoid unauthorised access, tampering and damage;

(f) place critical back-up assets into distinct geographic zones and maintaining inventories of relevant equipment, to allow the latter to be readily available in case of incidents;

4. **DETECTION MECHANISMS**

4.1. The detection mechanisms put in place by Union space operators shall:

(a) enable prompt detection of anomalous activities and identification of incidents, such as cyberattacks and electronic interferences;

(b) set-out alert thresholds and criteria to trigger incident response processes;

(c) monitor the state of the spacecraft;

(d) based on the risk assessments, and as deemed appropriate by the competent authorities, monitor the radiofrequency environment as regards the nominal data flows for services part, for sites that are critical to the command, control and

telemetry, the generation and transmission systems, and to the support for the detection of incidents and the localisation of the sources of interference.

5. **PROTECTION AND PREVENTIVE MEASURES**

5.1. The network and information systems shall:

(a) be adequate to ensure the confidentiality, integrity and availability of data;

(b) be technologically resilient, which includes, for the space segment, ensuring resilience against, for instance, tampering, jamming, blinding attacks and spoofing of sensors;

(c) use cryptography in accordance with the principles laid down in Article 85;

(d) have an ICT architecture fit to ensure the proper allocation of spacecraft resources and the integrity of services;

(e) have a security maintenance to allow to regularly install the latest patches, including a procedure for the urgent patching of vulnerabilities considered critical in light of the risk assessments.

5.2. The claimed identity of any device attempting to communicate with the satellite in view of modifying its internal state shall be authenticated.

5.3. The configuration of the flight systems and associated systems at the ground segment shall be done pursuant to pre-defined policies and shall be subject to verification in a way that prevents the installation or upgrade to software or firmware from being executed without an explicitly identified privilege to install such software.

5.4. Minimal protection and preventive measures:

(a) Use of multi-factor authentication or continuous authentication solutions, secured voice, video and text communications and secured emergency communication systems, as appropriate;

(b) Ensuring that all systems that directly send critical commands to the space segment are physically or logically isolated from other networks, as appropriate.

6. **SUPPLY CHAIN RISK MANAGEMENT FRAMEWORK**

6.1. Taking all appropriate measures to address the security related to the acquisition, development and maintenance of the network and information systems, including as regards vulnerability handling and disclosure.

6.2. Setting-out criteria for the choice of software and hardware products in the supply chain with due regard to the risk of obsolescence.

6.3. Deploying software integrity controls on the ground segment and the space segment including by deploying software integrity controls and authenticity controls proving the origin.

6.4. Controlling the network and information systems which are temporarily interconnected, such as in the context of the provision of maintenance or support.

7. **TRAININGS**

7.1. General Trainings

(a) ICT security awareness programmes.

(b) Compulsory modules with exercises on basic cyber hygiene practices.

(c) Specific cybersecurity trainings with complexity levels that are commensurate to the remit of staff functions and tasks.

(d) General trainings on security related to staff functions.

7.2. Tailored trainings

Union space operators shall ensure that tailored trainings are provided at least to staff:

(a) that operates, monitors and maintains the equipment interfacing with the space segment;

(b) that is in charge of implementing the business continuity policy and the response and recovery plan established in accordance with Article 87;

(c) that deals with cases requiring further interaction with third parties.

8. **INCIDENT HANDLING**

8.1. Logging of incidents.

8.2. Classification of incidents by severity of their impact.

8.3. Deployment of response measures that are necessary and adequate to mitigate the impacts of incidents, by ensuring in a timely manner that services become operational and are secure.

8.4. Non-alteration and preservation of assets.

8.5. Follow-up of taken actions.

9. **REQUIREMENTS FOR CRITICAL ASSETS AND RISKS IN THE CONTEXT OF THE SIMPLIFIED RISK MANAGEMENT**

9.1. The requirements laid down in Article 76.

9.2. Risk assessment referred to in Article 78(2).

9.3. Elements of the risk assessments referred to in point 1.4.

9.4. Development of the risk scenarios referred to in point 1.4, point (f).

9.5. Setting-up and maintaining inventories referred to in Article 80(4), first subparagraph.

9.6. Prevention and protection measures in accordance with Article 84(3).

9.7. Principles for cryptography and encryption pursuant to Article 85(1), first subparagraph.

9.8. Measures for the backup management pursuant to Article 86(1) and (3).

9.9. Handling of incidents pursuant to Article 91.

Annex VIII

IN-SPACE OPERATIONS AND SERVICES (ISOS) REFERRED TO IN ARTICLE 101

1. General provisions

1.1. General principles in carrying out ISOS

(a) For the purposes of this Annex, a client object shall be understood as a client space object, including a spacecraft, as well as space debris.

(b) The Union ISOS provider and the Union space operator of the client object shall conclude a dedicated ISOS-related contract.

(c) Any ISOS shall be carried out only after the Union ISOS provider and the Union space operator of a client object have explicitly and unequivocally consented to start carrying out the agreed operation or set of operations, as applicable.

(d) The ISOS contract referred to in point (b) shall include a dedicated service plan describing in detail the mission concept for the respective ISOS and the infrastructure of both the client object and the servicer spacecraft.

(e) The servicer spacecraft and the client object shall be designed and manufactured, and the corresponding service mission shall respectively be designed, in a way that limits the risk of collision.

(f) During the ISOS operation, the physical separation between the servicer spacecraft and the client object shall be performed in a manner that ensures a sustainable orbit for both spacecraft.

1.2. Coordination of control centers

(a) The respective control centers of the servicer spacecraft and the client object shall ensure appropriate coordination, by sharing all data, including the telemetry, that is necessary to ensure the safety of the respective operations.

(b) Except where the client object is space debris, the Union ISOS provider and the Union space operator of a client object shall identify, for each phase in the carrying out of ISOS, the control centre with decision-making authority for joint operations in the area of proximity, including during the attach phase, as well as the control centre which controls the composite object in the attached phase.

2. Service provision

2.1. Servicer and service compatibility to client space object configuration

The design of the servicer spacecraft and the operational service concept shall be compatible with the design and operation of the client object, respectively or, where the client object is space debris, with the condition of the debris object.

2.2. Due diligence obligations regarding the potential impacts on third parties

2.2.1. Union ISOS providers shall take all appropriate measures to prevent:

(a) interference with an object, other than the client object, that generates harm;

(b) disruption, including interruption, of any operation carried out by a third party spacecraft;

and, where such prevention is not possible or is not immediately possible, shall adequately mitigate potential adverse impacts when carrying out ISOS.

2.2.2. The Union ISOS provider shall define in the operational concept a safe zone where presence of a third party will lead to non-engagement or withdrawal of the ongoing ISOS operation.

2.2.3. Where anomalies occur, or where unforeseen events, including those caused by the carrying out of ISOS, lead to potential adverse impact on third party space objects, the Union ISOS provider shall immediately notify the space operator of the third-party space object impacted.

2.2.4. The Union ISOS provider shall closely cooperate with CA service provider referred to in Article 63, including in the service operation phase.

2.3. Safety of operations

(a) For the purposes of the approach phase, and with a view to initiate the separation, the Union ISOS provider shall set out, in the operational concept, standby or transit points.

(b) During the service operation the Union ISOS providers shall conduct a GO/NO-GO testing at every appropriate timing/sequence and shall only continue the service operation when the GO condition is met. When the GO conditions are not met, a cancel command shall be triggered either autonomously or by a command sent from the ground segment.

(c) During the approach phase, and after the separation, the on-board systems of the servicer spacecraft shall be able to assess the risk of collision between the servicer spacecraft and the client object, in real time, and shall be capable of autonomously triggering an avoidance manoeuvre to place the servicer spacecraft on a path non-colliding with the client object.

2.4. Qualification of the system and servicing concept - Prior testing

Except for non-reversible ISOS operations, Union ISOS providers shall, for the purposes of ascertaining the proper system functioning for the planned ISOS, carry out tests in orbit at least before engaging in the first service operation or in the first step and only if no danger is posed to any other space object.

Annex IX

QUALIFIED TECHNICAL BODIES FOR SPACE ACTIVITIES REFRRED TO IN ARTICLE 35

1. General requirements for qualified technical bodies for space activities

1.1. A qualified technical body for space activities shall be established under national law and shall have legal personality unless it is part of a competent authority.

1.2. A qualified technical body for space activities shall be independent from:

(a) a space services provider referred to in Article 2(1), where that qualified technical body for space activities carries out a technical assessment in relation to a product, process, service, including risk-management, regarding matters covered by this Regulation;

(b) a competitor of a space services provider referred to in Article 2(1), as regards the carrying out of the technical assessment of a product, process, service, including risk-management, regarding matters covered by this Regulation;

(c) an undertaking, other than space services providers referred to in point (a), or competitors referred to in point (b), of this paragraph, that has an economic interest in a product, process, service, including risk-management, regarding matters covered by this Regulation.

1.3. A body belonging to a business association or professional federation that represents undertakings which are involved in the design, development, production, provision, assembly, use, maintenance, testing, or operation of a product which a technical body assesses, or respectively undertakings which are involved in the use or operation of a service, activity or process that such technical body certifies, may only be considered as a qualified technical body for space activities, under this Regulation, if such body meets the requirements of independence and absence of conflict of interest.

1.4. A qualified technical body for space activities shall be organised and managed in a way that safeguards the independence, objectivity and the impartiality in carrying out its activities.

For that purpose, a qualified technical body for space activities shall ensure that:

(a) procedures to safeguard and document its impartiality are set up and guaranteed throughout its activities, and that such procedure apply both to the top-level management and to the personnel carrying out technical assessment activities;

(b) the qualified technical body for space activities and its personnel carries out the technical assessment with the highest degree of professional integrity and with all requisite technical competence in the specific area(s) of activity, free from any pressure and inducements, particularly of a financial nature, which might influence the judgement or the results of the technical assessment activities;

(c) it has policies and procedures to distinguish between the tasks it carries out in that capacity and any other tasks;

(d) the qualified technical body for space activities, its top-level management, and its personnel responsible for carrying out technical assessment activities does not engage in any activity that may conflict with the independence of judgement or the requirement of integrity, as regards the technical assessment, notably consultancy services;

(e) the remuneration of the top-level management and of the personnel of the qualified technical body for space activities carrying out technical assessment tasks shall not depend on the number of technical assessments being carried out, or on the results of those technical assessments;

(f) transparency is ensured regarding the procedure for carrying out technical assessments, for instance by means of publication on the relevant website of a description of such procedures.

A qualified technical body for space activities shall meet the organisational, quality management, resource-related and process-related requirements necessary to fulfil its tasks.

The organisational structure and operation of a qualified technical body for space activities, as well as the allocation of responsibilities and reporting shall be such as to ensure confidence in the performance of tasks and in the results of its technical assessment activities.

1.5. At all times, and for each procedure in the technical assessment, a qualified technical body for space activities shall:

(a) have at its disposal personnel possessing the necessary technical knowledge and appropriate and sufficient experience to perform technical assessment tasks;

(b) use procedures which take into account any relevant criteria applying to:

(i) the space services providers referred to in Article 2(1), such as the criteria of size of such space services provider or the specific sector of space activities;

(ii) the objective elements, such as structure, degree of complexity of processes or technology, mass or serial nature of the production processes;

(c) possess the necessary means to perform all the technical and administrative tasks for technical assessment activities, including having access to all necessary data, equipment or facilities.

1.6. The personnel of a qualified technical body for space activities which is in charge of carrying out technical assessment activities shall have:

(a) appropriate understanding and knowledge of the matters covered by this Regulation, of relevant standards regarding matters covered by this Regulation, or relevant provisions of Union law;

(b) sound knowledge of the specific requirements for which a technical assessment activity is carried out;

(c) sound technical and vocational training covering all technical assessment activities in relation to which a qualified technical body for space activities has been notified;

(d) the ability to draw up certificates, records and reports demonstrating that technical assessments have been carried out.

1.7. A qualified technical body for space activities shall be capable of carrying out tasks in relation to matters covered by this Regulation with the highest degree of professional integrity and requisite competence in specific fields, whether such tasks are carried out by the qualified technical body for space activities itself or are being carried out on its behalf and under its responsibility.

When a qualified technical body for space activities delegates part of its tasks, it shall have sufficient internal competence to effectively evaluate the way in which the external party executes such tasks on its behalf.

1.8. A qualified technical body for space activities shall ensure the permanent availability of administrative, technical, legal and scientific personnel with knowledge and experience of the relevant technologies of space activities and the technical requirements laid down in Regulation, Title IV.

1.9. A qualified technical body for space activities shall have in place documented procedures to ensure that its personnel and any relevant committees, subsidiaries, subcontractors or associated body or, as applicable, personnel of external bodies, handle the confidential information to which it comes into possession during the performance of technical assessment, in compliance the professional secrecy requirement laid down in Article 116, except when disclosure is required by law.

The staff of a qualified technical body for space activities shall observe professional secrecy regarding all information obtained in carrying out the tasks in relation to matters covered by this Regulation.

1.10. A qualified technical body for space activities shall hold or be in a position to obtain in due time, a valid personnel security clearance certificate.

1.11. A qualified technical body for space activities shall hold an appropriate liability insurance for carrying out its technical assessment activities.

1.12. A qualified technical body for space activities shall participate in the coordination activities as referred to in Article 39.

1.13. A qualified technical body for space activities shall take part, directly or through representation, in the activities of the European standardisation organisations, or shall at least ensure that it is aware and up to date with relevant standards in the areas falling into the matters covered by this Regulation.

1.14. A qualified technical body for space activities shall operate in accordance with fair and reasonable terms and conditions, in particular taking into account the interests of SMEs in relation to fees.

2. Specific requirements for qualified technical bodies for space activities carrying out tasks of verification and validation of the environmental footprint study

2.1. Qualified technical bodies for space activities that carry out technical assessment of matters covered by Chapter III of Title IV, shall meet, in addition to the requirements laid down in section I of this Annex, the requirements laid down in Section 8 of the Commission recommendation C(2021)9332.

Annex X

INFRINGEMENTS TO THE REGULATION REFERRED TO IN ARTICLE 54

1. Infringements applicable to Union space operators

1.1. A Union space operator infringes Article 6(1) in conjunction with Article 7(1) by providing space services before having obtained authorisation to carry out space activities.

1.2. A Union space operator intending to have recourse to the space services provided by a third country space operator or an international organisation infringes Article 6(5), by not demonstrating to its competent authority, in its application for authorisation, the registration in URSO of that third country space operator or international organisation or, where the procedure of registration in URSO has not been completed yet, the Union space operator does not coordinate closely with the third country space operator or international organisation, the relevant competent authority and the Agency, including by requiring updates on the status of the registration process.

1.3. A Union space operator infringes Article 6(6), by not informing without delay the competent authority of the need for the provision of space services by a third country space operator or international organisation which arises after an authorisation has been issued, such as in the case of ISOS, and by not providing to the competent authority the proof of registration in URSO of that third country space operator or international organisation.

1.4. A Union space operator infringes Article 7(2), by not submitting in the application for authorisation a technical file with all necessary documentation and supporting evidence to demonstrate compliance with the requirements laid down in Title IV, Chapters I to V, as applicable to its specific space mission.

1.5. A Union space operator infringes Article 7(3), by not indicating in its application for authorisation, to the competent authority which qualified technical bodies for space activities the applicant intends to use for the technical assessment of the requirements laid down in Title IV, Chapters I to V, as applicable.

1.6. A Union space operator infringes Article 9(1), by not ensuring that they comply with the conditions laid down in Article 9(1), points (a) and (b), when submitting the declaration referred to in Article 9(1), second subparagraph, or by failing to submit that declaration.

1.7. A Union space operator infringes Article 9(5), by not provided the explanations required by the competent authorities, where random inspections identify aspects that conflict with the declaration made by the Union space operator and the explanations are needed to allow the competent authority to conclude on the extent of, or absence of risks entailed by such conflict.

1.8. A Union space operator that is subject to the light regimes referred to in Article 10(2), (3) and (4), fails to comply with the conditions referred to in those paragraphs.

1.9. An applicant to become a Union space operator of Union-owned assets infringes Article 11(2), by failing to provide to the Agency and the Commission all the technical details and explanations that demonstrate compliance with the requirements laid down in Title IV, Chapters I, II, III, IV and V and in Article 12(1), first subparagraph, or infringes Article 11(3), second subparagraph, by not providing all additional information or by bringing clarifications.

1.10. A Union space operator of Union-owned assets infringes Article 11(2) and Article 12(1), first subparagraph, by failing to fulfil the requirements laid down in Article 12(1), first subparagraph and in Title IV.

1.11. A Union space operator of Union-owned assets infringes Article 13(1), by not reporting any unforeseen event that may require the modification of its authorisation or any planned or imminent termination of its activity.

1.12. A Union space operator of Union-owned assets is found in any of the situations referred to in Article 13(2), first subparagraph.

1.13. A Union space operator infringes Article 26(1) and (2), by failing to accompany the contracts for the provision of space-based data and space services in the Union by the e-certificate.

1.14. A Union space operator of Union-owned assets infringes Article 49, by failing to submit to a decision of request for information laid down in Article 49(3) or to provide the information referred to in Article 49(1).

1.15. A Union space operator of Union-owned assets infringes Article 50(5), first subparagraph by not submitting to an investigation and by hindering the exercise of the powers referred to in Article 50(4).

1.16. A Union space operator infringes Article 51(5), by failing to submit to the on-site inspections ordered by decision of the Agency and the Commission.

1.17. A Union space operator infringes Article 53(2), in conjunction with Articles 49, 50 and 51, by failing to submit to that investigation.

1.18. A Union launch operator infringes Article 58, Article 59, Article 60, or Article 61 as regards the safety of launchers.

1.19. A Union spacecraft operator infringes any of the rules laid down in Article 62 to Article 73 as regards the safety of spacecraft and space activities.

1.20. A Union space operator infringes Article 74, by not taking all the measures to ensure the conformity of contracted space objects or, as applicable, the conformity of components, with the design and the manufacturing requirements as laid down in Chapter I of Title IV.

1.21. A Union space operator infringes resilience requirements, by failing to comply with the risk management rules laid down in Article 76, Article 77, Article 78, Article 79, Article 80, Article 81, Article 82, Article 83, Article 84, Article 85, Article 86, Article 87, Article 88, Article 89, Article 90, Article 91, Article 92 and Article 95(1), (2) and (3).

1.22. A Union space operator of Union-owned assets infringes Article 93 regarding the reporting of significant incidents of Union-owned assets, by failing to report to the structure referred to in Article 93(1) or by not reporting in the manner specified in Article 93(7), first subparagraph.

1.23. A Union space operator operating the assets referred to in Article 5, first paragraph, point (21), infringes Article 93, by failing to report to the competent authorities, as laid down in Article 93(2), or by failing to report in the manner specified in Article 93(7), first subparagraph.

1.24. A Union space operator qualifying as an essential or important entity pursuant to Annexes I or II of Directive (EU) 2022/2555, infringes Article 93(3), first

subparagraph, by not reporting as referred to in that Article or infringes Article 93(7), first subparagraph, by not reporting in the manner specified therein.

1.25. A Union space operator identified as a critical entity pursuant to the Annex to Directive (EU) 2022/2557 infringes Article 93(3), second subparagraph, by not reporting in the manner determined by the Member State, pursuant to that article, or infringes Article 93(7), first subparagraph, by not reporting in the manner specified therein.

1.26. An applicant for authorisation as a Union space operator infringes Article 96(4) and (6), by failing to submit an Environmental Footprint Declaration ('EFD') to its competent authority or by failing to submit all the elements referred to in Article 96(6).

1.27. A Union space operator infringes Article 97, by failing to include in the calculation the space missions referred to in Article 97(1), or the activities referred to in Article 97(2).

1.28. A Union space operator of Union owned-assets infringes Article 97(3), by failing to include the components referred to in Article 3(1), points (a) to (c) and point (e), of Regulation (EU) 2021/696 and in Article 1 of Regulation (EU) 2023/588, as applicable.

1.29. An applicant for authorisation as Union space operator infringes Article 98(1), by failing to possess the EF certificate when applying for authorisation.

1.30. An applicant for authorisation as Union space operator infringes Article 99, by failing to transmit the datasets referred to in Article 99(1), first subparagraph.

1.31. A Union space operator infringes Article 101.

1.32. A Union space operator infringes Article 112(1), first subparagraph, by failing to accompany the application for a Union Space Label by a detailed technical file demonstrating the fulfilment of the requirements established in the Union Labelling Scheme(s) for which the Union Space Label is sought.

1.33. A Union space operator that is holder of a Union Space Label infringes Article 112(3), by failing to continue to comply with the requirements established in the Union Labelling Scheme(s) for which that Union Space Label was awarded, or infringes Article 112(6), by failing to inform the Agency of any subsequently detected irregularities concerning the labelled space mission, service or product, that may have an impact on its compliance with the requirements of the respective Union Space Label.

2. Infringements applicable to third country space services providers

2.1. A third country space operator infringe Article 14(1), by providing space services to Union space operators and in relation to Union-owned assets and to assets referred to in Article 5, first paragraph, point (21), without being registered in the Union Register of Space Objects and without being in the possession of the e-certificate.

2.2. A third country space operator infringes Article 15(1), by failing to fulfil any of the requirements listed in Article 15, in conjunction to Chapters I to V of Title IV, as specified in Article 15.

2.3. A third country space operator infringes Article 17(3), by failing to provide in the application to the Agency all the evidence needed to demonstrate compliance.

2.4. A third country space operator infringes Article 22, by failing to provide during the dialogue with the Agency the required explanations, documentation and evidence in support of its explanations, including any technical analysis, and to achieve compliance.

2.5. A third country space operator infringes Article 23, by failing to designate in writing one or more legal persons in one of the Member States to act as their legal representative in the Union, or by failing to mandating that legal representative to have the powers to be addressed in addition to, or instead of, the third country space operator, by the competent authorities, the Commission and the Agency, on all issues related to compliance with this Regulation, and to have all necessary powers and resources to guarantee an efficient and timely cooperation with such authorities.

2.6. A third country space operator infringes Article 25(3), by failing to accompany the contracts for the provision of space-based data and space services in the Union by the e-certificate.

2.7. A third country space operator infringes Article 25(4), by failing to send the Agency the details referred to in Article 25(4), first subparagraph, to allow the Agency to generate the e-certificate.

2.8. A third country space operator infringes Article 26(1) and (2), by failing to accompany the contracts for the provision of space-based data and space services in the Union by the e-certificate.

2.9. A third country space operator infringes Article 49, by failing to submit to a decision of request for information laid down in Article 49(3) or to provide the information referred to in Article 49(1).

2.10. A third country space operator infringes Article 50(5), first subparagraph, by not submitting to an investigation or by hindering the exercise of the powers referred to in Article 50(4).

2.11. A third country space operator infringes Article 51(5), by failing to submit to the on-site inspections ordered by decision of the Agency and the Commission.

2.12. A third country space operator that met the requirement referred to in Article 52(1), point (b), infringes Article 52, by not submitting to the inspection or by hindering the exercise of the powers laid down in Article 52(2).

2.13. A third country space operator infringes Article 53(2), in conjunction with Articles 49, 50 and 51.

3. Infringements applicable to international organisations

3.1. International organisations with specific technical expertise in matters covered by this Regulation, chosen by Member States to carry our technical assessments pursuant to Article 8(1), point (b), infringe Article 8(3), first subparagraph, by not complying with the requirements laid down in Regulation, Title III, Chapter I, Section 3, pursuant to Article 8(3), first subparagraph.

3.2. An international organisation infringes Article 25(3), by failing to accompany the contracts for the provision of space-based data and space services in the Union by the e-certificate.

3.3. An international organisations infringe Article 14(2).

3.4. An international organisation infringes Article 25(4), by failing to send the Agency the details referred to in Article 25(4), first subparagraph, to allow the Agency to generate the e-certificate.

3.5. An international organisation infringes Article 26(1) and (2), by failing to accompany the contracts for the provision of space-based data and space services in the Union by the e-certificate.

3.6. An international organisation infringes Article 49, by failing to submit to a decision of request for information laid down in Article 49(3) or to provide the information referred to in Article 49(1).

3.7. An international organisation infringes Article 50(5), first subparagraph, by not submitting to an investigation or by hindering the exercise of the powers referred to in Article 50(4).

3.8. An international organisation infringes Article 51(5).

3.9. An international organisation infringes Article 53(2), in conjunction with Articles 49, 50 and 51.

3.10. An international organisation infringes Article 58, Article 59, Article 60, or Article 61 as regards the safety of launchers.

3.11. An international organisation infringes Article 62, Article 63, Article 64, Article 65, Article 66, Article 67, Article 68, Article 69, Article 70, Article 71, Article 72 or Article 73, as regards the safety of spacecraft and space activities.

3.12. An international organisation infringes Article 74, by not taking all the measures to ensure the conformity of contracted space objects or, as applicable, the conformity of components, with the design and the manufacturing requirements as laid down in Chapter I of Title IV.

3.13. An international organisation infringes the risk management requirements, by failing to comply with the rules laid down in Article 76, Article 77, Article 78, Article 79, Article 80, Article 81, Article 82, Article 83, Article 84, Article 85, Article 86, Article 87, Article 88, Article 89, Article 90, Article 91, Article 92, and the conditions laid down in Article 95(1), (2) and (3).

3.14. An international organisation operating Union-owned assets infringes Article 93 regarding the reporting of significant incidents of Union-owned assets, by failing to report to the structure referred to in Article 93(1) or by not reporting in the manner specified in Article 93(7), first subparagraph.

3.15. An international organisation operating the assets referred to in Article 5, first paragraph, point (21), or its own assets, infringes Article 93, by failing to report to the competent authorities, as laid down in Article 93(2), or by failing to report in the manner specified in Article 93(7), first subparagraph.

3.16. An international organisation infringes Article 97, by failing to include in the calculation the space missions referred to in Article 97(1), or the activities referred to in Article 97(2).

3.17. An international organisation operating the Union owned-assets infringes Article 97(3), by failing to include the components referred to in Article 3(1), points (a) to (c) and point (e), of Regulation (EU) 2021/696 and in Article 1 of Regulation (EU) 2023/588, as applicable.

3.18. An international organisation infringes Article 98(1), by failing to possess the EF certificate in order to provide space services as regards the assets referred to in Article 5, first paragraph, points (20) and (21).

3.19. An international organisation infringes Article 99, by failing to transmit to the Commission the datasets referred to in Article 99(1), first subparagraph.

3.20. An international organisation infringes Article 101.

4. Infringements applicable to primary providers of space-based data

4.1. A primary provider of space-based data infringes Article 27(2), by failing to alert their suppliers and to contact the Agency or the competent authority of the Member State where they are established of any received alerts or complaints about potential irregularities.

5. Infringements applicable to collision avoidance space services providers

5.1. A collision avoidance space service provider infringes Article 102(1), by failing to provide to the competent authority of the Union space operator up-to-date information about the spacecraft, or infringes Article 102(2), first subparagraph, by failing to report on the aspects laid down therein.

5.2. A collision avoidance space service provider infringes Article 103(1), first subparagraph, by failing to ensure the conditions referred to in Article 103(1), first subparagraph for the CAM, or infringes Article 103(2), by failing to ensure the coordination according to that paragraph, or infringes Article 103(3), first subparagraph, by failing to base the strategy of action on the principles laid down in that first subparagraph, or infringes Article 103(4), by failing to establish contact with the respective spacecraft, or in case of successful contact infringes Article 103(5), first subparagraph, by failing to observe the requirements laid down in that first subparagraph, or infringes Article 103(6), by failing to recommend a strategy in accordance with the requirements laid down in that paragraph.

6. Infringements applicable to qualified bodies for space activities

6.1. Without prejudice to the regime of other entities that can provide technical assessments pursuant to Article 8(1), first subparagraph, an entity infringes Article 34(1), by carrying out such technical assessments without being designated and notified as a qualified technical body for space activities under this Regulation.

6.2. An entity which intends to carry out technical assessments for one or more matters covered by Title IV, Chapters I to V, infringes Article 34, by failing to provide or update the required documentation or to meet the conditions set in paragraphs 4 to 8 of that Article.

6.3. An entity that intends to carry out technical assessment for one or more matters covered by Title IV, Chapters I to V, infringes Article 35, by failing to meet any of the conditions laid down in Article 35(1), (2), (3) and (4), as applicable, in conjunction with the provisions of Annex IX.

6.4. A qualified body for space activities infringes Article 35, by no longer meeting any of the requirements laid down therein, in conjunction with the provisions of point 1, of Annex IX or point 2, of Annex IX.