
STATUTORY INSTRUMENTS

2021 No. 792

The Space Industry Regulations 2021

PART 4

Grant of a spaceflight operator licence: risk

CHAPTER 1

Interpretation

Interpretation

25. In this Part—

“applicant” means an applicant for a launch operator licence or a return operator licence;

“proposed range control service provider” means a person whom the applicant proposes should provide range control services for the applicant’s proposed spaceflight activities;

“proposed spaceport licensee” means—

- (a) the spaceport licensee for the spaceport which the applicant proposes to use for spaceflight activities, or
- (b) if no spaceport licence has yet been granted, any person who has applied or intends to apply for a spaceport licence for that spaceport;

“safety case” is to be construed in accordance with regulation 29(1).

CHAPTER 2

Risks to persons who are not crew or spaceflight participants

SECTION 1

Steps applicant must take to ensure that risks are as low as reasonably practicable

Flight safety analysis

26.—(1) An applicant must carry out a flight safety analysis in which the applicant—

- (a) identifies the major accident hazards that could, whether or not the launch vehicle malfunctions—
 - (i) arise from, or cause a major accident during, the proposed spaceflight activities, or
 - (ii) arise from the launch vehicle, or any part of it, during the proposed spaceflight activities,
- (b) completes the steps listed in regulation 28(1) for each hazard identified under sub-paragraph (a), and
- (c) estimates numerically the risk of death or serious injury arising from the hazards mentioned in sub-paragraph (a) to persons who are not human occupants.

(2) When identifying hazards under paragraph (1)(a), the applicant must consider the hazards referred to in paragraph 18(1) of Schedule 1.

(3) In carrying out the flight safety analysis the applicant must take into account the matters listed in paragraph 18(2) of Schedule 1.

Ground safety analysis

27.—(1) An applicant for a launch operator licence must carry out a ground safety analysis in which the applicant identifies the major accident hazards that could arise—

- (a) during, or cause a major accident during, preparations for the launch from the time when the launch vehicle or its components arrive at the spaceport or other place from which the launch is to take place, or
- (b) from the launch vehicle, or any part of it, or from a payload, upon or after landing, whether or not the launch vehicle malfunctions.

(2) “Preparations for the launch” in paragraph (1)(a) includes each of the following that are applicable—

- (a) transporting, handling and storing of any hazardous material in relation to the launch vehicle;
- (b) preparing or testing a payload that will be integrated with the launch vehicle;
- (c) integration of a payload with the launch vehicle;
- (d) integration of a carrier aircraft with the launch vehicle;
- (e) testing of—
 - (i) the launch vehicle;
 - (ii) systems on board the launch vehicle;
 - (iii) ground support equipment;
 - (iv) other systems to be used in the proposed spaceflight activities.

(3) An applicant for a return operator licence must carry out a ground safety analysis that identifies the major accident hazards that could arise from the launch vehicle, or any part of it, upon or after landing, whether or not the launch vehicle malfunctions.

(4) In the ground safety analysis, the applicant must complete the steps listed in regulation 28(1) for each hazard identified under paragraph (1) or (3).

(5) When identifying hazards under paragraph (1) or (3), the applicant must consider the hazards referred to in paragraph 19 of Schedule 1.

(6) In carrying out the ground safety analysis the applicant must take into account any existing legal requirements relevant to safety.

Steps to be taken for each identified hazard

28.—(1) The steps mentioned in regulations 26(1)(b) and 27(4) which the applicant must complete for each major accident hazard identified are to—

- (a) identify the conditions under which it could occur;
- (b) identify what could cause it or contribute to it;
- (c) assess the likelihood of it arising;
- (d) assess its foreseeable consequences;
- (e) use the assessments required by sub-paragraphs (c) and (d) to evaluate the risk of a major accident;

- (f) define any appropriate measures to take to—
 - (i) prevent a major accident from occurring, and
 - (ii) mitigate the consequences if a major accident does occur.
- (2) An applicant must—
 - (a) define appropriate performance standards for the measures mentioned in paragraph (1)(f);
 - (b) decide what mechanisms to use for reviewing—
 - (i) the flight safety analysis required by regulation 26(1),
 - (ii) the ground safety analysis required by regulation 27, and
 - (iii) the measures mentioned in paragraph (1)(f).
 - (3) An applicant must produce a safety operations manual that fulfils the requirements of regulation 90 and Schedule 5.
 - (4) When producing the safety operations manual, the applicant must—
 - (a) take into account the outcomes of the steps taken under paragraph (1);
 - (b) consult any proposed spaceport licensee;
 - (c) consult any proposed range control service provider.

SECTION 2

Information to be provided to the regulator

Contents of the safety case

- 29.**—(1) On making an application for a launch operator licence or a return operator licence, an applicant must give the regulator a safety case that includes—
- (a) the information about the applicant and the applicant’s proposed spaceflight activities listed in paragraphs 1 to 10 of Schedule 1;
 - (b) the technical particulars listed in paragraphs 11 to 17 of Schedule 1;
 - (c) the outcomes of each of the steps taken as part of the flight safety analysis required by regulation 26(1);
 - (d) the outcomes of each of the steps taken as part of the ground safety analysis required by regulation 27;
 - (e) any measures that the applicant considered but does not intend to implement to prevent, or to control or mitigate the consequences of, an identified hazard, and an explanation of why it was not reasonably practicable to implement those measures;
 - (f) a description of any consultation with, or involvement in the preparation of the safety case of—
 - (i) representatives of the applicant’s workforce;
 - (ii) a proposed spaceport licensee;
 - (iii) proposed range control service providers.
- (2) If the applicant revises the safety case after giving it to the regulator, the applicant must give the regulator the revised safety case without delay.

Applicant to provide safety operations manual to regulator

30.—(1) On making an application for a launch operator licence or a return operator licence, an applicant must give the regulator a copy of the safety operations manual required by regulation 28(3).

(2) If the applicant revises the safety operations manual after giving it to the regulator, the applicant must give the regulator the revised safety operations manual without delay.

CHAPTER 3**Risk assessments****Prescribed roles**

31. For the purposes of section 9(2), “crew member” is a prescribed role and “spaceflight participant” is a prescribed capacity.

Prescribed requirements for risk assessment

32.—(1) In carrying out the risk assessment required by section 9(2) for human occupants, an applicant must identify hazards that could harm the health or safety of human occupants, at any time, by—

- (a) causing an accident during the relevant time, or
- (b) arising during the relevant time.

(2) In particular, the applicant must comply with Schedule 2.

(3) For each hazard identified an applicant must—

- (a) identify the conditions under which it could occur;
- (b) identify what could cause it or contribute to it;
- (c) assess the likelihood of it arising;
- (d) assess its foreseeable consequences;
- (e) use the assessments required by sub-paragraphs (c) and (d) to evaluate the risks to the health and safety of human occupants;
- (f) define any appropriate measures to take to—
 - (i) prevent it from occurring, and
 - (ii) mitigate its consequences if it does occur.

(4) For the measures defined under paragraph (3)(f), an applicant must—

- (a) define appropriate performance standards;
- (b) decide what mechanisms to use for reviewing those measures.

(5) When considering measures under paragraph (3)(f), an applicant must take into account—

- (a) training to be provided to human occupants;
- (b) medical requirements for human occupants;
- (c) the technical requirements of the launch vehicle.

(6) In this regulation “the relevant time” for a human occupant starts when the human occupant boards the launch vehicle for the purpose of being carried on it during the proposed spaceflight activities and ends when all human occupants have disembarked.

Information to be provided to regulator about risk assessment

33.—(1) On making an application for a licence that would authorise spaceflight activities involving human occupants, an applicant must submit to the regulator—

- (a) evidence that the applicant will, if granted the licence, be able to meet the requirements of any of regulations 106 to 123 that will apply, and
- (b) a written record of the risk assessment carried out under section 9(2).

(2) The written record must also set out any measures that the applicant considered under regulation 32(3)(f) but does not intend to implement, with an explanation of why the applicant decided not to implement those measures.

(3) The regulator may request that an applicant who has carried out a risk assessment under section 9(2) provide the regulator with details of the risk assessment in an easily understandable form, and an applicant must comply with such a request within a period specified in writing by the regulator.

(4) The easily understandable form of the details of the risk assessment must set out in writing the outcome of each of the steps the applicant has taken under regulation 32(1) to (3).

(5) If an applicant revises a risk assessment after providing a written record of the risk assessment to the regulator, the applicant must, without delay, give the regulator—

- (a) a written record of the revised risk assessment, and
- (b) the details of the updated risk assessment in an easily understandable form.