STATUTORY INSTRUMENTS

2021 No. 792

The Space Industry Regulations 2021

PART 8

Safety of operator's spaceflight activities

CHAPTER 5

Additional safety requirements for launch vehicles with human occupants

SECTION 3

The launch vehicle

Additional conditions if the launch vehicle has a human occupant

109.—(1) The systems referred to in regulation 91(3)(d) are that, if the launch vehicle has a human occupant, that vehicle must have—

(a) a system capable of providing on board power and atmospheric conditions for the inhabited areas of the launch vehicle which are adequate to sustain life and consciousness of a human occupant or equipment to provide such conditions to each human occupant,

(b) an adequate redundant system for supplying oxygen to a human occupant and preventing depressurisation, or the harmful effects of depressurisation, in inhabited areas of the launch vehicle,

(c) a system capable of warning the pilot in command or the remote pilot of any significant accumulation of ice on the exterior of the launch vehicle,

(d) a system which enables the spaceflight operator or any crew to detect smoke in the inhabited areas of the launch vehicle and to assist in preventing or suppressing a fire in that area,

(e) a system capable of displaying any information necessary to any flight crew to ensure that the flight is carried out safely, and

(f) a system capable of restraining any member of the crew or any spaceflight participant in their seat when necessary to ensure that the flight is carried out safely.

(2) Any system referred to in paragraph (1) includes any hardware or software relating to that system and must—

(a) be suited to the operator's spaceflight activities, and

(b) be capable of functioning during those activities.

(3) If a launch vehicle has a human occupant, that vehicle must have a flight recorder.

(4) In this regulation "a redundant system" means a system which provides the essential services of a primary system in the event of the failure of such a primary system.

Numbers of crew or spaceflight participants on board

110. Before an operator's spaceflight activities commence, the spaceflight operator must determine the number of flight crew, cabin crew, spaceflight participants or both crew and spaceflight participants to be carried on board the launch vehicle, taking into account—

(a) any conditions of the launch operator licence or return operator licence describing matters to be taken into account when determining these numbers,

(b) the limits of the launch vehicle during operations as established by the technical requirements of that vehicle,

(c) the configuration of the launch vehicle and loading,

(d) the duration of the mission,

(e) any medical needs of a human occupant,

(f) the equipment including seating available to a human occupant, and

(g) any other matter which may affect the carrying out of the operator's spaceflight activities safely, in so far as these numbers are concerned.

Accessibility of instruments and equipment

111. If the launch vehicle has a flight crew, a spaceflight operator must ensure that instruments, systems and equipment within the launch vehicle are readily operable and accessible from the station where—

(a) any pilot in command who needs to use them is seated, and

(b) another member of the flight crew who needs to use them is seated.

Emergency equipment

112.—(1) A spaceflight operator must ensure that the launch vehicle is equipped with emergency equipment and a means of emergency evacuation of any human occupants in so far as is reasonable for and suited to the operator's spaceflight activities.

(2) The spaceflight operator must ensure that—

(a) each human occupant is aware of the location of the emergency equipment within the launch vehicle and the means of emergency evacuation from that vehicle,

(b) immediately before the flight, each human occupant is provided with information about how to use the emergency equipment and means of emergency evacuation and that such information is available on board the launch vehicle, and

(c) the emergency equipment and means of emergency evacuation are identifiable and accessible on the launch vehicle for immediate use.

(3) In this regulation "emergency equipment" means first aid supplies, fire extinguishers, radio beacons, clothing and other emergency and survival equipment relevant to the operator's spaceflight activities.

Atmospheric conditions on board

113.—(1) A spaceflight operator must maintain adequate atmospheric conditions in the inhabited areas of the launch vehicle, or provide equipment to provide such conditions to each human occupant, by monitoring and controlling—

(a) the composition of the atmosphere including oxygen, carbon dioxide and the need for revitalisation of the internal atmosphere,

(b) pressure, temperature and humidity,

(c) contaminants that include particles and any harmful or hazardous concentrations of gases or vapours, and

(d) ventilation and circulation.

(2) In this regulation "revitalisation" means a process by which the internal atmosphere of the inhabited parts of the launch vehicle is sustained at a healthy level, by introducing oxygen to replace the oxygen which has been consumed and by removing carbon dioxide.