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The Secretary of State, in exercise of the powers conferred by—

(a) sections 2(7), 3(5), 4(2) and (4), 5(2)(a) to (c), 7(6)(a) to (e), 8(5) to (7), 9(2), (3), (5) and (6), 10(b), 13(3), 16(1) and (2)(a) to (c), 17(1) and (3), 18(1), (4) and (5), 19(1), 23(1), 26(3), 34(3)(a), (5) and (6), 35(5)(b), 36(3)(a), 54, 56(4), 59(2), 66(1) and (3), 68(1) to (3) of,

(b) Schedule 2 to,

(c) paragraphs 1(1), 1(3)(a) and (b), 2(1) and (3), 3(1) and (2), 5(a), 6(1)(c) and (3) of Schedule 3 to, and

(d) paragraphs 1(1), (2), (4) and (5) of Schedule 5 to,

the Space Industry Act 2018(**a**), makes the following Regulations.

In accordance with section 4(2) of that Act, the Secretary of State is satisfied that in the cases set out in these Regulations, the requirement for an operator licence(**b**) is not necessary to secure public safety, to secure the health and safety of individuals taking part in spaceflight activities in a role or capacity prescribed under section 17(1) or to secure compliance with the international obligations of the United Kingdom.

In accordance with section 68(7) of that Act, the Secretary of State has carried out a public consultation.

In accordance with section 68(6) and (7) of that Act, a draft of this instrument and a report about the consultation have been laid before Parliament.

(**a**) 2018 c. 5. See section 69(1) for the definition of "prescribed".
(**b**) See section 3(2) of the Space Industry Act 2018 for the definition of "operator licence".

In accordance with section 68(6) of that Act, the draft has been approved by a resolution of each House of Parliament.

PART 1

General

Citation, commencement and extent

1.—(1) These Regulations may be cited as the Space Industry Regulations 2021 and come into force on the twenty-first day after the day on which they are made.

(2) These Regulations extend to England and Wales, Scotland and Northern Ireland.

Interpretation

2.—(1) In these Regulations—

"the Act" means the Space Industry Act 2018 and a reference to a section without more is a reference to a section of the Act;

"accident" includes any fortuitous or unexpected event by which the safety of any launch vehicle or person is threatened, and "spaceflight accident" means an accident—

(a) arising out of, or in the course of, spaceflight activities, and

(b) occurring—

(i) in or over the United Kingdom, or

(ii) elsewhere, if any of the circumstances referred to in regulation 16 of the Spaceflight Activities (Investigation of Spaceflight Accidents) Regulations 2021(**a**) apply;

"accountable manager" means the individual appointed under regulation 7(1)(a), 8(1) or 11(1)(c);

"aerodrome certificate" means a certificate issued under the Aerodromes Regulation;

"Aerodromes Regulation" means Commission Regulation (EU) No. 139/2014 of 12th February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EU) 2018/1139 of the European Parliament and of the Council;

"Aircrew Regulation" means Commission Regulation (EU) No. 1178/2011 of 3rd November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No. 216/2008 of the European Parliament and of the Council;

"air traffic controller" means an individual acting as an air traffic controller in pursuance of a licence granted under or by virtue of an enactment;

"blast overpressure" means pressure above normal atmospheric pressure as the result of a shock wave caused by an explosion or detonation;

"CAA licensed" in relation to an aerodrome means an aerodrome which is licensed under an Air Navigation Order(**b**);

"cabin crew" means individuals who take part in spaceflight activities on board a launch vehicle to perform duties assigned by the spaceflight operator or the pilot in command of the launch vehicle, but who are not members of the flight crew;

(**a**) S.I. 2021/****.

(**b**) Air navigation orders are defined in, and made under, section 60 of the Civil Aviation Act 1982 (c. 16); section 60 was amended by article 71(4) of, and Schedule 10 to, the Airports (Northern Ireland) Order 1994 (S.I. 1994/426), section 1 of, and Schedule 1 to, the Statute Law (Repeals) Act 1995 (c. 44) and section 8(5) of the Civil Aviation Act 2006 (c. 34). There are other amendments to section 60 not relevant to this instrument.

"carrier aircraft" means an aircraft which is carrying a launch vehicle which is to separate from that aircraft before the aircraft lands, except in—

(a) regulations 2(2)(b), 15, 27(2)(d), 36(6)(c), 80, 84(1)(b) and 161,

(b) Parts 9, 11 and 14, and

(c) paragraph 4(c) of Schedule 1, paragraph 12 of Schedule 5, and paragraph 6 of Schedule 8;

"certified" in relation to an aerodrome means an aerodrome in respect of which an aerodrome certificate is in force;

"crew", except in Part 9, means—

(a) members of the cabin crew, and

(b) members of the flight crew;

"current risk assessment" means—

(a) if the risk assessment has not been revised and accepted by the regulator in accordance with regulations 80 and 82, the risk assessment, or

(b) if the risk assessment has been revised and accepted by the regulator in accordance with regulations 80 and 82, that revised risk assessment;

"dangerous goods" means any article or substance which is identified as such in the 2021-2022 English language edition of the Technical Instructions for the Safe Transport of Dangerous Goods by Air(**a**), approved and published by decision of the Council of the International Civil Aviation Authority but does not include propellants or other substances necessary for the normal functioning of the launch vehicle;

"day" means a calendar day;

"designated range" means the range identified by the licensee pursuant to regulation 46(1) in respect of the operator's spaceflight activities;

"emergency services" means—

(a) police, fire, rescue and ambulance services, and

(b) Her Majesty's Coastguard;

"flight crew" means individuals who take part in spaceflight activities on board a launch vehicle as a pilot or flight engineer of the launch vehicle;

"flight envelope" means the expected set of trajectories of the launch vehicle taking account of variations to those trajectories and any deviation from those trajectories within which the operator's spaceflight activities can be carried out safely;

"flight safety system" means a system, including all hardware and software, that provides a controlled means of ending the flight of a launch vehicle for the purposes of ensuring that the operator's spaceflight activities are carried out safely;

"flight termination personnel" means the persons who are not on board the launch vehicle and operate, or oversee the operation of, a flight safety system which is not an autonomous flight safety system;

"fragmentation debris" means debris that is emitted as a result of an explosion or deflagration;

"ground control at the spaceport or other place" means a site at a spaceport(**b**) or other place from which spaceflight activities are controlled or are to be controlled but does not include a mission management facility;

"ground support equipment" means equipment including any hardware and software which is used on the ground or other place to assemble, integrate, test, transport, access, handle, maintain, calibrate, verify, protect or service a launch vehicle;

(**a**) ISBN 978-92-9258-946-2. The Technical Instructions can be purchased from: ICAO (https://store.icao.int/); Labeline, Midas House, Chivenor Business Park, Barnstable, Devon EX31 4AY (http://labeline.com and T: 0870 850 5051); and Freight Merchandising Services Limited, Unit 383, Sykes Road, Slough Trading Estate, Slough, Berkshire SL1 4SP (http://www.fmslondon.co.uk and T: 01784 240840).

(**b**) See section 3(2) and (3) of the Space Industry Act 2018 for the definition of "spaceport".

"hazardous material" includes any propellant, whether solid, liquid or gas, any radioactive material or any substance or material prescribed as a hazardous substance for the purposes of the Planning (Hazardous Substances) Act 1990(**a**), the Planning (Hazardous Substances) (Scotland) Act 1997(**b**) or the Planning Act (Northern Ireland) 2011(**c**) by regulations made under those Acts(**d**);

"hazardous material storage facility" has the meaning given in regulation 158(1);

"hazardous pre-flight and post-flight operations" means any operation or activity at a spaceport, the carrying out of which involves a risk to any person from blast overpressure, fragmentation debris, thermal radiation or toxic release;

"Her Majesty's forces" has the same meaning as in the Armed Forces Act 2006(**e**);

"horizontal spaceport" means a spaceport from which spaceflight activities requiring the use of a runway may be carried out by virtue of a spaceport licence(**f**);

"human factors" means the human and individual capabilities, characteristics and limitations which influence behaviour or the performance of tasks in a way which may affect the safety of licensed activities;

"human occupant" means a member of the crew or a spaceflight participant;

"intelligence service" means—

(a) the Security Service;

(b) the Secret Intelligence Service;

(c) the Government Communications Headquarters;

(d) any part of Her Majesty's forces, or of the Ministry of Defence, which engages in intelligence activities;

"investigator-in-charge" means an individual charged, on the basis of the individual's qualifications, with responsibility for the organisation, conduct and control of a safety investigation;

"launch director" means the individual appointed by the holder of a launch operator licence under regulation 9(3)(a);

"launch operator licence" means an operator licence(**g**) which authorises a person to carry out spaceflight activities that include launching a launch vehicle or launching a carrier aircraft and a launch vehicle;

"launch operator licensee" means the holder of a launch operator licence;

(**a**) 1990 c. 10; see section 39(2) for the definition of "prescribed". Section 39(2) was amended by section 162 of, and Schedule 16 to, the Environmental Protection Act 1990 (c. 43).

(**b**) 1997 c. 10; see section 38(2) for the definition of "prescribed". Section 38(2) was amended by section 76(7) of the Utilities Act 2000 (c. 27).

(**c**) 2011 c. 25; see section 250(1) for the definition of "prescribed".

(**d**) In relation to England, the Planning (Hazardous Substances) Regulations 2015 (S.I. 2015/627) are made under section 5 of the Planning (Hazardous Substances) Act 1990, and regulation 3 of S.I. 2015/627 specifies the substances that are hazardous substances for the purposes of that Act. Equivalent provision is made in relation to Wales by the Planning (Hazardous Substances) (Wales) Regulations 2015 (S.I. 2015/1597 (W. 196)). In relation to Scotland, the Town and Country Planning (Hazardous Substances) (Scotland) Regulations 2015 are made under section 3 of the Planning (Hazardous Substances) (Scotland) Act 1997, and regulation 3 of those Regulations specifies the substances that are hazardous substances for the purposes of that Act. In relation to Northern Ireland, the Planning (Hazardous Substances) (No. 2) Regulations (Northern Ireland) 2015 (S.R. 2015 No. 344) are made under section 108(4) of the Planning Act (Northern Ireland) 2011, and regulation 3 of those Regulations specifies the substances that are hazardous substances for the purposes of that Act.

(**e**) 2006 c. 52.

(**f**) See section 3(2) of the Space Industry Act 2018 for the definition of "spaceport licence".

(**g**) See section 3(2) of the Space Industry Act 2018 for the definition of "operator licence".

"launch vehicle", other than in references to a "US launch vehicle", means—

(a) a craft to which section 1(5) applies and the component parts of that craft, or

(b) a space object(**a**) which is a vehicle and the component parts of that vehicle,

that is used for the purpose of the proposed spaceflight activities or the operator's spaceflight activities, as applicable, but does not include a payload carried by the launch vehicle;

"licensed activities", except in Parts 5 and 10 and in Schedule 4, means the activities which a person is authorised to carry out by virtue of an operator licence, a spaceport licence or a range control licence(**b**);

"licensee" means the holder of an operator licence, a spaceport licence or a range control licence under the Act, except in—

(a) the defined terms—

(i) "launch operator licensee",

(ii) "proposed spaceport licensee",

(iii) "range control licensee",

(iv) "return operator licensee",

(v) "spaceport licensee", and

(vi) "US licensee",

(b) Parts 6 and 7, and

(c) Schedule 4;

"major accident" means—

(a) for the purposes of Parts 4, 8, Schedule 1 and Schedule 4 in so far as it relates to a spaceflight operator, an accident arising out of, or in the course of, spaceflight activities or preparation for spaceflight activities that is highly likely to—

(i) cause death or serious injury to, or

(ii) destroy or seriously damage the property of,

persons who are not human occupants;

(b) for the purposes of Parts 5 and 10, regulation 181(2)(e) and Schedule 4 in so far as it relates to a spaceport licensee, an accident at the spaceport that is highly likely to—

(i) cause death or serious injury to any person, or

(ii) destroy or seriously damage the property of members of the public;

(c) for the purposes of Part 16, an accident of the types referred to in paragraphs (a) or (b) as appropriate;

"major accident hazard" means a hazard that could cause a major accident;

"malfunctions" means the launch vehicle deviates from operating within its flight envelope or otherwise ceases to operate normally and "malfunction" means the deviation of such a vehicle from that envelope;

"NASP" means National Aviation Security Programme(**c**);

"occurrence", other than in Part 11, has the meaning given in regulation 270;

"occurrence report" means a report referred to in regulation 271(1);

(**a**) Space object is defined in section 69(1) of the Space Industry Act 2018, by reference to the Outer Space Act 1986 (c. 38). The definition is given in section 13(1) of that Act. It "includes the component parts of a space object, its launch vehicle and the component parts of that".

(**b**) See section 7(2) of the Space Industry Act 2018 for the definition of "range control licence".

(**c**) The National Aviation Security Programme relates to the security regime applicable for civil aviation. It provides a comprehensive security framework incorporating the baseline security requirements retained from EU law, as well as additional more stringent measures which are set out in directions issued by the Secretary of State to industry under Part 2 of the Aviation Security Act 1982 (c. 16).

"operator" means the holder of an operator licence;

"operator security programme" means the programme specified in regulation 171(1);

"operator's spaceflight activities" means spaceflight activities which are authorised by an operator licence and which are any of—

(a) launching a launch vehicle;

(b) launching a carrier aircraft;

(c) operating the launch vehicle or a carrier aircraft whose launch is authorised by the operator licence, in so far as necessary for one or more of the following assignments—

(i) to carry a spaceflight participant,

(ii) to carry a payload until its release or separation from the launch vehicle,

(iii) to carry out sub-orbital activities, or

(iv) to return to earth and complete its flight,

including orbital activities only in so far as they are necessary to complete such an assignment;

(d) operating a launch vehicle whose launch is not authorised by the operator licence, in order to cause that vehicle to land in the United Kingdom;

"orbital activities" means spaceflight activities using a launch vehicle which has reached a stable orbit;

"pilot in command" means the pilot who—

(a) takes part in the operator's spaceflight activities on board the launch vehicle, and

(b) is designated by the spaceflight operator as being in command and charged with the safe conduct of its flight, without being under the direction of any other pilot;

"proposed spaceflight activities" means any of the spaceflight activities mentioned in paragraphs (a) to (d) of the definition of "operator's spaceflight activities" which would be authorised by the operator licence that the applicant is applying for, if granted;

"qualifying health and safety authority" has the meaning given in section 21(2);

"range control licensee" means the holder of a range control licence;

"range operations manager" means the individual appointed under regulation 11(1)(b);

"range safety manager" means the individual appointed under regulation 11(1)(a);

"remote pilot" means an individual who—

(a) has the ability to control, in real time, the flight path of the launch vehicle, and

(b) is not on board that launch vehicle;

"return operator licence" means an operator licence which is not a launch operator licence and which authorises a person to operate a launch vehicle, launched elsewhere than the United Kingdom, in order to cause that vehicle to land in the United Kingdom;

"return operator licensee" means the holder of a return operator licence;

"safety investigation" means a process conducted by SAIA, or other relevant national or international body, for the purposes of spaceflight accident prevention, which—

(a) includes the gathering and analysis of information,

(b) the drawing of conclusions, including the determination of causes and contributing factors, and

(c) when appropriate, the making of safety recommendations;

"safety management system" in respect of a spaceflight operator and a spaceport licensee is to be construed in accordance with Schedule 4;

"safety manager" means the individual appointed under regulation 7(1)(b) or 9(1);

"safety recommendation" means a proposal of SAIA, based on information derived from a safety investigation or other sources such as safety studies, made with the intention of preventing spaceflight accidents;

"SAIA" means the space accident investigation authority nominated by the Secretary of State under regulation 5 of the Spaceflight Activities (Investigation of Spaceflight Accidents) Regulations 2021;

"security manager" means the individual appointed under regulation 7(1)(c), 9(3)(c), 10(2) or 11(1)(d);

"ship" means every description of vessel whether or not used in navigation;

"spaceflight operator" means the holder of a launch operator licence or a return operator licence;

"spaceflight participant" means an individual, other than a member of the crew, who is to be carried on board a launch vehicle with the spaceflight operator's permission;

"spaceport licensee" means the holder of a spaceport licence;

"space site security programme" means the programme specified in regulation 170(1);

"stable orbit" means an orbit where a launch vehicle—

(a) has started to travel in an orbit of a minimum perigee of 130 kilometres taking account of any natural influences such as the forces of drag acting on that vehicle, and

(b) is capable of continuing to travel in that orbit for at least one orbit of the earth;

"technical requirements", except in the definition of "Aircrew Regulation" and in paragraph 11 of Schedule 1, means the requirements described in the current safety case as required by paragraph 11 of Schedule 1;

"Technology Safeguards Agreement" means the Agreement between the Government of the United States of America and the Government of the United Kingdom of Great Britain and Northern Ireland on technology safeguards associated with United States' participation in space launches from the United Kingdom entered into on 16th June 2020(**a**);

"thermal radiation" means energy emitted as electromagnetic radiation caused by an explosion or deflagration that can be experienced as light or heat;

"toxic release" means the release of a substance that is toxic to humans;

"training manager" means the individual appointed under regulation 9(3)(b) or 11(1)(e);

"US technical data" has the meaning given in the Technology Safeguards Agreement.

(2) For the purposes of these Regulations references to "space site" are to be treated as if they include references to a ship—

(a) from which a launch vehicle or carrier aircraft is launched or is to be launched,

(b) on which a launch vehicle, or a carrier aircraft to which the exemption referred to in regulation 15(1) does not apply, has landed or is to be landed,

(c) from which spaceflight activities are controlled or are to be controlled,

(d) from which range control services are provided or are to be provided, or

(e) from or on which one or more of the activities in sub-paragraphs (a) to (d) are carried out or are to be carried out.

(**a**) CP 307. The agreement may be obtained in hard copy from the Commercial Space Directorate, UK Space Agency, 10 Victoria Street, London, SW1H 0NN or found on the Foreign, Commonwealth & Development Office treaties database at https://www.gov.uk/government/publications/ukusa-agreement-in-the-form-of-an-exchange-of-notes-between-the-united-kingdom-and-the-united-states-of-america-on-technology-safeguards-associated.

PART 2

Appointment of the regulator

Appointment of Civil Aviation Authority

3. The CAA(**a**) is appointed to exercise every function conferred on the regulator by or under the Act.

Concurrent appointment for functions of issuing guidance

4.—(1) Where the CAA is appointed to exercise functions under regulation 3, it is appointed instead of the Secretary of State, except for exercising functions of issuing guidance conferred by section 2(4), 7(7) or 11(6).

(2) For exercising the functions of issuing guidance mentioned in paragraph (1), the CAA is appointed as regulator concurrently with the Secretary of State.

PART 3

Grant of a licence – general

CHAPTER 1

Eligibility criteria and prescribed roles for licensees

Application of eligibility criteria

5.—(1) The eligibility criteria in regulation 6 apply to—

(a) a licensee,

(b) any individual appointed by a spaceport licensee or an operator to undertake a role prescribed in regulation 7, 8, 9 or 10, and

(c) any individual appointed by a range control licensee to undertake a role prescribed in regulation 11.

(2) In the case of a licensee which is a body corporate or a partnership, regulation 6 applies as if references to "that person" in sub-paragraphs (a) to (f) of that regulation are to an officer of that body corporate or a partner in that partnership.

(3) For the purposes of this regulation—

"officer" has the meaning given in section 57(3), and

"partner" has the meaning given in section 58(6).

Eligibility criteria

6.—(1) A person to whom regulation 5(1) applies will not be eligible if—

(a) that person is an undischarged bankrupt—

(i) in England and Wales or Scotland, or

(ii) in Northern Ireland,

(b) a bankruptcy restrictions order or undertaking is in force in respect of that person under—

(i) the Bankruptcy (Scotland) Act 2016(**b**) or the Insolvency Act 1986(**c**), or

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(**a**) "The CAA" is defined in section 69(1) of the Space Industry Act 2018 as "the Civil Aviation Authority".
(**b**) 2016 asp 21.
(**c**) 1986 c. 45.

(ii) the Insolvency (Northern Ireland) Order 1989(**a**),

(c) a debt relief restrictions order or undertaking is in force in respect of that person under—

(i) the Insolvency Act 1986, or

(ii) the Insolvency (Northern Ireland) Order 1989,

(d) a moratorium period under a debt relief order applies in relation to that person under—

(i) the Insolvency Act 1986, or

(ii) the Insolvency (Northern Ireland) Order 1989,

(e) that person is—

(i) in Great Britain, subject to a disqualification order under section 1(1) of, or a disqualification undertaking under section 1A(1) of, the Company Director's Disqualification Act 1986(**b**), or

(ii) in Northern Ireland, subject to a disqualification order under Article 3(1) of, or a disqualification undertaking under Article 4(1) of, the Company Director's Disqualification (Northern Ireland) Order 2002(**c**), or

(f) that person has been convicted of any offence involving fraud or dishonesty, or any indictable offence, and for this purpose "offence" includes any act or omission which would have been an offence if it had taken place in the United Kingdom, unless—

(i) in Great Britain, that person's conviction is spent within the meaning of the Rehabilitation of Offenders Act 1974(**d**), or

(ii) in Northern Ireland, that person's conviction is spent within the meaning of the Rehabilitation of Offenders (Northern Ireland) Order 1978(**e**).

(2) For the purpose of paragraph (1)(f), an offence is indictable if—

(a) in the case of an offence under the law of England and Wales, it is an indictable offence in England and Wales;

(b) in the case of an offence under the law of Scotland, it may be tried on indictment in Scotland;

(c) in the case of an offence under the law of Northern Ireland, it is an indictable offence in Northern Ireland.

Prescribed roles: spaceport licensees

7.—(1) A spaceport licensee must appoint individuals to undertake, on that licensee's behalf, the roles of—

(a) accountable manager,

(b) safety manager, and

(c) security manager(**f**).

(2) The spaceport licensee must ensure that—

(a) the accountable manager has a duty to establish and maintain an effective management system and to ensure that the spaceport licensee's licensed activities can be financed and carried out in accordance with the provisions contained in or made under the Act and the conditions of the licence;

(**a**) S.I. 1989/2405 (N.I. 19).

(**b**) 1986 c. 46; section 1 was amended by section 5(1) of the Insolvency Act 2000 (c. 39) and section 204(1) and (3) of the Enterprise Act 2002 (c. 40). Section 1A was inserted by section 6(1) and (2) of the Insolvency Act 2000 and amended by section 111 of, and paragraphs 1 and 3(1), (2) and (3) of Part 1 of Schedule 7 to, the Small Business, Enterprise and Employment Act 2015 (c. 26).

(**c**) S.I. 2002/3150 (N.I. 4). Article 3(1) was amended by Article 4(3) of S.I. 2005/1454 (N.I. 9).

(**d**) 1974 c. 53.

(**e**) S.I. 1978/1908 (N.I. 27).

(**f**) See regulation 169 for the responsibilities of a licensee's security manager.

(b) the safety manager's duties are—

(i) day-to-day development, administration and maintenance of an effective safety management system under regulation 163 and Schedule 4,

(ii) examination of all aspects of the spaceport licensee's licensed activity relating to securing that its licensed activities are carried out safely in accordance with Part 10, and

(iii) monitoring those involved in the spaceport licensee's licensed activities to ensure compliance with the spaceport licensee's safety policies and procedures in accordance with Part 10.

(3) A spaceport licensee may appoint the same individual to undertake more than one of the roles prescribed in paragraph (1).

Prescribed role: all operators

8.—(1) An operator must appoint an individual to undertake, on the operator's behalf, the role of accountable manager.

(2) The operator must ensure that the accountable manager has a duty to establish and maintain an effective management system and to ensure that the operator's licensed activities can be financed and carried out in accordance with the provisions contained in or made under the Act and the conditions of the licence.

Prescribed roles: spaceflight operators

9.—(1) A spaceflight operator must appoint an individual to undertake, on the spaceflight operator's behalf, the role of safety manager.

(2) The spaceflight operator must ensure that the safety manager's duties are—

(a) day-to-day development, administration and maintenance of an effective safety management system under regulation 85 and Schedule 4,

(b) examination of all aspects of the spaceflight operator's activity relating to securing that its spaceflight activities are carried out safely in accordance with Part 8, and

(c) monitoring those involved in the operator's spaceflight activities to ensure compliance with the spaceflight operator's safety policies and procedures in accordance with Part 8.

(3) A launch operator licensee must appoint individuals to undertake, on its behalf, the roles of—

(a) launch director,

(b) training manager, and

(c) security manager.

(4) The launch operator licensee must ensure that—

(a) the launch director has the duties set out in regulation 88, and

(b) the training manager has responsibility for the conduct and management of the spaceflight operator's training programme in accordance with Part 7.

(5) Where a return operator licence authorises the carrying out of activities which may give rise to any issue of national security, the regulator must include a condition in that licence requiring the operator to appoint a security manager.

(6) Where paragraph (5) applies, the operator must ensure that the security manager has the duties set out in regulation 169.

(7) A spaceflight operator may—

(a) subject to paragraph (8), appoint the same individual to undertake more than one of the roles under this regulation;

(b) appoint the same individual to undertake the role of safety manager under this regulation and accountable manager under regulation 8.

(8) A launch operator licensee must not appoint the same individual to undertake the role of safety manager and launch director.

Additional prescribed role for operators to whom regulation 9 does not apply

10.—(1) This regulation applies to an operator other than a spaceflight operator.

(2) Where the licence of an operator to whom this regulation applies authorises the carrying out of activities which may give rise to any issue of national security, the regulator must include a condition in that licence requiring the operator to appoint an individual to undertake the role of security manager.

(3) An operator to whom this regulation applies may appoint the same individual to undertake the role of security manager under this regulation and the role of accountable manager under regulation 8.

Prescribed roles: range control licensees

11.—(1) A range control licensee must appoint individuals to undertake, on that licensee's behalf, the roles of—

(a) range safety manager,

(b) range operations manager,

(c) accountable manager,

(d) security manager, and

(e) training manager.

(2) The range control licensee must ensure that—

(a) the range safety manager's duties are—

(i) day-to-day development, administration and maintenance of an effective safety management system under regulation 52,

(ii) examination of all aspects of the range control licensee's licensed activity relating to securing that its licensed activities are carried out safely, and

(iii) monitoring those involved in the range control licensee's activities to ensure compliance with the range control licensee's safety policies and procedures;

(b) the range operations manager has a duty to ensure that the range control licensee's licensed activities are properly and safely undertaken in accordance with the range control licence and requirements imposed on the range control licensee in or under the Act;

(c) the accountable manager has a duty to establish and maintain an effective management system and for ensuring that the range control licensee's licensed activities can be financed and carried out in accordance with the provisions contained in or made under the Act and the conditions of the licence;

(d) the training manager has responsibility for the conduct and management of the range control licensee's training programme in accordance with Part 7.

(3) A range control licensee may appoint the same individual to undertake more than one of the roles prescribed in paragraph (1).

Licensee's duty to ensure necessary resources for individuals in prescribed roles

12. Where a licensee is required to appoint an individual to undertake a prescribed role under this Part, the licensee must ensure that the individuals appointed have the necessary resources and means to carry out their duties.

Duty to inform regulator of changes: individuals in prescribed roles

13.—(1) Where there is to be a change of individual undertaking a prescribed role under this Chapter the licensee must, subject to paragraph (2), inform the regulator in writing, and in advance of making the proposed change.

(2) Where an individual appointed to a prescribed role—

(a) dies, or

(b) is otherwise unable or unwilling to carry out or to continue to carry out that role,

the licensee must inform the regulator in writing as soon as possible.

Offence of failure to inform regulator of changes: individuals in prescribed roles

14.—(1) It is an offence for a licensee—

(a) to fail to comply with regulation 13, or

(b) in purported compliance with regulation 13, to make a statement or provide information it knows to be false in a material particular, or recklessly to make such a statement or provide such information.

(2) A licensee who is guilty of an offence under paragraph (1) is liable—

(a) on summary conviction in England and Wales, to a fine;

(b) on summary conviction in Scotland or Northern Ireland, to a fine not exceeding the statutory maximum;

(c) on conviction on indictment, to imprisonment for a term not exceeding two years, or a fine, or both.

CHAPTER 2

Operator licences: exemptions

Operator licences: exemptions

15.—(1) If the conditions set out in paragraphs (2) and (3) are satisfied, the requirement to hold an operator licence to carry out spaceflight activities does not apply in relation to the launch or return to earth of a carrier aircraft which is being used to transport a space object, launch vehicle or the component parts of either from one place to another.

(2) The condition in this paragraph is satisfied if the flight following the launch does not include the launch of a space object or launch vehicle.

(3) The condition in this paragraph is satisfied if—

(a) the operator of the carrier aircraft has an air operator certificate to carry out commercial air transport operations, including the transport of the items referred to in paragraph (1)—

(i) granted by a state which is a signatory to the Chicago Convention, and

(ii) accepted by the CAA, or

(b) the operator possesses any necessary approvals, authorisations or permissions for the flight—

(i) required by the State of the Operator, and

(ii) accepted by the CAA.

(4) Section 36 does not apply to any person to the extent that that person is carrying out the activities described in paragraph (1).

(5) For the purposes of this regulation—

"air operator certificate", "commercial air transport operation" and "State of the Operator" have the meanings given in Chapter 1 of Annex 6 to the Chicago Convention;

"Chicago Convention" means the Convention on International Civil Aviation and its Annexes, signed in Chicago on 7th December 1944(**a**), as amended.

CHAPTER 3

Grant of a licence: general

Interpretation of this Chapter

16. In this Chapter "licence" means an operator licence, a range control licence or a spaceport licence.

Delegation of power to the regulator

17.—(1) The regulator must specify—

(a) the form and contents of the application for a licence;

(b) information to be provided in connection with that application;

(c) the procedure for rectifying procedural irregularities in that application;

(d) time limits for the applicant doing anything required to be done in connection with that application and the procedure for extending any period so specified.

(2) The application form must require the applicant to provide details of the identity of the individuals who are to undertake the prescribed roles specified in regulations 7 to 11.

(3) The regulator must publish the matters specified in accordance with paragraph (1) and any revisions to those matters as soon practicable after they have been specified or revised by the regulator(**b**).

How to apply for a licence

18.—(1) An application for a licence must be—

(a) made in writing to the regulator in the specified form, and

(b) accompanied by the specified information in writing.

(2) In this regulation "specified" means specified by the regulator in accordance with regulation 17.

How the regulator considers the application

19.—(1) The powers or requirements referred to in this regulation are given or imposed for the purposes of assisting the regulator's consideration of the application.

(2) The regulator may request the applicant in writing to—

(a) make available for inspection by a person appointed by the regulator, any site, facility, craft or equipment to be used in connection with the activities which are the subject of the application as the regulator may specify;

(b) produce for inspection any document or record in the possession or control of the applicant as the regulator may specify;

(c) make available for interview any officer or employee of the applicant or any other person acting on the applicant's behalf as the regulator may specify.

(**a**) Treaty Series No. 8 (1953); Cmd 8742. The Chicago Convention is published at https://www.icao.int/safety/airnavigation/NationalityMarks/annexes_booklet_en.pdf. A hard copy can be obtained from the Department for Transport, Great Minster House, 33 Horseferry Road, London, SW1P 4DR.

(**b**) The matters which must be specified by the regulator in accordance with regulation 17 are set out in the Regulator's Licensing Rules dated xxx2021 which are published at https://www.caa.co.uk/Our-work/Publications/Publications/. A hard copy can be obtained from the CAA, Aviation House, Beehive Ringroad, Crawley, West Sussex RH6 0YR.

(3) The applicant must comply with a request under paragraph (2) within such period as the regulator may reasonably require.

(4) The applicant must provide such assistance as a person appointed by the regulator to carry out an inspection pursuant to this regulation may reasonably request, such as making available relevant officers or employees of the applicant to provide any information relating to the inspection, unlocking doors, disassembling equipment or demonstrating its use.

(5) A person appointed by the regulator to carry out an inspection pursuant to this regulation may take samples, photographs and measurements when carrying out the inspection and make a record of any information obtained from the inspection.

(6) The regulator may—

(a) take copies of a document or record produced pursuant to this regulation;

(b) record an interview with a person interviewed pursuant to this regulation;

(c) subject to paragraph (7), disclose information in the regulator's possession, whether obtained under this regulation or otherwise, relating to an application to—

(i) the Secretary of State;

(ii) any person for the purposes of obtaining a technical assessment by that person of the activities which are the subject of the application or legal advice or information relevant to such activities;

(iii) a person acting on behalf of the country which is a party to a relevant agreement for the purposes of consulting that country about the application;

(iv) SAIA, or any other national or international body investigating spaceflight accidents for the purposes of obtaining information about any safety recommendations relevant to the activities referred to in the application;

(v) any person consulted under section 13(6) (conditions of licences)(**a**) or any other person consulted about conditions to be included in the licence;

(vi) any other public authority or international organisation responsible for regulating any aspect of spaceflight activities;

(d) provide copies of documents or records in the possession of the regulator relating to an application and any recording referred to in sub-paragraph (b) to any person referred to in sub-paragraph (c) for the purposes mentioned in that sub-paragraph.

(7) US technical data may only be disclosed with the consent of the Government of the United States after consultation between the regulator, the Secretary of State and the Government of the United States.

(8) An officer of the regulator or other person acting on the regulator's behalf may exercise the powers referred to in this regulation.

(9) In this regulation "relevant agreement" means an agreement between the United Kingdom and another country relating to spaceflight activities.

How the regulator determines the application

20. The regulator must determine the application(**b**) having regard to—

(**a**) Section 13(6) (conditions of licences) of the Space Industry Act 2018 requires the regulator, in deciding what conditions to include in a licence under that Act, to consult a list of persons specified in paragraphs (a) to (e) of that subsection and whatever other persons the regulator thinks appropriate if the proposed licence gives rise to any issues regarding trade controls or national security.

(**b**) The Space Industry Act 2018 provides matters which the regulator has to be satisfied of before the regulator can grant a licence. The matters are referred to in sections 8(2) and (3) (grant of licences: general), 9(1) (grant of operator licences: safety) and 10 (grant of spaceport licence). Section 11(2) and (5) (grant of licences: assessments of environmental effects) requires the applicant for a launch operator licence or a spaceport licence to submit to the regulator an "assessment of environmental effects" (defined in section 11(3) of the Space Industry Act 2018) which the regulator must take into account in deciding whether to grant those licences. The regulator must exercise the function of granting or refusing the licence with a view to securing public safety and take into account the matters listed in section 2(2) (duties and supplementary powers of the regulator).

(a) the information provided by the applicant in connection with the application;

(b) the information gathered by the regulator during consideration of the application;

(c) any licence condition under section 13(1) which the regulator thinks appropriate to include in the licence, if the licence is granted and the views expressed about the condition by the applicant and any other person consulted about the condition.

Preparation of the licence and informing the applicant of its grant

21. If the regulator grants a licence(**a**), the regulator must—

(a) prepare the licence and any conditions to be included in the licence, in writing,

(b) send that licence to the applicant, and

(c) give the applicant written reasons for including any conditions in the licence.

Informing the applicant of the refusal of a licence

22. If the regulator refuses an application for a licence, the regulator must—

(a) inform the applicant in writing of the decision, and

(b) give the applicant written reasons for the refusal.

Renewal of a licence

23. Regulations 17 to 22 and 24 apply in relation to an application for the renewal of a licence as they apply in relation to an application for a licence(**b**).

Withdrawal of an application for a licence

24. An applicant may withdraw an application for a licence by giving notice to the regulator at any time before the regulator determines the application.

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;

(**a**) Section 8(4) of the Space Industry Act 2018 provides that if the regulator is not the Secretary of State, the regulator may grant a licence only with the consent of the Secretary of State.

(**b**) Section 14(4) (licences granted for specified periods) of the Space Industry Act 2018 provides that if the regulator is not the Secretary of State, the regulator may grant a licence only with the consent of the Secretary of State.

"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.

PART 5

Grant of a spaceport licence

CHAPTER 1

Interpretation

Interpretation

34. In this Part—

"actual vehicle" means a launch vehicle or carrier aircraft in respect of which there is an operator applicant;

"applicant" means an applicant for a spaceport licence;

"licensed activities" means the activities that a person is authorised to carry out by virtue of a spaceport licence;

"operator applicant" means a person who is applying, has applied or intends to apply for a launch operator licence or a return operator licence to authorise spaceflight activities at the proposed spaceport;

"the proposed spaceport" means the site in respect of which an application for a spaceport licence is being, or has been, made;

"representative vehicle" means a launch vehicle or a carrier aircraft of the type that the applicant considers most likely to be used to carry out spaceflight activities at the proposed spaceport;

"safety case" is to be construed in accordance with regulation 36;

"safety clear zone" means an area which will be subject to restrictions, exclusions and warnings during the carrying out of hazardous pre-flight and post-flight operations;

"siting assessment" means an assessment carried out under regulation 38.

CHAPTER 2

Prescribed criteria and requirements

Grant of a spaceport licence: prescribed criteria for horizontal spaceports

35.—(1) Where the proposed spaceport is a horizontal spaceport, the proposed spaceport must be located at an aerodrome which is—

(a) either—

(i) certified, or

(ii) CAA licensed, and

(b) NASP directed.

(2) For the purposes of this regulation "NASP directed" in relation to an aerodrome means an aerodrome which is subject to the direction of the Secretary of State under sections 12, 13, 13A, 14 and 15 of the Aviation Security Act 1982(**a**).

Grant of a spaceport licence: safety case requirement

36.—(1) An applicant must carry out a safety case which, unless the circumstances in paragraph (2) apply, meets the requirements in paragraphs (3) to (7).

(2) The circumstances referred to in paragraph (1) are that the applicant's application is not based on an actual vehicle.

(3) The applicant's safety case must take into account—

(a) the interests of any operator applicant,

(b) the interests of any other known user of the proposed spaceport site, and

(c) if the proposed spaceport is a horizontal spaceport—

(i) the interests of the aerodrome licence holder, and

(ii) the interests of any other aerodrome user.

(4) The applicant's safety case must as a minimum contain the following information—

(a) a description of the proposed spaceport, including a description of—

(i) the licensed activities proposed to be conducted at that spaceport,

(ii) the spaceflight activities proposed to be conducted at that spaceport, and

(iii) the activities of any other known spaceport user;

(b) if the proposed spaceport is a horizontal spaceport, a description of the aerodrome;

(c) a description of the vicinity of the proposed spaceport, including identification of any areas, developments or features which could affect the assessment of risks or hazards or the mitigation measures to be applied in the event of an emergency occurring at the spaceport;

(d) a plan of the proposed spaceport identifying and showing the proposed location of—

(i) any known spaceport infrastructure including runways, taxiways, launch pads, test stands and launch vehicle parking areas,

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(**a**) 1982 c. 36.

(ii) any proposed physical barrier under regulation 172(2),

(iii) any proposed installations including maintenance facilities, integration facilities, hangars or any other buildings,

(iv) any proposed hazardous material storage facilities to be designated under regulation 158, including, if known, the types and maximum quantities to be stored at each hazardous material storage facility,

(v) any proposed area or buildings for handling or venting of any hazardous material, and

(vi) any proposed static engine or other test areas;

(e) a description of any spaceflight activities which the applicant believes likely to be carried out from the spaceport, including a description of any carrier aircraft or launch vehicle to be launched and any payload to be carried by such an aircraft or vehicle if the spaceport licence is granted, including—

(i) any associated infrastructure requirements;

(ii) any associated operational requirements, such as integration facilities and hangars;

(iii) any operating characteristics which may affect licensed activities;

(iv) any rescue and firefighting requirements;

(v) any hazardous material to be used by a carrier aircraft, launch vehicle or payload, or to be stored at the spaceport.

(5) The applicant's safety case must include, in relation to the operations and activities listed in paragraph (6)—

(a) identification of each major accident hazard that could arise during the operation or activity,

(b) an assessment of the likelihood of it arising and of the severity of the consequences if it does occur, and

(c) a description of the prevention and mitigation measures that will be applied to ensure that the risks identified are as low as reasonably practicable.

(6) The operations and activities to which paragraph (5) refers are—

(a) the transporting, handling and storing of any hazardous material at the spaceport,

(b) the integration of a payload with a launch vehicle at the spaceport,

(c) the integration of a carrier aircraft with a launch vehicle at the spaceport,

(d) any testing of a type described in regulation 161 (requirement to designate appropriate area for static engine etc. testing) at the spaceport, and

(e) any other proposed licensed activities or spaceflight activities which may give rise to a major accident hazard.

(7) Taking into account the findings of the assessment required under paragraph (5), the applicant's safety case must, except where regulation 37(2) applies—

(a) identify that a safety clear zone is required,

(b) define the area that will comprise the safety clear zone,

(c) stipulate the times that the safety clear zone will be in place,

(d) set out the measures the applicant will take to ensure that a safety clear zone is put in place and is monitored, and

(e) set out the arrangements the applicant will have in place to ensure that no person, other than a person permitted to be present under regulation 157(3)(d), is inside a safety clear zone.

(8) Where the circumstances in paragraph (2) apply, the applicant's safety case must—

(a) be based on the representative vehicle,

(b) take into account the matters listed in paragraph (3), as far as these are known to the applicant,

(c) contain as much of the information set out in paragraph (4) as is known to the applicant,

(d) include an assessment that meets, as far as possible, the requirements of paragraph (5), and

(e) take into account the assessment carried out under sub-paragraph (d), and unless regulation 37(2) applies, as far as possible satisfy the requirements in paragraph (7).

(9) In this regulation "aerodrome licence holder" means the holder of the CAA licence or aerodrome certificate for the aerodrome at which the proposed horizontal spaceport is to be located in accordance with regulation 35(1).

Grant of a spaceport licence: safety clear zone requirement

37.—(1) An applicant must, unless paragraph (2) applies, show that it will be able to put in place an appropriate safety clear zone to ensure that the risk to any person from blast overpressure, fragmentation debris, thermal radiation or toxic release will be as low as reasonably practicable during any hazardous pre-flight and post-flight operations.

(2) Paragraph (1) does not apply if the safety case demonstrates that a safety clear zone will not be required for the hazardous pre-flight or post-flight operations.

(3) For the purposes of paragraph (1), an appropriate safety clear zone is one that is determined by the assessment made in the applicant's safety case under regulation 36(7).

Grant of a spaceport licence: siting assessment requirement

38.—(1) An applicant must conduct a siting assessment that meets the requirements in this regulation.

(2) The applicant's siting assessment must—

(a) relate to the site of the proposed spaceport,

(b) subject to paragraph (4), be based on the actual launch vehicle or vehicles, and

(c) result in a numerical estimate of the annualised risk of death or serious injury to members of the public posed by the spaceflight activities proposed.

(3) The level of risk determined under paragraph (2)(c) must be acceptable to the regulator.

(4) Where the applicant's application is not based on an actual vehicle, the applicant's siting assessment must be based on the representative vehicle.

CHAPTER 3

Members of the public

"Members of the public": prescribed meaning under section 2(7) for the purpose of section 10(a) (grant of a spaceport licence)

39. "Members of the public" for the purpose of the reference to "public safety" in section 10(a) does not include any person who is—

(a) listed in regulation 40, and

(b) voluntarily in close proximity to a source of danger at a spaceport.

Persons who are not members of the public

40.—(1) The persons referred to in regulation 39 are—

(a) an appointee, employee or agent of a licensee;

(b) a member of the crew who has consented to accept the risks involved in the operator's spaceflight activities in accordance with section 17 (informed consent);

(c) a spaceflight participant who has consented to accept the risks involved in the operator's spaceflight activities in accordance with section 17;

(d) an individual not falling within sub-paragraphs (a) to (c) who is taking part in the operator's spaceflight activities;

(e) an officer or partner of a licensee;

(f) an individual who is at a spaceport at the invitation of a licensee;

(g) an employee or an individual acting on behalf of the regulator or with the regulator's authority;

(h) an employee or an individual acting on behalf of the government of another country in connection with spaceflight activities;

(i) an employee of the emergency services;

(j) an employee of SAIA;

(k) compliance authority personnel;

(l) an employee of a qualifying health and safety authority;

(m) a member of the armed forces of the Crown.

(2) For the purposes of paragraph (1)—

"compliance authority personnel" includes the following individuals—

(a) an individual appointed as an Inspector of Spaceflight Accidents under regulation 6(1) of the Spaceflight Activities (Investigation of Spaceflight Accidents) Regulations 2021(**a**);

(b) CAA inspectors and auditors;

(c) inspectors of the Department for Environment, Food and Rural Affairs and its agencies;

(d) an air traffic controller;

(e) an employee of the National Crime Agency(**b**);

(f) an employee of an intelligence service;

(g) a constable;

"officer" in paragraph (1)(e) has the meaning given in section 57(3);

"partner" in paragraph (1)(e) has the meaning given in section 58(6).

PART 6

Range Control Services

CHAPTER 1

Interpretation

Interpretation

41. In this Part—

"communication network" means a set of individuals connected to each other by real time communicative interaction;

"current safety case" has the meaning given in regulation 78(1);

"designated place" means—

(**a**) S.I. 2021/****.
(**b**) The National Crime Agency was established by section 1 of the Crime and Courts Act 2013 (c. 22).

(a) a place other than a site at which the operator's spaceflight activities are to be carried out, or

(b) where the operator's spaceflight activities include a controlled and planned landing of a launch vehicle or a planned but uncontrolled landing of such a vehicle at a place other than a site, that place;

"designated site" means—

(a) a spaceport at which the operator's spaceflight activities are to be carried out, or

(b) where the operator's spaceflight activities include a controlled and planned landing of a launch vehicle or a planned but uncontrolled landing of such a vehicle at a site other than a spaceport, that site;

"exclusion zone" has the meaning given in regulation 47(4)(a);

"hazard area" has the meaning given in regulation 47(1);

"land" means land situated in the United Kingdom;

"licence" means a range control licence(**a**);

"licensee" means the holder of a range control licence;

"the licensee's range control services" means the particular range control services(**b**) that are authorised by the licence held by the licensee;

"monitoring functions" means surveillance activities conducted in respect of the designated range, and references to "monitoring" are to be construed accordingly;

"relevant agreement" has the meaning given in regulation 43;

"relevant authorities" has the meaning given in regulation 44;

"restricted zone" has the meaning given in regulation 47(4)(b);

"warning zone" has the meaning given in regulation 47(4)(c).

CHAPTER 2

Requirements about the licensee's capability

The licensee's organisation and management

42.—(1) The matters which the licensee must ensure are in place to provide the licensee's range control services in support of the operator's spaceflight activities include—

(a) the equipment, financial and technical resources necessary to provide those range control services and do any other matter authorised by the licence;

(b) where the licensee's range control services consist of or include the management of the designated range, the capability to ensure that the licensee is able to exercise effective control over each zone(**c**) comprised in the designated range prior to and during the operator's spaceflight activities, including co-ordinating operations with the spaceflight operator and the relevant authorities;

(c) where the licensee's range control services consist of or include the issue of notifications in connection with monitoring the designated range, the capability to issue notifications or ensure that such notifications are issued by the relevant authorities;

(d) where the licensee's range control services consist of or include the identification of the designated range, the technical capability to identify a range taking account of the operator's spaceflight activities and the characteristics of the designated site or place;

(**a**) "range control licence" has the meaning given in section 7(2) of the Space Industry Act 2018.
(**b**) "range control services" has the meaning given in section 6(1) of the Space Industry Act 2018.
(**c**) See section 5(1) of the Space Industry Act 2018 for the definition of "zone".

(e) where the licensee's range control services consist of or include the tracking of the launch vehicle, the technical capability—

(i) where the operator's spaceflight activities are authorised by a launch operator licence, to track the position of the launch vehicle from launch to the point at which the licensee's responsibility for tracking the launch vehicle ceases, as provided in the current safety case for the operator's spaceflight activities;

(ii) where the operator's spaceflight activities are authorised by a return operator licence, to track the position of the launch vehicle until that vehicle lands in the United Kingdom, as provided in the current safety case for the operator's spaceflight activities;

(f) where the licensee's range control services consist of or include monitoring functions, the technical ability to conduct surveillance of the designated range in order to detect the position and speed of objects, including ships and aircraft, entering the designated range prior to and during the operator's spaceflight activities;

(g) sufficient suitably qualified and experienced employees or agents to do the things authorised by the licence and an appropriate management structure;

(h) effective communication networks to enable all parties involved in the provision of the licensee's range control services to communicate with each other and with persons involved in the operator's spaceflight activities during the provision of the licensee's range control services;

(i) facilities or infrastructure;

(j) the capability to comply with—

(i) all relevant requirements under any enactment relating to the provision of the licensee's range control services including health and safety requirements, and

(ii) any requirement contained in a condition subject to which the licence is granted.

(2) In paragraph (1)(i) "facilities or infrastructure" include facilities or infrastructure relating to communications, the collection and retention of information and data, and access to a supply of electrical power and other utilities.

(3) The licensee must ensure that the supply of electrical power and other utilities referred to in paragraph (2) is provided and maintained so as to ensure that the provision of the licensee's range control services is not interrupted or compromised prior to or during the operator's spaceflight activities.

CHAPTER 3

Agreements with relevant authorities

Relevant agreements

43.—(1) Where the licensee's range control services consist of or include monitoring the designated range, before commencing those services, the licensee must enter into an agreement in writing (a "relevant agreement") with the following persons (each a "relevant authority")—

(a) the person specified in regulation 44(a), and

(b) where United Kingdom territorial waters fall within the designated range, each of the persons specified in regulation 44(b) and (c)

and provide a copy of such agreement to the regulator.

(2) A relevant agreement must—

(a) relate to the provision of the licensee's range control services in respect of the operator's spaceflight activities at the designated site or place;

(b) set out the terms under which the licensee will co-operate with the relevant authority to ensure the effective and safe operation of the range prior to and during the operator's spaceflight activities including—

(i) the information which the licensee must provide to the relevant authority in order for the relevant authority to fulfil its function of issuing notifications to third party air users and mariners;

(ii) the time period within which and the format in which such information must be provided;

(iii) the procedures for communication between the parties to the relevant agreement.

(3) The licensee must review the relevant agreement on an annual basis to determine whether, having regard to its operation over the preceding period of 12 months, any amendment is appropriate or necessary and the first review must take place on the first anniversary (with subsequent reviews taking place on each subsequent anniversary) of the date of the relevant agreement.

(4) If, following such review, the licensee considers that an amendment to the agreement is appropriate or necessary, it must take all reasonable steps to agree an amendment to the relevant agreement with the relevant authority which it considers reasonably necessary to address matters arising out of the review.

(5) The licensee must not terminate or enter into any amendment to a relevant agreement unless it has notified the regulator and obtained the regulator's prior written approval to such termination or amendment.

(6) If a relevant agreement is terminated by a party other than the licensee (a "terminated agreement"), the licensee must, without delay, notify the regulator and take steps to enter into an agreement in place of the terminated agreement (a "replacement agreement") and the provisions of this regulation apply to the replacement agreement as they applied to the terminated agreement.

Relevant authorities

44. The relevant authorities are—

(a) the appropriate air navigation service provider for aircraft flying in the volume of airspace falling within the designated range;

(b) Her Majesty's Coastguard or such other appropriate management organisation having responsibility for the United Kingdom territorial waters, if any, falling within the designated range;

(c) the United Kingdom Hydrographic Office(**a**).

Communication with relevant authorities

45.—(1) The licensee must establish and maintain appropriate means of communication with the relevant authorities to enable—

(a) the parties to the relevant agreements to co-ordinate the monitoring of the movements of third party air users and mariners which might pose a hazard to the operator's spaceflight activities or to which the operator's spaceflight activities might pose a hazard;

(b) warnings to be issued to third party air users and mariners or other action to be taken with a view to avoiding or mitigating any loss or damage which may otherwise be caused—

(i) to the operator's spaceflight activities by such third parties' actions, or

(ii) to such third parties resulting from the operator's spaceflight activities.

(2) The licensee must ensure that the means of communication which it has established with the relevant authority referred to in regulation 44(a) is a communication network which permits real time contact between their respective personnel during the operator's spaceflight activities.

(**a**) "the United Kingdom Hydrographic Office" is an executive agency of the Ministry of Defence.

CHAPTER 4

The range and hazard areas

Identification of the designated range

46.—(1) Where the licensee's range control services consist of or include identifying an appropriate range for the operator's spaceflight activities, prior to the commencement of the operator's spaceflight activities, the licensee must—

(a) identify an appropriate range for the operator's spaceflight activities, taking into account the matters referred to in paragraph (2), and

(b) provide details of the range set out in paragraph (3) to the persons mentioned in paragraph (4).

(2) The matters to be taken into account under paragraph (1)(a) include—

(a) the characteristics of the launch vehicle;

(b) the planned trajectory of the launch vehicle;

(c) the capabilities of the equipment to be used by the licensee in the provision of the licensee's range control services;

(d) relevant environmental and meteorological conditions which will apply prior to and during the launch, flight or a controlled and planned landing or a planned but uncontrolled landing, as the case may be, of the launch vehicle including the information provided by the spaceflight operator referred to in regulation 97(2);

(e) areas of population and activities regularly conducted by individuals not involved in the operator's spaceflight activities—

(i) at or in the vicinity of the designated site or place, or

(ii) in any other area in respect of which the operator's spaceflight activities may pose a risk to the health, safety or property of such areas of population or individuals.

(3) The licensee must, utilising meteorological, chronological and other relevant measurement systems, accurately identify—

(a) the locations of the designated site or place, the mission management facility(**a**) or ground control at a spaceport or other place, and of any relevant equipment to be used in the provision of the licensee's range control services during the operator's spaceflight activities;

(b) the dimensions of—

(i) any area of land,

(ii) any area of sea, and

(iii) the volume of airspace,

falling within the designated range;

(c) the outer boundaries of the designated range, being the estimated location at which the launch vehicle, or any part or debris from it, may land following the activation of the flight safety system relating to the operator's spaceflight activities;

(d) the inner boundaries of the designated range, being the activation points for the flight safety system as provided by the spaceflight operator's current safety case.

(4) The licensee must provide written details of the designated range without delay to—

(a) the regulator,

(b) the spaceflight operator, and

(**a**) "mission management facility" is defined in section 69(1) of the Space Industry Act 2018 as having the meaning given in section 19(4).

(c) the spaceport licensee authorised to operate the spaceport at the designated site.

Identification of hazard areas

47.—(1) This regulation applies where the licensee's range control services consist of or include identifying a volume of airspace or an area or areas of land or sea falling within the designated range (a "hazard area") which require to be made subject to restrictions, exclusions or warnings for keeping the area clear at relevant times of—

(a) persons or things that might pose a hazard to the operator's spaceflight activities, and

(b) persons or things to which the operator's spaceflight activities might pose a hazard.

(2) Prior to the commencement of the operator's spaceflight activities, the licensee must identify the dimensions, location and boundary of each hazard area and must promulgate—

(a) which part or parts of the hazard area should be designated—

(i) an exclusion zone,

(ii) a restricted zone, and

(iii) a warning zone, and

(b) the time periods within which such zones should be operative.

(3) The licensee must communicate the information in paragraph (2), in relation to each hazard area, without delay to—

(a) the regulator,

(b) the spaceflight operator,

(c) the spaceport licensee authorised to operate the spaceport at the designated site, and

(d) the relevant authorities.

(4) In paragraph (2)—

(a) an "exclusion zone" is part of a hazard area to which entry by any vehicle, ship, aircraft, or other craft, individual or domestic animal is excluded;

(b) a "restricted zone" is part of a hazard area to which entry is restricted to authorised individuals whose presence is necessary for the carrying out of spaceflight activities or for the performance of duties in connection with such activities;

(c) a "warning zone" is part of a hazard area to which entry is not restricted but which is subject to a requirement to provide a warning notice in accordance with regulation 51.

Monitoring of a hazard area

48. Where the licensee's range control services consist of or include monitoring a hazard area, the licensee must ensure that—

(a) appropriate measures are taken to protect an exclusion zone or restricted zone from unauthorised entry during time periods within which the zones are operative, and

(b) a warning notice has been issued in respect of a warning zone in accordance with regulation 51.

CHAPTER 5

Notification requirements

Requirement to notify persons

49.—(1) Where the licensee's range control services consist of or include the issue of notifications in connection with monitoring the designated range, the licensee must notify the persons listed in paragraph (2) of certain information relating to the operator's spaceflight activities in accordance with regulation 50.

(2) The persons referred to in paragraph (1) are—

(a) the local authority(**a**) in whose administrative area any area of land comprised in the designated range is situated, whether wholly or partially;

(b) the emergency services which are relevant to the location of the designated site or place;

(c) the regulator;

(d) every owner, lessee or occupier of any part of the land falling within the designated range;

(e) any other person or organisation specified in a condition subject to which the licence is granted which the regulator considers should be notified of spaceflight activities taking place within the designated range.

(3) In this regulation "owner" has the meaning given in section 56 of the Civil Aviation Act 1982(**b**).

Notification requirements

50.—(1) This regulation applies to the provision of a notification referred to in regulation 49.

(2) Where the notification is to be provided to a local authority, the emergency services or the regulator, the notification must be provided—

(a) within such period prior to the commencement of the operator's spaceflight activities,

(b) containing such data and information, and

(c) in such form and manner,

as the recipient may require.

(3) Where the notification is to be provided to an owner, lessee or occupier of land, the notification must—

(a) be provided at any time not later than 4 weeks prior to the proposed date of commencement of the operator's spaceflight activities,

(b) contain such information regarding the nature and timing of the operator's spaceflight activities as is reasonably necessary to ensure that the owner, lessee or occupier of land does not pose a hazard to the operator's spaceflight activities and the operator's spaceflight activities do not pose a hazard to the owner, lessee or occupier of land, and

(c) be in writing and sent to the owner, lessee or occupier of the land.

(4) If it is not practicable, after reasonable enquiry, to ascertain the name or address of any owner, lessee or occupier of land to whom notification must be provided, the notification may be provided by addressing it to them by the description of "owner", "lessee" or "occupier" of the land, with a description of the land to which the notification relates and, if there are premises situated on the land, by delivering it to some person on the premises or, if there is no person on the premises to whom it can be delivered or there are no premises, by affixing it, or a copy of it, to some conspicuous part of the premises or land (as the case may be).

(5) Where the notification is to be provided to a person or organisation referred to in regulation 49(2)(e), the notification must be provided in accordance with any terms of the condition subject to which the licence has been granted.

Warning notices

51.—(1) Where the licensee's range control services consist of or include monitoring a part of a hazard area designated as a warning zone, the licensee must issue a warning notice or notices in accordance with paragraph (2).

(2) A warning notice must—

(**a**) "local authority" has the meaning given in section 69(1) of the Space Industry Act 2018.
(**b**) 1982 c. 16.

(a) contain such information as is reasonably necessary to make the individuals referred to in paragraph (3) aware of the operator's spaceflight activities, with a view to ensuring that—

(i) they do not pose a hazard to the operator's spaceflight activities;

(ii) the operator's spaceflight activities do not pose a hazard to them;

(b) be provided within a reasonable period prior to the commencement of the operator's spaceflight activities;

(c) be issued in a manner which is reasonably necessary to alert the individuals referred to in paragraph (3) to the operator's spaceflight activities.

(3) The individuals are—

(a) an individual whose regular place of work is situated on any part of the land falling within the designated range, and

(b) any individual who might enter or traverse any part of the land falling within the designated range in exercise of a legal right, entitlement or privilege including, but not limited to, an easement or a public right of way,

but do not include excluded individuals.

(4) The following individuals are "excluded individuals" for the purposes of paragraph (3)—

(a) an individual who is involved with the operator's spaceflight activities;

(b) an individual who is involved with the operation of the spaceport at the designated site;

(c) an individual who is involved with the provision of the licensee's range control services;

(d) a member of the police, fire, rescue or ambulance services;

(e) an individual employed by, or appointed to act on behalf of, the regulator.

CHAPTER 6

Safety

Safety and quality management systems requirement

52.—(1) Without prejudice to any conditions attached to a licence, a licensee must establish and implement management systems, including a safety management system, that give due priority to safety in relation to the provision of the licensee's range control services.

(2) The licensee must, within its management systems, make, implement and maintain adequate quality management arrangements in respect of all matters relating to the provision of the licensee's range control services which may affect the safety of the operator's spaceflight activities.

(3) Prior to the commencement of the licensee's range control services, the licensee must submit to the regulator a written record of the systems and arrangements referred to in paragraphs (1) and (2).

(4) The licensee must provide prior notice to the regulator of any material alteration or amendment to the management systems or quality management arrangements referred to in paragraph (3).

(5) The licensee must provide to the regulator copies of records or documents referred to in, or relating to, such management systems or quality management arrangements as the regulator may require.

CHAPTER 7

Applicable conditions where an operator is authorised to provide range control services in respect of the operator's spaceflight activities

Application

53. This Chapter applies where a spaceflight operator is authorised by a licence to provide range control services in respect of the operator's spaceflight activities carried out by that spaceflight operator.

Conditions applying to spaceflight operator

54.—(1) The spaceflight operator must establish and implement management systems so that the part of its organisation which is responsible for providing the licensee's range control services is distinct and separate from the part of its organisation which is engaged in the operator's spaceflight activities, in order to ensure that the performance of the obligations imposed upon the licensee under this Part are neither compromised nor adversely affected by a conflict of interest between the different parts of the organisation.

(2) To achieve that objective, the management systems must include—

(a) separate personnel appointed solely to undertake roles in the provision of the licensee's range control services;

(b) authorised lines of communication between the appropriate individuals involved in the provision of the licensee's range control services and the individuals engaged in the operator's spaceflight activities, for the transmission of data or information relating to the safety of the operator's spaceflight activities;

(c) measures which ensure that the individuals appointed to the prescribed roles under regulation 11 and the other personnel involved in the provision of the licensee's range control services report to and are managed by independent individuals;

(d) a process under which—

(i) an individual involved in the provision of the licensee's range control services can lodge a formal complaint or concern regarding any act or omission by personnel involved in the operator's spaceflight activities which the individual considers may compromise, or adversely affect, the proper performance of the range control services, with particular regard to the safety of the operator's spaceflight activities,

(ii) a complaint or concern referred to in paragraph (i) can be properly investigated by an independent individual appointed by the spaceflight operator, and

(iii) appropriate action is taken in the light of the results of the investigation by the independent individual referred to in paragraph (ii).

(3) For the purposes of this regulation, an individual is to be regarded as independent only where—

(a) the individual's function or role will not involve the consideration by that individual of any aspect of the operator's spaceflight activities for which that individual bears or has borne responsibility or where that individual's objectivity may be compromised, and

(b) the individual is sufficiently independent of a management scheme which has, or has had, any responsibility for any aspect of the operator's spaceflight activities.

PART 7

Training, qualifications and medical fitness

CHAPTER 1

General

Interpretation

55. In this Part—

"competence assessment" has the meaning given in regulation 69(3)(c)(iii);

"ICAO compliant", in relation to a licence, means a licence which complies with Annex 1 to the Convention on International Civil Aviation signed on behalf of the Government of the United Kingdom at Chicago on 7th December 1944, and is issued by the licensing authority in a country which is a party to that Convention;

"licensee" means a person who holds a launch operator licence, a return operator licence, a spaceport licence or a range control licence under the Act;

"medical assessment" has the meaning given in regulation 72(5);

"medical examination" has the meaning given in regulation 72(5);

"normal conditions" in relation to a flight means conditions in which—

(a) all launch vehicle aerodynamic parameters are as expected,

(b) all the internal and external systems of the launch vehicle perform exactly as planned, and

(c) there are no external perturbing influences other than atmospheric drag and gravity;

"relevant individual" has the meaning given in regulation 58(1);

"relevant requirement" has the meaning given in regulation 65(3);

"safety-critical function" means any function the performance of which is essential for preventing serious or fatal injuries as a result of the operator's spaceflight activities;

"simulated training device" has the meaning given in regulation 71(2);

"specified capacity" means a capacity which is specified for the purposes of section 18(4)(a) by regulation 57(1);

"specified role" means a role which is specified for the purposes of section 18(4)(b) by regulation 56(1);

"sub-orbital aircraft" means a craft to which section 1(5) applies which can derive support in the atmosphere from the reactions of the air other than reactions of the air against the earth's surface.

Specified roles and criteria

56.—(1) The following roles are specified for the purposes of section 18(4)(b)—

(a) the launch director;

(b) the flight termination personnel;

(c) the flight crew and remote pilots;

(d) the sub-orbital aircraft engineer;

(e) the range operations manager;

(f) the range safety manager.

(2) The criteria set out in Part 1 of Schedule 3 are specified criteria for the purposes of section 18(4) as follows—

(a) the criteria in paragraphs 1 to 6 are specified for the role of launch director;

(b) the criteria in paragraphs 8 to 12 are specified for the role of flight termination personnel;

(c) the criteria in paragraphs 13 to 20 are specified for the role of flight crew and remote pilots;

(d) the criteria in paragraph 21 are specified for the role of sub-orbital aircraft engineer;

(e) the criteria in paragraphs 22 to 24 are specified for the role of range operations manager;

(f) the criteria in paragraphs 25 to 29 are specified for the role of range safety manager.

Specified capacities and criteria

57.—(1) "Spaceflight participant" is a specified capacity for the purposes of section 18(4)(a).

(2) The criteria in paragraph 52 of Schedule 3 are specified criteria in relation to spaceflight participants for the purposes of section 18(4).

Responsibility of licensees

58.—(1) The licensee must ensure that—

(a) individuals who perform any specified role or have a specified capacity ("relevant individuals") satisfy—

(i) the conditions set out in paragraph (2), or

(ii) if paragraph (4) applies in relation to the individual concerned, the conditions set out in paragraph (5);

(b) individuals who participate in, or are otherwise engaged in connection with, the licensed activities but do not perform a specified role or have a specified capacity, satisfy the conditions set out in paragraph (3).

(2) An individual ("A") satisfies the conditions in this paragraph if A—

(a) has the qualifications, skills, experience and competencies required by this Part,

(b) has received training appropriate to A's role or capacity which—

(i) enables A to satisfy any criteria specified for that role by regulation 56(2) or for that capacity by regulation 57(2), and

(ii) otherwise complies with the requirements set out in this Part, and

(c) is medically fit to perform any duties assigned to A.

(3) An individual ("B") satisfies the conditions in this paragraph if B—

(a) has participated in a training programme, including instruction on safety, appropriate to B's role,

(b) has been assessed as being competent to perform B's duties, and

(c) is medically fit to perform B's duties.

(4) This paragraph applies to an individual who is taking part in licensed activities as a remote pilot for a spaceflight operator who holds a return operator licence but no other licence under the Act.

(5) An individual ("C") satisfies the conditions in this paragraph if C—

(a) has been assessed by a competent authority in the United Kingdom, or in a jurisdiction outside the United Kingdom, as being competent to perform the duties of a remote pilot in relation to the type of launch vehicle for which C has that role, and

(b) is medically fit to perform those duties.

(6) For these purposes, subject to paragraph (9), the licensee must—

(a) establish and maintain a training programme which complies with the requirements in regulation 69,

(b) prepare and maintain a training manual which complies with the requirements in regulation 66, and

(c) ensure that relevant individuals are medically fit to perform their duties in accordance with regulation 72(1).

(7) The licensee may satisfy the obligation in paragraph (1), in relation to any relevant individuals who are not its employees or spaceflight participants, by checking that—

(a) the individual concerned ("RI")—

(i) satisfies the condition in paragraph (2)(a), and

(ii) has received any training required to ensure that RI satisfies the conditions in paragraph (2)(a), from RI's employer, and

(b) RI is medically fit to perform RI's duties and, where regulation 72 applies, has been certified as medically fit in accordance with that regulation.

(8) The licensee must have in place a training management system which—

(a) is proportionate to the scale, nature and complexity of the licensed activities and the training programme;

(b) sets out clearly defined lines of responsibility and accountability for training, including—

(i) a direct accountability for training on the part of senior management of the licensee, and

(ii) the persons to whom and for whom the training manager is accountable;

(c) includes the means of measuring and verifying the effectiveness of the training programme;

(d) provides the means of monitoring the provision of any services or equipment by a third party contractor under regulation 59.

(9) A return operator licensee is not required to appoint a training manager or comply with paragraph (6)(a) or (b), or regulations 66 and 68 to 71.

Training resources

59.—(1) A licensee must ensure that it has adequate personnel, facilities and equipment to satisfy its obligations under this Part.

(2) If the conditions set out in paragraph (4) are satisfied, a licensee may enter into arrangements with a third party—

(a) to provide personnel, facilities or equipment for use in the licensee's training programme,

(b) to perform any part of its training programme, or

(c) to carry out medical assessments and medical examinations.

(3) Before entering into any such arrangements with a third party, the licensee must satisfy itself that the personnel, services, equipment or other facilities to be provided by the third party satisfy the requirements of this Part.

(4) The conditions referred to in paragraph (2) are that—

(a) the arrangements between the licensee and the third party ensure that the licensee retains full control over—

(i) the content of any service provided by the third party, and the way in which that service is provided, and

(ii) what equipment or facilities are to be provided by the third party, and the condition of that equipment or those facilities;

(b) the arrangements between the licensee and the third party enable the licensee to provide access to the regulator, or any person authorised by the regulator, to any records or other material held by the third party which relates to the licensed activities;

(c) the arrangements between the licensee and the third party are set out in full in a contract between them.

(5) The use by the licensee of a third party to provide services to the licensee for the purpose of the licensee's obligations under the Act, these Regulations and its licence does not relieve the licensee from any liability in relation to those obligations.

Records

60.—(1) The licensee must keep the records specified in paragraph (2) for a period of at least two years beginning on the first day of the calendar year following the year in which the records were created.

(2) The records are—

(a) the training manual, including any previous versions of the training manual, and all associated documents, including all documents referred to in the training manual;

(b) records relating to individual participants in the training, including results of competence assessments, and details of the training received by each individual participant;

(c) records relating to any mission rehearsals carried out;

(d) details of the training equipment used;

(e) records of the instructors employed on the training programme;

(f) records of any arrangements made with a third party to provide services or equipment to the licensee under regulation 59(2);

(g) a record of any mission rehearsal which took place in accordance with regulation 70(5), including details of every person who participated in the rehearsal, and of any problems which arose during the rehearsal;

(h) the records kept under regulation 77 in relation to medical examinations and medical assessments;

(i) records of the training given to spaceflight participants;

(j) copies of any consent form signed by all crew members and spaceflight participants in accordance with section 17(2);

(k) any other records needed for the licensee to demonstrate that its training activity has been conducted in accordance with the training manual, any conditions on its licence, and these Regulations.

CHAPTER 2

The training manager

The training manager

61.—(1) An individual may only be appointed to act as the training manager for a launch operator licensee under regulation 9(3)(b) or for a range control licensee under regulation 11(1)(e) if—

(a) that individual satisfies the eligibility criteria provided for in regulations 5 and 6, and

(b) the appointment of that individual has been approved by the regulator.

(2) The training manager must be an employee of the licensee.

(3) The training manager is responsible for—

(a) ensuring that the licensee complies with the requirements in these Regulations in relation to the qualification, training and medical fitness of individuals performing specified roles and spaceflight participants,

(b) establishing and running a system for managing the provision of training and where appropriate, qualifications, for individuals who participate in the licensed activities,

(c) ensuring the medical fitness of individuals performing specified roles and spaceflight participants, and

(d) carrying out the functions referred to in regulation 63.

(4) Where a spaceport licensee or a return operator licensee does not have a training manager, the responsibilities specified in paragraph (3)(b) and (d) fall on the licensee.

The training manager (application for approval)

62.—(1) An application for the regulator's approval of the training manager under regulation 61 must be made by a licensee, or by an applicant for a licence.

(2) The application must—

(a) be made in such manner as the regulator may direct;

(b) include a statement of the matters for which the training manager is to be responsible;

(c) contain, or be accompanied by, such other information as the regulator may reasonably require.

(3) At any time after the application is received and before it is determined, the regulator may require the applicant to provide it with such further information as it reasonably considers necessary to enable it to determine the application.

(4) The applicant must inform the regulator in writing as soon as possible of any material change in any of the information provided to the regulator in or with the application or in response to a requirement from the regulator under paragraph (3).

(5) No change may be made to the extent of the responsibilities of the training manager, as described in the statement referred to in paragraph (2)(b), unless this has been approved by the regulator.

(6) Paragraphs (1) to (4) apply to an application for approval under paragraph (5), as they apply to an application for approval under paragraph (1).

The training manager's functions

63.—(1) The training manager has the following functions—

(a) organising and managing such instructors and medical staff, facilities and equipment as are sufficient and appropriate to comply with the licensee's obligations under this Part;

(b) reviewing, and where appropriate, supervising the training provided by instructors, making improvements to training activity where possible, and ensuring that any unsafe training practices are corrected;

(c) reviewing the progress of relevant individuals;

(d) ensuring that the training is kept up to date, and that it meets the needs of all the activities which the licensee is licensed to carry out;

(e) establishing a system to record and document all training activity undertaken by the licensee, with information on the progress of each relevant individual ("RI"), including—

(i) whether each RI has completed the training relevant to that individual,

(ii) whether each RI has met the approved performance criteria necessary to be qualified to perform the RI's role, and

(iii) the results of any tests undertaken by an RI;

(f) maintaining records of all medical examinations and medical assessments carried out in relation to RIs;

(g) administering any informed consent process required by Part 12.

(2) If a spaceport licensee or a return operator licensee does not have a training manager, they must make alternative arrangements to carry out the functions specified in paragraph (1)(a), (b) and (d).

Approval of the appointment of training manager

64.—(1) The regulator may approve an application under regulation 62 only if—

(a) it is satisfied that the individual who is the subject of the application—

(i) is a suitable person to perform the role of training manager with the licensee or, where relevant, the applicant for a licence, and

(ii) satisfies the eligibility criteria prescribed for the licensee in regulations 5 and 6 in relation to that role;

(b) where the application is made by an applicant for a licence, that licence application is granted;

(c) where the application is made by a licensee, the licence of that holder is not suspended or revoked.

(2) The matters the regulator may take into account in making the determination in paragraph (1)(a) include—

(a) the individual's qualifications, including—

(i) knowledge of good educational practice and instruction techniques suitable for complex technical subjects;

(ii) an ability to devise appropriate courses for the training programme;

(b) the individual's training and experience, including whether—

(i) they have practical experience as an instructor in technical subjects relevant to the activities for which the licensee is licensed;

(ii) they can provide evidence of good organisational skills and managerial capability.

(3) The regulator may approve an application under this regulation—

(a) for a specified time, and

(b) subject to specified conditions,

and for these purposes, "specified" means specified by the regulator.

Termination of the training manager's approval

65.—(1) An approval given by the regulator under regulation 64 ceases to be valid if—

(a) the licence of the applicant is surrendered or revoked,

(b) the training manager ceases to satisfy the eligibility criteria referred to in regulation 64(1)(a)(ii), or

(c) the applicant or the approved individual is convicted of an offence under the Act.

(2) The regulator may revoke the approval given to the appointment of the training manager if the licensee or the training manager has contravened a relevant requirement.

(3) For the purposes of paragraph (2), a "relevant requirement" is—

(a) a requirement imposed by or under the Act, including a requirement imposed under these Regulations;

(b) a condition included in the licence of the licensee;

(c) a condition on the approval of the appointment of the training manager.

CHAPTER 3

Training manual

Training manual

66.—(1) The licensee must—

(a) compile a training manual which complies with the requirements in Part 2 of Schedule 3, and

(b) apply to the regulator for approval of those sections of that training manual which relate to relevant individuals (the "relevant sections").

(2) An application for the regulator's approval of the relevant sections of the training manual must be made by—

(a) a licensee, or

(b) an applicant for a licence.

(3) The application must—

(a) be made in such manner as the regulator may direct, and

(b) contain, or be accompanied by, such information as the regulator may reasonably require.

(4) At any time after the application is received and before it is determined, the regulator may require the applicant to provide it with such further information as it reasonably considers necessary to enable it to determine the application.

(5) Once the relevant sections of the training manual have been approved, the licensee must make available to its staff, and any person contracted to provide training services to the licensee, the manual, or those sections of the manual which are relevant to their duties.

(6) The licensee must also, where appropriate, provide copies of sections of the manual relevant to students to those students admitted to its training programme.

(7) The licensee must ensure that each copy of the training manual is kept up to date.

Approval of the training manual

67.—(1) The regulator may only approve sections of a training manual under regulation 66(1)(b) if it is satisfied that the sections of the training manual referred to in regulation 66(1)(b)—

(a) comply with the requirements set out in Part 2 of Schedule 3, and

(b) are fit for their purpose.

(2) In determining whether the requirement in paragraph (1)(b) is satisfied, the regulator must take into account—

(a) the scope, structure and content of the relevant sections of the training manual,

(b) any material referred to in those sections of the training manual, and

(c) how applicable those sections of the training manual are to the licensed activities.

Changes to the training manual

68.—(1) The applicant must inform the regulator in writing as soon as possible of any material change in any of the information provided to the regulator in or with the application for approval of sections of the training manual relating to relevant individuals or in response to a requirement from the regulator under regulation 66(4).

(2) No change may be made to any of the following items referred to in the training manual without the approval of the regulator—

(a) the scope of the training for relevant individuals carried out by or on behalf of the licensee ("the training");

(b) the locations where the training is carried out;

(c) the course structure and training methods adopted for the training;

(d) the use of instructors in the training;

(e) the standards of competence set for each role in relation to the licensed activities;

(f) the facilities and equipment used in the training, including the simulated training devices and aircraft where appropriate;

(g) the arrangements for medical examinations for crew and spaceflight participants.

(3) The regulator may not approve a change to any of the matters referred to in paragraph (2) if amending the training manual to reflect that change would in the regulator's opinion mean that the sections of the training manual relating to relevant individuals no longer satisfied the requirements in regulation 67.

(4) Regulation 66(2) to (4) applies to an application for approval under paragraph (2), as it applies to an application for approval under regulation 66(2).

CHAPTER 4

Training programme

Training programme

69.—(1) The licensee must establish and maintain a training programme—

(a) combining practical and theoretical training for—

(i) all individuals who will be on board a launch vehicle or a carrier aircraft in flight(**a**);

(ii) any other individual employed by the licensee who will perform a specified role;

(iii) any other individual contracted to provide services for the licensee who will perform a specified role;

(b) providing training for individuals who participate in the licensed activities but do not perform a specified role or act in a specified capacity.

(2) The objective of the training programme is to ensure that all participants are adequately qualified, trained, and medically fit to perform their assigned duties or otherwise participate in the licensed activities.

(3) To achieve that objective, the training programme must include—

(a) initial, proficiency and readiness training in accordance with paragraphs (4), (5) and (6) respectively for all relevant individuals;

(b) initial and readiness training in accordance with paragraphs (4) and (6) for individuals who do not perform a specified role, and

(c) assessments to determine—

(i) what training is required by relevant individuals;

(ii) whether individuals on a course of training have received and successfully completed all the necessary elements of that training ("a training assessment");

(iii) if individuals are competent to perform their functions in relation to the licensed activities ("a competence assessment").

(4) Initial training must enable individuals—

(a) to become familiar with—

(i) the licensee's organisation and methods of working;

(ii) the safety regulations in Part 8, including the procedures set out in the safety operations manual applying to the licensed activities;

(iii) other regulations applying to the licensee and its licensed activities,

where this is necessary to enable individuals to perform their roles, or to act as spaceflight participants,

(b) to be made aware of human factors, and

(**a**) Regulation 140 (provision of information and training to crew) requires crew members referred to in that regulation to be given training about matters relating to exposure to cosmic radiation. Launch vehicle task specialists are treated as crew members for the purpose of that regulation by virtue of regulation 134(2) (interpretation).

(c) to receive general security awareness training in accordance with Chapter 4 of Part 11.

(5) Proficiency training must be provided for each specified role to ensure that individuals appointed to perform that role—

(a) satisfy the criteria specified in relation to that role in Part 1 of Schedule 3,

(b) receive the training specified in Part 3 of Schedule 3, and

(c) are able to perform the duties associated with that role and otherwise take part in the licensed activities.

(6) Readiness training must be provided in relation to each mission undertaken by the licensee for all individuals who are to participate in that mission, to ensure that they—

(a) understand the objectives of that mission;

(b) rehearse the role which they are to perform in the mission in accordance with regulation 70(5), and demonstrate adequate performance in that role.

(7) The training programme must also provide training for spaceflight participants who do not perform a specified role in accordance with paragraphs 50 and 52 of Schedule 3.

Training and assessments

70.—(1) Competence assessments must be conducted at intervals determined by the training manager, or in the case of a spaceport licensee who does not have a training manager, by the licensee.

(2) No person who has failed a competence assessment relevant to a function may be permitted to perform that function until the person concerned has—

(a) undertaken further training to address the reasons for that failure, and

(b) passed a further competence assessment.

(3) Training and competence assessments for flight crew and remote pilots may be undertaken by one or more of the following methods, provided that the chosen methods cover all phases of flight of the launch vehicle to which the flight crew or remote pilots will be assigned—

(a) flight in that launch vehicle;

(b) use of simulated training devices;

(c) flight in an aircraft—

(i) possessing similar characteristics to those of that launch vehicle, or

(ii) that has similar phases of flight to that launch vehicle.

(4) No emergency situation may be simulated in a launch vehicle on which spaceflight participants are being carried, unless the only spaceflight participants on the flight are persons authorised by the regulator to train the crew or to check any aspect of the licensee's spaceflight activities, including the work of the crew.

(5) The licensee must, before a launch (a "mission"), conduct one or more rehearsals of the mission, in order to test its operational procedures and train staff in their operational duties.

(6) A mission rehearsal conducted under paragraph (5) must as nearly as possible reproduce the intended spaceflight, spaceport and range control activities which would be carried out on the mission, including—

(a) normal and abnormal situations;

(b) pre-launch, spaceflight and post-launch scenarios;

(c) any conditions in space that could affect the operator's spaceflight activity.

(7) A mission rehearsal conducted under paragraph (5) may include a spaceflight participant if this is necessary to enable the spaceflight participant to achieve the training objectives set for that participant, or to complete a competence assessment satisfactorily.

Training equipment

71.—(1) The licensee must ensure that it has access to sufficient training equipment to enable it to provide practical training where required as part of its training programme.

(2) Training equipment used for this purpose may include devices which are capable of simulating a launch vehicle, or any equipment or facilities which are used in the course of carrying out one or more of the licensed activities of the licensee ("a simulated training device").

(3) A simulated training device may only be used if, so far as practically possible—

(a) the device accurately represents the same configuration, graphical and instrument displays and environment as the launch vehicle, equipment or facilities it is simulating, and

(b) the device accurately represents conditions on the launch vehicle, equipment or facilities it is simulating as they will be experienced during the course of a licensed activity.

(4) Any difference between the simulated training device and the actual launch vehicle, equipment or facilities which it is simulating must be identified and described as part of the training programme.

(5) The licensee may also use devices designed to reproduce the effects of spaceflight on the human body, such as the effects of acceleration, disorientation, loss of pressurisation or other adverse physical effects connected with spaceflight.

(6) The licensee must establish and maintain a system for monitoring any simulated training device or other device which is used in its training programme, to identify any changes in the capability or configuration of any such device and ensure that such changes do not reduce the effectiveness of any training or assessment for which that device is used.

CHAPTER 5

Medical Fitness

Medical obligations

72.—(1) The licensee must ensure that—

(a) all the crew of the launch vehicle, and remote pilots taking part in spaceflight activities, hold a valid medical certificate as required by regulation 73(1);

(b) none of the crew has suffered a decrease in fitness due to illness or injury since the date of issue of their medical certificate which might affect their ability to—

(i) withstand the physical and mental rigours of spaceflight;

(ii) perform safety-critical functions reliably during the spaceflight activities;

(iii) carry out any emergency procedures which may be required during the spaceflight activities, including the evacuation of the launch vehicle;

(c) no person takes part in spaceflight activities, either as a crew member or a spaceflight participant, if that person is not medically fit to fly;

(d) no person participates in the licensed activities if they are not fit to do so.

(2) The procedures established by the licensee to ensure that it satisfies its obligations under paragraph (1) may include—

(a) medical examinations and medical assessments by an approved aeromedical examiner,

(b) requirements for the crew and remote pilots who hold valid medical certificates to complete self-declarations of fitness, and

(c) requirements for individuals who do not perform a specified role to report to the licensee on any occasion when they are not fit to perform their duties.

(3) For the purposes of paragraph (2), every crew member and remote pilot must submit to such a medical examination or medical assessment when required by the spaceflight operator to do so.

(4) The procedures referred to in paragraph (2) must be completed before—

(a) a crew member performs any duty on board a launch vehicle, and

(b) a remote pilot takes control of a launch vehicle.

(5) In this Chapter—

"approved aeromedical examiner" means an individual who—

(a) is qualified and holds a valid licence to practise medicine from the General Medical Council,

(b) has qualifications in aviation or space medicine, and

(c) has been approved by the regulator for the purposes of carrying out medical assessments or medical examinations for the purposes of these Regulations;

"approved medical assessor" means an individual employed by the regulator who—

(a) is qualified and holds a valid licence to practise medicine from the General Medical Council,

(b) has qualifications in aviation or space medicine, and

(c) has been authorised by the regulator for the purposes of regulations 73(5) and 74(5);

"medical assessment" means the conclusion on the medical fitness of an individual based on evaluation of that individual's medical history, medical examinations and medical tests;

"medical examination" means a physical inspection, palpation, percussion, auscultation or other means of investigation, especially for determining medical fitness or diagnosing disease.

Certificates and confirmation of medical fitness

73.—(1) No individual may take part in any spaceflight activities on board a launch vehicle, or training for spaceflight activities which takes place on board a launch vehicle, unless that individual—

(a) in the case of a crew member or remote pilot, holds a valid medical certificate issued by an approved aeromedical examiner;

(b) in the case of a spaceflight participant, has been confirmed as being medically fit to fly by an approved aeromedical examiner.

(2) An approved aeromedical examiner may only issue a medical certificate under paragraph (1), or confirm that a spaceflight participant is medically fit to fly, if—

(a) the examiner has carried out a medical examination of the applicant and an assessment of that individual's medical history, and

(b) following that assessment and examination, the examiner is satisfied that the individual concerned is medically fit—

(i) to participate in the spaceflight activities proposed for that individual, and

(ii) to carry out that individual's duties, if any, in relation to those activities.

(3) In determining whether an individual is medically fit for the purposes of paragraph (2)(b), the approved aeromedical examiner must take into account any operational or environmental conditions which—

(a) the spaceflight operator has identified as being likely to apply in relation to the spaceflight activities in which the individual would be participating or acting as a crew member, and

(b) are relevant to the individual's state of fitness.

(4) An approved aeromedical examiner must not determine that a crew member or remote pilot is medically fit for the purposes of paragraph (2)(b), unless—

(a) that individual meets—

(i) in the case of a member of the flight crew, other than a balloon pilot, or a remote pilot, the requirements for a Class 1 certificate for single pilot commercial air

transport operations carrying passengers set out in section 2 of Sub-Part B of Annex IV to the Aircrew Regulation,

(ii) in the case of a member of the cabin crew or a balloon pilot, the requirements for a Class 2 certificate set out in that section of Sub-Part B of Annex IV to the Aircrew Regulation, and

(iii) any medical requirements imposed by the regulator in conditions on the spaceflight operator's licence, or

(b) paragraph (5) applies.

(5) This paragraph applies if—

(a) the individual concerned has been assessed by an approved medical assessor, and

(b) the assessor is satisfied that the individual's condition—

(i) will not compromise the safety of any spaceflight activities in which the individual will be participating or of any other individual on board the launch vehicle, and

(ii) will not prevent the individual from performing the tasks assigned by the licensee to the individual's role.

(6) An approved aeromedical examiner may—

(a) issue a medical certificate, or

(b) confirm that an individual is medically fit to fly,

subject to any conditions which the examiner reasonably considers must be satisfied for the individual concerned to be considered to be medically fit to fly.

(7) Where an approved aeromedical examiner has issued a medical certificate, or confirmed that the individual concerned is medically fit to fly subject to conditions under paragraph (6), that individual does not meet the requirement in paragraph (1) unless those conditions are satisfied.

Illness, injury and related conditions

74.—(1) An individual ("P") may not act as a member of the crew of a launch vehicle or as a remote pilot if P knows or suspects that P's physical or mental condition renders P temporarily or permanently unfit to perform those functions, including unfitness by reason of—

(a) injury or sickness,

(b) taking or using any prescribed or non-prescribed medication which is likely to interfere with the ability to perform such functions,

(c) receipt of any medical, surgical or other treatment that is likely to interfere with the ability to perform such functions,

(d) the effects of any psychoactive substance, or

(e) fatigue.

(2) If paragraph (3) applies, an individual ("P") who holds a medical certificate issued under regulation 73(1) must inform the licensee's approved aeromedical examiner as soon as possible about P's condition and seek medical advice.

(3) This paragraph applies if—

(a) the individual concerned ("P") suffers any personal injury which means that P is not capable of undertaking P's functions as a member of the crew or a remote pilot,

(b) P suffers any significant illness which means that P is not capable of undertaking P's functions as a member of the crew or a remote pilot,

(c) P has reason to think that P is pregnant,

(d) P has undergone a surgical operation or invasive procedure,

(e) P has commenced or changed the regular use of any medication,

(f) P is admitted to a hospital or medical clinic, or

(g) P first requires correcting glasses or contact lenses.

(4) P must receive a medical assessment by the spaceflight operator's approved aeromedical examiner to confirm whether P is fit to take part in spaceflight activities—

(a) once P has recovered from—

(i) an injury or illness within paragraph (3)(a) or (b), or

(ii) an operation or procedure referred to in paragraph (3)(d);

(b) once P has been discharged from the hospital or clinic referred to in paragraph (3)(f);

(c) once P is no longer pregnant;

(d) when the condition referred to in paragraph (3)(e) or (f) applies.

(5) The spaceflight operator's approved aeromedical examiner must consult an approved medical assessor appointed by the regulator in relation to that assessment, and may only determine that P is fit for the purposes of paragraph (4) if the approved medical assessor agrees.

(6) A person who fails to comply with a requirement in paragraph (1), (2) or (4) commits an offence.

(7) A person who is guilty of an offence under paragraph (6) is liable—

(a) on summary conviction in England and Wales, to a fine;

(b) on summary conviction in Scotland or Northern Ireland, to a fine not exceeding level 5 on the standard scale.

Disability

75. If a spaceflight participant with a disability or reduced mobility has been certified as being fit to fly under regulation 73(1), the spaceflight operator may make arrangements for that participant to take part in a spaceflight if—

(a) doing so would not compromise the safety of the flight;

(b) the presence of an individual with that disability or reduced mobility would not impede or obstruct any member of the crew or spaceflight participant in carrying out their functions during the course of the flight, including executing emergency procedures or leaving the launch vehicle.

Validity of medical certificate

76.—(1) Subject to paragraph (3), a medical certificate is valid for the period which is stated in the certificate.

(2) The period referred to in paragraph (1) may not be more than 12 months.

(3) The medical certificate is suspended—

(a) if the subject of the certificate ("S") suffers a personal injury which means that S is not capable of undertaking S's functions as a member of the crew, from the date on which the injury occurred,

(b) if S suffers any significant illness which means that S is not capable of undertaking S's functions as a member of the crew, during the period of S's illness, or

(c) if S becomes pregnant, from the confirmation of the pregnancy.

(4) In the case of injury or illness the suspension ceases upon S being medically assessed under arrangements made by the spaceflight operator and pronounced fit to resume S's functions as a member of the crew.

(5) In the case of a pregnancy, the suspension—

(a) may be lifted by the regulator or an approved aeromedical examiner for such period, and subject to such conditions as the regulator or the approved aeromedical examiner thinks fit, and

(b) ceases upon S being medically assessed under arrangements made by the licensee after the pregnancy has ended and pronounced fit to resume S's functions as a member of the crew.

Medical records

77.—(1) Every medical assessment or examination of an individual who intends to be carried on board a launch vehicle during the operator's spaceflight activities, and of a remote pilot, must be recorded by the approved aeromedical examiner who carried out that assessment or examination on behalf of the spaceflight operator, and the result of that assessment or examination reported to the individual concerned and to the spaceflight operator.

(2) The aeromedical examiner must send copies of records of medical assessments and examinations carried out in relation to members of the flight crew to the regulator.

(3) The licensee and aeromedical examiner must make the records of other medical assessments and examinations carried out available to the regulator on request.

(4) The licensee and aeromedical examiner must take measures to ensure that all medical records are protected as confidential information, and not disclosed otherwise than in accordance with this regulation.

PART 8

Safety of operator's spaceflight activities

CHAPTER 1

Interpretation

Interpretation

78.—(1) In this Part—

"current safety case" means—

(a) if the safety case has not been revised and accepted by the regulator in accordance with regulations 80 and 81, the safety case, or

(b) if the safety case has been revised and accepted by the regulator in accordance with regulations 80 and 81, that revised safety case;

"fit for the operator's spaceflight activities"—

(a) in the case of a launch vehicle has the meaning given in regulation 91(2);

(b) in the case of a range means that—

(i) the range is suitable for carrying out those activities safely, and

(ii) the Secretary of State is providing range control services for those activities or another person providing those services is authorised to do so by a range control licence;

(c) in the case of a spaceport means that—

(i) the spaceport is suitable for carrying out those activities safely, and

(ii) the operation of the spaceport is authorised by a spaceport licence which permits the carrying out of the operator's spaceflight activities at that spaceport;

(d) in the case of a place other than a spaceport from which the launch or landing is to take place or takes place means that place is suitable for carrying out those activities safely;

"fit for supporting the operator's spaceflight activities" in relation to a launch vehicle's ground support equipment, has the meaning given in regulation 92(2);

"flight" means—

(a) in regulations 89, 99 and 100 and paragraph 19 of Schedule 5, any period from the moment when the launch vehicle first moves for the purpose of launching until the completion of the operator's spaceflight activities but does not include any period when that vehicle has reached a stable orbit;

(b) in other regulations, any period from the moment when the launch vehicle first moves for the purpose of launching until the completion of the operator's spaceflight activities;

"flight recorder" means any device for recording data relating to the flight of the launch vehicle, whether or not the device is located on the launch vehicle;

"operating staff" means an employee or agent of a spaceflight operator;

"range control service provider" means the Secretary of State or a person who holds a range control licence and provides range control services to a spaceflight operator;

"relevant air navigation service providers" means air navigation service providers which are relevant to the operator's spaceflight activities;

"relevant emergency services" means emergency services which are likely to be required to respond to an emergency at the location of the operator's spaceflight activities;

"relevant meteorological service providers" means meteorological service providers which are relevant to the operator's spaceflight activities;

"risk assessment" is to be construed in accordance with regulation 32;

"safety case" is to be construed in accordance with regulation 29;

"safety-critical information" has the meaning given in paragraph 1 of Schedule 4;

"safety operations manual" is to be construed in accordance with regulation 90(1);

"spaceflight duties" means duties in connection with the operator's spaceflight activities;

"spaceflight operator's safety duty" means the requirement in regulation 79(1).

(2) In this Part "carrying out the operator's spaceflight activities safely" or "to carry out the operator's spaceflight activities safely" has the meaning given in regulation 79(2).

(3) Any reference in this Part to the operator's spaceflight activities being "carried out safely" is to be read in accordance with regulation 79(2).

CHAPTER 2

A spaceflight operator's safety duty

A spaceflight operator's safety duty

79.—(1) A spaceflight operator must secure that the operator's spaceflight activities are carried out safely.

(2) A spaceflight operator carries out the operator's spaceflight activities safely by carrying them out—

(a) in accordance with the current safety case by—

(i) preventing a major accident from occurring, and

(ii) mitigating the consequences of such an accident if it does occur, and

(b) in accordance with the current risk assessment, by securing the safety of a human occupant, if the launch vehicle has such an occupant.

CHAPTER 3

Review and revision of safety case and risk assessment

Safety case and risk assessment review and revision requirements

80.—(1) A spaceflight operator must review and, where necessary, revise the current safety case and, if the launch vehicle has a human occupant, the current risk assessment—

(a) before the spaceflight operator introduces an operational change which is likely to materially alter the instructions and procedures in the safety operations manual;

(b) before the spaceflight operator makes—

(i) any modifications to the launch vehicle or carrier aircraft, or

(ii) changes to the operator's spaceflight activities, any flight safety system or to the duties of the flight termination personnel,

where such modifications or changes are likely to materially affect the spaceflight operator carrying out the operator's spaceflight activities safely;

(c) following any of the events or matters referred to in paragraph (2).

(2) The events and matters are—

(a) there has been an occurrence arising out of, or in the course of, the operator's spaceflight activities or another significant failing in those activities;

(b) the spaceflight operator has become aware of an occurrence elsewhere that may affect the carrying out of the operator's spaceflight activities safely;

(c) the spaceflight operator has become aware of new facts or technological knowledge about safety, including knowledge arising from analysis of accidents or occurrences, which may affect the carrying out of the operator's spaceflight activities safely;

(d) the application of the spaceflight operator's safety management system has given rise to a concern that the operator's spaceflight activities may result in a major accident hazard which may affect the carrying out of those activities safely;

(e) the launch operator licence or the return operator licence has been transferred or varied in accordance with section 15;

(f) a change in any matter relating to either the spaceport or other place from which the launch or landing is to take place or takes place or the range used for the operator's spaceflight activities which increases the level of risk of those activities;

(g) the regulator directs the spaceflight operator to review and, where necessary, revise the current safety case or if the launch vehicle has a human occupant, the current risk assessment in addition to that safety case.

(3) In carrying out a review of a current safety case or a current risk assessment, a spaceflight operator must take into account the spaceflight operator's safety duty.

Steps required after review, or review and revision, of the safety case

81.—(1) Where the current safety case has been reviewed under regulation 80 and revised, the spaceflight operator must supply to the regulator without delay a copy of—

(a) the current safety case which has been revised under regulation 80, and

(b) the results in writing of any tests and any technical analysis or other information supporting the need for the revision of that safety case.

(2) Where the current safety case has been reviewed under regulation 80 and a decision has been taken not to revise it, the spaceflight operator must without delay—

(a) inform the regulator in writing, and

(b) provide the regulator with written reasons for that decision.

(3) Until the spaceflight operator has received the regulator's confirmation in writing that it accepts the revised safety case supplied to it under paragraph (1), the spaceflight operator must not—

(a) implement any changes to its spaceflight activities as a result of the revision of that safety case, or

(b) commence a launch of a launch vehicle or a carrier aircraft.

Steps required after review, or review and revision, of the risk assessment

82.—(1) This regulation applies in addition to regulation 81 if the launch vehicle has a human occupant.

(2) Where the current risk assessment has been reviewed under regulation 80 and revised, the spaceflight operator must supply to the regulator without delay a copy of—

(a) the current risk assessment which has been revised under regulation 80, and

(b) the results in writing of any tests and any technical analysis or other information supporting the need for the revision of that risk assessment.

(3) Where the current risk assessment has been reviewed under regulation 80 and a decision has been taken not to revise it, the spaceflight operator must without delay—

(a) inform the regulator in writing, and

(b) provide the regulator with written reasons for that decision.

(4) Until the spaceflight operator has received the regulator's confirmation in writing that it accepts the revised risk assessment supplied to it under paragraph (2), the spaceflight operator must not—

(a) implement any changes to its spaceflight activities as a result of the revision of that risk assessment, or

(b) commence a launch of a launch vehicle.

CHAPTER 4

Other safety requirements

SECTION 1

Demonstrating requirements

Demonstration of compliance with safety requirements

83.—(1) A spaceflight operator must demonstrate in the safety case and any revision of that safety case how the operator's spaceflight activities comply with the requirements in regulations 84 to 104 in so far as those requirements relate to the operator's spaceflight activities.

(2) If a launch vehicle has a human occupant, a spaceflight operator must demonstrate in the risk assessment, and any revision of that assessment, how the operator's spaceflight activities comply with the requirements in—

(a) regulations 106 to 116 and 123, if the human occupant is a member of the crew or a remote pilot, in so far as those regulations relate to that member or remote pilot,

(b) regulations 109, 110, 112, 113 and 117 to 123, if the human occupant is a spaceflight participant, in so far as those regulations relate to that participant, and

(c) regulations 106 to 123, if the launch vehicle has both a member of the crew or a remote pilot and a spaceflight participant, in so far as each of these regulations relates to that member or pilot or that participant.

SECTION 2

Requirements about a spaceflight operator's organisation and management

A spaceflight operator's organisation

84.—(1) For the purposes of carrying out and supporting the operator's spaceflight activities, a spaceflight operator must have in place—

(a) the financial and technical resources to carry out those spaceflight activities and do any other matter authorised by the launch operator licence or the return operator licence,

(b) where the operator's spaceflight activities are authorised by a launch operator licence, a launch vehicle or a carrier aircraft and a launch vehicle,

(c) sufficient operating staff and a management structure proportionate to the type of spaceflight activities which the spaceflight operator is carrying out,

(d) facilities, infrastructure and equipment, and

(e) an organisation which is capable of complying with these safety regulations and proactively seeks to improve the safety of the operator's spaceflight activities.

(2) In this regulation, "facilities, infrastructure and equipment" includes facilities, infrastructure or equipment relating to a mission management facility or ground control at the spaceport or other place, communications, retention of data and record keeping, transport, power, handling of hazardous material, analysis and testing, environmental protection, emergency response or security.

Safety management system

85. A spaceflight operator must have in place a safety management system which complies with the requirements in Schedule 4.

SECTION 3

Requirements about specific safety roles

Responsibilities of the safety manager

86.—(1) Where an operator's spaceflight activities are authorised by a launch operator licence, the spaceflight operator must ensure that the safety manager—

(a) reports directly to the accountable manager,

(b) has a duty to inform that manager and the launch director of all safety concerns relating to the operator's spaceflight activities, including any such concerns reported to the safety manager by a member of the operating staff, before a launch and during any other part of those activities, and

(c) is able to communicate directly with the launch director at all reasonable times.

(2) Where an operator's spaceflight activities are authorised by a return operator licence, the spaceflight operator must ensure that the safety manager—

(a) reports directly to the accountable manager, and

(b) has a duty to inform that manager of all safety concerns relating to the operator's spaceflight activities, including any such concerns reported to the safety manager by a member of the operating staff, before those activities commence and during any part of those activities.

(3) The safety manager must record in writing safety concerns referred to in paragraphs (1)(b) or (2)(b) and how those concerns are addressed.

Responsibilities of the accountable manager

87.—(1) A spaceflight operator must ensure that the accountable manager has a duty to address all safety concerns relating to the operator's spaceflight activities reported to that manager—

(a) where the operator's spaceflight activities are authorised by a launch operator licence, before a launch and during any part of those activities, or

(b) where the operator's spaceflight activities are authorised by a return operator licence, before those activities commence and during any part of those activities.

(2) The accountable manager must record in writing safety concerns referred to in paragraph (1) and how those concerns are addressed.

Responsibilities of the launch director

88. Where an operator's spaceflight activities are authorised by a launch operator licence—

(a) the spaceflight operator must ensure that the launch director—

(i) has a duty to check that all safety concerns relating to the operator's spaceflight activities reported to that director have been addressed before a launch, and

(ii) is present at a mission management facility or ground control at the spaceport or other place during the operator's spaceflight activities;

(b) the launch director must record in writing safety concerns referred to in paragraph (a)(i) and how those concerns are addressed.

Flight termination personnel

89. A spaceflight operator must—

(a) if the launch vehicle has a flight safety system and that system is not autonomous, appoint flight termination personnel,

(b) ensure that such flight termination personnel are present at a mission management facility or ground control at the spaceport or other place during a flight,

(c) ensure that such flight termination personnel have the information which is necessary for such personnel to determine whether the flight safety system for which they are responsible is ready to be used,

(d) ensure that such flight termination personnel make a flight termination decision in the interests of the spaceflight operator's safety duty and not for any other reasons, and

(e) authorise such flight termination personnel to make a flight termination decision without a requirement for approval from, or interference by, any other operating staff including, where the operator's spaceflight activities are authorised by a launch operator licence, the launch director.

SECTION 4

Safety operations manual

Safety operations manual

90.—(1) A spaceflight operator must retain and keep up to date a safety operations manual which must contain the information, procedures and instructions necessary for the operating staff to carry out their spaceflight duties safely including, in particular, information, procedures and instructions relating to matters specified in Schedule 5.

(2) When updating the safety operations manual, the spaceflight operator must—

(a) take into account the outcomes of the steps taken under regulation 28(1);

(b) consult the spaceport licensee, if any;

(c) consult the range control service provider, if any.

(3) If the spaceflight operator updates the safety operations manual, the spaceflight operator must give the regulator the updated safety operations manual without delay.

(4) The spaceflight operator must make available to its operating staff the safety operations manual, or those sections of the manual which are relevant to their spaceflight duties.

(5) The spaceflight operator must ensure that each copy of the safety operations manual is kept up to date.

(6) The spaceflight operator must take all reasonable steps to secure that all members of its operating staff—

(a) are aware of the contents of every part of the safety operations manual which is relevant to their spaceflight duties, and

(b) undertake those duties in conformity with the relevant provisions of the safety operations manual.

SECTION 5

Preparations for launch, return and other operations

The launch vehicle

91.—(1) A spaceflight operator must not use a launch vehicle in the operator's spaceflight activities unless it is fit for those activities.

(2) A launch vehicle is fit for the operator's spaceflight activities if that vehicle—

(a) complies with the conditions in paragraph (3), and

(b) complies with any conditions about that vehicle in the launch operator licence or the return operator licence.

(3) The conditions are that the launch vehicle—

(a) has been designed to a specification that meets the technical requirements of the vehicle,

(b) has been built consistently with that specification,

(c) has been through the verification and validation processes set out in regulation 94 which demonstrate that it—

(i) conforms with the technical requirements referred to in sub-paragraph (a),

(ii) is free from workmanship errors which could prevent the vehicle carrying out the operator's spaceflight activities safely,

(iii) is otherwise ready to take part in those activities, and

(iv) is capable of carrying out those activities safely, and

(d) if it has a human occupant, the systems and flight recorder referred to in regulation 109 have been installed in the vehicle.

The launch vehicle's ground support equipment

92.—(1) A spaceflight operator must not use a launch vehicle's ground support equipment unless such equipment is fit for supporting the operator's spaceflight activities.

(2) A launch vehicle's ground support equipment is fit for supporting the operator's spaceflight activities if that equipment—

(a) complies with the conditions in paragraph (3), and

(b) complies with any conditions about that equipment in the launch operator licence or the return operator licence.

(3) The conditions are that the ground support equipment—

(a) has been designed to a specification that meets the technical requirements of the launch vehicle,

(b) has been built consistently with that specification, and

(c) has been through the verification and validation processes set out in regulation 94 which demonstrate that it—

(i) conforms with the condition in sub-paragraph (a),

(ii) is free from workmanship errors which could prevent the equipment supporting the launch vehicle and the operator's spaceflight activities being carried out safely,

(iii) is otherwise ready to support the launch vehicle and those activities, and

(iv) is capable of supporting those activities being carried out safely.

A reusable launch vehicle

93.—(1) Before the launch of a launch vehicle which has been used in one or more flights, a spaceflight operator must, by carrying out maintenance, servicing and repair and, if necessary, renewing any part of that vehicle, ensure that—

(a) the vehicle conforms with the technical requirements of the launch vehicle and is fit for the operator's spaceflight activities in accordance with regulation 91, or

(b) is returned to a condition which conforms with those requirements and which is fit for those activities.

(2) Before the launch of a launch vehicle which has been used in one or more flights, the member of the operating staff responsible for ensuring that the work in paragraph (1) is done must prepare a written report—

(a) providing details of the work which has been done in accordance with paragraph (1), and

(b) confirming that—

(i) the vehicle conforms with the technical requirements referred to in paragraph (1)(a) or has been returned to a condition which conforms with those requirements, and

(ii) the vehicle otherwise complies with regulation 91 and is fit for the operator's spaceflight activities.

(3) Copies of the report referred to in paragraph (2) must be sent by the person referred to in that paragraph to the spaceflight operator and to any member of the operating staff who has duties which are relevant to the work which has been done to the launch vehicle in accordance with paragraph (1).

(4) This regulation applies to any part of a launch vehicle which is capable of being launched and has been used in one or more flights as it applies to the whole of a launch vehicle which has been used in one or more flights.

Verification and validation by testing etc. of the launch vehicle and the ground support equipment

94.—(1) For the purposes set out in paragraph (2), before a launch, a spaceflight operator must carry out verification and validation processes—

(a) by testing, analysing, reviewing or inspecting the launch vehicle and the ground support equipment, and

(b) by integrated testing of that vehicle and equipment.

(2) The purposes are to ensure that—

(a) the launch vehicle is fit for the operator's spaceflight activities, and

(b) the ground support equipment is fit for supporting that launch vehicle and the operator's spaceflight activities.

(3) The spaceflight operator must—

(a) record the results of the verification and validation referred to in paragraph (1) in writing, and

(b) before a launch, ensure that copies of the results of such verification and validation are received and considered by the spaceflight operator and any member of the operating staff who has duties which are relevant to the results of the verification and validation.

(4) In this regulation—

"integrated testing" includes testing how the launch vehicle and its ground support equipment and any systems of that vehicle and that equipment function together;

"systems" includes hardware and software.

The spaceport (or other place of launch or landing) and the range

95.—(1) A spaceflight operator must ensure that the spaceport or other place used for the operator's spaceflight activities is fit for those activities.

(2) A spaceflight operator must ensure that the range for the operator's spaceflight activities is fit for those activities.

Communication during the operator's spaceflight activities

96.—(1) During an operator's spaceflight activities, the spaceflight operator must, where necessary, ensure that there is a reliable means of communication for sharing information between the mission management facility or ground control at the spaceport or other place and—

(a) the range control service provider,

(b) any site or other place used in connection with range control services,

(c) the spaceport licensee,

(d) relevant meteorological service providers,

(e) relevant air navigation service providers, and

(f) relevant emergency services.

(2) During an operator's spaceflight activities, the spaceflight operator must, where necessary, provide a reliable means of communication for sharing information between the launch vehicle, carrier aircraft and any other aircraft taking part in the operator's spaceflight activities and the mission management facility or ground control at the spaceport or other place.

Monitoring the environmental and meteorological conditions

97.—(1) A spaceflight operator must monitor environmental and meteorological conditions during the operator's spaceflight activities in so far as necessary to carry out those activities safely.

(2) The spaceflight operator must make the latest environmental and meteorological information referred to in paragraph (1) available without delay to—

(a) the accountable manager, the safety manager and, where the operator's spaceflight activities are authorised by a launch operator licence, the launch director and any other members of the operating staff who require such information to carry out their spaceflight duties safely, and

(b) the range control service provider, the spaceport licensee and any other person who requires such information to support the operator's spaceflight activities being carried out safely.

Dangerous goods

98.—(1) A spaceflight operator must only load dangerous goods onto a launch vehicle or permit a vehicle to carry such goods if—

(a) the terms of the launch operator licence or return operator licence permit the spaceflight operator to do so, and

(b) the spaceflight operator complies with those terms.

(2) For the avoidance of doubt any reference to loading dangerous goods onto a launch vehicle or carrying them on such a vehicle includes placing, suspending or carriage of such goods beneath a launch vehicle.

SECTION 6

Launch, return and other operations

Conditions for commencing the operator's spaceflight activities

99.—(1) Before an operator's spaceflight activities commence, the spaceflight operator or, where the operator's spaceflight activities are authorised by a launch operator licence, the launch director, must be satisfied that the activities can be carried out safely and the conditions in paragraph (2) have been met.

(2) The conditions are that—

(a) a launch vehicle is fit for the operator's spaceflight activities;

(b) the spaceport, or other place, from which the launch or landing is to take place is fit for the operator's spaceflight activities and the spaceport licensee, if launch or landing is to take place from a spaceport, confirms that, in so far as that licensee's responsibilities are concerned, these activities can be carried out safely;

(c) the range is fit for the operator's spaceflight activities and the range control service provider confirms that, in so far as the responsibilities of that provider are concerned, these activities can be carried out safely;

(d) a rehearsal of the mission referred to in regulation 70(5) was conducted and the spaceflight operator was satisfied that the operator's spaceflight activities could be carried out safely;

(e) the relevant emergency services have confirmed that they are on stand-by;

(f) where the launch vehicle has a flight safety system—

(i) a member of the flight termination personnel, if that system is not autonomous, or

(ii) a member of the operating staff responsible for such an autonomous system,

confirms that the flight safety system is ready to be used;

(g) where the operator's spaceflight activities are authorised by a launch operator licence, the launch of the launch vehicle can take place at a time when the launch vehicle will not collide with any known space object during its flight or when it first reaches a stable orbit;

(h) where the operator's spaceflight activities are authorised by a launch operator licence, the launch director and any flight termination personnel are present at the mission management facility or ground control at the spaceport or other place;

(i) such other operating staff as are necessary to carry out the operator's spaceflight activities safely are present at the mission management facility or ground control at the spaceport or other place;

(j) the security manager has confirmed that the requirements of the operator security programme have been met;

(k) the prevailing meteorological and environmental conditions are suited to the spaceflight operator carrying out the operator's spaceflight activities safely;

(l) any relevant safety operational procedures relating to the launch authorised by a launch operator licence or the return to earth authorised by a return operator licence in the safety operations manual have been followed.

During flight: monitoring and termination

100.—(1) If necessary to ensure that the operator's spaceflight activities are carried out safely, a spaceflight operator must monitor in real time—

(a) the flight of a launch vehicle, authorised by a launch operator licence, until it reaches a stable orbit or completes sub-orbital activities, or

(b) the flight of a launch vehicle, authorised by a launch operator licence or a return operator licence, on its return to land in the United Kingdom.

(2) Where the launch vehicle has a flight safety system which is not an automated system, flight termination personnel must make a flight termination decision during the flight of that vehicle—

(a) if at any time that vehicle malfunctions and that malfunction prevents the operator's spaceflight activities being carried out safely,

(b) if at any time a system—

(i) used to monitor whether or not the launch vehicle remains fit for the operator's spaceflight activities, or

(ii) used to detect a malfunction,

fails and that failure threatens the carrying out of the operator's spaceflight activities safely, or

(c) if it is necessary for any other reason which threatens or prevents the carrying out of the operator's spaceflight activities safely.

(3) In this regulation "system" includes hardware and software.

Additional requirement relating to the launch vehicle during operator's spaceflight activities

101.—(1) If necessary to ensure that an operator's spaceflight activities are carried out safely or to secure compliance with the international obligations of the United Kingdom, the spaceflight operator must after a launch vehicle has reached a stable orbit—

(a) monitor the trajectory of that vehicle in so far as it is possible to do so,

(b) monitor the basic orbital parameters of that vehicle including nodal period, inclination, apogee and perigee,

(c) take reasonable steps to—

(i) avoid the launch vehicle interfering with the space activities of other persons in the peaceful exploration and use of outer space,

(ii) limit or prevent major accident hazards to the health, safety and property of persons arising from the launch vehicle in orbit, and

(iii) prevent contamination of outer space arising from the launch vehicle in orbit or adverse changes in the environment of the earth from that vehicle in orbit, and

(d) take any other action necessary to carry out the operator's spaceflight activities safely.

(2) If the spaceflight operator is disposing of the launch vehicle by causing it to re-enter through the earth's atmosphere, that operator must carry out those activities in a way which ensures they are carried out safely.

(3) In this regulation the reference to taking reasonable steps in paragraph (1)(c) may include—

(a) avoiding the release of space debris;

(b) avoiding a collision between the launch vehicle and its payload after the release or separation of that payload from the vehicle;

(c) manoeuvring the vehicle;

(d) deactivating a component part of that vehicle;

(e) passivating that vehicle by dissipating the hazardous materials carried on board or preventing their accumulation.

SECTION 7

Recording and retaining information for safety purposes

Information on human occupants and dangerous goods on board a launch vehicle

102.—(1) Before launch, a spaceflight operator must prepare—

(a) a list of the names and addresses of all human occupants on board the launch vehicle and of individuals on board any carrier aircraft, and

(b) a list of all dangerous goods on board the launch vehicle and any carrier aircraft.

(2) The spaceflight operator must retain the lists referred to in paragraph (1) for a period of three years beginning with the day of the launch of the launch vehicle carrying the human occupants or dangerous goods on those lists.

Recording, collecting and retaining information made before or during the operator's spaceflight activities

103.—(1) For the purposes referred to in paragraph (3), a spaceflight operator must record—

(a) information shared through the means of communication referred to in regulation 96,

(b) where the launch vehicle has a flight recorder required by regulation 109(3), data relating to conditions and events on board the launch vehicle during the operator's spaceflight activities onto that recorder,

(c) data in connection with the launch vehicle which is obtained using telemetry during the operator's spaceflight activities and which relates to the tracking of that vehicle during those activities, and

(d) any other data collected or used during the operator's spaceflight activities.

(2) For the purposes referred to in paragraph (3), the spaceflight operator must collect and retain—

(a) the information referred to in paragraph (1),

(b) records of correspondence between the spaceflight operator and the regulator before launch and during the operator's spaceflight activities,

(c) the current safety case and current risk assessment and any written document describing any revisions to the safety case or the risk assessment,

(d) any written record of safety concerns referred to in regulations 86(3), 87(2) and 88(b) or an occurrence,

(e) the meteorological and environmental information referred to in regulation 97(2),

(f) reports of maintenance work carried out on communication and recording systems used to make the records referred to in paragraph (1) and of checks made to such systems to ensure the launch vehicle is fit for the operator's spaceflight activities, and

(g) any other information about the operator's spaceflight activities which is relevant to such activities being carried out safely.

(3) The purposes of recording, collecting and retaining the information referred to in paragraphs (1) and (2) are—

(a) to maintain and improve the spaceflight operator's safety performance,

(b) to enable the regulator to perform its duties referred to in section 26(1),

(c) to enable the spaceflight operator to comply with the requirement to make an occurrence report under Part 16, and

(d) to enable the spaceflight operator to comply with any demands for such information from an investigator-in-charge of SAIA in accordance with regulation 23 of the Spaceflight Activities (Investigation of Spaceflight Accidents) Regulations 2021.

(4) The spaceflight operator must retain the information referred to in paragraphs (1) and (2) for a period beginning with the date on which the launch operator licence or the return operator licence is granted and ending three years after the date on which that licence expires, unless that information has been recorded by that vehicle's flight recorder and the launch vehicle has not been involved in a spaceflight accident arising from or in the course of the operator's spaceflight activities.

(5) Where no spaceflight accident arose from or in the course of the operator's spaceflight activities, information recorded by the launch vehicle's flight recorder must only be retained until the completion of those activities.

SECTION 8

Emergency response

Emergency response plan requirement

104.—(1) A spaceflight operator must have in place and maintain an emergency response plan for the operator's spaceflight activities.

(2) An emergency response plan under paragraph (1) must—

(a) detail how the spaceflight operator will respond in an emergency;

(b) be appropriate for the operator's spaceflight activities;

(c) provide for the notification of the relevant emergency services and coordination with any relevant local authority and such services in response to an emergency during the operator's spaceflight activities;

(d) provide for prevention of harm to individuals after the emergency has occurred;

(e) provide for coordination of the spaceflight operator's emergency response plan with—

(i) the emergency response plan prepared by the spaceport licensee, and

(ii) any emergency response plans of other organisations with which the spaceflight operator must interact during the operator's spaceflight activities.

(3) The spaceflight operator must, at suitable intervals not exceeding three years—

(a) test the emergency response plan in so far as practicable, and

(b) review and, where necessary, revise the plan.

(4) The spaceflight operator must supply to the regulator—

(a) the results of any test of the emergency response plan conducted under paragraph (3)(a), and

(b) before or immediately after they come into effect, details of the revisions, if any, it has made to the emergency response plan as a result of a review conducted under paragraph (3)(b).

(5) For the purposes of this regulation "relevant local authority" means—

(a) in relation to a launch operator licence, a local authority in whose administrative area the spaceport or other place from which the launch vehicle or carrier aircraft is to be launched or is launched is situated, or

(b) in relation to a return operator licence, a local authority in whose administrative area—

(i) is situated a spaceport or other place at which a planned or controlled landing or a planned but uncontrolled landing of a launch vehicle is to take place or takes place, or

(ii) an unplanned landing of a launch vehicle in the United Kingdom is likely to take place.

CHAPTER 5

Additional safety requirements for launch vehicles with human occupants

SECTION 1

Interpretation

Interpretation

105.—(1) In this Chapter any reference to a pilot in command, a pilot or a remote pilot "carrying out the flight safely" or to the flight being "carried out safely" has the meaning referred to in paragraph (2).

(2) A pilot in command, pilot or a remote pilot carries out the flight safely by carrying it out—

(a) in accordance with the current safety case by—

(i) preventing a major accident from occurring, or

(ii) mitigating the consequences of such an accident if it does occur, and

(b) in accordance with the current risk assessment, by securing the safety of a human occupant.

SECTION 2

The crew or remote pilots

The roles and duties of each member of the crew or a remote pilot

106.—(1) If the launch vehicle has a crew, before the operator's spaceflight activities commence a spaceflight operator must—

(a) define the respective roles and duties of every member of the crew,

(b) ensure that every member of the crew is aware of their role and their duties, and

(c) provide copies of checklists of the duties to every member of the crew.

(2) If the launch vehicle has a remote pilot, before the operator's spaceflight activities commence a spaceflight operator must—

(a) define the role and duties of the remote pilot,

(b) ensure that the remote pilot is aware of their role and their duties, and

(c) provide copies of checklists of the duties to the remote pilot.

Information about the flight

107.—(1) If the launch vehicle has a flight crew, a spaceflight operator must make available to each member of that crew all information necessary for the flight crew to carry out the flight safely.

(2) If the launch vehicle has a remote pilot, a spaceflight operator must make available to that pilot all information necessary for the remote pilot to carry out the flight safely.

Authority to pilot in command or remote pilot

108. If the launch vehicle has a pilot in command or a remote pilot, a spaceflight operator must give that pilot the authority to give the commands, make the decisions or take the actions referred to in regulation 115.

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.

SECTION 4

Specific obligations of pilot in command, flight crew or remote pilot

Obligations of pilot in command or remote pilot immediately before the flight

114. Immediately before a flight, the pilot in command or the remote pilot must—

(a) perform an inspection of the launch vehicle and its systems and equipment to the extent that it is practicable to do so, and

(b) consult any of the spaceflight operator's written records relating to the fitness, condition and preparation of the launch vehicle, in so far as necessary to ensure the flight is carried out safely.

Obligations of pilot in command or remote pilot to carry out flight safely

115.—(1) If a launch vehicle has a pilot in command or a remote pilot, that pilot must give commands, make appropriate decisions and take appropriate actions during the flight of that vehicle which are necessary to ensure that the flight is carried out safely.

(2) A pilot in command or a remote pilot must inform the spaceflight operator and the regulator at the earliest practicable opportunity if any of the commands, decisions or actions referred to in paragraph (1) did not comply with provisions contained in or made under the Act and the conditions of the launch operator licence or return operator licence.

Pilot in command, flight crew or remote pilot to remain at stations

116.—(1) If a launch vehicle has a flight crew, that crew must during the flight remain at their stations secured in their seat by a safety belt or other restraint device unless there is more than one member of the flight crew and the pilot in command permits a member to leave the member's station temporarily—

(a) to provide urgent assistance to another human occupant, or

(b) for an urgent physiological or operational need.

(2) If a launch vehicle has a pilot in command that pilot may during the flight only leave the pilot in command's station temporarily where—

(a) there is more than one member of the flight crew,

(b) the flight can be carried out safely by another member of the flight crew, and

(c) there is an urgent physiological reason or operational need to do so.

(3) If a launch vehicle has a remote pilot that remote pilot may during the flight only leave the remote pilot's station temporarily where—

(a) there is more than one remote pilot,

(b) the flight can be carried out safely by that other pilot, and

(c) there is an urgent physiological reason or operational need to do so.

Pilot in command's obligations to a spaceflight participant about stations

117. If a launch vehicle has a pilot in command, that pilot must ensure that each spaceflight participant is seated at the spaceflight participant's assigned station and secured in that participant's seat by a safety belt or other restraint device—

(a) before launch and landing and during any taxiing operation necessary for the operator's spaceflight activities,

(b) during periods of flight when the effects on the human body of the forces due to acceleration and their duration are most acute, and

(c) at any other time when necessary for the flight to be carried out safely.

Remote pilot's obligations to a spaceflight participant about stations

118. If a launch vehicle has a remote pilot, that pilot must ensure that each spaceflight participant is seated at the spaceflight participant's assigned station and secured in that participant's seat by a safety belt or other restraint device—

(a) before launch and landing and during any taxiing operation necessary for the operator's spaceflight activities,

(b) during periods of flight when the effects on the human body of the forces due to acceleration and their duration are most acute, or

(c) at any other time when necessary for the flight to be carried out safely.

Launch director's or safety manager's obligations to a spaceflight participant about stations

119.—(1) If a launch vehicle has no pilot in command or remote pilot—

(a) where the operator's spaceflight activities are authorised by a launch operator licence, the launch director, or

(b) where those activities are authorised by a return operator licence, the safety manager,

must ensure that each spaceflight participant is seated at the spaceflight participant's assigned station and secured in that participant's seat by a safety belt or other restraint device at the times or during the periods referred to in paragraph (2).

(2) The times or periods are—

(a) before launch and landing and during any taxiing operation necessary for the operator's spaceflight activities,

(b) during periods of flight when the effects on the human body of the forces due to acceleration and their duration are most acute, and

(c) at any other time when necessary for the flight to be carried out safely.

SECTION 5

Spaceflight participants

Prohibiting the launch vehicle carrying a spaceflight participant

120. A spaceflight operator must not carry a spaceflight participant in a launch vehicle unless that vehicle is fit for the operator's spaceflight activities in accordance with regulation 91.

A spaceflight participant to remain at station

121.—(1) A spaceflight participant must remain seated at the spaceflight participant's assigned station and secured in that participant's seat by a safety belt or other restraint device at all times and during all the periods referred to in regulations 117 to 119 unless one of the individuals in paragraph (2) permits such a participant to leave that station.

(2) The individuals are—

(a) the pilot in command,

(b) a member of the flight crew,

(c) a remote pilot,

(d) the launch director, where the operator's spaceflight activities are authorised by a launch operator licence, or

(e) the safety manager, where the operator's spaceflight activities are authorised by a return operator licence.

Availability of seating requirement to a spaceflight participant

122. A spaceflight operator must make a copy of the requirement relating to seating in regulation 121 available to each spaceflight participant.

SECTION 6

Human occupant: information to be given after consent form is signed

Information about the operator's spaceflight activities

123. Before an operator's spaceflight activities commence, the spaceflight operator must give each human occupant the information referred to in regulations 209 and 210 which has become available since that occupant signed the consent form referred to in section 17.

CHAPTER 6

Offences and penalties

Failure of launch director to check conditions met before operator's spaceflight activities commence

124. A launch director who fails, without reasonable excuse, to comply with the obligation to check that the conditions in regulation 99(2) are met before an operator's spaceflight activities commence, commits an offence.

Failure of flight termination personnel to follow obligation to make a flight termination decision

125. A member of the flight termination personnel who fails, without reasonable excuse, to comply with the obligation to make a flight termination decision in regulation 100(2), commits an offence.

Failure of a pilot in command or remote pilot to carry out obligations before the flight

126. A pilot in command, or a remote pilot, who fails to comply with the obligations in regulation 114(a) or (b) before the flight, commits an offence.

Failure of pilot in command or remote pilot to carry out flight safely

127. A pilot in command, or a remote pilot, who fails to comply with the obligations in regulation 115(1), commits an offence.

Failure of a pilot in command, flight crew or a remote pilot to remain at stations

128.—(1) A member of the flight crew who fails to comply with the requirement in regulation 116(1) to remain at that member's station secured in their seat by a safety belt or other restraint device unless there is more than one member of the flight crew and the pilot in command permits the member to leave that station for the reasons referred to in regulation 116(1)(a) or (b), commits an offence.

(2) A pilot in command who leaves the pilot in command's station for reasons other than those referred to in regulation 116(2)(a) to (c), commits an offence.

(3) A remote pilot who leaves the remote pilot's station for reasons other than those referred to in regulation 116(3)(a) to (c), commits an offence.

Failure of a pilot in command to carry out obligations to a spaceflight participant about stations

129. A pilot in command who fails, without reasonable excuse, to comply with the requirement in regulation 117 to ensure that a spaceflight participant is seated at the spaceflight participant's assigned station and secured in that spaceflight participant's seat by a safety belt or other restraint device at the times or during the periods referred to in regulation 117(a) to (c), commits an offence.

Failure of a remote pilot to carry out obligations to a spaceflight participant about stations

130. A remote pilot who fails, without reasonable excuse, to comply with the requirement in regulation 118 to ensure that a spaceflight participant is seated at the spaceflight participant's assigned station and secured in that spaceflight participant's seat by a safety belt or other restraint device at the times or during the periods referred to in regulation 118(a) to (c), commits an offence.

Failure of a launch director or a safety manager to carry out obligations to a spaceflight participant about stations

131.—(1) A launch director referred to in regulation 119(1)(a), who fails, without reasonable excuse, to comply with the requirement in regulation 119 to ensure that a spaceflight participant is seated at the spaceflight participant's assigned station and secured in that spaceflight participant's seat by a safety belt or other restraint device at the times or during the periods referred to in regulation 119(2)(a) to (c), commits an offence.

(2) A safety manager referred to in regulation 119(1)(b), who fails, without reasonable excuse, to comply with the requirement in regulation 119 to ensure that a spaceflight participant is seated at the spaceflight participant's assigned station and secured in that spaceflight participant's seat by a safety belt or other restraint device at the times or during the periods referred to in regulation 119(2)(a) to (c), commits an offence.

Failure of a spaceflight participant to remain at station

132. A spaceflight participant who fails, without reasonable excuse, to comply with the requirement in regulation 121(1) to remain seated at the spaceflight participant's assigned station and secured in that participant's seat by a safety belt or other restraint device at all times or during all the periods referred to in regulations 117 to 119 unless one of the individuals listed in regulation 121(2) permits that participant to leave that station, commits an offence.

Penalties

133. A person who is guilty of an offence under any of regulations 124 to 132 is liable—

(a) on summary conviction in England and Wales, to a fine;

(b) on summary conviction in Scotland or Northern Ireland, to a fine not exceeding the statutory maximum;

(c) on conviction on indictment, to imprisonment for a term not exceeding two years, or a fine, or both.

PART 9

Cosmic radiation requirements: crew of a launch vehicle and crew of a carrier aircraft

CHAPTER 1

Interpretation

Interpretation

134.—(1) In this Part—

"approved doctor" means a registered medical practitioner who—

(a) is an appointed doctor for the purposes of the Ionising Radiation Regulations 2017(**a**) (see regulation 2 of those Regulations),

(b) has completed a course of training in providing medical surveillance for crew who have been exposed to ionising radiation, and

(c) has been approved by the regulator for the purposes of carrying out a medical assessment or a health review for the purposes of this Part;

"approved medical assessor" means an individual employed by the regulator who—

(**a**) S.I. 2017/1075, to which there are amendments not relevant to these Regulations.

(a) is qualified and holds a valid licence to practise medicine from the General Medical Council,

(b) has qualifications in aviation or space medicine, and

(c) has been authorised by the regulator for the purposes of regulations 73(5) and 74(5);

"carrier aircraft cabin crew" means those individuals carried in a carrier aircraft for the purpose of performing duties in the interests of safety of the passengers but who do not act as members of the carrier aircraft flight crew;

"carrier aircraft flight crew" means individuals working on a carrier aircraft who undertake to act as pilot, flight navigator, flight engineer or flight radiotelephony operator of the aircraft;

"carrier aircraft task specialist" means an individual who performs specialised tasks on board the carrier aircraft;

"classified crew member" has the meaning given in regulation 143(1);

"crew" means—

(a) in relation to a carrier aircraft, individuals carried in the aircraft who are—

(i) members of the carrier aircraft flight crew,

(ii) members of the carrier aircraft cabin crew, or

(iii) carrier aircraft task specialists, and

(b) in relation to a launch vehicle, individuals carried in the launch vehicle who are—

(i) members of the flight crew, or

(ii) members of the cabin crew, and

"crew member" is to be read accordingly;

"the Directive" means Council Directive 2013/59/Euratom(**a**) as it was on IP completion day(**b**), laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation;

"effective dose" has the meaning given in Article 4(25) of the Directive;

"health review" has the meaning given in regulation 144;

"launch vehicle task specialist" means a spaceflight participant who performs specialised tasks on board the launch vehicle;

"mSv" means one thousandth of a sievert;

"overexposure" means in relation to a crew member performing duties for a spaceflight operator—

(a) in relation to a classified crew member, that the crew member has received an effective dose of cosmic radiation that exceeds 20 mSv in a calendar year;

(b) in relation to any other crew member, that the crew member has received an effective dose of cosmic radiation that exceeds 6 mSv in a calendar year.

(2) For the purposes of this Part a launch vehicle task specialist is treated as a crew member.

(3) References in this Part to a crew member in relation to a spaceflight operator are to a crew member of a carrier aircraft or launch vehicle which takes part in the operator's spaceflight activities.

(4) References in this Part to cosmic radiation do not include cosmic radiation prevailing at ground level.

(**a**) O.J. No. L 13/1, 17.1.2014, p.1.

(**b**) Schedule 1 to the Interpretation Act 1978 (c. 30) provides that "IP completion day" has the same meaning as in the European Union (Withdrawal Agreement) Act 2020 (c. 1) (see section 39(1) to (5) of that Act).

CHAPTER 2

Generally applicable provisions

Authorisation and prohibition on exposure

135.—(1) No spaceflight operator may employ or otherwise engage an individual to perform duties as a crew member on a launch vehicle or carrier aircraft that would render the individual liable to receive an effective dose of cosmic radiation that exceeds 6 mSv in a calendar year unless the individual is a classified crew member (see regulation 142).

(2) No spaceflight operator may employ or otherwise engage an individual to perform duties as a classified crew member on a launch vehicle or carrier aircraft that would render the individual liable to receive an effective dose of cosmic radiation that exceeds 20 mSv in a calendar year (see regulation 142).

Risk of exposure of crew members to cosmic radiation

136.—(1) Subject to paragraph (2), a spaceflight operator must ensure that a suitable and sufficient assessment of the magnitude of the risk to crew members from exposure to cosmic radiation in the course of performing their duties on board a launch vehicle or a carrier aircraft (an "exposure assessment") is conducted before carrying out the operator's spaceflight activities.

(2) Where a spaceflight operator has completed an exposure assessment (the "previous exposure assessment") in relation to the operator's spaceflight activities involving the launch vehicle or carrier aircraft, no further exposure assessment needs to be conducted in relation to those activities, but a further assessment must be conducted if—

(a) the spaceflight operator has reason to suspect that the previous exposure assessment is no longer valid,

(b) there has been a material change to the matters to which the previous exposure assessment relates, or

(c) the spaceflight operator has reasonable cause to believe that a crew member has received an overexposure while performing duties for the spaceflight operator on board the launch vehicle or the carrier aircraft.

(3) The spaceflight operator must take into account the results of the most recent exposure assessments it has conducted in relation to the operator's spaceflight activities when managing the operation of the launch vehicle or carrier aircraft, with a view to minimising as far as reasonably possible the exposure of crew members to cosmic radiation.

(4) In carrying out an exposure assessment the spaceflight operator must take into account any existing legal requirements relating to safety.

Requirements to assess and inform

137.—(1) A spaceflight operator must—

(a) take appropriate measures to assess the exposure to cosmic radiation of each crew member,

(b) take into account the assessed exposure when organising working schedules, with a view to reducing the doses of highly exposed crew, and

(c) inform each crew member of their dose as assessed under sub-paragraph (a).

(2) "Assess" and "highly exposed" have the same meaning as in Article 35 of the Directive.

Protection of pregnant crew

138.—(1) A spaceflight operator must inform all crew members of the importance of giving early notification of pregnancy to the spaceflight operator in view of the risks of exposure to the unborn child.

(2) If the suspension of a pregnant crew member's medical certificate is lifted in accordance with regulation 76(5)(a), a spaceflight operator must ensure that—

(a) the conditions of exposure to cosmic radiation for the crew member in the context of her duties are such that the equivalent dose to the unborn child is as low as reasonably achievable, and

(b) it is unlikely that that dose will exceed 1 mSv during the remainder of the pregnancy.

(3) In this regulation, "equivalent dose" has the meaning given in Article 4(33) of the Directive.

Monitoring of exposure to cosmic radiation: crew other than classified crew

139.—(1) A spaceflight operator must ensure that the exposure to cosmic radiation of crew members who are not classified crew members is monitored to such an extent as is sufficient to identify any crew members who should be classified under regulation 143.

(2) Monitoring of the crew of a carrier aircraft or a launch vehicle under this regulation may be undertaken by proper use of any of the following computer programs, which calculate the effective dose of cosmic radiation received by an individual on board a carrier aircraft or a launch vehicle, or of a computer program that performs an equivalent function—

(a) CARI-7;

(b) EPCARD;

(c) SIEVERT PN;

(d) PCAire.

(3) In this regulation—

(a) "CARI-7" means the computer programme of the same name, developed by the Federal Aviation Administration's Civil Aerospace Medical Institute;

(b) "EPCARD" means the European Program Package for the Calculation of Aviation Route Doses, developed by the Institute of Radiation Protection at Helmholtz Zentrum Munich, German Research Centre for Environmental Health;

(c) "SIEVERT PN" means the computer programme of the same name, developed by the Institut De Radioprotection et de Surete Nucleaire;

(d) "PCAire" means the computer programme of the same name, developed by PCAire Inc.

Provision of information and training to crew

140.—(1) A spaceflight operator must ensure that each crew member is given appropriate information and training about—

(a) the health risks arising from exposure to cosmic radiation while performing the crew member's duties on board the carrier aircraft or the launch vehicle,

(b) the spaceflight operator's procedures for conducting an exposure assessment mentioned in regulation 136(1), and

(c) the spaceflight operator's procedures for assessing and monitoring crew exposure to cosmic radiation.

(2) The spaceflight operator must ensure that training under paragraph (1) is given before the crew member performs any duties on board the carrier aircraft or launch vehicle.

Overexposure

141.—(1) Where a spaceflight operator has reasonable cause to believe that a crew member has received an overexposure while performing duties for that operator on board a launch vehicle or a carrier aircraft, the spaceflight operator must immediately conduct an investigation in order to conclude beyond reasonable doubt that no overexposure has occurred (a "negative conclusion").

(2) If the spaceflight operator is not able to reach a negative conclusion within fourteen days beginning with the date on which the investigation commenced (the "fourteen day period"), an overexposure is deemed to have occurred and the spaceflight operator must—

(a) immediately—

(i) notify the regulator of the overexposure,

(ii) where the crew member is a classified crew member, notify the approved doctor who undertook the crew member's most recent medical examination or health review of the overexposure, and

(iii) take appropriate steps to notify the crew member affected of the overexposure,

(b) where requested by the crew member, immediately arrange for an approved doctor to undertake a medical examination of the crew member in relation to the overexposure, and

(c) as soon as is reasonably practicable after the fourteen day period, conduct such investigation as is necessary to determine—

(i) the dose of cosmic radiation received by the crew member, so far as is reasonably practicable, and

(ii) the necessary measures, if any, to be taken to prevent a recurrence of the overexposure.

(3) Where an investigation is conducted under paragraph (2)(c), the spaceflight operator must immediately upon the conclusion of the investigation—

(a) notify the regulator, and

(b) take appropriate steps to notify the crew member affected,

of the results of the investigation and any determination as to the necessary measures to be taken to prevent a recurrence of the overexposure.

(4) A spaceflight operator who determines that there are measures necessary to be taken to prevent a recurrence of the overexposure must implement those measures as soon as practicable after such a determination is reached.

(5) A spaceflight operator who conducts an investigation pursuant to paragraph (1) must ensure that a report of the investigation is retained until the second anniversary of the date on which the investigation was commenced.

(6) A spaceflight operator who conducts an investigation pursuant to paragraph (2)(c) must ensure that a report of the investigation is retained until the later of—

(a) the 75th anniversary of the birth of the crew member affected, whether or not the crew member survives until that date, and

(b) the 30th anniversary of the date on which the investigation was commenced.

Continued working of overexposed crew

142.—(1) No spaceflight operator may employ or engage a crew member who has received an overexposure to perform duties on board a launch vehicle or a carrier aircraft that would render the crew member liable to receive an effective dose of cosmic radiation that exceeds X mSv for the remainder of the calendar year.

(2) In paragraph (1), "X" is the lower of—

(a) the dose limit applicable to the crew member divided by 365 and multiplied by the number of days in the remainder of the calendar year, and

(b) the dose limit applicable to the crew member minus the effective dose of radiation received by the crew member for the calendar year to the date on which the crew member received the overexposure, excluding the dose resulting in the overexposure.

(3) A spaceflight operator employing or engaging a crew member who has received an overexposure to perform duties on board a launch vehicle or a carrier aircraft must inform the crew member of the dose limit applicable to the crew member.

(4) Where an overexposure received by a crew member was caused by exceptional circumstances beyond the control of the spaceflight operator, the dose resulting in the overexposure is not to be included in any assessment of the crew member's effective dose for the purposes of regulation 135.

(5) In this regulation—

(a) the "dose limit applicable to the crew member" is —

(i) for classified crew members, 20 mSv;

(ii) for all other crew members, 6 mSv;

(b) the "remainder of the calendar year" begins with the day after the date on which the crew member received the overexposure and ends with the last day of the calendar year.

CHAPTER 3

Provisions relating to classified crew

Classification of crew

143.—(1) Subject to paragraph (2), a spaceflight operator may classify a crew member for the purpose of regulation 135(1) and (2) and a crew member classified under this regulation is referred to in this Part as a "classified crew member".

(2) A spaceflight operator must not classify a crew member unless—

(a) at the crew member's most recent medical examination or health review, under regulation 144, an approved doctor determined that the crew member is—

(i) fit to work as a classified crew member, or

(ii) fit, subject to certain conditions, to work as a classified crew member, and

(b) in a case within sub-paragraph (a)(ii), the conditions are complied with.

(3) A spaceflight operator must, as soon as is practicable following a crew member's most recent medical examination or health review under regulation 144, review the suitability of the crew member for the crew member's classification, having regard to the results of—

(a) any monitoring under regulation 139 or 146 undertaken in relation to the crew member since the beginning of the year in which the medical examination or health review takes place,

(b) the crew member's most recent medical examination or health review under regulation 144, and

(c) any other medical examination the crew member has been subject to since the date of the crew member's most recent medical examination or health review under regulation 144.

(4) A spaceflight operator must cease to classify a crew member as a classified crew member if—

(a) at the crew member's most recent medical examination or health review, in accordance with regulation 144, an approved doctor determines that the crew member is—

(i) unfit to work as a classified crew member, or

(ii) fit, subject to certain conditions, to work as a classified crew member, and

(b) in a case within sub-paragraph (a)(ii), the conditions are not complied with.

Medical surveillance

144.—(1) A spaceflight operator must ensure that—

(a) before classifying a crew member as a classified crew member, the crew member undergoes a medical examination by an approved doctor to determine the crew member's fitness to perform duties as a classified crew member, and

(b) each classified crew member has at least one review of their health ("health review") by an approved doctor once in every 12 months to determine whether the crew member remains fit to perform their duties.

(2) For the purposes of paragraph (1), every crew member must submit to such a medical examination or health review when required by the spaceflight operator to do so.

(3) A spaceflight operator must ensure that the approved doctor who performs an examination or health review in accordance with paragraph (1)—

(a) determines that the crew member is—

(i) fit to work as a classified crew member,

(ii) fit, subject to certain conditions, to work as a classified crew member, or

(iii) unfit to work as a classified crew member, and

(b) in a case within sub-paragraph (a)(ii), specifies the conditions concerned.

(4) A spaceflight operator must, as soon as reasonably practicable, notify the crew member concerned of—

(a) the determination made by the approved doctor of the crew member's fitness under paragraph (3)(a), and

(b) any conditions the approved doctor has specified in relation to the crew member under paragraph (3)(b).

(5) A spaceflight operator must allow an approved doctor access to any information the approved doctor may reasonably require in relation to the approved doctor's functions under this regulation.

Health records

145.—(1) A spaceflight operator must ensure that a health record is created in respect of each classified crew member.

(2) A "health record" is a written document containing the information specified in Schedule 6.

(3) A spaceflight operator must ensure that each health record is—

(a) maintained while the crew member to whom it relates is classified by the spaceflight operator as a classified crew member, and

(b) retained until the later of—

(i) the 75th anniversary of the birth of the crew member, whether or not the crew member survives until that date, and

(ii) the 30th anniversary of the date on which the crew member was last exposed to cosmic radiation in the course of performing duties for the spaceflight operator on board a carrier aircraft or launch vehicle.

(4) A crew member may request a copy of their health record.

(5) An approved doctor may request a copy of the health record in respect of a crew member whom the approved doctor has examined, is due to examine, or whose health the approved doctor has reviewed, or is due to review, in accordance with regulation 144(1) in connection with the performance of the approved doctor's functions under that regulation.

(6) A spaceflight operator must, within a reasonable time of receiving a request under paragraph (4) or (5), ensure that a copy of the health record is produced to the crew member or approved doctor.

(7) The spaceflight operator must take measures to ensure that a health record is protected as confidential information, and not disclosed otherwise than in accordance with this regulation or to an approved medical assessor for the purposes of that assessor performing duties as a medical assessor.

Monitoring of exposure to cosmic radiation: classified crew

146.—(1) A spaceflight operator must ensure that the exposure to cosmic radiation of each classified crew member is individually monitored.

(2) Monitoring of the crew of a carrier aircraft or a launch vehicle under this regulation may be undertaken by proper use of any of the following computer programs, which calculate the effective dose of cosmic radiation received by an individual on board a carrier aircraft or a launch vehicle, or of a computer program that performs an equivalent function—

(a) CARI-7;

(b) EPCARD;

(c) SIEVERT PN;

(d) PCAire.

(3) In this regulation, "CARI-7", "EPCARD", "SIEVERT PN" and "PCAire" have the same meaning as in regulation 139.

Records of exposure to cosmic radiation of classified crew

147.—(1) A spaceflight operator must maintain a record of all monitoring undertaken under regulation 146.

(2) A record under paragraph (1) is a written document containing—

(a) the crew member's—

(i) name,

(ii) date of birth,

(iii) gender, and

(iv) nationality,

(b) the name and address of the crew member's employer, where it is not the spaceflight operator, and

(c) the start date of the period to which the monitoring relates and, where possible, the end date.

(3) An operator must ensure that a record under paragraph (1) is retained until the later of—

(a) the 75th anniversary of the birth of the crew member to whom the record relates, whether or not the crew member survives until that date, and

(b) the 30th anniversary of the date on which the crew member was last exposed to cosmic radiation in the course of performing duties for the spaceflight operator on board a launch vehicle or a carrier aircraft.

(4) On or before 31st March of each calendar year the spaceflight operator must submit to the regulator a copy of all records under paragraph (1) relating to the previous calendar year.

Access to records of individual exposure to cosmic radiation

148.—(1) An interested person may request that a spaceflight operator cause to be produced to the interested person a copy of the record required to be maintained under regulation 147 in relation to a crew member specified in that request.

(2) "Interested person" means—

(a) the crew member to whom the record relates,

(b) another spaceflight operator ("O"), or a person other than O employing or otherwise engaging the crew member to perform duties for O on board a launch vehicle or a carrier aircraft, where the request is made for the purpose of complying with O's requirements in relation to the crew member under this Part,

(c) any approved doctor who makes the request—

(i) in relation to an examination or health review the approved doctor is due to perform, or has performed, in accordance with regulation 144 of the crew member to whom the record relates, and

(ii) in connection with making a determination as mentioned in paragraph (3) of that regulation.

(3) The spaceflight operator must, within a reasonable time of receiving a request under paragraph (1), cause a copy of the record to be produced to the person who requested it.

(4) The spaceflight operator must take measures to ensure that all records referred to in paragraph (1) are protected as confidential information, and not disclosed otherwise than in accordance with this regulation or to an approved medical assessor for the purposes of that assessor performing duties as a medical assessor.

CHAPTER 4

Instruction of experts

Instruction of experts

149.—(1) A spaceflight operator must instruct a suitably qualified person to review the processes implemented by the spaceflight operator to comply with the regulations in this Part.

(2) The spaceflight operator must ensure that the review referred to in paragraph (1) is completed within a reasonable period of the spaceflight operator commencing the operator's spaceflight activities which involve employing or engaging a crew member to perform duties on board a launch vehicle or a carrier aircraft.

(3) A spaceflight operator must pay due regard to the results of any review undertaken under paragraph (1).

(4) A spaceflight operator must provide the person instructed under paragraph (1) with any information and facilities that the person reasonably requests for the purpose of performing their review.

(5) The spaceflight operator must take measures to ensure that any information provided under paragraph (4) is protected as confidential information and not disclosed otherwise than in accordance with this regulation or to an approved medical assessor for the purposes of that assessor performing duties as a medical assessor.

CHAPTER 5

Consequential amendments to Air Navigation Order

Consequential amendments

150. In consequence of the provisions of this Part, the amendments to the Air Navigation (Cosmic Radiation: Protection of Air Crew and Space Crew and Consequential Amendments) Order 2019(**a**) in Schedule 7 have effect.

(**a**) S.I. 2019/1115.

PART 10

Spaceport safety

CHAPTER 1

Interpretation

Interpretation

151. In this Part—

"current safety case" means—

(a) if it is the first safety case, the safety case which the regulator is satisfied meets the requirements of regulation 36, or

(b) if it is a safety case reviewed, or reviewed and revised, under regulation 155, the safety case reviewed, or reviewed and revised, and accepted by the regulator in accordance with that regulation;

"licensed activities" means the activities that a person is authorised to carry out by virtue of a spaceport licence;

"operational area" means any area of a spaceport where licensed activities are undertaken and includes any runway, taxiway, launch pad, test stand, hazardous material storage facility, hazardous material handling or venting area, static engine test area or area within a safety clear zone;

"safety case" is to be construed in accordance with regulation 36;

"safety clear zone" means an area which is subject to restrictions, exclusions and warnings during the carrying out of hazardous pre-flight and post-flight operations;

"spaceport manual" is to be construed in accordance with regulation 164;

"spaceport operating staff" means an employee or agent of the licensee whose duties—

(a) are concerned with ensuring that the spaceport is safe and secure for use by carrier aircraft, launch vehicles and any payload to be carried by a launch vehicle, or

(b) require them to have access to an operational area.

CHAPTER 2

A spaceport licensee's safety duty

A spaceport licensee's safety duty

152.—(1) A spaceport licensee must ensure that its licensed activities are carried out safely.

(2) A spaceport licensee carries out its licensed activities safely by carrying them out—

(a) in accordance with the current safety case by—

(i) preventing a major accident from occurring, and

(ii) mitigating the consequences of such an accident if it does occur.

CHAPTER 3

Horizontal spaceport location requirement

Horizontal spaceport location requirement

153. A horizontal spaceport must be located at an aerodrome which is either—

(a) certified, or

(b) CAA licensed.

CHAPTER 4

Safety case: retention, review and revision

Requirement to retain the safety case

154. A spaceport licensee must retain its current safety case for the duration of the licence.

Safety case review and revision requirement

155.—(1) A spaceport licensee must review and, where necessary, revise its current safety case—

(a) no more than five years after the date on which the licence was granted, and

(b) at intervals not exceeding five years following the first review mentioned in sub-paragraph (a).

(2) Despite paragraph (1), the spaceport licensee must review and, where necessary, revise its current safety case—

(a) following an occurrence at the spaceport;

(b) where it becomes aware of an occurrence that has occurred elsewhere and which may affect the safe operation of the spaceport;

(c) where a review is justified by new facts or by technological knowledge about safety matters, including knowledge arising from analysis of accidents or occurrences;

(d) where a review is justified by developments in knowledge concerning the assessment of hazards;

(e) before—

(i) making modifications to the spaceport,

(ii) making changes to the licensed activities,

(iii) a new carrier aircraft or launch vehicle operates from the spaceport,

(iv) a new payload is to be carried by a launch vehicle operating at the spaceport, or

(v) introducing new types of hazardous material to the spaceport, or increasing the quantities of hazardous material that are to be transported on or stored at the spaceport,

where such changes could have material consequences for risk;

(f) following any change to the safety management system which may introduce new risks or hazards or change the nature of existing hazards;

(g) if the regulator directs the spaceport licensee to review, or review and revise, its current safety case.

(3) In carrying out a review of a safety case the spaceport licensee must take into account the spaceport licensee's safety duty under regulation 152.

Steps required after review, or review and revision, of safety case

156.—(1) Where a spaceport licensee revises its safety case it must supply to the regulator without delay and, where regulation 155(2)(e) applies, in advance of the proposed change—

(a) the revised safety case, and

(b) any other information about the revision of the safety case which the regulator requires.

(2) Where a safety case has been reviewed under regulation 155 and a decision has been taken not to revise it, the spaceport licensee must without delay—

(a) inform the regulator in writing, and

(b) provide the regulator with written reasons for that decision.

(3) Until the spaceport licensee has received the regulator's confirmation in writing that it accepts the revised safety case supplied to it under paragraph (1), the licensee must not implement any changes to its licensed activities as a result of any revision of that safety case.

CHAPTER 5

Safety clear zones

Safety clear zone requirement

157.—(1) A spaceport licensee must, unless paragraph (2) applies, put in place an appropriate safety clear zone to ensure that the risk to any person from blast overpressure, fragmentation debris, thermal radiation or toxic release is as low as reasonably practicable during any hazardous pre-flight and post-flight operations.

(2) This paragraph applies if the current safety case demonstrates that a safety clear zone is not required for the hazardous pre-flight or post-flight operations.

(3) A spaceport licensee must—

(a) promulgate the times at which a safety clear zone is in place,

(b) promulgate the area that comprises the safety clear zone,

(c) ensure that the safety clear zone is monitored at all times, and

(d) secure that arrangements are in place to ensure that no person is inside the safety clear zone unless the person's presence there is essential for the carrying out of spaceflight activities or for the performance of duties connected with such activities.

(4) For the purposes of paragraph (1), an appropriate safety clear zone is one which is determined by the assessment made in the spaceport licensee's current safety case.

CHAPTER 6

Hazardous material, testing areas and safety equipment at spaceports

Hazardous material storage facilities: location requirements and plan

158.—(1) A spaceport licensee must designate, in accordance with paragraph (2), appropriate areas at the spaceport for the safe storage of any hazardous material ("hazardous material storage facilities").

(2) For the purposes of paragraph (1), whether an area is appropriate for the siting of a hazardous material storage facility must be determined in the light of—

(a) the assessment made in the spaceport licensee's current safety case, and

(b) the types and quantities of hazardous material to be stored.

(3) The spaceport licensee must identify on the site plan required under regulation 36(4)(d)—

(a) the location of all hazardous material storage facilities at the spaceport;

(b) the maximum quantity of hazardous material to be stored at each facility, including the type of hazardous material and, if applicable, its hazard type;

(c) actual and minimum separation distances between each hazardous material storage facility and—

(i) any other hazardous material storage facility at the spaceport;

(ii) an inhabited building;

(iii) a public road or railway line;

(iv) a public area.

(4) The spaceport licensee must ensure that any hazardous material storage facility is clearly marked in a manner appropriate to the hazardous material stored.

(5) For the purposes of this regulation—

"hazard type" has the same meaning as in the Explosives Regulations 2014(**a**);

"inhabited building" means any building in or at which people are, or are likely to be, present either all the time or from time to time;

"minimum separation distance" means the minimum distance which is appropriate in the light of the assessment made in the spaceport licensee's current safety case, between a hazardous material storage facility and any other infrastructure or building listed in paragraph (3)(c)(i) to (iv);

"public area" means any area within, or in the vicinity of, the spaceport and to which members of the public are allowed access;

"public road" means any thoroughfare outside the spaceport on which the movement of vehicles is allowed.

Hazardous material: handling and venting areas

159.—(1) A spaceport licensee must designate appropriate areas at the spaceport for the handling and venting of any hazardous material.

(2) Any area designated under paragraph (1) must be appropriate to the type and quantity of hazardous material and have a surface that is compatible with that type of hazardous material.

(3) For the purposes of paragraphs (1) and (2), whether an area is appropriate must be determined in the light of the assessment made in the spaceport licensee's current safety case.

Propellants etc.: fit for purpose requirement

160.—(1) Where a spaceport licensee is responsible for storing, transporting or handling any hazardous material, it must not cause or permit that hazardous material to be delivered to an installation unless satisfied that—

(a) the installation is capable of storing and dispensing the hazardous material so as not to render it unfit for use in a carrier aircraft, launch vehicle or payload;

(b) the installation is marked in a manner appropriate to the type of hazardous material stored or, if different types are stored in different parts, each part is so marked;

(c) in the case of delivery from a vehicle, a ship or a vessel other than a ship, the hazardous material is of a type appropriate to that installation and is fit for use in a carrier aircraft, launch vehicle or payload.

(2) A spaceport licensee must not cause or permit any hazardous material to be dispensed from an installation that it manages to a carrier aircraft, launch vehicle or payload unless satisfied that it is fit for use in that carrier aircraft, launch vehicle or payload.

(3) Paragraphs (1) and (2) do not apply to any hazardous material which has been removed from a carrier aircraft, launch vehicle or payload and is intended for use in another carrier aircraft, launch vehicle or payload operated by the same operator as the carrier aircraft, launch vehicle or payload from which it has been removed.

(4) The spaceport licensee must keep a written record for each installation that it manages, which must include detailed information about—

(a) the type and quantity of hazardous material delivered and the date of delivery,

(b) any samples taken of the hazardous material and the results of tests of those samples, and

(c) the maintenance and cleaning of the installation.

(**a**) S.I. 2014/1638, amended by S.I. 2014/3248, S.I. 2016/315, S.I. 2016/345, S.I. 2016/721, S.I. 2017/469 and S.I. 2019/696.

(5) The spaceport licensee must—

(a) preserve the written record required under paragraph (4) for the period of 12 months beginning with the date of delivery referred to in paragraph (4)(a) or such longer period as the regulator may in a particular case direct, and

(b) produce that record within a reasonable time after being requested to do so by the regulator.

(6) In this regulation, "installation" means any apparatus or container, including a hazardous material storage facility or a vehicle, designed, manufactured or adapted for the storage or transportation of any hazardous material or for the delivery of any such material to a carrier aircraft, launch vehicle or payload.

Static engine test area

161.—(1) Where static engine testing of carrier aircraft, launch vehicles or payloads, or any other test of such a vehicle or craft which has the potential to cause a major accident hazard is to be carried out at a spaceport, the spaceport licensee must designate an appropriate area at the spaceport for the purposes of conducting those tests.

(2) For the purposes of paragraph (1), whether an area is appropriate for the static engine or other testing of carrier aircraft, launch vehicles or payloads must be determined in the light of the assessment made in the spaceport licensee's current safety case.

Safety equipment

162. If a spaceport licensee owns, manages or controls any system or ground equipment used to protect persons or property at the spaceport or to comply with these Regulations, that licensee must ensure that any such system or equipment is—

(a) maintained in efficient working order and in good repair, and

(b) thoroughly examined and, where appropriate, tested at suitable intervals.

CHAPTER 7

Requirements about the spaceport licensee's organisation and management

Safety management system requirement

163. A spaceport licensee must have in place a safety management system which complies with the requirements in Schedule 4.

Spaceport manual requirement

164.—(1) A spaceport licensee must have in place a spaceport manual, which in the case of a horizontal spaceport may be an annex to the existing aerodrome manual, which meets the requirements in paragraph (2).

(2) The spaceport manual must contain all such information and instructions as may be necessary to enable each member of the spaceport operating staff to perform their duties as such including, in particular, information and instructions relating to the matters specified in Schedule 8.

(3) The spaceport licensee must—

(a) supply to the regulator any amendments or additions to the spaceport manual before or immediately after they come into effect,

(b) without prejudice to sub-paragraph (a), make such amendments or additions to the spaceport manual as the regulator may require for the purpose of ensuring the safe operation of the spaceport and of any carrier aircraft, launch vehicle or payload at the spaceport, and

(c) maintain the spaceport manual and make such amendments as may be necessary for the purpose of keeping its contents up to date.

(4) The spaceport licensee must make available to each member of the spaceport operating staff a copy of the spaceport manual, or a copy of every part of the spaceport manual which is relevant to that person's duties and ensure that each such copy is kept up to date.

(5) The spaceport licensee must take all reasonable steps to secure that each member of the spaceport operating staff—

(a) is aware of the contents of every part of the spaceport manual which is relevant to that person's duties, and

(b) undertakes those duties in conformity with the relevant provisions of the spaceport manual.

(6) In this regulation "existing aerodrome manual" means the manual required to be in place under article 212(1)(d) of the Air Navigation Order 2016(**a**).

CHAPTER 8

Emergencies

Emergency response plan requirement

165.—(1) A spaceport licensee must have in place and maintain an emergency response plan for the spaceport.

(2) The emergency response plan must—

(a) detail how the spaceport licensee will respond in an emergency;

(b) be appropriate for the licensed activities and spaceflight activities to be conducted at the spaceport;

(c) provide for coordination with the relevant local authority and emergency services in response to an emergency occurring at, or in the vicinity of, the spaceport;

(d) provide for the coordination of the spaceport emergency response plan with—

(i) the spaceport safety management system,

(ii) the emergency response plan of any other organisation at the spaceport, and

(iii) the emergency response plans of those organisations with which the spaceport licensee must interact during the provision of the spaceport services.

(3) The spaceport licensee must, at suitable intervals not exceeding three years—

(a) test the emergency response plan, and

(b) review and, where necessary, revise the plan.

(4) The spaceport licensee must supply to the regulator before or immediately after they come into effect—

(a) the results of any test of the emergency response plan conducted under paragraph (3)(a), and

(b) details of the revisions, if any, it has made to the emergency response plan as a result of a review conducted under paragraph (3)(b).

(5) For the purposes of this regulation—

"relevant emergency services" means emergency services which are likely to be required to respond to an emergency at the spaceport;

"relevant local authority" means the local authority in whose administrative area the spaceport is situated.

(**a**) S.I. 2016/765. Article 212 was amended by S.I. 2019/645.

Spaceport rescue and fire-fighting provision

166.—(1) A spaceport licensee must ensure that rescue and firefighting personnel, facilities and equipment are provided at the spaceport in a timely manner.

(2) The level, type and timeliness of provision under paragraph (1) must be appropriate taking account of—

(a) the licensed activities and spaceflight activities to be conducted at the spaceport, and

(b) the assessment made in the spaceport licensee's current safety case.

Powers of spaceport firefighters in an emergency

167.—(1) A member of the Rescue and Fire Fighting Service at a spaceport may do anything at a spaceport that the member reasonably believes to be necessary—

(a) if the member reasonably believes a fire to have broken out or to be about to break out, for the purpose of extinguishing or preventing the fire or protecting life or property,

(b) if the member reasonably believes an accident to have occurred, for the purpose of rescuing people or protecting them from serious harm, or

(c) for the purpose of preventing or limiting damage to property resulting from any action taken as mentioned in sub-paragraph (a) or (b).

(2) In particular, a member of the Rescue and Fire Fighting Service at a spaceport, when acting in accordance with paragraph (1), may at the spaceport—

(a) enter a launch vehicle, by force if necessary, without the consent of the owner or spaceflight operator;

(b) restrict the access of persons to a launch vehicle or a place.

(3) A person who without reasonable excuse obstructs or interferes with a member of the Rescue and Fire Fighting Service at a spaceport taking authorised action under this regulation commits an offence.

(4) A person who commits an offence under paragraph (3) is liable—

(a) on summary conviction in England and Wales, to a fine;

(b) on summary conviction in Scotland or Northern Ireland, to a fine not exceeding the statutory maximum;

(c) on conviction on indictment, to imprisonment for a term not exceeding two years, or a fine, or both.

PART 11

Security

CHAPTER 1

Interpretation

Interpretation

168. In this Part—

"appropriate authorities" has the meaning given in regulation 184(3);

"controlled area" means a space site security restricted area which—

(a) has US technology,

(b) has launch activities taking place in that area,

(c) is designated as a controlled area by the Secretary of State, and

(d) is prescribed as a controlled area under paragraph 1(1)(a) of Schedule 5 to the Act;

"essential services" means services which are essential for the maintenance of critical societal or economic activities;

"foreign spacecraft" has the meaning given in the Technology Safeguards Agreement;

"launch activities" has the meaning given in the Technology Safeguards Agreement;

"NASP directed aerodrome" means an aerodrome which is subject to the direction of the Secretary of State under sections 12, 13, 13A, 14 and 15 of the Aviation Security Act 1982(**a**);

"network and information systems" has the meaning given in regulation 185(3);

"non-US vehicle" has the same meaning as "Foreign Launch Vehicle" has in the Technology Safeguards Agreement;

"notifiable incident" has the meaning given in regulation 186(2);

"security" in connection with network and information systems has the meaning given in regulation 186(2);

"security operative" means an individual who is engaged by the security manager to perform security functions on behalf of a licensee at a space site;

"segregated area" means an area within a space site which is designated as a segregated area jointly by the Secretary of State and the US Government and is prescribed by the Secretary of State as a segregated area under paragraph 1(1)(a) of Schedule 5 to the Act where the licensee permits access only to persons authorised by the US Government to ensure that on an uninterrupted basis they can monitor, inspect, access and control access to US technology for the purposes of conducting launch activities;

"spaceflight operations" means—

(a) spaceflight activities;

(b) range control services;

(c) activities associated with spaceflight activities and range control services;

(d) activities associated with launch vehicles and their payloads;

"space site security restricted area" means an area within a space site designated by the Secretary of State for the purposes of the assembling and integration of launch vehicles or carrier aircraft(**b**), mating of launch vehicles or carrier aircraft to their payloads, and mission management or range control services where such activities require restricted access;

"special launch operator" means a person who holds a launch operator licence which authorises the launch of a US launch vehicle or of a launch vehicle carrying a US spacecraft;

"supplies" has the meaning given in regulation 177(2);

"supplier" has the meaning given in regulation 179(4);

"Technology Transfer Control Plan" has the meaning given in the Technology Safeguards Agreement;

"unauthorised access or interference" in connection with the security of systems relating to spaceflight operations has the meaning given in regulation 185(3);

"unlawful occurrences" has the meaning given in regulation 185(3);

"UK participants", "US launch vehicles", "US licensees", "US participants", "US related equipment" and "US spacecraft" have the meanings given in the Technology Safeguards Agreement;

"US" means the United States of America;

"US technology" means any US launch vehicles, US related equipment, US technical data or US spacecraft;

"valid" has the meaning given in regulation 173(8).

(**a**) 1982 c. 36.
(**b**) "carrier aircraft" is defined in section 2(6) of the Space Industry Act 2018.

CHAPTER 2

Physical and personnel security

Responsibilities of a security manager

169. A security manager is responsible for—

(a) setting security policy, standards and targets,

(b) writing security instructions for staff carrying out security functions,

(c) making decisions affecting security operations,

(d) developing and managing security contingency planning,

(e) undertaking a security risk assessment,

(f) ensuring that individuals carrying out security functions have appropriate training and qualifications and have been vetted in accordance with national security vetting procedures to carry out such functions, and

(g) managing security quality control.

Space site security programme

170.—(1) Where there is a requirement to appoint a security manager for a space site(**a**) under Chapter 1 of Part 3 (eligibility criteria and prescribed roles for licensees), the security manager must draw up and maintain a security programme in respect of the space site for which that manager is responsible.

(2) The programme may, in the case of horizontal spaceports, be an annex to the existing aerodrome security plan.

(3) The licensee must comply with the requirements of the programme.

(4) The programme must—

(a) comply with the requirements mentioned in paragraph (5), and

(b) describe the methods and procedures mentioned in paragraph (6).

(5) The requirements are that the programme must—

(a) be kept up to date,

(b) be reviewed no more than 12 months after the date on which the licence was granted and, subsequently, at intervals not exceeding 12 months,

(c) be sent to the regulator as soon as possible following a review referred to in sub-paragraph (b),

(d) comply with international obligations of the United Kingdom and be consistent with such obligations,

(e) be site specific and proportionate to the type of activities being carried out on the site, and

(f) be based on a security risk assessment which—

(i) has been carried out by the security manager,

(ii) is reviewed no more than 12 months after the date on which the licence was granted and, subsequently, at intervals not exceeding 12 months, and

(iii) is kept up to date.

(**a**) "space site" is defined in paragraph 5(3) of Schedule 4 to the Space Industry Act 2018. Regulation 2(2) makes provision for references to "space site" to be treated as if they include references to a ship from which a launch vehicle is launched or is to be launched, on which a launch vehicle or carrier aircraft is landed or is to be landing, spaceflight activities are controlled or are to be controlled, range control services are provided or are to be provided or from or on which one or more of these activities are carried out or are to be carried out.

(6) The programme must describe—

(a) any physical barrier for the space site provided under regulation 172,

(b) the access controls to the space site put in place to prevent unauthorised access provided under regulation 173,

(c) the space site security restricted areas and controlled areas at the site (see regulation 174),

(d) the access controls for emergency services and post-emergency security procedures provided under regulation 175,

(e) security controls relating to prohibited articles (see regulation 176),

(f) the access controls for supplies, payloads and launch vehicles provided under regulations 177 and 178,

(g) guidance and procedures for assuring and approving suppliers (see regulation 179),

(h) the methods and procedures for surveillance of space sites provided under regulation 180,

(i) procedures for protection of hazardous material from unauthorised interference (see regulation 181),

(j) the methods and procedures for protection of carrier aircraft, launch vehicles and payloads at a spaceport pre- and post-integration (see regulations 182 and 183),

(k) the training, qualifications and national security vetting procedures necessary for individuals carrying out security functions at the space site provided under regulations 187 to 190,

(l) the procedures in place for protection of US technology at the site (see regulations 192 to 202),

(m) the security measures in place for a space site used in connection with the provision of range control services, and

(n) how compliance with methods and procedures specified in the programme is to be monitored by the security manager.

(7) In this regulation—

"existing aerodrome security plan" means the plan in force in relation to the aerodrome under section 24AE of the Aviation Security Act 1982(**a**);

"post-emergency security procedures" means the checks carried out by the licensee of all the areas that the emergency services have accessed after the emergency services have left the site to ensure that there has been no breach of security as set out in the space site security programme.

Operator security programme

171.—(1) Where there is a requirement to appoint a security manager under Chapter 1 of Part 3, the security manager for a spaceflight operator ("the security manager") must draw up and maintain an operator security programme ("the programme") for spaceflight activities in respect of which that manager is responsible.

(2) The programme must be integrated with the space site security programme.

(3) The spaceflight operator must comply with the requirements of the programme.

(4) The programme must—

(a) comply with the requirements mentioned in paragraph (5), and

(b) describe the methods and procedures mentioned in paragraph (6).

(5) The requirements are that the programme must—

(**a**) 1982 c. 36. Part 2A (security planning for aerodromes) of the Aviation Security Act 1982 was inserted by section 79 of the Policing and Crime Act 2009 (c. 26) and applies to NASP directed aerodromes. Section 24AE (aerodrome security plans) was amended by section 15(3) of, and paragraph 186 of Schedule 8 to, the Crime and Courts Act 2013 (c. 22).

(a) be kept up to date,

(b) be reviewed no more than 12 months after the date on which the licence was granted and, subsequently, at intervals not exceeding 12 months,

(c) be sent to the regulator as soon as possible following a review referred to in sub-paragraph (b),

(d) comply with international obligations of the United Kingdom and be consistent with those obligations,

(e) be specific and proportionate to the spaceflight activities being carried out by the spaceflight operator, and

(f) be based on a security risk assessment which—

(i) has been carried out by the security manager,

(ii) is reviewed no more than 12 months after the date on which the licence was granted and, subsequently, at intervals not exceeding 12 months, and

(iii) is kept up to date.

(6) The programme must describe—

(a) the appropriate measures for protecting launch vehicles, payloads and carrier aircraft at the spaceport (see regulations 182 and 183),

(b) the appropriate security controls for flight safety systems (see regulation 184),

(c) the appropriate training, qualifications and national security vetting procedures necessary for individuals carrying out security functions for the operator (see regulations 187 to 190),

(d) how compliance with methods and procedures mentioned in this paragraph is to be monitored by the security manager, and

(e) the procedures in place for protection of US technology at the site (see regulations 192 to 202).

Access control to space sites: sufficient security measures

172.—(1) A licensee must take sufficient security measures to ensure that the space site for which they are responsible is secure from unauthorised access.

(2) The security measures may include the installation of a temporary or permanent physical barrier around the site.

(3) This regulation does not apply to a spaceport located at a NASP directed aerodrome.

Access control to space sites: further provisions

173.—(1) This regulation applies to the grant of access to a space site.

(2) A licensee may only grant access to a space site if an individual or vehicle seeking to enter the site satisfies the conditions mentioned in paragraphs (3) to (5).

(3) The conditions for granting access to the site are that—

(a) there must be a legitimate reason for the individual or vehicle to be on the site,

(b) the individual seeking access to the site must provide a reliable means of personal identification by providing—

(i) an employee or licensee identification card,

(ii) a national appropriate authority identification card, or

(iii) an approved identification card, and

(c) the individual seeking to bring a vehicle onto the site must provide the licensee with their details, and the details of the vehicle they seek to bring on site, prior to arrival.

(4) In paragraph (3)(a) a legitimate reason for being on the site includes participation in guided tours of the site.

(5) The identification mentioned in paragraph (3)(b) must be checked by an appropriately qualified and authorised security operative to ensure that the identification card is valid and corresponds to the holder before the holder is granted access to the site.

(6) An individual who has been granted access to the site must display any of the personal identification cards mentioned at paragraph (3)(b) at all times whilst on the site.

(7) This regulation does not apply to access for emergency services where they are responding to an emergency on the site.

(8) In this regulation—

"appropriate authority" means a public authority that is responsible for overseeing the operations of the individuals mentioned in the definition of "approved identification card";

"appropriately qualified and authorised security operative" means a security operative who has been trained in accordance with provisions set out in Chapter 4 of this Part and is authorised to carry out security functions on the space site by the licensee;

"approved identification card" means a valid identification card issued by an appropriate authority to the following individuals including—

(a) officers of SAIA,

(b) CAA inspectors and auditors,

(c) a constable,

(d) officers of—

(i) the Health and Safety Executive, or

(ii) the Health and Safety Executive for Northern Ireland, and

(e) inspectors of the Department for Environment, Food and Rural Affairs and its agencies;

"employee identification card" means a valid identification card issued by an individual's employer that clearly identifies an individual and the organisation they work for;

"licensee identification card" means a valid identification card issued by the licensee that clearly identifies an individual and the licensee's company;

"national appropriate authority identification card" means a valid identification card issued by—

(a) the Secretary of State for the purposes of enabling the holder to enter a space site to carry out a security inspection to ensure that security operatives are compliant with security measures set out in this Part and in security guidance made under the Act, or

(b) the US Government to enable access to a space site security restricted area(**a**) which has US technology, data or equipment;

"valid" means current and not tampered with.

Space site security restricted area and controlled area

174.—(1) A licensee must make a proposal to the Secretary of State for an area at a space site to be designated by the Secretary of State—

(a) as a space site security restricted area ("the restricted area"), if the licensee intends to carry out the activities mentioned in paragraph (2) in that area, and

(b) as a controlled area if paragraph (3)(a) or (b) applies.

(2) The area proposed by the licensee must be designated by the Secretary of State as a restricted area for the purposes of—

(**a**) See regulation 168 for the definition of "space site security restricted area".

(a) assembling and integration of launch vehicles or carrier aircraft,

(b) the mating of launch vehicles or carrier aircraft to their payloads, and

(c) mission management or range control services where such activities require restricted access.

(3) The restricted area must be designated as a controlled area by the Secretary of State where—

(a) US technology is being used in that area, and

(b) launch activities are taking place in that area.

(4) The licensee must ensure that—

(a) the restricted area or controlled area is clearly defined and that access to the area is controlled by a security operative or by electronic means as appropriate,

(b) access to the restricted area or controlled area is limited to individuals who have been authorised to be in the area,

(c) individuals seeking access to the restricted area or controlled area have valid identification as a condition of being admitted into the area,

(d) individuals, payloads, launch vehicles, supplies and vehicles entering the restricted area or controlled area are subjected to appropriate levels of screening so that prohibited articles (see regulation 176) do not enter the area, and

(e) individuals who have been granted access to the restricted area or controlled area display their identification at all times whilst in the area.

(5) Where it is not possible to screen a payload or a launch vehicle entering the restricted area or controlled area due to its density or sensitivity, the operator must ensure that it obtains a declaration from the individual seeking to bring the payload or launch vehicle into the area confirming that the payload or launch vehicle has been protected from unauthorised interference or tampering during manufacture and transportation.

(6) This regulation does not apply to access for the emergency services where they are responding to an emergency on the site.

Access control to space sites: emergency services

175.—(1) Where the emergency services are responding to an emergency at a space site the licensee must grant access to the emergency services without requiring them to be subject to the access control measures mentioned in regulations 173 and 174.

(2) The licensee must draw up a plan relating to action to be taken following an emergency response at the site.

Security controls for prohibited articles

176.—(1) A licensee must apply appropriate and proportionate security controls to ensure that no prohibited articles are introduced onto the space site, launch vehicles or carrier aircraft either in vehicles, supplies or on persons.

(2) Individuals other than spaceflight participants must not be permitted to carry onto the site the articles mentioned in paragraph (4).

(3) Spaceflight participants must not be permitted to carry onto the site or on board a launch vehicle or carrier aircraft the articles mentioned in paragraph (5).

(4) The prohibited articles for individuals other than spaceflight participants are—

(a) guns, firearms and any other devices that are capable or appear capable of being used to cause injury by discharging projectiles,

(b) any device designed specifically to stun or immobilise,

(c) any explosives, incendiary substances and devices appearing capable of, or being used—

(i) to cause injury, or

(ii) to pose a threat to the safety of launch vehicles or carrier aircraft, and

(d) any other article capable of being used to cause injury and which is not commonly used on the site.

(5) The prohibited articles for spaceflight participants are—

(a) the articles mentioned in paragraph (4),

(b) any tools capable of being used either to cause injury or to threaten the safety of launch vehicles or carrier aircraft, and

(c) any objects capable of being used to cause injury.

(6) This regulation does not apply to a spaceport located at a NASP directed aerodrome.

(7) Paragraphs (2) and (3) do not apply where—

(a) an individual has been authorised by the licensee to carry prohibited articles onto the site,

(b) the licensee has checked that the individual who is carrying one or more articles specified in paragraph (4) is the individual who has been authorised to do so, and

(c) it is necessary for that individual to carry prohibited articles onto the site in order to undertake tasks that are essential for spaceflight operations or for the performance of duties connected with such operations.

(8) The checking requirement in paragraph (7)(b) is only satisfied if the individual presents the authorisation which—

(a) is either indicated on the identification card that grants access to the space site or in a separate declaration in writing, and

(b) indicates the article or articles that may be carried either as a category or a specific article.

(9) The checks mentioned in paragraph (7)(b) must be performed—

(a) before the individual is allowed to carry the article or articles concerned onto—

(i) the site, and

(ii) on board the launch vehicle or carrier aircraft, and

(b) when the individual is challenged by a security operative performing surveillance patrols on behalf of the licensee.

(10) The articles specified in paragraph (4) may be stored on the site provided they are kept in secure conditions.

(11) The articles specified in paragraph (5) may be stored on the site provided they are not accessible to spaceflight participants.

Security controls for supplies

177.—(1) A licensee must ensure that—

(a) appropriate and proportionate security controls are applied to space site supplies entering a space site,

(b) supplies are protected from unauthorised interference or tampering from the point at which security controls are applied until delivery to the site,

(c) it is familiar with any security controls to be applied to supplies prior to delivery onto the site,

(d) suppliers are informed of the requirements and restrictions to be imposed on supplies prior to entry onto the site,

(e) the licensee retains the final authority to allow supplies to enter the site where the provision of security controls to be applied to supplies prior to delivery onto the site is under the control of third parties,

(f) there are procedures in place to enable supplies entering the site to be inspected and screened, and

(g) staff with access to supplies to which security controls have been applied have been recruited and given security awareness training in accordance with the requirements of the Act and Chapter 4 of this Part.

(2) In this regulation—

"space site supplies" means all items intended to be used, sold or made available for any purpose or activity on the space site, and

"supplies" includes equipment but does not include payloads or launch vehicles and supplies shall be considered as space site supplies from the time that they are identifiable as supplies to be used, sold, or made available for any purpose or activity on the space site.

Security controls for payloads and launch vehicles

178.—(1) A spaceflight operator must—

(a) ensure that security controls are applied to payloads and launch vehicles prior to entry into the space site security restricted area ("the restricted area"),

(b) notify the spaceport licensee of the security controls to be applied to payloads and launch vehicles prior to the entry of payloads and launch vehicles into the restricted area,

(c) obtain a signed declaration from a manufacturer of payloads and launch vehicles and a person responsible for transporting payloads and launch vehicles from their place of manufacture to the spaceport or other place from which the launch is to take place or takes place confirming that all reasonable steps have been taken to ensure the security of payloads and launch vehicles,

(d) retain the final authority to allow any payloads and launch vehicles to enter the restricted area,

(e) inform the individual mentioned in paragraph (3) of the security controls to be imposed on the payloads and launch vehicles, and

(f) ensure that staff with access to payloads and launch vehicles to which security controls have been applied have been recruited and given security training in accordance with the requirements of the Act and Chapter 4 of this Part.

(2) The signed declaration mentioned in paragraph (1)(c) must be provided to the spaceflight operator as a condition of the payloads and launch vehicles being admitted into the restricted area.

(3) The individual to be informed of the security controls imposed on payloads and launch vehicles must be a responsible individual nominated by—

(a) a manufacturer of payloads and launch vehicles,

(b) an operator of payloads and launch vehicles, or

(c) a person responsible for transporting payloads and launch vehicles from their place of manufacture to the spaceport.

Access control to space sites: approval of suppliers

179.—(1) A person wishing to be a supplier to a licensee must apply to the licensee for approval.

(2) An application made under paragraph (1) must identify—

(a) the identity of the intending supplier,

(b) details of the supplies that the intending supplier proposes to provide,

(c) the space site where the supplies are to be delivered,

(d) details of individuals who will need access to the space site to deliver supplies, and

(e) details of the intending supplier's security procedures that describe how supplies are protected from unauthorised interference or tampering.

(3) The licensee must provide the applicant with guidance which sets out how the application is to be assessed.

(4) In this regulation "supplier" means a person who provides any items intended to be used, sold or made available for any purpose or activity on the space site.

Surveillance of space sites

180.—(1) A licensee must carry out ongoing surveillance of the space site in respect of which it is responsible, to ensure security of the site.

(2) The surveillance to be carried out on the site—

(a) must be appropriate and proportionate to the spaceflight operations being conducted on the site,

(b) must not follow a predictable pattern, and

(c) may be carried out by using technical equipment which is capable of recording, detecting or preventing security breaches.

(3) The frequency and means of undertaking surveillance must be based on a security risk assessment conducted by the site security manager or the licensee if the space site does not have a security manager.

(4) The security risk assessment referred to in paragraph (3) must take into account the—

(a) size and layout of the site, including the number and nature of operations,

(b) minimum response times for responding to a security incident, and

(c) possibilities and means of undertaking surveillance.

(5) This regulation does not apply to a spaceport located at a NASP directed aerodrome.

Security controls: hazardous material

181.—(1) This regulation applies to hazardous material at the locations mentioned in paragraph (2).

(2) The locations are—

(a) an area at a spaceport designated as a hazardous material storage facility under regulation 158,

(b) an area at a space site used by the licensee for the storage of any hazardous material,

(c) an area at a spaceport designated for the handling or venting of any hazardous material under regulation 159,

(d) an installation at a spaceport capable of storing or dispensing any hazardous material, and

(e) an area at a spaceport designated for the testing of a launch vehicle under regulation 161 which has the potential to cause a major accident hazard.

(3) A licensee must ensure that, at the locations referred to in paragraph (2)—

(a) it takes into account any statutory or contractual prohibitions, restrictions or conditions which apply to the material,

(b) there are appropriate measures in place to—

(i) detect any unauthorised access to, or unlawful interference with, hazardous material, and

(ii) respond to such unauthorised access to, or unlawful interference with, hazardous material.

(4) In this regulation "installation" has the meaning given in regulation 160(6).

Protection of carrier aircraft, launch vehicle or payload: pre-integration

182.—(1) This regulation applies—

(a) to a carrier aircraft prior to integration with a launch vehicle at a spaceport or other place from which the launch is to take place,

(b) to a payload prior to integration with a launch vehicle at a spaceport or other place from which the launch is to take place, and

(c) to a launch vehicle at a spaceport or other place from which the launch is to take place or takes place,

regardless of where a carrier aircraft or launch vehicle is parked or kept at the spaceport or other place.

(2) A licensee must—

(a) take all practicable measures to ensure that the carrier aircraft, launch vehicle or payload is protected from unauthorised access or interference,

(b) ensure that it complies with international obligations of the United Kingdom relating to security of the carrier aircraft or launch vehicle, and

(c) ensure that it complies with any applicable legislation relating to a NASP directed aerodrome.

Protection of carrier aircraft, launch vehicle or payload: post-integration

183.—(1) This regulation applies to security arrangements which are applicable once a payload has been integrated with a carrier aircraft or launch vehicle at a spaceport or other place from which the launch is to take place or takes place.

(2) A spaceflight operator must ensure that—

(a) the payload, carrier aircraft and the launch vehicle are protected from unauthorised access or interference, and

(b) it complies with any applicable legislation relating to a NASP directed aerodrome.

Security controls for flight safety systems

184.—(1) A spaceflight operator must apply the appropriate security controls to all aspects of a flight safety system, including elements of that system within the launch vehicle.

(2) Security controls are appropriate if they ensure that—

(a) the system is not prevented from functioning as intended due to external interference,

(b) the system is transported and stored securely, and

(c) any actual or attempted theft of, or tampering with, the system is immediately reported to the appropriate authorities.

(3) In this regulation "appropriate authorities" includes the police and the regulator.

CHAPTER 3

Cyber security

Spaceflight cyber security strategy

185.—(1) A licensee must draw up and maintain a cyber security strategy for the network and information systems ("the systems") used in relation to spaceflight operations for which it is responsible.

(2) The strategy must—

(a) be kept up to date,

(b) be reviewed—

(i) no more than 12 months after the date on which the licence was granted and, subsequently, at intervals not exceeding 12 months, and

(ii) upon any upgrades made to the systems,

(c) be sent to the regulator following a review referred to in sub-paragraph (b)(i),

(d) be proportionate and appropriate for the type of systems operated,

(e) comply with international obligations of the United Kingdom and be consistent with such obligations,

(f) be based on a security risk assessment which—

(i) has been carried out by the licensee, and

(ii) is reviewed no more than 12 months after the date on which the licence was granted and, subsequently, at intervals not exceeding 12 months, and upon any upgrades made to the systems,

(g) ensure the security of the systems managed by employees or agents of the licensee,

(h) ensure that the systems are protected from—

(i) unauthorised access or interference,

(ii) other unlawful occurrences, and

(iii) cyber threat, and

(i) ensure that the licensee's suppliers and their supply chain specify in their security protocols how they will achieve the cyber security requirements set out in the strategy.

(3) In this regulation—

"cyber threat" means anything capable of compromising the security of, or causing harm to, information systems and internet connected devices including hardware, software and associated infrastructure, the data on them and the services they provide, primarily by cyber means;

"jamming" means a deliberate blocking or interference with a wireless communication system by transmission of radio signals that disrupt information flow in wireless data networks by decreasing the signal to noise ratio;

"network and information systems" in connection with spaceflight operations means—

(a) an electronic communications network within the meaning of section 32 of the Communications Act 2003(**a**),

(b) any device or group of interconnected or related devices, one or more of which, pursuant to a programme, perform automatic processing of digital data,

(c) digital data stored, processed, retrieved or transmitted by elements covered under sub-paragraphs (a) or (b) for the purposes of their operation, use, protection and maintenance, or

(d) a flight safety system;

"spoofing" means a technique used to gain unauthorised access to computers whereby an intruder sends messages to a computer indicating that the message is coming from a trusted source;

"unauthorised access or interference" in connection with the security of systems relating to spaceflight operations includes hacking, jamming or spoofing of services or other recognised cyber threats;

"unlawful occurrences" includes theft of data.

Duty to report a notifiable incident to the regulator

186.—(1) A licensee must inform the regulator of any notifiable incident promptly and in any event within 72 hours after it becomes aware that a notifiable incident has occurred.

(**a**) 2003 c. 21. Section 32(1) was amended by S.I. 2011/1210.

(2) In this regulation—

"notifiable incident" means any event—

(a) of a type that has been determined by the regulator and the licensee as having an adverse effect on the security of the network and information systems used in relation to spaceflight operations, and

(b) that may have a significant impact on future essential services provided by the licensee;

"security" in connection with the network and information systems means the ability of the network and information systems to resist any action that compromises the availability, authenticity, integrity or confidentiality of stored, transmitted or processed data or the related services offered by, or accessible via, the systems.

CHAPTER 4

Vetting, clearance, training and qualifications

National security vetting procedures

187.—(1) A licensee must ensure that—

(a) the security manager has a level of security clearance which would be regarded as appropriate by the Government of the United Kingdom for persons performing such security functions,

(b) the individuals mentioned in paragraph (2) have obtained an acceptable criminal record certificate under section 113A(1) of the Police Act 1997, or enhanced criminal record certificate under section 113B(1) of that Act(**a**) in relation to the individuals mentioned in paragraph (2) as a condition of being engaged, or continuing to be engaged, to carry out security functions, and

(c) any other individual carrying out security functions as part of their employment has a satisfactory background check as a condition of being engaged, or continuing to be engaged, to carry out security functions.

(2) The individuals mentioned in paragraph (1)(b) are—

(a) software and hardware service providers of network and information systems used for the implementation and performance of security controls where direct access to the systems is granted to them, and

(b) individuals who have administrator rights for information management systems and critical supplies used by, or made available to, space sites.

(3) This regulation does not apply to a spaceport located at a NASP directed aerodrome.

Appropriate security training and qualifications

188.—(1) A licensee must ensure that—

(a) any individual employed as a security manager has the appropriate security training and qualifications necessary to carry out the role,

(b) any amendments to details of appropriate security training are sent to the regulator, and

(c) details of the appropriate security training include the types of training that will be required for individuals carrying out security functions at the space site.

(**a**) 1997 c. 50. Sections 113A and 113B were inserted by section 163(2) of the Serious Organised Crime and Police Act 2005 (c. 15), and amended by section 79(1) of the Protection of Vulnerable Groups (Scotland) Act 1997 (asp 14), sections 97(2) and 112(2) of, and paragraph 1 of Schedule 8 to, the Policing and Crime Act 2009 (c. 26), section 80(1) of the Protection of Freedoms Act 2012 (c. 9), section 38(1) of the Justice Act (Northern Ireland) 2015 (c. 9) and by S.I. 2012/3006. There are other amending statutory instruments which are not relevant.

(2) The regulator must allow the licensee to have access to the aviation security syllabuses to enable the licensee to develop the appropriate security training.

(3) The security manager must ensure that—

(a) all staff, regardless of the capacity in which they are engaged to work at the space site have appropriate general security awareness training before being granted unescorted access to the site, and

(b) the individuals mentioned in paragraph (4), who are engaged to perform security related functions, have the appropriate security training and qualifications to carry out those functions.

(4) The individuals mentioned in paragraph (3)(b) are—

(a) individuals implementing security controls,

(b) individuals who have roles and responsibilities relating to cyber security,

(c) supervisors of the individuals mentioned in sub-paragraph (a), and

(d) individuals, other than spaceflight participants, requiring unescorted access to security restricted areas on the site.

Training records and qualifications

189.—(1) A licensee must keep the records specified in paragraph (2) for as long as an individual is engaged to carry out security functions at the space site.

(2) The records are those relating to training and qualifications which indicate that an individual has the appropriate training and necessary qualifications for the security related functions that the individual has been engaged to perform.

Renewal of security training

190.—(1) A licensee must ensure that security training for the security manager is renewed periodically in accordance with paragraph (3).

(2) The security manager must ensure that—

(a) security training for individuals engaged to carry out security functions at the space site, and

(b) general security awareness training for all staff, regardless of the capacity in which they are engaged to work at the space site,

is renewed periodically in accordance with paragraphs (4) and (5).

(3) The security manager must renew that manager's training after a period of not more than 36 months beginning on the first day of the calendar month following the month in which they last completed their security training.

(4) An individual engaged to carry out security functions must renew that individual's training after a period of not more than 13 months beginning on the first day of the calendar month following the month in which they last completed their security training.

(5) Each member of staff working at the space site must renew that member of staff's general security awareness training after a period of not more than five years beginning on the first day of the calendar year following the year in which they last completed their security awareness training.

CHAPTER 5

Critical national infrastructure and essential services

Spaceflight activities: critical national infrastructure and essential services

191.—(1) This regulation applies where the Secretary of State, in consultation with the Centre for Protection of National Infrastructure ("the CPNI")(**a**), determines that—

(a) a space site is critical national infrastructure, or

(b) spaceflight activities are essential services.

(2) The licensee must—

(a) take appropriate and proportionate measures to manage any risks posed to the security of the space site and spaceflight activities, and

(b) cooperate with the CPNI and the National Cyber Security Centre in ensuring continuity of essential services.

(3) In this regulation "critical national infrastructure", means those critical elements of infrastructure which include assets, facilities, systems, networks or processes and the essential workers that operate and facilitate them, the loss or compromise of which could result in—

(a) a major detrimental impact on the availability, integrity or delivery of essential services including those services whose integrity, if compromised, could result in significant loss of life or casualties, taking into account significant economic or social impacts, or

(b) a significant impact on national security, national defence, or the functioning of the state.

CHAPTER 6

Security provisions for the protection of US technology

Segregated areas

192.—(1) A licensee who intends to carry out launch activities must make a proposal to the Secretary of State and the US Government for an area to be designated as a segregated area for the purposes mentioned in paragraph (2).

(2) The area proposed by the licensee may be designated by the Secretary of State and the US Government for—

(a) the purposes of ensuring that all US spaceflight activities that are subject to an agreement between the United Kingdom and the US Government are secured to prevent the unauthorised transfer of US technology to third parties, and

(b) as long as there is US technology in that area.

(3) The licensee must ensure that the boundaries of the segregated area are clearly delineated.

(4) If any US launch vehicle, US spacecraft or US related equipment, or debris thereof, is recovered and stored after an accident, the area in which it is stored may be designated by the Secretary of State as a segregated area.

Control of access to segregated area

193.—(1) Subject to paragraph (2), a licensee must ensure that no person may enter a segregated area without—

(a) US Government authorisation, and

(b) being escorted by a person authorised by the US Government unless unescorted access has been authorised by the US Government.

(**a**) The Centre for Protection of National Infrastructure ("the CPNI") is part of the Security Service.

(2) Paragraph (1) does not apply to access for the emergency services where they are responding to an emergency at the space site.

Control of access to imported US technology

194.—(1) A person who owns, or is in possession of, US technology must ensure that access to that US technology is controlled by a person authorised to do so by the US Government throughout—

(a) the transport of US technology;

(b) preparations for the launch of US launch vehicles or US spacecraft;

(c) the launch of US launch vehicles;

(d) the launch of US spacecraft.

(2) A person who contravenes paragraph (1) commits an offence.

(3) It is a defence for a person charged with such an offence to show that that person—

(a) did not know, and had no reason to know, that they were the owner of, or were in possession of, US technology, or

(b) took all reasonable precautions and exercised all due diligence to avoid committing the offence.

(4) A person guilty of an offence under paragraph (2) is liable—

(a) on summary conviction in England and Wales, to a fine;

(b) on summary conviction in Scotland or Northern Ireland, to a fine not exceeding the statutory maximum;

(c) on conviction on indictment, to imprisonment for a term not exceeding two years, or a fine, or both.

Monitoring and oversight of US technology

195.—(1) A licensee must permit any person whom the US Government has authorised to do so to have access to and monitor any US launch vehicle, US spacecraft or US related equipment, in accordance with that person's authorisation from the US Government.

(2) A licensee must not prevent a US licensee from accessing or monitoring the US technology in respect of which that US licensee has an export or transfer licence or authorisation from the US Government.

Monitoring and oversight of launch activities

196.—(1) A special launch operator must permit the US Government to oversee and monitor its launch activities.

(2) If the launch of a US spacecraft is delayed or cancelled, and the special launch operator who holds a launch licence for that launch intends to remove the US spacecraft from its launch vehicle, the special launch operator must notify—

(a) any US participant whom it considers should be notified, and

(b) the US Government.

(3) If the launch of a US launch vehicle or US spacecraft is cancelled, and the special launch operator for that launch intends to load any US technology that was to be used for the launch onto a vehicle, that special launch operator must—

(a) notify any US participant whom it considers should be notified,

(b) notify the US Government,

(c) only use a vehicle approved by the US Government, and

(d) permit any US participant authorised by the US Government to do so to monitor the loading.

Restrictions on the use of and access to US technology

197.—(1) A licensee using US technology for its licensed activities must ensure that that US technology is not used for any purpose other than that for which a US export licence has been granted, unless the US Government authorises it.

(2) A licensee must ensure that projects related to spaceflight activities that involve the launch of a US launch vehicle or a US spacecraft and items imported for use in these projects are not used for any other purpose without permission from the US Government.

(3) The licensee must ensure that—

(a) no person may transfer US technology to another person at a space site subject to the licensee's control without authorisation from the US Government,

(b) access to US technology used for the licensee's licensed activities is restricted to those persons who have been authorised by the regulator and the US Government, and

(c) persons may only unload sealed US technology used for the licensee's licensed activities and deliver it to a controlled or segregated area if supervised by a person who has been authorised by the US Government.

(4) A special launch operator must ensure that no person may transfer US technology used for that operator's launch activities to another person without authorisation from the US Government.

(5) The persons who may be authorised to have access to US technology include—

(a) SAIA,

(b) the Health and Safety Executive, in the case of US technology in Great Britain, or the Health and Safety Executive for Northern Ireland, in the case of US technology in Northern Ireland,

(c) law enforcement agencies,

(d) the regulator, and

(e) the Secretary of State.

(6) In this regulation, "law enforcement agencies" includes the police.

(7) The licensee must inform the regulator of any information that a US licensee has given it from the US export licence or other authorisation of the US Government to transfer US technology.

(8) The regulator must promptly give the Secretary of State any information it receives under paragraph (7).

Restrictions on importing US technology

198.—(1) A licensee which is a UK participant must not take possession of equipment or technology which originated in the US and was imported into the United Kingdom to support launch activities, and must not allow any other UK participant to do so, unless the regulator gives permission.

(2) If the licensee is in possession of any such equipment or technology, that equipment or technology may only be used to support launch activities if the regulator gives permission.

(3) The regulator may give permission under paragraph (1) or (2) only if the US Government and Her Majesty's Government have agreed that the UK participant may have possession of the equipment or technology.

(4) The licensee must comply with any Technology Transfer Control Plan that it has entered into.

Security training for spaceflight activities involving US technology

199. A special launch operator must ensure that all staff carrying out spaceflight activities involving US technology, regardless of whether or not they are carrying out a security function, receive training on security measures required for US technology.

Return of US technology if export licence etc. is revoked

200. A licensee which uses US technology for its licensed activities must ensure that in the event that a US export licence or authorisation for export or transfer of any of that US technology is revoked by the US Government, anything imported under the revoked licence or authorisation is either—

(a) returned to the US in accordance with the US export licence or authorisation, or

(b) sent to another location, if authorised by the US Government.

Processing of US technology after a normal launch

201.—(1) Following the launch of a US launch vehicle or US spacecraft which proceeded as expected, the special launch operator must—

(a) not permit any UK participant to dismantle US related equipment unless that UK participant is authorised to do so by the US Government;

(b) either—

(i) destroy any US related equipment it used for the launch and which it does not need for further launch activities, or

(ii) send such equipment from the UK to a location approved by, and in a manner approved by, the Secretary of State and the US Government;

(c) return any US technical data it has to a location approved by the Secretary of State and the US Government;

(d) not permit any UK participant to take part in the recovery of a reusable US launch vehicle or US related equipment unless that UK participant is authorised to do so by the US Government and is supervised by a US participant;

(e) send any recovered US launch vehicle, recovered US spacecraft, or recovered components of a US launch vehicle or US spacecraft, from the UK to a location approved by, and in a manner approved by, the Secretary of State and the US Government;

(f) not permit any UK participant to study or photograph recovered US technology unless that UK participant is authorised to do so by the US Government.

(2) Where recovery of a reusable US launch vehicle is planned to take place in a country outside the UK, the special launch operator must notify the regulator of the location of the planned recovery at the earliest opportunity.

(3) On receipt of information under paragraph (2), the regulator must inform the Secretary of State promptly.

Information about nationality of contributors to launch activities etc.

202.—(1) An applicant for a launch operator licence that would authorise a spaceflight activity involving both US technology and either a non-US vehicle or a foreign spacecraft must, when it applies for the licence, inform the regulator of the nationality of any person who has contributed money, equipment, technology or personnel to the production or acquisition of any essential and integral part of—

(a) the non-US vehicle,

(b) the foreign spacecraft, or

(c) the applicant's launch business.

(2) An applicant for a spaceport licence, if the applicant intends that there will be launches of US spacecraft or US launch vehicles from the spaceport, must, when it applies for the licence, inform the regulator of the nationality of any person who has contributed money, equipment, technology or personnel to the production or acquisition of any essential and integral part of the launch facilities or its launch business.

(3) The holder of a licence of a kind mentioned in paragraph (1) or (2) must inform the regulator as soon as possible of any change to information provided under paragraph (1) or (2), including any contributions to any new essential and integral part.

PART 12

Informed consent

CHAPTER 1

Interpretation

Interpretation

203. In this Part—

(a) "injury" means personal injury, and

(b) except in regulation 209, a reference to "operator's spaceflight activities" is a reference to those activities to be carried out by a spaceflight operator in which a human occupant is to take part.

CHAPTER 2

Prescribed matters

Prescribed role or capacity

204. For the purposes of section 17(1)—

(a) a member of the crew is a prescribed role, and

(b) a spaceflight participant is a prescribed capacity.

Prescribed criteria with respect to age and mental capacity

205.—(1) For the purposes of section 17(1)(b), the criterion prescribed relating to age is that a human occupant must be at least 18 years of age.

(2) For the purposes of section 17(1)(b), the following are the prescribed criteria relating to mental capacity—

(a) if the launch vehicle is to be launched from England or Wales, a human occupant must have capacity within the meaning of the Mental Capacity Act 2005(**a**) to understand the risks involved in the operator's spaceflight activities and the meaning of signifying their consent to take part in those activities,

(b) if the launch vehicle is to be launched from Scotland, a human occupant is not incapable within the meaning of the Adults with Incapacity (Scotland) Act 2000(**b**) of understanding the risks involved in the operator's spaceflight activities and the meaning of signifying their consent to take part in those activities, or

(c) if the launch vehicle is to be launched from Northern Ireland, a human occupant must have capacity in accordance with the law of Northern Ireland to understand the risks

(**a**) 2005 c. 9.
(**b**) 2000 asp 4.

involved in the operator's spaceflight activities and the meaning of signifying their consent to take part in those activities.

CHAPTER 3

The consent form

Details to be included in the consent form

206.—(1) The consent form must include—

(a) the full name, address and date of birth of the human occupant,

(b) the name and address of the spaceflight operator,

(c) the design specification of the launch vehicle to be used for the operator's spaceflight activities, and

(d) the details of the current risk assessment for the operator's spaceflight activities in an easily understandable form.

(2) Where the consent form is to be signed by a spaceflight participant, the consent form must, in addition to the details set out in paragraph (1), contain details of—

(a) the spaceport or other place from which the launch vehicle is to be launched,

(b) the spaceport or other place at which a controlled or planned landing of the launch vehicle is to take place,

(c) the planned date of the flight,

(d) the flight nomenclature, and

(e) the planned trajectory and duration of the flight.

(3) Where the consent form is to be signed by a member of the crew, the consent form may relate to more than one flight where—

(a) all the flights are to take place in a launch vehicle of the same design specification, and

(b) the current risk assessment relates to all the flights.

Statements to be included in the consent form

207.—(1) The consent form must include statements that the human occupant—

(a) has fulfilled the criteria in paragraphs 50 and 52 of Schedule 3,

(b) has read and understood—

(i) the details of the current risk assessment for the operator's spaceflight activities, and

(ii) the other information specified in regulations 209 and 210,

(c) has been given the opportunity to ask questions and received answers to those questions in accordance with regulation 211,

(d) accepts and understands that the operator's spaceflight activities carry an inherent risk of danger and in particular that—

(i) the activities may result in death or injury,

(ii) the regulator has not certified that the launch vehicle complies with any national or international safety standards, and

(iii) the provision referred to in paragraph (2) will not apply in the event of the human occupant dying or sustaining injury by taking part in the operator's spaceflight activities, and

(e) has not been unduly influenced to consent to accept the risks involved in the operator's spaceflight activities.

(2) The provision referred to in paragraph (1)(d)(iii) is section 34(2) (which provides for damages to be recovered without proof of negligence or intention or other cause of action, as if the injury or damage had been caused by the wilful act, neglect, or default of the licensee)(**a**).

No derogation from statements in the consent form

208. The consent form must not contain any provision which derogates from the statements required to be included in the form by regulation 207.

CHAPTER 4

Information to be given to a human occupant before the consent form is signed

Information about operator's spaceflight activities carried out by the spaceflight operator

209.—(1) In this regulation, references to "operator's spaceflight activities" are to all such activities carried out by the spaceflight operator.

(2) At least 24 hours, but not more than one month, before a human occupant signs a consent form, the spaceflight operator must give that individual—

(a) the information referred to in paragraph (3),

(b) a copy of any safety recommendations made as a result of a safety investigation relating to the operator's spaceflight activities, and

(c) information in writing and in an easily understandable form about any actions taken to improve safety following a spaceflight accident relating to the operator's spaceflight activities.

(3) The information mentioned in paragraph (2)(a) is information in writing about—

(a) the number of launches that the operator's spaceflight activities have involved,

(b) the number of persons who have died, sustained an injury or had a medical emergency as a result of taking part in the operator's spaceflight activities, and

(c) the number of spaceflight accidents relating to the operator's spaceflight activities and whether they occurred during the testing and development of the launch vehicle or during commercial operation.

(4) In this regulation "commercial operation" means any operation of the launch vehicle—

(a) which is available to the public, or

(b) which, when not made available to the public, is performed under a contract between the spaceflight operator and a customer, where the latter has no control over the spaceflight operator,

in return for remuneration or other valuable consideration.

Information about the operator's spaceflight activities

210. At least 24 hours, but not more than one month, before a human occupant signs a consent form, the spaceflight operator must give that human occupant—

(a) the details of the current risk assessment for the operator's spaceflight activities in an easily understandable form,

(b) information in writing about the availability of emergency services in the event of an accident or medical emergency, and

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(**a**) See regulation 218(1)(c) and (d) of Part 12. For the purposes of section 34(3)(a) of the Space Industry Act 2018, a human occupant under this Part is an individual of a prescribed description taking part in spaceflight activities.

(c) where that human occupant is a crew member or a launch vehicle task specialist, the information relating to exposure to cosmic radiation which is referred to in regulation 140(1).

Opportunity for questions

211.—(1) Before a human occupant signs the consent form, the spaceflight operator must—

(a) give the human occupant an opportunity to ask questions about the information given to that individual in accordance with regulations 209 and 210, and

(b) answer the questions in an easily understandable form.

(2) The questions referred to in paragraph (1)(a) may be raised, and answers referred to in paragraph (1)(b) may be given, in writing or orally.

CHAPTER 5

Procedural requirements with regard to the signification of consent

Who prepares the consent form

212. The spaceflight operator must prepare the consent form in writing and in duplicate.

When a human occupant signs the consent form

213. A human occupant must sign both copies of the consent form no more than 24 hours before taking part in the operator's spaceflight activities or, if the form relates to more than one flight, no more than 24 hours before taking part in the first of those flights.

What happens after the consent form is signed

214. A human occupant must give the duplicate consent form to the spaceflight operator by hand or send such duplicate form to the spaceflight operator.

CHAPTER 6

Evidential requirements with regard to the information and the signification of consent

A written record of the information provided to the human occupant

215.—(1) The spaceflight operator must keep a written record of—

(a) the information provided to a human occupant in accordance with regulations 209 to 211, and

(b) the date on which and time at which such information was provided to that individual.

(2) Before a human occupant signs the consent form, the spaceflight operator must give a copy of the written record referred to in paragraph (1) to that individual.

The signification of consent

216.—(1) A human occupant must sign the consent form.

(2) A human occupant must date the consent form and record on the form the time at which the consent form was signed.

(3) An electronic signature satisfies the requirements to sign the consent form in paragraph (1).

(4) In this regulation "electronic signature" has the same meaning as in section 7(2) (electronic signatures and related certificates) of the Electronic Communications Act 2000(**a**).

The consent form as evidence of signification of consent

217. The requirement in section 17(2) for consent to accept the risks involved in an operator's spaceflight activities to be signified by signing the consent form is satisfied only if—

(a) the spaceflight operator complies with the requirements in regulations 206 to 212 and 215, and

(b) a human occupant complies with the requirements in regulations 213, 214 and 216.

PART 13

Liabilities and indemnities

Prescribed description of individuals to whom section 34(2) does not apply

218.—(1) The following descriptions of an individual are prescribed for the purposes of section 34(3)(a)—

(a) where a spaceport licensee or a range control licensee is an individual, that licensee;

(b) an appointee, employee or agent of a licensee who is at work at a space site;

(c) a member of the crew who has consented to accept the risks involved in an operator's spaceflight activities in accordance with section 17;

(d) a spaceflight participant who has consented to accept the risks involved in an operator's spaceflight activities in accordance with section 17;

(e) an individual not falling within sub-paragraphs (a) to (d) who is present at a space site in connection with spaceflight activities;

(f) an individual on a carrier aircraft taking part in an operator's spaceflight activities;

(g) an officer or partner of a licensee who is present at a space site;

(h) an individual who is within an operational area or a restricted area of a space site at the invitation of a licensee;

(i) an employee or an individual acting on behalf of the regulator or with the regulator's authority at a space site;

(j) an employee or an individual acting on behalf of the government of another country present at a space site in connection with spaceflight activities;

(k) an employee of the emergency services who is on duty at a space site in connection with spaceflight activities;

(l) an employee of SAIA who is on duty at a space site in connection with spaceflight activities;

(m) compliance authority personnel on duty at a space site in connection with spaceflight activities;

(n) an employee of a qualifying health and safety authority who is on duty at a space site in connection with spaceflight activities;

(o) a member of the armed forces of the Crown who is on duty at a space site in connection with spaceflight activities;

(p) any individual who has entered into a reciprocal waiver of liability with a licensee.

(**a**) 2000 c. 7. Section 7(2) was amended by S.I. 2016/696 and provides that an electronic signature is so much of anything in electronic form as: (a) is incorporated into or otherwise logically associated with any electronic communication or electronic data, and (b) purports to be used by the individual creating it to sign.

(2) For the purposes of this regulation—

"compliance authority personnel" includes the following individuals—

(a) an individual appointed as an Inspector of Spaceflight Accidents under regulation 6(1) of the Spaceflight Activities (Investigation of Spaceflight Accidents) Regulations 2021(**a**);

(b) CAA inspectors and auditors;

(c) inspectors of the Department for Environment, Food and Rural Affairs and its agencies;

(d) an air traffic controller;

(e) an employee of the National Crime Agency(**b**);

(f) an employee of an intelligence service;

(g) a constable;

"officer" in paragraph (1)(g) has the meaning given in section 57(3);

"partner" in paragraph (1)(g) has the meaning given in section 58(6);

"restricted area" means a controlled area, a space site security restricted area or a segregated area, within the meanings given in regulation 168, within a space site.

Prescribed cases or circumstances under which a limit on the operator's liability to government does not apply

219. The following cases and circumstances are prescribed for the purposes of section 36(3)(a) (obligation to indemnify government etc. against claims)—

(a) cases where the operator is liable in respect of gross negligence(**c**) or wilful misconduct in the performance of its obligations under the Act or regulations made under the Act;

(b) circumstances where damage or loss is caused as a result of the non-compliance by the operator with—

(i) any conditions of its licence;

(ii) the requirements under the Act or regulations made under the Act.

Limit on the amount of operator's liability

220.—(1) An operator licence must specify a limit on the amount of the operator's liability in respect of—

(a) injury or damage arising out of spaceflight activities under section 34(2), and

(b) any third party liability arising out of spaceflight activities which may be incurred by the operator in respect of the death of or bodily injury to any person or damage to property not covered by section 34(2).

(2) The limit on the amount of the operator's liability shall be determined by the regulator having regard to, in particular, the spaceflight activities which the operator applicant proposes to carry out(**d**).

(3) An operator licence must provide that the limit on the amount of the operator's liability does not apply in cases or circumstances where—

(a) the operator is liable in respect of gross negligence or wilful misconduct in the performance of its obligations under the Act or regulations made under the Act;

(b) damage or loss is caused as a result of the non-compliance by the operator with—

(i) any conditions of its licence;

(**a**) S.I. 2021/****.
(**b**) The National Crime Agency was established by section 1 of the Crime and Courts Act 2013 (c. 22).
(**c**) See section 37(5) of the Space Industry Act 2018 for the definition of "gross negligence".
(**d**) See definitions of "carry out" at section 1(2) and "spaceflight activities" at section 1(6) of the Space Industry Act 2018.

(ii) any requirements under the Act or regulations made under the Act.

(4) In this regulation "operator applicant" means a person who is applying, has applied or intends to apply for an operator licence.

Duty of the Secretary of State to indemnify

221. The cases and circumstances prescribed for the purposes of section 35(5)(b) (power or duty of Secretary of State to indemnify) are—

(a) cases where the operator is liable in respect of gross negligence or wilful misconduct in the performance of its obligations under the Act or regulations made under the Act;

(b) circumstances where damage or loss is caused as a result of the non-compliance by the operator with—

(i) any conditions of its licence;

(ii) any requirements under the Act or regulations made under the Act.

PART 14

Monitoring and enforcement

CHAPTER 1

General

Interpretation

222. In this Part—

"contravention notice" means a notice issued under regulation 247;

"information" means information held in any form;

"inspector" means a person appointed under regulation 237;

"prohibition notice" means a notice issued under regulation 249;

"warning notice" means a notice issued under regulation 248.

Offence to obstruct inspector or regulator

223. It is an offence for a person intentionally to obstruct or impede any person who is exercising a power or performing a duty under this Part.

Penalty for obstructing inspector or regulator

224. A person guilty of an offence under regulation 223 is liable—

(a) on summary conviction in England and Wales, to a fine;

(b) on summary conviction in Scotland or Northern Ireland, to a fine not exceeding the statutory maximum;

(c) on conviction on indictment, to imprisonment for a term not exceeding six months, or a fine, or both.

Offence to impersonate inspector

225. It is an offence to impersonate an inspector.

Penalty for impersonating inspector

226. A person guilty of an offence under regulation 225 is liable on summary conviction—

(a) in England and Wales, to a fine;

(b) in Scotland or Northern Ireland, to a fine not exceeding level 5 on the standard scale.

CHAPTER 2

Obligation to provide information to the regulator

Persons to whom obligation applies

227. This Chapter applies to a person who—

(a) carries out spaceflight activities,

(b) operates a spaceport,

(c) occupies land forming part of a spaceport or is allowed access to such land for the purposes of the activities of a business carried on by the person,

(d) provides range control services under a range control licence, or

(e) carries out associated activities.

Information notices

228.—(1) The regulator may serve a notice on a person specified in regulation 227 requiring the provision of any information it thinks necessary for the purposes set out in section 26(2).

(2) A notice requiring the provision of information under this Chapter is referred to as an "information notice".

(3) The regulator may specify in the information notice that the information is to be provided by any means it thinks necessary, including a written response or an oral interview.

(4) Where information is provided orally, the regulator may record that information in any manner which in the regulator's view is appropriate.

(5) The notice must specify a period within which the person must provide the information specified.

(6) An information notice may require the creation of documents, or documents of a description, specified in the notice.

(7) A requirement to provide information or create a document is a requirement to do so in a legible form.

Obligation to provide information to regulator

229. A person who receives an information notice must, before the end of the period specified in the notice, provide, or cause to be provided, to the regulator such information as is specified or described in the information notice.

Offence of failing to comply with information notice

230. A person who contravenes regulation 229 commits an offence, but it is a defence for a person charged with such an offence to show that they took all reasonable steps and exercised all due diligence to avoid committing the offence.

Penalty for failing to comply with information notice

231. A person guilty of an offence under regulation 230 is liable, on summary conviction—

(a) in England and Wales, to a fine;

(b) in Scotland or Northern Ireland, to a fine not exceeding level 5 on the standard scale.

Offence of providing false information

232. It is an offence for a person, in purported compliance with regulation 229—

(a) to make a statement that the person knows to be false in a material particular, or

(b) recklessly to make a statement that is false in a material particular.

Penalty for providing false information

233. A person guilty of an offence under regulation 232 is liable—

(a) on summary conviction in England and Wales, to a fine;

(b) on summary conviction in Scotland or Northern Ireland, to a fine not exceeding the statutory maximum;

(c) on conviction on indictment, to imprisonment for a term not exceeding two years, or a fine, or both.

Offences of false recording

234.—(1) It is an offence for a person to—

(a) use any document or record issued or required or having effect by or under the Act—

(i) which the person knows or ought to know has been forged, altered, revoked, or suspended, or

(ii) to which the person knows or ought to know that that person is not entitled, or

(b) lend any document or record issued or required or having effect by or under the Act to, or allow it to be used by, any other person.

(2) It is an offence for a person intentionally to damage, alter, or render illegible—

(a) any document or record issued or required or having effect by or under the Act, or

(b) any entry made in such a document or record.

(3) It is an offence for a person—

(a) knowingly to make, or procure or assist in the making of, any false entry in or material omission from any document or record issued or required or having effect by or under the Act, or

(b) to destroy any such document or record during the period for which the person is obliged to preserve it.

(4) It is an offence for a person knowingly to create a false licence, certificate, approval, permission, exemption or any other document issued by the regulator.

Defence to offences of false recording

235. It is a defence for a person charged with an offence—

(a) under regulation 234(2) to show that the person was acting with intent to amend an error in the document, record or entry;

(b) under regulation 234(3)(b) to show that the person took all reasonable steps and exercised all due diligence to avoid committing the offence.

Penalty for false recording

236. A person guilty of an offence under regulation 234 is liable—

(a) on summary conviction in England and Wales, to a fine;

(b) on summary conviction in Scotland or Northern Ireland, to a fine not exceeding the statutory maximum;

(c) on conviction on indictment, to imprisonment for a term not exceeding two years, or a fine, or both.

CHAPTER 3

Inspectors

SECTION 1

Appointment and powers

Appointment of inspector

237.—(1) The regulator may appoint a person (referred to in this Chapter as "an inspector") to act on the regulator's behalf for the purposes set out in section 26(2).

(2) The regulator must not appoint a person under paragraph (1) unless satisfied that that person is qualified to carry out the functions that the regulator authorises the person to carry out.

(3) The regulator may appoint an inspector under this Chapter on such terms as the regulator may determine and may terminate that appointment at any time.

(4) Any appointment of an inspector under this regulation must be made in writing and must specify the powers available to the inspector.

Duties of inspector

238. An inspector must carry out all monitoring and enforcement activities and tasks that the regulator thinks necessary to discharge its obligations in section 26(1) for the purposes set out in section 26(2).

Powers of inspector

239.—(1) The regulator may authorise the inspector to exercise any power set out in Section 2 of this Chapter.

(2) That authority may be given—

(a) without restriction, or

(b) only to a limited extent or for limited purposes.

(3) The authority conferred by an instrument of appointment to exercise any power may be varied by the regulator by a further instrument in writing varying the instrument of appointment.

(4) When exercising or seeking to exercise a power, an inspector must, if asked, produce formal identification showing their authority to exercise that power.

References to inspector

240. In this Chapter, references to an inspector, in relation to any power, are to the inspector exercising or proposing to exercise the power.

SECTION 2

Powers exercisable by inspectors

Power of entry

241.—(1) An inspector may enter any of the premises mentioned in paragraph (2), or enter, or demand access to, any vehicle mentioned in paragraph (3), where the inspector has reason to believe it is necessary for the purposes set out in paragraph (4)—

(a) at any reasonable time, or

(b) at any time, in a situation—

(i) which, in the inspector's opinion, is or may be dangerous, or

(ii) in which, in the inspector's opinion, delay would or might be prejudicial to public safety or the national security of the United Kingdom.

(2) In this Section "premises" means—

(a) any spaceport or other space site;

(b) any site from which spaceflight activities, the operation of a spaceport, the provision of range control services, or associated activities are being carried out, including range control facilities, spaceport facilities, mission control, and mission management facilities;

(c) any place in the United Kingdom where spacecraft(**a**) or carrier aircraft(**b**) used by a regulated person(**c**) are assembled or made or where third party work is carried out on behalf of a regulated person;

(d) any other facility used by or on behalf of a regulated person;

(e) any place where any carrier aircraft, spacecraft or other vehicle involved in spaceflight activities used by any person, including a person who is not a regulated person, has landed.

(3) In this Section "vehicle" means any carrier aircraft, spacecraft or other vehicle involved in spaceflight activities and used by or on behalf of a regulated person.

(4) An inspector so authorised may enter the premises or enter, or demand access to, the vehicle for any of the following purposes—

(a) to inspect the premises or to inspect any vehicle;

(b) to inspect any document or record which the inspector has power to demand under these Regulations;

(c) to examine, inspect or test any part of, or material intended to be incorporated in or used in the manufacture of any part of, any vehicle or its equipment;

(d) to examine, inspect or test any equipment used or intended to be used in connection with the provision of a service to any vehicle whether or not in flight;

(e) to inspect the training and assessment of persons for a specified role under regulation 56(1);

(f) to carry out any examination, inspection or test necessary to discharge the inspector's duties;

(g) to serve any notice under these Regulations.

(5) The power to enter any premises or vehicle under this regulation includes the power to be on the premises or vehicle during testing, training, demonstration flights, and commercial flights.

Power to take persons and equipment etc. onto premises or vehicle

242. In exercising the power of entry mentioned in regulation 241 an inspector may—

(a) be accompanied—

(i) by any person approved by the regulator including a representative of a qualifying health and safety authority, and

(ii) by a constable if the inspector has reasonable cause to expect any serious obstruction in the exercise of the inspector's powers, and

(b) take along any equipment and materials required for any purpose for which the inspector is exercising the power of entry.

(**a**) See section 2(6) of the Space Industry Act 2018 for the definition of "spacecraft".
(**b**) See section 2(6) of the Space Industry Act 2018 for the definition of "carrier aircraft".
(**c**) See section 28(8) of the Space Industry Act 2018 for the definition of "regulated person".

Powers of inspection and examination and to take samples

243.—(1) An inspector may—

(a) take measurements and photographs, and

(b) make recordings.

(2) An inspector may take and deal with samples of—

(a) any article or substance found on any premises or vehicle, or

(b) the atmosphere in, or in the vicinity of, any premises or vehicle.

(3) An inspector may take possession of—

(a) any part of, or material to be incorporated or used in the manufacture of any part of, any vehicle or its equipment, or

(b) any equipment used, or intended to be used, in connection with the provision of a service to any vehicle in flight or on the ground,

and retain it for as long as necessary to comply with the purposes in section 26(2).

(4) An inspector may direct that any premises or vehicle, or any article or substance or atmosphere in them, must be left undisturbed for as long as reasonably necessary for the purposes of any inspection, examination or test under regulation 241(4).

(5) A direction under paragraph (4)—

(a) may relate to part of any premises;

(b) may relate to particular aspects of any premises, article, substance or atmosphere.

Powers to require information and documents

244.—(1) An inspector may require any person whom the inspector has reasonable cause to believe is able to give any information relevant to any inspection or examination under regulation 241(4)—

(a) to answer any question that the inspector thinks fit, and

(b) to sign a declaration of the truth of the person's answers.

(2) An inspector may—

(a) require any relevant documents to be produced, and

(b) inspect and take copies of, or of any information in, any relevant documents.

(3) For this purpose—

(a) "document" includes information recorded in any form;

(b) "relevant document" means a record or other document which—

(i) is required to be kept by virtue of these Regulations, or

(ii) the inspector needs to see for the purposes of any inspection, examination or test under regulation 241(4).

(4) In the case of a relevant document that consists of information held otherwise than in legible form, including information held in electronic form, the inspector may—

(a) require it to be produced—

(i) in a legible form, or

(ii) in a form from which it can readily be produced in a legible form, and

(b) require access to, and inspect and check the operation of, any computer and any associated apparatus or material which is or has been used in connection with the relevant document.

(5) An inspector may take possession of any document or record which the inspector has power to demand and retain it for as long as necessary to comply with the purposes in section 26(2).

(6) Where an inspector has reason to believe that any document or record which the inspector has power to demand is held on electrical or electronic equipment, the inspector—

(a) may take possession of that equipment and retain it for as long as necessary to comply with the purposes in section 26(2);

(b) may take all reasonable steps to gain access to the document or record held on the electrical or electronic equipment.

Powers exercisable in relation to particular articles or substances

245.—(1) An inspector may take possession of any article or substance found on any premises or vehicle and retain it for as long as necessary—

(a) for it to be examined or tested;

(b) for anything to be done to it which the inspector may cause to be done under paragraph (6);

(c) to ensure that it is not tampered with before any examination, test or other procedure mentioned in sub-paragraph (a) or (b) is complete;

(d) to ensure that it is available for use in any proceedings for an offence under the Act or any regulations made under the Act.

(2) The inspector may exercise the power in paragraph (1) if the inspector has reason to believe that—

(a) the article or substance has caused, may have caused, or is likely to cause, non-compliance with a licence condition, a provision of the Act or an international obligation of the United Kingdom,

(b) the article or substance has caused, may have caused, or is likely to cause, danger to public safety or national security, or

(c) it is desirable to do so for the purposes set out in section 26(2).

(3) Before taking possession of any substance under this regulation, the inspector must, if it is practicable—

(a) take a sample of it, and

(b) give a portion of the sample, marked so as to be identifiable, to a person at the premises or vehicle from which the substance is taken.

(4) An inspector who takes possession of any article or substance under this regulation must—

(a) if it is practicable to do so, give written notice to that effect to a person at the premises or vehicle from which the article or substance is taken;

(b) otherwise, fix such a notice in a conspicuous position at the premises or vehicle from which the article or substance is taken.

(5) The notice must include sufficient information about the article or substance to identify it.

(6) An inspector may cause any article or substance found in any premises or vehicle—

(a) to be dismantled;

(b) to be examined or tested;

(c) to be the subject of a demonstration showing how the article or substance functions;

(d) to be deactivated or otherwise rendered safe for handling;

(e) to have any other process applied to it.

(7) The inspector may exercise any power in this regulation if the inspector has reason to believe that—

(a) the article or substance has caused, may have caused, or is likely to cause, non-compliance with a licence condition, a provision of the Act or an international obligation of the United Kingdom,

(b) the article or substance has caused, may have caused, or is likely to cause, danger to public safety or national security, or

(c) it is desirable to do so for the purposes set out in section 26(2).

(8) Before exercising a power in this regulation, the inspector must use their best endeavours to consult such persons as the inspector considers appropriate.

(9) Anything done to the article or substance under this regulation must not damage or destroy it unless in the circumstances that is unavoidable.

(10) If requested by a person who has responsibilities in relation to the premises or vehicle from which the article or substance is taken, and that person is on or at the premises or vehicle, the inspector must allow anything done to the article or substance under this regulation to be done in that person's presence.

(11) Paragraph (10) does not apply where the inspector considers that that would be prejudicial to the national security of the United Kingdom.

Power to require the use of facilities and assistance

246. A power conferred by this Section includes power to require any person to provide any facilities or assistance relating to matters or things—

(a) within the person's control, or

(b) in relation to which the person has responsibilities,

which are needed in order to enable an inspector to exercise the power.

Power to issue contravention notice

247.—(1) This paragraph applies where an inspector is of the opinion that a person—

(a) is contravening, or has contravened—

(i) any of the conditions of a licence granted under the Act,

(ii) any provision of the Act or regulations made under the Act, or

(b) is conducting an activity that is likely to cause a contravention of—

(i) any of the conditions of a licence granted under the Act;

(ii) any provision of the Act or regulations made under the Act.

(2) The inspector may serve on that person a notice (a "contravention notice") identifying the contravention.

(3) The notice must—

(a) specify the relevant licence condition or provision of the Act or regulations, and

(b) state that the inspector is of the opinion mentioned in paragraph (1).

(4) The notice must specify a period within which it is in the inspector's opinion reasonable for the contravention to be remedied.

(5) The notice may include directions as to the measures to be taken to remedy the contravention identified in the notice.

Power to issue warning notice

248.—(1) This regulation applies where the conditions in paragraph (2) are met.

(2) The conditions are—

(a) a contravention notice has been issued to a person,

(b) the period specified under regulation 247(4) has expired, and

(c) the contravention identified in the notice has not been remedied in full.

(3) The inspector may serve on that person a notice (a "warning notice") informing that person of—

(a) the regulator's power to revoke, vary or suspend a licence under section 15;

(b) the regulator's power to give a direction under sections 27 and 28;

(c) the Secretary of State's power to give a direction under section 28;

(d) the inspector's power to give a prohibition notice under regulation 249.

(4) The notice must specify a period within which it is, in the inspector's opinion, reasonable for the contravention to be remedied.

(5) The notice may include directions as to the measures to be taken to remedy the contravention identified in the contravention notice.

Power to issue prohibition notice

249.—(1) This paragraph applies where the conditions in paragraph (2) are met.

(2) The conditions in this paragraph are—

(a) a warning notice has been served on a person,

(b) the period given in the warning notice has expired,

(c) the contravention identified in the contravention notice has not been remedied in full, and

(d) the inspector is of the opinion that that person—

(i) is carrying on activities which involve a risk to public safety or the national security of the United Kingdom, or

(ii) is likely to carry on activities which involve a risk to public safety or the national security of the United Kingdom.

(3) The inspector may serve on that person a notice (a "prohibition notice") directing the relevant person to stop carrying on the activities specified in the notice unless that person remedies the contravention complained of in the contravention notice.

(4) The notice must—

(a) state that the inspector is of the opinion mentioned in paragraph (2)(d), and why;

(b) specify the matters which in the inspector's opinion give rise, or will give rise, to the risk mentioned in that sub-paragraph.

(5) A prohibition notice takes effect—

(a) at the end of the period specified in the notice, or

(b) if the notice so specifies, immediately.

Appealing against notice under regulation 249

250. A prohibition notice must include information about the right of appeal against the notice.

Supplementary powers

251. A power conferred by this Section includes power to do anything incidental that is necessary for the inspector to fulfil the purpose of the inspector's appointment.

Protection for documents subject to legal professional privilege etc.

252. Nothing in this Section is to be taken to confer power to compel the production by any person of a document or information in respect of which—

(a) in England and Wales or Northern Ireland, a claim to legal professional privilege, or

(b) in Scotland, a claim to confidentiality of communications,

could be maintained in legal proceedings.

CHAPTER 4

Sharing of information between regulator and other bodies

Regulator may share information

253.—(1) The regulator may share the information listed in paragraph (2) with the following persons—

(a) the Secretary of State;

(b) a qualifying health and safety authority;

(c) the Defence Safety Authority;

(d) any other public authority or international organisation responsible for regulating any aspect of spaceflight activities;

(e) an appointed person(**a**),

for the purposes set out in section 26(2).

(2) The regulator may share the following information—

(a) information submitted to the regulator by a person making an application for a licence under the Act;

(b) information otherwise obtained by a regulator in respect of a person making an application for a licence under the Act;

(c) information submitted to or obtained by the regulator, or an inspector, in the exercise of powers under this Part.

CHAPTER 5

Restrictions on disclosure of information

SECTION 1

Prohibition against disclosure of protected information

Meaning of "protected information"

254.—(1) A reference in this Section to "protected information" means information which has been—

(a) obtained by the regulator or an inspector under this Part, or

(b) shared with any of the persons listed in regulation 253(1).

(2) Information is not protected information for the purposes of this Section if it has been disclosed or made available to the public lawfully from other sources.

Prohibition on disclosing protected information

255. Protected information must not be disclosed except in accordance with Section 2 of this Chapter.

Offence of disclosing protected information

256. It is an offence for a person to disclose information in contravention of regulation 255.

(**a**) See definition in section 16(1) of the Space Industry Act 2018.

Defences to offence of disclosing protected information

257. It is a defence for a person charged with an offence under regulation 256 to prove—

(a) that the person did not know, and had no reason to suspect, that the information disclosed was protected information, or

(b) that the person took all reasonable precautions, and exercised all due diligence, to avoid committing the offence.

Penalty for disclosing protected information

258. A person guilty of an offence under regulation 256 is liable—

(a) on summary conviction in England and Wales, to a fine;

(b) on summary conviction in Scotland or Northern Ireland, to a fine not exceeding the statutory maximum;

(c) on conviction on indictment, to imprisonment for a term not exceeding two years, or a fine, or both.

SECTION 2

Exceptions to prohibition against disclosure of protected information

Disclosure with consent

259. Regulation 255 does not prohibit disclosure of protected information if it is made with the consent of the person or body who provided or shared the information.

Disclosure by the regulator, inspectors etc.

260.—(1) Regulation 255 does not prohibit a disclosure of protected information by—

(a) the regulator,

(b) an inspector,

(c) any person referred to in regulation 253(1),

(d) any other public authority,

for the purposes set out in paragraph (2).

(2) Those purposes are—

(a) complying with any of that person's duties, or

(b) exercising their powers,

under the Act or any regulations made under the Act.

Disclosure to authorities

261.—(1) Regulation 255 does not prohibit a disclosure to a public or local authority, or an officer of that authority.

(2) Where protected information is disclosed by virtue of this paragraph, the person to whom the information is disclosed may only use the information for the purposes of the authority in question.

Disclosure required under legislation

262. Regulation 255 does not prohibit a disclosure of protected information which is made in accordance with an obligation under—

(a) the Freedom of Information Act 2000(**a**), or

(b) the Freedom of Information (Scotland) Act 2002(**b**).

Legal proceedings, inquiries and investigations

263.—(1) Regulation 255 does not prohibit a disclosure of protected information for the purposes of—

(a) any legal proceedings;

(b) an investigation under section 20;

(c) any report of such proceedings or investigation.

(2) Regulation 255 does not prohibit a disclosure of protected information which is made—

(a) by the regulator or an inspector, and

(b) for any of the purposes specified in section 17(2)(a) to (d) (criminal proceedings and investigation) of the Anti-terrorism, Crime and Security Act 2001(**c**).

Anonymised information

264. Regulation 255 does not prohibit a disclosure of protected information which is made in a form calculated to prevent a particular person or case, to whom the information relates, from being identified.

PART 15

Civil sanctions (stop notices)

Stop notices

265.—(1) A reference in this Part to a "stop notice" is to a notice prohibiting a person from carrying on an activity specified in the notice (the "activity") until the person has taken the steps specified in the notice.

(2) The regulator may serve a stop notice on any person (the "relevant person") in accordance with this Part.

(3) A stop notice may only be served in a case falling within paragraph (4) or (5).

(4) A case falling within this paragraph is a case where—

(a) the relevant person is carrying on the activity,

(b) the regulator reasonably believes that the activity as carried on by the relevant person is causing, or presents a significant risk of causing, serious harm to any of the matters referred to in paragraph (6), and

(c) the regulator reasonably believes that the activity as carried on by the relevant person involves or is likely to involve the commission by that person of an offence under the Act or under any regulations made under the Act (referred to in this Part as the "relevant offence").

(5) A case falling within this paragraph is a case where the regulator reasonably believes that—

(a) the relevant person is likely to carry on the activity,

(b) the activity as likely to be carried on by the relevant person will cause, or will present a significant risk of causing, serious harm to any of the matters referred to in paragraph (6), and

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(**a**) 2000 c. 36.
(**b**) 2002 asp 13.
(**c**) 2001 c. 24.

(c) the activity as likely to be carried on by the relevant person will involve, or will be likely to involve, the commission by that person of an offence under the Act or under any regulations made under the Act.

(6) The matters referred to in paragraphs (4)(b) and (5)(b) are—

(a) public safety;

(b) persons carried in spacecraft(**a**) or carrier aircraft(**b**);

(c) persons at work at spaceports, mission management facilities or sites used in connection with the provision of range control services;

(d) the interests of persons in relation to the use of land, sea and airspace;

(e) the interests of persons with interests in property carried by spacecraft.

(7) The steps referred to in paragraph (1) must be steps to remove or reduce the harm or risk of harm referred to in paragraphs (4)(b) or (5)(b).

Contents of stop notice

266. A stop notice must include information as to—

(a) the grounds for serving the notice,

(b) rights of appeal, and

(c) the consequences of non-compliance.

Completion certificate

267.—(1) Where, after service of the notice, the regulator is satisfied that the relevant person has taken the steps specified in the stop notice, the regulator must issue a certificate to that effect.

(2) A certificate under paragraph (1) is referred to in this Part as a "completion certificate".

(3) The stop notice ceases to have effect on the issue of a completion certificate.

(4) The relevant person may at any time apply for a completion certificate.

(5) The regulator must make a decision as to whether to issue a completion certificate within 14 days of that application.

Compensation

268.—(1) The regulator must compensate the relevant person for loss suffered as a result of the service of the stop notice or the refusal to issue a completion certificate if that person has suffered loss as a result of the notice or refusal and the conditions in paragraph (2) apply.

(2) The conditions referred to in paragraph (1) are—

(a) the relevant person makes a successful appeal against a decision to serve a stop notice or a decision not to issue a completion certificate;

(b) the power to issue the stop notice was not exercised as a result of any neglect or default of the relevant person.

Offence of failing to comply with stop notice

269.—(1) Where a relevant person does not comply with a stop notice within the time limit specified in the notice, that person is guilty of an offence and liable—

(a) on summary conviction in England and Wales, to a fine, or imprisonment for a term not exceeding 12 months, or both;

(**a**) See section 2(6) of the Space Industry Act 2018 for the definition of "spacecraft".
(**b**) See section 2(6) of the Space Industry Act 2018 for the definition of "carrier aircraft".

(b) on summary conviction in Scotland, to a fine not exceeding £20,000, or imprisonment for a term not exceeding 12 months, or both;

(c) on summary conviction in Northern Ireland, to a fine not exceeding £20,000, or imprisonment for a term not exceeding six months;

(d) on conviction on indictment, to imprisonment for a term not exceeding two years, or a fine, or both.

(2) In relation to an offence committed before the commencement of paragraph 24(2) of Schedule 22 (general limit on magistrates' court's powers to imprison) to the Sentencing Act 2020(**a**), the reference in paragraph (1)(a) to imprisonment for a term not exceeding 12 months is to be read as a reference to imprisonment for a term not exceeding six months.

PART 16

Occurrence reporting

CHAPTER 1

Interpretation

Interpretation

270. In this Part—

"Chief Inspector" means the Chief Inspector of Spaceflight Accidents appointed under regulation 6(2) (appointment of inspectors of spaceflight accidents) of the Spaceflight Activities (Investigation of Spaceflight Accidents) Regulations 2021(**b**);

"confidential information" includes—

(a) occurrence reports or any information referred to in those reports except to the extent that such information has been made public,

(b) material produced by the regulator and others assisting in the analysis of the occurrence or the exercise of the regulator's powers referred to in regulation 276(1)(b) such as notes and opinions expressed about the analysis of information,

(c) information and evidence about occurrences provided by SAIA,

(d) information and evidence about occurrences provided by any national or international body referred to in regulation 277(5)(h) if the arrangement referred to in that regulation provides that this material is to be treated as confidential information in accordance with this Part, and

(e) US technical data;

"injury" means personal injury;

"occurrence" means—

(a) a spaceflight accident,

(b) a major accident, or

(c) any other fortuitous or unexpected event arising out of or in the course of spaceflight activities or preparation for those activities, and occurring—

(i) in or over the United Kingdom, or

(ii) elsewhere if any of the circumstances referred to in regulation 273 apply,

which, if not corrected or addressed, could result in a spaceflight accident or a major accident;

(**a**) 2020 c. 17.
(**b**) S.I. 2021/****.

"police officer" means any person who is a member of—

(a) a police force,

(b) the Police Service of Northern Ireland, or

(c) the Police Service of Northern Ireland Reserve;

"staff of the regulator" means an employee or agent of the regulator.

CHAPTER 2

Duty to report an occurrence and the objective of that report

Duty to report an occurrence

271.—(1) A licensee must report an occurrence to the regulator.

(2) The occurrence report must be in writing and sent to the regulator within 72 hours of the time at which the licensee became aware of the occurrence.

(3) The licensee must prepare the occurrence report having regard to the objective of the report referred to in regulation 272.

Objective of an occurrence report

272. The sole objective of an occurrence report is the prevention of spaceflight accidents or major accidents, without the apportionment of blame or liability.

CHAPTER 3

Events elsewhere which could threaten safety

When an event elsewhere which could result in an accident is an occurrence

273.—(1) A fortuitous or unexpected event which occurs elsewhere than the United Kingdom is an occurrence within the meaning of paragraph (c)(ii) of the definition of "occurrence" in regulation 270 if any of the circumstances in paragraph (2) apply.

(2) The circumstances referred to in paragraph (1) are that the United Kingdom is the state—

(a) from which the launch vehicle or any carrier aircraft was launched,

(b) having jurisdiction over the organisation responsible for the design of the launch vehicle or any carrier aircraft,

(c) having jurisdiction over the organisation responsible for the manufacture or final assembly of the launch vehicle or any carrier aircraft, or of any components of that vehicle or aircraft,

(d) having jurisdiction over the organisation responsible for the maintenance of the launch vehicle or any carrier aircraft or any components of that vehicle or aircraft, or

(e) in which the licensee's principal place of business is located.

CHAPTER 4

Contents of the occurrence report

Contents of the occurrence report

274.—(1) The occurrence report must include—

(a) the name and address of the licensee,

(b) the role of the person within the licensee's organisation who has prepared the occurrence report on the licensee's behalf,

(c) the date of the occurrence report and the time when it was made,

(d) the date and time of the occurrence and where it took place,

(e) if any person has died or sustained an injury as a result of the occurrence—

(i) the number of such persons who have died,

(ii) the number of such persons who are injured,

(iii) a description of the injuries of such persons including any injuries which resulted in death,

(iv) if the person falls within the description of persons in regulation 40 (persons who are not members of the public), the description in that regulation which the person falls within,

(v) any other role or capacity of the person in connection with spaceflight activities, and

(vi) whether the person is a member of the public,

(f) whether the occurrence falls within one or more of Categories A to E described in regulation 275,

(g) a short description of the occurrence and the circumstances in which it happened,

(h) any action taken to prevent the occurrence happening again and improve safety relating to the operator's spaceflight activities, the operation of the spaceport or other place from which the launch is to take place or takes place or the provision of range control services following the occurrence,

(i) any notification of the occurrence to—

(i) the Chief Inspector of SAIA or to a police officer or, in relation to Scotland, a constable for the area where the occurrence took place, as required by regulation 7 of the Spaceflight Activities (Investigation of Spaceflight Accidents) Regulations 2021, and

(ii) any other national or international body investigating spaceflight accidents for the purposes of accident prevention, and

(j) if a body referred to in sub-paragraph (i) has been notified, the method by which that body was notified.

(2) In this regulation "member of the public" has the same meaning as its prescribed meaning for the purpose of section 10(a) given in regulation 39.

Categories of occurrence

275. For the purposes of regulation 274(1)(f), the categories of occurrence are occurrences related to—

(a) preparations for spaceflight activities at a spaceport or other place from which such preparations take place (Category A),

(b) the launch vehicle or any carrier aircraft, including a technical failure in such a vehicle or aircraft, during—

(i) preparations for the launch from the time when that vehicle or its component parts or that aircraft or its component parts arrive at the spaceport or other place from which the launch is to take place or takes place (Category B), or

(ii) the operator's spaceflight activities (Category B),

(c) a technical failure in the mission management facility or ground control at the spaceport or other place (Category C),

(d) failure in the provision of range control services (Category D), and

(e) human occupants (Category E).

CHAPTER 5

The regulator's actions when it receives an occurrence report

What the regulator must do on receipt of an occurrence report

276.—(1) As soon as reasonably practicable after receipt of an occurrence report, the regulator must—

(a) analyse the occurrence report, including comparing that report with any other occurrence reports which the regulator has received, so that any common trends of events described in the occurrence report are identified, and

(b) identify whether the regulator needs to exercise any of its powers contained in the Act or in regulations made under the Act to prevent or mitigate the risk of a spaceflight accident or a major accident from occurring.

(2) The regulator must retain the occurrence report.

CHAPTER 6

Confidential information

Protection of information and permitted disclosures

277.—(1) Confidential information may not be disclosed by—

(a) the licensee who reported the occurrence,

(b) any member of staff of the regulator,

(c) any person called upon to participate or assist in an analysis of an occurrence report or in the regulator exercising its powers referred to in regulation 276(1)(b), or

(d) any person who has received confidential information from a person referred to in sub-paragraph (a), (b) or (c),

except as provided for in this regulation or by order of the court under regulation 278.

(2) US technical data may only be disclosed with the consent of the Government of the United States after consultation between the regulator, the Secretary of State and the Government of the United States.

(3) Any disclosure made under this regulation must ensure that the anonymity of the licensee, the person who prepared the occurrence report on the licensee's behalf and any other person involved in an occurrence, is preserved.

(4) Subject to obtaining the consent required by paragraph (2) to disclose US technical data, the regulator may disclose confidential information to the persons referred to in paragraph (5) to the extent necessary for the purposes of—

(a) improving the safety of spaceflight activities, or

(b) preventing a spaceflight accident or a major accident.

(5) The persons referred to in this paragraph are—

(a) a licensee involved in an occurrence other than the licensee who reported the occurrence,

(b) the Secretary of State,

(c) persons responsible for the manufacture and maintenance of the launch vehicle or any carrier aircraft involved in the spaceflight accident,

(d) persons responsible for training,

(e) persons using a launch vehicle or a carrier aircraft of the same type as the launch vehicle or the carrier aircraft involved in the occurrence,

(f) a qualifying health and safety authority if—

(i) such an authority is providing the regulator with advice or assistance in response to a requirement imposed under section 21(1)(a), or

(ii) such an authority is performing a function that the authority is authorised to perform under section 21(1)(b),

(g) the Chief Inspector of SAIA or the investigator-in-charge, or

(h) any national or international body involved with spaceflight activities provided that—

(i) the regulator has in place an arrangement to disclose an occurrence report to such a body, and

(ii) the regulator does not disclose information which might create a conflict of interest between the bodies to whom the information is revealed and the objective of an occurrence report.

(6) Subject to obtaining the consent required by paragraph (2) to disclose US technical data, the Chief Inspector or the investigator-in-charge may refer to confidential information received from the regulator in accordance with paragraph (4) in a safety investigation report only to the extent necessary to permit the Chief Inspector or the investigator-in-charge to comply with their obligations under regulations 32 to 34 of the Spaceflight Activities (Investigation of Spaceflight Accidents) Regulations 2021.

Court application for disclosure

278.—(1) An application may be made to the court for permission—

(a) to disclose confidential information, or

(b) for confidential information to be disclosed.

(2) An application made under paragraph (1) must identify the confidential information which the person making the application wishes to disclose, or to be disclosed.

(3) Before making an order under paragraph (1), the court must be satisfied—

(a) that the disclosure of the confidential information identified in the application will not—

(i) disclose the identity of any person involved with the occurrence, or

(ii) damage the international relations of the United Kingdom, and

(b) that the benefits of disclosing that information outweigh the adverse domestic and international consequences that disclosure of that information might have on the reporting of occurrences to the regulator and any safety investigation to which the information relates or any future safety investigation.

(4) The jurisdiction conferred by this regulation may be exercised by—

(a) the High Court, or

(b) in Scotland, the Court of Session.

CHAPTER 7

Offences and penalties

Providing false information

279. Any person who, in purported compliance with regulation 271, makes a statement they know to be false in a material particular, or recklessly makes a statement that is false in a material particular, commits an offence.

Failure to protect confidential information

280.—(1) Any person who knowingly contravenes any of the prohibitions in regulation 277 commits an offence.

(2) Paragraph (1) does not apply where a person makes confidential information available to another person ("person A") in the following circumstances—

(a) in a case where person A is a party to, or otherwise entitled to appear at, judicial proceedings and the relevant court has ordered that confidential information must be made available to person A for the purposes of those proceedings;

(b) in any other case, where the relevant court has ordered that confidential information must be made available to person A for other specified purposes.

(3) The relevant court must not make an order under paragraph (2) unless it is satisfied that the benefits of the disclosure of the confidential information concerned outweigh the adverse domestic and international consequences which the disclosure might have on the reporting of occurrences or any safety investigation to which the information relates or any future safety investigation.

(4) In this regulation—

"judicial proceedings" includes any proceedings before any court, tribunal or person having by law power to hear, receive and examine evidence on oath;

"relevant court" means—

(a) in the case of judicial proceedings or an application for disclosure made in England, Wales or Northern Ireland, the High Court, and

(b) in the case of judicial proceedings or an application for disclosure made in Scotland, the Court of Session.

Penalties

281. A person who is guilty of an offence under regulation 279 or 280 is liable—

(a) on summary conviction in England and Wales, to a fine;

(b) on summary conviction in Scotland or Northern Ireland, to a fine not exceeding the statutory maximum;

(c) on conviction on indictment, to imprisonment for a term not exceeding two years, or a fine, or both.

PART 17

Miscellaneous

Duty on licensee to inform regulator of changes

282.—(1) A reference in this Part to a "relevant person" is to—

(a) a person applying for a licence under the Act, or

(b) a licensee.

(2) A relevant person must inform the regulator in writing as soon as possible of any material change in any of the information provided to the regulator by or on behalf of the relevant person, whether in or with the application for a licence or after the licence has been granted.

(3) Where the information referred to in paragraph (2) was provided by a person other than the relevant person, the obligation to inform the regulator of any material change in the information applies as soon as possible after the relevant person becomes aware—

(a) that the information in question was provided to the regulator, and

(b) of the change in the information.

Offence of failure to inform regulator of changes

283.—(1) It is an offence for a relevant person—

(a) to fail to comply with regulation 282, or

(b) in purported compliance with regulation 282, to make a statement or provide information they know to be false in a material particular, or recklessly to make such a statement or provide such information.

(2) It is a defence for a person charged with an offence under paragraph (1)(a) to show that they took all reasonable steps and exercised all due diligence to avoid committing the offence.

Penalty for failure to inform regulator of changes

284. A person who commits an offence under regulation 283 is liable—

(a) on summary conviction in England and Wales, to a fine;

(b) on summary conviction in Scotland or Northern Ireland, to a fine not exceeding the statutory maximum;

(c) on conviction on indictment, to imprisonment for a term not exceeding two years, or a fine, or both.

Sending of notices and other documents

285.—(1) Any notice or other document required or authorised by these Regulations to be provided (in whatever terms) to any person may be provided by—

(a) delivering it to that person in person,

(b) leaving it at that person's proper address, or

(c) sending it by post or by electronic means to that person's proper address.

(2) In the case of a body corporate, any such notice or document may be provided to a director of that body or to any other officer or employee of that body ("authorised person") who is authorised to accept such notices or documents on its behalf.

(3) For the purposes of this regulation, "proper address" means—

(a) in the case of a body corporate or its director or authorised person—

(i) the registered or principal office of that body, or

(ii) the email address of the secretary or clerk of that body, the director or the authorised person;

(b) in any other case, a person's last known address, which includes an email address.

(4) In this regulation references to an email address are to an email address which has not been withdrawn for the purposes of service.

Use of records and documentary evidence: prescribed persons

286.—(1) The following persons are prescribed persons for the purposes of section 66(1)—

(a) the Secretary of State;

(b) the regulator;

(c) an inspector appointed by the regulator under regulation 237 to act on the regulator's behalf for the purposes set out in section 26(2) (monitoring and enforcement).

(2) The following persons are prescribed persons for the purposes of section 66(3)—

(a) the Secretary of State;

(b) the regulator;

(c) a range control licensee;

(d) an operator;

(e) a spaceport licensee;

(f) a person employed by, or providing services to, a person referred to in sub-paragraph (c), (d) or (e).

Review

287.—(1) The Secretary of State must from time to time—

(a) carry out a review of the regulatory provision contained in these Regulations, and

(b) publish a report setting out the conclusions of the review.

(2) The first report must be published before the end of the period of five years beginning with the date on which these Regulations come into force.

(3) Subsequent reports must be published at intervals not exceeding five years.

(4) Section 30(4) of the Small Business, Enterprise and Employment Act 2015(**a**) requires that a report published under this regulation must, in particular—

(a) set out the objectives intended to be achieved by the regulatory provision referred to in paragraph (1)(a),

(b) assess the extent to which those objectives are achieved,

(c) assess whether those objectives remain appropriate, and

(d) if those objectives remain appropriate, assess the extent to which they could be achieved in another way which involves less onerous regulatory provision.

(5) In this regulation, "regulatory provision" has the same meaning as in sections 28 to 32 of the Small Business, Enterprise and Employment Act 2015 (see section 32 of that Act).

Signed by authority of the Secretary of State for Transport

Name
Parliamentary Under Secretary of State
Department for Transport

Date

SCHEDULE 1

Regulations 26, 27, 29

Information the safety case must contain

General information

1. A description of the proposed spaceflight activities including the proposed flight trajectory, any planned orbital parameters for the launch vehicle, any planned orbital parameters for any payload and details of any planned re-entry from orbit by the launch vehicle.

2. General descriptions of—

(a) the applicant's organisation and management structure;

(b) the launch vehicle to be used including descriptions and, where appropriate, diagrams of—

(i) its concept of operations,

(ii) any payload or class of payload, and

(iii) the layout of systems that are part of it;

(**a**) 2015 c. 26. Section 30(3) was amended by section 19 of the Enterprise Act 2016 (c. 12), and paragraph 36 of Schedule 8 to the European Union (Withdrawal) Act 2018 (c. 16).

(c) any carrier aircraft to be used including descriptions and, where appropriate, diagrams of—

(i) its concept of operations,

(ii) any payload or class of payload, and

(iii) the layout of systems that are part of it;

(d) the facilities and major items of equipment that the applicant will need to carry out the proposed spaceflight activities, and which, if any, of these will be provided by a proposed spaceport licensee or by a proposed range control service provider;

(e) the areas which could be affected by a major accident during the proposed spaceflight activities, including—

(i) their geography,

(ii) any structures in them built by humans or built for human use or benefit, and

(iii) the existing and expected locations of humans and areas of habitation within those areas.

3. For launch operator licence applicants, identification of the spaceport or other place from which the launch is to take place and the proposed spaceport licensee.

4. Identification of—

(a) any range control services needed;

(b) any proposed range control service providers;

(c) any site or facility other than a spaceport that has been or is to be used by the applicant in the design, manufacture, testing or operation of the applicant's launch vehicle or any carrier aircraft.

5.—(1) For launch operator licence applicants—

(a) a schedule of the preparatory events mentioned in the ground safety analysis required by regulation 27 setting out how long before the launch each preparatory event is intended to take place;

(b) the review processes the applicant will use to check—

(i) that launch preparations are progressing safely, and

(ii) whether the applicant and any other licensees involved in the launch are ready to commence the launch;

(c) a schedule of any safety-critical actions the proposed range control service provider and the proposed spaceport licensee will carry out in preparation 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.

(2) In this paragraph, "safety-critical action" means any action which is essential to preventing the proposed spaceflight activities from causing a major accident.

6. Evidence that the applicant will, if granted the licence, be able to meet the requirements of regulations 84 to 104 of Part 8 (safety of operator's spaceflight activities).

7. Details of the applicant's safety management system for the proposed spaceflight activities.

8. Particulars of any licence, permit or approval that any country other than the United Kingdom has granted to the applicant in relation to the proposed spaceflight activities or a launch vehicle that the applicant plans to use for those activities.

9. Information about what applications, if any, the applicant has previously made for a licence or approval to carry out spaceflight activities similar to the proposed spaceflight activities, and what the outcome was of each of those applications.

10. Information about the applicant's experience, if any, in the design, development or operation of launch vehicles, payloads or any other space-related hardware or software.

Technical particulars

11. Descriptions of the technical requirements which apply to the launch vehicle, which must be either—

(a) the requirements described under the headings of technical requirements types contained in Chapter 6 of the Space Engineering Technical Requirements Specification produced by the European Cooperation for Space Standardisation and dated 6th March 2009(**a**), or

(b) requirements of substantially like effect to the requirements referred to in sub-paragraph (a).

12.—(1) For each safety-critical system used in the proposed spaceflight activities—

(a) a description, drawing and schematic diagram of the system;

(b) a statement of the system's purpose;

(c) documentation justifying the choice of design for that system;

(d) a description of each way that system could fail;

(e) predicted probabilities of failure and, where known, failure frequencies;

(f) predicted consequences of failure;

(g) a description of any method used to check that the applicant has correctly identified the environment within which the system is expected to operate;

(h) a description of the methods used to—

(i) design, test and qualify the system;

(ii) accept the system hardware and any software for use;

(iii) determine the service life of the system and the major phases of its lifecycle;

(i) the criteria and procedures for disposal or refurbishment of the system or its major components;

(j) a description of any standards used in paragraphs (a) to (i).

(2) In this paragraph, "safety-critical system" means any system, including hardware and software, the performance of which is essential to preventing a major accident as a result of the proposed spaceflight activities.

13. A description of the engineering practices used in the design, manufacture, assembly and operation of the launch vehicle including of—

(a) the design and analysis tools used;

(b) any national or international design, engineering or safety standards followed;

(c) test, validation and verification procedures undertaken or to be undertaken as required by regulation 94.

14. A description of the engineering practices and design and operational measures that will be used to prevent or mitigate the creation of space debris during the proposed spaceflight activities, including identification of methods for verifying and validating those practices and measures.

15. Descriptions of any hazardous material that is part of the launch vehicle or payload or is to be carried on board the launch vehicle during the proposed spaceflight activities.

(**a**) ECSS-E-ST-10-06C (https://ecss.nl/standard/ecss-e-st-10-06c-technical-requirements-specification). The specification is annexed to the guidance for launch operator and return operator applicants and licensees, available on the CAA's website (www.caa.co.uk). A paper copy of that guidance may be requested by writing to the CAA at Aviation House, Beehive Ringroad, Crawley, West Sussex RH6 0YR.

16. For any payload that the launch vehicle will carry, technical particulars relevant to the risk of a major accident, including—

(a) descriptions of any systems on board the payload that are required for the basic operation of the payload or necessary to carry out its intended mission;

(b) information about any hazardous material or any equipment or device carried on board the payload that could give rise to a major accident hazard;

(c) a description of any ground support equipment needed for the payload or its integration with the launch vehicle;

(d) information about any essential interface between the payload and specific equipment at the place of launch.

17. Technical particulars of and performance data for any carrier aircraft intended to be used, including any existing aircraft certification or permit.

Flight safety analysis

18.—(1) The hazards mentioned in regulation 26(2) which the applicant must consider in carrying out the flight safety analysis are—

(a) blast overpressure;

(b) fragmentation debris;

(c) thermal radiation;

(d) toxic release;

(e) major accident hazards arising from—

(i) any discarded part of the launch vehicle and any object, including any payload, released or separated from the launch vehicle;

(ii) collision with a space object;

(iii) meteorological or environmental conditions;

(iv) the use of a carrier aircraft, if applicable;

(v) re-entry of the launch vehicle, or any part of it, from orbit, if applicable.

(2) The matters mentioned in regulation 26(3) which the applicant must take into account in carrying out the flight safety analysis are—

(a) the locations of individuals who could be harmed by any of the identified hazards;

(b) the applicant's own and each proposed range control service provider's capabilities in—

(i) tracking;

(ii) telemetry;

(iii) communications;

(c) how any flight safety system will be activated if its activation is necessary;

(d) how the applicant will coordinate and communicate with air traffic control service providers, meteorological information providers and emergency services;

(e) any legal requirements relevant to the applicant's proposed use of airspace;

(f) information available about any known space object with which there is a risk of the launch vehicle colliding.

Ground safety analysis

19. The hazards mentioned in regulation 27(5) which the applicant must consider in carrying out the ground safety analysis are—

(a) blast overpressure;

(b) fragmentation debris;

(c) thermal radiation;

(d) toxic release;

(e) major accident hazards arising from—

(i) hazardous material;

(ii) contamination of hazardous material intended for use in the launch vehicle;

(iii) impact damage and mechanical damage;

(iv) meteorological or environmental conditions;

(v) sources of electrical discharge.

SCHEDULE 2

Regulation 32

Matters applicant must take into account for the risk assessment

The applicant must consider all hazards that could cause a human occupant to experience or undergo any of the following—

(a) disorientation;

(b) acceleration;

(c) free-falling in circumstances equivalent to reduced gravity;

(d) excessive noise or vibration;

(e) anxiety, claustrophobia or other conditions caused by restrictions on individual mobility or reduced ability to use the senses during spaceflight activities;

(f) loss of, or a reduction in the level of, launch vehicle pressurisation;

(g) depleted levels of oxygen and decompression sickness;

(h) fire, smoke or other emergency on board the launch vehicle which contaminates the supply of oxygen;

(i) evacuation of the launch vehicle;

(j) activation of a flight safety system.

SCHEDULE 3

Regulations 56, 66, 69

Training and qualification

PART 1

Specified criteria

Launch directors

1. A launch director ("LD") must have a detailed knowledge and understanding of—

(a) the operator's spaceflight activities, including the operation of the launch vehicle and any carrier aircraft and all matters which may affect the safety of the launch;

(b) the responsibilities of the LD in relation to the licence of the spaceflight operator and any conditions imposed on that licence;

(c) all launch procedures and spaceflight procedures throughout all phases of the flight, including under both normal conditions and abnormal conditions, including emergency situations;

(d) in cases where the operator's spaceflight activities require a flight safety system, the flight safety system, including autonomous flight safety systems and manual systems, and the circumstances and conditions for use of the flight safety system.

2. The LD must be able to demonstrate an ability to deal with both planned and unplanned events during—

(a) a launch, or a series of simulated launches, and

(b) flights,

in accordance with the procedures established by the spaceflight operator.

3. The LD must have the ability to organise and lead personnel of the spaceflight operator working on the launch, and any other staff involved with monitoring in real time the launch vehicle's trajectory, performance or safe condition for continued flight.

4. The LD must have a comprehensive knowledge of pre-flight, flight and post-flight activities, including safety-critical ground operations and the role and functions of any sub-contractors and other agencies involved during the operator's spaceflight activities.

5. The LD must have a clear understanding of—

(a) the role of the safety manager,

(b) the regulatory matters pertaining to the operator's spaceflight activities,

(c) the role of regulatory officials during launch and spaceflight activities, and

(d) the processes involved in gaining final approval for launch.

6. The LD must have participated in practical training, which must include mission rehearsals, and either—

(a) participating in actual launch activities under the supervision of a qualified LD, or

(b) simulations of any circumstances where the trainee LD was forbidden from participating in actual launch activities under paragraph 7.

7. A trainee LD may not be given any role in relation to an actual launch if this could adversely affect flight safety.

Flight termination personnel

8. Every member of the flight termination personnel ("MFTP") must have the knowledge, skill and ability to operate a manual flight safety system in accordance with the safety regulations in Part 8.

9. The MFTP must be familiar with—

(a) the spaceport or other place from which the launch is to take place or takes place, the launch vehicle and equipment used in the operator's spaceflight activities, and

(b) the flight-safety functions and procedures which relate to the operator's spaceflight activities.

10. The MFTP must have completed—

(a) training designed for each mission in which the MFTP is to participate, and

(b) launch and spaceflight simulation exercises and rehearsals designed to test the flight termination criteria, the flight safety data display integrity and the performance of the MFTPs for the flight in both normal and abnormal conditions, including emergency situations.

11. All MFTPs who monitor launch vehicle performance and perform flight termination, or oversee an automated flight safety system which performs these functions, must have detailed knowledge of—

(a) the application of safety support systems such as position-tracking sources, communications, telemetry and system redundancy,

(b) the technology and scientific principles associated with the flight safety systems used by the spaceflight operator, including hardware and software and any command destruct function,

(c) the principles of radio frequency transmission, propagation, reception and attenuation,

(d) the behaviour of ballistic and aerodynamic vehicles in flight under the influence of aerodynamic forces, and

(e) the application of safety regulations in Part 8 and the procedures set out in the safety operations manual so far as they apply to flight termination.

12. The MFTP must also be capable of resolving, where possible, malfunctions in the flight safety systems used by the spaceflight operator, and be aware of the procedures to be followed if malfunctions cannot be resolved.

Flight crew and remote pilots

13. Every member of the flight crew ("MFC") and remote pilot must be able to demonstrate their ability to operate the launch vehicle and to perform their assigned functions competently and safely throughout all phases of the flight in both normal and abnormal conditions, including emergency situations.

14.—(1) An MFC of a sub-orbital aircraft must, subject to paragraph (3), hold—

(a) a commercial pilot's licence with an instrument rating, issued by the CAA, or

(b) an ICAO compliant commercial pilot's licence with instrument rating,

which, subject to paragraph (2), has a valid type-rating for at least one type of turbo-jet aircraft.

(2) The MFC may hold a licence within paragraph (1)(a) or (b) which does not have a valid type-rating for a type of turbo-jet aircraft if the MFC can provide evidence that the MFC is, or has been, qualified to fly a military turbo-jet aircraft.

(3) An MFC who is a pilot of a launch vehicle which is a balloon must hold—

(a) a commercial pilot's licence for balloons issued by the CAA, or

(b) an ICAO compliant commercial pilot's licence for balloons.

(4) A remote pilot must have any qualifications required by the regulator by conditions included in the spaceflight operator's licence.

15.—(1) Pilots and remote pilots must possess the aeronautical knowledge, experience and skills necessary to pilot and control the launch vehicle within airspace having the same classification as the airspace in which the launch vehicle will be operating, including in the vicinity of spaceports and airports.

(2) For the purposes of sub-paragraph (1), aeronautical experience may include hours in flight and hours under instruction.

16.—(1) An MFC expecting to act as a pilot in command of a flight in which a spaceflight participant is to be carried (a "participant spaceflight"), must have undertaken one actual or simulated spaceflight in a launch vehicle of the same type as the spaceflight operator's launch vehicle as a member of the flight crew within the period of 14 days ending on the day before the participant spaceflight (the "relevant period").

(2) A remote pilot who intends to act as a remote pilot in command of a participant spaceflight must have undertaken one actual or simulated spaceflight in a launch vehicle of the same type as the spaceflight operator's launch vehicle as a remote pilot within the relevant period.

17. An MFC must be able to demonstrate the MFC's ability to withstand the mental and physical stresses of spaceflight including disorientation, illusory effects, rapid acceleration,

microgravity, noise and vibration, in sufficient condition to be able to operate the launch vehicle throughout all phases of flight safely and competently.

18.—(1) An MFC of a launch vehicle other than a balloon must be able to demonstrate an ability to perform tasks, equivalent in complexity to those which would be performed in flight, while exposed to the mental and physical stresses of rapid acceleration.

(2) Whether the MFC satisfies the criteria in sub-paragraph (1) must be tested in a centrifuge device or an aircraft, or in a combination of the two, that is able to replicate the effects on the human body of the forces of acceleration, the rate of change of those forces and their duration, in conditions equivalent to the periods of the flight when those forces are most acute.

19. An MFC and a remote pilot must hold a flight radiotelephony operator's licence for the area of operation of the licensee's spaceflight activities, which certifies that they have language proficiency in English to level 6, in accordance with Appendix 2 to the Aircrew Regulation.

20. An MFC must have previous experience as a member of the flight crew or as a remote pilot in a launch vehicle or aircraft that exposed the MFC—

(a) to a workload which is equivalent to that expected of an MFC or a remote pilot undertaking the spaceflight activities, and

(b) to effects on the body of rapid onset and diminution of acceleration at least equivalent to those which would be experienced during a typical flight of the spaceflight operator's launch vehicle.

Sub-orbital aircraft engineers

21.—(1) A sub-orbital aircraft engineer for a sub-orbital aircraft intended to carry humans must hold—

(a) an aircraft engineer's licence issued by the CAA which is relevant to turbo-jet powered aircraft, or

(b) an equivalent ICAO compliant aircraft maintenance engineer's licence.

(2) The sub-orbital aircraft engineer referred to in sub-paragraph (1) must be able to demonstrate an ability to carry out any inspections and functional checks and to review any information, which are necessary to confirm that the launch vehicle complies with conditions referred to in regulation 99 in so far as readiness of the launch vehicle to launch is concerned.

Range operations manager

22. A range operations manager ("ROM") must be able to demonstrate competence in—

(a) coordinating arrangements for the activation and operation of the range, and

(b) ensuring—

(i) that range functions of a mission are carried out in accordance with the terms and conditions of the range control licence, and

(ii) effective functioning of range operation and personnel in support of the spaceflight activities.

23. The ROM must ensure that the ROM's team has completed mission-specific training so that the team is ready to support the spaceflight activities involved in a mission.

24. The ROM must have experience in a similar or related role in another organisation.

Range safety manager

25. A range safety manager ("RSM") must have completed—

(a) mission-specific training to ensure that the team is ready for a mission, and

(b) launch and spaceflight simulation exercises and rehearsals covering both normal and abnormal conditions, including emergency situations, designed to test—

(i) range safety personnel performance,

(ii) flight termination criteria, and

(iii) flight safety data-display integrity.

26. The RSM must be able to demonstrate familiarity with the range, spaceport or other place from which the launch is to take place or takes place, launch vehicle and the flight safety system functions, equipment and procedures related to the operator's spaceflight activities.

27. Where the RSM is to be responsible for operating, or for overseeing the operation of, the flight safety system, the RSM must be able to demonstrate the knowledge, skill and ability necessary to operate that system, or, in the case of an autonomous flight safety system, to oversee the operation of that system.

28. The RSM must be able to demonstrate detailed knowledge of—

(a) the application of safety support systems such as position-tracking sources, communications, telemetry and system redundancy,

(b) the technology and scientific principles associated with the flight safety system to be used by the spaceflight operator, including hardware and software and any command destruct function,

(c) the principles of radio frequency transmission, propagation, reception and attenuation,

(d) the behaviour of ballistic and aerodynamic vehicles in flight under the influence of aerodynamic forces, and

(e) the application of safety regulations in Part 8 and the procedures set out in the safety operations manual so far as they apply to flight termination.

29. The RSM must also be capable of resolving malfunctions in flight safety systems used by the spaceflight operator and be aware of the procedures to be followed if malfunctions cannot be resolved.

PART 2

Training manual

30. The training manual must contain the matters set out in paragraphs 31 to 47.

31. The training policy of the licensee, including guidance on objective assessment, the need for impartiality, and what provision is made for independent confirmation that an individual meets the required standard of competency.

32. The responsibilities of the training manager.

33. The responsibilities of instructors carrying out any part of the training programme.

34. Information for instructors on the training programme, including—

(a) the syllabus and content for each course on the training programme,

(b) what assessments are to be carried out on the training programme, and

(c) the facilities, equipment and instructional material to be used on each course on the training programme.

35. The locations where any training is to be carried out.

36. The procedures established by the licensee to satisfy its obligations under regulation 72(1), and, where the licensee will be undertaking spaceflight activities with individuals on board a

launch vehicle, to enable crew members and spaceflight participants to satisfy their obligations under Chapter 5 of Part 8.

37. The entry requirements for applicants for each role.

38. The procedures to be adopted for determining that an individual has met the required standard of competency to undertake a role, and for recording that fact.

39. A full description of the training programme, including—

(a) a schedule of all the training provided, indicating—

(i) the priority and sequence of courses of training,

(ii) the intervals at which recurrent training will be provided, and

(iii) when assessments will be carried out;

(b) a statement of the standards, objectives and training goals for each course of training included in the training programme, setting out—

(i) what training is provided, at each level referred to in regulation 69(3)(a),

(ii) who will be providing the training,

(iii) when practical instruction, in the form of group training, exercises and simulations, will be used,

(iv) what theoretical instruction will be given, and

(v) what criteria a participant has to satisfy to pass a course, and

(c) a description of—

(i) any aircraft referred to in regulation 70(3), and

(ii) any simulated training devices or other equipment referred to in regulation 71,

which is used in any of the training given on the training programme, and how it is intended to be used in the training programme.

40. A full description of the arrangements made for undertaking mission rehearsals in compliance with regulation 70(5), including the time at which mission simulations are held, and who participates in them.

41. A statement describing any arrangements which have been made with a third party for the provision of any services or equipment by the third party, setting out precisely what services or equipment are to be provided by that third party.

42. A statement of how the licensee, other than a spaceport licensee, will ensure that relevant individuals, before undertaking any role in relation to licensed activities, have undertaken the required training, and have reached the required level of competence and medical fitness for their roles, including—

(a) a description of the procedures for testing the competency of relevant individuals, and the standards to be applied in relation to each role;

(b) the procedures for medical assessments and medical examinations.

43. A statement of the policy in relation to individuals who do not fully complete training, fail a competency test, or withdraw or are withdrawn from training.

44. Where the licensee will be undertaking spaceflight activities with individuals on board a launch vehicle, the informed consent procedures applying to the crew and any spaceflight participants.

45. The procedures of the licensee, other than a spaceport licensee, for recording results of training undertaken by relevant individuals, and keeping the records of those results, including the measures being taken to ensure the confidentiality of personal information.

46. The measures being taken to assess the performance of training instructors and to review the adequacy and suitability of the training being provided.

47. A section setting out the measures the licensee is taking to satisfy the medical requirements in these Regulations which apply to the licensee's activities, which must, where appropriate to those activities, contain—

(a) the licensee's policy in relation to medical fitness;

(b) information on the responsibilities of the licensee, and the training manager in relation to medical fitness under regulations 58(6)(c) and 58(7)(b), 63(1)(a), and 72 to 77;

(c) information on the responsibilities of the aeromedical examiner and medical staff taking part in the licensee's medical programme;

(d) the medical requirements for any flight crew, remote pilots and spaceflight participants under this Part;

(e) the obligations of any flight crew, remote pilots and spaceflight participants under regulations 72 to 77;

(f) information for approved medical examiners, any flight crew and spaceflight participants and their medical advisers on—

(i) when medical examinations and assessments will be held, and how they will be conducted;

(ii) where medical examinations will be conducted, and what equipment and facilities are available for them;

(iii) what medical reports will be required for the purpose of medical assessments;

(iv) what conditions may be imposed on a certificate or confirmation of medical fitness under regulation 73(6);

(g) a list of the medical records kept by the licensee under regulation 77.

PART 3

Training for specified roles and capacities

48. Every member of the crew and remote pilot must have received the training described in paragraphs 49 and 50 before they are assigned duties on board a launch vehicle or, in the case of a remote pilot, permitted to pilot a launch vehicle remotely.

49. Every member of the crew and remote pilot must receive theoretical and practical training on—

(a) all matters where coordination between members of the crew, remote piloting staff and spaceflight participants is critical to dealing effectively with normal and abnormal situations, including emergency situations, and

(b) the location and use of the launch vehicle's emergency equipment including the procedures for evacuating the launch vehicle, and for these purposes, "emergency equipment" has the same meaning as in regulation 112(3).

50. Every member of the crew and spaceflight participant must receive training in withstanding the stresses of spaceflight activities, including training on—

(a) the causes of disorientation, and what effects of disorientation may be experienced by crew and spaceflight participants during the various phases of flight,

(b) what physical effects may be experienced as a result of—

(i) gradual or instantaneous acceleration, and

(ii) free-falling in circumstances equivalent to reduced gravity, and

how those effects may be mitigated,

(c) how to reduce the effects of excessive noise and vibration, including the methods and equipment available for this purpose,

(d) techniques available for countering anxiety, claustrophobia and other conditions which may be caused by restrictions on individual mobility or reduced ability to use the senses during spaceflight,

(e) procedures for a loss of launch vehicle pressurisation, or a reduction in the level of launch vehicle pressurisation, including how to deal with depleted levels of oxygen and decompression sickness,

(f) procedures for dealing with fires, smoke or other emergencies on board the launch vehicle when the supply of oxygen becomes contaminated, and

(g) survival techniques following an evacuation, including basic first aid, so far as relevant to the operator's intended spaceflight activities.

51. Every member of the crew and remote pilot must receive training in—

(a) co-ordination of the crew,

(b) the extent to which human error may affect the safety and efficiency of spaceflight activities, and how this may be mitigated, and

(c) the identification and carriage of hazardous material or dangerous goods.

52. Every spaceflight participant must receive training in—

(a) what functions, if any, they are directly responsible for,

(b) how these functions relate to the functions of others on board the launch vehicle, particularly during abnormal or emergency conditions,

(c) entering and leaving the launch vehicle and the actions to be taken on board the launch vehicle during all phases of the flight,

(d) the instructions to be complied with in relation to any direction from the crew,

(e) what hazardous forms of activity are forbidden during training and during the spaceflight activities,

(f) the use of any personal protective equipment,

(g) the location and use of the launch vehicle's emergency equipment, and

(h) the procedures for evacuating the launch vehicle.

SCHEDULE 4

Regulations 85 and 163

Requirements and matters to be addressed by safety management systems

1. In this Schedule—

"emergency response plan" means the plan referred to in regulation 104 (in the case of a spaceflight operator) and in regulation 165 (in the case of a spaceport licensee);

"licensed activities" means the activities which a person is authorised to carry out by virtue of a launch operator licence, a return operator licence or a spaceport licence;

"licensee" means a person who holds a launch operator licence, a return operator licence or a spaceport licence under the Act;

"safety-critical information" means any information which is essential to the licensee satisfying its safety duty;

"safety duty" is to be construed in accordance with—

(a) regulation 79, in the case of a spaceflight operator,

(b) regulation 152, in the case of a spaceport licensee;

"security risk assessment" means the assessment required under—

(a) regulation 170(5)(f), in the case of a spaceport licensee,

(b) regulation 171(5)(f), in the case of a spaceflight operator, and

(c) regulation 185(2)(f), in the case of either a spaceport licensee or a spaceflight operator.

2. A safety management system must—

(a) be proportionate to the hazards, licensed activities and complexity of the licensee's organisation,

(b) be based on an assessment of the risks,

(c) include within its scope the general management system, including the organisational structure, responsibilities, practices, procedures, processes and resources for determining and implementing the licensee's spaceflight safety policy, and

(d) be coordinated with the safety management system of any other licensee or other organisation with whom the licensee must interact during the provision of its licensed activities.

3. A safety management system must include a written spaceflight safety policy which—

(a) is proportionate to the licensee's safety duty,

(b) sets out the licensee's overall aims and principles of action,

(c) sets out the role and responsibility of management, and its commitment towards continuously improving the licensee's safety performance,

(d) sets out a direct accountability for safety on the part of senior management, and

(e) is signed by the accountable manager.

4. The following matters must be addressed by the safety management system—

(a) in relation to the organisation and personnel—

(i) the safety roles and responsibilities of personnel involved in the management of major accident hazards at all levels in the organisation,

(ii) where relevant, the safety roles and responsibilities of personnel involved in the management of risks to human occupants at all levels in the organisation,

(iii) the identification of the training needs of personnel in paragraphs (i) and (ii), and the provision of the training with reference to the training management system the licensee has in place under regulation 58(8),

(iv) the measures taken to raise awareness of the purpose and content of the licensee's spaceflight safety policy amongst such personnel,

(v) the communication of safety-critical information, and

(vi) the involvement of employees and agents involved in the licensed activities, who are important from the point of view of safety;

(b) the identification and evaluation of major accident hazards by the adoption and implementation of procedures which—

(i) systematically identify those hazards,

(ii) assess their likelihood and severity,

(iii) take into account human factors in the initiation, prevention, control and mitigation of the consequences of those hazards, and

(iv) take into account the security risk assessment;

(c) where relevant, the identification and evaluation of risks to human occupants by the adoption and implementation of procedures which—

(i) systematically identify the risks to those occupants,

(ii) assess their likelihood and severity,

(iii) take into account human factors in the initiation, prevention, control and mitigation of the consequences of those risks, and

(iv) take into account the security risk assessment;

(d) in relation to operational control—

(i) the adoption and implementation of procedures which take account of human factors and instructions for—

(aa) safe operation including condition monitoring and maintenance of facilities or infrastructure and equipment;

(bb) where relevant, safe assembly and integration, including condition monitoring and maintenance of launch vehicles;

(ii) the taking into account of available information on best practices for monitoring and control, with a view to reducing the risk of system failure;

(e) in relation to the management of change, the adoption and implementation of procedures which take account of human factors, for planning changes to licensed activities or organisational change;

(f) in relation to planning for emergencies—

(i) the adoption and implementation of procedures to identify foreseeable emergencies by systematic analysis,

(ii) the preparation, testing and review of the emergency response plan, and

(iii) the provision of specific training for all personnel working in the licensee's organisation, including relevant subcontracted personnel;

(g) in relation to monitoring performance, the adoption and implementation of procedures, which must include the matters referred to in paragraph 5, for—

(i) the ongoing assessment of compliance with the objectives set by the licensee's spaceflight safety policy and safety management system, and

(ii) the mechanisms for investigation and taking corrective action in case of non-compliance or sub-standard safety performance of the safety management system;

(h) in relation to audit and review—

(i) the adoption and implementation of procedures for periodic systematic assessment of the licensee's spaceflight safety policy and the effectiveness and suitability of the safety management system;

(ii) the documented review of performance of the safety policy and safety management system and its updating by senior management, including consideration and incorporation of necessary changes indicated by the audit and review.

5. The procedures referred to in paragraph 4(g)—

(a) must cover the licensee's system for internal reporting of occurrences, particularly those involving failure of protective measures, and their investigation and follow-up on the basis of lessons learned, and

(b) may include performance indicators such as safety performance indicators or other relevant indicators.

SCHEDULE 5

Regulation 90

Safety operations manual

1. Where the operator's spaceflight activities are authorised by—

(a) a launch operator licence, the safety operations manual must contain the matters set out in paragraphs 2 to 27;

(b) a return operator licence, the safety operations manual must contain the matters set out in paragraphs 3 to 6, 7(1)(l), 8, 9, 14, 15, 17 and 20 to 27,

in so far as relevant to the operator's spaceflight activities which are authorised by the launch operator licence or the return operator licence.

2. The manual must—

(a) where necessary, include or refer to information relating to the instructions and procedures referred to in this Schedule, and

(b) take into account any human factors relevant to the performance of those procedures and instructions by members of the operating staff and, if the launch vehicle has a spaceflight participant on board, that participant.

Fatigue and other human factors

3. Instructions and procedures that take account of the effects of fatigue and other human factors related to the ability of any member of the operating staff to carry out their spaceflight duties safely.

4. If the launch vehicle has a crew, information about the limitations on flight time, flight duty periods and rest periods for members of the crew and any other matter intended to manage the effects of spaceflight on the human body and to ensure that the crew comply with the requirement in regulation 74.

5. If the launch vehicle has a remote pilot, information about the limitations on flight time, flight duty periods and rest periods for remote pilots and to ensure that the remote pilot complies with the requirement in regulation 74.

6. Details of the safety management system which the spaceflight operator has put in place and which satisfies the requirements in regulation 85 and Schedule 4.

Preparations for launch, return and other operations

7.—(1) Instructions and procedures about—

(a) the arrival of the launch vehicle at the spaceport or other place from which the launch is to take place;

(b) storing the launch vehicle at the spaceport or other place from which the launch is to take place;

(c) the assembly and integration of any component parts of the launch vehicle including any instructions from the design authority or a person who manufactured the launch vehicle or any of its component parts;

(d) if a launch vehicle is to be reused, satisfying the requirements in regulations 91 to 93;

(e) the verification and validation of the launch vehicle to satisfy the requirement in regulation 94;

(f) the integration of any payload with the launch vehicle;

(g) the loading of any hazardous material onto the launch vehicle;

(h) the meteorological and environmental conditions needed to safely load such material;

(i) the preparations for the use of any carrier aircraft;

(j) moving the launch vehicle to the place of launch at the spaceport or other place from which the launch is to take place and finally preparing the launch vehicle;

(k) carrying out safety, technical and organisational reviews, including joint procedures for carrying out such reviews, to check—

(i) the progress of launch preparations,

(ii) the fitness of the launch vehicle for the operator's spaceflight activities,

(iii) the fitness of the ground support equipment for supporting those activities, and

(iv) the readiness for use of any flight safety system or any necessary equipment for providing range control services;

(l) to ensure the requirements in regulation 96 are satisfied, coordinating and communicating, including joint procedures for coordinating and communicating, with—

(i) the range control service provider and any site or other place used in connection with the provision of range control services,

(ii) the spaceport licensee,

(iii) the relevant meteorological service providers,

(iv) the relevant air navigation service providers, and

(v) the relevant emergency services.

(2) In this paragraph "design authority" means the person with responsibility for the design of the launch vehicle.

8. Instructions and procedures for complying with the operator security programme.

9. Instructions about the functions and procedures of a mission management facility or ground control at a spaceport or other place and how such functions and procedures affect the duties of a member of the operating staff.

10. Instructions and procedures for ground operating staff about the types of dangerous conditions or events necessitating such staff to cease work on the launch vehicle or its ground support equipment and withdraw to a safe location.

11. Instructions and procedures for monitoring the progress of the preparations for readiness to launch.

12. Procedures for notifying the regulator about planned operator's spaceflight activities and for arranging and cooperating with any inspections by the regulator of the launch vehicle, carrier aircraft, any ground support equipment or other equipment.

13. Instructions as to the order of the activities and safety procedures to be followed by ground operating staff on the day of the launch.

14. Instructions and procedures about recording in writing the environmental and meteorological information referred to in regulation 97, including the source of that information.

Launch and other operations

15. Instructions and procedures about the conditions referred to in regulation 99 and how to satisfy them.

16. Instructions and procedures about the steps to be taken if a launch cannot safely commence.

17. Instructions and procedures about the steps to be followed during each phase of the flight of the launch vehicle and other operator's spaceflight activities, including any phase when that vehicle is in orbit, to ensure that the spaceflight operator satisfies the requirements in regulations 100 and 101.

18. Instructions about the process to be followed before a flight termination decision is made in accordance with regulation 100(2).

19. If there is a flight safety system—

(a) instructions and procedures to ensure that the system is capable of operating correctly and of being activated at any time in accordance with sub-paragraphs (c) to (e);

(b) instructions and procedures about how to separate flight termination decisions and the actions of flight termination personnel relating to those decisions from the decisions and actions of other operating staff during launch and flight;

(c) instructions to flight termination personnel relating to any time that a launch vehicle malfunctions and that malfunction prevents the operator's spaceflight activities being carried out safely;

(d) instructions relating to any time that a system—

(i) used to monitor whether or not the launch vehicle remains fit for the operator's spaceflight activities, or

(ii) used to detect a malfunction,

fails and that failure threatens the carrying out of the operator's spaceflight activities safely;

(e) instructions relating to any time that it is necessary to make a flight termination decision for any reason other than one referred to in sub-paragraph (c) or (d) which threatens or prevents the carrying out of the operator's spaceflight activities safely;

(f) instructions to the flight termination personnel on making a flight termination decision and the actions that such personnel must perform to terminate the flight.

20. If part of the mission, instructions and procedures about returning the launch vehicle to earth including a re-entry from orbit.

21. If the launch vehicle is reusable, instructions and procedures about recovering the launch vehicle to the earth's surface, rendering it safe from major accident hazards and enabling the planned landing.

22. Instructions and procedures about the steps to be followed on successful completion of the flight of the launch vehicle or other operator's spaceflight activities.

Launch vehicles with crew or a remote pilot

23. Instructions and procedures for members of the crew and any remote pilot to satisfy any requirements in these Regulations which apply to such members or pilot.

Emergency response

24. The emergency response plan satisfying the requirements in regulation 104 and instructions and procedures to implement that plan.

25. Procedures to ensure that the emergency response plan is tested, reviewed and revised as required by regulation 104(3) and that the results of a test of that plan and details of any revisions to that plan are supplied to the regulator as required by regulation 104(4).

Ground support equipment

26. Instructions and procedures for using, maintaining, verifying and validating, repairing and servicing any ground support equipment.

Making, collecting and retaining information

27. Instructions and procedures about—

(a) making recordings referred to in regulation 103(1), and

(b) collecting and retaining the information referred to in regulation 103(2).

SCHEDULE 6

Regulation 145

Information to be included in a health record

The information that must be included in a health record is—

(a) the crew member's—

(i) full name;

(ii) gender;

(iii) date of birth;

(iv) address;

(v) national insurance number, if the crew member has one,

(b) the date the crew member began work as a classified crew member for the operator required to create the health record,

(c) if the crew member has received an overexposure—

(i) the date on which the overexposure occurred, and

(ii) the results of any medical examination undertaken by an approved doctor pursuant to regulation 141(2)(b), and the name and signature, which may be an electronic signature, of the approved doctor who undertook that examination,

(d) the results of all medical examinations and health reviews of the crew member performed in accordance with regulation 144 under the instruction of the spaceflight operator which are signed by the approved doctor and include a legible record of that doctor's signature,

(e) a statement made by the approved doctor who performed the crew member's most recent examination or, as the case may be, health review, setting out the determination made in respect of the crew member under regulation 144(3) at that examination or review, including any conditions specified as mentioned in regulation 144(3)(b), and

(f) a copy of the record of all monitoring undertaken in relation to the crew member under regulation 146.

SCHEDULE 7

Regulation 150

Amendments to the Air Navigation (Cosmic Radiation: Protection of Air Crew and Space Crew and Consequential Amendments) Order 2019

1. The Air Navigation (Cosmic Radiation: Protection of Air Crew and Space Crew and Consequential Amendments) Order 2019(**a**) is amended as follows.

2. In article 2 (interpretation)—

(a) in the definition of "crew", omit paragraph (b) including the word "and" immediately following it,

(b) in the definition of "doctor" omit the words "or space crew",

(c) in the definition of "relevant crew member" omit the words "or spacecraft",

(d) omit the definitions of "space cabin crew", "space flight crew", "spacecraft" and "spaceport",

(e) in the definition of "task specialist" omit the words "or spacecraft", and

(f) in paragraph (2) omit the words "or spacecraft".

3. In article 3 (application of this Order)—

(a) omit paragraph (1)(b),

(b) in paragraph (2) omit the words "or spacecraft", and

(c) in paragraph (3) omit the words "or spacecraft" in each place in which they occur.

4. In article 4 (meaning of "operator")—

(**a**) S.I. 2019/1115.

(a) in paragraph (1) omit the words "or spacecraft" in both places in which they occur,

(b) in paragraph (2) omit the words "or spacecraft" in each place in which they occur, and

(c) in paragraph (3) omit the words "or spacecraft".

5. In article 5 (authorisation and prohibition on exposure)—

(a) in paragraph (1) omit the words "or spacecraft",

(b) in paragraph (2)(a) omit—

(i) ", a Space Industry Act licence,", and

(ii) ", licence",

(c) in paragraph (3) omit the words "or spacecraft",

(d) in paragraph (4) omit the words "or spacecraft", and

(e) in paragraph (5) omit the definition of "Space Industry Act licence".

6. In article 6 (risk assessments)—

(a) in paragraph (1) omit the words "or spacecraft" in both places in which they occur,

(b) in paragraph (2), both in the opening words and in sub-paragraph (c), omit the words "or spacecraft", and

(c) in paragraph (3) omit the words "or spacecraft" in both places in which they occur.

7. In article 10 (provision of information and training to crew)—

(a) in paragraph (1)(a) omit "or, as the case may be, spacecraft",

(b) in paragraph (2)(a) omit the words "or spacecraft", and

(c) in paragraph (2)(b) omit "or, as the case may be, spacecraft".

8. In article 11 (overexposure), in paragraph (1) omit the words "or spacecraft".

9. In article 12 (continued working of overexposed crew)—

(a) in paragraph (1) omit the words "or spacecraft", and

(b) in paragraph (3) omit the words "or spacecraft".

10. In article 15 (health records), in paragraph (3)(b)(ii) omit the words "or spacecraft".

11. In article 17 (records of exposure to cosmic radiation of classified crew), in paragraph (3)(b) omit the words "or spacecraft".

12. In article 18 (access to records of individual exposure to cosmic radiation), in paragraph (2)(b) omit the words "or spacecraft".

13. In article 19 (instruction of experts), in paragraph (5) omit the words "or spacecraft".

14. In article 21 (right of access to aerodromes and other places)—

(a) omit paragraphs (2)(d) and (e), and

(b) in paragraph (4) (the definition of "relevant area"), for ", aerodrome or spaceport" substitute ", or an aerodrome,".

SCHEDULE 8

Regulation 164

Information and instructions which must be included in a spaceport manual

1. The name and status of the accountable manager for the spaceport.

2. The names and status of other senior operating staff at the spaceport and instructions as to the order and circumstances in which they may be required to act.

3. Details of the safety management system.

4. Procedures for promulgating information concerning the spaceport's state.

5. Procedures for control of access, vehicles and work in relation to the operational areas.

6. Procedures for the removal of disabled carrier aircraft, launch vehicles or payloads.

7. Process to ensure the emergency response plan is tested, reviewed and revised and the procedures for complying with regulation 165.

8. Process to ensure that the part of the site plan required under regulation 36(4)(d), which identifies the location of any areas at the spaceport designated as hazardous material storage facilities under regulation 158(1), is maintained and complied with.

9. Procedures to ensure that an appropriate safety clear zone, where required, is in place and is monitored.

10. Procedures for using a designated static engine test area.

11. Process and procedures to ensure the safe integration of licensed activities with—

(a) spaceflight activities undertaken at the spaceport, and

(b) aerodrome and aviation activities undertaken at the aerodrome with which the spaceport is co-located, if applicable.

12. In the case of a spaceport which has any hazardous material storage facility, procedures for complying with regulation 158.

13. Procedures for complying with fit for purpose requirements in regulation 160 for hazardous material.

14. Operational procedures for the routine and special inspection of the spaceport operational areas.

15. Process for using, maintaining, testing, repairing and servicing of any safety equipment.

16. If spaceflight activities are permitted during periods of low visibility, procedures for the protection of the runways, if applicable, during such periods.

17. Details of, or reference to, the bird control management plan, if any, related to spaceflight activities.

18. The scale of rescue, first aid and fire service facilities, the spaceport emergency procedures and procedures to be adopted in the event of temporary depletion of the rescue and fire service facilities.

19. Procedures for complying with the space site security programme required under regulation 170.

EXPLANATORY NOTE

(This note is not part of the Regulations)

These Regulations implement the Space Industry Act 2018 ("the Act") (c. 5) by putting in place a regulatory regime for spaceflight operations carried out in the United Kingdom.

Part 2 of these Regulations makes provision for the appointment of the Civil Aviation Authority ("the CAA") as regulator. This means that wherever the Act or regulations give a function to the regulator, the CAA has that function. For functions in the Act of issuing guidance, the CAA and the Secretary of State are both appointed as regulator, so that either of them may issue guidance.

Chapter 1 of Part 3 of these Regulations prescribes eligibility criteria applicable to licensees and to any individuals appointed to undertake prescribed roles on their behalf. The roles to which different types of licence holder must appoint individuals are prescribed in regulations 7 to 11. Regulations 13 to 14(2) place a duty on all licensees to inform the regulator of changes to individuals in prescribed roles and provide that failure to do so is an offence.

Chapter 2 of Part 3 of these Regulations provides that the requirement to hold an operator licence does not apply in relation to carrier aircraft in specified circumstances.

Chapter 3 of Part 3 of these Regulations provides the procedure for obtaining an operator licence, range control licence or a spaceport licence. It delegates matters, such as the form and contents of the application form for a licence and information which must accompany it, to the regulator. Provision is also made in regulations 19, 20, 23 and 24 for matters such as inspections of any site, facility, craft or equipment by the regulator, production of documents to the regulator, disclosure of information relating to the application, how the regulator must consider and determine the application for a licence, withdrawal of an application for a licence and the procedure for an application to renew a licence.

Part 4 of these Regulations prescribes the criteria and requirements which an applicant for a licence to carry out spaceflight activities that include launch or return to earth of a launch vehicle must meet in order for the regulator to be able to grant that applicant a licence. Regulations 26 to 28 set out the steps an applicant must take under section 9(4)(a) to ensure that risks to persons not prescribed under section 9(2) are as low as reasonably practicable. This Part provides for an applicant to provide information to the regulator, part of which is to be a safety case. It also requires an applicant carrying out a risk assessment to take certain steps and take into account certain things, including those set out in Schedule 2.

Chapters 1 and 2 of Part 5 of these Regulations prescribe the criteria and requirements which an applicant must meet in order for the regulator to be able to grant a spaceport licence. An application for a horizontal spaceport licence must be made in respect of an existing aerodrome meeting the requirements in regulation 35(1). An applicant must carry out a safety case which meets the requirements in regulation 36, but where there is no actual launch vehicle known to the applicant, paragraph (8) of that regulation sets out how the applicant will be able to meet those requirements. Unless the applicant's safety case demonstrates that it is not required, an applicant must (under regulation 37) show that it will be able to put in place an appropriate safety clear zone to ensure that particular types of risks to people from hazardous operations at the spaceport are as low as reasonably practicable. A further requirement on applicants (in regulation 38) is to carry out a siting assessment.

The Act refers to "public safety" in several provisions. This means the health and safety of members of the public and the safety of their property. Chapter 3 of Part 5 of these Regulations provides that any person referred to in regulation 40 who is voluntarily in close proximity to a source of danger at a spaceport is not to be considered a member of the public for the purposes of section 10(a) of the Act. Regulation 40(2) sets out the meaning of the terms used in regulation 40.

Part 6 of these Regulations sets out the requirements which apply to the holder of a range control licence. A range control licensee must comply with the requirements relating to its organisation and management capability (regulation 42). Where the licensee's range control services consist of or include monitoring the range for spaceflight activities, it must enter into agreements with certain third parties (regulations 43 to 45). Where a licensee's range control services consist of or include identifying an appropriate range for spaceflight activities the licensee must comply with the requirements set out in regulations 46 to 48. Where the licensee's range control services consist of or include the issue of notifications in connection with monitoring the designated range, the licensee must notify certain persons and issue warning notices relating to the operator's spaceflight activities (regulations 49 to 51). Under regulation 52, a range control licensee must establish and maintain a quality management system including a safety management system. Where a spaceflight operator is authorised to provide range control services in respect of its spaceflight activities, it must ensure that the part of its organisation which provides those services

is distinct and separate from the part involved in its spaceflight activities in accordance with regulation 54.

Part 7 of these Regulations defines the responsibility of the licensees in relation to training and medical fitness: to ensure that individuals performing a specified role (listed in regulation 56) or participating in spaceflight activities as a spaceflight participant satisfy the criteria identified in this Part, and are medically fit to perform their duties. Licensees must ensure that they have in place a training management system and adequate resources to satisfy their training and medical fitness obligations. For this purpose, licensees must appoint a training manager approved by the regulator (Chapter 2), prepare a training manual (Chapter 3 and Part 2 of Schedule 3) and establish a training programme (Chapter 4). The licensees' responsibilities in relation to the medical fitness of their crew, remote pilots, spaceflight participants and others taking part in the licensed activities are set out in Chapter 5.

Part 8 of these Regulations contains the safety regulations which apply to a spaceflight operator (the holder of a launch operator licence or a return operator licence (regulation 2)). These regulations impose a duty to carry out the operator's spaceflight activities safely. "Carrying out operator's spaceflight activities safely" means the spaceflight operator must carry out the activities in accordance with the safety case by preventing a major accident from occurring or mitigating the consequences of such an accident if it does occur and, if the launch vehicle has a human occupant (regulation 2), in accordance with the risk assessment by securing the safety of a human occupant (regulation 79). Regulations 80 to 82 make provision for the safety case and risk assessment to be reviewed and for revisions of these documents so that the safety duty relates to any revised safety case and risk assessment. Regulations 83 to 104 set out specific safety requirements such as those relating to the fitness of the launch vehicle for the activities and, if the launch vehicle has a human occupant, there are additional requirements set out in regulations 105 to 123.

Part 9 of these Regulations contains requirements for the protection of space crew and carrier aircraft crew against risks arising from such crew being exposed to cosmic radiation. These requirements are closely modelled on those contained in the Air Navigation (Cosmic Radiation: Protection of Air Crew and Space Crew and Consequential Amendments) Order 2019 (S.I. 2019/1115) ("the 2019 Order"). The 2019 Order implements Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation in so far as it applies to basic safety standards for protection against risks arising from air and space crew being exposed to cosmic radiation. Regulation 150 and Schedule 7 contain amendments to the 2019 Order as a result of Part 9.

Part 10 of these Regulations contains the safety regulations which apply to a spaceport licensee. These regulations impose a duty on a spaceport licensee to carry out its activities safely (regulation 152) and set out the further requirements to be met in order to comply with that duty, including providing that the safety case an applicant for a spaceport licence had to carry out under regulation 36 is reviewed and revised in accordance with regulation 155. Regulation 157 makes provision about safety clear zones and regulations 158 to 166 set out specific safety requirements for a spaceport licensee, including relating to designation of appropriate areas, organisational requirements and emergencies. Regulation 167 provides additional powers for members of the Rescue and Fire Fighting Service attending an emergency – this is to ensure that aerodrome fire-fighters enjoy the same powers in relation to spaceports and launch vehicles as they already hold in respect of aerodromes and aircraft.

Part 11 of these Regulations makes security provisions relating to physical, personnel and cyber, vetting, training and qualifications, critical national infrastructure and essential services and the protection of US technology.

Part 12 of these Regulations makes provision regarding the consent which the spaceflight operator must obtain before that operator allows human occupants (regulation 2) to take part in spaceflight activities. Regulation 204 prescribes that a member of the crew and a spaceflight participant are to give consent. In addition, these human occupants must be at least 18 years of age and have the mental capacity provided for in regulation 205.

Part 13 of these Regulations deals with liabilities and indemnities. Regulation 218 excludes the strict liability (for personal injury, death or physical damage caused to persons or property on land or water in the United Kingdom or in the territorial sea adjacent or to aircraft in flight over such land, water or sea or to persons or property on board such aircraft) of the holder of an operator licence under section 34(2) of the Act towards the individuals listed in that regulation. These individuals can still claim for injury or damage under the common law. Regulation 219 sets out that any limit on the liability of the holder of an operator licence to indemnify Her Majesty's Government does not apply in cases where the operator is guilty of gross negligence or wilful misconduct or in circumstances where the operator has not complied with its licence conditions or the requirements of the Act or regulations made under the Act. Regulation 220 provides that an operator licence must specify a limit on the amount of an operator's liability under section 34(5) of the Act and for any third party liability not covered by that section. It also provides how that limit shall be determined, and where it will not apply. Regulation 221 provides that the power or duty of the Secretary of State to indemnify for claims above an insurance or liability limit does not apply where the operator is liable for gross negligence or wilful misconduct, or where damage or loss is caused by non-compliance by the operator with any conditions of its licence or any requirements under the Act or regulations made under the Act.

Part 14 of these Regulations sets out the powers of the regulator to monitor licensees' activities and enforce their obligations, in order to secure compliance with the Act, regulations made thereunder, the conditions of licences, and the UK's international obligations, as well as protect public safety and national security. Offences are created where a person impersonates an inspector or deliberately obstructs the regulator (Chapter 1). Persons carrying out specified activities must keep accurate records and provide accurate information to the regulator (Chapter 2). The regulator may appoint inspectors who have specified powers of access and investigation, as well as powers to issue enforcement notices where they identify contraventions (Chapter 3). The regulator may share with specified persons information received in respect of an application for a licence or received by exercising powers under this Part (Chapter 4); such information is not to be disclosed unless an exception applies (Chapter 5).

Part 15 of these Regulations sets out the stop notices framework and gives effect to the relevant provisions of Part 3 of the Regulatory Enforcement and Sanctions Act 2008 (c. 13). Under this framework, the regulator may serve notice prohibiting a person from carrying on a specified activity until that person has complied with instructions contained in the notice. Wrongful processing of the stop notice framework by the regulator can result in compensation, and failing to comply with the stop notice is an offence.

Part 16 of these Regulations creates an occurrence reporting regime by imposing a duty on the holder of an operator licence, a spaceport licence or a range control licence to report an occurrence to the regulator. An occurrence includes a spaceflight accident and a major accident and includes a near miss threatening the safety of any person and an occurrence during preparation for spaceflight activities.

Part 17 of these Regulations imposes an overarching duty on an applicant for a licence or a licensee to update the regulator where information previously provided changes, makes provision for sending notices and other documents, identifies those persons who are prescribed for the purposes of section 66 of the Act and who can therefore certify certain documents or records for use in legal proceedings and includes a provision requiring review of the Regulations every five years.

A full impact assessment of the effect that this instrument will have on the costs of business, the voluntary sector and the public sector is available from the Department for Transport, Great Minster House, 33 Horseferry Road, London SW1P 4DR and is published alongside the Explanatory Memorandum to this instrument on the legislation.gov.uk website.

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