

SOUTH AFRICAN CIVIL AVIATION AUTHORITY

CIVIL AVIATION ACT, 2009 (ACT NO. 13 OF 2009)

AMENDMENT OF SA-CATS 5 OF 2026

The Director of Civil Aviation has, in terms of section 163 (1) of the Civil Aviation Act, 2009 (Act No. 13 of 2009) amended the South African Civil Aviation Technical Standards as reflected in the Schedule hereto. The Amendments as contained in the Schedule shall come into operation on the date of coming into operation of the Amendment Act.



Poppy Khoza
Director of Civil Aviation

Date: 30 SEP 2026

GENERAL EXPLANATORY NOTE:

[] Words in bold type in square brackets indicate omissions from existing technical standards.

_____ Words underlined with a solid line indicate insertions in existing technical standards.

SCHEDULE

AMENDMENT OF SA CATS 36

1. Document SA CATS 36 is hereby amended to by the insertion after Technical Standard 36.02.02 of the following Appendices:

Appendix A1: Equations and criteria for the calculation of maximum permitted noise levels as a function of take-off mass

Appendix A2: Aircraft noise certification framework

AMENDMENT OF SA-CATS 92

1. Document SA-CATS 43 is hereby amended by:
 - (a) the substitution in Technical Standard 92.01.2 section 1 of the following section:

“1. Dangerous goods forbidden for transport by air under any circumstances

Articles and substances that are specifically identified by name or by generic description in **[Part] Segment 1, [Chapter] Section 2, [Part] Segment 3** or by the classification process **[of the Technical Instructions]** contained in Annexure A as being forbidden for conveyance by air under any circumstances shall not be carried on an aircraft.”;

- (b) the substitution in Technical Standard 92.01.3 section 1 for subsection (1) of the following subsection:

“(1) The regulations on the conveyance of dangerous goods do not apply in respect of the articles and substances carried on board an aircraft for specialised purposes prescribed as follows: **[in Part 1; 2.2.1(b), (c) and (d) of the Technical Instructions. The provisions of the Technical Instructions do not apply to the following—]**

- (a) articles and substances which would otherwise be classified as dangerous goods, but which are required to be aboard the aircraft in accordance with the pertinent airworthiness requirements and operating regulations or that are authorised by the Authority to meet special requirements;
- (b) aerosols, alcoholic beverages, perfumes, colognes, liquefied gas lighters and portable electronic devices containing lithium metal or lithium-ion cells or batteries provided that the batteries meet the provisions of Table 92.01.3.4.1 in Annexure A, **[8-1, Item 20 of the Technical Instructions]** carried aboard an aircraft by the operator for use or sale on the aircraft during the flight or series of flights but excluding non-refillable gas lighters and those lighters liable to leak when exposed to reduced pressure;
- (c) dry ice intended for use in food and beverage service aboard an aircraft; and
- (d) electronic devices, such as EFB, personal entertainment devices, and credit card readers, containing lithium metal or lithium-ion cells or batteries and spare lithium batteries for such devices carried aboard an aircraft by the operator for use on the aircraft during the flight or series of flights, provided that the batteries meet the requirements specified in this Document SA-CATS 92. **[the Technical Instructions]**. Spare lithium batteries must be individually protected to prevent short circuits when not in use. Conditions for the carriage and use of these electronic devices and for the carriage of spare batteries must be provided for in the operations manual and other appropriate manuals to enable flight crew, cabin crew and other employees to carry out their responsibilities; and
- (e) alcohol-based hand sanitizers and cleaning products carried aboard an aircraft by an air service operator for use on an aircraft during a flight or series of flights for the

purposes of passenger and crew hygiene.”.

- (c) the substitution in Technical Standard 92.01.3 for section 2 of the following section:

“2. Replacement for articles and substances required to be on board

The replacements for the articles and substances required to be on board an aircraft shall be in accordance with the appropriate airworthiness requirements and the provisions of the operations manual and must be conveyed in accordance with Document SA-CATS 92 . **[Part 1, 2.2.3 of [the Technical Instructions].”;**

- (d) the substitution in Technical Standard 92.01.3 section 3 for subsection (1) of the following subsection:

“(1) Dangerous goods transported and provided for in regulation 92.01.3 may be carried on a flight made by the same aircraft before or after a flight for the purposes identified or for other purposes such as training flights and positioning of flights prior to or after maintenance when it is impracticable to load or unload the dangerous goods immediately before or after the flight **[as prescribed in Part 1, Chapter 1 of the Technical Instructions]**, subject to the following conditions –

- (a) the dangerous goods shall be capable of withstanding the normal conditions of air transport;
- (b) the dangerous goods shall be appropriately identified by marking or labelling;
- (c) the dangerous goods may only be carried with the approval of an operator;
- (d) the dangerous goods shall be inspected for damage or leakage prior to loading;
- (e) loading must be supervised by an operator;

- (f) the dangerous goods shall be stowed and secured in an aircraft in a manner that shall prevent any movement in flight which would change their orientation;
 - (g) a PIC shall be notified of the dangerous goods loaded on board an aircraft and their loading location. In the event of a crew change, this information shall be passed to the next crew; and
 - (h) all personnel shall be trained commensurate with their responsibilities.”;
- (e) the substitution in Technical Standard 92.01.3 for section 4 of the following section:
 “The articles and substances intended for the personal use of passengers and flight crew must be carried in accordance with the requirements and standards as follows: **[in Part 8, Chapter 1 and Table 8-1 of [the Technical Instructions].**”;
- (1) Crew and passengers are not allowed to carry dangerous goods in carry-on baggage, checked baggage or on their person, unless the dangerous goods are allowed in accordance with Table 92.01.3.4.1 ;
 - (2) The following dangerous goods are not allowed in carry-on baggage, checked baggage or on a person:
 - (a) “strike anywhere” matches;
 - (b) electroshock weapons, such as tasers, containing dangerous goods such as explosives, compressed gases, or lithium batteries;
 - (c) personal medical oxygen devices that utilize liquid oxygen;
 - (d) lighter fuel and lighter refills;
 - (e) premixing burner lighter without a means of protection against unintentional activation; and
 - (f) battery-powered lighters powered by a lithium ion or lithium metal battery, such as laser plasma lighters, tesla coil lighters, flux lighters, arc lighters and double arc lighters, without a safety cap or a way to protect against unintentional activation.
 - (3) Exceptions listed are not repeated in Table 92.01.3.4.1. The following dangerous goods are not subject to these standards:
 - (a) Radio-pharmaceuticals contained within the body of a person as the result of medical treatment; and

- (b) Energy efficient lamps when in retail packaging and intended for personal or home use.
- (4) Except for the reporting provisions in relation to dangerous goods accidents and incidents or the reporting requirement for mis-declared or undeclared dangerous goods, the provisions of these standards do not apply to the dangerous goods allowed under Table 92.01.3.4.1 when those dangerous goods are:
- (a) carried by crew or passengers for their personal use only;
 - (b) it is in baggage that has been separated from its owner during transit such as mishandled baggage, lost baggage or improperly routed baggage; or
 - (c) it is inside items of excess baggage sent as cargo.
- (5) The statement or entry in Table 92.01.3.4.1 that best describes the item or article must be chosen.
- (6) If an item contains more than one type of dangerous goods it must comply with all the applicable entries.
- (7) If you have carry-on baggage that is placed in the cargo hold, it must only contain dangerous goods that are allowed in checked baggage. If carry-on baggage is taken by an operator and placed into the cargo hold for carriage, an operator must first confirm with the passenger that the dangerous goods which are only permitted in carry-on baggage was removed.
- (8) An entity other than an operator such as a travel agent, involved in the air transport of passengers, should provide passengers with information about the types of dangerous goods which they are not allowed to carry aboard an aircraft. This information should preferably consist of, as a minimum, notices at locations where there is interaction with the passengers.
- (9) Where tickets can be bought online or via the Internet, information on the types of dangerous goods which a passenger is not allowed to carry aboard an aircraft shall be provided. This can be done in either text or pictorial form and shall be in such way that the ticket purchasing cannot be completed until the passenger, or a person acting on their behalf, has indicated that they understand the restrictions on dangerous goods carried in baggage.
- (10) The Organisation for the Prohibition of Chemical Weapons (OPCW) and government agencies listed in Table 92.01.3.4.2 are allowed to carry instruments containing dangerous goods as stated in Table 92.01.3.4.2.
- (11) Other than the reporting provisions in relation to dangerous goods accidents and incidents or the reporting requirement for mis-declared or undeclared dangerous goods, the requirements

of these rules do not apply to the dangerous goods that are allowed in accordance with Table 92.01.3.4.2 when those dangerous goods are:

- (a) carried by representatives of the OPCW during official travel or government agencies listed in Table 92.01.3.4.2 on official travel;
- (b) inside baggage that was parted from its owner during transit such as, mishandled baggage or lost baggage or mis-routed baggage; or
- (c) inside items of excess baggage sent as cargo.

(12) Equipment or devices that are active must meet the specified standards for electromagnetic radiation to ensure that the operation of the devices does not interfere with the aircraft or the aircraft systems.

Table 92.01.3.4.1. Requirements for dangerous goods carried or presented by crew and passengers

<u>Type of dangerous Goods items or articles</u>	<u>Location on board an aircraft</u>		<u>Cases where the approval of the operator is required</u>	<u>Restrictions</u>
	<u>Checked baggage</u>	<u>Carry-on baggage</u>		

Batteries and equipment containing batteries

<u>1) Lithium batteries (Portable electronic devices included)</u>	<u>Yes (except for g) and h))</u>	<u>Yes</u>	<u>(see c) and d))</u>	<u>a) every battery must meet the requirements of each required test as stipulated in the UN Manual of Tests and Criteria, Part III, subsection 38.3 (This manual can be accessed at:</u> https://unece.org/sites/default/files/2024-09/ST_SG_AC.10_11_Rev.8e_WEB.pdf <u>)</u> ; <u>b) batteries must not exceed the following:</u>
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				<u>— for lithium metal batteries, a lithium content of 2 g; or</u> <u>— for lithium ion batteries, a Watt-hour rating of 100 Wh;</u> <u>c) batteries may exceed 100 Wh but not exceed 160 Wh Watthour</u> <u>rating for lithium ion but you must obtain the approval of the operator;</u> <u>d) batteries may exceed 2 g but may not exceed 8 g lithium content</u> <u>for lithium metal for portable medical electronic devices but you must obtain the approval of the operator;</u> <u>e) Where portable electronic devices contain batteries:</u> <u>— you must take measures to prevent unintentional activation and you must protect the devices from damage;</u> <u>— the devices must preferably be carried as carry-on baggage; but if carried as checked baggage, each device must be switched off completely (not in sleep or hibernation or standby mode) where the batteries exceed:</u> <u>— for lithium metal batteries, a lithium content of 0.3 g per device; or</u> <u>— for lithium ion batteries, a Watt-hour rating of 2.7 Wh for each device;</u> <u>f) batteries and heating elements must be isolated in portable electronic devices</u>
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				<u>that are able to generate extreme heat, which</u> <u>could cause a fire if it is activated, by removing the heating element, the battery or any other components;</u> <u>g) batteries (spare), including power banks:</u> <u>— must be carried as carry-on baggage;</u> <u>and</u> <u>— must be individually protected so as to prevent short circuits (either by placement in its original retail packaging or insulating the terminals, e.g. by taping over</u> <u>open terminals or placing individual batteries in a separate plastic bag or protective pouch);</u> <u>h) equipped in baggage with a lithium battery(ies) exceeding:</u> <u>— for lithium metal batteries, a lithium content of 0.3 g; or</u> <u>— for lithium ion batteries, a Watt-hour rating of 2.7 Wh</u> <u>Are required to be carried as carry-on baggage unless the battery(ies) are removed from the baggage, in such a case the battery(ies) are required to be carried in accordance with g);</u> <u>i) not more than two spare batteries that meet the requirements of</u>
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				<u>c) or d) are allowed to be carried per person.</u>
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<u>Type of dangerous Goods items or articles</u>	<u>Location on board an aircraft</u>		<u>Cases where the approval of the operator is required</u>	<u>Restrictions</u>
	<u>Checked baggage</u>	<u>Carry-on baggage</u>		
<u>2) Dry, Non-spillable wet and nickel-metal hydride batteries.</u>	<u>Yes</u>	<u>Yes</u>	<u>No</u>	<u>a) for a non-spillable battery:</u> <u>i) Special Provision A67 requirements must be met;</u> <u>ii) for every battery a voltage of 12 volts and a Watt-hour rating of 100 Wh must not be exceed;</u> <u>iii) every battery must be protected from short circuit by effectively insulating open terminals;</u> <u>iv) each person may not carry more than two spare batteries; and</u> <u>v) if the batteries are in equipment, the equipment must be either protected from unintentional activation, or every battery must be disconnected and its open terminals insulated;</u> <u>b) for a nickel-metal hydride battery or dry battery or, every battery must comply with Special Provision A123 or A199, respectively; and</u>

				<u>c) heating elements and batteries must be isolated in any equipment that are battery powered and capable of generating extreme heat, by removing the heating element, the battery or any other components.</u>
<u>3) Portable electronic smoking devices that are battery-powered (These may include e-cigarettes, ecigs, ecigars, epipes, personal vaporizers or electronic nicotine delivery systems)</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>a) if the device is powered by lithium batteries, every battery must comply with restrictions of 1) a), b) and g);</u> <u>b) the devices and/or batteries must not be recharged on board the aircraft; and</u> <u>c) measures must be taken to prevent unintentional activation of the heating element while on board the aircraft.</u>
<u>4) Mobility aids (These may include wheelchairs) that are powered by:</u> <u>– spillable batteries;</u> <u>– non-spillable wet batteries;</u> <u>– dry batteries;</u> <u>– nickel-metal hydride batteries; or</u> <u>– lithium ion batteries</u>	<u>Yes</u>	<u>(See e)</u>	<u>Yes</u>	<u>a) the restriction is only applicable where the mobility aid is the for use by a passenger whose mobility is restricted by either a disability, their age or health, or a temporary mobility situation (e.g. broken leg);</u> <u>b) the passenger is required to make advance arrangements with each operator and provide information on the type of battery that is installed and on the handling of the mobility aid (including instructions on how to isolate the battery);</u>

				<u>c) in the case of a nickel-metal hydride battery or dry battery, each battery must comply with Special Provision A123 or A199, respectively;</u> <u>d) where you have a non-spillable wet battery:</u> <u>i) Special Provision A67 is applicable for every battery; and</u> <u>ii) not more than one spare battery may be carried per passenger;</u> <u>e) where you have a lithium ion battery:</u> <u>i) every battery must meet the requirements of each required test as stipulated in the UN Manual of Tests and Criteria, Part III, subsection 38.3 (This manual can be accessed at: https://unece.org/sites/default/files/2024-09/ST_SG_AC.10_11_Rev.8e_WEB.pdf);</u> <u>ii) In cases where the mobility aid does not give sufficient protection to the battery, the following is applicable:</u> <u>— remove the battery according to the manufacturer's instructions;</u> <u>— the battery is not allowed to exceed 300 Wh;</u> <u>— protect the battery terminals from short circuits (insulate the terminals, e.g. by taping over open terminals);</u> <u>— protect the battery from damage (e.g.</u>
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				<u>Place every battery in a protective pouch);</u> <u>and</u> <u>— carry the battery in the cabin;</u> <u>iii) you may carry only one spare battery</u> <u>not exceeding 300 Wh may be permitted</u> <u>or two spare batteries that don't</u> <u>exceeding 160 Wh individually and these</u> <u>spare batteries must be carried in the</u> <u>cabin.</u> <u>Where the lithium battery(ies) are not</u> <u>removed from the mobility aid, there will</u> <u>be no Watt-hour restriction.</u>
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Flames and fuel sources

<u>Type of dangerous Goods items or articles</u>	<u>Location on board an aircraft</u>		<u>Cases where the approval of the operator is required</u>	<u>Restrictions</u>
	<u>Checked baggage</u>	<u>Carry-on baggage</u>		
<u>5) Small packets of safety matches or Cigarette lighters</u>	<u>No</u>	<u>See b</u>	<u>No</u>	<u>a) only one per person;</u> <u>b) it must be carried on the</u> <u>person;</u> <u>c) it must not contain</u> <u>unabsorbed liquid fuel (other</u> <u>than liquefied gas); and</u> <u>d) in the case of a cigarette</u> <u>lighter that is powered by</u> <u>lithium batteries, every</u> <u>battery is required to comply</u> <u>with restrictions of 1) a), b)</u> <u>and g) and 3) b) and c).</u>
<u>6) Alcoholic beverages: Where these beverages contain in excess of 24</u>	<u>Yes</u>	<u>Yes</u>	<u>No</u>	<u>a) the beverages must be in</u> <u>their retail packagings; and</u>

<u>per cent but not more than 70 per cent alcohol by volume</u>				<u>b) no more than 5 L total net quantity per person is permitted.</u> <u>If the alcoholic beverages contain less than 24 per cent alcohol by volume they are not subject to these restrictions.</u>
<u>7) Internal combustion engines or fuel cell engines</u>	<u>Yes</u>	<u>No</u>	<u>No</u>	<u>Measures must be taken to remove the hazard. See Special Provision A70 for more detail.</u>
<u>8) Fuel cells that contain fuel</u> <u>Spare fuel cell cartridges</u>	<u>No</u> <u>Yes</u>	<u>Yes</u> <u>Yes</u>	<u>No</u> <u>No</u>	<u>a) fuel cell cartridges are only allowed to contain flammable liquids,</u> <u>corrosive substances,</u> <u>liquefied flammable gas,</u> <u>water reactive substances or hydrogen in metal hydride;</u> <u>Spare fuel cell cartridges</u> <u>b) fuel cells may not be refuelled on board an aircraft although the installation of a spare cartridge is allowed;</u> <u>c) fuel cell or fuel cell cartridges may not exceed the below quantities:</u> <u>— for liquids 200 mL;</u> <u>— for solids 200 g;</u>

				— <u>for liquefied gases, 120 mL for non-metallic fuel cell cartridges or 200 mL for metal fuel cell or fuel cell cartridges; and</u> — <u>for hydrogen in metal hydride, the fuel cell or fuel cell cartridges must have a water capacity of 120 mL or less;</u> <u>d) upon request documentary proof must be provided that each fuel cell and each fuel cell cartridge complies to IEC standard 62282-6-100 Ed. 1, including Amendment 1, and must be marked with a manufacturer's certification mark that it complies to the specification. Each fuel cell cartridge must also be marked with the maximum quantity and type of fuel in the cartridge;</u> <u>e) fuel cell cartridges containing hydrogen in metal hydride are required to comply with the requirements contained in Special Provision A162;</u>
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				<u>f) it is not permitted to carry more than two spare fuel cell cartridges per passenger;</u> <u>g) fuel cells containing fuel are allowed in carry-on baggage only;</u> <u>h) upon request, documentary proof must be supplied that interaction between fuel cells and integrated batteries in a device complies with IEC standard 62282-6-100 Ed. 1, including Amendment 1. Fuel cells whose only function is to charge a battery in the device are not allowed;</u> <u>i) fuel cells must be of a type that is not going to charge batteries when the portable electronic device is not in use. It must also be durably marked by the manufacturer with the wording: “APPROVED FOR CARRIAGE IN AIRCRAFT CABIN ONLY”;</u> <u>and</u> <u>j) the marking must at a minimum be in English.</u>
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Gases in cylinders and cartridges

9) <u>Cylinders containing oxygen or air required for medical use</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>a) a maximum of 5 kg gross mass per cylinder;</u> <u>b) where cylinders, valves and regulators, where fitted, it is required that it will be protected from damage that could cause accidental release of the contents;</u> <u>c) it is recommended that advance arrangements be made with the operator; and</u> <u>d) the pilot-in-command must be notified of the number of oxygen or air cylinders that are loaded on board the aircraft and of their loading location(s).</u>
10) <u>Cartridges of Division 2.2 that are worn by a person for the operation of mechanical limbs</u>	<u>Yes</u>	<u>Yes</u>	<u>No</u>	<u>Spare cartridges that are of the same size are also allowed, if it is necessary, to ensure that there is an adequate supply for the duration of the journey.</u>
11) <u>Cartridges that contain hydrocarbon gas installed in hair styling equipment</u>	<u>Yes</u>	<u>Yes</u>	<u>No</u>	<u>a) a maximum of one per person;</u> <u>b) the safety cover is required to be securely fitted over the heating element; and</u>

				<u>c) no spare cartridges are allowed.</u>
<u>12) Cartridges of Division 2.2 with no subsidiary hazard fitted inside a self-inflating personal safety device, intended to be worn by a person, such as a lifejacket or vest</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>a) a maximum of two personal safety devices per person;</u> <u>b) the personal safety device(s) must be packed in such a way that accidental activation will not happen.</u> <u>c) must be intended for flotation purposes;</u> <u>d) a maximum of two cartridges are allowed to be fitted inside each device;</u> <u>and</u> <u>e) a maximum of two spare cartridges per device are permitted.</u>
<u>13) Cartridges of Division 2.2 with no other subsidiary hazard for reasons other than a self-inflating personal safety device</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>a) a maximum of four cartridges per person; and</u> <u>b) the water capacity of each cartridge may not exceed 50 mL.</u> <u>(For carbon dioxide, a gas cartridge with a water capacity of 50 mL is equivalent to a 28 g cartridge).</u>
<u>14) Cartridges and cylinders of Division 2.2 with no subsidiary hazard that is contained in an</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>a) a maximum of one avalanche rescue backpack per person;</u>

<u>avalanche rescue backpack</u>				<u>b) the backpack must be packed in such a way that accidental activation will not occur;</u> <u>c) it is permitted to contain a pyrotechnic trigger mechanism which may not contain more than 200 mg net of Division 1.4S; and</u> <u>d) the airbags inside the backpack must be equipped with pressure relief valves.</u>
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Radioactive material

<u>15) Radioisotopic cardiac pacemakers or other medical devices</u>	<u>N/A</u>	<u>N/A</u>	<u>No</u>	<u>The implant or external fitment on a person must as a result of a medical procedure.</u>
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Mercury

<u>16) Any small medical or clinical thermometer that contain mercury</u>	<u>Yes</u>	<u>No</u>	<u>No</u>	<u>a) a maximum of one per person; and</u> <u>b) it is required to be inside its protective casing.</u>
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Other dangerous goods

<u>17) Non-radioactive medicinal articles (including aerosols), toiletry articles (including aerosols) and aerosols</u>	<u>Yes</u>	<u>Yes</u>	<u>No</u>	<u>a) a maximum of 0.5 kg or 0.5 L total net quantity per single article;</u>
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<u>in Division 2.2 that does not have a subsidiary hazard</u>				<u>b) a maximum of 2 kg or 2 L total net quantity of all articles</u> <u>(e.g. four aerosol cans of 0.5 L each) per person;</u> <u>c) aerosols with a release valves must be protected by a cap or other suitable ways to prevent accidental release of the contents;</u> <u>and</u> <u>d) where there is release of gas it may not cause extreme annoyance or discomfort to crew members so that it may prevent the proper performance of assigned duties.</u>
<u>18) Dry ice</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>a) a maximum of 2.5 kg per person;</u> <u>b) it must be intended for use to pack perishables that are not subject to these rules;</u> <u>c) the package must allow for the release of carbon dioxide gas;</u> <u>and</u> <u>d) in the event that it is carried as checked</u>

				<u>baggage, every package are required to be marked:</u> <u>i) “DRY ICE” or “CARBON DIOXIDE, SOLID”;</u> and <u>ii) the net weight of dry ice must be recorded or an indication that the net weight is 2.5 kg or less.</u>
<u>19) Cartridges in Division 1.4S (UN 0012 or UN 0014 only) e.g. firearm ammunition.</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>a) a maximum of 5 kg gross mass per person;</u> <u>b) it is required to be securely packaged;</u> <u>c) ammunition with explosive or incendiary projectiles are not allowed; and</u> <u>d) the allowed maximum for more than one person must not be combined into one or more packages.</u>
<u>20) Permeation devices</u>	<u>Yes</u>	<u>No</u>	<u>No</u>	<u>See packing instructions in Special Provision A41.</u>
<u>21) Non-infectious specimens in flammable solutions</u>	<u>Yes</u>	<u>Yes</u>	<u>No</u>	<u>See packing and marking instructions in Special Provision A180.</u>
<u>22) Refrigerated liquid nitrogen</u>	<u>Yes</u>	<u>Yes</u>	<u>No</u>	<u>It is required to be contained inside insulated packagings that will not permit any build-up of pressure and must be fully absorbed in a porous material to prevent the</u>

				<u>release of any free liquid from the packaging.</u> <u>Also see Special Provision A152 for more detail requirements.</u>
<u>23) Dangerous goods installed or forming part of security-type equipment, such as security cases, cash boxes, cash bags, etc.</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>The security-type equipment must be fitted with a safety mechanism that will effectively prevent accidental activation. The dangerous goods installed or forming part of the equipment must comply with requirements contained in Special Provision A178.</u>

Table 92.01.3.4.2. Provisions for instruments carried by OPCW and government agencies

<u>Type of dangerous Goods items or articles</u>	<u>Location on board an aircraft</u>		<u>Cases where the approval of the operator is required</u>	<u>Restrictions</u>
	<u>Checked baggage</u>	<u>Carry-on baggage</u>		
<u>1) Instruments that contain radioactive substances (i.e. chemical agent monitors (CAM), rapid alarm and identification device monitors (RAID-M))</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>a) these instruments are not allowed to exceed the activity limits that are contained in Table 93.01.3.4.3;</u> <u>b) it is required to be securely packed; and</u> <u>c) It may only be carried by staff members of the Organization for the Prohibition of Chemical</u>

				<u>Weapons (OPCW) on official travel.</u>
<u>2) A mercurial barometer or mercurial thermometer</u>	<u>No</u>	<u>Yes</u>	<u>Yes</u>	<u>a) It may only be carried by a representative of a government weather bureau or equivalent official agency;</u> <u>b) It is required to be packed in a strong outer packaging, that has a sealed inner liner or a bag of strong leakproof and punctureresistant material impervious to mercury, which will prevent the escape of mercury from the package irrespective of its position; and</u> <u>c) the pilot-in-command must be notified of the barometer or thermometer.</u>

Table 92.01.3.4.3

Radioactive material: Activity limits for excepted packages

	<u>Instruments or article</u>		<u>Materials</u>
<u>Physical state of contents</u>	<u>Item limits*</u>	<u>Package limits*</u>	<u>Package limits*</u>
<u>Solids</u>			
<u>Special form</u>	$10^{-2} A_1$	A_1	$10^{-3} A_1$
<u>Other form</u>	$10^{-2} A_2$	A_2	$10^{-3} A_2$
<u>Liquids</u>	$10^{-3} A_2$	$10^{-1} A_2$	$10^{-4} A_2$
<u>Gases</u>			
<u>Tritium</u>	$2 \times 10^{-2} A_2$	$2 \times 10^{-1} A_2$	$2 \times 10^{-2} A_2$
<u>Special form</u>	$10^{-3} A_1$	$10^{-2} A_1$	$10^{-3} A_1$
<u>Other forms</u>	$10^{-3} A_2$	$10^{-2} A_2$	$10^{-3} A_2$

* For mixtures of radionuclides, refer to technical guidance material on the Determination of basic radionuclide values.

- (f) the substitution in Technical Standard 92.01.4 for section 1 of the following section:

“1. A person shall not label, mark, certify or offer packaging as complying with the requirements of these regulations unless that packaging is manufactured, fabricated, marked maintained, reconditioned, or repaired as required by **[Part]** Segment 6 of **[the Technical Instructions]** Annexure A.”;

- (g) the substitution in Technical Standard 92.01.10 for section 1 of the following section:

“1. Compliance

The reference to Document SA-CATS 92 in CAR 92.01.10 means the requirements and standards as prescribed in **[the Technical Instructions]** Document SA-CATS 92 ;

- (h) the substitution for Technical Standard 92.01.11 of the following Technical Standard:

“92.01.11 CLASSIFICATION AND LISTING OF DANGEROUS GOODS

The classification of an article or substance shall be in accordance with the provisions of **[Part]** Segment 2 of **[the Technical Instructions]** Annexure A.”;

- (i) the substitution in Technical Standard 92.01.11 for section 1 of the following section:

“1. Classes, divisions, packing groups

“Substances and articles **[subject to the Technical Instructions]** shall be assigned to one of nine classes according to the hazard or the most predominant of the hazards they present. Some of these classes are subdivided into divisions. These classes and divisions are:

(1) Class 1: Explosives

(a) Division 1.1: Substances and articles which have a mass explosion hazard.

(b) Division 1.2: Substances and articles which have a projection hazard but not a mass

explosion hazard.

- (c) Division 1.3: Substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.
- (d) Division 1.4: Substances and articles which present no significant hazard.
- (e) Division 1.5: Very insensitive substances which have a mass explosion hazard.
- (f) Division 1.6: Extremely insensitive articles which do not have a mass explosion hazard.

(2) Class 2: Gases

- (a) Division 2.1: Flammable gases.
- (b) Division 2.2: Non-flammable, non-toxic gases.
- (c) Division 2.3: Toxic gases.

(3) Class 3: Flammable liquids.

- (4) Class 4: Flammable solids; substances liable to spontaneous combustion; substances which, on contact with water, emit flammable gases
 - (a) Division 4.1: Flammable solids, self-reactive and related substances and solid desensitized explosives and polymerizing substances.
 - (b) Division 4.2: Substances liable to spontaneous combustion.
 - (c) Division 4.3: Substances which, in contact with water, emit flammable gases.

(5) Class 5: Oxidizing substances and organic peroxides

- (a) Division 5.1: Oxidizing substances.
- (b) Division 5.2: Organic peroxides.

(6) Class 6: Toxic and infectious substances

- (a) Division 6.1: Toxic substances.
- (b) Division 6.2: Infectious substances.

(7) Class 7: Radioactive material

(8) Class 8: Corrosive substances

(9) Class 9: Miscellaneous dangerous substances and articles, including environmentally hazardous substances

(a) For packing purposes, dangerous goods other than those of Classes 1, 2, 7, Divisions 5.2 and 6.2 and self-reactive substances of Division 4.1 are assigned to three packing groups in accordance with the degree of danger they present –

(i) Packing Group I: Substances presenting high danger;

(ii) Packing Group II: Substances presenting medium danger; and

(iii) Packing Group III: Substances presenting low danger.”;

(j) the substitution for Technical Standard 92.01.12 of the following Technical Standard:

“92.01.12 PACKING AND PACKAGING

1. Packing

Dangerous goods shall be packed in accordance with the requirements prescribed in **[Part] Segment 4** of **[the Technical Instructions] Annexure A**.

2. Packaging

(1) Packaging used for the transport of dangerous goods by air shall be of good quality and shall be well constructed and securely closed so as to prevent leakage which might be caused in normal conditions of transport, by changes in temperature, humidity or pressure, or by vibration.

(2) Packaging shall be suitable for the contents. Packaging in direct contact with dangerous goods shall be resistant to any chemical or other action of such goods.

(3) Packaging shall meet the material and construction specifications in **[Part] Segment 4** and **[Part] 6** of **[the Technical Instructions] Annexure A**.

(4) Packaging shall be tested in accordance with the provisions of **[Part] Segment 4** and **[Part] Segment 6** of **[the Technical Instructions] Annexure A**.

(5) Packaging for which retention of a liquid is a basic function, shall be capable of withstanding,

without leaking, the pressure stated in **[Part] Segment 4** and **[Part] Segment 6** of **[the Technical Instructions] Annexure A**.

- (6) Inner packaging shall be packed, secured or cushioned as to prevent breakage or leakage and to control movement within the packaging during normal conditions of air transport. Cushioning and absorbent materials shall not react dangerously with the contents of the packaging.
- (7) Packaging shall not be reused unless it has been inspected and found free from corrosion or other damage. Where packaging is reused, all necessary measures shall be taken to prevent contamination of subsequent contents.
- (8) Due to the nature of its former contents, uncleaned empty packaging may present a hazard and it shall be tightly closed and treated according to the hazard it constitutes.
- (9) An air service operator, shipper or an entity involved in the conveyance of dangerous goods shall ensure that shall no harmful quantity of a dangerous substance adhere to the outside of packages.”;

- (k) the substitution for Technical Standard 92.01.13 of the following Technical Standard:

“92.01.13 ABEL AND MARKING

1. Dangerous goods labels

Unless otherwise provided for in **[the Technical Instructions] Annexure A**, a package of dangerous goods shall be labelled appropriately and in accordance with the provisions prescribed in **[Part] Segment 5 [Chapter] Section 3** of **[the Technical Instructions] Annexure A**.

2. Dangerous goods markings

- (1) Unless otherwise provided for in **[Part] Segment 5, [Chapter] Section 2** of **[the Technical Instructions] Annexure A**, each package of dangerous goods shall be marked with the proper shipping name of its contents and, when assigned, the UN number and such other markings as may be specified in **[the Technical Instructions] Annexure A**.
- (2) Specification markings on packaging

(a) Packaging manufactured to a specification contained in **[the Technical Instructions]** Annexure A shall, unless otherwise provided for in **[Part]** Segment 5 **[chapter]** Section 2 of **[the Technical Instructions]** Annexure A, be so marked in accordance with the appropriate provisions of **[the Technical Instructions]** Annexure A and no packaging shall be marked with a packaging specification marking unless it meets the appropriate packaging specification contained in **[the Technical Instructions]** Annexure A.

(3) In addition to the languages which may be required by the State of origin. English shall be used.”;

(l) the substitution for Technical Standard 92.01.14 of the following Technical Standard:

“92.01.14 RESPONSIBILITY OF SHIPPER

(1) Responsibility of shipper

[The responsibilities of a shipper regarding the identification, classification, marking and labelling of packages containing dangerous goods and completion of the dangerous goods transport document are contained in Part 5 of the Technical Instructions].Before a person offers any package or overpack of dangerous goods for transport by air, such person must ensure that:

(a) the articles or substances are not forbidden for transport by air;

(b) the goods are properly classified, marked and labelled and otherwise in a condition for transport as required by these Instructions;

(c) the dangerous goods are packaged in compliance with all the applicable air transport requirements including:

(i) inner packaging and the maximum quantity per package limits;

(ii) appropriate types of packaging according to the packing instructions;

(iii) other applicable requirements indicated in the packing instructions including:

(aa) single packagings may be forbidden;

- (bb) only inner and outer packagings indicated in the packing instructions are permitted;
- (cc) inner packaging may need to be packed in intermediate packagings; and
- (dd) certain dangerous goods must be transported in packagings meeting a higher performance level.
- (iv) appropriate closure procedures for inner and outer packagings;
- (v) the compatibility requirements such as those in the particular packing requirements of the packing instructions;
- (vi) the absorbent material requirements in the packing instructions when applicable; and
- (vii) the pressure differential requirements.
- (d) the dangerous goods transport document has been properly executed and the declaration signed;
- (e) the overpack does not contain packages of dangerous goods which require segregation according to Table 92.01.29.1;
- (f) when an overpack is used, packages must be secured within the overpack;
- (g) the dangerous goods are not included in any freight container or unit load device except as specified in Document SA-CATS 92;
- (h) before a package or overpack is reused, all inappropriate dangerous goods labels and marks are removed or completely obliterated;
- (i) each package contained within an overpack is properly packed, marked, labelled and is free of any indication that its integrity has been compromised and in all respects is properly prepared as required in Annexure A. The “overpack” mark is an indication of compliance with this requirement. The intended function of each package must not be impaired by the overpack; and
- (j) packages and overpacks containing dangerous goods are offered to the air service operator separately from cargo which is not subject to these Technical Standards, except as provided for in Document SA-CATS 92.

- (1) In addition to the approval of package designs, multilateral shipment approval is also required in certain circumstances. In some circumstances it may be necessary to notify competent authorities of a shipment, except if such authority may authorise transport into or through its country without shipment approval, by a specific provision in its design approval.
- (2) The shipment of Type B(M) packages not conforming with the requirements of Document SA-CATS 92;
- (3) The shipment of Type B(M) packages containing radioactive material with an activity greater than 3000 A₁ or 3000 A₂, as appropriate, or 1000 TBq, whichever is the lower;
- (4) The shipment of packages containing fissile materials if the sum of the criticality safety indexes of the packages in a single freight container or in an aircraft exceeds 50; and
- (5) A competent authority may approve provisions under which consignments that do not satisfy all the applicable requirements of Document SA-CATS 92 may be transported under special arrangement. Notification to competent authorities is required as follows:
 - (a) Before the first shipment of any package requiring competent authority approval, the shipper must ensure that copies of each applicable competent authority certificate applying to that package design have been submitted to the competent authority of the country of origin of the shipment and to the competent authority of each country through or into which the consignment is to be transported. The shipper is not required to await an acknowledgement from a competent authority, nor is such competent authority required to make such acknowledgement of receipt of a certificate;
 - (b) For each of the following types of shipments:
 - (i) Type C packages containing radioactive material with an activity greater than 3000 A₁ or 3000 A₂, as appropriate, or 1000 TBq, whichever is the lower;
 - (ii) Type B(U) packages containing radioactive material with an activity greater than 3000 A₁ or 3000 A₂, as appropriate, or 1000 TBq, whichever is the lower;
 - (iii) Type B(M) packages;
 - (iv) Shipment under special arrangement;
 - (c) The shipper must notify a competent authority of the country of origin of the shipment and the competent authority of each country through or into which the consignment

is to be transported. This notification must be in the possession of each competent authority prior to commencement of the shipment, and preferably at least 7 days in advance. The shipper is not required to send a separate notification if the required information has been included in the application for approval of the shipment;

(d) The consignment notification must include:

(i) sufficient information to enable the identification of the package or packages including all applicable certificate numbers and identification marks;

(ii) information on the date of shipment, the expected date of arrival and proposed routing;

(i) the names of the radioactive material or nuclides;

(ii) descriptions of the physical and chemical forms of the radioactive material, or whether it is special form radioactive material or low dispersible radioactive material; and

(iii) the maximum activity of the radioactive contents during transport expressed in units of becquerels (Bq) with an appropriate SI prefix symbol. For fissile material, the mass of fissile material or of each fissile nuclide for mixtures when appropriate in units of grams (g), or multiples thereof, may be used in place of activity.

(6) A certificate issued by a competent authority is required for the following:

(a) Designs for:

(i) special form radioactive material;

(ii) low dispersible radioactive material;

(iii) fissile material excepted as specified in the Technical Standards;

(iv) packages containing 0.1 kg or more of uranium hexafluoride;

(v) packages containing fissile material unless excepted;

(vi) Type B(U) packages and Type B(M) packages;

(vii) Type C packages;

- (b) Special arrangements;
 - (c) Certain shipments;
 - (d) Determination of the basic radionuclide values for individual radionuclides which are not listed; and
 - (e) Alternative activity limits for an exempt consignment of instruments or articles.
- (7) A certificate of approval must confirm that the applicable requirements are met, and for design approvals, must attribute to the design an identification mark.
- (8) A certificate of approval for the package design and shipment may be combined into a single certificate. An application for certificate for approval must be in accordance with the requirements contained in Document SA-CATS 92.
- (9) The shipper must be in possession of a copy of each applicable certificate.
- (10) For package designs where it is not required that a competent authority issue a certificate of approval, the shipper must, on request, make available for inspection by the relevant competent authority, documentary evidence of the compliance of the package design with all the applicable requirements.
- (11) The transport index (TI) for a package, overpack or freight container, must be the number derived in accordance with the following procedure:
- (a) Determine the maximum dose rate in units of millisieverts per hour (mSv/h) at a distance of 1m from the external surfaces of the package, overpack, or freight container. The value determined must be multiplied by 100 and the resulting number is the transport index. For uranium and thorium ores and their concentrates, the maximum dose rate at any point 1m from the external surface of the load may be taken as:
 - (i) 0.4 mSv/h for ores and physical concentrates of uranium and thorium;
 - (ii) 0.3 mSv/h for chemical concentrates of thorium;
 - (iii) 0.02 mSv/h for chemical concentrates of uranium, other than uranium hexafluoride;
 - (b) For freight containers, the value referred to in paragraph (a) must be multiplied by the appropriate factor from Table 92.01.14.1;

(c) The value obtained in paragraph (a) and (b) must be rounded up to the first decimal place, such as 1.13 becomes 1.2, except that a value of 0.05 or less may be considered as zero and the resulting number is the transport index value.

(12) The transport index for each overpack or freight container must be determined as the sum of the transport indices of all the packages contained therein. However, for a rigid overpack, or a freight container from one single shipper, the shipper may determine the transport index by direct measurement of dose rate. The transport index for a non-rigid overpack must be determined only as the sum of the transport indices of all the packages within the overpack.

(13) **Determination of transport index**

Table 92.01.14.1. Multiplication factors for freight containers

<i>Size of load*</i>	<i>Multiplication factor</i>
size of load $\leq 1 \text{ m}^2$	1
$1 \text{ m}^2 < \text{size of load}$	2
$\leq 5 \text{ m}^2$ $5 \text{ m}^2 < \text{size}$	3
of load $\leq 20 \text{ m}^2$ 20	10
$\text{m}^2 < \text{size of load}$	
* Largest cross-sectional area of the load being measured.	

(14) The criticality safety index(CSI) for each overpack or freight container must be determined as the sum of the CSIs of all the packages contained. The same procedure must be followed for determining the total sum of CSIs in a consignment or aboard an aircraft.

(15) Packages, overpacks and freight containers must be assigned to either category I-

WHITE, II-YELLOW or III-YELLOW in accordance with the conditions specified in Table 92.01.14.2 and with the following requirements:

- (a) for a package, overpack or freight container, both the transport index and the surface dose rate conditions must be taken into account in determining which is the appropriate category. Where the transport index satisfies the condition for one category but the surface dose rate satisfies the condition for a different category, the package, overpack or freight container must be assigned to the higher category. For this purpose, category I-WHITE must be regarded as the lowest category;
- (b) the transport index must be determined following the procedures specified in Document SA-CATS 92;
- (c) if the surface dose rate is greater than 2 mSv/h, the package or overpack must be transported under exclusive use and under the provisions of Document SA-CATS 92;
- (d) a package transported under a special arrangement must be assigned to category III-YELLOW except under the provisions specified in Document SA-CATS 92;
- (e) an overpack or freight container which contains packages transported under special arrangement must be assigned to category III-YELLOW except under the provisions specified in Document SA-CATS 92.

(16) The following Table A1 contains categories of packages, overpacks and freight containers:

TABLE A1

<u>Conditions</u>		
<u>Transport index</u>	<u>Maximum dose rate at any point on external surface</u>	<u>Category</u>
<u>0*</u>	<u>Not more than 0.005 mSv/h</u>	<u>I-WHITE</u>
<u>More than 0 but not more than 1*</u>	<u>More than 0.005 mSv/h but not more than 0.5 mSv/h</u>	<u>II-YELLOW</u>

<u>More than 1 but not more than 10</u>	<u>More than 0.5 mSv/h but not more than 2 mSv/h</u>	<u>III-YELLOW</u>
<u>More than 10</u>	<u>More than 2 mSv/h but not more than 10 mSv/h</u>	<u>III-YELLOW**</u>
* <u>If the measured transport index is not greater than 0.05, the value quoted may be zero in accordance with 1.2.3.1.1 c).</u> ** <u>Must be transported under exclusive use and special arrangement except for freight containers (see Table 7-6).</u>		

(17) In all cases of international transport of packages requiring competent authority approval of design or shipment, for which different approval types apply in the different countries concerned by the shipment, the categorization must be in accordance with the certificate of the country of origin of design.

(18) Excepted packages of radioactive material of Class 7 must be legibly and durably marked on the outside of the packaging with:

- (a) the UN number preceded by the letters "UN";
- (b) an identification of either the shipper or consignee, or both; and
- (c) the permissible gross mass if this exceeds 50 kg.

(19) The documentation requirements do not apply to excepted packages of radioactive material of Class 7, except that:

- (a) the UN number preceded by the letters "UN" and the name and address of the shipper and the consignee and, if relevant, the identification mark for each competent authority certificate of approval must be shown on a transport document such as an air waybill or other similar document complying with the requirements;
- (b) the requirements, if relevant, in relation to special packing provisions, and
- (c) the packing requirements requirements.

(20) Where an agreement exists with the operator, the shipper may provide the information by EDP or EDI techniques. The requirements contained in Document SA-CATS 92 apply if relevant.

- (21) A shipper must provide such information to employees as will enable them to carry out the functions for which they are responsible with regard to the transport of dangerous goods by air.
- (22) Before a consignment of dangerous goods is offered for air transport, all relevant persons involved in its preparation must have received training to enable them to carry out the functions for which they are responsible. Where a shipper does not have trained staff, the “relevant persons” may be interpreted as applying to those employed to act on the shipper’s behalf and to undertake the shipper’s responsibilities in the preparation of the consignment. However, such persons must be trained as required in terms of Document SA-CATS 92.
- (23) Before a person offers any salvage packaging for transport by air, that person must ensure that:
- (a) it is marked with the proper shipping name and UN number of, and bear all the labels appropriate for, the dangerous goods contained therein; and
 - (b) it is marked with the word “Salvage” and the lettering of the “Salvage” mark must be at least 12 mm high;
 - (c) the words “Salvage packaging” are added after the description of the goods in the dangerous goods transport document; and
 - (d) where the package contains dangerous goods restricted to transport on cargo aircraft only, it bears a “Cargo aircraft only” label and the dangerous goods transport document contains the necessary statement.
 - (e) In addition, that person must ensure that all other applicable requirements are met.
- (24) Other than for Class 7, a packaging which previously contained dangerous goods must be identified, marked, labelled and placarded as required for those dangerous goods unless steps such as cleaning, purging of vapours or refilling with a non-dangerous substance are taken to nullify any hazard.
- (25) Before an empty packaging which had previously contained an infectious substance is returned to the shipper, or sent elsewhere, it must be disinfected or sterilized to nullify any hazard, and any label or mark indicating that it had contained an infectious substance must be removed or obliterated.
- (26) Freight containers as well as other packagings and overpacks used for the transport of

radioactive material must not be used for the storage or transport of other goods unless decontaminated below the level of 0.4 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters and 0.04 Bq/cm² for all other alpha emitters.

(27) When two or more dangerous goods are packed within the same outer packaging, the package must be labelled and marked as required for each substance. Labels need not be applied for a subsidiary hazard if the hazard is already represented by a primary hazard label.;

(2) Documentation

The documentation relating to a consignment of dangerous goods is provided for in regulation 92.01.15 and Technical Standard 92.01.15.”;

(m) the substitution for Technical Standard 92.01.15 of the following Technical Standard:

“92.01.15 DANGEROUS GOODS TRANSPORT DOCUMENT

1. A dangerous goods transport document need not be completed for dangerous goods conveyed in airmail and for dangerous goods conveyed in excepted quantities.

2. A dangerous good document may be provided electronically or on a paper document **[as provided for in Part 5; 4.1 of the Technical Instructions]** subject to the following:

- (a) where a paper document is used, the person who offers dangerous goods for transport by air shall provide the operator with 2 copies of the document, completed and signed.
- (b) where the dangerous goods information is provided through electronic means, the data shall be in a format that can be produced as a paper document without delay and with data in the sequence required **[the Technical Instructions]** in terms of Document SA-CATS 92.

(3) Declaration

The information that shall be contained in the declaration referred to in CAR 92.01.15 (2), is the

information prescribed in **[the Technical Instructions]** terms of Document SA-CATS 92**[Part 5.4.1.]**";

(4) **Dangerous Goods Transport Information**

- (a) A person who offers dangerous goods for transport by air must provide to an operator the information applicable to the consignment as set out in this paragraph. The information may be provided on a paper document or, where an agreement exists with the operator, by EDP or EDI techniques.
- (b) Where a paper document is used, a person who offers dangerous goods for transport by air must provide to the operator two copies of the dangerous goods transport document, completed and signed as provided for in subsection 4.
- (c) Where the dangerous goods transport information is provided by EDP or EDI techniques the data must be able to be produced as a paper document without delay, with the data in the sequence required in this section.
- (d) A dangerous goods transport document may be in any form, provided it contains all of the information required in Document SA-CATS 92 .
- (e) If both dangerous and non-dangerous goods are listed in one document, the dangerous goods must be listed first or otherwise be emphasized.

(5) **Continuation page**

- (a) A dangerous goods transport document may consist of more than one page, provided pages are consecutively numbered.
 - (b) The information on a dangerous goods transport document must be easy to identify, legible and durable.
 - (c) Shipper and consignee.
- (6) The name and address of the shipper and the consignee of the dangerous goods must be included on the dangerous goods transport document. For the transport of radioactive material, it is recommended that the telephone number of the consignee is

included to facilitate a prompt release at the airport of destination.

(7) Information required on the dangerous goods transport document. The dangerous goods transport document must contain the following information for each dangerous substance, material or article offered for transport:

- (a) the UN or ID number preceded by the letters “UN” or “ID” as appropriate;
- (b) the proper shipping name, as determined according to Document SA-CATS 92, including the technical name. ;
- (c) the primary hazard class or, when assigned, the division of the goods, including for Class 1 the compatibility group letter. The words “Class” or “Division” may be included preceding the primary hazard class or division numbers;
- (d) subsidiary hazard class or division number(s) corresponding to the subsidiary hazard label(s) required to be applied, when assigned, must be entered following the primary hazard class or division and must be enclosed in parenthesis. The words “Class” or “Division” may be included preceding the subsidiary hazard class or division numbers;
- (e) where assigned, the packing group for the substance or article which may be preceded by “PG” (such as “PG II”).
- (8) Sequence of the dangerous goods description. The five elements of dangerous goods description must be shown in the order listed above , with no information interspersed, except as provided in Document SA-CATS 92.
 - (a) Examples of a dangerous goods description are:
 - (i) “UN 1717 Acetyl chloride 3 (8) II” or
 - (ii) “UN 1717 Acetyl chloride, Class 3 (Class 8), PG II”

Information which supplements the proper shipping name in the dangerous goods description

- (b) The proper shipping name in the dangerous goods description must be supplemented as

follows:

- (i) Technical names for “n.o.s.” and other generic descriptions: Proper shipping names that are assigned an asterisk in column 1 of the Dangerous Goods List must be supplemented with their technical or chemical group names as described;
- (ii) Empty uncleaned packagings: Empty means of containment which contain the residue of dangerous goods of classes other than Class 7 must be described as such by, for example, placing the words “Empty uncleaned” or “Residue last contained” before or after the dangerous goods description;
- (iii) Wastes: For waste dangerous goods (other than radioactive wastes) which are being transported for disposal, or for processing for disposal, the proper shipping name must be preceded by the word “Waste”, unless this is already a part of the proper shipping name;
- (iv) Molten substances: When a substance, which is solid in accordance with the definition in the Technical Standards, is offered for transport in the molten state, the qualifying word “Molten” must be added as part of the proper shipping name, unless it is already part of the proper shipping name;
- (v) Stabilized substances: Unless already part of the proper shipping name, the word “Stabilized” must be added to the proper shipping name if stabilization is used.

Information required in addition to the dangerous goods description

- (a) In addition to the dangerous goods description the following information must be included after the dangerous goods description on the dangerous goods transport document.
- (9) Quantity of dangerous goods, number and type of packagings
- (a) The number of packages, type of packaging such as steel drum, fibreboard box, and net quantity of dangerous goods in each package (by volume or mass, as appropriate) must be indicated for each item of dangerous goods bearing a

different proper shipping name, UN number or packing group. Abbreviations may be used to specify the unit of measurement for the quantity.

(b) For packages containing the same dangerous goods and quantity per package a multiple of the quantity may be used, such as:

(i) UN 1263, Paint, 3, PG II, 5 fibreboard boxes x 5 L

(c) Consignment comprising packages of different quantities of the same dangerous good must be clearly identified such as:

(i) UN 1263, Paint, 3, PG II, 5 fibreboard boxes x 5 L, 10 fibreboard boxes x 10 L

(d) UN packaging codes may only be used to supplement the description of the kind of package (such as one fibreboard box (4G)). For limited quantities, where the letter "G" follows the quantity in column 11 of Table 3-1, the gross mass of each package must be indicated, rather than the net quantity, except when there are different dangerous goods packed together in the same outer packaging which must be described in terms of subsection 9, and:

- (i) for empty uncleaned packagings only the number and type of packagings need be shown;
- (ii) for chemical kits and first aid kits, the total net mass of dangerous goods. Where the kits contain solids or liquids, the net mass of liquids within the kits is to be calculated on a 1 to 1 basis of their volume, that is, 1 L equal to 1 kg;
- (iii) for dangerous goods in machinery or apparatus, the individual total quantities of dangerous goods in solid, liquid or gaseous state, contained in the article;
- (iv) for dangerous goods transported in salvage packagings, an estimate of the quantity of dangerous goods must be given;
- (v) for dangerous goods in limited quantities with a 30kg G limit, where different dangerous goods are packed together in the same outer packaging, the net quantity of each dangerous goods followed by the gross mass of the completed package;

- (vi) for explosive articles of Class 1, the net quantity indicated for each package must be supplemented with the net explosive mass contained in the package followed by the unit of measurement. The abbreviations “NEQ”, “NEM” or “NEW” may be indicated in association with the value provided.

(10) Salvage packagings

For dangerous goods transported in salvage packagings in accordance with the words “Salvage packaging” must be included.

(a) Chemical oxygen generators

When chemical oxygen generators contained in protective breathing equipment (PBE) are being transported under Special Provision A144, the statement “Aircrew protective breathing equipment (smoke hood) in accordance with Special Provision A144” must be included on the dangerous goods transport document.

(b) Self-reactive substances and organic peroxides

- (i) When organic peroxides and self-reactive substances are transported under conditions where approval is required, a statement to this effect must be included in the dangerous goods transport document. A copy of the classification approval and conditions of transport for non-listed organic peroxides and self-reactive substances must be attached to the dangerous goods transport document.
- (ii) When a sample of an organic peroxide or a self-reactive substance is transported, a statement to this effect must be included in the dangerous goods transport document.

(c) Infectious substances and controlled substances

The dangerous goods transport document must also include the name and telephone number of a responsible person when a national law or international convention prohibits the disclosure of the technical name following an “n.o.s.*” entry or for infectious substances, UN 2814 and UN 2900.

- (d) Firework classification reference.
- (e) When fireworks of UN 0336 or UN 0337 are transported, the dangerous goods transport document must include a classification reference(s) issued by the appropriate national authority.
- (f) The classification reference(s) must consist of the appropriate national authority's State, indicated by the distinguishing sign used on vehicles in international traffic, the appropriate national authority identification and a unique serial reference.

(11) Radioactive material

The following information must be included for each consignment of Class 7 material, as applicable, in the order given:

- (a) The name or symbol of each radionuclide or, for mixtures of radionuclides, an appropriate general description or a list of the most restrictive nuclides;
- (b) A description of the physical and chemical form of the material, or a notation that the material is special form radioactive material or low dispersible radioactive material. A generic chemical description is acceptable for chemical form;
- (c) The maximum activity of the radioactive contents during transport expressed in units of becquerels (Bq) with an appropriate SI prefix symbol. For fissile material, the mass of fissile material (or mass of each fissile nuclide for mixtures when appropriate) in units of grams (g), or appropriate multiples thereof, may be used in place of activity;
- (d) The category of the package and if applicable for the overpack and freight container, that is, I-WHITE, II-YELLOW, III-YELLOW;
- (e) The transport index as determined (except for category I-WHITE);
- (f) For Category II-Yellow and III-Yellow only: the dimensions including dimensional units of each package, or when placed in an overpack or freight container, the dimensions of the overpack, or the freight container, as applicable. The dimensions should be shown in the following order: length x width (or diameter, if applicable) x height. "L", "W" (or "D"), "H" may be shown immediately preceding their respective dimension. When a different order is used, the letters "L", "W" (or "D") and "H" must be shown accordingly.

(g) For fissile material:

(i) shipped under one exception;

(ii) shipped under the provisions for fissile material;

(iii) contained in a package for which there are special requirements as applicable to fissile material; and

(iv) the criticality safety index, where applicable.

(h) The identification mark for each competent authority certificate of approval

(i) For consignments of more than one package, the information contained in the packing instructions must be given for each package. For packages in an overpack or freight container, a detailed statement of the contents of each package within the overpack or freight container and, where appropriate, of each overpack or freight container must be included. If packages are to be removed from the overpack or freight container at a point of intermediate unloading, appropriate transport documents must be made available;

(ii) Where a consignment is required to be shipped under exclusive use, the statement "EXCLUSIVE USE SHIPMENT"; and

(iii) For LSA-II, LSA-III, SCO-I and SCO-II, the total activity of the consignment as a multiple of A_2 . For radioactive material for which the A_2 value is unlimited, the multiple of A_2 must be zero.

(12) The shipper must provide a statement regarding actions, if any, that are required to be taken by the carrier. The statement must be in the languages deemed necessary by the carrier or the authorities concerned, and must include at least the following points:

(i) Supplementary requirements for loading, stowage, carriage, handling and unloading of the package, overpack or freight container including any special stowage provisions for the safe dissipation of heat, or a statement that no such requirements are necessary;

(ii) Restrictions on the type of aircraft and any necessary routing instructions;

(iii) Emergency arrangements appropriate to the consignment. In all cases of international transport of packages requiring competent authority approval of design or shipment, for which different approval types apply in the different countries concerned by the shipment, the UN number and proper shipping name must be in accordance with the certificate of the country of origin of design.

(13) The applicable competent authority certificates need not necessarily accompany the consignment. The shipper must make them available.

(14) Additional requirements

(a) The dangerous goods transport document must also contain:

(i) except for radioactive material, the packing instruction applied. For shipments of lithium batteries prepared in accordance with Section IB of Packing Instruction 965 or Packing Instruction 968, the letters "IB" must be added following the packing instruction number;

(ii) when applicable, reference to Special Provision A1, A2, A4, A5, A51, A88, A99, A176, A190, A191, A201, A202, A211, A212, A224 or A225;

(iii) a statement indicating that the shipment is within the limitations prescribed for either passenger and cargo aircraft or cargo-only aircraft, as appropriate;

(iv) special handling information, when appropriate;

(v) an indication that an overpack has been used, when appropriate;

(vi) the "Q" value rounded up to the first decimal place,; and

(vii) for individual radionuclides or for mixtures of radionuclides for which relevant data are not available or which are not listed in the relevant tables and where the relevant tables were used to determine the maximum allowed activity, the use of the tables must be referenced as well as the radioactive contents as specified in the first column of the relevant Table. For example: "Table 92-13 used. Only beta- or gamma-emitting nuclides are known to be present".

(15) For explosive substances, where Packing Instruction 101 has been adopted by an appropriate national authority, the State's distinguishing sign for motor vehicles in

international traffic of the country for which the authority acts must be marked on the dangerous goods transport document.

(16) When self-reactive substances of Division 4.1, or organic peroxides of Division 5.2 or other substances having similar properties, are offered for transport, the shipper must indicate on the dangerous goods transport document that the packages containing such substances must be protected from direct sunlight and all sources of heat and be placed in adequately-ventilated areas.

(g) Classification where new data is available

For transport in accordance with the classification of dangerous goods, a statement to this effect must be included on the dangerous goods transport document.

(h) Application of special provisions

Where, in accordance with a special provision in, additional information is necessary, this additional information must be included on the dangerous goods transport document.

(17) Certification

(i) The dangerous goods transport document must include a certification or declaration that the consignment is acceptable for transport and that the goods are properly packaged, marked and labelled, and in proper condition for transport in accordance with Document SA-CATS 92 and including additional air transport requirements.

(18) The text for this certification is:

“I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.”

For air transport the following additional statement is required:

“I declare that all of the applicable air transport requirements have been met.”

The certification must be signed and dated by the shipper. Facsimile signatures are acceptable where applicable laws and regulations recognize the legal validity of facsimile

signatures.

- (a) If the dangerous goods documentation is presented to the operator by means of EDP or EDI transmission techniques, the signature(s) may be electronic signature(s) or may be replaced by the name(s) (in capitals) of the person authorized to sign. Where the original consignment details are provided to an operator, by EDP or EDI techniques, and subsequently the consignment is transhipped to an operator that requires a paper dangerous goods transport document, the operator must ensure the paper document indicates "Original Received Electronically" and the name of the signatory must be shown in capital letters.
- (b) In addition to the languages which may be required by the State of Origin, English should be used for the dangerous goods transport document.

(19) Air waybill

When an air waybill is issued for a consignment for which a dangerous goods transport document is required, the air waybill must contain a statement to indicate that the dangerous goods are described on an accompanying dangerous goods transport document. An air waybill issued for a consignment must, when applicable, indicate that the consignment must be loaded on cargo aircraft only.

(20) Additional documentation for other than radioactive material

- (a) When dangerous goods are shipped as authorized by Special Provision A1 or A2, they must be accompanied by a copy of the document(s) of approval, showing the quantity limitations, the packing requirements and, in the case of A2, the labelling requirements.
- (b) When dangerous goods are shipped in portable tanks as authorized by the appropriate authority, they must be accompanied by a copy of the document(s) of approval.
- (c) When dangerous goods are shipped in packaging as authorized, they must be accompanied by a copy of the document(s) of approval.
- (d) When organic peroxides and self-reactive substances require an approval prior to

transport, a copy of the approval must be attached to the dangerous goods transport document.

- (e) When dangerous goods are shipped under exemption, a copy of the exemption must accompany the consignment. Where more than one State has granted an exemption for a particular consignment, the documents that need to accompany it are the exemptions granted by the States of Origin, Transit (if relevant) and Destination.

(21) Retention of dangerous goods transport information

- (a) The shipper must retain a copy of the dangerous goods transport document and additional information and documentation as specified in Document SA-CATS 92, for a minimum period of three months and be made available to the appropriate national authority upon request.
- (b) When the documents are kept electronically or in a computer system, the shipper must be able to reproduce them in a printed form”.

- (n) the substitution for Technical Standard 92.01.17 of the following Technical Standard:

“92.01.17 OPERATOR’S COMPLIANCE WITH DANGEROUS GOODS REQUIREMENTS

1. An air service operator shall operate in accordance with the operator’s responsibilities as provided for in **[Part 7 of the Technical Instructions]** Document SA-CATS 92.
2. The dangerous goods procedures manual or chapter in the operator’s manual dealing with dangerous goods shall include the following operational areas –
 - (a) onboard operations;
 - (b) passenger handling operations;
 - (c) ramp handling operations; and
 - (d) cargo operations.”;

- (o) the substitution for Technical Standard 92.01.18 of the following Technical Standard:

“92.01.18 REQUIREMENTS FOR AN OPERATOR WITH NO APPROVAL TO CONVEY DANGEROUS GOODS AS CARGO

1. An air service operator with no approval for the transport of dangerous goods as cargo shall provide procedures and instructions in the operations manual as follows:

- (a) policy on non-carriage of dangerous goods;
- (b) procedures and instructions for the provision of adequate training to personnel responsible for accepting and handling cargo or packaged materials on how to recognise items classified as dangerous goods;
- (c) procedures and instructions to assist personnel to identify and reject undeclared or mis-declared dangerous goods, including COMAT classified as dangerous goods;
- (d) procedures and instructions for reporting damaged packages found to contain, or that are suspected of containing dangerous goods in compliance with the regulations and these Technical Standards;
- (e) procedures for provision of information to passengers with regards to dangerous goods prohibited onboard an aircraft;
- (f) procedures and instructions to ensure that all spares and COMAT classified as dangerous goods are offered for conveyance by a different mode of transport or offered to an air service operator authorised to convey dangerous goods as cargo;
- (g) procedures and instructions to ensure that an employee, agent, or contract employee of an operator who prepares and offers COMAT classified as dangerous goods for shipment by any mode, is fully trained as a dangerous goods shipper;
- (h) a dangerous goods training programme that meets the requirements of the regulations **[and these Technical Instructions]**;
- (i) procedures to conduct quality audits pertaining to dangerous goods;
- (j) report to the appropriate authorities in the State of Operator and the State of occurrence of any—
 - (i) occasions where undeclared or mis-declared dangerous goods are discovered in cargo or mail; and
 - (ii) dangerous goods incidents or accidents;
- (k) include all other items prescribed in the regulations as part of the operations manual.”;

- (p) the substitution for Technical Standard 92.01.19 of the following Technical Standard:

“92.01.19 REQUIREMENTS FOR AN OPERATOR WITH APPROVAL TO CONVEY DANGEROUS GOODS AS CARGO

1. An operator with approval for the conveyance of dangerous goods as cargo shall provide instructions and procedures in the operations manual as follows –

- (a) policy on the carriage of dangerous goods;
- (b) designate a person to be responsible for dangerous goods as required by the regulations;
- (c) procedures in its dangerous goods operations manual to meet, at a minimum, the requirements of **[the Technical Instructions and the regulations]** Document SA-CATS 92, to enable personnel to—
 - (i) identify and reject undeclared or mis-declared dangerous goods, including COMAT classified as dangerous goods;
 - (ii) report to the appropriate authorities in the State of the Operator and the State of Occurrence of any—
 - (aa) occasions where undeclared or mis-declared dangerous goods are discovered in cargo or mail; and
 - (bb) dangerous goods incidents or accidents;
- (d) report to the State of the Operator and the State of Origin, any occasions when dangerous goods are discovered to have been carried—
 - (i) without being loaded, segregated, separated or secured in accordance with **[the Technical Instructions and]** the regulations; and
 - (ii) without information having been provided to a PIC;
- (e) procedures on how to accept, handle, store, inspect, transport, load and unload dangerous goods, including COMAT classified as cargo onboard an aircraft;
- (f) provide the PIC with the accurate and legible written or printed information concerning dangerous goods that are to be carried as cargo;
- (g) provision of information to employees working in passenger handling, check-in, ramp handling, cargo and sales, as well as passengers, as prescribed in the regulations;

- (h) procedures and instructions to ensure that an employee, agent, or contract employee of an air service operator who prepares and offers COMAT classified as dangerous goods, is fully trained as a dangerous goods shipper;
 - (i) a dangerous goods training programme that meets the requirements of **[the Technical Instructions and the regulations]** Document SA-CATS 92;
 - (j) procedures to conduct a risk assessment and quality audits pertaining to dangerous goods; and
 - (k) other items **[provided for in the regulations]** in terms of Document SA-CATS 92 as part of the operations manual.”;
- (q) the substitution for Technical Standard 92.01.21 of the following Technical Standard:

“92.01.21 HELICOPTER OPERATIONS

1. Slung loads usage and carriage of dangerous goods by helicopter is permissible if a helicopter operator is authorised to carry dangerous goods in accordance with **[Part 7 of the Technical Instructions]** Document SA-CATS 92 and goods—
 - (a) are carried as a slung load;
 - (b) are in a proper condition for carriage by air;
 - (c) are segregated in accordance with **[the Technical Instructions]** Document SA-CATS 92, or, if they are likely to react dangerously with one another, are not carried in the same load;
 - (d) are not prohibited by **[the Technical Instructions]** Document SA-CATS 92 for conveyance by air under any circumstances;
 - (e) are packed and stowed to prevent leakage or damage during the flight;
 - (f) are not fireworks, pyrotechnics or other explosives intended to be activated during the flight;
 - (g) only operating crew and persons associated with the goods are carried on board the helicopter; and
 - (h) the helicopter’s PIC is notified before the load is carried what the goods are and the quantity of them in the load.”;

- (r) the substitution for Technical Standard 92.01.29 of the following Technical Standard:

“92.01.29 LOADING AND STOWAGE

1. Loading and stowage

[The requirements for the storage and loading of dangerous goods are contained in Part 7, Chapter 2 of the Technical Instructions];

- (1) Dangerous goods must not be carried in a passenger-occupied aircraft cabin or on the flight deck, except where specifically permitted. For radioactive material, this restriction does not apply to excepted packages.
- (2) Dangerous goods may be carried in a main-deck cargo compartment of a passenger aircraft only when the compartment meets all applicable certification requirements for a Class B or Class C aircraft cargo compartment.
- (3) Dangerous goods bearing the “Cargo Aircraft Only” label must not be transported on a passenger aircraft.
- (4) The State of Origin and the State of the Operator may approve the transportation of dangerous goods in main-deck cargo compartments of passenger aircraft that do not meet the requirements.
- (5) Additional requirements relating to the loading of dangerous goods for transportation by helicopter as specified in the Technical Standards must also be complied with.
- (6) Packages containing dangerous goods that could react dangerously with one another must not be stowed next to each other or placed in a position where they could interact if leakage occurs.
- (7) At a minimum, the segregation requirements provided in Table 92.01.29.1 must be followed to ensure adequate separation between packages containing dangerous goods with different hazards.
- (8) These segregation requirements apply whether the hazard is identified as the primary hazard or a subsidiary hazard.

(9) Packages and overpacks containing UN 3480 - Lithium-ion batteries, prepared in accordance with Section IA or Section IB of Packing Instruction 965, and packages and overpacks containing UN 3090- Lithium metal batteries, prepared in accordance with Section IA or Section IB of Packing Instruction 968, must not be stowed next to, or placed in a position where they could interact with, packages or overpacks bearing a hazard label for:

(a) Class 1, except Division 1.4S;

(b) Division 2.1;

(c) Class 3;

(d) Division 4.1; or

(e) Division 5.1.

(10) To ensure adequate segregation, the requirements specified in Table 92.01.29.1 must be followed.

(11) The segregation requirements are determined by all hazard labels displayed on the package or overpack, regardless of whether the hazard is classified as the primary or subsidiary hazard.

(12) Only explosives classified as Division 1.4, Compatibility Group S, may be transported on passenger aircraft.

(13) The following explosives may be transported on cargo aircraft:

(a) Division 1.3: Compatibility Groups C and G

(b) Division 1.4: Compatibility Groups B, C, D, E, G and S

(14) The extent to which explosives may be stowed together on an aircraft depends on their compatibility.

(15) Explosives are considered compatible when they can be stowed together without significantly increasing either the likelihood of an accident or, for a specified quantity, the severity of the consequences should an accident occur.

(16) Explosives classified as Compatibility Group S may be stowed together with explosives belonging to any other compatibility group.

- (17) When explosives have different division numbers and compatibility groups, the separation requirements specified in Table 92.01.29.2 must be followed to ensure that the required separation distances between the packages are maintained.

Table 92.01.29.1. Package Separation Requirements

<u>Division or Class</u>											
<u>Hazard label</u>	<u>1</u>	<u>2.1</u>	<u>2.2, 2.3</u>	<u>3</u>	<u>4.1</u>	<u>4.2</u>	<u>4.3</u>	<u>5.1</u>	<u>5.2</u>	<u>8</u>	<u>9 see 2.2.1 2</u>
<u>1</u>	<u>Key Point 1</u>	<u>Key Point 2</u>	<u>Key Point 2</u>	<u>Key Point 2</u>	<u>Key Point 2</u>	<u>Key Point 2</u>	<u>Key Point 2</u>	<u>Key Point 2</u>	<u>Key Point 2</u>	<u>Key Point 2</u>	<u>Key Point 2</u>
<u>2.1</u>	<u>Key Point 2</u>	=	=	=	=	=	=	=	=	=	X
<u>2.2, 2.3</u>	<u>Key Point 2</u>	=	=	=	=	=	=	=	=	=	=
<u>3</u>	<u>Key Point 2</u>	=	=	=	=	=	=	X	=	=	X
<u>4.1</u>	<u>Key Point 2</u>	=	=	=	=	=	=	=	=	=	X
<u>4.2</u>	<u>Key Point 2</u>	=	=	=	=	=	=	X	=	=	=
<u>4.3</u>	<u>Key Point 2</u>	=	=	=	=	=	=	=	=	X	=
<u>5.1</u>	<u>Key Point 2</u>	=	=	X	=	X	=	=	=	=	X
<u>5.2</u>	<u>Key</u>	=	=	=	=	=	=	=	=	=	=

	<u>Point 2</u>										
8	<u>Key</u> <u>Point 2</u>	=	=	=	=	=	X	=	=	=	=
9 see 2.2.1.2	<u>Key</u> <u>Point 2</u>	X	=	X	X	=	=	X	=	=	=

An “X” at the intersection of a row and column indicates that packages containing these classes or divisions of dangerous goods must be kept separate. They must not be stowed next to or in contact with one another or placed in a position where leakage from one package could interact with the contents of another. For example, a package containing Class 3 dangerous goods must not be stowed next to or in contact with a package containing Division 5.1 dangerous goods.

Key Point 1.- See separation requirements for explosive substances and articles.

Key Point 2.- This class or division must not be stowed together with explosives other than those in Division 1.4, Compatibility

Group S.

Key Point 3.- Packages containing dangerous goods with multiple hazards in the class or divisions which require segregation in accordance with Table 92.01.29.1 need not be segregated from other packages bearing the same UN number.

Key Point 4.- UN 3528, **Engines, internal combustion, flammable liquid powered, Engines, fuel cell, flammable** liquid powered, Machinery internal combustion, flammable liquid powered and Machinery,

fuel cell, flammable liquid powered need not be segregated from packages containing dangerous goods in Division 5.1.

Table 92.01.29.2. Separation Requirements for Explosive Substances
and Articles

<u>Compatibility Group and Division</u>	<u>1.3C</u>	<u>1.3G</u>	<u>1.4B</u>	<u>1.4C</u>	<u>1.4D</u>	<u>1.4E</u>	<u>1.4G</u>	<u>1.4S</u>
<u>1.3C</u>			X					
<u>1.3G</u>			X					
<u>1.4B</u>	X	X		X	X	X	X	
<u>1.4C</u>			X					
<u>1.4D</u>			X					
<u>1.4E</u>			X					
<u>1.4G</u>			X					
<u>1.4S</u>								

An “X” at the intersection of a row and column indicates that explosives belonging to the specified divisions and compatibility groups must be loaded in separate unit load devices (ULDs). When stowed on board the aircraft, the ULDs must be separated by other cargo by a minimum distance of 2 meters.

If the explosives are not transported in a unit load device, they must be placed in separate, non-adjacent loading positions and separated from each other by other cargo by a minimum distance of 2 meters.

- (18) During air transport, packages containing dangerous goods that display the package orientation label specified in terms of Document SA-CATS 92 must be loaded, stowed, and handled on board the aircraft in accordance with the instructions indicated by the label.
- (19) Single packaging containing liquid dangerous goods and fitted with end closures must be positioned and stowed on the aircraft with the closures facing upwards, even if the packaging also has closures on its sides.
- (20) Packages or overpacks of dangerous goods displaying the “Cargo Aircraft Only” label must be loaded onto a cargo aircraft in accordance with one of the following requirements:
- (a) In a Class C aircraft cargo compartment; or
 - (b) In a Unit Load Device (ULD) fitted with a fire detection and suppression system equivalent to that required for a Class C aircraft cargo compartment, as determined by the appropriate national authority. A ULD approved by the appropriate national authority as meeting Class C cargo compartment standards must have “Class C Compartment” clearly indicated on its ULD identification tag; or
 - (c) In a manner that allows a crew member or other authorized person to access the packages or overpacks in the event of an emergency. Where the size and weight permit, the packages or overpacks must also be capable of being handled and separated from other cargo; or
 - (d) By external carriage on a helicopter; or
 - (e) For helicopter operations, inside the cabin, provided approval has been obtained from the Commissioner.
- (21) The requirements specified in 92.01.29.(20) (a), (b), and (c) do not apply to the following dangerous goods:
- (a) Flammable liquids (Class 3), Packing Group III, except those that have a subsidiary hazard of Class 8;

- (b) Toxic substances (Division 6.1) that have no subsidiary hazard other than Class 3;
- (c) Infectious substances (Division 6.2);
- (d) Radioactive material (Class 7);
- (e) Miscellaneous dangerous goods (Class 9);
- (f) UN 3528 - Engines or machinery powered by flammable liquid, including internal combustion engines, fuel cell engines, internal combustion machinery, or fuel cell machinery; and
- (g) UN 3529 - Engines or machinery powered by flammable gas, including internal combustion engines, fuel cell engines, internal combustion machinery, or fuel cell machinery.
- (22) An air service operator must secure dangerous goods within the aircraft in a manner that prevents them from moving during transport.
- (23) For packages or overpacks containing radioactive material, the securing arrangements must be sufficient to ensure that the required separation distances specified in Document SA-CATS 92 are maintained at all times.
- (24) When dangerous goods are loaded onto an aircraft, the operator must take appropriate measures to protect the packages from damage caused by the movement of baggage, mail, stores, or other cargo.
- (25) Particular care must be taken when preparing packages for transport, considering the type of aircraft being used and the method of loading required. Packages must be handled and loaded in a way that prevents accidental damage, including damage caused by dragging, dropping, or improper handling.
- (26) If a package of dangerous goods loaded onto an aircraft appears to be damaged or leaking, the operator must remove it from the aircraft or arrange for its removal by an appropriate authority or organization.
- (27) The package must then be disposed of safely.
- (28) Where a package appears to be leaking, the operator must also verify that:
 - (a) The remaining consignment is in a suitable condition for air transport; and
 - (b) No other package, baggage, or cargo has been contaminated.
- (29) For packages containing infectious substances (Class 6) or radioactive material (Class 7), the applicable procedures in relation to inspecting and reacting to damage and leakage must also be followed.

- (30) Throughout air transport, including during storage, all markings and labels required by these Instructions must remain clearly visible and unobstructed.
- (31) They must not be covered, concealed, or made unreadable by any part of the packaging, attachment, or by another label or marking.
- (32) If an operator identifies that any marks required in terms of Document SA-CATS 92 or any dangerous goods labels, have been lost, detached, damaged, or become illegible, the operator must replace them with the appropriate marks or labels.
- (33) The replacement must be based on the information provided in the Dangerous Goods Transport Document or, where applicable, another transport document such as an Air Waybill.
- (34) Each Unit Load Device (ULD) containing dangerous goods that require a hazard class label must display an identification tag on its exterior stating that dangerous goods are contained within the ULD.
- (35) This requirement does not apply where the applicable hazard class labels are already clearly visible.
- (36) The identification tag must:
- (a) Have a prominent red-hatched border on both sides and remain visible at all times;
 - (b) Have minimum dimensions of 148 mm × 210 mm; and
 - (c) Clearly display the primary and subsidiary hazard class or division numbers of the dangerous goods contained within the ULD.
 - (d) Where the identification tag is placed inside a protective tag holder, all information on the tag must remain clear, legible, and visible.
 - (e) If the ULD contains packages displaying the “Cargo Aircraft Only” label, either:
 - (i) The “Cargo Aircraft Only” label must remain visible; or
 - (ii) The identification tag must clearly indicate that the ULD may only be loaded onto a cargo aircraft.
 - (f) The identification tag must be removed immediately after all dangerous goods have been unloaded from the ULD.

- (36) Radiation exposure to personnel involved in the transport and storage of radioactive material must be controlled so that they are not likely to receive a radiation dose exceeding the limit permitted for members of the public.
- (37) In special circumstances, arrangements may be made with the appropriate competent authority for such personnel to be classified as radiation workers, in which case the applicable requirements for radiation workers must be followed.
- (38) All personnel involved in the transport and storage of radioactive material must receive appropriate training and instructions on the hazards involved and the precautions that must be taken.
- (39) Radiation exposure should always be kept as low as reasonably achievable (ALARA).
- (40) The separation distances specified in Tables 92.01.29.3 and 92.01.29.4 are minimum requirements. Greater separation distances should be applied where practicable.
- (41) Where possible, packages containing radioactive material that are carried in the underfloor cargo compartments of passenger aircraft should be positioned on the floor of the compartment.
- (42) The total activity of LSA material or SCO carried on an aircraft in Type IP-1, Type IP-2, or Type IP-3 packages must not exceed the applicable limits specified in Table 92.01.29.5.
- (43) All consignments of radioactive material must be securely stowed during transport and while in temporary storage; Provided that—
- (a) The average surface heat flux does not exceed 15 W/m²; and
- (b) The cargo immediately surrounding the package is not contained in sacks or bags, a package or overpack may be transported or stored together with packaged general cargo without special stowage arrangements.
- (c) Any additional requirements specified by the competent authority in an applicable certificate of approval must also be followed.

- (d) The loading of freight containers and the accumulation of packages, overpacks, and freight containers must be controlled as follows:
 - (i) Unless the shipment is being transported under exclusive use, the total number of packages, overpacks, and freight containers on a single aircraft must be controlled so that the combined transport index (TI) does not exceed the limits specified in Table 92.01.29.6.
 - (e) There is no limit on the sum of transport indexes for consignments of LSA-I material.
 - (f) When a consignment is transported under exclusive use, there is no limit on the total transport index aboard a single aircraft. However, the minimum separation distance requirements in terms of Document SA-CATS 92 must still be met.
 - (g) Under normal transport conditions, the dose rate must not exceed 2 mSv/h at any point on the external surface of the aircraft.
 - (h) The total Criticality Safety Index (CSI) in a freight container and on board the aircraft must not exceed the limits specified in Table 92.01.29.7.
-
- (45) Any package or overpack with a Transport Index (TI) greater than 10, or any consignment with a Criticality Safety Index (CSI) greater than 50, must be transported under exclusive use only.
 - (46) Any group of packages, overpacks and freight containers containing fissile material stored in transit in any one storage area must be so limited that the total sum of the criticality safety indexes in the group does not exceed 50. Each group must be stored so as to maintain a spacing of at least 6m from other such groups.

**Table 92.01.29.3. Minimum Required Distance
Between the Surface of Radioactive Material
Packages, Overpacks and Freight Containers
and the Nearest Inside Surface of Passenger**

Cabin or Flight Deck Partitions or Floors,
Regardless of Carriage Duration

<u>Minimum</u> <u>distance(meters)</u>	<u>Total sum of</u> <u>transport indexes</u>
<u>0.30</u>	<u>0.1 – 1.0</u>
<u>0.50</u>	<u>1.1 – 2.0</u>
<u>0.70</u>	<u>2.1 – 3.0</u>
<u>0.85</u>	<u>3.1 – 4.0</u>
<u>1.00</u>	<u>4.1 – 5.0</u>
<u>1.15</u>	<u>5.1 – 6.0</u>
<u>1.30</u>	<u>6.1 – 7.0</u>
<u>1.45</u>	<u>7.1 – 8.0</u>
<u>1.55</u>	<u>8.1 – 9.0</u>
<u>1.65</u>	<u>9.1 – 10.0</u>
<u>1.75</u>	<u>10.1 – 11.0</u>
<u>1.85</u>	<u>11.1 – 12.0</u>
<u>1.95</u>	<u>12.1 – 13.0</u>

<u>Minimum distance (meters)</u>	<u>Total sum of transport indexes</u>
<u>2.05</u>	<u>13.1 – 14.0</u>
<u>2.15</u>	<u>14.1 – 15.0</u>
<u>2.25</u>	<u>15.1 – 16.0</u>
<u>2.35</u>	<u>16.1 – 17.0</u>
<u>2.45</u>	<u>17.1 – 18.0</u>
<u>2.60</u>	<u>18.1 – 20.0</u>
<u>2.90</u>	<u>20.1 – 25.0</u>
<u>3.20</u>	<u>25.1 – 30.0</u>
<u>3.50</u>	<u>30.1 – 35.0</u>
<u>3.75</u>	<u>35.1 – 40.0</u>
<u>4.00</u>	<u>40.1 – 45.0</u>
<u>4.25</u>	<u>45.1 – 50.0</u>

When more than one package, overpack, or freight container is carried on the aircraft, the minimum separation distance for each individual item must be determined using the above table. The calculation must be based on the combined Transport Index (TI) values of all the individual packages, overpacks, or freight containers.

Alternatively, the packages, overpacks, or freight containers may be arranged into separate groups. In this case, the minimum distance between each group and the nearest inside surface of the passenger cabin or flight deck partitions or floors must be determined according to the combined Transport Index of that group.

Each group must also be separated from every other group by a distance of at least three times the separation distance applicable to the group with the higher

combined Transport Index.

Key Point- For total sum of transport indexes over 50 to be carried by cargo aircraft only, see Table 92.01.29.4.

Table 92.01.29.4. Minimum distance from surface of packages, overpacks and freight containers of radioactive material, carried by cargo aircraft only, to the nearest inside surface of the flight deck partitions or floor, or other areas occupied by personnel, irrespective of carriage duration

<u>Total sum of transport indexes</u>	<u>Minimum distance (metres)</u>	<u>Total sum of transport indexes</u>	<u>Minimum distance (metres)</u>
<u>50.1 – 60.0</u>	<u>4.65</u>	<u>180.1 – 190.0</u>	<u>8.55</u>
<u>60.1 – 70.0</u>	<u>5.05</u>	<u>190.1 – 200.0</u>	<u>8.75</u>
<u>70.1 – 80.0</u>	<u>5.45</u>	<u>200.1 – 210.0</u>	<u>9.00</u>
<u>80.1 – 90.0</u>	<u>5.80</u>	<u>210.1 – 220.0</u>	<u>9.20</u>
<u>90.1 – 100.0</u>	<u>6.10</u>	<u>220.1 –</u>	<u>9.40</u>

		<u>230.0</u>	
<u>100.1 – 110.0</u>	<u>6.45</u>	<u>230.1 –</u> <u>240.0</u>	<u>9.65</u>
<u>110.1 – 120.0</u>	<u>6.70</u>	<u>240.1 –</u> <u>250.0</u>	<u>9.85</u>
<u>120.1 – 130.0</u>	<u>7.00</u>	<u>250.1 –</u> <u>260.0</u>	<u>10.05</u>
<u>130.1 – 140.0</u>	<u>7.30</u>	<u>260.1 –</u> <u>270.0</u>	<u>10.25</u>
<u>140.1 – 150.0</u>	<u>7.55</u>	<u>270.1 –</u> <u>280.0</u>	<u>10.40</u>
<u>150.1 – 160.0</u>	<u>7.80</u>	<u>280.1 –</u> <u>290.0</u>	<u>10.60</u>
<u>160.1 – 170.0</u>	<u>8.05</u>	<u>290.1 –</u> <u>300.0</u>	<u>10.80</u>
<u>170.1 – 180.0</u>	<u>8.30</u>		

If more than one package, overpack or freight container is placed in the aircraft, the minimum separation distance for each individual package, overpack or freight container must be determined in accordance with the above table, on the basis of the sum of the transport index numbers of the individual packages, overpacks or freight containers. Alternatively, if the packages, overpacks or freight containers are separated into groups, the minimum distance from the nearest inside surface of the flight deck partition or floor to each group is the distance applicable to the sum of transport indexes within the individual groups, provided that each group is separated from each other group by at least three times the distance applicable to the one that has the larger sum of transport indexes.

Key Point - For smaller sums of transport indexes, see Table 92.01.29.3. Distances for total sum of transport indexes over 200 apply to exclusive use only.

Table 92.01.29.5. Aircraft activity limits for LSA material and SCO in industrial packages

<u>Material Type</u>	<u>Aircraft Activity Limit</u>
<u>LSA-I</u>	<u>No restriction applies</u>
<u>LSA-II and LSA-III non-combustible solids</u>	<u>No restriction applies</u>
<u>LSA-II and LSA-III combustible solids, and all liquids and gases</u>	<u>100 A₂</u>
<u>SCO</u>	<u>100 A₂</u>

Table 92.01.29.6. Transport index limits for freight containers and aircraft not under exclusive use

<u>Type of freight container or aircraft</u>	<u>Limit on total sum of transport indexes in a freight container or aboard an aircraft</u>
<u>Freight container</u>	
<u>Small freight container</u>	<u>50</u>

<u>Large freight container</u>	<u>50</u>
<u>Aircraft</u>	
<u>Passenger</u>	<u>50</u>
<u>Cargo</u>	<u>200</u>

Table 92.01.29.7. Critical safety indexes limits for freight containers and aircraft containing fissile material

<u>Limit on total sum of criticality safety indexes in a freight container or aboard an aircraft</u>		
<u>Aircraft or Freight Container Type</u>	<u>Not under exclusive use</u>	<u>Under exclusive use</u>
<u>Freight container</u>		
<u>Small freight container</u>	<u>50</u>	<u>n.a.</u>
<u>Large freight container</u>	<u>50</u>	<u>100</u>
<u>Aircraft</u>		
<u>Passenger</u>	<u>50</u>	<u>n.a.</u>
<u>Cargo</u>	<u>50</u>	<u>100</u>

- (47) Where the total sum of the criticality safety indexes on board an aircraft or in a freight container exceeds 50, as permitted in Table 7-7, storage must be such as to maintain a spacing of at least 6 m from other groups of packages, overpacks or freight containers containing fissile material or other conveyances carrying radioactive material.

- (48) Fissile material meeting one of the provisions for fissile material in terms of Document SA-CATS 92 must meet the following requirements:
- (a) only one of the provisions for fissile material as contained in terms of Document SA-CATS 92 is allowed per consignment;
 - (b) only one approved fissile material in packages classified in terms of Document SA-CATS 92 is allowed per consignment unless multiple materials are authorized in the certificate of approval;
 - (c) fissile material (Uranium with a maximum uranium enrichment of 5 per cent by mass uranium-235) in packages classified in accordance with the requirements in terms of Document SA-CATS 92 must be transported in a consignment with no more than 45 g of fissile nuclides;
 - (d) fissile material (Fissile nuclides with a total mass not greater than 2 g per package) in packages classified in terms of Document SA-CATS 92 must be transported in a consignment with no more than 15 g of fissile nuclides;
 - (e) fissile material (Fissile nuclides with a total mass not greater than 45 g) classified in terms of Document SA-CATS 92 must be transported under exclusive use on an aircraft with no more than 45 g of fissile nuclides.
- (49) Type B(M) packages and consignments under exclusive use must not be transported on passenger aircraft.
- (50) Vented Type B(M) packages, packages which require external cooling by an ancillary cooling system, packages subject to operational controls during transport, and packages containing liquid pyrophoric materials must not be transported by air
- (51) Packages or overpacks having a surface dose rate greater than 2 mSv/h must not be transported by air except by special arrangement.

- (52) Except in the case of shipment under special arrangement, mixing of packages of different kinds of radioactive material, including fissile material, and mixing of different kinds of packages with different transport indexes is permitted without specific competent authority approval. In the case of shipments under special arrangement, mixing is not permitted except as specifically authorized under the special arrangement.
- (53) Categories II – Yellow and III – Yellow packages, overpacks or freight containers must be separated from persons. The minimum separation distances to be applied are shown in Tables 92.01.29.3 and 92.01.29.4 and these distances are from the surface of the packages, overpacks or freight containers to the nearest inside surface of the passenger cabin or flight deck partitions or floors, irrespective of the duration of the carriage of the radioactive material. Table 92.01.29.4 applies only when radioactive material is being carried by a cargo aircraft, and in those circumstances the minimum distances must be applied as above and also to any other areas occupied by persons.
- (54) Categories II – Yellow and III – Yellow packages, overpacks or freight containers must be separated from undeveloped photographic films or plates. The minimum separation distances to be applied are shown in Table 7-8 and these distances are from the surface of the packages, overpacks or freight containers to the surface of the packages of undeveloped photographic films or plates.
- (55) Categories II – Yellow and III – Yellow packages, overpacks or freight containers must be separated from live animals by a distance of at least 0.5 meters for journeys not exceeding 24 hours, and by a distance of at least 1.0 meters for journeys longer than 24 hours.
- (56) Magnetized material must be loaded in a manner that ensures aircraft compass readings remain within the tolerances specified by the applicable airworthiness requirements. Where practicable, such material should be positioned to minimize any potential interference with aircraft compasses. The combined effect of multiple packages containing magnetized material must also be considered.

- (57) Where magnetized material is transported under an approval specified in Packing Instruction 953, it must be loaded in accordance with all conditions and requirements stated in the applicable approval.

Table 92.01.29.8. Minimum distance in metres from surface of each package, overpack or freight container of radioactive material to undeveloped photographic films or plates, for carriage lasting up to 48 hours

<u>Combin</u> <u>ed</u> <u>Transp</u> <u>ort</u> <u>Index</u>	<u>Carriage</u> <u>Duration</u>					
	<u>2</u> <u>hour</u> <u>s or</u> <u>less</u>	<u>2-4</u> <u>hours</u>	<u>4-8</u> <u>hours</u>	<u>8-12</u> <u>hours</u>	<u>12-24</u> <u>hours</u>	<u>24-48</u> <u>hours</u>
<u>1</u>	<u>0.4</u>	<u>0.6</u>	<u>0.9</u>	<u>1.1</u>	<u>1.5</u>	<u>2.2</u>
<u>2</u>	<u>0.6</u>	<u>0.8</u>	<u>1.2</u>	<u>1.5</u>	<u>2.2</u>	<u>3.1</u>
<u>3</u>	<u>0.7</u>	<u>1.0</u>	<u>1.5</u>	<u>1.8</u>	<u>2.6</u>	<u>3.8</u>
<u>4</u>	<u>0.8</u>	<u>1.2</u>	<u>1.7</u>	<u>2.2</u>	<u>3.1</u>	<u>4.4</u>
<u>5</u>	<u>0.8</u>	<u>1.3</u>	<u>1.9</u>	<u>2.4</u>	<u>3.4</u>	<u>4.8</u>
<u>10</u>	<u>1.4</u>	<u>2.0</u>	<u>2.8</u>	<u>3.5</u>	<u>4.9</u>	<u>6.9</u>
<u>20</u>	<u>2.0</u>	<u>2.8</u>	<u>4.0</u>	<u>4.9</u>	<u>6.9</u>	<u>10.0</u>
<u>30</u>	<u>2.4</u>	<u>3.5</u>	<u>4.9</u>	<u>6.0</u>	<u>8.6</u>	<u>12.0</u>
<u>40</u>	<u>2.9</u>	<u>4.0</u>	<u>5.7</u>	<u>6.9</u>	<u>10.0</u>	<u>14.0</u>
<u>50</u>	<u>3.2</u>	<u>4.5</u>	<u>6.3</u>	<u>7.9</u>	<u>11.0</u>	<u>16.0</u>
<u>Key Point- The above is calculated so that the radiation dose received by the films does not exceed 0.1 mSv (10 mrem).</u>						

- (58) Dry ice (carbon dioxide, solid), whether transported on its own or used as a refrigerant for other commodities, may be carried provided that the operator has established appropriate arrangements based on relevant factors. These factors include:
- (a) The type of aircraft;
 - (b) The aircraft ventilation rate;
 - (c) The method used to package and stow the dry ice;
 - (d) Whether animals are being transported on the same flight; and
 - (e) Any other relevant operational considerations.
- (59) The operator must ensure that ground handling personnel are informed whenever dry ice is being loaded or is present on board the aircraft.
- (60) Where dry ice is contained in a Unit Load Device (ULD) prepared by a single shipper in accordance with Packing Instruction 954, and the operator adds additional dry ice after accepting the shipment, the operator must ensure that the information provided to the pilot-in-command reflects the updated total quantity of dry ice on board.
- (61) Loading Requirements for UN 2211 – Expandable Polymeric Beads and UN 3314 – Plastics Moulding Compound:
- (a) A maximum net quantity of 100 kg of expandable polymeric beads (or granules) or plastics moulding compound, as specified in Packing Instruction 957, may be carried in any inaccessible cargo compartment of an aircraft.
- (62) Loading of mobility aids powered by non-spillable wet batteries or batteries which comply with Special Provision A123 or A199.
- (63) An air service operator must secure, by use of straps, tie-downs or other restraint devices, a battery-powered mobility aid with installed battery(ies). The mobility aid, the battery(ies), electrical cabling and controls must be protected from damage including by the movement of baggage, mail or cargo.
- (64) An operator must verify that:
- (a) the passenger has confirmed that a battery is:
 - (ii) a non-spillable wet battery that complies with Special Provision A67;

- (iii) a dry battery that complies with Special Provision A123; or
 - (iv) a nickel-metal hydride battery that complies with Special Provision A199;
- (b) the battery terminals are protected from short circuits such as being enclosed within a battery container;
- (c) a battery is either:
 - (i) adequately protected against damage by the design of the mobility aid and securely attached to the mobility aid. The electrical circuits must be isolated following the manufacturer's instructions; or
 - (ii) removed from the mobility aid, following the manufacturer's instructions; and
- (d) a maximum of one non-spillable wet spare battery is carried per passenger.
- (65) An air service operator must ensure that a battery removed from the mobility aid and any spare battery are carried in strong, rigid packagings, protected from short circuit and stowed in the cargo compartment.
- (66) An air service operator must inform the pilot-in-command of the location of any mobility aids with installed battery, removed battery and spare battery.
- (67) An air service operator must secure, by use of straps, tie-downs or other restraint devices, a battery-powered mobility aid with installed battery. The mobility aid, the battery electrical cabling and controls must be protected from damage including by the movement of baggage, mail or cargo.
- (68) An air service operator must verify that:
 - (a) the battery terminals are protected from short circuits such as being enclosed within a battery container;
 - (b) the battery is fitted, where feasible, with spill resistant-vent caps; and
 - (c) the battery is either:
 - (i) adequately protected against damage by the design of the mobility aid and securely attached to the mobility aid. The electrical circuits must be isolated following the manufacturer's instructions; or
 - (ii) removed from the mobility aid, following the manufacturer's instructions when required in terms of Document SA-CATS 92.

- (69) An operator must load, stow, secure, and unload a spillable battery-powered mobility aid in an upright position. If the mobility aid cannot be loaded, stowed, secured and unloaded always in an upright position or if the mobility aid does not adequately protect the battery, the operator must remove the battery and carry it in strong, rigid packagings, as follows:
- (a) packagings must be leak-tight, impervious to battery fluid and be protected against being overturned by securing them to pallets or by securing them in cargo compartments using appropriate means of securement;
 - (b) battery must be protected against short circuits, secured upright in these packagings and surrounded by compatible absorbent material sufficient to absorb its total liquid contents; and
 - (c) packagings must be marked "Battery, wet, with wheelchair" or "Battery, wet, with mobility aid" and be labelled with a Corrosive" label and with package orientation labels in terms of Document SA-CATS 92.
- (70) The operator must inform the pilot-in-command of the location of any mobility aids with installed spillable battery and removed battery.
- (71) An air service operator must secure, by use of straps, tie-downs or other restraint devices, a battery-powered mobility aid with installed battery. The mobility aid, the battery, electrical cabling and controls must be protected from damage including by the movement of baggage, mail or cargo.
- (72) An air service operator must verify that:
- (a) a battery terminal protected from short circuits such as being enclosed within a battery container;
 - (b) a battery is either:
 - (i) adequately protected against damage by the design of the mobility aid and securely attached to the mobility aid. The electrical circuits must be isolated following the manufacturer's instructions; or
 - (ii) removed from the mobility aid, following the manufacturer's instructions; and

- (c) each removed battery does not exceed 300 Wh. A maximum of one spare battery not exceeding 300 Wh or two spare batteries each not exceeding 160 Wh may be carried.
 - (73) An operator must ensure that any battery removed from the mobility aid and any spare battery is carried in the cabin and protected from damage by placing each battery in a protective pouch and the battery terminals protected from short circuit by insulating the terminals, by taping over exposed terminals.
 - (74) An air service operator must inform the pilot-in-command of the location of any mobility aids with installed lithium ion battery, removed battery and spare battery.
 - (75) During the course of transport, packages or unit load devices containing self-reactive substances of Division 4.1 or organic peroxides of Division 5.2 must be shaded from direct sunlight, stored away from all sources of heat in a well-ventilated area.
 - (76) When handling and loading intermediate bulk containers (IBCs), the markings in terms of Document SA-CATS 92 must be considered, where applicable”.
- (s) the substitution in Technical Standard 92.01.30 for section 1 of the following section:

“92.01.30 INSPECTION FOR DAMAGE OR LEAKAGE

1. Radiation level

The radiation level resulting from the fixed contamination of any accessible surface and non-fixed contamination must be below the values prescribed in terms of Document SA-CATS 92[Part 7,3 of the Technical Instructions]:

- (1) Immediately prior to loading packages or overpacks containing dangerous goods, an air service operator must inspect such packages or overpacks to ensure they are free from evidence of leakage or damage and must not load same if there are evidence of leakage or damage.
- (2) An air service operator must ensure that a unit load device is not loaded aboard an aircraft unless the device has been inspected and found free from any evidence of leakage from or damage to any dangerous goods contained therein.
- (3) An air service operator must ensure that packages or overpacks containing

dangerous goods must be inspected for signs of damage or leakage upon unloading from the aircraft or unit load device. If evidence of damage or leakage is found, the position where the dangerous goods or unit load device was stowed on the aircraft must be inspected for damage or contamination and any hazardous contamination removed.

(4) If any air service operator or person responsible for the carriage of packages containing infectious substances becomes aware of damage to or leakage from such a package, the following must be done:

(a) avoid handling the package or maintain handling to a minimum;

(b) inspect adjacent packages for contamination and place separately any that may have been contaminated;

(c) inform the Port Health Service and the airport authority and provide information on any other countries of transit where persons may have been exposed to danger;

(d) notify the shipper or the consignee.

(5) If it is clear that a package is damaged or leaking, or if there is a suspicion that the package may have leaked or damaged, access to the package must be controlled to authorised persons or such qualified person must, as soon as possible, assess the extent of contamination and the resultant dose rate of the package. The scope of the assessment must include the package, the aircraft, the nearby loading and unloading areas and, if necessary, all other material which has been carried in the aircraft. When necessary, additional steps for the protection of persons' property and the environment, in accordance with provisions established by the relevant competent authority, must be taken to overcome and minimize the consequences of such leakage or damage.

(6) Packages of radioactive material that are damaged or leaking in excess of the maximum allowable limits for normal conditions of transport may be removed to a remote acceptable interim location under supervision, but must not be loaded on board an aircraft or forwarded until repaired or reconditioned and decontaminated.

(7) Where aircraft and equipment are regularly used for the transport of radioactive material it must be periodically checked to determine the level of contamination.

The frequency of such checks must be related to the likelihood of contamination and the extent to which radioactive material is transported.

- (8) Except as provided in Regulation 92.01.30 (9), any aircraft or equipment or any part thereof that become contaminated above the maximum permitted limits in the course of the transport of radioactive material, or which shows a dose rate in excess of 5 μ Sv/h at the surface, must be decontaminated as soon as possible by a qualified person and must not be re-used unless the following conditions are met:
- (a) the dose rate from fixed contamination must not exceed 5 μ Sv/h at the surface.
 - (b) Non-fixed contamination that is present on the external surfaces of any package must be kept as low as practicable and, under normal conditions of transport, must not go over the following limits:
 - (i) 4 Bq/cm² for beta and gamma emitters and low toxicity alpha emitters;
and
 - (ii) 0.4 Bq/cm² for all other alpha emitters.
- (9) Where an overpack, freight container, or aircraft is dedicated to the transport of radioactive material under exclusive use, the requirements as provided in Regulation 92.01.30 (8) shall not be applicable, solely with regard to its internal surfaces and only for as long as it remains under that specific exclusive use.
- (10) If an air service operator becomes aware that baggage or cargo not identified as containing dangerous goods has been contaminated and it is suspected that dangerous goods may be the cause of the contamination, the operator must take reasonable steps to identify the nature and source of the contamination before proceeding with the loading of the contaminated baggage or cargo.
- (11) Where contaminating substances are found or suspected to be a substance classified as dangerous goods by these Instructions, the air service operator must separate the baggage or cargo and take appropriate steps to nullify any identified hazard before the baggage or cargo is loaded on board an aircraft.

- (t) the substitution in Technical Standard 92.01.31 for section 1 of the following section:

“92.01.31 LOADING RESTRICTIONS IN PASSENGER CABIN OR ON FLIGHT DECK

1. Conveyance of dangerous goods in aircraft cabin or flight deck

Dangerous goods may not be conveyed in an aircraft cabin occupied by passengers or on a flight deck or in a cockpit of an aircraft, except as permitted by Technical Standard 92.01.3 **[Part 1, 2.2.1 and Part 8 Chapter 1 of the Technical Instructions and for radioactive material, except packages permitted under Part 2,7 of [the Technical Instructions]]**”;

- (u) the substitution for Technical Standard 92.01.32 of the following Technical Standard:

“92.01.32 SEPARATION AND SEGREGATION

1. Stowage of poison or infectious substances

The stowage of poison or an infectious substance must be done in accordance with **[Part 7,3 of the Technical Instructions]** Technical Standard 92.01.30.

2. Stowage of radioactive materials

The stowage of radioactive materials must be done in accordance with **[Part 7,2 of the Technical Instructions]** Technical Standard 92.01.29.”;

- (v) the substitution in Technical Standard 92.01.33 for section 1 of the following section:

“92.01.33 SECURING OF DANGEROUS GOODS CARGO LOADS

1. An air service operator shall ensure that dangerous goods are secured during conveyance as described in **[Part 7, 2.4 and Part 7, 2.9 of the Technical Instructions]** Technical Standard 92.01.29";
- (w) the substitution in Technical Standard 92.01.34 for section 1 of the following section:

"92.01.34 LOADING IN CARGO AIRCRAFT

1. Loading in cargo aircraft

[The packages or overpacks of dangerous goods bearing the "cargo aircraft only" label shall be loaded for carriage by a cargo aircraft in accordance with the provisions described below: in Part 7.2.4.1 of the Technical Instructions].";

- (1) Packages or overpacks of dangerous goods that are labeled with the "Cargo aircraft only" handling label must be loaded for carriage by a cargo aircraft in accordance with one of the following requirements:
- (a) in a Class C aircraft cargo compartment; or
 - (b) in a unit load device equipped with a fire detection or suppression system comparable to that required by the certification requirements of a Class C aircraft cargo compartment as determined by the Commissioner.
 - (A) a ULD that is determined by the Commissioner to meet the Class C aircraft cargo compartment standards must include "Class C compartment" on the ULD tag; or
 - (c) loaded so that when there is an emergency involving such packages or overpacks, a crew member or other authorized person can access the packages or overpacks, and can handle and, where size and mass permit, separate such packages or overpacks from other cargo; or
 - (d) external carriage by a helicopter; or
 - (e) with the approval of the State of the Operator, for helicopter operations, in the

cabin

(2) The requirements of Regulation 92.01.34.(1) (a); (b) or (c) do not apply to:

(a) flammable liquids (Class 3), Packing Group III, other than those with a subsidiary hazard of Class 8;

(b) toxic substances (Division 6.1) with no subsidiary hazard other than Class 3;

(c) infectious substances (Division 6.2);

(d) radioactive material (Class 7);

(e) miscellaneous dangerous goods (Class 9);

(f) UN 3528 – Engine, internal combustion, flammable liquid powered or Engine, fuel cell, flammable liquid powered or Machinery, internal combustion, flammable liquid powered or Machinery, fuel cell, flammable liquid powered; and

(g) UN 3529 – Engine, internal combustion, flammable gas powered or Engine, fuel cell, flammable gas powered or Machinery, internal combustion, flammable gas powered or Machinery, fuel cell, flammable gas powered.

(3) In instances where dangerous goods shipments need to be transported in a non-pressurized cargo compartment, there will be a large pressure variance up to 75 kPa at cruising altitudes. Packages that are filled at a normal atmospheric pressure may not be capable of withstanding this pressure differential, which may cause the packages to break causing leakage. It is advisable that confirmation is obtained from the shipper if the packagings are suitable for transport in a non-pressurized cargo compartment.

(x) the substitution for Technical Standard 92.01.35 of the following Technical Standard:

“92.01.35 PROVISION OF INFORMATION TO PIC

1. Information to PIC

(1) An air service operator of an aircraft in which dangerous goods are to be carried shall provide the PIC as early as practicable before departure with written information as specified in [Part 7,4.1 of the Technical Instructions]in Document SA-CATS 92.

(2) The minimum information that an air service operator shall provide to a PIC in a NOTOC shall include the following –

- (a) the date of the flight;
- (b) the air waybill number;
- (c) the proper shipping name and UN Number or ID number as listed in in Document SA-CATS 92 **[the Technical Instructions]**;
- (d) the class or division, and subsidiary hazards corresponding to the subsidiary hazard labels applied, by numerals, and in the case of Class 1, the compatibility group;
- (e) the packing group shown on the dangerous goods transport document;
- (f) the number of packages and their exact loading location;
- (g) the net quantity or gross mass of each package, if applicable, except that this does not apply to radioactive material or other dangerous goods where the net quantity or gross mass is not required on the dangerous goods transport document or any alternative written documentation.

For a consignment consisting of multiple packages containing dangerous goods bearing the same proper shipping name and UN number or ID number, only the total quantity and an indication of the quantity of the largest and smallest package at each loading location need to be provided.

For consumer commodities, the information provided may be either the gross mass of each package or the average gross mass of the packages as shown on the dangerous goods transport document;

- (h) For radioactive material, the number of packages, overpacks or freight containers, their category, their transport index (if applicable) and their exact loading location;
- (i) whether the package must be carried on cargo aircraft only; and
- (j) the aerodrome at which the package is to be unloaded.

- (3) As early as practicable before departure, and in any case no later than when the aircraft begins to move under its own power, the air service operator must:
- (a) provide a PIC with accurate, legible written or printed information regarding dangerous goods carried as cargo; and
 - (b) provide the personnel responsible for operational control of the aircraft such as flight operations officers, flight dispatchers, or designated ground personnel with the same information provided to a PIC.
- (4) An air service operator shall identify in their operations manual or equivalent documentation the personnel by job title or function who must receive this information.
- (5) For helicopter operations, with approval from the State of the Operator, the information provided to the PIC may be abbreviated or communicated through alternative means such as radio communication or operational documentation such as a journey log or operational flight plan where issuing written or printed information is impracticable.
- (6) Unless otherwise specified, the minimum information to a PIC must include:
- (a) date of the flight;
 - (b) air waybill number (if issued);
 - (c) proper shipping name (technical names on transport documents are not required) and UN/ID number as listed in these Instructions. For chemical oxygen generators in protective breathing equipment under Special Provision A144, the proper shipping name “oxygen generator, chemical” must be supplemented with “Aircrew protective breathing equipment (smoke hood) in accordance with Special Provision A144”;

- (d) class or division and subsidiary hazard(s) (including numerically identified labels), and for Class 1, the compatibility group;
 - (e) packing group;
 - (f) number of packages and exact loading location (radioactive material excepted, see (g));
 - (g) net quantity or gross mass per package, except where not required in terms of Document SA-CATS 92For multiple packages with identical proper shipping names and UN/ID numbers, only total quantity and range of package sizes per loading location are required. For consumer commodities, either gross mass per package or average gross mass may be used;
 - (h) for radioactive material: number of packages, overpacks or freight containers, category, transport index (if applicable), and exact loading location;
 - (i) indication if the package must be carried on cargo aircraft only;
 - (j) destination aerodrome for unloading;
 - (k) indication of transport under a State exemption, where applicable;
 - (l) a telephone number for obtaining a copy of the information during flight if permitted as an alternative.
- (7) For UN 1845 Carbon dioxide, solid (dry ice), the information may be limited to UN number, proper shipping name, class, total quantity per cargo compartment, and destination aerodrome.
- (8) For UN 3480 (Lithium-ion batteries) and UN 3090 (Lithium metal batteries), the information may be limited to UN number, proper shipping name, class, total quantity per loading location, destination aerodrome, and whether cargo aircraft only restrictions apply. Shipments under State exemption must still comply fully with Technical Standard 92.01.35.
- (9) The information must include a signed confirmation or equivalent from the loading responsible person confirming that no damage or leakage was observed in packages or unit load devices.

- (10) The information must remain readily accessible to a PIC during flight.
- (11) Information shall be provided on a dedicated form and not via air waybills, invoices, or transport documents.
- (12) A PIC must acknowledge receipt of the information on a copy.
- (13) A legible copy of the dedicated form must be retained on the ground, marked to indicate receipt by the PIC, and remain accessible to operational personnel until flight arrival.
- (14) English should be used in addition to any other languages required by the State of the Operator.
- (15) Where full transmission of information is impractical in-flight, a summary must be provided, including at minimum quantity and class or division per cargo compartment.
- (16) The dangerous goods listed in Table 92.01.35.9 are not required to appear on the information provided to a PIC.

Table 92.01.35.9 - Exempted Items

<u>UN Number</u>	<u>Item</u>
<u>n/a</u>	<u>Dangerous goods packed in excepted quantities</u>
<u>UN 2807</u>	<u>Magnetized material</u> with field strengths causing a compass deflection of not more than 2 degrees at a distance of 4.6 m
<u>UN 2908</u>	<u>Radioactive material, excepted package – empty packaging</u>
<u>UN 2909</u>	<u>Radioactive material, excepted package – articles manufactured from natural uranium or depleted uranium or natural thorium</u>

<u>UN 2910</u>	<u>Radioactive material, excepted package – limited quantity of material</u>
<u>UN 2911</u>	<u>Radioactive material, excepted package – instruments or articles</u>
<u>UN 3091</u>	<u>Lithium metal batteries contained in equipment</u> (including lithium alloy batteries) when meeting the requirements of Packing Instruction 970, Section II
<u>UN 3091</u>	<u>Lithium metal batteries packed with equipment</u> (including lithium alloy batteries) when meeting the requirements of Packing Instruction 969, Section II

<u>UN 3164</u>	<u>Articles, pressurized, hydraulic</u> containing non-flammable gas when meeting the requirements of Packing Instruction 208 a)
<u>UN 3164</u>	<u>Articles, pressurized, pneumatic</u> containing non-flammable gas when meeting the requirements of Packing Instruction 208 a)
<u>UN 3245</u>	<u>Genetically modified micro-organisms</u>
<u>UN 3245</u>	<u>Genetically modified organisms</u>
<u>UN 3373</u>	<u>Biological substance, Category B</u>
<u>UN 3481</u>	<u>Lithium-ion batteries contained in equipment</u> (including lithium-ion polymer batteries) when meeting the requirements of Packing Instruction 967, Section II
<u>UN 3481</u>	<u>Lithium-ion batteries packed with equipment</u> (including lithium-ion polymer batteries) when

	<u>meeting the requirements of Packing Instruction 966, Section II</u>
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- (17) An air service operator must include in operational manuals all necessary information enabling flight and ground personnel to perform their duties related to dangerous goods transport. This includes emergency procedures and details of cargo compartment layout and numbering, as well as:
- (a) maximum dry ice quantity per compartment;
 - (b) loading instructions for radioactive material in accordance with Technical Standard 92.01.29.
- (18) Where applicable, this information must also be provided to ground handling agents.
- (19) In the event of an in-flight emergency, the PIC must inform ATS, as soon as practicable, of any dangerous goods onboard for relay to aerodrome authorities.
- (a) Where possible, the information must include:
 - (i) proper shipping name and/or UN number
 - (ii) class/division and compatibility group (for Class 1)
 - (iii) subsidiary hazards
 - (iv) quantity and location onboard
 - (v) or a contact number for accessing full information
 - (b) If full details cannot be provided, a summary of the most relevant information must be given.
- (20) An air service operator must report all dangerous goods accidents and incidents to the appropriate authorities of both the State of the Operator and the State where the event occurred, in accordance with applicable reporting requirements. This includes incidents involving dangerous goods not fully subject to the regulations due to exemptions or special provisions.

- (21) An air service operator must report any occurrence of undeclared or misdeclared dangerous goods found in cargo or mail to relevant authorities.
- (22) An air service operator must also report dangerous goods discovered in passenger baggage or on persons that are not permitted under Technical Standard 92.01.3.
- (23) Operators must report to the appropriate authority any instance where:
 - (a) dangerous goods are carried contrary to Technical Standard 92.01.29 requirements; or
 - (b) required PIC information under Technical Standard 92.01.35 was not provided.
- (24) In the event of an accident or serious incident involving dangerous goods, operators must immediately provide emergency services with available dangerous goods information and subsequently notify relevant State authorities.
- (25) In incidents, information must be provided upon request to emergency services and authorities.
- (26) These requirements must be incorporated into operational manuals and contingency plans.
- (27) Operators or handling agents must ensure that clearly visible notices are displayed at cargo acceptance areas, informing shippers or agents about dangerous goods restrictions, including visual examples such as batteries.
- (28) Operators must ensure that emergency response information is immediately available for all consignments requiring dangerous goods documentation. This may be provided via:
 - (a) ICAO Doc 9481 – Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods; or
 - (b) any equivalent document containing appropriate emergency information.

(29) An air service operator must retain at least one copy of relevant documents for a minimum of three months after the flight, including:

(a) dangerous goods transport documents

(b) acceptance checklists

(c) identity of acceptance personnel

(d) PIC information

(30) These must be available to authorities upon request and may be stored electronically if reproducible in printed form.

(31) For packages or freight containers not accepted due to shipper errors, documentation, acceptance checklists, and personnel identification must also be retained for at least three months after completion of the acceptance process.

(y) the substitution for Technical Standard 92.01.36 of the following Technical Standard:

“92.01.36 DANGEROUS GOODS CARRIED BY PASSENGERS OR FLIGHT CREW MEMBERS

1. Dangerous goods carried by passengers or flight crew members

(1) A passenger or flight crew member shall not carry dangerous goods except in accordance with the requirements and standards contained in Technical Standard 92.01.3.4.(1) [Part 8, Chapter 1 of the Technical Instructions].

(2) Table 92.01.3.4.(1).[8-1 of the Technical Instructions] shall be consulted for more updated information to prevent undeclared dangerous goods from being loaded on an aircraft and to prevent passengers from taking on board those dangerous goods which they are not permitted to carry in their baggage.

(3) The following is a list of general descriptions and the types of dangerous goods that may be hidden in a baggage carried by passengers and crew—

(a) aircraft on ground (AOG) spares — may contain explosives in the form of flares or other pyrotechnics or chemical oxygen generators;

- (b) tyre assemblies, cylinders of compressed gas such as oxygen, carbon dioxide or fire extinguishers, as well as fuel in equipment;
- (c) wet or lithium batteries or matches;
- (d) automobile parts or supplies for cars and motorcycles which may include engines, including fuel cell engines, carburettors or fuel tanks that contain or have contained fuel, wet or lithium batteries, compressed gases in tyre inflation devices and fire extinguishers, air bags, flammable adhesives, paints, sealants and solvents;
- (e) batteries for powered devices or equipment which may contain wet or lithium batteries;
- (f) breathing apparatus which may indicate cylinders of compressed air or oxygen, chemical oxygen generators or refrigerated liquefied oxygen;
- (g) camping equipment which may contain flammable gases such as butane or propane, flammable liquids such as kerosene or petrol, or other flammable solids such as hexamine and matches;
- (h) chemicals which may contain items meeting any of the criteria for dangerous goods, particularly flammable liquids or flammable solids;
- (i) oxidizers, organic peroxides, toxic or corrosive substances;
- (j) consolidated consignments or groupages which may contain any of the defined classes of dangerous goods;
- (k) cryogenic liquid which indicates refrigerated liquefied gases such as argon, helium, neon or nitrogen;
- (l) cylinders which may contain compressed or liquefied gas;
- (m) dental apparatus which may contain flammable resins or solvents, compressed or liquefied gas, mercury and radioactive material;
- (n) diagnostic specimens which may contain infectious substances;
- (o) diving equipment which may contain cylinders of compressed gas such as air or oxygen. These may also contain high intensity diving lamps that can generate extreme heat when operated in air. In order to be carried safely, the bulb or battery should be disconnected;
- (p) drilling and mining equipment which may contain explosives or other

dangerous goods dry shipper or vapour shipper, which may contain free liquid nitrogen. Dry shippers are only subject to the Technical Instructions when they permit the release of free liquid nitrogen, irrespective of the orientation of the packaging;

- (q) electrical or electronic equipment which may contain magnetized material, mercury in switch gear, electron tubes, wet or lithium batteries or fuel cells or fuel cell cartridges that contain or have contained fuel;
- (r) electrically powered apparatus such as wheelchairs, lawnmowers or golf carts which may contain wet or lithium batteries or fuel cells or fuel cell cartridges that contain or have contained fuel;
- (s) expeditionary equipment which may contain explosives or flares, flammable liquids such as petrol, flammable gas or gas for camping equipment, or other dangerous goods;
- (t) film crew and media equipment which may contain explosive pyrotechnic devices, generators incorporating internal combustion engines, wet or lithium batteries, fuel or heat-producing items;
- (u) frozen embryos which may be packed in refrigerated liquefied gas or dry ice;
- (v) frozen fruit, vegetables which may be packed in dry ice or solid carbon dioxide;
- (w) fuel control units which may contain flammable liquids;
- (x) a hot-air balloon which may contain cylinders with flammable gas, fire extinguishers, internal combustion engines and batteries;
- (y) household goods which may contain items meeting the criteria for dangerous goods containing flammable liquids such as solvent-based paint, adhesives, polishes, aerosols for passengers which are not permitted under Table 8-1, bleach, corrosive oven or drain cleaners, ammunition or matches;
 - (aa) instruments which may conceal barometers, manometers, mercury switches, rectifier tubes or thermometers containing mercury;
 - (bb) laboratory or testing equipment which may contain items meeting

any of the criteria for dangerous goods, particularly flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances, lithium batteries or cylinders of compressed gas;

- (cc) machinery parts which may contain flammable adhesives, paints, sealants and solvents, wet and lithium batteries, mercury, cylinders of compressed or liquefied gas;
- (dd) magnets and other items of similar material which may individually or cumulatively meet the definition of magnetized material;
- (ee) instruments which may conceal barometers, manometers, mercury switches, rectifier tubes or thermometers containing mercury;
- (ff) laboratory or testing equipment which may contain items meeting any of the criteria for dangerous goods, particularly flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances, lithium batteries or cylinders of compressed gas;
- (gg) machinery parts which may contain flammable adhesives, paints, sealants and solvents, wet and lithium batteries, mercury, cylinders of compressed or liquefied gas;
- (hh) magnets and other items of similar material which may individually or cumulatively meet the definition of magnetized material;
 - (i) medical supplies or equipment which may contain items meeting any of the criteria for dangerous goods, particularly flammable;
 - (ii) liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances, lithium batteries;
- (kk) metal construction material containing ferromagnetic material which may be subject to special stowage requirements due to the possibility of affecting aircraft instruments;
- (ll) metal fencing which containing ferromagnetic material which may be subject to special stowage requirements due to the possibility of

- affecting aircraft instruments;
- (mm) metal piping which may contain ferromagnetic material which may be subject to special stowage requirements due to the possibility of affecting aircraft instruments;
 - (nn) passenger baggage which may contain items meeting any of the criteria for dangerous goods not permitted under Table 8-1;
 - (oo) pharmaceuticals which may contain items meeting any of the criteria for dangerous goods, particularly radioactive material;
 - (pp) flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances;
 - (qq) photographic supplies or equipment which may contain items meeting any of the criteria for dangerous goods, particularly heat producing devices, flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances or lithium batteries;
 - (rr) racing car or motorcycle team equipment which may contain engines, including fuel cell engines, carburettors or fuel tanks that contain fuel or residual fuel, wet and lithium batteries, flammable aerosols, nitromethane or other petrol additives;
 - (ss) cylinders of compressed gases;
 - (tt) refrigerators which may contain liquefied gases or an ammonia solution;
 - (uu) repair kits which may contain organic peroxides and flammable adhesives, solvent- based paints and resins;
 - (vv) samples for testing which may contain items meeting any of the criteria for dangerous goods, particularly infectious substances;
 - (ww) flammable liquids, flammable solids, oxidizers, organic peroxides, toxic or corrosive substances;
 - (xx) semen which may be packed with dry ice or refrigerated liquefied gas;
 - (yy) ships' spares which may contain explosives or flares, cylinders of compressed gas for life rafts, paint or lithium batteries for emergency

locator transmitters;

- (zz) sporting goods or sports team equipment which may contain cylinders of compressed or liquefied gas such as compressed air and carbon dioxide, lithium batteries, propane torches, first aid kits, flammable adhesives or aerosols;
- (aaa) swimming pool chemicals which may contain oxidizing or corrosive substances;
- (bbb) switches in electrical equipment or instruments which may contain mercury;
- (ccc) toolboxes which may contain explosives such as power rivets, compressed gases or aerosols, flammable gases such as butane cylinders or torches, flammable adhesives or paints, corrosive liquids or lithium batteries;
- (ddd) torches or micro torches and utility lighters which may contain flammable gas and be equipped with an electronic starter. Larger torches may consist of a torch head often with a self-igniting switch attached to a container or cylinder of flammable gas;
- (eee) unaccompanied passenger baggage or personal effects which may contain items meeting any of the criteria for dangerous goods not permitted under Table 92.01.3.4.(1).**[8-1]**;
- (fff) excess baggage carried as cargo may contain certain dangerous goods such as vaccines which may be packed in dry ice or solid carbon dioxide[;]”;

- (z) the substitution for Technical Standard 92.01.41 of the following Technical Standard:

“92.01.41 EMERGENCY RESPONSE INFORMATION

1. An air service operator shall ensure that the following emergency response information is available at all times as required in terms of CAR 92.01. 42 –

- (a) the ICAO document Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (Doc 9481); or
 - (b) any other document which provides appropriate information concerning the dangerous goods on board. **[prescribed in Part 7, 4.9(a) and (b) of the Technical Instructions]**.
- 2. An air service operator not approved to carry dangerous goods as cargo shall assist the PIC and the cabin crew to deal with onboard emergencies resulting from dangerous goods carried onboard by providing a PIC or the cabin crew with—
 - (a) the ICAO document Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (Doc 9481); or
 - (b) any other document which provides appropriate information concerning the dangerous goods on board.”;
- (aa) the substitution for Technical Standard 92.01.46 of the following Technical Standard:

“92.01.46 DANGEROUS [GOOD] GOODS BY MAIL

- 1. The procedures for the conveyance of dangerous goods by air mail
 - (1) A designated postal operator shall develop procedures for the training of staff in accordance with **[Part 4 of the Technical Instructions and in line with]** Subpart 2 of the regulations and **[these Technical Standards]** Document SA-CATS 92.
- 2. The procedures for the transport of dangerous goods by air mail
 - (1) A designated postal operator shall develop the following procedures for –
 - (a) training of staff in accordance with Technical Standard 92.02.1.6 (1)

[Part 4 1,4 of the Technical Instructions];

- (b) reporting of dangerous goods accidents or incidents to the relevant civil aviation authorities;
- (c) reporting of hidden and undeclared dangerous goods to the relevant civil aviation authorities;
- (d) provision of information to customers at acceptance points such as street post boxes, post offices, agencies or websites;
- (e) provision of information to account to customers regarding dangerous goods;
- (f) inclusion of clauses in contracts with account customers regarding dangerous goods not permitted in the mail;
- (g) emergency procedures;
- (h) retention of documents such as dry ice acceptance checklist;
- (i) documented acceptance for staff regarding dangerous goods allowed in mail. **[by Part 1; 2.3 of the Technical Instructions];**
- (j) ensuring that any State and operator variations are complied with;
- (k) ensuring that any changes to the Regulations **[the Technical Instructions]** are incorporated into existing procedures, and legislative amendments;
- (l) the handling of packages rejected from being conveyed; and
- (m) acceptance procedure for the conveyance of air cargo and air mail.”;

(bb) the substitution in Technical Standard 92.01.49 of section 1 of the following section:

“92.01.49 DANGEROUS GOODS ACCIDENTS AND INCIDENTS REPORTING

1. Dangerous goods accidents and incidents reporting

An air service operator of an aircraft carrying dangerous goods which is involved in a dangerous goods accident or incident shall notify the relevant authority of the

matters contained in Technical Standard 92.01.35 **[Part 7 of the Technical Instructions]**.”;

- (cc) the substitution for Technical Standard 92.01.55 of the following Technical Standard:

“92.01.55 DANGEROUS GOODS SECURITY

1. An air service operator, shipper and other entities involved in the conveyance of dangerous goods aboard an aircraft shall implement and comply with a security plan that addresses the elements contained in the applicable Technical Standards. **[comply with both the aviation security requirements contained in Part 108 of the regulations and the requirements described in the Technical Standards. Part 1, Chapter 5 of the Technical Instructions]**.
2. A high consequence dangerous goods security plan shall comprise at a minimum, the following elements –
 - (a) specific allocation of responsibilities for security to competent and qualified persons with appropriate authority to carry out their responsibilities;
 - (b) records of dangerous goods or types of dangerous goods transported;
 - (c) review of current operations and assessment of vulnerabilities, including inter-modal transfer, temporary transit storage, handling, and distribution, as appropriate;
 - (d) a clear statement of measures including training policies, a response to higher threat conditions, new employee or employment verifications, operating practices such as access to dangerous goods in temporary storage, proximity to vulnerable infrastructure as well as equipment and resources that are to be used to reduce security risks;
 - (e) effective and up-to-date procedures for reporting and dealing with security threats, breaches of security or security incidents;
 - (f) procedures for the evaluation and testing of security plans and procedures for periodic review and updating of the plans;

- (g) measures to ensure the security of transport information contained in the plan; and
 - (h) measures to ensure that the security of the distribution of transport documentation is limited as far as possible.”;
- (dd) the substitution for Technical Standard 92.02.1 of the following Technical Standard:

“92.02.1 TRAINING REQUIREMENTS

1. Initial training provided in CAR 92.02.1 shall be carried out before a candidate is allowed to undertake “on the Job training” (OJT).
2. OJT is required upon successful completion of initial and refresher training.
3. The OJT record shall be signed by both the supervisor and trainee.
4. On successful completion of dangerous goods training, the trainee shall be required to complete an OJT commensurate with their responsibilities under direct supervision.
5. The minimum period for OJT practical assessments shall be defined in the Training programme.
6. TRAINING CURRICULA
 - (1) Training curricula for postal operators shall be based on personnel categories specified as follows:
 - (a) Staff of postal operators involved in accepting mail containing dangerous goods should be familiar with the aspects listed under category A.
 - (b) Staff of postal operators involved in processing mail other than dangerous goods should be familiar with the aspects listed under category B.
 - (c) Staff of postal operators involved in the handling, storage and loading of mail should be familiar with the aspects listed under category C.

Category A

General philosophy

Limitations

General requirements for shippers

Classification

List of dangerous goods

Packing requirements

Labelling and marking

Dangerous goods transport documents and other relevant documentation

Acceptance of the dangerous goods listed below:

i. patient specimens

ii. infectious substances assigned to category B (UN 3373)

iii. radioactive material in an excepted package, UN Nos. 2910 and 2911

iv. lithium ion batteries contained in equipment (UN 3481)

v. lithium metal batteries contained in equipment (UN 3091)

Recognition of undeclared dangerous goods

Provisions for passengers and crew

Emergency procedures

Category B

General philosophy

Limitations

Labelling and marking

Dangerous goods transport documents and other relevant documentation

Recognition of undeclared dangerous goods

Provisions for passengers and crew

Emergency procedures

Category C

General philosophy

Limitations

Labelling and marking

Recognition of undeclared dangerous goods

Storage and loading procedures

Provisions for passengers and crew

Emergency procedures

[in Table 1-4 of the Technical Instructions].

(d) For all other categories of personnel, the training curricula shall be as per an employer's job function specifications and in accordance with the employee groupings contained in **[SA-CATS]** Technical Standard 92.02.2.

(2) An employer shall ensure that training curricula and syllabi are in accordance with the **[SACAA guidance material]** Document SA-CATS 92 for competency-based approach to dangerous goods Training and Assessment. **[The ICAO Doc 10147, Competency-Based Approach to Dangerous Goods Training and Assessment may also be used]**.

(3) Personnel must be trained, certified and declared competent prior to commencement of their duties.

(4) A written examination to verify understanding shall be provided following training. Confirmation that the examination has been completed satisfactorily is required.

(5) The pass mark for the written examination is 80 percent.

(6) A record of training shall be maintained which must include –

(a) the individual's name;

(b) the most recent training completion month;

(c) a description, copy or reference to training materials used to meet the training requirements;

(d) the name and address of the organisation providing the training; and

(e) evidence which shows that a test has been completed satisfactorily. Training records must be retained by the employer for a minimum period of 5 years from the most recent training completion month and must be made available upon request by the Authority.”.

(ee) The insertion after Technical Standard 92.04.4 of the following Annexure:

ANNEXURE A1: DANGEROUS GOODS

ANNEXURE A2 TABLE 3-1 DANGEROUS GOODS LIST

AMENDMENT OF SA-CATS 171

2. Document SA-CATS 171 is hereby amended by:

- (a) the deletion in Technical Standard 171.03.7 of subsection (1).
- (b) the deletion in Technical Standard 171.03.8 of section 1.
- (c) the deletion of Technical Standard 171.03.9.
- (d) the deletion of Technical Standard 171.03.10.
- (e) the deletion of Technical Standard 171.03.11.
- (f) the deletion of Technical Standard 171.03.12.
- (g) the insertion after Technical Standard 171.03.14 of the following list of appendices:
 - 1. Appendix A: Specification Regarding Radio Navigation Aids (In relation to Technical Standard 171.03.07)
 - 2. Appendix B: Specification Regarding Communication Procedures (In relation to Technical Standard 171.03.08)
 - 3. Appendix C: Specification Regarding DATA and VOICE Communication (In relation to Technical Standard 171.03.09)
 - 4. Appendix D: Specification Regarding Surveillance and Collision Avoidance System (In relation to Technical Standard 171.03.10)

5. Appendix E: Specification Regarding Radio Spectrum and Utilisation. (In relation to Technical Standard 171.03.11)

AMENDMENT OF SA-CATS 173

3. Document SA-CATS 173 is hereby amended by:

- (a) the deletion in Technical Standard 173.01.7 for section 1.
- (b) the deletion of Technical Standard 173.01.9.
- (c) the substitution in Technical Standard 173.02.1 section 1 subsection (1) for paragraph (m) of the following paragraph:

“173.02.1 OPERATIONS MANUAL

(1) The information referred to in CAR 173.02.1(1)(b), which must be contained in the operations manual of the applicant, shall include the following:

- (a) a table of contents based on the items in the manual, indicating the page number on which each item begins;
- (b) a description of the designer’s organisational structure and a statement setting out the functions that the designer performs, or proposes to perform under CAR 173;
- (c) a description of the chain of command established, or proposed to be established, by the designer and a statement of the duties and responsibilities of any supervisory positions within the organisational structure;
- (d) a statement showing how the designer determines the number of operational staff required including the number of operational supervisory staff;
- (e) a list of the design services that the designer provides, or proposes to provide;

- (f) a statement, for each design service, that identifies the location from where the service is provided, or proposed to be provided;
 - (g) a statement of the responsibilities and functions for each position;
 - (h) a description of the arrangements made or proposed to be made by the designer to ensure that it has, and will continue to receive, the information necessary for providing the service;
 - (i) a description of the arrangements made or proposed to be made by the designer to ensure that it has, and will continue to be able to provide, information in connection with its design services to another person whose functions reasonably require that information;
 - (j) a description of the designer's record keeping system;
 - (k) a statement detailing any agreement entered into by the designer in relation to the provision of a design service provided by another party;
 - (l) a copy of the document that sets out the designer's safety management system; and
 - (m) a description of the processes and documentation used to present to staff the relevant standards[, **rules and procedures contained in ICAO Doc 8168 and this document,**] and any of the designer's site-specific instructions for the provision of design services;"
- (d) the substitution in Technical Standard 173.02.2 section 1 for subsection (1) of the following subsection:

"173.02.2 PERSONNEL REQUIREMENTS

1. Performance of Flight Procedure Design

(1) In accordance with CAR 173.02.2(1)(a)(vi), the chief designer shall have a duty to ensure that any flight procedure design covered by the approval is performed as prescribed in –

(a) SA FPD Manual of Standards – Guidance Material for the Design and Submission of Flight Procedures[; and].

[(b) ICAO Document 9906-AN/472 The Quality Assurance Manual for Flight Procedure Design, as amended.]

(e) the deletion in Technical Standard 173.02.2 of section 5.

(f) the substitution in Technical Standard 173.01.7 for section 2 of the following section:

“2. Approval of training programme

(1) The prerequisites for initial training are:

(a) Trainees should be competent in algebra to at least the level of resolving equations with two unknowns and handling operations of the third level (exponentiation, radical, logarithms and angular functions). This requirement will assure the understanding of formulas given in the relative criteria documents as well as the ability to follow rationales on which certain criteria are based.

(b) Trainees should be familiar with the classical Euclidian geometry (plane geometry, solid geometry) as well as Thales and Pythagoras constructions.

(c) Trainees should be competent in all trigonometry functions such as sine, cosine, tangent, cotangent, secant and cosecant. Furthermore, they should be familiar with trigonometry theorems such as the theorem of sines and the theorem of cosines

(d) Trainees should have basic knowledge of statistical and probability mathematics, particularly an understanding of the Gaussian (normal) distribution.

(e) Trainees should demonstrate fundamental knowledge of air traffic management, as in the Procedures for Air Navigation Services, as well as understanding the broad concept of

ATM which consists of ATS including air traffic control, air traffic flow management, airspace management and other fields related to ATM such as route spacing, ATC separation and aviation weather.

(f) Trainees should demonstrate knowledge of navigation, navigation systems and geography

(g) Trainees should demonstrate knowledge of the basics of flying and aerodynamics.

(h) Trainees should demonstrate knowledge of aircraft performance

(i) Trainees should demonstrate fundamental knowledge Aeronautical Information Services.

(j) Trainees must be familiar with the basic requirements for aerodrome safeguarding, including Obstacle limitation

Surfaces and Aerodrome reference codes).

(k) Trainees should demonstrate fundamental knowledge of geodesy, including geoid and reference ellipsoid, coordinate systems in space, coordinate systems in the plane, heights, geodetic datums and datum conversion, point positioning, units and measures on the ellipsoid, geodetic principal problem and geodetic inverse problem.

(l) proficiency in the language in which training will be delivered.

(2) The minimum duration of Initial training shall be six weeks.

(3) Approval of the training programme referred to in paragraph (2) may require on-site inspection and observation of the conduct of the course.

(4) The content of Initial training shall as a minimum include all basic concepts of Instrument Flight Procedure Design, including the following:

(a) Conventional non-precision approach procedure,

(b) PBN non-precision approach procedure,

(c) Precision approach procedure,

(c) Conventional departure procedure,

(d) PBN departure procedure.

(e) Conventional holding procedure.

(f) PBN holding procedure,

(g) Conventional enroute procedure.

(5) The mastery test shall include a practical competency-based assessment.

(6) The training is to be conducted by an instructor with proven qualification and experience in designing instrument flight procedures.”;

(g) The insertion after Technical Standard 173.01.7 of the following Technical Standard:

“173.01.8 Quality Assurance System

1. The quality assurance system shall specify:

- (1) The details of the Instrument Flight Procedure process to be followed, including the following:
 - (a) A description of how the Instrument Flight Procedure process is prompted by stakeholders, regulatory requirements, changes in design criteria etc.
 - (b) Details of how data that is to be used in the Instrument Flight Procedure design process will be collected and validated, including all stakeholder requirements, traffic patterns, related flight procedures, CNS infrastructure, reference geodetic datum, aerodrome or heliport data, altimetry source, weather statistics, magnetic variation and rate of change, aeronautical data, obstacle data and terrain data.
 - (iii) The creation of a conceptual design
 - (iv) The review of the conceptual design by stakeholders, including the process for the identification of stakeholders, record of stakeholder inputs, concerns and agreements.
 - (v) The application of criteria by a qualified designer
 - (vi) The documentation and storage of the logic, parameters used, calculations, assumptions, decisions and environmental considerations that are used in the design process into a draft chart, procedure design report, drawing file, textual description, data tabulation and other relevant formats.
 - (vii) Details of the process to be followed in conducting safety activities to determine the level of safety impact, and the role to be performed by relevant stakeholders.
 - (viii) Details of the process to be followed in reviewing the interface with existing airspace as well as the process of effecting amendments to airspace where necessary.
 - (ix) Details of the process for the verification of criteria, all applicable data and congruence with stakeholder requirements by another qualified designer.

- (x) Ground validation of the instrument flight procedure by an Instrument Flight Procedure Ground validation approval holder.
- (xi) Flight validation of the instrument flight procedure by an Flight Validation approval holder where applicable.
- (xii) The review of the instrument flight procedure by stakeholders.
- (xiii) The process to be followed for the approval of the instrument flight procedure by the Commissioner.
- (xiv) The process to be followed for the creation of the draft publication chart by an Aeronautical Cartography approval holder.
- (xv) The process to be followed for the verification of the draft aeronautical chart
- (xvi) The process to be followed for the publication of the Instrument Flight Procedure.
- (xvii) The process to be followed to obtain and analyse stakeholder feedback.
- (xviii) The process to be followed to continuously maintain the Instrument Flight Procedure.
- (xix) The process to be followed to periodically review the Instrument Flight Procedure.
- (2) The details of the process to be followed in validating automated Flight Procedure Design software, including the following;
 - (a) The process to be followed to obtain confirmation from the software developer that the hardware and software are installed and configured according to the hardware and software specifications.
 - (b) The validation of the results obtained by the approval holder in a series of tests of the tool using applicable criteria. The applied tests shall as a minimum cover all the relevant functions of the tool (including general functions and some input/output functions). These tests shall include the comparison between the results obtained with the tool and the ones obtained manually or with a previously validated independent tool. These tests shall be carried out according to a predefined list to assess all applicable procedure types, including protection areas as well as obstacle limitation surfaces.
 - (iii) Details of how the latest updates to the software will be received.
 - (iv) The involvement of the approval holder as well as the software developer in the validation of the software.

- (v) The validation of coordinate reference system integration, WGS-84 geodetic calculations, transformation between reference systems and projection-based systems.
- (vi) The validation of the magnetic model.
- (vii) The validation of the application of units of measurement and rounding considerations.
- (viii) The validation of basic data and parameters
- (ix) The validation of calculations and the construction of protection areas and nominal tracks.
- (x) Record of the outputs of the designs for subsequent studies
- (xi) Confirmation of the system performance at the approval holder's premises.
- (xii) Confirmation of input and output data formats, including DTM, AIXM and ARINC 424.
- (xiii) A validation report stating the characteristics of the tests, including dates, the names of the individuals that conducted the tests, system performance and errors, the version of the software and the operating system that was used.”.

AMENDMENT OF SA-CATS 175

- 4. Document SA-CATS 175 is hereby amended by:
 - (a) the substitution in Technical Standard 175.03.2, section 2, for subsection (1) of the following subsection:

“2. Data quality specifications

(1) **[The order of data accuracy and resolution]** Data quality specifications shall be in accordance with the Aeronautical Data Catalogue. It provides a general description of the AIM data scope and consolidates data that shall be collected and maintained by an AIS provider. It also provides a reference for aeronautical data origination and publication requirements as contained in **[the Procedures for Air Navigation Services-Aeronautical Management (PANS=AIM, DOC 10066)]** in the following appendices:

- (a) Appendix A - Table A1-1 Aerodrome data;
- (b) Appendix B - Table A1-2 Airspace data;
- (c) Appendix C - Table A1-3 ATS and other routes data;
- (d) Appendix D - Table A1-4 Instrument flight procedure data;
- (e) Appendix E - Table A1-5 Radio navigation aids/systems data;
- (f) Appendix F - Table A1-6 Obstacle data;
- (g) Appendix G - Table A1-7 Geographic data;
- (h) Appendix H - Table A1-8 Terrain data;
- (i) Appendix I - Table A1-9 Data types; and
- (j) Appendix J - Table A1-10 Information about national and local regulation, services and procedures.”;

(b) the substitution in Technical Standard 175.03.4, Section 6, of subsection (2), paragraph (d) of the following paragraph:

“SA-CATS 175.03.4 AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

6. NOTAM

- (1) The **[Director]** Commissioner shall designate an International NOTAM Office responsible for the provision of a NOTAM service and for the exchange of NOTAM internationally.
- (2) NOTAM service shall –
 - (a) operate the NOF on a 24-hour basis;
 - (b) establish agreements with other international NOF for the exchange of;
 - (c) ensure that –
 - (i) the NOF is connected to the ATN;
 - (ii) the ATN connection provides for printed communication;

- (iii) the NOF has appropriate facilities to issue and receive NOTAM distributed by means of telecommunication;
- (d) promptly issue a NOTAM **[that is in accordance with PANS AIM (DOC 10066) and Annex 15,]** whenever information is received under technical standard **[175.03.1]** 175.03.5, section 3, which requires the issuance of a NOTAM; and
- (e) at intervals of not more than one month, issue a checklist over the AFS of the NOTAM and AIP Amendments that are currently in force, and latest published AIP Supplement and AIC.”

(b) the substitution in Technical Standard 175.03.4, section 9, subsection (5)(b) for subparagraphs (iii) and (iv) of the following subparagraphs:

“SA-CATS 175.03.4 AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

9. Digital data sets

(5) Contents of digital data sets shall include:

(b) Terrain data sets which shall—

- (i) provide a terrain grid which shall be angular or linear and shall be of regular or irregular shape;
- (ii) include spatial (position and elevation), thematic and temporal aspects for the surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, and permanent ice and snow, and exclude obstacles. Depending on the acquisition method used, this shall represent the continuous surface that exists at the bare Earth, the top of the canopy or something in-between, also known as “first reflective surface”;
- (iii) provide only one feature type, i.e., terrain, in terrain data sets. Feature attributes describing terrain **[shall be those listed in Appendix 6, Table A6-1 of the PANS-AIM, Doc 10066.]** are listed in Table 1 below and **[The terrain feature attributes listed in Appendix 6, Table A6-1 of the PANS-AIM, Doc 10066]**

represent the minimum set of terrain attributes, and those annotated as mandatory shall be recorded in the terrain data set[;];

Table 1:

Terrain attributes

<u>Terrain attribute</u>	<u>Mandatory/Optional</u>
<u>Area of coverage</u>	<u>Mandatory</u>
<u>Data originator identifier</u>	<u>Mandatory</u>
<u>Data source identifier</u>	<u>Mandatory</u>
<u>Acquisition method</u>	<u>Mandatory</u>
<u>Post spacing</u>	<u>Mandatory</u>
<u>Horizontal reference system</u>	<u>Mandatory</u>
<u>Horizontal resolution</u>	<u>Mandatory</u>
<u>Horizontal accuracy</u>	<u>Mandatory</u>
<u>Horizontal confidence level</u>	<u>Mandatory</u>
<u>Horizontal position</u>	<u>Mandatory</u>
<u>Elevation</u>	<u>Mandatory</u>
<u>Elevation reference</u>	<u>Mandatory</u>
<u>Vertical reference system</u>	<u>Mandatory</u>
<u>Vertical resolution</u>	<u>Mandatory</u>
<u>Vertical accuracy</u>	<u>Mandatory</u>
<u>Vertical confidence level</u>	<u>Mandatory</u>
<u>Surface type</u>	<u>Optional</u>
<u>Recorded surface</u>	<u>Mandatory</u>
<u>Penetration level</u>	<u>Optional</u>
<u>Known variations</u>	<u>Optional</u>
<u>Integrity</u>	<u>Mandatory</u>
<u>Date and time stamp</u>	<u>Mandatory</u>
<u>Unit of measurement used</u>	<u>Mandatory</u>

(iv) conform to the applicable numerical requirements in **[Appendix 1 of the PANS-AIM, Doc 10066.] Table 2 :**

Table 2:

Terrain data numerical requirements.

	<u>Area 1</u>	<u>Area 2</u>	<u>Area 3</u>	<u>Area 4</u>
<u>Post spacing</u>	<u>3 arc seconds</u>	<u>1 arc second</u>	<u>0.6 arc seconds</u>	<u>0.3 arc seconds</u>
	<u>(approx. 90 m)</u>	<u>(approx. 30 m)</u>	<u>(approx. 20 m)</u>	<u>(approx. 9 m)</u>
<u>Vertical accuracy</u>	<u>30 m</u>	<u>3 m</u>	<u>0.5 m</u>	<u>1 m</u>
<u>Vertical resolution</u>	<u>1 m</u>	<u>0.1 m</u>	<u>0.01 m</u>	<u>0.1 m</u>
<u>Horizontal accuracy</u>	<u>50 m</u>	<u>5 m</u>	<u>0.5 m</u>	<u>2.5 m</u>
<u>Confidence level</u>	<u>90%</u>	<u>90%</u>	<u>90%</u>	<u>90%</u>
<u>Integrity classification</u>	<u>routine</u>	<u>essential</u>	<u>essential</u>	<u>essential</u>
<u>Maintenance period</u>	<u>as required</u>	<u>as required</u>	<u>as required</u>	<u>as required</u>

(c) the substitution in Technical Standard 175.03.4 section 9 (5) (c) for section 9 (5)(c) subparagraphs (ii), (iii) and (iv) of the following subparagraphs:

CATS 175.03.4 AERONAUTICAL INFORMATION PRODUCTS AND SERVICES

9. Digital data sets

(5) Contents of digital data sets shall include:

“(c) Obstacle data set which shall:

(ii) define obstacle feature types which shall be provided and described **[according to the list of mandatory attributes provided in Appendix 6, Table A6-2 of the PANS-AIM, Doc 10066;]** in accordance with Table 3 below.

Table 3:

Obstacle attributes

<u>Obstacle attribute</u>	<u>Mandatory/Optional</u>
<u>Area of coverage</u>	<u>Mandatory</u>
<u>Data originator identifier</u>	<u>Mandatory</u>
<u>Data source identifier</u>	<u>Mandatory</u>
<u>Obstacle identifier</u>	<u>Mandatory</u>
<u>Horizontal accuracy</u>	<u>Mandatory</u>
<u>Horizontal confidence level</u>	<u>Mandatory</u>
<u>Horizontal position</u>	<u>Mandatory</u>
<u>Horizontal resolution</u>	<u>Mandatory</u>
<u>Horizontal extent</u>	<u>Mandatory</u>
<u>Horizontal reference system</u>	<u>Mandatory</u>
<u>Elevation</u>	<u>Mandatory</u>
<u>Height</u>	<u>Optional</u>
<u>Vertical accuracy</u>	<u>Mandatory</u>
<u>Vertical confidence level</u>	<u>Mandatory</u>
<u>Vertical resolution</u>	<u>Mandatory</u>
<u>Vertical reference system</u>	<u>Mandatory</u>
<u>Obstacle type</u>	<u>Mandatory</u>
<u>Geometry type</u>	<u>Mandatory</u>
<u>Integrity</u>	<u>Mandatory</u>
<u>Date and time stamp</u>	<u>Mandatory</u>
<u>Unit of measurement used</u>	<u>Mandatory</u>
<u>Operations</u>	<u>Optional</u>
<u>Effectivity</u>	<u>Optional</u>

<u>Lighting</u>	<u>Mandatory</u>
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(iii) conform to the applicable numerical requirements contained in Table 4 [Appendix 1 of the PANS-AIM, Doc 10066;] and

(iv) include the obstacle data product specification, supported by geographical coordinates for each aerodrome included within the data set, shall describe the following areas:

(aa) areas 2a, 2b, 2c, 2d;

(bb) the take-off flight path area; and

(cc) the obstacle limitation surfaces.

Table 4:

Obstacle data numerical requirements.

Property: Horizontal position of obstacle

	<u>Accuracy</u>	<u>Integrity</u>	<u>Origination type</u>	<u>Publication resolution</u>	<u>Chart resolution</u>
<u>Obstacles in Area 1</u>	<u>50 m</u>	<u>routine</u>	<u>surveyed</u>	<u>1 sec</u>	<u>as plotted</u>
<u>Obstacles in Area 2 (including 2a, 2b, 2c, 2d, take-off flight path area and obstacle limitation surfaces)</u>	<u>5 m</u>	<u>essential</u>	<u>surveyed</u>	<u>1/10 sec</u>	<u>1/10 sec</u>
<u>Obstacles in Area 3</u>	<u>0.5 m</u>	<u>essential</u>	<u>surveyed</u>	<u>1/10 sec</u>	<u>1/10 sec</u>
<u>Obstacles in Area 4</u>	<u>2.5 m</u>	<u>essential</u>	<u>surveyed</u>	-	-

Property: Height of obstacle above ground

	<u>Accuracy</u>	<u>Integrity</u>	<u>Origination type</u>	<u>Publication resolution</u>	<u>Chart resolution</u>
<u>Obstacles in Area 1</u>	<u>30 m</u>	<u>routine</u>	<u>surveyed</u>	<u>1 m or 1 ft</u>	<u>3 m (10 ft)</u>
<u>Obstacles in Area 2 (including 2a, 2b, 2c, 2d, take-off flight path area and obstacle limitation surfaces)</u>	<u>3 m</u>	<u>essential</u>	<u>surveyed</u>	<u>1 m or 1 ft</u>	<u>1 m or 1 ft</u>
<u>Obstacles in Area 3</u>	<u>0.5 m</u>	<u>essential</u>	<u>surveyed</u>	<u>0.1 m or 0.1 ft 0.01 m</u>	<u>1m or 1 ft</u>
<u>Obstacles in Area 4</u>	<u>1 m</u>	<u>essential</u>	<u>surveyed</u>	<u>0.1 m</u>	-

Elevation of the highest point of the obstacle.

	<u>Accuracy</u>	<u>Integrity</u>	<u>Origination type</u>	<u>Publication resolution</u>	<u>Chart resolution</u>
<u>Obstacles in Area 1</u>	<u>30 m</u>	<u>routine</u>	<u>surveyed</u>	<u>1 m or 1 ft</u>	<u>3 m (10 ft)</u>
<u>Obstacles in Area 2 (including 2a, 2b, 2c, 2d, take-off flight path area and obstacle limitation surfaces)</u>	<u>3 m</u>	<u>essential</u>	<u>surveyed</u>	<u>1 m or 1 ft</u>	<u>1 m or 1 ft</u>
<u>Obstacles in Area 3</u>	<u>0.5 m</u>	<u>essential</u>	<u>surveyed</u>	<u>0.1 m or 0.1 ft 0.01 m</u>	<u>1m or 1 ft</u>
<u>Obstacles in Area 4</u>	<u>1 m</u>	<u>essential</u>	<u>surveyed</u>	<u>0.1 m</u>	-

- (d) the substitution in Technical Standard 175.03.5 section 3 for subsection (2) of the following subsection:

CATS 175.03.5 AERONAUTICAL INFORMATION UPDATES

3. NOTAM

“(2) [Detailed specifications concerning the Trigger NOTAM are contained in the Procedures for Air Navigation Services — Aeronautical Information Management (PANS-AIM, Doc 10066).]”

- (a) The Trigger NOTAM shall come into force on the same effective date and time as the amendment or supplement and shall remain valid in the pre-flight information bulletin for a period of fourteen days.
- (b) In the case of an AIP Supplement, the Trigger NOTAM shall remain valid for a period of fourteen days.
- (c) In the case of an AIP Supplement that is valid for less than fourteen days, the Trigger NOTAM shall remain valid for the complete validity period of the AIP Supplement.
- (d) In the case of an AIP Supplement that is valid for fourteen days or more, the Trigger NOTAM shall remain valid for at least fourteen days.”.

AMENDMENT OF SA-CATS 177

5. Document SA-CATS 177 is hereby amended by the substitution in Technical Standard 177.01.3 for section 1 of the following section:

“1. General

- (1) All aeronautical charts shall be designed, maintained, **[revised,]** amended, **[adapted,]** verified, validated, and quality assured **[assurance checks performed, submitted, published and retained]** in accordance with the following Annexure: – [(a) ICAO Standards and Recommended Practices; and

(b) ICAO Documents; and]

(a) Annexure A: Aeronautical Charting Standards;

(b) Annexure B: Charting Manual; and

(c) Procedures, standards, instructions, directives, technical guidance material and any other requirements as deemed necessary by the **[Director]** Commissioner.”