Appendix 2: Carriage of Dangerous Goods

Current CASA regulations http://www.casa.gov.au allow parachutists to carry dangerous goods (pyrotechnics and flares) which are classed as *Hazard Division 1.4*, without reference to CASA.

Other Hazard Division classes (e.g. Silver Fountain flares – Hazard Division 1.3) still require individual approval from a CASA Officer for carriage by parachutists in an aircraft.

As the pilot in command is responsible for the safety of the aircraft and the DZSO is responsible for the safe parachute operation, a parachutist proposing to carry a pyrotechnic must make the pilot and DZSO aware of the type and quantity on board and the precautions that will apply.

Pyrotechnics may not be carried by APF members in an aircraft unless:

The pilot in command authorises the carriage of the pyrotechnics on board the aircraft,

The assembly for carriage of a pyrotechnic device attached to a parachutist incorporates a secure quick release feature,

- The equipment for carriage, attachment and release of the pyrotechnics is approved by a Licensed Display Organiser or the Director Safety,
- The parachutist is familiar with and observes the pyrotechnic handling procedures contained in this manual,
- The pyrotechnic devices are of a type approved by CASA (either under a Civil Aviation Safety Regulation, or with specific CASA approval) for carriage in aircraft by parachutists, (Appendix A to this manual lists types currently approved by CASA.)
- The parachutist is familiar with the safe handling and ignition method of the pyrotechnics to be used.
- Where pyrotechnics are used during a parachute display, it is the responsibility of the Licensed Display Organiser to ensure that the parachutists are familiar with the safe handling and use of the pyrotechnic device.

Note:

The APF Operational Regulations specifically require a parachutist not to carry any object which if dropped would constitute a danger to property or persons on the ground during a descent unless that object is secured to their person.

Handling Procedures: General Precautions

Pyrotechnic devices should be stored in a cool, dry area. Avoid storage above 60°C.

Units should be handled and stored in accordance with State Dangerous Goods (Explosives) Regulations.

It is recommended that parachutists wear their goggles at any time they are handling or stowing pyrotechnics.

Those parachutists carrying pyrotechnics shall be positioned closest to the aircraft door.

Before leaving the ground pyrotechnics shall be fixed to the parachutist or, if temporarily detached for the ascent, shall at all times be stored in the aircraft such that they cannot be accidentally dropped from the aircraft (ref. CAR 150).

Carriage / Attachment / Release

Pyrotechnics shall not be carried in the hand during a parachute descent.

Smoke generating pyrotechnics may be attached to the foot of the parachutist with a releasable bracket. The bracket shall not constitute a hazard to the deployment of the parachute.

Pyrotechnics that generate significant heat should be carried in a metal sleeve (pipe) attached by a metal chain arranged so that the burning flare angles predominantly upwards at all times and the contents are prevented from escaping.

The chain itself should be at least 4 mm diameter cross section (19 mm pitch) and at least one metre long. In order that the pyrotechnic hangs at least a distance of 1.5 metre below the parachutist the chain may be extended by webbing.

In the case of a pyrotechnic suspended on a chain, in order to be releasable, the attachment to the parachutist may be by a webbing loop to the legstrap. The quick release may then be by use of a large hook knife to sever the webbing.

The flare may be secured in the sleeve by means of a bolt through a hole drilled in the handle of the flare. The flare and excess chain shall be securely contained in a pouch attached to the parachutist during aircraft ascent, exit and freefall so that they shall not interfere with parachute deployment.

Above are two of the common safe methods of attaching pyrotechnics for carriage by parachutists during a descent: However, the LDO may vary the equipment depending upon the circumstances or the type of pyrotechnic to be carried.

Activation

Pyrotechnics shall not be activated inside the aircraft cabin.

Pyrotechnic flares being used on night descents must not be activated during the freefall phase of the descent.

Pyrotechnics that have a striker type of activation shall have the striker shielded by the striker cap or other means until clear of the aircraft.

* Pyrotechnics using an electrical ignition device require special precautions.

1) The electrical wires from the igniter shall be shorted together at all times while in the aircraft as radio signals are capable of generating a potential that could activate the pyrotechnic.

2) Where a switch is used to separate the wires from the igniter and power source the switch should be a protected toggle type switch with the positions clearly labelled and of such a construction that it cannot be activated accidentally by being knocked or pushed. Extreme care must be exercised by the parachutist to ensure the switches are not disturbed until activation is required. This is especially important at night.

3) A simpler method involves fixing the battery to the chest- strap. The two shorted wires are then separated and are touched to each terminal of the battery

Pyrotechnics must never be pointed towards a person or aircraft during activation.

Accidental Ignition

The pilot and parachutist shall agree on the procedure should a pyrotechnic device ignite inside the aircraft:

- If below 1800 feet AGL the device shall be moved to the open door and held outside the aircraft until it burns out;
- If above 1800 feet AGL the device shall be moved to the open door and held outside the aircraft until it burns out or the parachutist may exit the aircraft.

The LDO is responsible to ensure that a suitable fire extinguisher be carried in the aircraft in order to control any secondary fires such as the aircraft carpet or jumpsuits set alight by the accidental ignition of the pyrotechnic. Note: BCF extinguishers are approved for carriage in aircraft - contact your state or territory EPA for more information.)

Ignition of a pyrotechnic device in an aircraft constitutes a Dangerous Goods Incident according to CASA, and a reportable incident according to the APF Op Regs. This is to be reported by the LDO to the APF according to the APF Operational Regulations. The APF will then notify CASA. The pilot should also follow normal aircraft incident reporting procedures.

On Landing:

Ideally the pyrotechnic devices should have burnt out by the time the parachutist lands. The activation height and rate of descent under canopy should be planned to allow for this. However, if the use of pyrotechnics on a parachute descent presents a potential fire hazard on landing (such as dry grass) then the ground crew should be briefed and equipped to deal with any spot fires and have a metal container (such as a bucket) ready to contain the pyrotechnic device.

Organisers should also be aware that the use of hot pyrotechnic devices during a day of total fire ban is illegal.

Approval Procedure For:

Where an APF member considers that a particular type of pyrotechnic not found on the CASA approved list would be suitable for use the member may supply details of the pyrotechnic to the Director Safety through the APF National Office for assessment. Samples may be requested. Those considered suitable shall be recommended for inclusion on the CASA list of approved types.

CASA Approved Types

Proper shipping name

Signal device, hand Signal, smoke Articles, pyrotechnic Ammunition, smoke Igniter

Fireworks

Flares Aerial

Description

Red night flare Orange smoke Parasmoke, signal Smoke canister, army fuse - electric Various

Signal Smoke for Parachutists

All the pyrotechnics above are of Hazard Division 1.4 and consequently approved for

carriage in aircraft for the purpose of use during a parachute descent.

Fireworks Silver Fountain, flare 0335 1.3G

The Silver Fountain flare requires application to and approval by CASA on an individual basis.