



Australian Parachute Federation

Display Manual

Including:

“Carriage of Dangerous Goods”

“Special Requirements for Displays”



VERSION 01-2021

STATUS: REGULATORY

Warning***Parachuting and flying in parachuting aircraft can be dangerous.*****Read This Information**

This manual is not a do-it-yourself guide. It is designed as an aid for Safety and Training Officers (STO's) and candidates for the Display Organiser (DO) rating and should be used only in conjunction with a training course and assessment conducted by a STO.

CURRENT VERSION	RELEASE DATE
01-2021	01 April 2020

PREVIOUS VERSIONS	REPLACED BY
01-2020	01-2021

AMENDMENTS

VERSION	AMENDMENT DETAILS
01-2021	<ul style="list-style-type: none"> • Appendix 2 – Accidental Ignition – amend altitude heights • Appendix 3 – Specific Display Venues – North Queensland; amend to consider all jumps into any Cay as a display.

Front cover photo by Kian Bullock

2021 Australian Parachute Federation Ltd

For further information visit www.apf.com.au

This work is copyright. You may download, display, print and reproduce this material in unaltered form only (retaining this notice) for your personal, non-commercial use or use within your organisation.

This document is offered as a free download to APF members.
Alternatively, contact the APF Office for a paper copy at a cost of \$5.00



Index

Section 1: Introduction and Definitions	4
Section 2: Authority and Status of this Manual.....	6
Section 3: Display Ratings - Requirements, Assessments and Renewal	6
Section 4: Display Organiser - Appointment, Conditions and Privileges	8
Appendix 1: Airspace	14
Appendix 2: Carriage of Dangerous Goods.....	155
Appendix 3: Special Requirements for Displays	186

Section 1: Introduction and Definitions

Background

This issue of the Display Manual supersedes all previous issues and is binding on all APF Display Organisers.

This version of the APF Display Manual refers wherever possible to the APF Operational Regulations and Regulatory Schedules, thus ensuring that change effected within them will not be in conflict with this manual.

Special requirements for displays are published by APF and are included as an appendix to this manual. DO's are required to conduct the display in accordance with these special requirements.

Users of this manual should satisfy themselves that this is the current version, both of the Display Manual and of the Appendixes "Carriage of Dangerous Goods" and "Special Requirements for Displays".

Information as to the date of the latest version may be obtained from the APF Website.

Abbreviations

CASA Civil Aviation Safety Authority.

VEC Visual En-route Chart.

VTC Visual Terminal Chart.

WAC World Aeronautical Chart.

ERSA En Route Supplement Australia

Definitions and Responsibilities

1.1 Display Organiser

A Display Organiser (DO), appointed in accordance with the provisions of the APF Operational Regulations, Regulatory Schedules and this Manual. The DO is responsible for:

- (a) Selection of participating parachutists, Ground Control Assistant (GCA), Drop Zone Safety Officer (DZSO), air crew and other staff;
- (b) Ensuring that all staff and jumpers are fully competent, equipped and qualified in accordance with this Manual and the APF Operational Regulations and Regulatory Schedules;
- (c) Ensuring that the drop-zone meets all APF requirements;
- (d) Ensuring that crowd control measures are satisfactory;
- (e) Ensuring that suitable wind indication is available for landing parachutists and that an effective means of determining the exit point is used;
- (f) Ensuring that all relevant APF and CASA regulations and the provisions of this Manual are observed;
- (g) Overseeing all aspects of safety of the display;
- (h) Ensuring that the paradrop aircraft and aircrew are suitable for the operation and meet all CASA and APF requirements;
- (i) Ensuring that the display is conducted in a professional manner;

-
- (j) Maintaining the records required by this Manual and the Operational Regulations and Regulatory Schedules, and for making any required notifications and reports to the APF.

1.2. Ground Control Assistant (GCA)

The person appointed by the DO in accordance with the APF Operational Regulations and Regulatory Schedules.

1.3. Loadmaster

The holder of at least a Certificate Class D appointed by the Organiser and responsible for:

- (a) Communicating with the pilot in command of the paradrop aircraft;
- (b) Communicating with the participating parachutists on board the paradrop aircraft;
- (c) Ensuring that the "clear to drop" has been declared by the GCA and, if applicable, by Air Traffic Control before allowing parachutists to exit the aircraft.
- (d) Ensuring the exit point is appropriate for the jump.

1.4. Crowd Control Marshall

A person appointed by the DO and responsible to the GCA for ensuring the effective control of spectators and other members of the public on the drop-zone.

1.5. Drop Zone

The clearly defined area clear of members of the public and of hazards, and meeting the minimum requirements of the APF Operational Regulations and Regulatory Schedules.

1.6. Paradrop Aircraft

The aircraft used to carry the parachutists participating in a display jump. The paradrop aircraft must be appropriately equipped for the airspace in which it will be flying, and may need to be maintained to a standard set out in the APF Operational Regulations and Regulatory Schedules.

1.7. Safety and Training Officer (STO)

The person appointed according to the APF Operational Regulations and Regulatory Schedules.

1.8. Parachuting Display

A descent made as a display descent as defined by the APF Operational Regulations and Regulatory Schedules

Section 2: Authority and Status of this Manual

- 2.1 The APF Operational Regulations and Regulatory Schedules require that, except as approved by the Safety and Training manager (STM), all parachute displays be conducted in accordance with this Manual.
- (a) The provisions of this Manual shall not be altered or waived except on the authority of the STM. The STM has authority to alter or waive the provisions of this manual. Before doing so, the STM should take advice from senior members of the Australian Parachute Federation.
- 2.2 Where there is conflict between the provisions of this Manual and the APF Operational Regulations or Regulatory Schedules, the APF Operational Regulations shall take precedence. This Manual takes precedence over the Display Jumpers Handbook.
- 2.3 This manual supersedes Display Manuals previously issued by the Australian Parachute Federation.

Section 3: Display Ratings – Requirements, Assessments and Renewals

3.1 General Provisions

- 3.1.1 STO's are appointed according to the APF Operational Regulations.
- 3.1.2 The STM shall, ex officio, have all the privileges of a STO.
- 3.1.3 A STO shall, ex officio, have all the privileges of a DO.
- 3.1.4 Requirements for the various display ratings (General, Pro and Open) are detailed in APF Regulatory Schedule 52.

3.2 Conduct of Assessments

All assessments for APF Display ratings and DO rating shall be conducted in accordance with this Manual, and with the current APF Operational Regulations and Regulatory Schedules.

3.2.1 Nominated Jumps

- (a) Nominated accuracy jumps shall be nominated immediately prior to take off to an APF Chief Instructor, DZSO of a Training Organisation, APF Judge, STO or DO.
- (b) A nominated accuracy jump must be witnessed by the person to whom the jump was nominated. That person shall immediately record the jump in the candidate's record of nominated jumps (Form D1) and sign it as correct.
- (c) All nominated jumps must be conducted in Australia under APF Guidelines as outlined in the current APF Operational Regulations and Regulatory Schedules.

3.2.2 Practical Assessments

- (a) The practical assessment shall consist of tests specified by this Manual and the APF Operational Regulations and Regulatory Schedules.
- (b) No practical assessment is presently prescribed for the issue of Display General or Display Pro ratings, apart from the prescribed Certificate Class, currency and accuracy requirements detailed of Regulatory Schedule 52.

3.2.3 Display Open Practical Assessment

- (a) The practical assessment for the Display Open shall be conducted and directly supervised by a STO.
- (b) The STO shall require the candidate to make enough jumps (minimum three) to satisfy her/himself that the candidate can perform his task of landing competently and consistently in tight and difficult areas under a range of meteorological conditions.
- (c) The target area and conditions under which the jumps are made shall be selected by the STO.
- (d) The conduct of the jumps (including appointment of GCA, organisation of aircraft operation etc.) shall be organised by the candidate.
- (e) The STO shall select landing areas and conditions to include as many as possible of the following:
 - (i) High winds,
 - (ii) Light or nil winds,
 - (iii) Changeable winds,
 - (iv) Small landing area (not larger than that specified as the minimum landing area allowed for holders of Display Open),
 - (v) Landing areas with obstacles of a realistic nature (eg. cars, buildings, people, trees), rather than an open landing area,
 - (vi) Unfamiliar landing areas.
- (f) The STO shall assess each assessment jump, taking into account not only the accuracy of the landing, but also the competency of the organisation of the operation, the skill demonstrated during the descent, and the competency of the landing.
- (g) If not satisfied that the candidate has demonstrated the skill required by section 3.2.3(b) of this Manual, the STO may require the candidate to make further assessment jumps or may terminate the assessment.

3.3 Issue and Renewal of Display Ratings

- 3.3.1 Display ratings may be issued by the APF National Office only after receipt of a correctly completed application and payment of the prescribed fee.
- 3.3.2 Before approving an application for a Display rating, a STO or CI (for Display general) shall be satisfied that the applicant has fulfilled the requirements stipulated by the APF Operational Regulations and Regulatory Schedules.
- 3.3.3 Display ratings may be renewed by the APF National Office after a member submits a properly completed renewal application and payment of the prescribed fee. Application for renewal must be made within 6 months of expiry, after which point the applicant has to contact a STO for review of the renewal.
- 3.3.4 Before approving the renewal of a Display rating, a STO shall be satisfied that the Applicant still has the competence required to perform the tasks required for the original issue of that rating, and that the Applicant has performed the recent display descents required by APF Operational Regulations and Regulatory Schedules.

3.3.5 Display ratings are only valid after it is either issued or renewed by the APF national office.

3.3.6 Display ratings are valid for a period of one year from the date of issue or renewal.

Section 4: Display Organiser - Appointment, Conditions and Privileges

4.1 General Provisions

4.1.1 The requirements for appointment of an APF member as a DO are defined in the APF Operational Regulations and Regulatory Schedules. This section provides further information for the prospective DO.

4.1.2 A DO rating may be issued either to a parachutist or to a non-parachutist. However, it is considered that a parachutist gains knowledge and experience necessary for the organisation of a display which a non-parachutist will find difficult to acquire. For this reason, the issue of a DO rating to a person who does not hold or has never held a Certificate Class D will be subject to especially careful consideration.

4.1.3 The applicant for a DO rating must pass exams administered by the STO and must convince the STO of his/her ability and experience in organising displays and his/her attitude and level of safety and professionalism. Generally, a person who has not participated in at least 20 displays, either as a jumper, ground crew or by assisting in the organisation, within the last four years, will not be considered to have sufficient ability and experience. Additionally, the applicant will be expected to have assisted in the organisation of at least five displays within the last two years.

4.1.4 Where necessary, the STO will seek information on the candidate's suitability from the applicant's Chief Instructor, other Council officials, CASA officers etc, and may take into account the applicant's previous record of safety, maturity, ability and attitude.

4.1.5 The STO's response to an application for the granting of a DO rating will be made in writing, with copies to the local Council and the APF National Office.

4.2 Recommendation for Issue of a Display Organiser rating

4.2.1 The DO appointment is made by the APF after a recommendation by a STO.

4.2.2 Before making a recommendation for appointment of a person as a DO, the STO shall be satisfied that the applicant meets all the conditions required the APF Operational Regulations and Regulatory Schedules.

4.2.3 Additionally, the STO shall satisfy her/himself that the candidate:

- (a) Has a good working knowledge of APF and CASA regulations and procedures (especially the APF Display Manual) as they affect the DO and display jumper;
- (b) Has a good working knowledge of airspace classification and is able to read aeronautical charts and Aerservices Publications relevant to the organisation of parachute displays (eg: WAC, ERSA, VTC);
- (c) Understands the duties and responsibilities of a DO, and has consistently demonstrated the mature, responsible and professional attitude required of a DO.

4.2.4 A waiver against any section of the APF Operational Regulations and Regulatory Schedules with regard to the appointment of DO's must be made in writing by the STM.

4.3 Issue and Renewal of Display Organiser ratings

- 4.3.1 DO rating may be issued by the APF National Office only after receipt of a correctly completed application form and payment of the prescribed fee.
- 4.3.2 Before signing a form for renewal of a DO rating, a STO shall satisfy her/himself that the applicant still has the qualifications and competence required for the original issue of that rating, and that the applicant has fulfilled the currency requirements of APF Operational Regulations and Regulatory Schedules.

4.4 Validity of the Display Organiser rating

- 4.4.1 A DO rating remains valid for a period of two years from the date of issue, provided that the holder remains a current member of the APF, and satisfies the recent experience requirements of the APF Operational Regulations and Regulatory Schedules. Where the DO has not achieved this level of recent experience, the Rating is considered to have lapsed, and may become valid again only as per the APF Operational Regulations and Regulatory Schedules.
- 4.4.2 In deciding whether to make such a recommendation as allowed by the APF Operational Regulations and Regulatory Schedules, the STO should consider the DO's previous record, the reason for the Organiser having organised less than the required number of displays and the likelihood of her/him organising more displays in the future. The STO may require the Organiser to assist another Organiser in the organisation of a display, or to pass other tests, before recommending the reinstatement of the Rating.

4.5 Restriction, Suspension or Cancellation of Display Organiser rating

- 4.5.1 A STO has the authority to restrict or suspend a DO rating.
- 4.5.2 The APF STM may restrict, suspend or cancel a DO rating.
- 4.5.3 Any breach of APF Operational Regulations, Regulatory Schedules or of the requirements of this Manual, or any lack of professionalism in the organisation of a display may be considered grounds for restriction, suspension or cancellation of a DO rating.

DOs are advised that all such breaches and unprofessional actions are treated as serious matters by the Australian Parachute Federation. They are further advised that the full privileges of a restricted, suspended or cancelled DO rating are unlikely to be restored before the relevant authority is fully convinced that the applicant will conduct all future displays both legally and professionally.

- 4.5.4 The following occurrences may be considered grounds for the restriction, suspension or cancellation of a DO rating. This list should not be considered as an exhaustive list.
- (a) Breach of any APF Operational Regulations, Regulatory Schedules or provision of this Manual;
 - (b) Use of under-qualified jumpers for the size of the landing area;
 - (c) Use of jumpers with uncurrent APF membership or Display ratings;
 - (d) Use of jumpers with insufficient skill or training for the task to be performed;
 - (e) Incompetent organisation, such as , but not limited to, selection of inappropriate aircraft or pilot, jumpers using untested, unfamiliar or inappropriate equipment, failure to spot properly given the size of the load, the size of the landing area and the canopies of the participants, delegation of duties to inexperienced or unqualified people or without proper briefings, etc;

- (f) Failure to notify the APF National Office in advance, as required by APF Operational Regulations and Regulatory Schedules;
- (g) Failure to make proper log entries or incident reports or to return copies of the log or incident reports by the required date.
- (h) Failure to make Display Log available to APF/CASA officials on request.

4.6 Privileges of a Display Organiser

- 4.6.1 The DO is authorised to organise parachute displays in accordance with the conditions and specification of the APF Operational Regulations, Regulatory Schedules, this Manual and the Special Requirements for Displays (as published by the APF as Annexure to this manual).
- 4.6.2 The DO must ensure that all participants comply with the APF Operational Regulations and Regulatory Schedules. These Regulations require that certain conditions be met before parachute jumps are made in controlled airspace, within 600metres of a populous area or at or near certain aerodromes.

Consideration should be given to the amount of prior notification that must be given to Air Traffic Control based on the intensity of the air traffic operating within the plan display area. In busier air space, it may be necessary to make prior arrangements with Air Traffic Control, perhaps several days in advance.

- 4.6.3 DOs are reminded that Air Traffic Controllers have no obligation to allow a parachute jump, but that they will endeavour to cater for the needs of all airspace users. It should be noted that different airspace users are allocated different priorities according to the type of aircraft and the use to which it is being put. Some other airspace users may have a higher priority than parachutists.

4.7 Notification of Intent to Conduct a Display

- 4.7.1 Before a display is conducted, the DO is required by the APF Operational Regulations and Regulatory Schedules to notify the APF National Office. Such notification may be made in person, by email, by phone, or by mail, and is to contain the following details:
 - (a) The name of the DO responsible;
 - (b) The date, approximate time(s) and location of the display.
- 4.7.2 For the purposes of this section, multiple descents on a single day into the same location will be considered a single display.
- 4.7.3 Failure to comply with 4.7 represents a serious breach of the regulations and may be considered as grounds for disciplinary action under Section 4.5 of this Manual.

4.8. Records to be kept

- 4.8.1 Each DO shall keep a log of all displays he/she organises. The log shall contain at least the information stipulated by the APF Operational Regulations and Regulatory Schedules.
- 4.8.2 The DO's log shall upon request be made available for inspection as required by the APF Operational Regulations and Regulatory Schedules.
- 4.8.3 For the purposes of this section, multiple descents into the same location on the same day are to be considered a single display.

4.9 Record & Notification of Incidents

- 4.9.1 All incidents are to be recorded in the DO's log and are to be reported as required by the APF Operational Regulations and Regulatory Schedules.
- 4.9.2 In addition to incidents as defined in the APF Operational Regulations and Regulatory Schedules the following occurrences at displays are considered incidents and shall be recorded in the log and reported to the APF in the timeframe normally required by the APF Operational Regulations and Regulatory Schedules:
- (a) Any injury to a parachutist, other parachute display staff member or a member of the public;
 - (b) Any occurrence which may have endangered the public, including any landing in the crowd and any equipment dropped from the paradrop aircraft or by a parachutist;
 - (c) Any parachute malfunction;
 - (d) Any breach of the Operational Regulations and Regulatory Schedules or of the provisions of this Manual;
 - (e) Any damage to the paradrop aircraft, parachuting equipment, or property;
 - (f) Any landing by any parachutist outside the area required by the APF Operational Regulations and Regulatory Schedules. (Note that this means not only landings outside the display area, but also landings further from the target than the minimum clear distance required for the holder of a particular rating or certificate.);
 - (g) Unprofessional conduct, or failure to carry out assigned duties, by any participant or staff member;
 - (h) Any occurrence which detracts from the professionalism of the display or detracts from the public perception of parachuting;
 - (i) Any other irregular occurrence.

4.10 Operational Limitations

- 4.10.1 All displays shall be conducted in accordance with all relevant provisions of the APF Operational Regulations and Regulatory Schedules.
- 4.10.2 The only exception shall be where a particular regulation has been waived by the relevant APF official, and, if necessary, by CASA. Any such waiver shall be recorded in the DO's log.
- 4.10.3 DOs should note that special CASA requirements apply to events designated as "Air Shows". These may require the organiser of the air show to submit a detailed program of events (including parachute displays) to CASA at least 28 days prior to the air show.

4.11 Operational Requirements

- 4.11.1 It is the responsibility of the DO to ensure that all Operational Regulations and Regulatory Schedules are obeyed by all participants. Any breaches of Regulations are required to be recorded in accordance with Sections 4.8 and 4.9 of this Manual.
- 4.11.2 DOs should note that incidents caused by lack of prior preparation may be considered grounds for action against the DO under the provisions of Section 4.5 of this Manual.

- (a) Where a flag or banner is to be carried on a display, the DO should note the provisions of RAC 222, APF Design Standard for Flag Assemblies. This RAC defines mandatory construction details for flags and associated equipment and places responsibility for approving a flag to be used on a display on DOs.
- (b) Where pyrotechnic material is to be carried in the aircraft from which a display jump is to be made, the DO shall ensure that the provisions of the Manual "Carriage of Dangerous Goods" issued by the Australian Parachute Federation are complied with.
- (c) DOs are reminded that, where smoke or other pyrotechnics are to be used on a display, the APF "Carriage of Dangerous Goods" Manual requires the DO (among other requirements) to ensure that:
 - (i) The parachutists are familiar with and briefed on the use of the smoke/pyrotechnics;
 - (ii) Permission for the use of smoke/pyrotechnics has been granted by CASA for that display if non-approved pyrotechnics are to be used;
 - (iii) Only CASA-approved types of smoke/pyrotechnics are used, as described in CASR 92.180;
 - (iv) The pilot has authorised the carriage of the smoke/pyrotechnics on the aircraft;
 - (v) The smoke/pyrotechnics is properly attached to the parachutist and the attachment incorporates a quick release mechanism.

4.11.3 It is the DO's responsibility to ensure that the pilot in command of the paradrop aircraft is appropriately licensed for the planned activity according to the APF Operational Regulations and Regulatory Schedules.

4.11.4 The pilot in command of the paradrop aircraft shall be fully briefed before take-off on the following:

- (a) Drop-zone location;
- (b) Number of jump runs and exit altitude(s);
- (c) Drifter run;
- (d) Jump run procedures and spotting commands;
- (e) Parachute opening height(s);
- (f) The necessity of the required radio broadcast(s) on appropriate frequencies two minutes before exit;
- (g) Any special requirement.

Note that this list assumes that the pilot is an experienced jump pilot. Should this not be the case, a fuller briefing will be required.

4.11.5 All parachutists will be fully briefed before take-off on all aspects of the jump, including the following:

- (a) Location of drop-zone and target;
- (b) Altitude and hazards of the drop-zone;
- (c) Planned exit and opening heights;
- (d) Exit order;

- (e) Smoke, flags or other special equipment to be used;
- (f) Expected weather conditions;
- (g) Location of wind indicators on the drop-zone;
- (h) Contingencies, including off drop-zone landings.

4.11.6 It is the DO's responsibility to ensure that:

- (a) Spectators are not permitted to encroach onto the specified drop-zone while parachutists are descending;
- (b) A crowd control marshal has the ability to effectively advise spectators not to enter onto the drop-zone;
- (c) The boundaries of the specified drop-zone shall be clearly defined and an effective means of prohibiting entry to non-approved persons established.

Appendix 1: Airspace

Since 1997, this manual has referenced Mick Honeyman's thesis "Airspace Information for DOs". Airspace regulation is controlled not by the APF but by CASA, and is subject to regular change and review. Information regarding current Airspace information and regulation can be found at <http://www.casa.gov.au>.

Candidates for Display Organiser assessment are required to have sought out this information, and must be able to display a working knowledge of it as referenced by the APF Operational Regulations and Regulatory Schedules.

Additionally, candidates must currently be able to show a working knowledge of the following Airspace publications and charts: ERSA, WAC, VTC, VEC. Candidates must show a working knowledge of Prohibited, Restricted and danger areas, and the different Controlled and Uncontrolled airspaces.

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*, as well as UN0335 Fireworks and UN0430 Articles, pyrotechnic in Division 1.3G only (i.e. Silver Fountain Flares) without reference to CASA.

CASA has broadened CASR 92.180 in 2019 to include Silver Fountain flares (previously not approved) as these are widely used for parachuting displays.

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 Display Organiser or the STM,
- 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 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 DO 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 2000ft AGL the device shall be moved to the open door and held outside the aircraft until it burns out;

- If above 2000ft 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 DO 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 DO to the APF according to the APF Operational Regulations and Regulatory Schedules. 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 Safety and Training Officer 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 UN0335 and UN430

Silver Fountain Flares listed above are from Hazard Division 13 and approved for use during parachute descents under CASR 92.180.

Appendix 3: Special Requirements for Displays

General

All display jumps into all venues are to be performed in compliance with the APF Operational Regulations and Regulatory Schedules, and other APF manuals as applicable.

Where pyrotechnics are used on displays, all local, state and federal laws and regulations, as well as APF regulations and recommendations, have to be followed.

The STO is to be notified 7 days prior to a major display where more than 30,000 people are expected to be in attendance. In such case the display jumpers must also make a practice jump into the venue within 30 days of the major display.

The APF office will copy the local STO in all display acknowledgements sent from APF to DO's.

Following is a list of special requirements for specific venues that have been made known to the APF National Office in the past. If any DO identifies additional special display requirements, or if these details change, please notify the office. apf@apf.com.au

Requirements for Specific Display Venues

New South Wales

For displays into Sydney Showground, SCG, Stadiums Australia stadiums and the Olympic Park site at Homebush Bay:

Day Jumps: DO direct supervision (either on the jump or ground crew), minimum Display PRO, and site inspection by all jumpers.

Night Jumps: DO direct supervision, minimum display PRO and Certificate Class F, and a practice jump into venue during daylight required.

Victoria incorporating Tasmania

When a crowd is in attendance for displays at the MCG/ Olympic Precinct, or Docklands Stadium, a Certificate Class F, Display PRO, at least one jump in the last 12 months into the display target, and if not, a practice jump in the preceding 30 days using all gear intended for the display, are required. In addition, DO direct supervision (either on the jump or ground crew) is required.

South Australia

All display jumps into Hindmarsh Stadium, Adelaide Oval, AAMI Stadium or Alberton Oval: Display jumpers require a minimum of a Certificate Class E and Display Pro rating. In addition, all display jumps into these four venues require Display Organiser (DO) direct supervision (either on the ground or in the aircraft/ air).

North Queensland

NQPC previously directed that descents onto the Upolu Cay off Cairns is considered to be a display unless proved otherwise and thus all conditions regarding display descents must be in place to conduct parachuting operations on the Cay. Further to this, all jumps onto any Cay in North Queensland are considered displays. The DO and CI must be present for all Tandem jumps being conducted into Upolu Cay.

A.C.T.

For all jumps into public areas controlled by the ACT Government, the landing area must be clearly delimited by marker cones (This is an ACT Government requirement.)