National Airtanker Standard Operating Procedures

Version 1.0

30 June 2026

Contents

1. Version information

Version	Change(s)
1.0	Initial issue

Cover image:

2. Abbreviations/acronyms and definitions

Term	Definition
AAS	Air attack supervisor - Coordination of firebombing and tactical aircraft activity in support of the incident, and to achieve the objectives of the incident action plan and will ensure assigned aircraft operate in an effective manner.
ABM	Air base manager. A trained person who is appointed to manage all the functions and personnel on an air base or helicopter base.
AGL	Above ground level.
AIP	Aeronautical information package – published by Airservices Australia. Contains aeronautical information essential to air navigation including regulations, procedures, and other information. Includes Enroute Supplement Australia (ERSA), departure and approach procedures (DAP), aeronautical charts, etc.
AMSL	Above mean sea level.
ATS	Air traffic services.
ATSB	Australian Transport Safety Bureau.
Birddog	The callsign of a fixed wing aircraft performing a coordination role for any firebombing aircraft.
CASA	Civil Aviation Safety Authority.
DBCA	Department of Biodiversity Conservation and Attractions (Western Australia).
DEECA	Department of Energy, Environment and Climate Action (Victoria).
DFES	Department of Fire Emergency Services (Western Australia).
Drop zone	The area identified for a firebombing aircraft to deliver the load of water or suppressant.
Fire-CTAF	Fire common traffic advisory frequency (F-CTAF).
Fire-CTAF area	A section of airspace with a 5 nautical mile (NM) buffer from any edge of the fire and up to 3,000 feet above ground level (AGL) during fire suppression operations. Primarily focused on establishing appropriate communications between incident aircraft to ensure deconfliction is maintained. The F-CTAF area is the same as the incident area. Incident area is the preferred terminology.
FRAT	Flight risk assessment tool.
Holding area	Nominated area for aircraft to orbit prior to entry into the incident area.
Horizontal separation	The horizontal separation between aircraft operating within the incident airspace, with the minimum distance between LATS and other aircraft (other than the LAT birddog) should be 800 metres.
IC	Incident controller.
IMT	Incident management team.
Incident AAS (IAAS)	An air attack supervisor established over a specific fire coordinating the tactical aircraft assigned to that fire.

Term	Definition
Incident area	A section of airspace with a 5 nautical mile lateral buffer from the outer edge of the fire/burned area to a height of 3,000 feet AGL.
Large Air Tanker (LAT)	A multi engine fixed wing aircraft fitted with a tanking system capable of delivering between 11,356 litres and 30,232 litres. In this document for ease of refence and understanding LAT refers to Multi Engine Air Tankers (MEAT), Large Air Tankers (LAT), and Very Large Air Tankers (VLAT), but not Single Engine Air Tankers (SEAT).
LAT AAS	AAS responsible for the coordination of LAT operations as endorsed by each agency.
LAT Birddog	Any aircraft which is tasked for supervision and crewed by an LAT endorsed AAS that includes aircraft, LAT air attack supervisor, and pilot in command.
Medium Multi Engine Air Tanker (MEAT)	Multi Engine Air Tanker – fixed wing aircraft with water carrying capacity between 6,813 and 11,356 litres.
NAFC	National Aerial Firefighting Centre.
NOB	Nominated operational base.
NOTAM	Notice to Airmen – managed by Airservices Australia.
NRSC	National Resource Sharing Centre.
PIC	Pilot in command.
QFD	Queensland Fire Department.
RAAF	Royal Australian Air Force.
RFS	Rural Fire Service (New South Wales).
SAD (SOAD)	State Air Desk (State Operations Air Desk).
SEAT	Single Engine Air Tanker.
Stack	Area within the incident area in which aircraft operate vertically over the fireground.
STC	Supplemental type certificate – a certificate issued when an aircraft has been approved by a national aviation authority (e.g. CASA, FAA, TSB) to be modified from the original design.
TDA	Temporary danger area.
TRA	Temporary restricted area.
TOB	Temporary operational base.
Vertical Separation	The vertical separation of aircraft operating within the incident airspace. Visual flight rules (VFR) minima are required. 500 feet is the minimum recommended, with 1,000 feet preferred and should be used whenever possible.
Very Large Air Tanker (VLAT)	A multi engine fixed wing aircraft fitted with a tanking system capable of delivering greater than 30,232 litres.
Working area	A ‘working area’ is a geographic area where aviation operations are being undertaken. It includes the drop zone.

3. Scope

This Standard Operating Procedure has been collaboratively developed, endorsed and adopted by all Australian fire agencies through the National Aerial Firefighting Centre (NAFC) to ensure national consistency and operational alignment. It applies to all Large Air Tanker (LAT) operations conducted across Australia and outlines the required aerial supervision arrangements, task profiles, and communication protocols necessary for safe and effective operations in low-level, complex, and high-risk aviation environments.

4. National Airtanker Standard Operating Procedure feedback

This Standard Operating Procedure is subject to ongoing review to ensure it remains current, effective, and aligned with best practice. Feedback, observations, and suggested improvements arising from operational use, exercises, incidents, or seasonal reviews should be submitted through the appropriate agency governance channels. All feedback will be assessed in consultation with relevant stakeholders, and where agreed, incorporated through formal version control and amendment processes. Updates to this procedure will be communicated to participating agencies to support continuous improvement and national consistency.

5. Agency variations

Where fire agency variations to this doctrine exist, a formal record must be maintained by the applicable agency and must be discussed and agreed upon with the relevant LAT and/or LAT birddog pilot in command (PIC) if the variation affects the safety of LAT operations.

6. Aviation safety

The Strategic Committee of NAFC commits to:

- promoting identified best practice in aerial firefighting
- encouraging a safety culture in Australian aerial firefighting that embraces the reporting of risks and safety concerns without fear of repercussion
- developing effective relationships with all sectors of the Australian aerial firefighting community
- developing opportunities for national sharing of safety information relating to aerial firefighting
- recognising that the safety of aerial firefighting operations is a shared responsibility
- assisting in the development of nationally consistent standards in aerial firefighting operations
- assisting in the development of strategies that identify and manage risk in aerial firefighting.

7. Ability to perform

Personnel must not engage in any aviation-related operation if their ability, alertness, or coordination is impaired or in doubt. This includes circumstances where concerns are identified by the individual, their supervisor, or the pilot in command.

8. Flight safety considerations

Threat and error management principles must be applied to all aerial firefighting operations. Activities must remain safe, effective, and efficient at all times. The following terrain and environmental hazards and associated effects must be recognised and mitigated during both planning and operational execution:

- Terrain may restrict firebombing run directions and limit available exit paths.
- Prevailing winds can significantly influence flight operations, particularly in mountainous environments, and may affect the accuracy of aerial drops.
- Turbulence and downdrafts associated with fire activity require heightened vigilance.
- Air traffic and airspace coordination hazards are prevalent and require active management.
- Reduced visibility from smoke, cloud, diminishing daylight, valley shadowing, or sun glare demands additional caution.
- Localised and rapidly changing weather conditions must be incorporated into operational decision-making.
- Natural and man-made obstructions-including powerlines, cables, tall trees, snags, towers, and built-up areas, may restrict opportunities for safe low-level operations.

9. Wake turbulence

Aircraft must maintain adequate separation to prevent disturbance of stable flight.

Particular attention is required when operating in proximity to LATs, Very Large Air Tankers (VLAT), and type 1 helicopters.

It is recommended that a minimum delay of **two to three minutes** is observed following LAT/VLAT drops before other aircraft are cleared to re-enter the working area.

Note: There may be a variation to the delay subject to wind, canopy, surface type, and or other aircraft.

10. State Air Desk contact information

State/territory	Contact numbers	Email addresses
Australian Capital Territory (Simon May)	0434 888 942	simon.may@act.gov.au
New South Wales	1300 677 723	airops@rfs.nsw.gov.au
Northern Territory	0457 183 621	bushfiresnt.aviation@nt.gov.au
Queensland	07 3635 1400	StateAirDesk@fire.qld.gov.au
South Australia	08 8115 3400	cfs.stateoperationscentre@eso.sa.gov.au
Tasmania	03 6166 5621	AirOps@fire.tas.gov.au
Victoria	1300 134 144	Sccvic.sad@scc.vic.gov.au
Western Australia	1 800 490 658	stateoperationsairdesk@dfes.wa.gov.au dutyaviationofficer@dfes.wa.gov.au

11. Interjurisdictional deployment

Non-national LAT requests/dispatching that occur between states must be coordinated through the respective State Air Desk (SAD).

National LAT requests shall occur through the National Resource Sharing Centre (NRSC).

12. Additional resources

Further information can be found within the following documents:

- *AIP Complete – Airservices Australia*
- *Alberta Provincial Airtanker Program Firebombing Procedures Manual*
- *NWCG Standards for Airtanker Operations (PMS 514)*
- *United States Department of Agriculture Forest Service Standards for Airtanker Operations*
- *Advisory Circular AC 91-16 v1.2 – Wake Turbulence*

13. Terminology

Where the terms '**shall**' and '**must**' are used in this document, compliance with those requirements is **mandatory** and **not discretionary**. The terms 'should' and 'may' indicate guidance information.

14. Airtanker definitions

All Multi Engine Air Tanker (MEAT), LAT and VLATs shall be referred to as LAT in this document for simplicity.

The following are the NAFC aircraft category definitions for fixed-wing airtankers:

Category	Engines	Descriptor	Water carrying capacity
FW 1	Multi engine	Very Large Air Tanker (VLAT)	Greater than **30,232** litres
FW 1	Multi engine	Large Air Tanker (LAT)	Between **11,356** litres and **30,232** litres
FW 2	Multi engine	Medium Multi Engine Air Tanker (MEAT)	Between **6,813** and **11,356** litres inclusive
FW 3	Multi engine	Small Multi Engine Air Tanker (MEAT)	Less than 6,813 litres

Single Engine Air Tanker operations are not included in this document however are defined as below:

FW 4	Single engine	Medium Single Engine Air Tanker (SEAT)	Greater than **2,270** litres
FW 5	Single engine	Small Single Engine Air Tanker (SEAT)	Less than or equal to **2,270** litres

15. Pilot in command responsibility

The PIC is directly responsible for and retains final authority over the safe operation of the aircraft, including the safety of all passengers, task specialists, and aircrew, on board. No instruction or request issued by agency personnel supersedes or diminishes the legal, regulatory, or contracted responsibilities of the PIC.

16. Large Air Tanker Air Attack supervisor qualifications and endorsement

Agencies are responsible for the training, endorsement, and maintenance of currency for air attack supervisors engaged in LAT operations. Each agency will maintain records of endorsed supervisors approved to undertake such operations. Endorsements and qualifications issued by any agency may be recognised nationally, enabling LAT air attack supervisors (AAS) to operate across Australia under a consistent framework.

17. Aircrew duty limitations and last light

Civil Aviation Safety Authority (CASA) requirements and each operator's fatigue management system (FMS) have primacy in the management of flight and duty limitations.

Operators and flight crew are responsible for maintaining and managing their flight and duty times to ensure legal limitations are correctly applied and complied with. Pilots and operators must advise the relevant SAD as soon as possible if any flight or duty limitations may affect operational capability.

During emergencies, contracted aircraft may be activated from first light to last light, subject at all times to flight and duty period limitations.

LAT firebombing operations shall be conducted only under visual flight rules (VFR), with the final drop completed no later than 10 minutes before last light.

LATs and LAT birddogs may return to base under the instrument flight rules (IFR) and in instrument meteorological conditions (IMC), provided the aircraft, crew, and operator remain in full compliance with CASA regulations and operator approval requirements.

18. Risk assessments

The PIC must ensure appropriate flight risk assessments (FRAT) are undertaken prior to flight operations.

19. Minimum safe drop height

Drops should be conducted **no lower than** the above ground level (AGL) height as shown in the table below for the relevant aircraft category, measured above the highest near-horizontal surface within the drop zone. These drop heights do not supersede an operator's approved or contractually mandated minimum drop height or PIC decision making. LAT birddogs conducting profiles that require low level flight should operate no lower than the height AGL of the relevant LAT.

Category	Engines	Descriptor	Minimum drop height (AGL)
FW1	Multi engine	Very Large Air Tanker (VLAT)	250 feet
FW 1	Multi engine	Large Air Tanker (LAT)	150 feet
FW 2	Multi engine	Medium Multi Engine Air Tanker (MEAT)	120 feet
FW 3	Multi engine	Small Multi Engine Air Tanker (MEAT)	120 feet

20. Communications

Effective communication is essential to ensuring safety, accurate mission tasking, and continuous flight following. The PIC retains final authority over the use of all communication systems within the aircraft. All transmissions should be concise and limited to essential information relevant to the task.

21. Accident and incident reporting

Any agency member who is involved in, or becomes aware of, an accident, incident, or aircraft proximity event, must notify the incident controller (IC) or appropriate aviation specialist.

The IC or aviation specialist must advise the relevant SAD at the earliest opportunity. Accidents, incidents, and aircraft proximity events will be managed in accordance with SAD or agency documented procedures. Appropriate personnel within the jurisdiction should inform NAFC of incident occurrence and provide updates of lessons learned when appropriate.

Operators must ensure full compliance with all applicable Australian Transport Safety Bureau (ATSB) and CASA reporting requirements, in addition to any agency-specific reporting obligations.

22. Task rejection

Individuals and organisations shall reject a dispatch or tasking in accordance with their organisational or company procedures when they determine that they cannot safely undertake the activity or effectively mitigate the associated risks.

Examples of task rejections are:

- a violation of established safe aviation practices, regulations, or policy
- weather or environmental conditions adversely impact the safety of the operation
- aircraft performance, capabilities, or limitations prevent the safe execution of the task

- insufficient information to safely plan or undertake the activity
- personnel required for task completion lack the necessary qualifications or experience
- human factors (e.g. fatigue, disorientation, stress) may impair safe operation
- communication limitations or failures may affect safety or operational effectiveness
- where the airspace over a fire is congested and/or inadequately managed.

Where an aviation dispatch or tasking is rejected for safety reasons, the individual or organisation must immediately:

- notify the tasking agency in accordance with relevant agency policy
- notify the SAD
- describe the specific issues or concerns prompting the rejection
- identify any safer alternatives that may enable completion of the intended objective.

For any incident where a task rejection has occurred, incident management teams (IMTs) and the SAD must ensure that all aircraft and operators assigned to the incident are advised (where relevant) as soon as practicable of the rejection and the reasons for it.

Following notification, the relevant PICs and agencies will determine whether to proceed with operations in accordance with applicable agency procedures and company operating procedures.

23. Aerial supervision requirements

Aerial supervision is undertaken within the AIIMS framework, reporting to the aircraft officer/air operations manager. Where jurisdictional practice differs, the stricter or more conservative standard applies unless otherwise authorised by the relevant agency.

23.1 LAT birddog

A LAT birddog may perform the following functions:

- Conduct low-level operations below 500 ft
- Provide aerial supervision duties
- Establish and maintain airspace management (refer Section 24)
- Develop and validate LAT strategies
- Coordinate LAT strategies
- Undertake LAT task profiles, including:
  - show me
  - lead
  - called drop
  - chase
  - describe the drop
- May undertake incident AAS duties when required.

The relevant contracting agency must ensure that the tasks requested in any instance align with aircraft performance and capability and with pilot qualifications, recency, and experience.

23.2 Initial attack – NSW only

NSW has adopted and accepts the initial attack (IA) qualifications issued by the United States Forest Service (USFS). Airtanker pilots who hold this qualification are authorised to undertake operations without the need for aerial supervision. Accordingly, aerial supervision is not required for LAT pilots operating in NSW who hold a valid USFS IA qualification.

ARENA is utilised by Australian jurisdictions to record and maintain operator and aircraft information, including pilot qualifications. Records relating to IA qualifications held by LAT pilots are uploaded into ARENA by the pilot or operator, and an annual audit of these records is conducted by the NSW Rural Fire Service.

Under standard operating practice, a birddog aircraft with an AAS will be tasked prior to, or concurrently with, a LAT. However, there may be circumstances where a LAT is tasked to operate without aerial supervision, consistent with the pilot's USFS IA qualification and prevailing risk considerations.

The table below outlines aerial supervision requirements as part of NSW LAT operations:

Situation	Birddog with LAT AAS
Actual/forecast adverse flying conditions, poor visibility or turbulence	Required
Requested by LAT pilot	Required
LAT pilot - not USFS IA qualified (not carded)	Required
LAT pilot USFS IA qualified (carded)	Subject to PIC's flight risk assessment tool

24. AAS coordination – Incident AAS (IAAS) and LAT AAS

The LAT AAS and the IAAS are responsible for establishing the controlling principles for airspace management once the LAT birddog is positioned at the incident. All aircraft operating on the fire to which the LAT is allocated to must be advised of any changes to the control arrangements and must acknowledge these changes.

The IAAS and LAT AAS shall coordinate the LAT and LAT birddog working area. Once this coordination is complete, sequencing of all LATs within the stack will be coordinated by the LAT AAS in consultation with the IAAS.

The IAAS maintains responsibility for airspace management when a LAT AAS is present. If vertical separation within the stack becomes restricted, the IAAS should consider the following options:

> Assigning other aircraft types (e.g. firebombing helicopters, SEATs, MEATs) to geographically separated circuits.

> Utilising those aircraft on other sectors of the fire until LAT drops are completed.

If geographic separation cannot be achieved, the IAAS may consider placing other aircraft types in orbits with vertical separation within the stack, provided this remains safe and operationally acceptable.

25. Handover arrangements – IAAS departs the incident

If the IAAS needs to depart the incident area and asset handover needs to occur, the IAAS may handover incident coordination responsibilities to the LAT AAS. A thorough handover must be completed to ensure adequate aerial supervision in the absence of the IAAS. IMTs must also be briefed on the proposed supervision arrangements.

All aircraft operating in the working area, as well as the IMT, must be notified of the aircraft assuming IAAS responsibilities, and all aircraft are required to acknowledge the handover.

25.1 Handover requirements

At a minimum the handover must include the following information:

- Aircraft currently operating at the incident
- Incident QNH
- Current stack altitudes and sequencing arrangements
- Known hazards
- Flight-following arrangements
- Communications plan
- Any other pertinent operational information (i.e. objectives, strategies, and taskings)
- Confirmation of the handover with the operations officer or key IMT personnel, and key ground personnel
- Confirmation that the handover has been completed between the IAAS and the LAT AAS
- Notification to all affected aircraft that the handover has occurred, including details of the assuming AAS authority. All aircraft must acknowledge this notification.
- Notification of key ground personnel and channels.

25.2 Handback

Upon the return of the IAAS to the operational airspace, a handback must be conducted, and previous aerial supervision arrangements reinstated. All aircraft and key ground personnel operating at the incident must be advised of the change and are required to acknowledge the updated arrangements prior to the transition of airspace control.

26. Aircraft refuelling and simultaneous reloading

Refuelling is the responsibility of the PIC and is conducted in accordance with airport standard refuelling procedures.

To expedite turnaround times, the PIC may advise the air base manager (ABM) by radio or phone while inbound that refuelling will be required. Where possible, the ABM will notify the local refueller of the aircraft's expected arrival time to facilitate timely refuelling operations.

Simultaneous refuelling and reloading of LATs may only occur when all of the following conditions are met:

- The PIC has authorised the simultaneous operation
- The ABM has assessed and determined that the operation is an operational necessity
- A positive-seal, dry-break pressurised refuelling system is fitted and used

> All requirements of the aircraft operator's Operations Manual for simultaneous refuelling/reloading are met.

27. Dispatch considerations

Prior to dispatching a LAT and/or LAT birddog the agency should consider the following:

> The incident management strategy and whether it identifies LAT use as an appropriate tactic
> Whether mission objectives are clearly defined and achievable while ensuring firefighter and civilian safety
> Whether an IAAS is on scene
> Ensuring coordination between relevant IMT personnel and the requester for the LAT deployment including likely estimated time of arrival (ETA)
> Identification and management of any risk and safety issues
> Threats to life, property, critical assets, forests, or the environment
> Flight and duty limitations for relevant aircraft and crew
> Terrain and fuel type (e.g. forest, grassland, urban interface)
> Prevailing and forecast weather and flying conditions, including turbulence
> Availability and effectiveness of alternative aircraft or ground-based resources
> Estimated transit time for LAT(s) to reach the incident
> Expected duration of deployment and anticipated number of loads
> Landholder permission for the use of suppressant where required
> Time of day, including consideration of last light and VFR requirements
> Desired suppressant type and quantity
> Communications plan.

28. Dispatch inclusions

The relevant SAD will dispatch aircraft in accordance with the agency's documented procedures, which may include information provided via ARENA.

At a minimum all LAT and LAT birddog dispatches must include:

> location (latitude and longitude)
> geographic information (e.g. bearing, range, distance)
> aircraft assigned or currently operating in the incident area
> radio frequencies in use, including fire-common traffic advisory frequency (F-CTAF) and the incident channel
> IAAS contact details (e.g. IAAS aircraft callsign)
> key ground personnel where relevant
> any additional information that may enhance safety

- any agency-specific inclusions required under local procedures
- known hazards.

Additional information may include:

- incident number
- actual and forecast weather
- fire behavior, activity, and threats
- suppressant load type (retardant, gel, water)
- staging area location
- any other agency-specific information relevant to the dispatch.

The dispatch notification must be sent to:

- the relevant LAT and LAT birddog pilots
- the relevant LAT AAS
- any other required recipients under agency procedures.

LATs and the LAT AAS will be assigned to the operational management of the incident to which they are dispatched.

Redeployment of LATs to a new incident is to be treated as a new initial dispatch and must be coordinated via the SAD using the processes as outlined in sections 27 and 28.

29. LAT deployment approval

LAT deployment approval must be obtained prior to the dispatch of a LAT, in accordance with relevant agency procedures.

30. Pre-mission

The agency must ensure that a pre-mission briefing is conducted for the LAT AAS, LAT aircrew, and all other relevant personnel. This briefing must include all information contained in the aircraft dispatch and any additional operational or safety considerations relevant to the mission.

In addition to the agency briefing, the PIC of the LAT and LAT birddog shall:

- confirm receipt of all dispatch information
- check current and forecast weather conditions
- review and note all relevant notice to airmen, temporary restricted areas, temporary danger areas, and any other applicable airspace information
- review other relevant aviation safety information
- conduct a pre-flight risk assessment in accordance with operator and regulatory requirements.

Note: Where an agency has a required FRAT or equivalent tool, pilots must complete it before operations.

31. Flight following

Flight following is to be conducted with Airservices Australia when operating within controlled airspace.

Operational flight following must be undertaken in accordance with the relevant agency flight following procedures.

32. Enroute contact

When the LAT departs controlled airspace or a mandatory frequency area of the nominated operational base/ temporary operational base, the LAT AAS will establish communications with the IC or IAAS and monitor the F-CTAF.

Contact should be made with the IAAS as soon as practicable after departure, and no later than 10 minutes prior to arrival at the incident area.

The LAT AAS must maintain communications with LATs on the allocated F-CTAF as determined by the relevant agency.

Once contact has been established with the IAAS, the LAT AAS, in consultation with the PIC, must request or confirm:

- altimeter setting (QNH)
- incident elevation
- vertical profile and separation procedures for the stack
- confirmation of LAT and LAT birddog operating altitudes
- incident name
- communication plan
- details of other aircraft and tactical resources operating at the incident
- known hazards
- specific mission objectives.

Inbound LATs and LAT birddogs must have set the fireground QNH prior to entering the incident area, 5 nautical miles (NM) from the edge of the fire.

When an IAAS is established at the incident, aircraft must not enter the incident area without approval from the IAAS.

Where no IAAS is established, the LAT AAS must establish communications with the applicable ground personnel and any other aircraft already operating at the incident.

When an IAAS is not present, the LAT AAS will assume the IAAS role and associated responsibilities, including establishment and management of airspace separation.

Note: In NSW only, IA carded pilots may operate without a LAT AAS. These pilots must ensure any airspace entry is coordinated with incident aircraft and/or ground personnel.

32.1 10-minute inbound call

A mandatory broadcast call must be made by all inbound LAT and LAT birddog aircraft no less than 10 minutes prior to arriving at the incident area. This call must be transmitted on the F-CTAF and include the following information:

- Fire incident name
- Aircraft callsign/registration
- Aircraft type
- Current position, altitude/level, and intentions
- ETA to the fireground

Where an airbase is located within the 10-minute inbound radius or Incident Area, aircraft must make the broadcast inbound call as soon as practicable.

32.2 Approval to enter

Individual jurisdictions will provide approval to enter in accordance with jurisdictional policies and procedures. An approval to enter will normally include:

- direction to enter the operational airspace
- incident airspace QNH
- assigned operating altitude for the LAT birddog (if applicable)
- assigned operating altitude for the LAT
- operating altitudes of other aircraft within the incident area
- any known hazards relevant to the operation.

LAT and LAT birddog aircraft may be instructed not to enter the incident area due to congestion, separation issues, or unsuitable conditions. In such cases, a direction to hold outside the incident area will be issued, including minimum separation distances. Aircraft holding outside must ensure adequate deconfliction with other aircraft and always maintain situational awareness.

32.3 5 NM boundary (incident area boundary)

All incident aircraft must ensure they are operating on the correct F-CTAF and maintain continuous communication with any aircraft inbound to, operating within, or exiting the incident area.

If approval to enter has not been provided, inbound aircraft must not enter within 5 NM of the fire. Aircraft must hold outside the 5 NM incident area boundary until communications are established and approval to enter has been received from the IAAS (if applicable). The assigned IAAS retains the authority to deny entry to inbound aircraft as required.

If contact cannot be established with the IAAS, inbound aircraft must troubleshoot radios to confirm serviceability and/or correct frequencies.

If no aircraft and no IAAS are established at the incident, the first aircraft on scene assumes responsibility for airspace separation and entry management until relieved by appropriately qualified supervision.

All pilots must ensure they have adopted the incident QNH before entering the incident area (5 NM boundary).

33. On-site tasking

Before a LAT enters the incident area, the IAAS or LAT AAS must ensure that all other aircraft are cleared into, or away from, the working area as required to safely conduct the LAT firebombing operation. This may be completed with vertical, horizontal, or geographical separation.

Where both an IAAS and a LAT AAS are operating, the LAT AAS may request that the IAAS act as the communications link with ground crews while the LAT AAS maintains a strategic overview of LAT operations and airspace management.

34. Orbits and circuits

All pilots are responsible for maintaining safe aircraft separation, continuous radio communication, and adherence to the correct flight patterns and assigned altitudes.

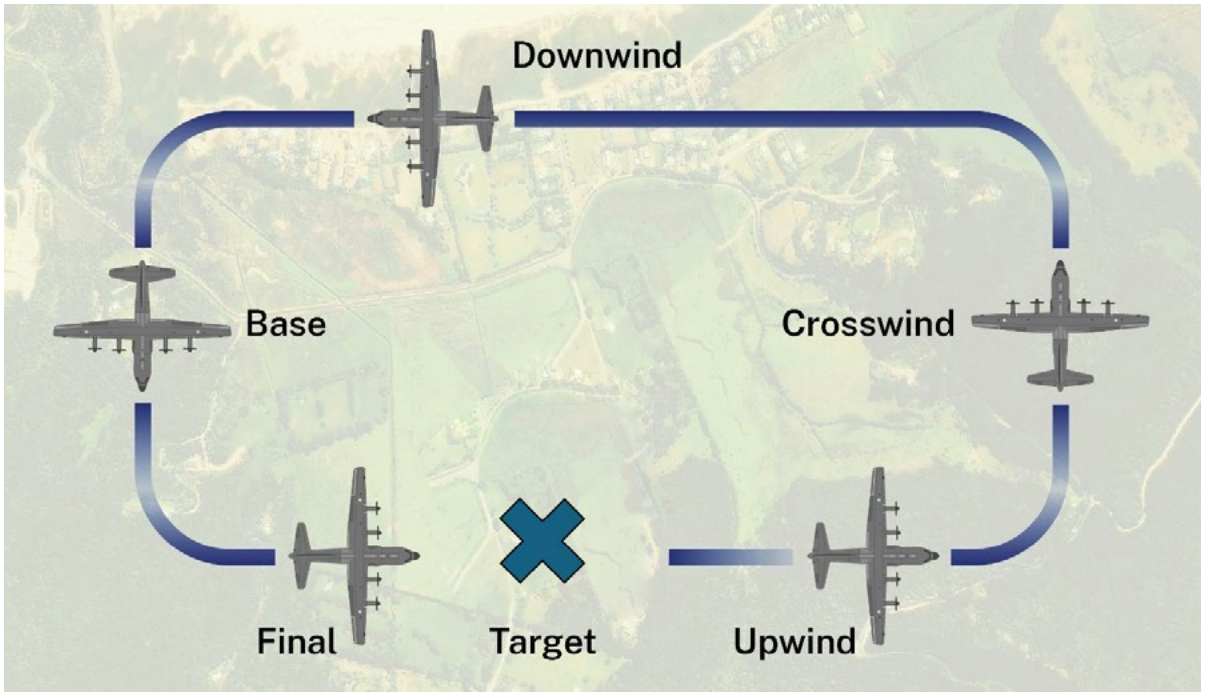
The LAT birddog will normally maintain right-hand orbits, as this provides optimal visibility of the fireground. The LAT birddog may transition from a right-hand to a left-hand circuit (terrain and hazards permitting) when conducting any of the approved LAT task profiles.

As standard procedure, LAT aircraft will:

- operate in a left-hand orbit within the LAT stack
- conduct a left-hand circuit (where terrain permits) for the firebombing run.

Following completion of the drop, the LAT will exit the run in accordance with pre-briefed instructions issued by the LAT AAS.

LATs and LAT birddogs may deviate from these standard orbit directions when coordinated with, and approved by the IAAS, the LAT AAS, and other relevant personnel and aircraft.



35. Pre-drop zone assessment

The LAT AAS must ensure that the pre-drop zone assessment includes consideration of the following:

- Location and communication with ground personnel
- Target elevation
- Direction of approach for the circuit
- Correction for wind drift
- Hazards, including those present on final approach
- Drop objective
- Direction of run
- Required coverage level
- Safe exit path and any hazards on exit
- Visual reference points
- A nominated anchor points to assist LAT aircrew in determining the appropriate flight line and drop zone.

Note: The LAT PIC and LAT AAS must ensure that no rising terrain exists in the exit path and that the exit route is clear of all obstacles.

35.1 Decision-making and separation

The final decision regarding separation protocols, circuit direction, circuit pattern, and drop height is made by the LAT PIC, in consultation with the LAT birddog PIC.

35.2 Drop zone verification

The LAT AAS must confirm with the IAAS or relevant ground personnel that the drop zone is clear.

No drop must be conducted until clearance of the drop zone has been verified.

If any unacceptable risk is identified at any stage, the LAT AAS, LAT birddog PIC, or LAT pilot will terminate the mission and advise the IAAS accordingly.

35.3 Abort procedures

If a drop is considered unsafe during final manoeuvres, the phrase “abort, abort, abort” may be transmitted by any aircraft operating on the F-CTAF.

No drop will occur until the LAT AAS confirms “drop zone clear”.

36. Effective coverage level guide

The following table may assist to guide drop coverage levels. Type of aircraft, weather, and fire behaviour will also be factors.

Coverage level	Vegetation type	Large Airtanker drop pattern length (metres)	Very Large Airtanker drop pattern length (metres)
1	Light grass	1,000	3,000
2	Dense grass / light scrub	800	2,000
3	Dense scrub / small trees	600	1,500
4	Light canopy	500	1,250
6	Medium canopy	400	1,000
8	Dense canopy	300	750
9-12	Heavily dense canopy	200	500

37. Urban interface drops

For LAT operations within the urban interface, adjustments to drop height, airspeed, and coverage level may be required based on prevailing winds, the suppressant type in use, and the density of development within the drop zone.

Firebombing drops within the urban interface may be conducted subject to the following provisions:

> The delivery system attached to the aircraft should not operate lower than the minimum drop height for the category of aircraft as specified in section 19, measured above the highest near-horizontal surface (e.g. the roof of a structure).

> The coverage level will be determined by the LAT AAS. Direct application of suppressant on structures should be avoided. If suppressant is inadvertently dropped onto structures, the LAT AAS must notify the relevant SAD/IMT/IC and follow agency reporting procedures.

38. LAT tasking profiles

Once confirmation has been received that the LAT is in position to observe the run, the LAT birddog will identify and brief the drop zone using one of the following:

> Show-me profile

> Lead profile

> Chase profile

> Called drop

> Describe the drop.

Where the IAAS is endorsed as a LAT AAS, these profiles may be conducted from the IAAS aircraft, if the aircraft is suitable and the pilot appropriately qualified. However, the preferred practice is for all LAT task profiles to be undertaken by the LAT birddog.

38.1 Show-me profile

A Show-me profile is conducted by the LAT birddog at the intended drop height (refer section 19) and is a simulated firebombing run conducted to demonstrate the intended run and to visually identify the target to the LAT aircrew. It is not a lead profile, with the LAT remaining in the orbit observing the path of the LAT birddog.

A Show-me profile may be used when:

- the LAT is the first firebombing aircraft to undertake a specific run
- an incoming LAT has not had the opportunity to observe a previous drop
- when required or requested by the LAT PIC.

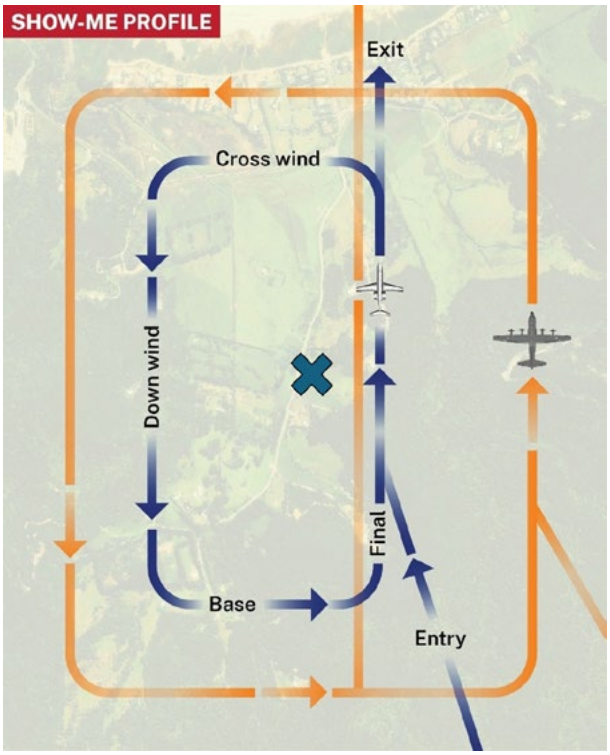
Subsequent drops on the same run may be verbally described rather than demonstrated, provided situational awareness can be maintained safely.

Where terrain permits, the LAT should approach the target using a left-hand circuit. When terrain, hazards, or operational considerations prevent this, a right-hand circuit may be used.

Prior to commencing a show-me run, the LAT AAS must confirm that the LAT is positioned to observe the demonstration. The LAT AAS will then begin the profile by announcing their position in the circuit and will provide:

- target description
- drop altitude
- hazard information (including on approach and exit)
- exit instructions.

When the LAT birddog or LAT is established on final approach to the drop zone, the LAT AAS will confirm the drop zone elevation and activate the siren (if fitted) as a warning of an imminent drop.

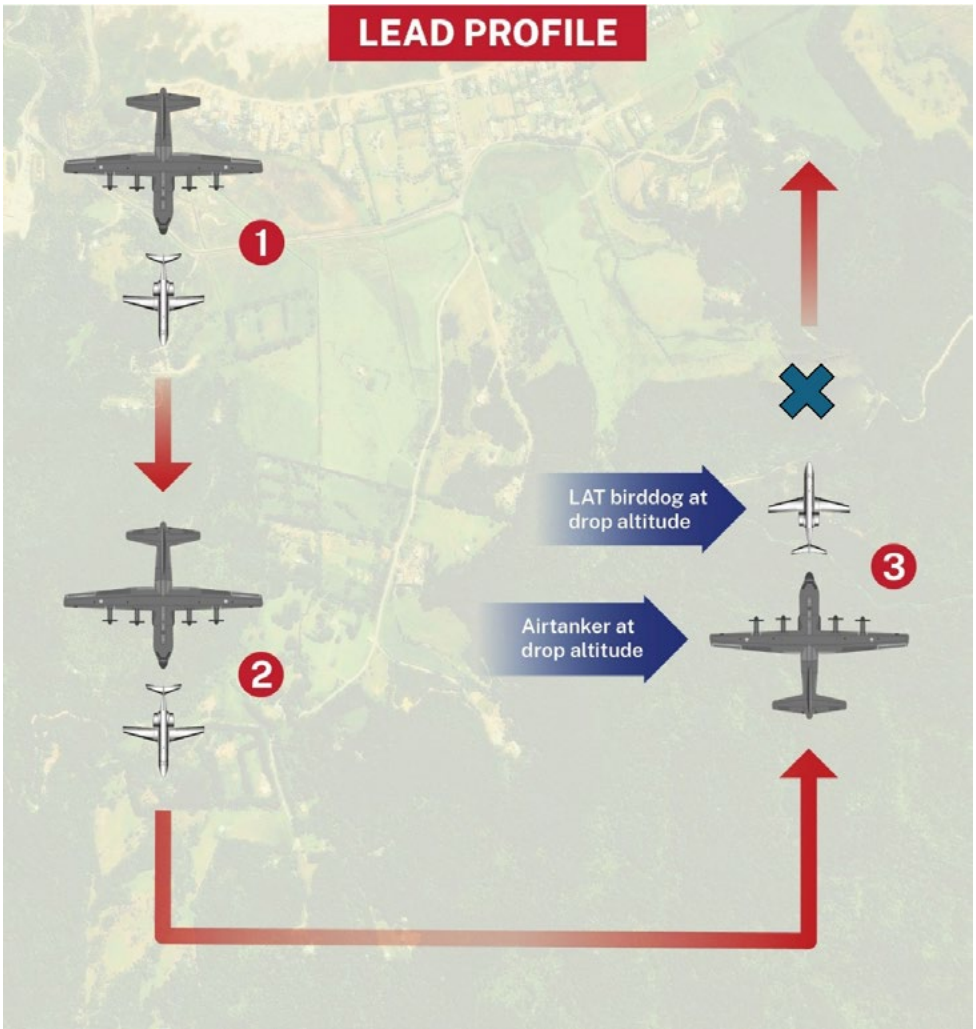


38.2 Lead profile

A lead profile is conducted by the LAT birddog at the intended drop height (refer section 19) and positioned at an appropriate distance ahead of the LAT.

The purpose of the lead profile is to guide the LAT onto the correct flight path by demonstrating the run at the operational height, confirming alignment, identifying hazards, and assisting with accurate positioning for the drop.

The lead profile is undertaken at the request of the LAT aircrew or when the line, target, or drop start point is difficult to see or adequately describe due to restricted visibility, terrain, smoke, or limited reference points.



38.3 Chase profile

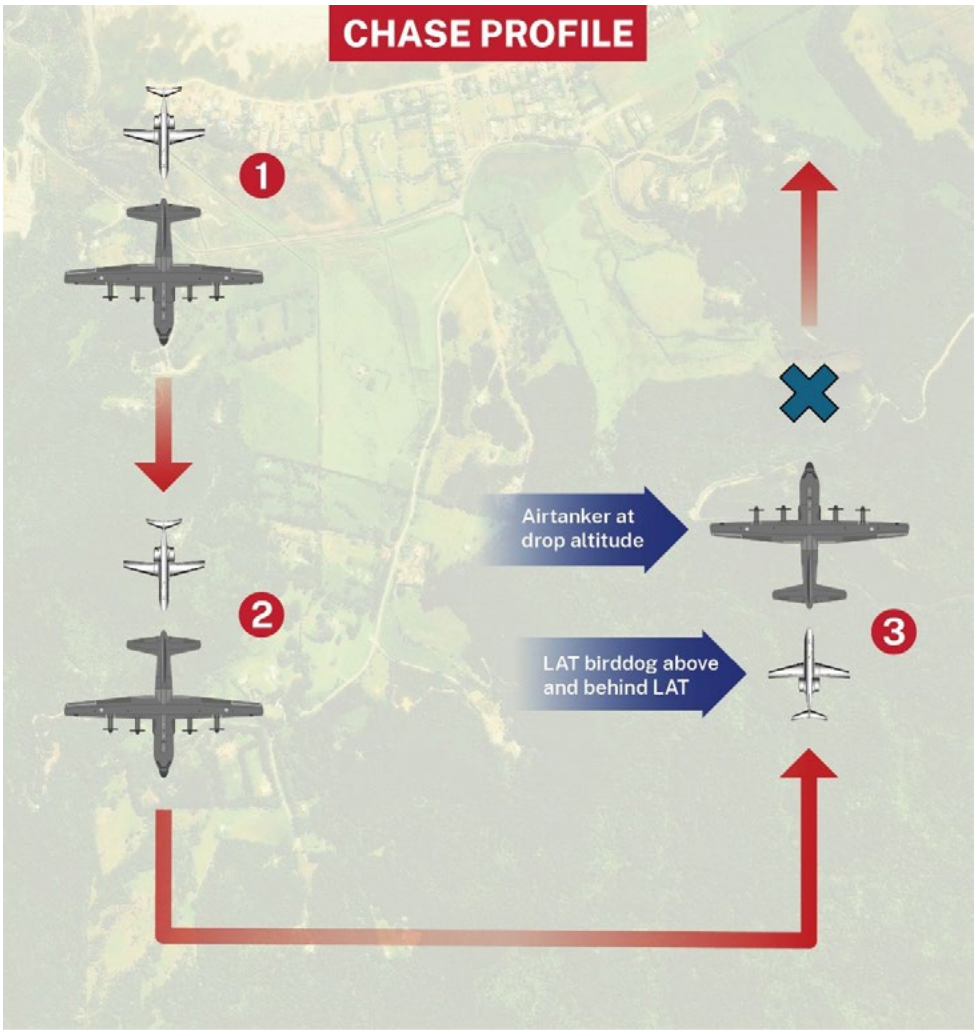
The chase profile is conducted with the LAT at the intended drop height (refer section 19), with the LAT Birddog positioned above and behind the LAT, typically at the 5 o'clock to 7 o'clock position relative to the LAT's flight path. This profile enables the LAT AAS to:

- observe the firebombing drop from an elevated trailing position
- provide real-time verbal adjustments to the LAT while established on final
- confirm drop alignment, accuracy, and effectiveness
- assess the performance of the drop, including coverage level, line placement, and interaction with terrain or fire behaviour.

The chase profile provides enhanced situational awareness for both the LAT AAS and the LAT aircrew and is a key method for ensuring safe, accurate, and effective drop delivery.

CAUTION – WAKE TURBULENCE

Carefully consider the preceding aircraft's flight path when adopting a chase profile to avoid wake turbulence hazards, especially on exit. The LAT birddog must **always maintain a position above and behind the LAT**.



38.4 Called drop

The called drop profile is conducted with the LAT birddog at the intended drop height (refer section 19) and will fly parallel to the LAT and call the drop. This profile is used when the LAT aircrew can verify the correct flight line but cannot clearly identify the specific drop zone. The LAT AAS pilot must consider both the climb performance and wake turbulence characteristics of the specific LAT type before initiating this profile.

Prior to 'join-up', the LAT AAS will:

- establish and communicate the turn direction that both aircraft will take following the drop
- brief the LAT crew on known hazards
- describe the exit route to be flown by the LAT.

This information must be confirmed with the LAT aircrew before either aircraft enters the drop-zone circuit pattern.

When the LAT is established on final, the LAT AAS will:

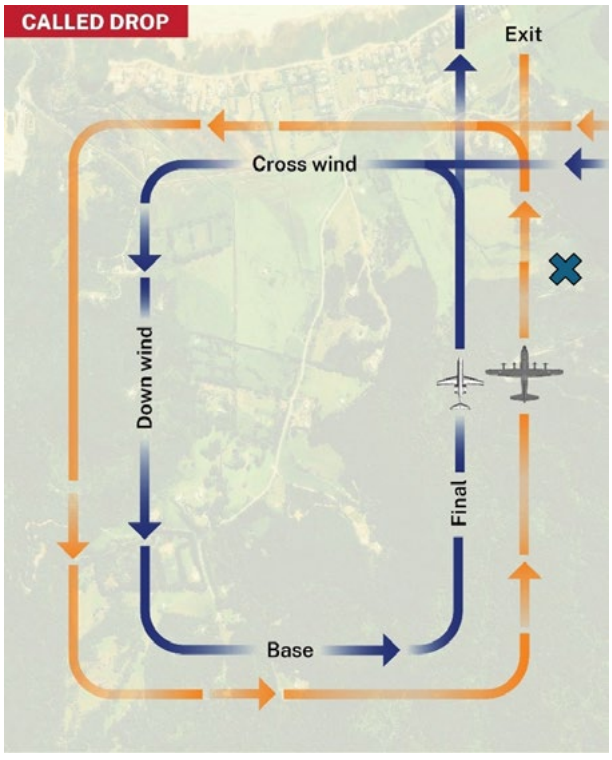
- confirm the flight line
- transmit the drop command: "three, two, one, drop drop drop".

Upon completion of the drop, both aircraft will:

- execute the pre-briefed turn and exit procedures
- maintain safe separation throughout the manoeuvre.

The LAT birddog will then:

- return to overfly and assess the drop
- provide any further directions required for subsequent LAT drops.



38.5 Describe the drop

Describe the drop is as per standard AAS training. A verbal description of the intended target will take place prior to the drop. This also includes commands such as tag and extend.

39. Post drop assessment

Following completion of the drop, and where practicable, the LAT birddog will reposition to provide the LAT AAS with an unobstructed vantage point of the drop line and resultant drop footprint. This may require manoeuvring the aircraft, typically through a right-hand turn, to achieve optimal visual assessment.

The LAT AAS will maintain situational awareness to ensure that the LAT safely clears the drop zone.

As soon as practicable after the drop, the LAT AAS will provide the LAT crew with comprehensive feedback, including:

- drop accuracy and possible corrections
- any abnormalities or issues, such as:
  - load not released
  - tank doors not fully closing
  - incorrect drop location
  - suppressant trailing or unanticipated flow
- drop height above canopy or ground (whichever is higher)
- drop speed
- assessment of drop effectiveness, including footprint characteristics and alignment with the intended objective.

Further instructions, such as:

- load and return
- hold
- await further direction.

Drop Assessments

Drop times, accuracy information, and load placement may be recorded by the AAS and provided to the relevant agency for use during post-mission debrief.

40. Post drop procedures

Once the LAT has completed a drop, it must broadcast on the F-CTAF that the load has been released, including its intentions to either conduct another run or exit the drop zone.

The LAT AAS, in conjunction with the IAAS (where applicable) and through consultation with key ground personnel, will determine the next appropriate action for the LAT.

Depending on mission requirements, the LAT will:

> if retardant remains – coordinate with the LAT AAS and await instructions for the next run (if applicable)

> if the drop is complete – exit the working area and incident area as directed by the LAT AAS.

Once all LATs have cleared the incident area, the LAT birddog may:

> conduct a low-level drop assessment

> remain on-site to await returning LATs

> undertake IAAS duties if required

> proceed to an alternative airbase to refuel before LATs return, where operationally appropriate

> depart the incident area if tasking is complete.

41. Return and reload

The LAT AAS will report the effectiveness of each drop to the key personnel or IAAS as soon as practicable and determine if additional loads are required.

Return and reload procedures will be managed in accordance with the relevant agency's dispatch and operational management processes, including refuelling, reloading suppressant or retardant, and reassignment to subsequent missions as directed by the SAD.

42. Loss of visual separation

If visual separation is lost, aircraft must:

> broadcast immediately on the F-CTAF that visual separation has been lost

> fly the predetermined flight path or escape manoeuvre until visual separation is re-established.

43. Overrun

Reserved

44. Load jettison

44.1 Planned jettison while airborne

The practice of conducting a planned load jettison will be completed in accordance with the operator's operations manual and the respective agencies procedures.

If required, ensure adherence to the following:

Pre-jettison safety pass

The LAT pilot must conduct a high-level pass over the approved jettison area to confirm that the area is clear of hazards, personnel, livestock, and infrastructure.

Approved locations only

Jettison operations must occur only in an identified and approved jettison area.

Minimum height

The jettison must be conducted at an appropriate height, and not below the minimum drop height for the category of LAT as specified in section 19, or higher if required by the operator's exposition manual.

Coverage level

Coverage levels must be ≤ 2, unless otherwise specified in the applicable operator's exposition manual.

Wind and environmental considerations

The LAT pilot must consider wind speed, direction, and environmental conditions to ensure that drift does not pose a hazard to people, property, or aviation operations.

44.2 Emergency jettison on take-off

Discharge timing and the location of any required jettison will be at the discretion of the PIC.

Appendix 1

LAT birddog pilot competency requirements

Contractors must ensure that all pilots assigned as PIC for a LAT birddog have completed a course of training. They must have demonstrated knowledge of, and ability to, conduct the activities and manoeuvres specified, and possess the skills and knowledge required to safely operate the aircraft in the aerial firefighting environment.

The head of flying operations of each contractor for LAT birddog services must provide evidence of pilot training and demonstrated competency in the specified performance criteria by uploading to ARENA a current statement of competency confirming LAT birddog pilot competency.

The performance criteria for the identified competencies are listed in the table below:

Description	Performance criteria
Mission planning/readiness	Confirms aircraft serviceability and performance. Understands the mission requirements as tasked. Interprets correctly pre-dispatch operational information.
Radio setup	Identifies and demonstrates agency radios and use. Identifies correct frequencies. Correctly sets up radio.
Flight following	Demonstrates understanding of requirements for flight following. Correctly communicates requirement inbound and outbound from fire.
Fire common traffic advisory procedures	Demonstrates strong situational awareness of other traffic. Correctly communicates requirement inbound and outbound from fire. Demonstrates correct radio procedures with other aircraft including air attack platform/s. Uses appropriate techniques and communication procedures when arriving and departing from a fireground.
High level assessment	Accurately identifies fire boundaries. Identifies hazards and escape routes. Accurately assesses wind speed and direction and possible turbulence. Accurately identifies environmentally sensitive areas. Confirms and amends application management plan, including pattern type and direction of treatment. Identifies conditions for suspension of treatments.
Low-level handling	Describes risks associated with low level operations Manages aircraft energy state. Accurately controls aircraft including appropriate speed control and bank angles. Maintains strong situational awareness of other traffic and hazards.

Description	Performance criteria
Initial briefing	Issues accurate initial briefing including stack information, target elevation, and QNH. Accurately assesses hazards and potential hazards. Always uses correct fire taxonomy. Confirms understanding. Develops and maintains an effective drop plan.
Tactics and strategy	Uses appropriate tactics for the actual situation. Tactics were communicated and understood by all parties including the IAAS. Tactics were executed as briefed.
Join-up	Maintains situational awareness during join up. Anticipates chase aircraft inertia. Uses correct phraseology for positional information. Accurately confirms aircraft position when required. Demonstrates accurate speed control.
Tactical briefing	Issues accurate tactical briefing. Accurately updates/reinforces any hazard information. Always uses correct fire taxonomy. Correct volume and coverage level issued. Correct target elevation issued. Confirms understanding with airtanker when required. Coordinates with the IAAS on tasking and separation.
Target description	Identifies key features of target. Relays accurate information to tanker. Uses standard fire taxonomy as required.
Show-me profile	Flies accurate profile. Identifies and correctly manages threats and errors. Identifies and communicates tactical threats. Anticipates LAT aircraft inertia and turning performance. Uses visible signalling smoke effectively to assist with the provision of clear instructions to the airtanker pilot.
Lead profile	Appropriately executes join-up process. Flies accurate profile. Identifies and correctly manages threats and errors. Identifies and communicates tactical threats. Anticipates LAT aircraft inertia and turning performance. Uses visible signalling smoke effectively to assist with the provision of clear instructions to the airtanker pilot.

Description	Performance criteria
Chase profile	Flies accurate profile. Maintains appropriate distance and vertical separation. Considers wake turbulence. Positions aircraft accurately.
Called drop profile	Flies accurate profile. Maintains appropriate distance. Considers wake turbulence. Positions aircraft accurately.
Exits	Briefs appropriate exit strategies for LAT and LAT birddog. Flies the exit post drop accurately.
Drop assessment	Assesses post drop effectiveness accurately. Correctly relays complete post drop information to LAT pilots.
Departure briefing	Demonstrates awareness of post drop departure requirements. Includes communication requirements and profile in departure from fireground briefing. Coordinates with IAAS to hand over working area.
Airtanker birddog/AAS transition	Demonstrates concise information transfer. Demonstrates effective CRM during transition. Clearly defines objectives.
Aircraft sequencing	Demonstrates sound situational awareness. Understands stack positioning and timing. Correctly sequences aircraft in accordance with instructions.
Emergency/non-normal operations	Performs any non-normal or emergency in accordance with applicable standard operating procedure/checklist. Ensures safety of flight is not compromised and safety margins are maintained. Maintains appropriate situational awareness during non-normal or emergency events.

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