



**ACT RURAL FIRE SERVICE**

**HELICOPTER WINCHING STANDARDS**

**(V1.0)**

## Glossary of Terms

**Access Winching:** Winching for the purposes of accessing an area or incident. E.g. Remote area firefighting

**ACTRFS:** Rural Fire Service within the Australian Capital Territory

**AGL:** Above ground level

**Air Crewperson:** The member of a helicopter crew who is responsible for operating the winch and managing the rear of the helicopter. AKA 'Crewman'

**AKA:** Also known as

**AOC:** Air Operator's Certificate

**Cabin Manager:** A role which is often taken up by a member of the firefighting crew to assist the Air Crewperson by managing the flow of equipment and people through the helicopter cabin

**Aircrew:** Refers to the Pilot and Air Crewperson as a collective group

**Connections Check:** A check of the winchee and their associated winching equipment to ensure that they are safe to commence or continue winch operations

**CWN:** Call When Needed – A contract or standing offer provided to an Operator for potential occasional use

**D – Ring Reversal:** AKA: 'Dynamic Rollout'. Can occur with lifting equipment and hooks where cross loading over the gate can result in accidental disconnection of the load

**Evolution (Winching):** A winching evolution includes both a complete winch out and a complete winch in.

**Extraction:** A part of winching operations where personnel are extracted from an environment and winched in to the helicopter

**IMT:** Incident Management Team

**Incident Controller:** The position or person who has the legislated authority and responsibility for control of an emergency incident

**Insertion:** A winching operation that deploys personnel by winch into an environment by winching them out from of a helicopter

**Jump Seat:** A seat where winchees are to sit when they are next to be winched. This seat is often closest to the door they will be exiting from

**NAFC:** National Aerial Firefighting Centre – A central location that coordinates and procures firefighting aircraft on behalf of RFS and land managers

**NSWRFS:** Rural Fire Service within the State of New South Wales

**OGE (Hover):** Hover Out of Ground Effect – hovering at heights where the downwash dissipates to no benefit of the aircraft's lift capacity

**Operations Manual:** A company document (or series of documents) that outlines the operational principles and procedures of the company

**Operator:** A company or organisation that operates aircraft. In this case for use at ACT RFS winching operations and with ACT RFS Personnel. AKA: 'Contractor'

**PIC:** Pilot In Command

**Pilot:** The Pilot In Command of the Aircraft

**PTT:** Push to Talk

**Rescue Winching:** Winching for the purposes of rescuing people or animals

**RAFSO:** ACTRFS Section – Remote Area Firefighting & Specialised Operations

**RFSO:** Request for Standing Offer – Request for submissions from aircraft operators for ‘CWN’ Aircraft

**Wander Lead:** AKA: Restraint Strap. A specifically designed strap that’s purpose is to secure personnel to the helicopter but allow them to move throughout the helicopter.

**Winch:** AKA: ‘Hoist’. A mechanical lifting or lowering device fitted to a helicopter

**Winch Operator:** Also referred to in this document as the Air Crewperson

**Winchee:** A person that is winched

**Winching:** AKA: ‘Hoisting’. The mechanical lifting or lowering of a person from a helicopter on a cable

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# 1 Overview

## 1.1 Purpose and Scope

The purpose of this document is to provide guidance and direction to personnel and organisations associated with ACT RFS helicopter winch operations. It details the requirements and expectations of the ACT RFS to which all Aircraft Operators must meet in order to conduct helicopter winching operations involving ACTRFS personnel. While some policies included in this document are 'mandatory', some are 'preferred practice'. The ACTRFS accept that each Operator has different procedures; however the ACTRFS also require minimum standards, and wherever possible consistent processes are adhered to by all Operators. This document provides the basis against which helicopter winching Operators will be audited.

This document is supplementary to the following documents:

- NSW and ACT Interagency Aviation Standard Operating Procedures
- ACTRFS Call When Needed Supply Agreement
- NAFC Contract

This document refers to the winching of individual personnel for the purposes of access or egress only.

The ACTRFS will only engage operators contracted through NAFC for Helicopter Rescue Winching Operations.

## 1.2 Applicable Regulatory References

The following are particular industry references that are applicable to ACTRFS helicopter winching operations:

- Civil Aviation Orders Part 29.
- Aviation Technical Standing Order – ATSO-C1001
- Aviation Technical Standing Order – ATSO-C1003
- PUAFIR017 - Work safely around aircraft (National Training Competencies)
- PUAFIR016 - Undertake hover-exit operations from helicopter (National Training Competencies)
- PUAFIR015 - Undertake helicopter winch operations (National Training Competencies)

## 1.3 Review of Standards

These standards are current at the time of publish however the ACTRFS accept that in such a dynamic industry these standards will need regular reviewing to ensure industry best practice is maintained. At all times the ACTRFS welcome feedback on these standards especially from Industry, Operators, subject experts, and Agency personnel. Feedback can be provided by emailing [RFS@act.gov.au](mailto:RFS@act.gov.au).

# 2 ACTRFS Winching Operations

## 2.1 Winching Operations – ACTRFS

Winching operations are often critical to the insertion and extraction of firefighters and other emergency service personnel. Access winching operations for ACTRFS personnel are restricted to one winchee on the cable at a time. This document will deal only with winching operations of this nature. These include but are not limited to:

- Remote Area Operations (including firefighting)
- Rapid Aerial Response Teams (RART) Operations

## 2.2 Winching Risk Management (Priorities)

Winching operations are inherently dangerous activities and the ACTRFS considers winching an option of last resort for inserting or extracting personnel to/from incidents.

Winching operations should never be undertaken without thorough measurement of risk, consideration of alternative tactics and relevant authorisation. While ultimately this document sets standards and policies regarding winching



operations, under exceptional circumstances it may be necessary for Pilots, Air Crewpersons and ACTRFS personnel to act outside of these standards in the interest of preserving life.

### 2.2.1 Priorities for Insertion and Extraction

1. Under all circumstances, options for landing must be explored as a first priority for insertion and extraction of ACTRFS personnel.
2. Where landing is not possible or reasonably practical, hover entries and exits are the next options to explore.
3. It is only when landing or hovering insertions have been thoroughly explored and discounted as possible options or reasonably impractical, that winching operations should be considered.

Hover entries and exits are generally considered safer than winching, however it is also possible in some instances that hovering involves a greater risk to personnel involved. The ACTRFS accepts that in some instances a winch operation can pose less risk than a hover entry or exit.

### 2.2.2 Carriage of Passengers While Winching

Operators are to ensure that non-essential personnel are not to be in the helicopter during winching operations.

### 2.2.3 Qualified Personnel (Winchees)

ACTRFS personnel can only winch operationally if they have been formally assessed as 'competent' in Helicopter Insertion Techniques (HIT) within the previous 14 months.

If non-ACTRFS agencies are using ACTRFS aircraft for winch operations, they shall comply with their own standards for currency.

### 2.2.4 Air Crewperson Duties during Winching Operations

The ACTRFS requires Operators to ensure that their operational documentation includes specific duties and responsibilities of the aircrew.

### 2.2.5 Empowerment of Air Crewperson

It is essential that in the case of an emergency any Air Crewperson conducting winching operations is empowered to cut the winch cable (loaded or unloaded) without reference to the Pilot.

## 2.3 Authorisation for Winching Operations

### 2.3.1 Training Winches

Training winches must only be conducted with authorisation from authorised staff. For the ACTRFS this is the Manager Operations ACTRFS. Training winches must be conducted at a height of no more than 30ft AGL.

Advanced training winches may be conducted, providing that a full risk assessment has been conducted and risk management strategies have been employed. The ACTRFS and the Operator need to be satisfied with the risk management strategies before advanced training winches are conducted.

### 2.3.2 Operational Winches

Operational winching operations must be approved by the Incident Controller.

## 3 Operator Applications and Audits

### 3.1 Application for Winching

An application to conduct winching operations is submitted by an Operator through either tendering for a winching service through the National Aerial Firefighting Centre (NAFC) contracts or by listing "Winching" as a function in their response to the Request for Standing Offer (RFSO).

## 3.2 Endorsement by the ACTRFS

Any Operator of aircraft seeking endorsement to conduct winching operations involving ACTRFS personnel must hold a current NAFC winch contract, or have been formally audited for winching and received written endorsement from the ACTRFS to undertake winching as part of the 'Call When Needed' arrangements and be provided with written approval from the Director Operations ACTRFS. This endorsement will provide conditions and an expiry date pertaining to the endorsement.

It should be noted that endorsement to conduct winching operations is not implied by acceptance of a RFSO for other aviation roles such as fire bombing, air attack supervision, airwork or aerial ignition. No guarantee of winching or flying hours is implied by the endorsement of an Operator for winch operations.

### 3.2.1 Compliance

All Operators seeking endorsement to conduct winching operations will need to comply with and be audited against the *ACTRFS Helicopter Winching Standards*. Operators found to be non-compliant with the *ACTRFS Helicopter Winching Standards* will not be endorsed to conduct winching operations with ACTRFS personnel.

### 3.2.2 Opportunities

A limited number of Operators will be formally endorsed to conduct helicopter winching operations on an annual basis. Demand for winch capable aircraft varies from year to year. The ACTRFS reserves the right to limit the number of Operators endorsed to winch, based on operational needs, costs and opportunities to audit.

## 3.3 Winching Audits

Winching audits will be conducted by appropriate auditors authorised by the ACTRFS. The overarching purpose of auditing is to assess risk levels that ACTRFS personnel and contractors may be exposed to when authorising, supervising or being winched by helicopter Operators.

The costs associated with audits including the cost of fuel and flying hours is the responsibility of the Operator. All costs associated with ACTRFS staff attendance or external auditors engaged by the ACTRFS will be the responsibility of the ACTRFS.

### 3.3.1 Notification and Information

An information pack will be sent to an Operator prior to an audit. It will outline tasks that need to be completed prior to the audit visit and what the Operator must have ready at the time of the audit to make the process efficient for all parties.

### 3.3.2 Auditing of Prospective Operators

Prior to being formally endorsed for winching operations, a first time Operator will need to be audited against the *ACTRFS Helicopter Winching Standards*. The audit will take place at a mutually agreeable time and location for both the auditor(s) and the Operator.

### 3.3.3 Audits for Existing Operators

The ACTRFS or delegated auditor may formally audit any current winch Operator at any time providing not less than 14 working days' notice is provided in writing.

### 3.3.4 Winching Audit (Winch Check Flight)

To ensure compliance with the *ACTRFS Helicopter Winching Standards*, an audit involves inspection of actual winching operations (under training conditions). The Operator must demonstrate compliance to section 6 of the *ACTRFS Helicopter Winching Standards* during at least 1 but not more than 2 complete winching evolutions.

During the winch check flight, an auditor or delegate will observe actions, procedures and communications of the aircrew from inside the cabin of the helicopter.

### 3.3.5 Audit Outcomes

The ACTRFS will provide the outcomes of a winching audit to the Operator in writing within 21 days of the audit being completed. Operators found to be non-compliant with the *ACTRFS Helicopter Winching Standards* will not be endorsed to conduct winching operations with ACTRFS personnel.

### 3.3.6 Actual or Alleged Breach of Standards

Upon the ACTRFS becoming aware of an alleged or actual breach of the *ACTRFS Helicopter Winching Standards* an immediate suspension of the operators winching authorisation will occur.

Upon suspension of an operators winching authorisation the ACTRFS shall instigate a review of the actual or alleged breach and:

1. Lift the suspension and allow the operator to resume winching operations; or
2. Perform or cause to be performed a detailed investigation with recommendations to the Director Operations ACTRFS to:
  - a. Lift the suspension and allow the operator to resume winching operations;
  - b. Impose conditions upon the operator to allow resumption of winching operations (e.g. compliance order, review or further audit);
  - c. Remove from the operator issues winch authorisation for the remainder of the contracted period; or
  - d. Disqualify the operator from holding any winch authorisation for a prescribed period not exceeding 5 years;
3. Report the alleged or actual breach to another agency or regulator (e.g. CASA) for their information or further action where necessary.

The Director Operations ACTRFS must inform the Operator providing 14 working days of their decision and outcome.

An Operator may appeal within 21 working days any outcome by the Director Operations ACTRFS to the Chief Officer ACTRFS.

## 4 Operator Specific Requirements

### 4.1 ACTRFS Helicopter Winching Standards

It is the responsibility of an Operator to ensure that all Pilots and Air Crewpersons (involved in ACTRFS activities) employed by an Operator thoroughly understand and are internally checked against the *ACTRFS Helicopter Winching Standards*. This includes ensuring that such standards are accessible and where appropriate incorporated into the company Operations Manual.

### 4.2 Organisational Documentation

#### 4.2.1 Operations Manual

The Operations Manual (or equivalent) of a helicopter winching Operator must contain the policies and procedures of the Operator. The Operations Manual must make reference to the *ACTRFS Helicopter Winching Standards* in some form so that all employees have access to the detailed standards and ACTRFS requirements contained in this document.

#### 4.2.2 Risk Management Plan

Every Operator must have a documented Risk Management Plan (or equivalent) which covers at the very least, key winching risks and control measures.

#### 4.2.3 AOC

All current or prospective Operators conducting winching operations with ACTRFS personnel must have a current AOC which includes approval for the following:

- Charter Operations
- Aerial Work – Including at least:
- Slings load operations
- Water and fire retardant
- Winching/hoisting

#### 4.2.4 Briefing Cards

The Operator must maintain briefing cards that are specific to the type of helicopters being used for winching. Each helicopter used for winching operations must carry a relevant briefing card. Each card must contain the following minimum information:

- How to approach / depart the helicopter
- Hazardous areas
- Location of emergency exits
- Location of first aid kits
- Location of ELT

## 4.3 Pilot Requirements

### 4.3.1 Qualifications

A pilot conducting winching operations must be qualified and proficient as defined in CAO 29.11 in the techniques and procedures necessary to perform winching/hoist operations. Pilots must be internally checked and endorsed against the Operator's Operations and Training Manuals as well as the *ACTRFS Helicopter Winching Standards*.

### 4.3.2 Currency

To maintain currency, all pilots conducting winching operations must have conducted within 3 months, at least 3 live winching evolutions. The responsibility for organising, recording and covering the cost of maintaining currency lies solely with the Operator.

## 4.4 Air Crewperson Requirements

### 4.4.1 Qualifications

Air Crewpersons conducting winching operations must be qualified and proficient as defined in CAO 29.11 in the techniques and procedures necessary to perform winching operations. Air Crewpersons must be internally checked and endorsed against the Operator's operations and training manuals as well as the *ACTRFS Helicopter Winching Standards*.

### 4.4.2 Currency

To maintain currency, all Air Crewpersons conducting winching operations must have conducted within 3 months, at least:

- 4 complete live winching evolutions (human load) Or
- 3 simulated complete winch evolutions (dummy load) and 2 live winching evolutions (human load).

The responsibility for organising, recording and covering the cost of maintaining currency lies solely with the Operator.

## 4.5 Winching Equipment

It is the responsibility of the Operator to ensure every winch capable aircraft has the minimum equipment required to conduct winching operations with the ACTRFS. It remains the responsibility of the Operator to ensure that winching equipment is provided, approved or permitted to be used by CASA, certified where appropriate and operated and maintained in accordance with manufacturer's requirements. The firefighting equipment used by crews on the ground for all ACTRFS operations will be provided by the ACTRFS or its members.

The following lists and describes the minimum equipment required to be provided by an Operator and carried on each winch capable aircraft:

### 4.5.1 Winch (Hoist)

The winch must be equipped with a non-manual cable cut system that should be capable of being activated by either or both the Pilot and Air Crewperson. The safe load rating of the winch, cable and hook assembly must be at least 272kg.

### 4.5.2 Winch Hook

To manage the risk of D-ring reversal, the winch hook for all ACTRFS operations must be a 'D-Lock - Helicopter Hoist Hook' manufactured by Lifesaving Solutions.

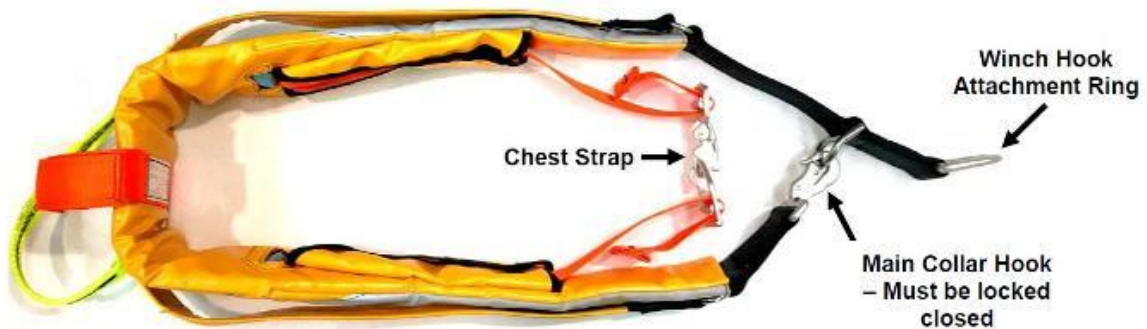
**Image 1: D-Lock Helicopter Hoist Hook**



#### 4.5.3 Rescue Collar (Rescue Strop)

Two (2) rescue collars must be carried on every helicopter for ACTRFS winching operations. The winching collar must comply with ATSO-C1003. Rescue collars must have an adjustable chest strap – with a system that allows the chest strap to be easily connected and disconnected. Additionally, all collars must also have the main collar hook locked closed (e.g. by a split pin) to prevent the strop being opened during winching operations.

**Image 2: Example of a Rescue Collar**



#### 4.5.4 Equipment Ring

An equipment ring (lifting ring) must be utilised whenever personnel and equipment are being winched. The equipment ring will be connected to the winch hook during winch operations. Equipment must always be attached directly to the equipment ring and never to the winch hook. The ring must be of steel construction and be rated to lift at least 240kg.

**Image 3: Example of an Equipment Ring**



#### 4.5.5 Equipment Strops x 8

Equipment strops (or lanyards) are used for the attaching of equipment to the equipment ring. Equipment strops must be made of webbing with the total length between 900mm and 1200mm long. One end should include a double action hook resistant to D ring reversal and compatible with the equipment ring. The other end must include a sewn loop with that will enable different pieces of equipment and bags to be connected (reeved) to the strop. The

equipment strops should be rated to lift at least 120kg. A minimum of eight (8) equipment strops must be carried on each aircraft. Equipment strops are not to be used for human loads.

**Image 4: Example of Equipment Strop**



#### 4.5.6 Winchee Wander Lead

The Winchee wander lead will enable the movement during flight for winchee's undertaking operations. The wander leads are to be secured to a Rescue Collar during movement. The Winchee's wander lead must comply with ATSO-C1001.

#### 4.5.7 Air Crewperson Harness

The Air Crewperson must wear an approved full body harness which is compatible with an approved wander lead. The Air Crewperson's harness must comply with ATSO-C1003.

#### 4.5.8 Air Crewperson Wander Lead

The Air Crewperson will also have a wander lead which will allow them to be tethered to the aircraft securely. The wander lead will also permit the Air Crewperson to work in restraint while operating the hoist or during other aircraft operations. The Air Crewperson's wander lead must comply with ATSO-C1001.

#### 4.5.9 Manual Cable Cut

The aircraft (or Air Crewperson) must have accessible equipment to allow manual cutting of the winch cable under load in case the primary cable cut system is non-responsive.

## 5 Aircraft Requirements

The aircraft approved for winching operations must meet the designated minimum standards which are included within the following sub sections.

### 5.1 Existing Requirements

Prior to being considered for ACTRFS winching operations, all aircraft will need to meet the minimum requirements for:

- The supply agreement provided by the ACTRFS
- A contract provided by NAFC or other Organisation (if applicable)

### 5.2 Engines and Performance

#### 5.2.1 ACTRFS Requirements

All helicopters undertaking ACTRFS winching operations must have 2 (twin) engines.

## 5.2.2 Capability

It is common for all firefighting aircraft to operate in high density altitude conditions especially associated with elevated temperatures. It is an expectation that winch capable helicopters will regularly carry 350 - 400kg (4 x firefighters with firefighting equipment) in addition to other minimum equipment. Winch capable helicopters will need to maintain a hover OGE with at least a 5% power margin available at operating weight in conditions typically experienced during firefighting operations.

## 5.2.3 Power Margins and Monitoring

Operators must have published performance charts that provide the pilot with an ability to calculate power margins in given conditions and operating weights. Additionally, all helicopters require power monitoring system that provides clear indication to the pilot of limits being approached during flight.

## 5.2.4 Approved Aircraft

Aircraft approved for ACTRFS winching operations include (variants of) of:

- Bell 212
- Bell 412
- Eurocopter EC145
- Eurocopter AS365 Dauphin
- MBB/Kawasaki BK117

If an Operator intends to utilise a different aircraft to those listed above for winching operations with the ACTRFS, specific mention of the aircraft and evidence of its capability and performance must be provided to the ACTRFS in the application to conduct winching operations.

## 5.3 AOC Approvals

The manufacturer, type and model of each helicopter owned by an approved or prospective winch Operator must be listed on the Operator's AOC as an approved aircraft for:

- Charter Operations
- Aerial Work – Including at least:
- Sling load operations
- Water and fire retardant
- Winching/hoisting

## 5.4 Cabin

### 5.4.1 Winch Area

The helicopter's primary winch access area must be designed to reduce the chances of fouling wire or hooks or other equipment in order to avoid damage to the cable and equipment.

### 5.4.2 Communications

If not already required by the Standing Offer or Contract Specifications, winch capable helicopters must come fitted with at least the following:

1. Intercom headsets for at least 4 x firefighting crew/passengers.
2. A PTT lead for all firefighting crew headsets to restrict the use of 'Hot Mic' communications by firefighting crew/passengers.
3. At least 1 headset and lead capable of both intercom (ICS) and external transmissions (EXT) is available to the firefighting crew or in the rear of the aircraft. Ideally this will be located in the Crew Leader's position in close proximity to a window.

### 5.4.3 Firefighting Equipment Storage

It is common for a large amount of bulky equipment to be stored inside the cabin. Aircraft Operators need to consider equipment stowage and security and the seating configuration should accommodate this need.

#### 5.4.3.1 Storage of Water Bucket (BK117/EC145)

The ACTRFS strongly recommend these aircraft (wherever possible) store the water bucket in the rear of the helicopter to minimise the impact upon or delay of winching operations. These arrangements need not apply when there is no requirement for winching or hover operations with firefighting crew such as when the aircraft is tasked for general use or during transit.

#### 5.4.3.2 Storage of Water Bucket (Bell 412/212)

The ACTRFS strongly recommend these aircraft (wherever possible) store the water bucket in either of the rear quarter seat (gunner's seat) areas to minimise the impact upon or delay of winching operations. These arrangements need not apply when there is no requirement for winching or hover operations with firefighting crew such as when the aircraft is tasked for general use or during transit.

### 5.4.4 Hard Points

The cabin needs to have at least two rated hard points which allow connection of both the cabin wander lead and the Air Crewperson's wander lead. They should be located so that the Air Crewperson can function as required and also so personnel in all seats can access the cabin wander lead. Hard points need to be referred to in the company's Operations Manual and must be capable of safely holding at least a single person load.

## 6 ACTRFS Winching Procedures

The following section outlines the minimum requirements from the ACTRFS in relation to the specific processes involved in winching ACTRFS personnel. **To avoid confusion, the below procedures are mandatory for all Operators except where the words 'should', 'can' or 'may' are directly used.**

### 6.1 Pre Flight Procedures

#### 6.1.1 ACTRFS Approved Winchees

The aircrew must ensure that all ACTRFS personnel are current and authorised to undertake winching operations.

The aircrew must not permit the members to undertake any winching or hover insertions/extractions unless their currency can be confirmed by a staff member of the ACTRFS Remote Area Firefighting & Specialised Operations section.

#### 6.1.2 Aircraft Brief

At the commencement of every shift, the Pilot or Air Crewperson must provide an aircraft briefing to all passengers or winchees, covering at least:

- Aircraft hazards
- Approach and departure procedures
- Door operation
- Seatbelt operation
- Emergency exits
- Emergency equipment

An aircraft brief must not take longer than **6 minutes**. Briefings that take longer than this greatly disrupt the efficient deployment of personnel.

#### 6.1.3 Winch Briefing

At the commencement of every shift, the Air Crewperson must provide a winch briefing to the winchees covering at least:

- Cabin management
- Seat transitions
- The winching process
- Contingencies and emergencies
- Return of equipment strops
- Mobile phones or other devices turned off when winching
- Ground to air communications channel and procedures



An operational winch brief for winchees must not take longer than **12 minutes**. Briefings that take longer than this greatly disrupt the efficient deployment of personnel.

#### 6.1.4 Hover Entry and Exit Briefing

While specific procedures for hover entry/exit are not included in this document, standard daily briefings for winching helicopters must also include a hover entry/exit briefing. At the commencement of every shift, the Pilot or Air Crewperson must provide a briefing to all firefighting crew, covering at least:

- Preference of hover over winch
- Process for insertion
- Management of equipment
- Process for extraction

An operational hover entry/exit brief for winchees must not take longer than **6 minutes**. Briefings that take longer than this greatly disrupt the efficient deployment of personnel.

#### 6.1.5 Complete Briefing Sequence

In line with sections 6.1.2 – 6.1.4, a complete briefing sequence for one aircraft including an Aircraft, Winching and Hover Entry/Exit Briefs must take no longer than **24 minutes**.

#### 6.1.6 Winch Briefing – Multiple Aircraft

Large operations regularly have more than one winch capable aircraft tasked. To expedite the process of briefings, one winching brief will be conducted on an aircraft most likely to conduct the majority of the winching operations for that day. Furthermore, shorter briefings should then occur on additional aircrafts containing information on only the differences in equipment, procedures, aircraft and seating configurations. Air Crewpersons of other aircraft should be present at these briefings to ensure they are aware of what has been covered and what has not.

#### 6.1.7 Cabin Management

While the Air Crewperson remains responsible for overall cabin management, a cabin manager from the firefighting crew should be identified. The role of the cabin manager is to reduce the workload of the Air Crewperson by ensuring equipment; personnel and the cabin wander lead are organised and ready at appropriate times during winch operations.

Cabin Managers will usually be first in and last out during winching operations.

#### 6.1.8 Equipment Loading

The Pilot or Air Crewperson must oversee the loading of all personal and firefighting equipment ensuring that dangerous goods are identified pre-flight. Equipment should be loaded so it can be efficiently deployed during a winch operation and where appropriate with equipment strops already attached.

#### 6.1.9 Flight Manifest

The Pilot or Air Crewperson must ensure a flight manifest is completed and communicated or handed or communicated to a responsible person such as the Airbase Manager or a RART Coordinator.

#### 6.1.10 Pre Flight Winch Checks

The winch and assembly must be checked pre-flight to ensure that it is fully operational. These checks must be in line with the manufacturer's instructions.

### 6.2 Pre-Winch Procedures

Upon approach to an incident or winch site ongoing risk assessments are imperative. The operation must be aborted and reassessed if any member of the aircrew, firefighting crew or IMT personnel is uncomfortable with the safety risks of any component of the tasking. This will be particularly appropriate during the pre-winch stage of the flight or mission.

#### 6.2.1 Reconnaissance Phase

All involved personnel are to thoroughly assess the mission and all conceivable hazards including emergency procedures and contingencies. This can be done at a range of heights. The winchees should be encouraged to

contribute. CRM is utilised and if all crew are satisfied with the plan and the risk the mission will go ahead. A winching assessment (PSWATP check) is conducted by the aircrew during the reconnaissance phase.

**P: Power:** Assess the local current conditions and calculate the power required for an OGE hover. Ensure 5% power margin is available by conducting a check at or above the landing / winching site.

**S: Sun, Slope, Surrounds and Surface:** Working from big picture to small while identifying major features that may affect the approach, hover, landing or departure. The sun's position, local terrain, any obstructions close to the winch point, and the surface onto which the winchee is to be placed need to be assessed.

**W: Wind and Wires:** Wind direction may dictate the approach and departure tracks. Wind strength must also be considered. A thorough search for wires is essential and if present consideration whether they may affect the circuit, hover location and approach and departure paths.

**A: Assessment:** From the observed conditions the crew assess the safest approach, hover and departure paths identifying physical markers to assist with alignment and flying the appropriate course over the ground, and assess the possible courses of action in case of emergency.

**T: Trouble/Turbulence:** The crew revise emergencies paying particular attention to actions required when personnel are on the winch. Another check for possible turbulence should be made also.

**P: Plan:** Once all the factors have been assessed, the crew then ensure that each member of the crew is aware of the intended actions, that each knows their role in the plan and is satisfied.

## 6.2.2 Mobile Phones and Other Devices during Winch Operations

To reduce the risk of inadvertent firing of the cable cutter charge, the ACTRFS requires that certain personnel turn off, or place into flight mode, any device that produces an electromagnetic signal prior to any winching operation commencing. Those affected by this procedure include at least:

- Any personnel who will or may be winched
- The Air Crewperson
- Any other personnel in the rear of the helicopter

Devices which must be powered off includes but is not limited to mobile phones, high powered radios, tablets and video cameras with wireless or bluetooth connectivity. If a device can be adjusted to reduce or remove this risk it may be approved by the aircrew to remain 'on'.

## 6.2.3 Video or Photography during Winching Operations

During winching operations, winchees and aircrew should be focused on safety above anything else. At any point, the Pilot or Air Crewperson can restrict video or photography devices being used if they believe safety is or is likely to be compromised. This excludes any audio or video capability installed on the aircraft for the purpose of intelligence gathering or collection of winch review data.

The ACTRFS requires all winchees to request verbal permission of the aircrew and other winchees in advance of using video or photo devices during any flight or winch operation, as well as informing the aircrew/winchees of the intended purpose.

## 6.2.4 Winch Authorisation

Relevant authorisation to undertake winching operations is required from the agency controlling the incident. In the emergency service context, this can only come from an Incident Controller (or delegate) or the RAFT Coordinator (if appointed).

## 6.2.5 Confirm Insertion or Extraction Method

At this stage a method of insertion must be agreed upon. If options for landing or hovering nearby to the incident location are possible and practical, winching must not be attempted.

## 6.2.6 Winching Configurations

If the aircraft weight is beyond the parameters decided upon by the Pilot for safe OGE hover and power margins, a firefighting crew may be split up. When this occurs, the first winch sequence must include a minimum of 2 x firefighters and their personal equipment to ensure safety if the aircraft is unable to return.

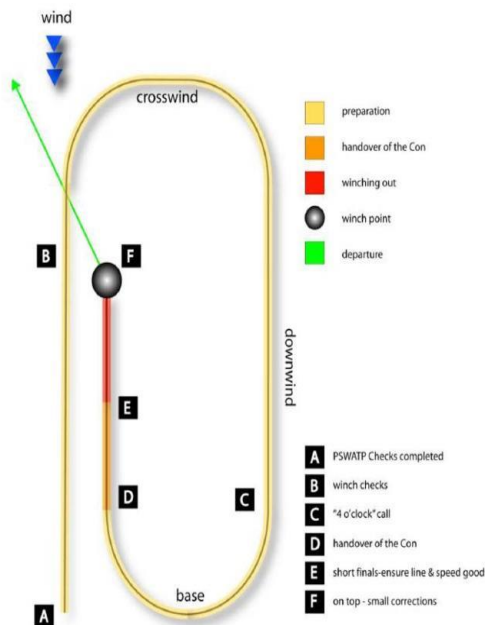
## 6.2.7 Winchee PPC/PPE

The ACTRFS requires winchees to wear personal protective clothing and equipment while undertaking helicopter winching operations. While it is primarily the responsibility of the winchees to ensure they are prepared and clothed for firefighting and winching operations, an Air Crewperson must not winch a ACTRFS member if they have not donned and secured the following as a minimum:

- A helmet
- Firefighting pants and jacket / Overall
- Eye Protection
- Hearing Protection
- Gloves

## 6.2.8 Winching Circuit

A full circuit prior to the winch must be made. This may occur per the following diagram.



The circuit should be made in the direction that allows the aircrew the best view of the winch site. Transfer of 'The Con' to the Air Crewperson should occur to ensure that either the Pilot or Air Crewperson has a visual on the winch site at all times during the final stages of the circuit.

Following the base turn of the winching circuit the Air Crewperson may commence bringing the first winchee to the door or the skids (if appropriate) once the steps 6.3.1 – 6.3.3 have been completed.

## 6.2.9 Winch Checks

During the circuit, the Air Crewperson and Pilot will ensure that all appropriate winch checks are completed including but not limited to:

1. Cabin and objects within are secure
2. Power on to winch
3. Cable cut options are identified by both Pilot and Air Crewperson
4. Radios silenced or turned down for winching ops

5. Electromagnetic devices turned off (winchees and Air Crewperson)

## 6.3 Winchee Security

At all times during a winching operation, winchees must be secured by at least one point of attachment to the helicopter. These points of attachment are; the cabin wander lead, the winch cable and the seatbelt.

**At no times during a winching operation can a winchee be unsecured within the helicopter cabin.**

To ensure this, for short periods the winchee will be secured by two points of attachment during a transition from one point to another. Winchees must avoid being connected by two points of attachment for longer than necessary.

## 6.4 Insertion Winch Sequence

### 6.4.1 Connection of the Winchee

The winchee should be seated in the designated dispatch seat with seat belt fastened and rescue collar fitted. The Air Crewperson will firstly connect the equipment ring to the winch hook. Secondly, the Air Crewperson will connect the winchee's rescue collar to the winch hook. At this point the Air Crewperson and the winchee will conduct a *Connections Check*.

### 6.4.2 Connections Checks

A *Connections Check* will be conducted by the Air Crewperson and the winchee a number of times throughout a winch sequence. A *Connections Check* must include at least:

1. PPC secure and complete
2. Chest strap fastened and connected
3. Collar hook closed (split pin in position) and not twisted
4. Winch hook locked closed and dressed appropriately

The Air Crewperson will prompt the winchee to check themselves by providing a 'thumbs up' following their checks. The winchee is satisfied to continue once they check themselves and return the 'thumbs up' or nod their head. A 'thumbs down' or shake of the head (left to right) indicates the winchee is not satisfied.

### 6.4.3 Move Winchee to the Door and remaining on Floor

Once the Air Crewperson is satisfied that the winchee is secured to the winch cable, they can signal for the winchee to remove their seatbelt and move to the floor. At this point the Air Crewperson has 2 key responsibilities other than efficiently returning to the door to maintain aircraft clearances:

- Maintain positive door security
- Reduce excess slack cable by winching in (reducing the risk of shock loading)

### 6.4.4 Connections Checks – Second Checks

At the door before committing the winchee to moving outboard, the Air Crewperson and winchee must conduct the second of three *Connections Checks*.

The winchee is satisfied to continue once they check themselves and return the 'thumbs up' or nod their head. A 'thumbs down' or shake of the head (left to right) indicates the winchee is not satisfied.

### 6.4.5 Moving Outboard

With the winchee at the doorway the Air Crewperson will winch in as required and bring them outboard to the skids (if the aircraft is fitted with skids). At this point the Air Crewperson must manage the risk of shock loading by encouraging the winchee to maintain their weight on the cable and ensuring there is no slack in the cable. Once on the skids the winchee should be positioned facing inboard with feet shoulder width apart for stability

### 6.4.6 Equipment Connection

The Air Crewperson will then connect the firefighting and personal equipment by hooking an equipment strop to the equipment ring.

### 6.4.7 Connections Checks – Third Checks

Once equipment is connected, the Air Crewperson will commence the final *Connections Check*.

The winchee is satisfied to continue once they check themselves and return the ‘thumbs up’ or nod their head. A ‘thumbs down’ or shake of the head (left to right) indicates the winchee is not satisfied.

### 6.4.8 Winching Out

When the aircraft is correctly positioned and clear of obstacles, the Air Crewperson must request clearance to commence winching from the pilot. Once permission has been received, the Air Crewperson can commence the winch out.

During the winch, the Air Crewperson must also ensure the aircraft maintains clearance and correct positioning while also watching the winchee for hand signals.

### 6.4.9 Landing

10-15 feet from the ground, the winchee will signal a “Stop” (arm extended horizontally) and the Air Crewperson will slow the winch and check its responsiveness, then continue to slowly winch out as required.

### 6.4.10 Winchee Disconnection

The winchee will remove themselves from the rescue collar first. This may be done by extending or disconnecting the chest strap then removing the rescue collar over their head. Once they are free of the collar, the winchees will remove the equipment by disconnecting the equipment strop from the equipment ring only. The equipment will be secured by the winchee while cable is managed and a ‘thumbs up’ given by the winchee to signal to the Air Crewperson that the cable is clear to winch in.

At no point in time should a winchee operate the main winch hook. This should remain closed at all times until activated by the Air Crewperson to swap rescue collars.

### 6.4.11 Connection of Additional Winchees

During the winch insertion (and extraction) sequence, additional winchees must be empowered to move throughout the cabin using a rescue collar and the wander lead. Additional winchees will move to the dispatch seat to minimise time wastage.

The Air Crewperson will disconnect the empty rescue collar and hand to the cabin manager. The next winchee should already be in the dispatch seat with the additional rescue collar donned and ready for connection. From here, the process repeats for all winchees.

### 6.4.12 Return of Equipment Strops

Unless under exceptional circumstances the inserted crew must return their equipment strops to the aircraft prior to the completion of the winch insertion. This should be done immediately following the insertion of the final crew member. At this stage, all equipment strops will be attached to the equipment ring and returned to the aircraft. The Operator can brief the winchees on their preferred method for attachment of the strops.

## 6.5 6.5 Extraction Winch Sequence

### 6.5.1 Pre-Winch Procedures

Prior to a winch extraction commencing, the same actions and checks as detailed in 6.2 *Pre-Winch Procedures* must be undertaken by the aircrew.

The Cabin Manager should be the first winchee, and the Crew Leader being last.

### 6.5.2 Equipment Preparation

In addition to the pre-winch procedures, winch extractions will require the aircrew to prepare and connect equipment prior to winching out the cable for the first extraction. This must include:

#### 6.5.2.1 *Equipment Ring*

The equipment ring must be connected to the winch hook first.

#### 6.5.2.2 *Equipment strops*

An appropriate amount of equipment strops (normally all) need to be attached to the equipment ring for the first winch to allow the winchees to prep equipment bags prior to winching out.

#### 6.5.2.3 *Rescue Collars*

The first rescue collar should be attached to the winch hook in order to retrieve the first winchee. The second rescue collar should be stowed securely in the cabin but accessible to the Air Crewperson for the second winch extraction.

### 6.5.3 Connection of the Winchee

The winchee will receive the collar (and equipment strops on the first winch). The equipment must be attached to the equipment ring first via the equipment strop. Once attached, the winchee will don the rescue collar under their arms and fasten the chest strap. The winchee will then conduct a *Connections Check*.

Once satisfied, the winchee will ensure their positioning is underneath the winch and then request the winch in by extending a 'thumbs up' horizontally to the Air Crewperson and maintain control of their equipment. The winchee should be in a standing position at the time they signal their 'thumbs up' to reduce the risk of shock loading.

### 6.5.4 Power Check

A power check must be undertaken to ensure the aircraft has sufficient power to undertake the winch. Methods of undertaking a power check at this stage of the winch can vary and each Operator should have a considered and documented practice within their Operations Manual relating specifically to this stage of the extraction.

### 6.5.5 Winching In

Once the Pilot has approved the winch in, the Air Crewperson will winch in the cable and maintain communications with the pilot for the amount of cable out and progress of the winch. Between 10ft and 15ft below the aircraft, the Air Crewperson will slow the winch and check the responsiveness of the controls (control check). The Air Crewperson will continue winching in slowly so the winchee can self-orientate and pass the skids facing inboard.

### 6.5.6 Equipment Management

Once on the skids, the Air Crewperson will remove the equipment first from the equipment ring and stow inside the cabin or pass to a cabin manager for stowing.

### 6.5.7 Door Transition (In)

The Air Crewperson will manage bringing the winchee inboard preferably by turning them and using the handle at the rear of the collar. Once inside the winchee will either move to a seat and secure seatbelt or attach to the cabin wander lead dependant on the Operator's procedures.

### 6.5.8 Disconnection of Winchee

Once the winchee is secured in the cabin by one of the means mentioned in 6.3, the Air Crewperson will disconnect the rescue collar from the winch hook. The next rescue collar will be connected to the winch hook and the Air Crewperson will return to the door and commence the extraction of the next winchee.

The winchee will move from the dispatch seat to their flight seat, secure with seatbelt and remove the wander lead and rescue collar.

## 6.6 After Action Review (Debriefing)

It is the expectation that all personnel involved in winching operations undertake post mission after action reviews. These should focus on:

- What the objectives were?
- What eventuated?
- Why did those things eventuate?
- What should happen next time?
- Communicating and make changes or recommendations.

## 6.7 Aircrew Communications for Winching

There are specific minimum requirements for communications during winching operations that are outlined in the following sub sections. The ACTRFS no longer require Operators to use specific phrases during winching operations.

### 6.7.1 Aircraft Communications System

The ACTRFS requires that during winch operations or other critical phases of flight, the aircraft is equipped with an internal communications system capable of operating on 'Hot Mic' and therefore allowing clear, unobstructed verbal communications between the Pilot and the Air Crewperson. Given the operating environment of the Air Crewperson, this will often require adjustable noise cancelling capabilities.

### 6.7.2 Operations Communications Procedures

The Operator must have documented procedures within their operations manual specifically referring to how and when winching communications must occur.

### 6.7.3 Communications while Winching

The ACTRFS require that during winching operations, constant communications (patter) between the Pilot and Air Crewperson must be maintained. It is the role of the Air Crewperson to provide updates on the progress of the winching operation to ensure the Pilot can visualise the progress and situation and therefore make efficient decisions in the event of an emergency.

Critical components of information that must be communicated as a minimum between the Air Crewperson and Pilot during winch operations are:

- Aircraft clearances (ongoing)
- Positional corrections (ongoing)
- Winchee moving outboard/inboard
- Clearance requests to winch in/out
- Halfway point of the winch
- Winch height/amount of cable deployed
- Weight transitions on/off the cable
- Malfunctions or emergencies

**6.7.4 Communications Redundancies** Every Operator must have documented procedures in their Operations Manual of actions to be taken in the event of a communications failure during a winching operation.

**6.7.5 Non Essential Communications** The ACTRFS require that the Pilot and or Air Crewperson silence all non-essential radio communications during winching operations. This removes potential distractions from the environment.

## 6.8 Hand Signals

The standard winching hand signals are illustrated and described below.

### 6.8.1 OK

A 'thumbs up' is used to express satisfaction and also that the person is happy to proceed with a task. Where a winchee may not be able to use their hands, a nod of the head (up and down) also implies the same meaning. On the ground this signal is given in a horizontal position so as the Air Crewperson can see the signal from the air.

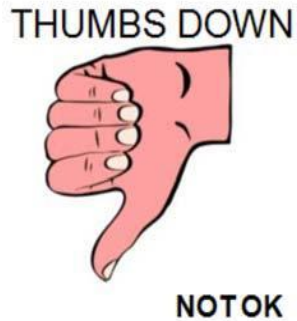
THUMBS UP



OK TO  
PROCEED

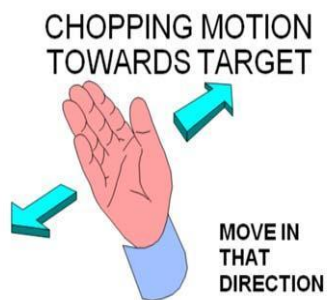
### 6.8.2 Not OK

A 'thumbs down' or shake of the head (left to right) indicates the winchee or Air Crewperson is not happy with something.



### 6.8.3 Movement (Direction)

A chopping motion in a particular direction notifies the Air Crewperson that the winchee would like to move in that direction.



### 6.8.4 Stop Winch

A horizontal chopping motion across the chest signals to the Air Crewperson to stop winching.



### 6.8.5 Winch Up/In

Moving a hand in a circular motion above the shoulder requests the Air Crewperson to winch in/up.



## CIRCULAR MOTION



WINCH IN

### 6.8.6 Winch Down/Out

Moving a hand in a circular motion below the shoulder requests the Air Crewperson to winch down/out.

## CIRCULAR MOTION

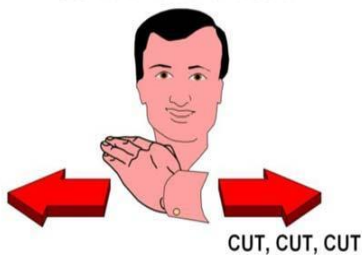


WINCH OUT

### 6.8.7 Cut Cable

A cutting motion across the throat. The Air Crewperson may also make this signal for the winchee.

## CUTTING MOTION



CUT, CUT, CUT

## 6.9 Spins and Swings

### 6.9.1 Spins

The ACTRFS accepts that spins will occur of varying speeds during winching operations. Every Operator must have documented procedures for dealing with spins under a range of circumstances. Operators must allow the option of transitioning to forward flight to arrest a serious spin where injury or loss of consciousness for the winchee is likely.

### 6.9.2 Swings

The ACTRFS accepts that swings may occur during winching operations. Every Operator must have documented procedures for dealing with swings under a range of circumstances. Operators must allow the option of transitioning to forward flight when safe to do so to arrest a serious swing.

## 6.10 Malfunctions and Emergencies

Every Operator must have documented procedures on the actions of their Air Crewpersons and Pilots in the event of the emergencies listed in this sub section. All documented procedures need to consider what actions are to be recommended or required if a winchee was on the cable to the time.

- Birdcaging (wire fouling on drum)
- Intercom failure
- Engine or aircraft failure
- Activation of warning lights

If at any point there is a malfunction to any part of the aircraft or winching equipment, the mission must be postponed until the malfunction has been completely corrected.

The ACTRFS have recommendations and requirements on how Operators must deal with the following malfunctions and emergencies:

### 6.10.1 Winch Stoppage

If a winch stoppage occurs during a winch (that cannot be resolved), the aircrew can gauge whether there is enough clearance between the canopy or other obstructions to allow the aircraft to descend and place the winchee on the ground. If this option is not possible or safe, then a static lift should be initiated to a position where the winchee can be safely lowered to the ground.

### 6.10.2 Winch Runaway

In the event of an uncontrollable winch runaway, the aircrew may attempt to isolate the power to avoid injury to the winchee and damage to the cable. A static lift may be required in this instance if power is isolated while a winchee is suspended.

### 6.10.3 Winch Cable Fouling (Entanglement)

In the event that an unloaded winch cable becomes entangled on obstacles, the aircrew must not attempt to static lift the cable from its position. The ACTRFS recommends winching out occur immediately to ensure the aircraft is not inhibited by the cable. The Air Crewperson must attempt to disentangle the cable by using manual force only. If at any point there is a risk to the aircraft and those on board the cable must be cut immediately.

## 7 ACTRFS Training and Qualifications

### 7.1 Helicopter Insertion Techniques (HIT) Course

The ACTRFS coordinates the training and recertification for all winchees. Training for ACTRFS personnel will be aligned to the national units of competency:

- PUAFIR017 - Work safely around aircraft (National Training Competencies)
- PUAFIR016 - Undertake hover-exit operations from helicopter (National Training Competencies)
- PUAFIR015 - Undertake helicopter winch operations (National Training Competencies)

While being aligned to national standards, ACTRFS training will also be contextualised to the relevant components within these winching standards and the ACTRFS specific winching procedures to ensure interoperability with all Operators involved in winching.

### 7.2 ACTRFS Winching Currency Requirements

The ACTRFS HIT qualification has a shelf life of 14 months. ACTRFS personnel cannot winch operationally unless they have formally recertified under assessment conditions within the previous 14 months.

### 7.3 Training Approval

All HIT training or assessments must be approved by the Manager Operations ACTRFS.


## 7.4 Training Winches

Any current winching Operator may be utilised for training. Unless formally approved by the Manager Operations ACTRFS, and agreed upon by the Operator, all training winches must be conducted at a height of 30ft AGL.

### Version history

| Version | Date          | Author | Summary of changes                      |
|---------|---------------|--------|---|
| V1.0    | 14 March 2024 | R.Gore | Adapted from NSWRFWS Winching Standards |
|         |               |        |   |
|         |               |        |   |
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|         |               |        |   |

### Approved by

| Name        | Title/Role           | Signature | Date   |
|-------------|----------------------|-----------|--|
| Rohan Scott | ACTRFS Chief Officer |           |  |

### Document owner

| Position            | Section    |
|---------------------|------------|
| Director Operations | Operations |