QUESTION TAKEN ON NOTICE

Parliamentary Inquiry : 20 March 2018

HOME AFFAIRS PORTFOLIO

(*Inquiry into the implications of climate change for Australia's national security*) – FADT/001: Aircraft into Australia that suit Australian conditions -

Asked:

Mr Crosweller: They are privately owned, and there's a good reason for that. We're able to contract the best and the brightest and the latest aircraft into Australia that suit Australian conditions. These machines work for 12 months of the year of course. They're not required in Australia for 12 months of the year, so we bring the expertise in from overseas when we need it. It goes back when we don't need it. That's managed through the National Aerial Firefighting Centre, which is a cooperative arrangement between the federal government and the states.
The Tasmanian operation was complex. The fire services have done a review on that through the Australasian Fire and Emergency Service Authorities Council. I am privy to those outcomes, but I can take that on notice, if you'd like to see what they had to say.
Senator WHISH-WILSON: All right. Thank you.

Answer:

The National Aerial Firefighting Centre (NAFC) is responsible for managing the seasonal contracts for firefighting aircraft across Australia. Contracted aircraft are based in a particular state and that state pays a substantial proportion of the cost of the contract for that season.

NAFC currently contracts a fleet of 132 specialised aircraft to support firefighters. The majority of these aircraft are contracted to be available for the fire season in the respective locations, however some are also contracted to be available in spring and autumn “shoulder” periods and a few are available year-round.

Around twenty percent of the aircraft alternate between northern and southern hemisphere fire seasons. These tend to be the larger aircraft, but the others remain in Australia, mostly carrying out other charter or agricultural work, and can be re-called to support bushfires if conditions require.

The total cost of keeping this fleet available (the standing cost) varies depending on the nature of the season. In a typical year, the minimum cost is estimated to be around $65M. The Commonwealth currently contributes $14.8M annually, and the States and Territories contribute the remainder. The States and Territories also meet the operating costs. The operating costs vary significantly from year to year, and have on occasions exceeded $100M in total.

The report of the review of the management of the Tasmanian fires of January 2016, conducted by the Australasian Fire and Emergency Services Authorities Council (AFAC) can be found online here:
https://www.fire.tas.gov.au/userfiles/tym/file/misc/1604_tasfirereport_final1.pdf

QUESTION TAKEN ON NOTICE

Parliamentary Inquiry : 20 March 2018

HOME AFFAIRS PORTFOLIO

(*Inquiry into the implications of climate change for Australia's national security*) – FADT/002: helicopter or machine operators -

Asked:

Senator PATRICK: Mr Crosweller, to follow on from the discussion that took place prior to the break: I'm not ambushing you and I will say this is hearsay. I've talked to a number of helicopter or machine operators who tell me that the rates that someone, either state or federal, pays for aircraft are quite high. I can imagine in a business context that you can't bring an aircraft to Australia, put it on stand-by and have no-one making money with the machine, so there's a cost to that. But I'm wondering if you are in a position maybe on notice to provide the committee with some details about how much the Commonwealth and perhaps—I don't know if you have access—states pay on an annual basis for the availability of either helicopters or aircraft for firefighting roles. Perhaps give some description that says that cost covers three months' residence in Australia and typically deals with these operations, the cost varies as a function of how much we use them or something along those lines.
Mr Crosweller: The Commonwealth contributes approximately $14.8 million to the National Aerial Firefighting Centre, which is the entity that was established by the federal government with the states in about 2003, probably around the time of the Canberra fires or thereabout. The states contribute somewhat more money into that arrangement as well because they're the ultimate users of the asset. That $14.8 million Commonwealth contribution helps to pay for the contract costs and the standing charges for the aircraft. The operational costs are covered by the states. The Commonwealth does reimburse some of that operational cost through the counter disaster operations of the natural disaster relief and recovery arrangements, so it's a fairly complex financial arrangement. NAFC produces an annual report of its costs and the aircraft that it contracts. We can make that available to you.
Senator PATRICK: Does that include the states' contribution as well?
Mr Crosweller: It does in relation to those aircraft that NAFC are responsible for. States also contract own aircraft, and it's essentially a two-tier system as I understand it. There are the seasonal contracts, which aircraft operators tender for, and then there's a list of what's called 'call when needed'. They may well be agricultural aircraft or commercial aircraft that have gone through the training and certification to operate on fire grounds safely and effectively. They would operate at a higher rate than a contract rate, of course, because they're only called when needed. That entire fleet of aircraft in Australia, I'm pretty sure, can reach 150 or more if it needs to. So it accesses into the commercial market as required. When the fire danger ratings increase over time, more aircraft come on board under either contract or call-when-needed.
The fire services, particularly in conjunction with the Bureau of Meteorology and

others, will assess the incoming fire seasons. If it looks delayed, they will delay the contracts. They will prevent the bigger aircraft coming in-country until the weather starts to move towards a drier, more volatile climate and weather pattern for fire. So those contract periods do vary. They can be extended, and they tend to try to adapt them to what's unfolding in a climatic and weather sense that results from that.
Senator PATRICK: To give you a feel for the information I'd be interested in: I'm wondering about cost analysis. Companies often lease to preserve capital so they can spend money on other things, and the Commonwealth is not in a different position. If you've got an asset that you end up using all of the time, sometimes it can be better to pull at least some portion of those onto your own ledger for capital procurement cost. Has any analysis been done as to the leasing verses part-procurement option? If so, can you potentially provide the committee with analysis?
Mr Crosweller: We will take that on notice. The National Aerial Firefighting Centre would absolutely have information on that. They're separate to government, but we can ask them. The specific rates are probably commercial-in-confidence.
Senator PATRICK: Yes. I don't want the detail of any one particular contract. I want to understand the cost to the Commonwealth of that approach and any analysis that might have been done to say: 'You know what? We might be better off paying for 10 aircraft ourselves, because that will always be filled with that sort of use or mix of capability.'
Mr Crosweller: We will seek some information from NAFC…
…
Senator PATRICK: I'm more interested in whether or not we've done analysis to look at the mix of purchase and lease or whether we say lease is the best option from the taxpayers' perspective.
Mr Crosweller: The short answer is that we will go to NAFC for that information because we regard them as experts in that regard.
Senator PATRICK: Fantastic.

Answer:

The national Aerial Firefighting Centre (NAFC) regularly reviews the international market and considers appropriate models for making aerial firefighting resources available.

NAFC considers that at the current time, leasing from commercial operators through public, open tender processes remains the most suitable model, and provides the best value. For the larger aircraft that are shared between hemispheres it is very cost effective to lease rather than purchase. The aircraft operator is able to amortise fixed costs across year-round work, as well as employ full time, professional aerial firefighting crews. Leasing also offers greater flexibility to adjust resourcing levels to the forecast risk and to introduce technological advancements.
NAFC acknowledges that changing market conditions and other factors may influence this equation and is open to other models. NAFC will continue to examine which approaches provide the best value, and provide the best support, to firefighter and communities.

QUESTION TAKEN ON NOTICE

Parliamentary Inquiry : 20 March 2018

HOME AFFAIRS PORTFOLIO

(*Inquiry into the implications of climate change for Australia's national security*) – FADT/003: Stock of aircraft -

Asked:

Senator WHISH-WILSON: …In terms of having something readily available rather than having to bring in things from overseas or source agricultural aircraft, what kind of stock of aircraft do you have readily available at five minutes notice or 10 minutes notice in high-fire conditions?
Mr Crosweller: I think we'll take that on notice. NAFC manages that entire contract space. They do the aircraft profiling—so the mix of aircraft between rotary, fixed wing, water bombing, retardant bombing, surveillance, reconnaissance and air attack. All of those things are dealt with by NAFC and they are assessed every year based on climatic outlooks that the bureau provides us. We also look at what has happened overseas, particularly in America, for example. America can often be a precursor to fire seasons in Australia. So all of that is taken into account in terms of contracts, aircraft placement and the establishment of call-when-needed aircraft as well.
Senator WHISH-WILSON: Also, in a sense, for preventative fire management. I know the helicopters in Tasmania are often unavailable because they're being used to do strategic fuel reduction burns as well. It would be useful to know who manages that as well.
Mr Crosweller: Certainly. We're more than happy to provide the committee with whatever we can obtain from NAFC.

Answer:

The National Aerial Firefighting Centre (NAFC) contracted a fleet of 132 specialised aircraft for the 2017-18 bushfire season. These aircraft carry out a range of tasks, including firebombing, firefighter transport and insertion, incendiary dropping and reconnaissance. The fleet included six Erickson Aircranes as well as a number of other heavy lift helicopters. The fleet incorporated four large fixed wing airtankers, including a DC-10 Very Large Airtanker, alongside more than forty other fixed wing firebombing aircraft. The fleet also included four, very fast, specialist fixed wing mapping aircraft, equipped with infra-red scanners to rapidly locate and map bushfires.

In most instances, NAFC contracted aircraft are required to be available at 15 minutes notice during bushfire risk periods. Where practical this response time is further shortened on critical days.

This nationally contracted fleet is complemented by around 20 specialised aircraft that are owned or contracted by individual state or territory agencies.

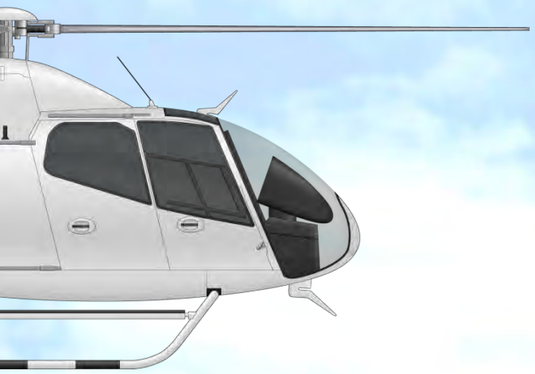
On days of elevated fire risk, the contracted aircraft are supplemented by approved Call When Needed aircraft. Around 300 additional aircraft across Australia are registered for Call When Needed engagement. The cost of Call When Needed aircraft is typically higher than the cost of seasonally contracted aircraft on an hour by hour basis, reflecting the commercial and ad hoc nature of their engagement. NAFC is not currently involved in the administration of Call When Needed resources.

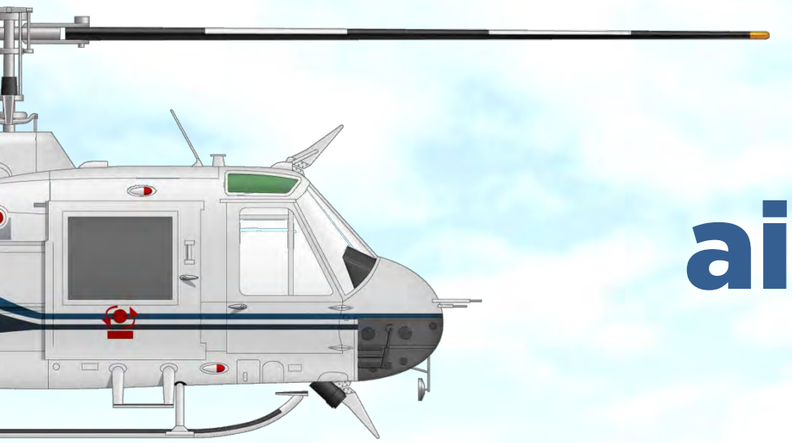
Selected NAFC contracts require aircraft to also be available to support fuel mitigation works, such as incendiary dropping during spring and autumn hazard reduction seasons. Call When Needed aircraft are also regularly employed for planned burning.

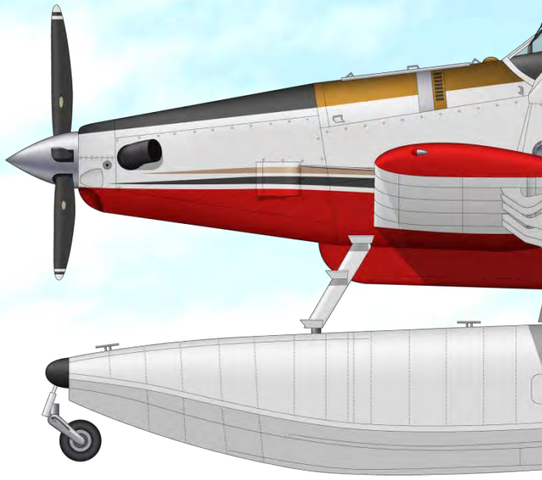
NAFC normally places five additional firefighting helicopters in Tasmania during the bushfire season. Priorities for use are managed jointly by the Tasmanian Fire Service and Tasmanian land management agencies.

Attachments

- NAFC Firefighting Fleet Booklet







Firefighting aircraft of Australia 2016/17

NAFC
National Aerial Firefighting Centre

Aerial Fire Fighting

Aerial firefighting is the use of aircraft to support firefighting and fire management operations.

One of the earliest documented uses aerial firefighting in Australia was when the Forests Commission Victoria utilised Westland Wapiti aircraft from the Royal Australian Air Force for fire detection and observation flights in the late 1920's.

The use of aircraft across Australia for firefighting has developed over time with the adoption of fire bombing, fire crew transport & insertion, reconnaissance & mapping, aerial incendiary operations and other specialist roles.

The primary purpose of aerial firefighting is to support those on the ground, both ground firefighting crews and communities at risk. While firebombing is the most common use of aircraft, the use of aircraft for gathering information for incident management teams and community warnings, has grown markedly in recent years.

Fixed wing aircraft and helicopters are used for aerial fire fighting. Each aircraft has a call sign that designates its primary firefighting role and capacity. The table below lists the common aerial firefighting roles and the types of aircraft that regularly perform each role.

Roles	Airframe Type	Call sign
Firebombing	Fixed wing & helicopter	Bomber, Helitak, Firebird
Air Attack Supervision	Fixed wing & helicopter	Firebird, Firespotter, Birddog
Incident observation	Fixed wing & helicopter	Firebird, Firespotter, Birddog
Incident mapping	Fixed wing & helicopter	Firebird, Firespotter, Birddog, Firescan
Winching & Rappelling	Helicopter	Helitak, Firebird
Transport - Fire crew	Fixed wing & helicopter	Firebird, Helitak, Firespotter, Birddog
Transport - General cargo	Fixed wing & helicopter	Firebird, Helitak, Firespotter, Birddog
Transport - Passengers	Fixed wing & helicopter	Firebird, Helitak, Firespotter, Birddog
Aerial Ignition - Drip torch	Helicopter	Firebird
Aerial Ignition - Machine	Fixed wing & helicopter	Firebird, Birddog, Firespotter
Sling Load - Long & Short line	Helicopter	Firebird, Helitak

Where it is safe, efficient and cost effective to do so, all states and territories utilise aircraft to support their firefighting and other fire management activities. Most firefighting aircraft are chartered from appropriately experienced and qualified commercial aircraft service providers. A small number of aircraft are directly owned and operated by fire agencies.

In Australia each state and territory faces its own unique fire and emergency conditions and has its own organisational arrangements. The fleet configuration and use of aircraft in each state and territory is therefore tailored to meet local requirements.

National Aerial Firefighting Centre

In Australia, individual states and territories are responsible for the management of bushfires and a range of other emergencies, and for most land management. State and territory governments and the Australian Government have, however, recognised the importance of collaboration and cooperation in aerial firefighting and have established the National Aerial Firefighting Centre to support and facilitate collaboration across Australia

The National Aerial Firefighting Centre facilitates the coordination and procurement of a fleet of highly specialised firefighting aircraft that are readily available for use by state and territory emergency service and land management agencies across Australia.

This national aircraft fleet complements aerial firefighting resources that are arranged directly by the states and territories. Some services in the national aerial firefighting fleet receive funding support from the Australian Government as well as state and territory government funding.

NAFC also plays a key role in ensuring the sharing of aerial firefighting resources between emergency service and land management agencies throughout Australia, and in the development of national protocols and systems for aerial firefighting.

NAFC
National Aerial Firefighting Centre

Disclaimer:

The material in this document has, as far as practical, been fact checked with aircraft manufacturers, aircraft operators, and fire agency staff, and represents the typical performance of these types of aircraft when operating in their primary fire fighting roles. There will be times when the aircraft under or over perform the figures given.

Some aircraft types are represented by a single variant of the aircraft type. As an example there at least six different sub types of AS350 'squirrel' helicopter in use for fire fighting in Australia. We have included two variants in this guide.

Some aircraft types in regular use by State and Territory fire agencies, but not contracted through NAFC, have not been included in this edition. They include Ayres Thrush, American Champion Scout and MBB Bolkow 105.

The material in this document is provided as an information source only and errors or omissions may have occurred in its production. The information is provided solely on the basis that readers will be responsible for making their own assessment of the material presented and are strongly advised to verify its accuracy, completeness, currency, and relevance for their purposes.

Any representations of specific aircraft are provided for the reader's convenience and do not constitute endorsement of the aircraft, its operator, or any associated organisation, product or service.

Copyright:

Copyright in the material published in this document is subject to the operation of the *Copyright Act 1968* and its subsequent amendments. Material may be printed and reproduced in unaltered form only for non-commercial use or use within an organisation. All other rights are reserved by the copyright owner. Under no circumstances can any of the information be used for commercial purposes without the permission of the copyright owner.

Credit:

Aircraft profile images in this edition have all been illustrated, by Bill Dady of www.clavework-graphics.co.uk

National Aerial Firefighting Fleet

The 2016/17 National Aerial Firefighting Fleet comprises approximately 130 contracted aircraft primarily made up of types listed here. These aircraft, contracted by NAFC on behalf of state and territory governments, are supplemented by additional state owned, and state contracted aircraft and other aircraft hired to meet peak demand across Australia. In total more than 500 aircraft, provided by over 150 operators, are available for firefighting across Australia.

Contracted aircraft locations:

ACT		**Victoria**	
Hume Helibase	2	Stawell	5
NSW		Moorabbin	5
Bankstown	7	Mansfield	3
Camden	6	Avalon Airport	3
Richmond	4	Ovens	3
Nowra	4	Bairnsdale	3
Scone	2	Latrobe Valley	3
Grafton	2	Ballarat	2
Forbes	1	Casterton	2
Goulburn	1	Bendigo	2
Orange	1	Mangalore	1
Taree	1	Hamilton	3
Tumut	1	Colac	2
Armidale	1	Essendon	2
Moruya	1	Albury	2
Wagga Wagga	1	Benambra	2
Gunnedah	1	Benalla	1
Hume Helibase	1	Olinda	1
Queensland		Heyfield	1
Archerfield	3	Shepparton	1
Meandarra	3	Horsham	1
Cooroy	1	North West	1
SA		Healesville	1
Claremont	9	**WA**	
Port Lincoln	3	Jandakot Airport	5
Naracoorte	2	Albany	2
Mt Gambier	3	Busselton	2
Millicent	1	Serpentine	1
Brukunga	1	**NT**	
Tasmania		Batchelor	3
Launceston	2		
Hobart / Cambridge	6		

Aircraft counts and locations vary from time to time as the fleet balance is adjusted and individual airframes are updated or replaced.

The facts sheets on subsequent pages detail each of the aircraft types in the order listed below:

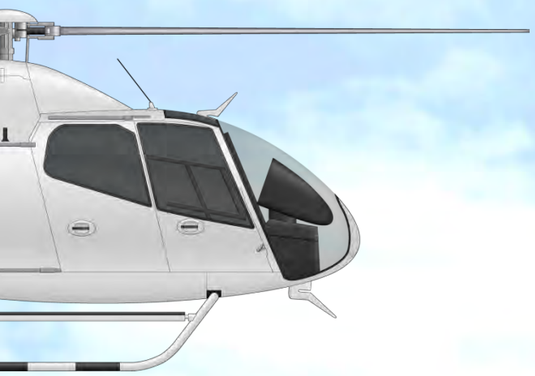
Contracted aircraft types:

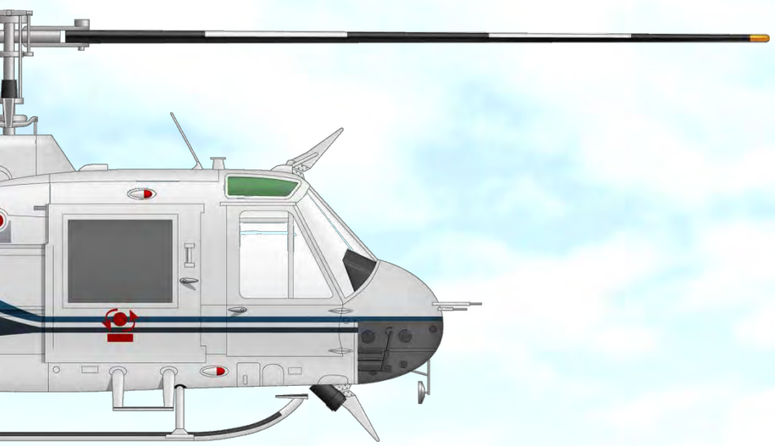
Eurocopter EC120B Colibri	1
Bell 206L-3 LongRanger	6
Eurocopter AS355F1 Twin Squirrel	2
Eurocopter AS350 Squirrel	17
MBB / Kawasaki BK 117	4
Eurocopter EC145	2
Eurocopter AS365N2 Dauphin	1
Bell 204B	2
Bell 212	6
Bell 412	6
Bell 214B – Big Lifter	13
Sikorsky S61N	2
Erickson S64E - Aircrane	6
Cessna 182 Skylane / 210 Centurion	5
Cessna 337 Skymaster	3
Cessna 208B Grand Caravan	3
Rockwell Turbo Commander 690B	3
Beechcraft KingAir 200	1
Gates Learjet 35A/36A	3
PZL M18T (Hubler) Dromader	2
Air Tractor AT-802F	38
Air Tractor AT-802F (Fireboss)	2
Avro RJ85 airtanker	1
Coulson C130Q airtanker	1
Lockheed Martin L100-30 airtanker	1
McDonnell Douglas DC10-30 airtanker	1

NAFC
National Aerial Firefighting Centre

Level 1, 340 Albert Street
East Melbourne VIC 3002
Tel: 03 9418 5252 Fax: 03 9419 2389
info@nafc.org.au www.nafc.org.au

Version 4
November 2016





Helicopters 2016/17

NAFC
National Aerial Firefighting Centre

© NAFC 2015

Eurocopter EC120B Colibri

Call sign “Firebird”

Primary role air attack supervision

Other roles reconnaissance / utility

Single engine helicopter

Single pilot, four passengers

1715 kg gross weight

Cruise speed 220 km/h

Three bladed main and eight bladed tail rotors

11.5 m length, 10.0 rotor diameter,

Turbomeca Arrius 2F Turbo shaft engine,

Fuel consumption 100 litres/h of Jet-A1

500 HP available at take off

2+ fire agency radios

Satellite tracking

The EC120B is a modern design light helicopter from manufacturer Eurocopter, now know as Airbus Helicopters. Its composite fuselage, Spheriflex main rotor and Fenestron tail rotor make it quiet, comfortable and economical to operate. It is used by fire agencies primarily for supervision of fire operations, fire detection, reconnaissance and utility missions carrying the pilot and up to four passengers or crew depending on the mission.

The EC120B is particularly well suited to the supervision of firebombing operations with its high speed enabling it to keep up with the largest of firebombing helicopters and the ability to slow down and loiter in the fire area. When working as a ‘firebird’ the primary responsibility for the crew is to supervise aerial fire fighting operations and to collect information about a fire and pass it on to the incident management team. The EC120B is also used for utility missions including ferrying passengers and cargo.

The EC120B operates alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The Victorian Governments have contracted, through NAFC, one EC120B helicopter for the 2015-16 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories

NAFC
National Aerial Firefighting Centre

© NAFC 2015

Bell 206L-3 LongRanger

Call sign “Firebird”

Primary role: air attack supervision

Other roles: reconnaissance / utility

Single engine helicopter

Single pilot, six passengers

1800 kg gross weight

Cruise speed 220 km/h

Two bladed main and tail rotors

13.0 m length, 11.3 rotor diameter,

Rolls Royce / Allison C30P Turbo shaft engine,

Fuel consumption 140 litres/h of Jet-A1

650 HP available at take off

2+ fire agency radios

Satellite tracking

The Bell 206L LongRanger light helicopter is a more powerful, stretched version of the Bell 206B JetRanger light helicopter. It is used by fire agencies primarily for supervision of fire operations, fire detection, reconnaissance and utility missions carrying the pilot and up to six passengers or crew depending on the mission.

The B206L is particularly well suited to the supervision of firebombing operations with its high speed enabling it to keep up with the largest of firebombing helicopters and the ability to slow down and loiter in the fire area. When working as a ‘firebird’ the primary responsibility for the crew is to supervise aerial fire fighting operations and to collect intelligence information about a fire and pass it on to the incident management team.

The B206L is also used for utility missions including ferrying passengers and cargo, firebombing with a 550 litre underslung bucket, and aerial incendiary operations. The B206L can also be specifically equipped with high quality visual and/or infrared camera systems and digital video transmission equipment to beam live images of the fire ground back to fire agency headquarters and incident management teams.

The B206L operates alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The NSW and Victorian Governments have contracted, through NAFC, four 206 LongRanger helicopters for the 2015-16 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories

NAFC
National Aerial Firefighting Centre

© NAFC 2015

Eurocopter AS355F1 Twin Squirrel

Call sign “Firebird”

Primary roles: Supervision, firebombing

Other roles: Reconnaissance, utility

Twin engine helicopter

Single pilot, up to five passengers

680 litre firebombing tank or bucket

2400 kg gross weight

Cruise speed 230 km/h

Three bladed composite main rotor

12.9m length, 10.9m rotor diameter

2x Rolls Royce Allison 250-C20F turbo shaft engines

840 HP available at take off

Fuel consumption 220 litres/h of Jet-A1

2+ fire agency radios, Satellite tracking

The Eurocopter AS355F1 is the twin engined version of the popular ‘Squirrel’ helicopters from manufacturer Aerospatiale, then Eurocopter and now Airbus helicopters. With its twin engines the AS355F1 is more powerful and faster than the standard AS350 helicopter. It is used by fire agencies primarily for supervision of fire operations, firebombing and transport of fire crews. Other roles include fire detection, reconnaissance and utility missions carrying the pilot and up to five passengers or crew depending on the mission.

The AS355F1 is particularly well suited to supervision of fire fighting operations with its speed and endurance allowing it to keep up with the largest of firebombing helicopters and the ability to slow down and loiter affording the crew an unobstructed view of the fire area.

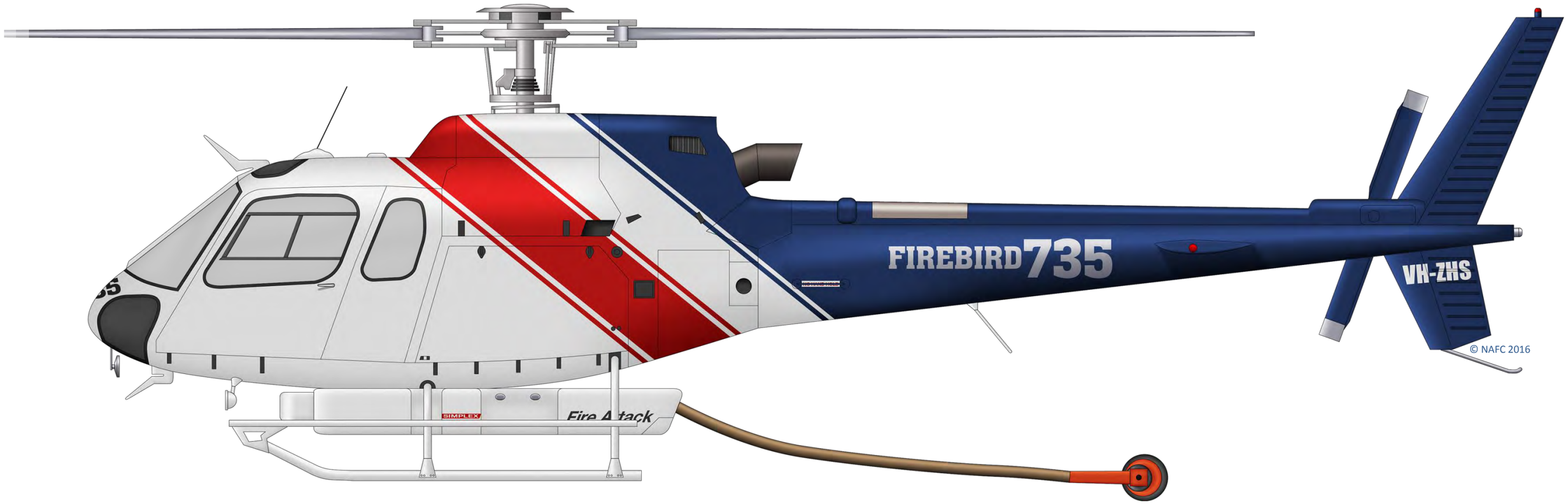
When firebombing the AS355F1 can pick up 680 litres of water in an under slung bucket. To this the pilot can add a measured quantity of fire fighting suppressant foam to increase the effectiveness of the load when it is dropped on a fire.

The AS355F1 can be used to transport fire fighters into remote areas. The AS355F1 is also used to conduct aerial observation and fire detection operations where it is used to collect intelligence information about a fire and pass it on to the incident management team.

The AS355F1 helicopters operate alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The Queensland and West Australian Governments have contracted, through NAFC, two Eurocopter AS355F1 helicopters for the 2015-16 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories

NAFC
National Aerial Firefighting Centre



© NAFC 2016

Eurocopter AS350B3 Squirrel

Call sign “Firebird”

Primary roles: Firebombing, supervision, winching

Other roles: Reconnaissance, utility

Single engine helicopter

Single pilot, up to five passengers

1100 litre firebombing tank or bucket

2800 kg gross weight

Cruise speed 200 km/h

Three bladed composite main rotor

12.9m length, 10.7m rotor diameter

Turbomeca Arriel 2D turbo shaft engine

847 HP available at take off

Fuel consumption 160 litres/h of Jet-A1

2+ fire agency radios, Satellite tracking

The Eurocopter AS350B3 helicopter is the latest in the line of ‘Squirrel’ helicopters from manufacturer Aerospatiale, then Eurocopter and now Airbus Helicopters. The AS350B3 a more powerful, heavier lifting version of the standard AS350 helicopter. It is used by fire agencies primarily for firebombing, supervision of fire operations, and winching of fire crews into remote areas. Other roles include fire detection, reconnaissance and utility missions carrying the pilot and up to five passengers or crew depending on the mission.

The AS350B3 is particularly well suited to fire fighting operations with its ‘hot and high’ performance allowing it to operate at or near its peak performance in typical fire conditions. When firebombing the AS350B3 can regularly pick up 900 litres of water in its firebombing tank or in an under slung bucket. To this the pilot can add a measured quantity of fire fighting suppressant foam to increase the effectiveness of the load when it is dropped on a fire.

The AS350B3 can be fitted with a winch capable of lifting a 200kg load. With this winch fitted the aircraft is used to insert firefighting teams into areas to remote to quickly access by road or foot. The AS350B3 is also used to supervise aerial fire fighting operations and to collect intelligence information about a fire and pass it on to the incident management team.

The AS350B3 helicopters operate alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The New South Wales, Tasmanian and Victorian Governments have contracted, through NAFC, seven Eurocopter AS350B3 helicopters for the 2016-17 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories

NAFC
National Aerial Firefighting Centre

© NAFC 2015

MBB/Kawasaki BK 117

Call sign “Helitak”

Primary roles: Fire crew insertion, Firebombing

Other roles: Transport, utility

Twin engine helicopter

270kg 75m ‘Breeze Eastern’ HS-20200 rescue hoist

Single pilot, up to eight passengers

900 litre firebombing bucket

3500 kg gross weight

Cruise speed 215 km/h

Four bladed composite main rotor

13.0m length, 11.0m rotor diameter

2 x 750HP Honeywell LTS101-850B-2 turbo shaft engines

Fuel consumption 300 litres/h of Jet-A1

2+ fire agency radios, Satellite tracking

The MBB/Kawasaki BK 117 helicopter is a medium weight, multi role, twin engined helicopter produced as joint development between Messerschmitt-Bölkow-Blohm (MBB) of Germany and Kawasaki of Japan. It is used by fire agencies primarily for winching of fire crews into remote areas and firebombing. Other roles include transport and utility missions carrying the pilot and up to eight passengers or crew depending on the mission.

The BK117 is fitted with a winch capable of lifting a 270kg load on a 75m cable. With this winch the aircraft is used to insert remote area firefighting teams into areas to remote to quickly access by road or foot.

With its two upgraded engines the 850B-2 BK117 is particularly well suited to winching and other fire fighting operations. Its high speed allows it to reach remote fires quickly.

When firebombing the BK117 can pick up 900 litres of water in an under slung bucket. The pilot can add a measured quantity of fire fighting suppressant foam to this water increase its effectiveness when it is dropped on a fire.

The BK117 helicopters operate alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The New South Wales Government has contracted, through NAFC, five MBB/Kawasaki BK 117 helicopters for the 2015-16 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories.

NAFC
National Aerial Firefighting Centre

© NAFC 2015

Eurocopter EC145

Call sign “Helitak”

Primary roles: Fire crew insertion, Firebombing

Other roles: Transport, utility

Twin engine helicopter

270kg 91m ‘Goodrich’ Winch

Single pilot, up to eight passengers

910 litre firebombing bucket

3585 kg gross weight

Cruise speed 220 km/h

Four bladed composite main rotor

13.0m length, 11.0m rotor diameter

2 x 700HP Arriel 1E2 turbo shaft engines

Fuel consumption 265 litres/h of Jet-A1

2+ fire agency radios, Satellite tracking

The Eurocopter EC145 helicopter is a medium weight, multi role, twin engined helicopters from manufacturer Aerospatiale, then Eurocopter and now Airbus helicopters. It is used by fire agencies primarily for winching of fire crews into remote areas and firebombing. Other roles include transport and utility missions carrying the pilot and up to eight passengers or crew depending on the mission.

The EC145 is fitted with a winch capable of lifting a 270kg load on a 90m cable. With this winch the aircraft is used to insert remote area firefighting teams into areas to remote to quickly access by road or foot.

With its two powerful engines the EC145 is particularly well suited to winching and other fire fighting operations. Its high speed allows it to reach remote fires quickly. A distinctive feature of the EC145 are the clam-shell rear doors and large open cabin area, this allows for the aircraft to be radially configures for a number of different roles .

When firebombing the EC145 can pick up 850 litres of water in an under slung bucket. The pilot can add a measured quantity of fire fighting suppressant foam to this water increase its effectiveness when it is dropped on a fire.

The EC145 helicopters operate alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The New South Wales Government has contracted, through NAFC, one Eurocopter EC145 helicopter for the 2015-16 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories

NAFC
National Aerial Firefighting Centre

Eurocopter AS365N2 Dauphin

Call sign “Helitak”

Primary roles: Fire crew insertion, Firebombing

Other roles: Transport, utility

Twin engine helicopter

270kg 100m ‘Air Equipment’ Winch

Single pilot, up to eight passengers

1025 litre firebombing bucket

4250 kg gross weight

Cruise speed 260 km/h

Four bladed composite main rotor

13.7m length, 11.9m rotor diameter

2 x 750HP Arriel 1C2 turbo shaft engines

Fuel consumption 340 litres/h of Jet-A1

2+ fire agency radios, Satellite tracking

The Eurocopter AS365N2 Dauphin helicopter is a medium weight twin engined helicopters from manufacturer Aerospatiale, then Eurocopter and now Airbus helicopters. It is used by fire agencies primarily for winching of fire crews into remote areas and firebombing. Other roles include transport and utility missions carrying the pilot and up to eight passengers or crew depending on the mission.

The AS365N2 is fitted with a winch capable of lifting a 270kg load on a 100m cable. With this winch the aircraft is used to insert remote area firefighting teams into areas to remote to quickly access by road or foot.

With its two powerful engines the AS365N2 is particularly well suited to winching and other fire fighting operations. Its high speed allows it to reach remote fires quickly. A distinctive feature of the AS365 is the “fenestron” tail rotor. The fenestron reduces the noise of the aircraft and increases performance.

When firebombing the AS365N2 can pick up 1000 litres of water in an under slung bucket. The pilot can add a measured quantity of fire fighting suppressant foam to this water increase its effectiveness when it is dropped on a fire.

The AS365N2 helicopters operate alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The New South Wales Government has contracted, through NAFC, one Eurocopter AS365N2 helicopter for the 2015-16 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories

NAFC National Aerial Firefighting Centre

© NAFC 2015

Bell 204B

Call sign “Helitak”

Primary roles: Firebombing

Other roles: Transport, utility

Single engine helicopter

Single pilot, up to eleven passengers

1290 litre long-line firebombing bucket

4300 kg gross weight

Cruise speed 185 km/h

Two bladed main rotor

17.3m length, 14.6m rotor diameter

1400HP Pratt and Whitney T53-13B turbo shaft engine

Fuel consumption 340 litres/h of Jet-A1

2+ fire agency radios

Satellite tracking

The Bell 204B helicopter is a medium weight single engine helicopter. It is a civilian derivative of the Bell UH-1 “Huey” helicopter usually fitted with an upgraded engine. It is used by fire agencies primarily for firebombing. Other roles include transport and utility missions carrying the pilot and up to eleven passengers or crew depending on the mission.

The 204B is typically fitted with a ‘PowerFill’ firefighting bucket on a 150 foot ‘long-line’. With this equipment the aircraft can fill from quite small water sources including rivers, dams, ponds and swimming pools. The long line allows the aircraft to lift water from water sources where there is not enough clearance from obstacles to safely allow the helicopter to descend and hover fill with a pond snorkel and tank. Pilots are able to mix in a measured quantity of fire fighting suppressant foam to increase the effectiveness of the load when it is dropped on a fire.

The 204B can be quickly reconfigured to carry passengers or other loads internally, or up to 1400 kg loads externally on its cargo hook.

The Bell 204B helicopters operate alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The Queensland and Victorian Governments have contracted, through NAFC, two Bell 204B helicopters for the 2015-16 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories

NAFC
National Aerial Firefighting Centre

© NAFC 2015

Bell 212

Call sign “Helitak”

Primary roles: Firebombing, fire crew insertion

Other roles: Transport, utility

Twin engine helicopter

Two line rappel system

Single pilot, up to fourteen passengers

1477 litre firebombing tank

5090 kg gross weight

Cruise speed 185 km/h

Two bladed main rotor

17.4m length, 14.6m rotor diameter

1800HP Pratt and Whitney PT6T-3BFTwin-Pac engine

Fuel consumption 340 litres/h of Jet-A1

2+ fire agency radios

Satellite tracking

The Bell 212 helicopter is a medium weight twin engined helicopter. It is a modern derivative of the Bell UH-1 “Huey” helicopter. It is used by fire agencies primarily for firebombing and insertion of fire crews into remote areas. Other roles include transport and utility missions carrying the pilot and up to fourteen passengers or crew depending on the mission.

The 212 may be fitted with two line rappel system or winch. With this equipment the aircraft is used to insert specially trained firefighting into fires that cannot be quickly accessed by road or foot. The rappel system also includes a cargo arm that allows a crewman on board the helicopter to lower cargo to fire fighters on the ground.

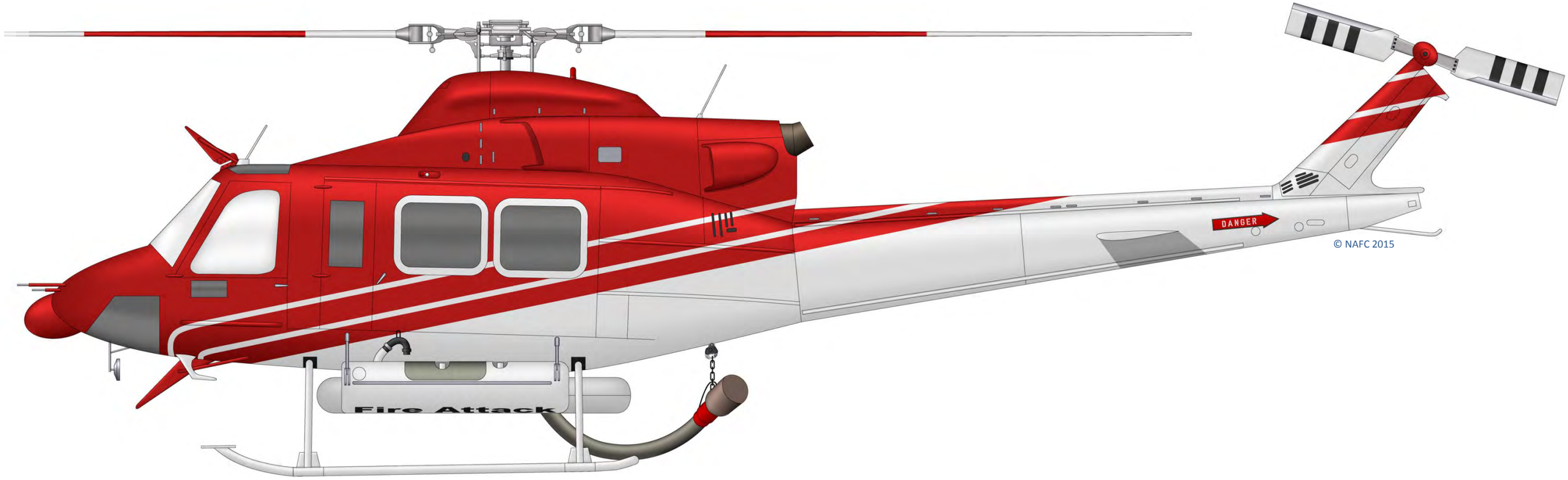
With its two powerful engines driving a common gearbox the 212 is particularly well suited to rappelling and other fire fighting operations. The majority of firefighting 212 helicopters are fitted with BLR Fast Fins and tail boom strakes. These modifications increase tail rotor effectiveness allowing the aircraft to lift a greater load with greater control.

Most contracted Bell 212s are fitted with a 1477 litre Conair 85 KE firebombing belly tank. The aircraft can hover-fill from quite small water sources including rivers, dams, ponds and swimming pools. Pilots are able to mix in a measured quantity of fire fighting suppressant foam to increase the effectiveness of the load when it is dropped on a fire.

The Bell 212 helicopters operate alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The Victorian Government has contracted, through NAFC, six Bell 212 helicopters for the 2015-16 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories.

NAFC
National Aerial Firefighting Centre



© NAFC 2015

Bell 412

Call sign “Helitak”

Primary roles: Firebombing, fire crew insertion

Other roles: Transport, utility

Twin engine helicopter

270kg, 75m ‘Goodrich’ winch or two line rappel system

Single pilot, up to eleven passengers

1400 litre firebombing tank

5400 kg gross weight

Cruise speed 225 km/h

Four bladed main rotor

17.1m length, 14.0m rotor diameter

1800HP Pratt and Whitney PT6T-3BF Twin-Pac engine

Fuel consumption 410 litres/h of Jet-A1

2+ fire agency radios, Satellite tracking

The Bell 412 helicopter is a medium weight twin engined helicopter. It is a modern derivative of the Bell UH-1 “Huey” helicopter. It is used by fire agencies primarily for firebombing and insertion of fire crews into remote areas. Other roles include transport and utility missions carrying the pilot and up to eleven passengers or crew depending on the mission.

The 412 can be fitted with a winch capable of lifting a 270kg load on a 75m cable or with a two line rappel system. With the rappel system or winch the aircraft is used to insert remote area firefighting teams into fires that cannot be quickly accessed by road or foot.

With its two powerful engines driving a common gearbox the 412 is particularly well suited to rappelling, winching and other fire fighting operations. Its high speed allows it to reach remote fires quickly. The 412 aircraft are fitted with BLR Fast Fins and tail boom strakes, these modifications increase tail rotor effectiveness allowing the aircraft to lift a greater load with greater control.

The 412 is fitted with a 1400+ litre firebombing belly tank. The aircraft can hover-fill from quite small water sources including rivers, dams, ponds and swimming pools. Pilots can mix a measured quantity of fire fighting suppressant foam to increase the effectiveness of the load when it is dropped on a fire.

The Bell 412 helicopters operate alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The NSW and Victorian Governments have contracted, through NAFC, four Bell 412 helicopters for the 2015-16 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories

NAFC
National Aerial Firefighting Centre

© NAFC 2015

Bell 214B Big Lifter

Call sign “Helitak”

Primary role: Firebombing

Other roles: passenger / cargo transport

Single engine helicopter

Single pilot, up to 14 passengers

2650 litre firebombing tank capacity

Cruise speed 240 km/h

Two bladed main and tail rotors

6300 kg maximum take-off weight

17.7 m length, 14.7 rotor diameter,

2950 HP Lycoming T5508D turbo shaft engine,

Fuel consumption 600 litres/h of Jet-A1

2+ fire agency radios, satellite tracking

The Bell 214B helicopter is the largest, most powerful single engined helicopter in the world. It is used by fire agencies primarily for firebombing, passenger and cargo transport and utility missions carrying the pilot and up to 14 passengers depending on configuration.

The 214B is typically fitted with ‘Tsunami’ firebombing belly tank. With this fitted the pilot can fill 2650 litres of water in approximately 35 seconds. To this they can mix a measured quantity of fire fighting suppressant foam to increase the effectiveness of the load when it is dropped on a fire. Pilots can hover fill from quite small water sources including rivers, dams, ponds and swimming pools, however they do need a reasonable clearance around the filling point to avoid damage or disruption due to the substantial down wash from the aircraft rotor and to give the aircraft a clear path to approach and depart.

The 214B is also used for transport of passengers and cargo. Some aircraft are fitted with extra high skids to allow them to land in long grass and other low vegetation in remote areas where constructed helipads do not exist.

The 214B operates alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The State Governments of Australia have contracted, through NAFC, eleven Bell 214B helicopters for the 2015-16 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories

NAFC
National Aerial Firefighting Centre

© NAFC 2015

Sikorsky S61N

Call sign “Helitak”

Primary roles: Firebombing, fire crew insertion,

Other roles: Transport, utility

Twin engine helicopter

Coulson single line rappel system

Single pilot, up to eighteen passengers

4000 litre firebombing tank

9980 kg gross weight

Cruise speed 225 km/h

Five bladed main rotor

21.95m length, 18.9m rotor diameter

2 x 1500HP General Electric CT58-140 turbo shaft engines

Fuel consumption 625 litres/h of Jet-A1

2+ fire agency radios, Satellite tracking

The Sikorsky S61N helicopter is a heavy lift, multi role, twin engined helicopter it is a civil variant of the successful SH-3 Sea King helicopter. It is used by fire agencies primarily for firebombing. Other roles include rappelling of fire crews into fires in remote areas and transport missions carrying the pilot and up to eighteen passengers or crew depending on the mission.

When firebombing the S61N can pick up 4000 litres of water in it’s firebombing tank or 2850 litres in an under slung bucket. The pilot can add a measured quantity of fire fighting suppressant foam to this water increase its effectiveness when it is dropped on a fire.

The S61N is a multi-role aircraft. It can be readily reconfigured from firebombing with a tank to long line operations with a power-fill bucket. It can also be used to transport up to 18 passengers in airline style comfort or large amounts of cargo inside the aircraft or slung underneath.

The S61N is fitted with a single line rappel system. With this rappel system the aircraft is used to insert fire fighting crews into areas too remote to quickly access by road or foot.

The Sikorsky S61N helicopters operate alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The Victorian Government has contracted, through NAFC, are two Sikorsky S61N helicopters for the 2015-16 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories.

NAFC
National Aerial Firefighting Centre

© NAFC 2015

Erickson S64E - Aircrane

Call sign “Helitak”

Primary role: Firebombing

Other roles: Heavy lifting

Twin engine heavy helicopter

Two pilots for firebombing operations

7560 litre firebombing tank

7700 kg realistic external load

19090 kg gross weight

Cruise speed 215 km/h

Six bladed main rotor

26.8m length, 22.0m rotor diameter

2 x 4500HP Pratt & Whitney JFTD12A-4A turbo shaft engines

Fuel consumption 1985 litres/h of Jet-A1

2+ fire agency radios, Satellite tracking

The Erickson S64E Aircrane is a purpose built heavy lift helicopter. It is the civil variant of the Sikorsky CH-54A Tarhe. Erickson Aircrane purchased the Type Certificate and manufacturing rights from Sikorsky 1992 and now able to zero time or remanufacture these unique aircraft

The S64E Aircrane is used by fire agencies primarily for firebombing. In this role it typically utilises a computer controlled firebombing tank system that is designed to deliver a constant flow of fire suppressant of retardant on to the target area regardless of the movement of the aircraft. If required the Aircrane can be fitted with an underslung power fill bucket on a long line.

The S64E Aircrane can pick up 7560 litres of water in its firebombing tank with its ‘pond’ snorkel while hovering for 45 seconds or where larger bodies of water are available in 30 seconds by flying low over the water’s surface with its ‘sea’ snorkel extended. The pilot can add a measured quantity of fire fighting suppressant foam to this water increase its effectiveness when it is dropped on a fire. Where circumstances call for it ground crew can set up tanks of pre mixed fire retardant solution for the Aircrane to fill from.

Other roles include the lifting of heavy or oversize loads underslung on a long line beneath the helicopter. In these missions the aircraft may carry a third person as a rear facing observer-pilot to assist with precisely positioning the load.

The S64E Aircrane helicopters operate alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The State Governments of Australia have contracted, through NAFC, six Erickson S64E Aircrane helicopters for the 2015-16 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories.

NAFC
National Aerial Firefighting Centre

Fixed Wing Aircraft
2016/17

NAFC
National Aerial Firefighting Centre

© NAFC 2015

Cessna 182T Skylane

Reconnaissance / utility aircraft.
Single Engine High wing
Call sign “Fire spotter”
Single pilot crew
Three passengers
1400 kg gross weight
Cruise speed 270 km/h
8.8 m length, 11 m wingspan,
230 HP Lycoming IO-540 piston engine
Three bladed constant speed propeller
Fuel consumption 55 litres/h of AvGas
Day, night and instrument flight
Garmin 1000 ‘glass’ cockpit
2+ fire agency radios
Satellite tracking

The Cessna 182T Skylane is a modern version of the well known Cessna 182 line of aircraft. It is used by fire agencies primarily for fire detection, reconnaissance and utility missions carrying the pilot and up to three passengers or crew.

The C182T is particularly well suited to the fire detection and reconnaissance mission with its high wing offering excellent visibility from all seats, and the ability to slow down and loiter in the fire area. When working as a ‘fire spotter’ the primary responsibility for the crew is to collect relevant information about the fires below and pass it on to the incident management team.

The C182T is also used for utility missions ferrying passengers and cargo into locations as diverse as major city airports to the remote dusty rural airstrips. When required the C182T can also be utilised for air attack supervision where an experienced fire agency crew member takes charge of part of the fire fighting operation from their aircraft while orbiting overhead.

With the C182T Cessna takes advantage of modern design and technology to advance safety through the inclusion of features such as a digital cockpit, lightning detection, airbag seat belts, pulsed recognition lighting and traffic awareness technology. The aircraft’s range and performance allows it to operate over long distances, and from sea level up into the mountains

The Cessna 182 aircraft operates alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The New South Wales, Queensland and South Australian Governments have contracted, through NAFC, four Cessna 182 aircraft and one similar Cessna 210 aircraft for the 2015-16 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories

NAFC
National Aerial Firefighting Centre

© NAFC 2015

Cessna 337G Skymaster

Call sign “Birddog”

Primary role: air attack supervision

Other roles: reconnaissance / utility aircraft.

Centreline thrust twin engine design

High wing, piston engined

Single pilot, 3 passengers

2100 kg gross weight

Cruise speed 250 km/h

9.0 m length, 11.6 m wingspan

2 x 210 HP Continental IO-360-G engines

Fuel consumption 80 litres/h of AvGas

Day, night and instrument flight

Up to 6 hours endurance

2+ fire agency radios

Satellite tracking

The Cessna 337 Skymaster is a unique design with its two engines in a push pull configuration and a twin boom tail. The C337 is used by fire agencies primarily for supervision of fire operations, fire detection, reconnaissance and utility missions carrying the pilot and up to three passengers or crew depending on the mission and aircraft configuration.

The C337 is particularly well suited to the fire detection, reconnaissance and supervision missions with its high wing offering excellent visibility from the front seats, and the ability to slow down and loiter in the fire area. When working as a ‘Birddog’ the primary responsibility for the crew is to supervise aerial fire fighting operations and to collect intelligence information about a fire and pass it on to the incident management team.

The C337 is also used for utility missions ferrying passengers and cargo into locations such as major city airports and remote dusty rural airstrips and everywhere in between. The C337 can be equipped with specialist intelligence gathering equipment including cameras that stream real time vision of the fire scene to incident management teams on the ground

The C337 is regarded as a rugged and reliable aircraft. Its centreline thrust arrangement means that the aircraft has no tendency to yaw to one side in the event of an engine failure. The C337s speed and range make it ideal for supporting fire operations in regional locations.

The Cessna 337G aircraft operates alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The Victorian Government has contracted, through NAFC, three Cessna 337G aircraft for the 2015-16 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories.

NAFC
National Aerial Firefighting Centre

© NAFC 2015

Cessna 208B Grand Caravan

Call sign “Birddog”

Primary role: air attack supervision

Other roles: reconnaissance / utility aircraft.

Single engine, turbo prop, high wing

Single pilot, nine passengers

3950 kg gross weight

Cruise speed 300 km/h

12.7 m length, 15.8 m wingspan,

675 HP Pratt & Whitney PT6A-114A Turbo shaft engine

Three bladed constant speed reversible propeller

Fuel consumption 175 litres/h of Jet-A1

Day, night and instrument flight

Up to 6 hours endurance

2+ fire agency radios

Satellite tracking

The Cessna 208 Grand Caravan is the largest single-engine airplane ever produced by Cessna. It is used by fire agencies primarily for supervision of fire operations, fire detection, reconnaissance and utility missions carrying the pilot and up to nine passengers or crew depending on the mission.

The C208B is particularly well suited to the fire detection, reconnaissance and supervision missions with its high wing offering excellent visibility from all seats, and the ability to slow down and loiter in the fire area. When working as a ‘birddog’ the primary responsibility for the crew is to supervise aerial fire fighting operations and to collect intelligence information about a fire and pass it on to the incident management team.

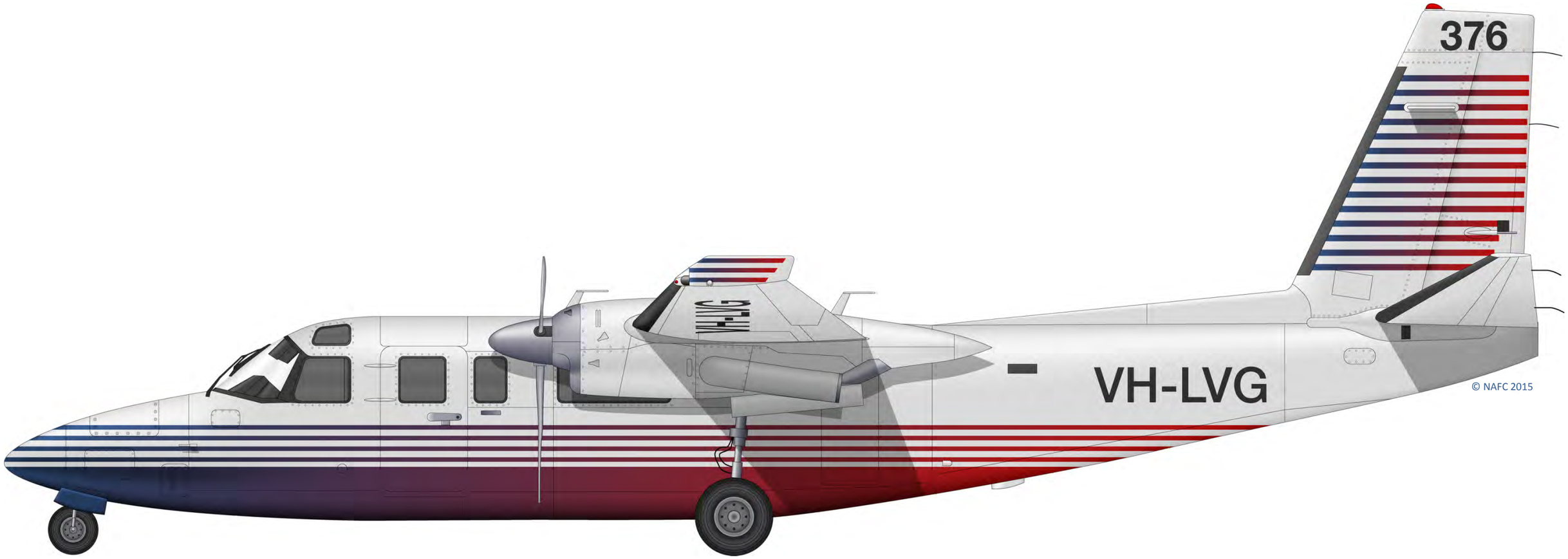
The C208B is also used for utility missions ferrying passengers and cargo into locations such as major city airports and remote dusty rural airstrips and everywhere in between. The large passenger and cargo carrying capacity allows the aircraft to move small teams of fire fighters and their equipment around quickly to meet the requirements of fire agencies.

With the C208B Cessna takes advantage of the proven record of the P&W PT6 turbo prop engine to produce a high performance, high reliability aircraft. The aircraft’s range and performance allows it to operate over long distances, and from sea level up into the mountains

The Cessna 208B aircraft operates alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The New South Wales, South Australian and Victorian Governments have contracted, through NAFC, three Cessna 208B aircraft for the 2015-16 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories

NAFC
National Aerial Firefighting Centre



© NAFC 2015

Rockwell Turbo Commander 690B

Call sign “Birddog”
Primary role: air attack supervision
Other roles: reconnaissance / utility aircraft.
Twin engine, turbo prop, high wing
Single pilot, 5 passengers
4650 kg gross weight
Typical cruise speed 500 km/h
Typical cruise altitude 18,000 feet
13.5 m length, 14.2 m wingspan
2 x 717 HP Garrett TPE 331-10 engines
Fuel consumption 300 litres/h of JetA1
Day, night and instrument flight
More than 3.5 hours endurance
2+ fire agency radios & satellite tracking
Smoke trail generator

The Rockwell Turbo Commander 690B is a twin engine, high wing, passenger transport aircraft. The Turbo Commander is used by fire agencies primarily for aerial supervision of airtanker operations. Other roles include supervision of fire operations, fire detection, reconnaissance and utility missions carrying the pilot and up to five passengers or crew depending on the mission.

The Turbo Commander is particularly well suited to aerial supervision with its high wing offering excellent visibility from the front seats, and the ability to slow down and loiter in the fire area. When working as a ‘Birddog’ the main responsibility for the crew is to supervise aerial fire fighting operations and to collect intelligence information about a fire and pass it on to the incident management team.

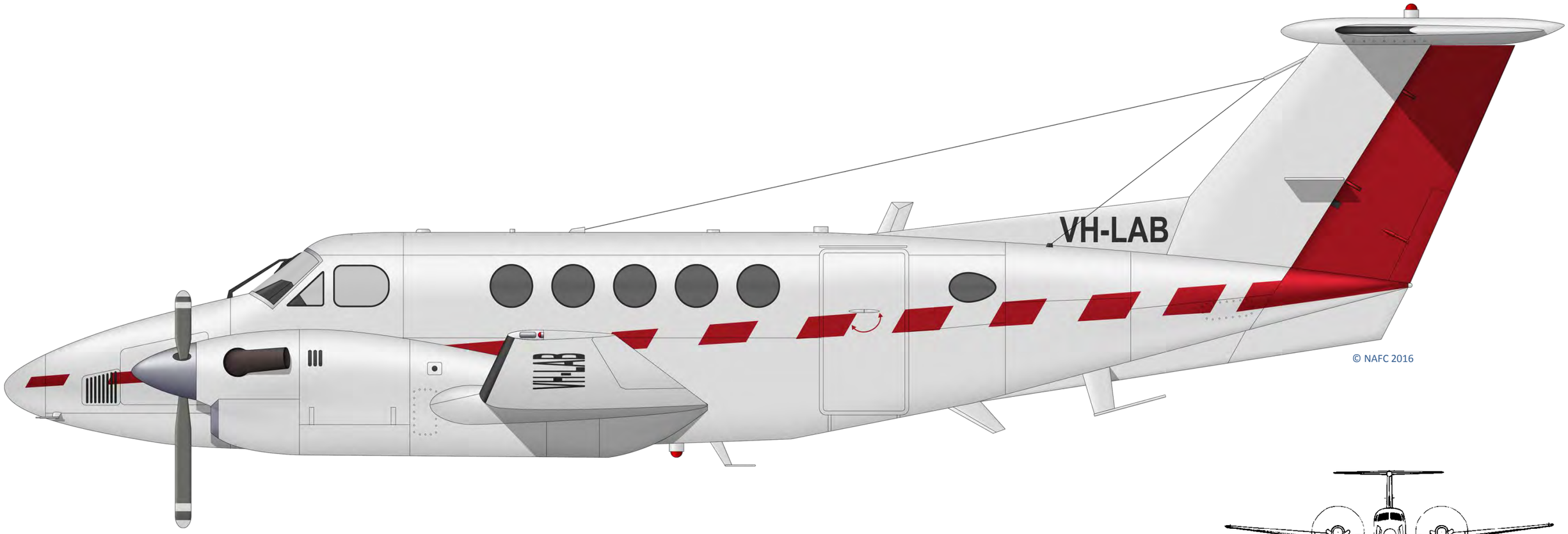
The Turbo Commander is used to supervise airtanker operations. An on board air attack supervisor will direct air tankers where and how to drop their load on the fire. The aircraft can be used to fly the drop profile to show the airtanker where to fly and to identify hazards and landmarks. In some circumstances the Turbo Commander can be used to lead the airtanker through its drop pattern and generate a smoke marker trail at the required drop location.

The Turbo Commanders speed, range and climb performance make it ideal for supporting fire operations in regional locations. It can quickly climb to altitude cruise at high speed, then descend and slow down in the fire area. It can readily match the speed of large air tankers when operating in the fire area.

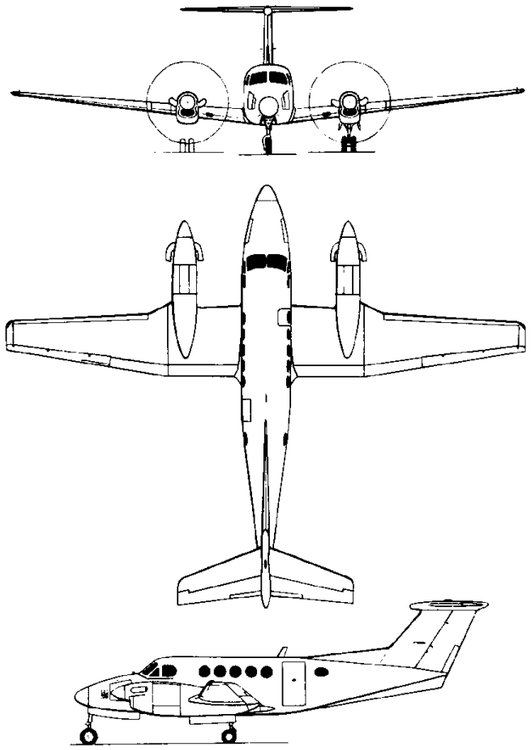
The Rockwell Turbo Commander aircraft operates alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The NSW and Victorian Governments have contracted, through NAFC, three Rockwell Turbo Commander aircraft for the 2015-16 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories.

NAFC
National Aerial Firefighting Centre



© NAFC 2016



Beechcraft King Air - B200T

Call sign “Firescan”

Primary role: Fire Scanning

Other roles: Reconnaissance / utility

Twin engined turboprop

Single pilot, one system operator

Operating speed 245 Knots (450 km/h)

1300m Runway required normal ops

6100 kg maximum take-off weight

13.3 m length, 16.8 wing span

Two P&W PT6A-42 turboprop engines

Fuel consumption 340 litres/h of Jet-A1

Infrared and multispectral line scanner

Satellite broad band data transmission

2+ fire agency radios, Satellite tracking

The Beechcraft Super King Air is one of the most common twin engined turboprop aircraft available. Since the first model was built in 1974 the King Air range has had the longest production run of any civilian turboprop aircraft in its class. It is primarily used by fire agencies for fire detection and fire mapping operations, other uses may include passenger and cargo transport and utility missions carrying the pilot and up to 10 passengers. When conducting fire scanning missions the aircraft is fitted with an infrared and multispectral line scanning instrument and data processing system.

When fire scanning the aircraft flies over a fire area at high level, imaging the fire and its surrounding terrain with sensitive thermal and visual sensors. Processing systems on board the aircraft combine the image data with GPS, inertial measurement systems and terrain elevation data. This processing geo-rectifies the image to make it usable in mapping software and geospatial information systems. The combination of thermal and visual sensors used and the geo-rectification process creates images that are easy for fire fighters to interpret and for them to understand where the fire is and what it is doing.

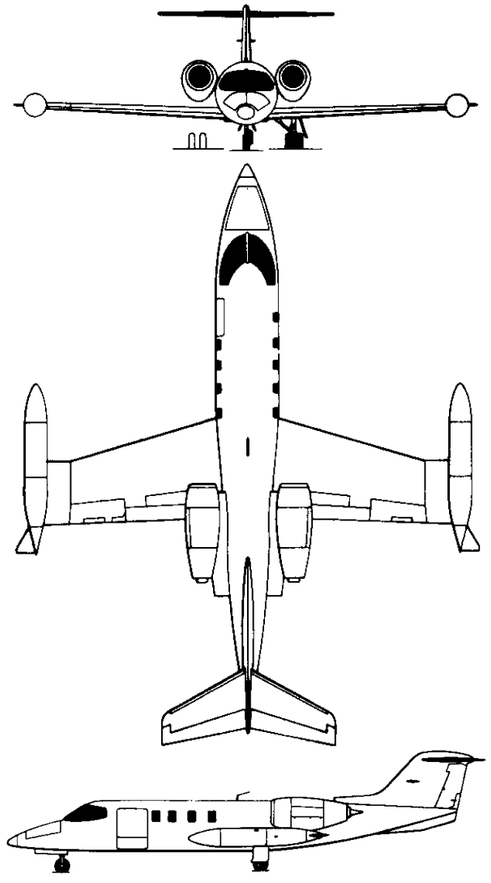
A broadband satellite data communication system enables rapid transfer of processed and raw data from the aircraft to users on the ground regardless of the aircraft’s location.

The B200T King Air operates alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The Victorian and NSW Governments have contracted, through NAFC, one Beechcraft King Air fire scanning aircraft. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories of Australia.

NAFC
National Aerial Firefighting Centre

© NAFC 2016



Gates Learjet 35A

Call sign “Firescan”

Primary role: Fire Scanning

Other roles: Reconnaissance / utility

Twin engined turbofan

Two pilots, one system operator

Operating speed 350 Knots (650 km/h)

1800m Runway required normal ops

8300kg maximum take-off weight

14.8m length, 12.0m wing span

Two Honeywell TFE731 turbofan engines

Fuel consumption 1000 litres/h of Jet-A1

Infrared and multispectral line scanner

Satellite broad band data transmission

2+ fire agency radios, Satellite tracking

The Learjet is widely recognised as the aircraft that introduced practical private jets to the world. The model 35A was first flown in 1973. Production of the model 35/36 series continued until 1994. The design of the Learjet wing allows the carriage of external stores mounted on hard points built into the wing. The Learjet 35A is used by fire agencies primarily for fire detection and fire mapping operations, other uses include reconnaissance and utility missions. When conducting fire scanning missions the aircraft is fitted with an infrared and multispectral line scanning instrument and data processing system. The scanner instrument may be fitted in a pod under one wing, or in a standard aerial photography camera mount inside the aircraft fuselage.

When fire scanning the aircraft flies over a fire area at high level, imaging the fire and its surrounding terrain with sensitive thermal and visual sensors. Processing systems on board the aircraft combine the image data with GPS, inertial measurement systems and terrain elevation data. This processing geo-rectifies the image to make it usable in mapping software and geospatial information systems. The combination of thermal and visual sensors used and the geo-rectification process creates images that are easy for fire fighters to interpret and for them to understand where the fire is and what it is doing.

A broadband satellite data communication system enables rapid transfer of processed and raw data from the aircraft to users on the ground regardless of the aircraft’s location.

The Learjet 35A operates alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The Victorian and NSW Governments have contracted, through NAFC, three Gates Learjet 35/36 fire scanning aircraft. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories of Australia.

NAFC
National Aerial Firefighting Centre

© NAFC 2016

PZL M18T (Hubler) Dromader

Single Engined Air Tanker.

Call sign “Bomber”

Single pilot crew

2375 litre capacity

5300 kg gross weight

Drop speed 160 km/h

Cruise speed 230 km/h

11.3 m length, 18 m wingspan

Honeywell TPE-331-11 turboprop engine, 1100 HP

Fuel consumption 240 litres/h of Jet A1

Fire retardant or fire suppressant

2+ fire agency radios

Satellite tracking

The PZL M18T Dromader is a fire fighting conversion of the PZL M18B agricultural aircraft. The Hubler conversion replaces the original radial piston engine with a Honeywell TPE331-11 turbine engine. The M18 is designed and built to be a rugged and reliable high performance agricultural aircraft.

The M18T can be filled with a 2375 litre load of either fire retardant or fire suppressant solution. Its turbine engine and high lift wing allow it to safely manoeuvre in steep, rugged country. The pilot can accurately drop the load while flying approximately 30 metres above the target. The M18T returns to the nearest firebombing base to reload. It can reload and be airborne again in 6 to 8 minutes.

The PZL M18T is utilised for both initial attack with fire suppressant on new fires and fire retardant line building on larger fires. Its flexibility enables the M18T to work in both the urban interface and remote areas such as parks and forests.

The PZL M18T aircraft operate alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with the fire agency crews that supervise their operations.

The State Government of Victoria has contracted, through NAFC, two M18T aircraft for the 2016-17 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories

NAFC
National Aerial Firefighting Centre

Air Tractor AT802F

Single Engined Air Tanker.

Call sign “Bomber”

Single pilot crew

3200 litre capacity

7250 kg gross weight

Drop speed 200 km/h

Cruise speed 350 km/h

11 m length, 18 m wingspan,

P&W PT6A turboprop engine 1350-1600 HP

Fuel consumption 280 litres/h of Jet A1

Gen II Fire Retardant Dispersal System

Fire retardant or fire suppressant

4+ Radios & Satellite tracking

The Air Tractor 802F is a purpose built fire fighting aircraft. It is the largest single engined turbo prop aircraft currently in production. It is designed and built to be a rugged and reliable high performance firebombing aircraft.

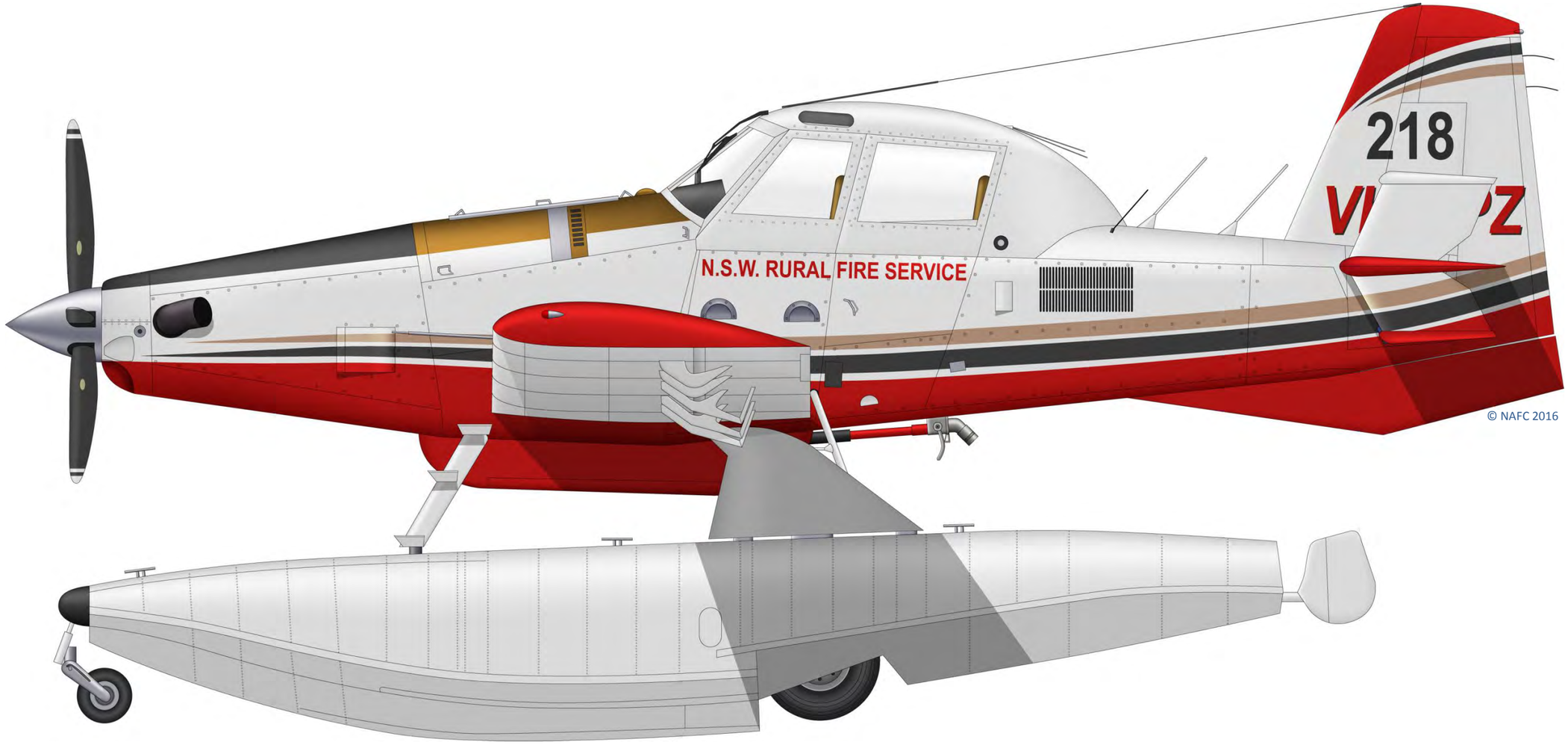
The AT802F can be airborne in less than five minutes from call out and its fast cruise speed means it can reach a fire 50km away in approximately 10 minutes. The computer controlled firebombing system assists the pilot to accurately drop the 3200 litre load while flying approximately 30 metres above the target. The AT802F returns to the nearest firebombing base to reload. It can reload and be airborne again in 6 to 8 minutes.

The AT802F is utilised for both initial attack with fire suppressant on new fires and fire retardant line building on larger fires. Its flexibility enables the AT802F to work in both the urban interface and remote areas such as parks and forests.

The AT802F aircraft operate alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with the fire agency crews that supervise their operations.

The State Governments of Australia have contracted, through NAFC, thirty seven AT802F aircraft for the 2016-17 fire season. These aircraft are equipped with a variety engines and equipment and can have one or two seats. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories

NAFC
National Aerial Firefighting Centre



© NAFC 2016

Air Tractor AT802F - Fireboss

Amphibious Single Engined Air Tanker.
Call sign “Bomber”
Single pilot crew
3200 litre capacity
7250 kg gross weight
Drop speed 200 km/h
Cruise speed 275 km/h
11 m length, 18 m wingspan,
P&W PT6A-67F turboprop engine 1600 HP
Fuel consumption 280 litres/h of Jet A1
Gen II Fire Retardant Dispersal System
Fire retardant or fire suppressant
330 litre Foam Concentrate capacity
4+ Radios & Satellite tracking

The Air Tractor AT802F - Fireboss is a purpose built amphibious fire fighting aircraft. The Fireboss is a variant of the rugged and reliable Air Tractor AT802F firebombing aircraft. It is able pick up water by skimming over the surface of suitable lakes and rivers.

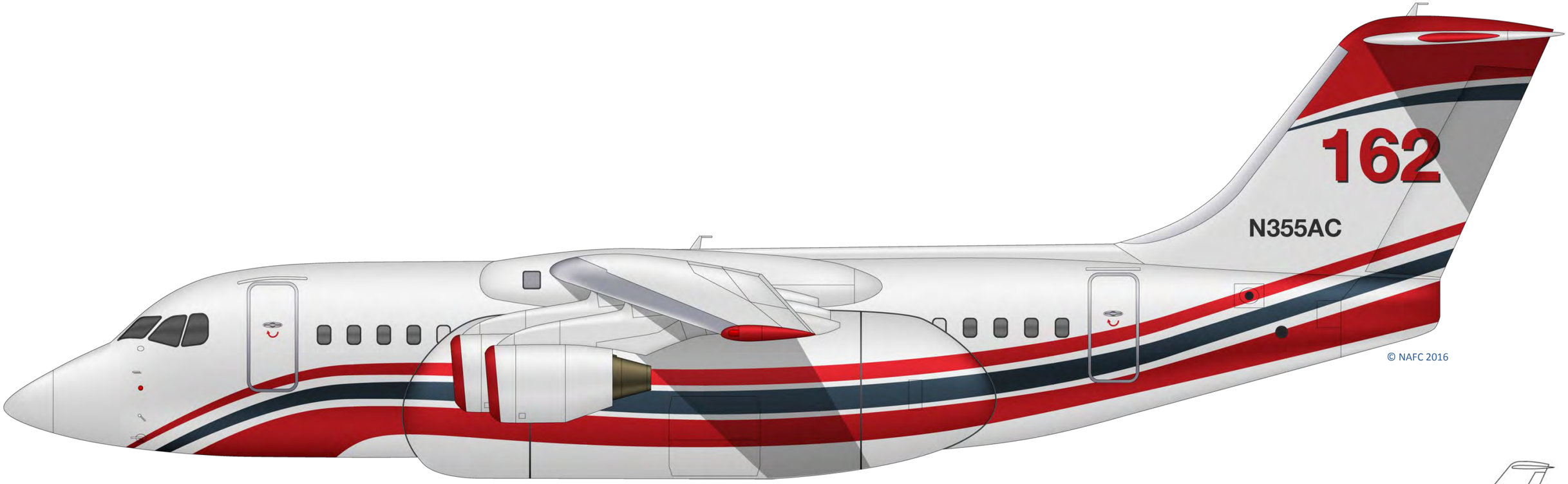
The Fireboss, while normally based on land, can utilise water sources nearby the fire to refill its firebombing system in just 30 seconds. This can significantly increase the amount of fire suppressant delivered to the fire per hour when suitable water sources are available. Able to operate from water sources at least 750m long and clear of obstructions and the Fireboss is particularly suited to the coastal river country such as that found in Northern NSW and the rivers and dams in the Upper Murray river. The computer controlled firebombing system assists the pilot to accurately drop the 3200 litre load while flying approximately 30 metres above the fire.

While the Fireboss is well suited to initial attack with fire suppressant on fires with nearby water sources it can also operate from air bases on land and be utilised for fire retardant line building on larger or more remote fires. This flexibility enables the Fireboss to operate in both the urban - rural interface and remote areas such as parks and forests.

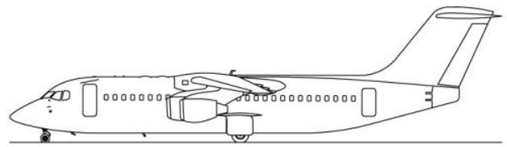
The Fireboss aircraft operates alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with the fire agency crews that supervise their operations.

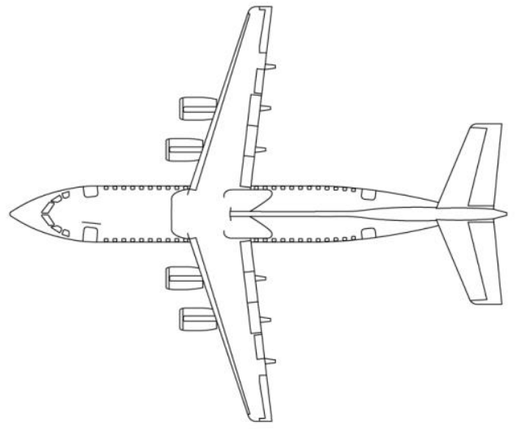
The New South Wales and Victorian Governments have contracted, through NAFC, two AT802F – Fireboss aircraft for the 2016-17 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories

NAFC
National Aerial Firefighting Centre



© NAFC 2016





Avro RJ85 airtanker

Type 1 Airtanker

Primary role: Firebombing

Two pilots when firebombing

Conair constant flow firebombing system

11,350 litre retardant capacity

Cruise speed (loaded) 680 km/h

Typical cruise altitude (loaded) 18,000 feet

Typical runway required 1,650m

Max runway required (full load hot day) 1,950m

28.6 length, 26.3m wingspan

42,200 kg gross weight

4 x Honeywell LF507-1F turbo fan engines

Fuel consumption 3200 litres/h of Jet-A1

2+ fire agency radios, Satellite tracking

The Avro RJ85 airtanker is a modification of an Avro RJ85 passenger jet. In its airliner configuration the RJ85 carries up to 100 passengers typically on short haul routes. The RJ85 is a modernised, more powerful upgrade of the well-known BAe-146 line of passenger jets.

Conair have designed and certified a modification to the RJ85 to integrate a 3,100 US gallon firebombing system. This system installs an external saddle tank around the centre of the aircraft fuselage. An 11,350 litre load of fire retardant solution can be carried on board the aircraft. The computerised firebombing system delivers a constant flow of fire retardant or suppressant to the target area

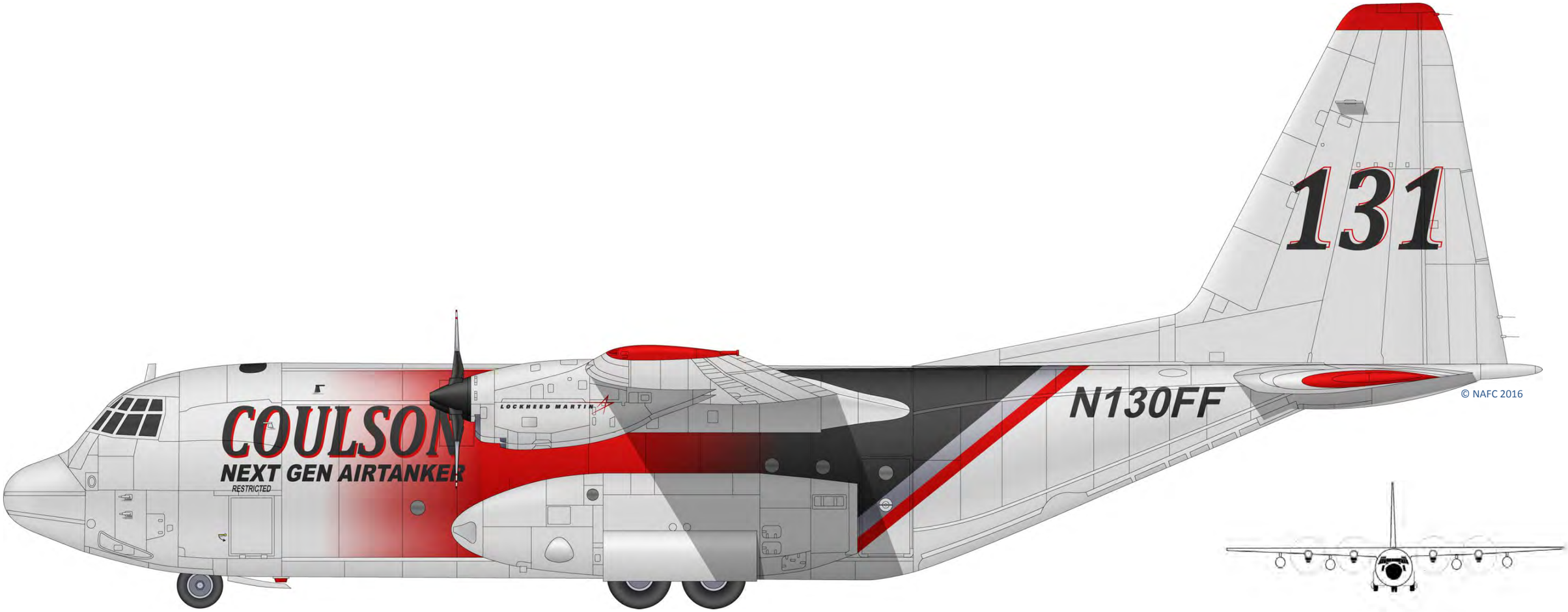
The RJ85 is used by fire agencies in North America and Australia primarily for firebombing. It can be utilised for both initial attack of new fires with fire suppressant solutions and line building with fire retardant on larger fires. Its flexibility enables the RJ85 to work in both the urban interface and remote areas such as parks and forests.

The RJ85 can operate from many airfields across Australia. With a full retardant load on a 45 degree Celsius day the aircraft requires a 1,950m runway. Shorter runways can be utilised with a slightly lighter load or on cooler days. The RJ85 was specifically designed as a short haul airliner to use short runways with steep approaches.

The Avro RJ85 airtanker operates alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The Victorian Government has contracted, through NAFC, one Avro RJ85 airtanker for the 2016-17 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories of Australia.

NAFC
National Aerial Firefighting Centre



© NAFC 2016

Coulson C130Q airtanker

Type 1 Airtanker

Primary role: Firebombing

Other roles: Transport

Two pilots and one flight engineer

RADS-XXL constant flow firebombing system

15,450 litre retardant capacity

Cruise speed (loaded) 545 km/h

Typical cruise altitude (loaded) 12,500 feet

Typical runway required 1,600m

Max runway required (full load hot day) 1,950m

30.3m length, 40.4m wingspan

68,000 kg gross weight

4 x 4,500HP Allison T56-A-16 turbo prop engines

Fuel consumption 2,650 litres/h of Jet-A1

2+ fire agency radios, Satellite tracking

The Coulson C130Q airtanker is a modification of the ubiquitous Lockheed Martin C130 military transport aircraft. In its original configuration as an EC-C130Q, the aircraft was used by the US Navy in the TACAMO role where it operated as a communication relay in the event of a crisis. Subsequently, it was operated by NASA before being purchased by Coulson Aviation.

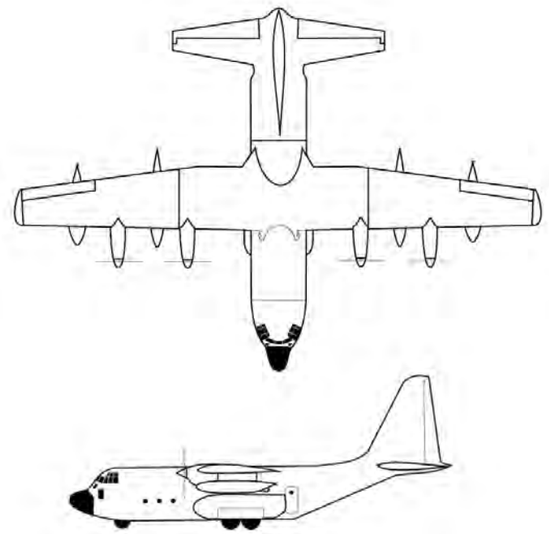
Coulson Aviation have designed and certified a modification to the C130 to integrate a 4,300 US gallon firebombing system. This system is a derivative of the well regarded Aero Union RADS 1 firebombing tank. A 15,450 litre load of fire retardant solution can be carried on board the aircraft. The GPS linked computer controlled firebombing system delivers a constant flow of fire retardant or suppressant to the target area.

The C130Q is used by fire agencies in North America and Australia primarily for firebombing. It can be utilised for both initial attack of new fires with fire suppressant solutions and line building with fire retardant on larger fires. Its flexibility enables the C130Q to work in both the urban interface and remote areas such as parks and forests.

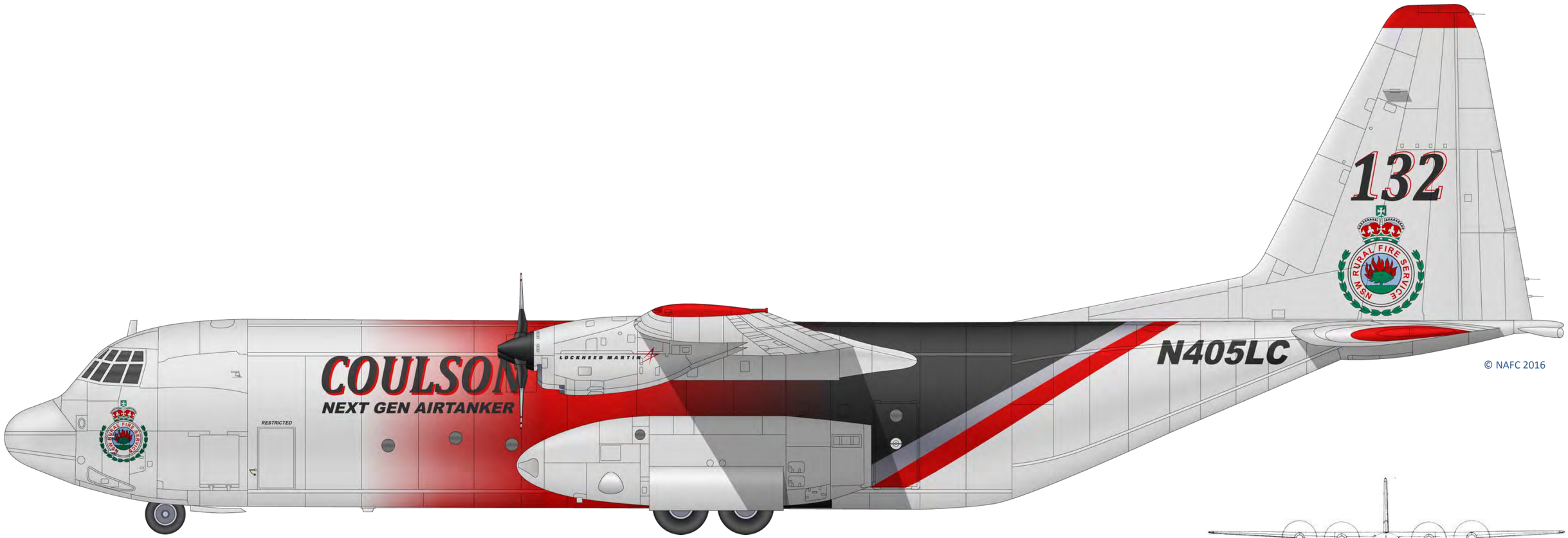
The C130Q can operate from many airfields across Australia. With a full retardant load on a 45 degree Celsius day the aircraft requires a 1,950m runway. Shorter runways can be utilised with a slightly lighter load or on cooler days. The C130 was designed as a tactical airlifter and is ideally suited to operating at low level around fires.

The C130Q airtanker operates alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The Victorian Government has contracted, through NAFC, one Coulson C130Q airtanker for the 2016-17 fire season. A similar Lockheed L100-30 airtanker is based in NSW. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories of Australia.



NAFC
National Aerial Firefighting Centre



© NAFC 2016

Lockheed L100-30 airtanker

Type 1 Airtanker

Primary role: Firebombing

Other roles: Transport

Two pilots and one flight engineer

RADS-XXL constant flow firebombing system

15,450 litre retardant capacity

Cruise speed (loaded) 545 km/h

Typical cruise altitude (loaded) 12,500 feet

Typical runway required 1,600m

Max runway required (full load hot day) 1,950m

34.4m length, 40.4m wingspan

68,000 kg gross weight

4 x 4,500HP Allison 501-D22A turbo prop engines

Fuel consumption 2,650 litres/h of Jet-A1

2+ fire agency radios, Satellite tracking

The Lockheed L100 airtanker is a modification of a Lockheed Martin L100-30 (382G) cargo transport aircraft. The L100 is the civilian version of the ubiquitous Lockheed Martin C130 Hercules military transport aircraft. In its transport configuration, the L100 is used by the cargo transport airlines around the world, often operating in and out of remote airfields from Africa to the Antarctic.

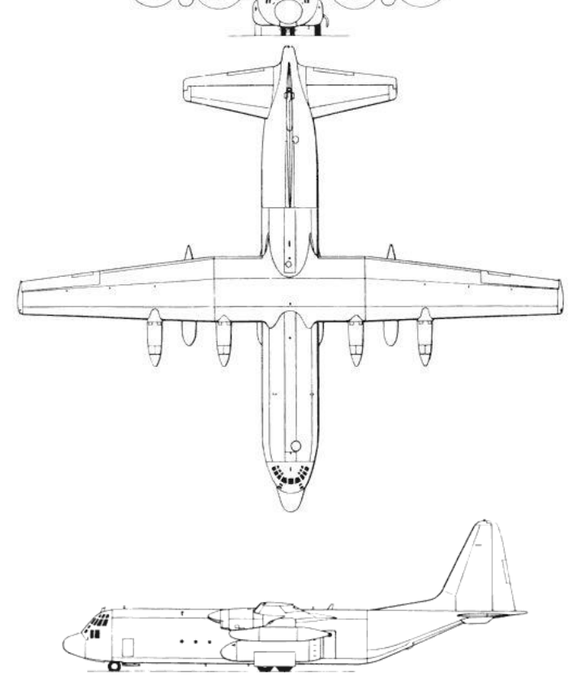
Coulson Aviation have designed and certified a modification to the L100 to integrate a 4,300 US gallon firebombing system. This system is a derivative of the well regarded Aero Union RADS 1 firebombing tank. A 15,450 litre load of fire retardant solution can be carried on board the aircraft. The GPS linked computer controlled firebombing system delivers a constant flow of fire retardant or suppressant to the target area. The L100 can carry an on-board system for mixing fire suppressant solutions so it can operate from remote airfields where only water is available.

The L100 airtanker is used by fire agencies in North America and Australia primarily for firebombing. It can be utilised for both initial attack of new fires with fire suppressant solutions and line building with fire retardant on larger fires. Its flexibility enables the L100 to work in both the urban interface and remote areas such as parks and forests.

The L100 can operate from many airfields across Australia. With a full retardant load on a 45 degree Celsius day the aircraft requires a 1,950m runway. Shorter runways can be utilised with a slightly lighter load or on cooler days. The L100/C130 aircraft were designed as a tactical airlifter and is ideally suited to operating at low level around fires.

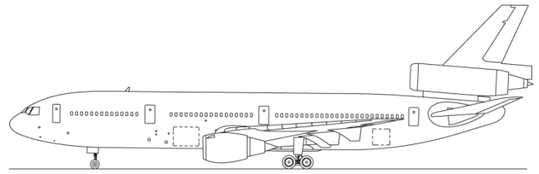
The L100 airtanker operates alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

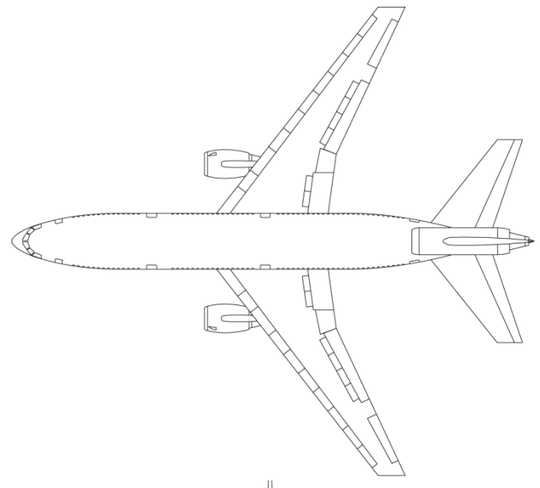
The NSW Government has contracted, through NAFC, one Lockheed L100-30 airtanker for the 2016-17 fire season. A similar Coulson C130Q airtanker is based in Victoria. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories of Australia.

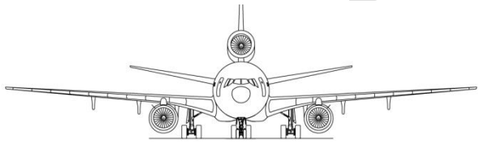


NAFC
National Aerial Firefighting Centre

© NAFC 2016







DC-10 very large airtanker

Type 1 VLAT airtanker

Primary role: Firebombing

Crew of two pilots and one flight engineer

5 tank, underslung, constant flow firebombing system

43,900 litre retardant capacity

Drop speed approximately 280 km/h

Typical cruise speed 650 km/h (loaded), 830 km/h (empty)

Typical cruise altitude 12,500 ft (loaded), 27,000 ft (empty)

Typical runway required 2,000+m

55.5m length, 50.4m wingspan

190,500kg Maximum takeoff weight

3x General Electric CF6-50C2 turbo fan engines

Fuel consumption 9,650 litres/h of Jet-A1

2+ fire agency radios, Satellite tracking

The DC-10 VLAT is a modification of a McDonnell Douglas DC-10-30 airliner. In its original configuration the DC-10 aircraft was used by airlines around the world as a wide bodied long haul passenger airliner. The DC-10 is still in widespread use as a cargo transport aircraft.

10 Tanker Air Carrier, LLC have designed and certified a modification to the DC-10-30 to integrate an 11,600 US gallon firebombing system. This firebombing system is a derivative of Erickson Aircrane helicopter tank specially modified to suit the DC-10. A 43,900 litre load of fire retardant solution can be carried in five tanks mounted below the aircraft fuselage. The computer controlled firebombing system delivers a constant flow of fire retardant to the target area.

The DC-10 airtanker has been used by fire agencies in North America and Australia. It is primarily used for line building with fire retardant on larger fires. Increasingly the DC-10 is used in other airtanker roles including supporting direct attack on smaller fires. The DC-10 airtanker typically operates with a ‘lead plane’ that flies ahead of the DC-10 during the firebombing drops and directs where the load is to be placed. The lead plane is usually a twin turbine aircraft such as a Rockwell Turbo Commander or Beechcraft Kingair.

The DC-10 can only operate from a limited number of larger airports across Australia. With a full retardant load on a 45 degree Celsius day the aircraft requires a runway length in excess of 2,000m. The DC-10 requires more consideration of runway and taxiway pavement strengths and clearances than other fire fighting aircraft.

The DC-10 airtanker operates alongside other fire fighting aircraft to support fire fighting crews on the ground. Carried on board the aircraft are sophisticated communication and tracking equipment that keep the aircraft in constant contact with other aircraft and the fire agency crews managing fires on the ground.

The NSW Government has contracted, through NAFC, one DC10 Airtanker for the 2016-17 fire season. Aircraft in the national aerial fire fighting fleet are available for use across all states and territories of Australia.

NAFC
National Aerial Firefighting Centre

Firefighting aircraft of Australia - 2016/17


Eurocopter EC120B Colibri

Bell 206L-3 LongRanger

Eurocopter AS355F1 Twin Squirrel


Eurocopter AS350B3 Squirrel


Cessna 182T Skylane

MBB/Kawasaki BK 117

Eurocopter EC145

Eurocopter AS365N2 Dauphin

Bell 204B


Cessna 337G Skymaster

Cessna 208B Grand Caravan

Rockwell Turbo Commander 690B

Bell 212


Bell 412SP


PZL M18T (Hubler) Dromader


Air Tractor AT802F

Air Tractor AT802F Fireboss

Bell 214B Big Lifter

Sikorsky S61N

Beechcraft Kingair B200T – “Firescan”

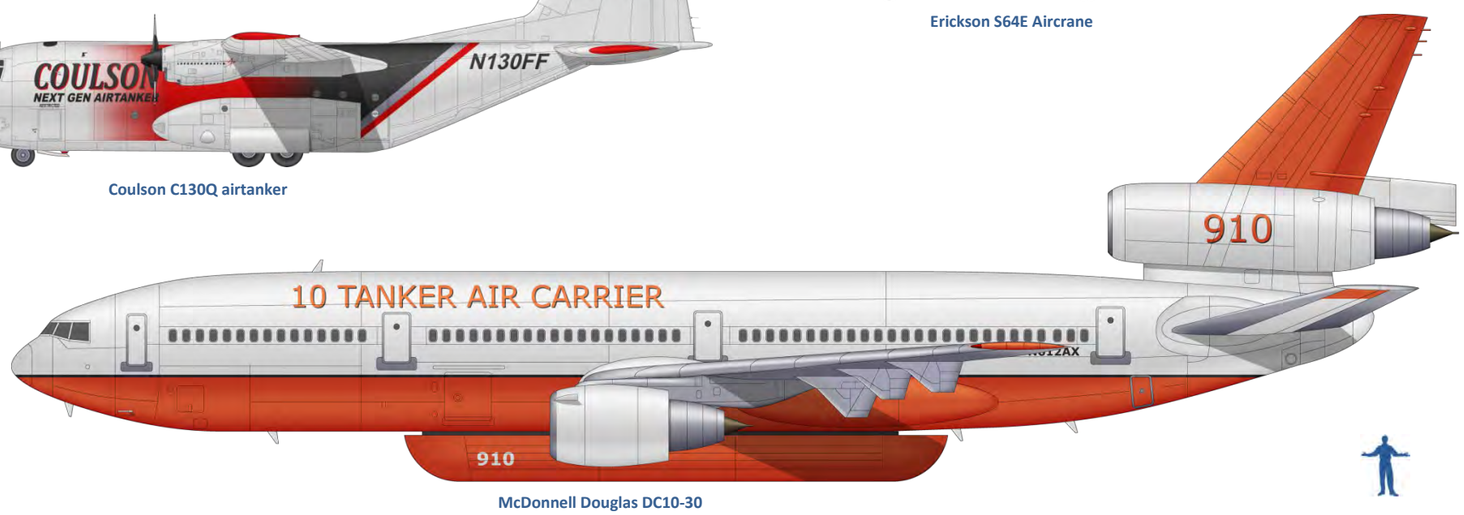
Gates Learjet 35A – “Firescan”.

Erickson S64E Aircrane

Avro RJ85 airtanker

Coulson C130Q airtanker

Lockheed Martin L100-30 airtanker



McDonnell Douglas DC10-30

Version 004 ©NAFC 2016

WRITTEN COMMITTEE QUESTIONS FOLLOWING HEARING ON 20 MARCH 2018.

Parliamentary Inquiry : 20 March 2018

HOME AFFAIRS PORTFOLIO

(*Inquiry into the implications of climate change for Australia's national security*) – FADT/004: Home Affairs Portfolio approach to climate security threats.

Asked:

What structures or mechanisms are in place in the Home Affairs Portfolio to evaluate and address climate security threats?

The submissions from Defence and the Department of Foreign Affairs and Trade both noted the effects of climate change may foster conflict, crime and terrorism.[1] How is the department responding to this threat?

How are national security and law enforcement agencies within the Home Affairs Portfolio integrating climate security issues into their planning, reporting and risk assessment processes?

Answer:

The Home Affairs Portfolio recognises climate change as both a threat or risk multiplier, and as a risk in its own right.

As a threat multiplier, climate change is one factor of many with the potential to intensify or alter systemic trends, shift global policy context, and increase Australia's exposure to various threats and hazards.

The Portfolio operates in an inherently complex and challenging environment. As with many evolving contextual factors, the implications of climate change for the Portfolio's areas of policy responsibility are continually unfolding. The Portfolio's policy advice to Government and policy implementation is developed with a nuanced awareness of, and is responsive to, this unfolding context.

In particular, the Portfolio is proactively responding to, and positioning the nation to prepare for, changes in natural hazard intensity and frequency triggered by climate change. For example, the Portfolio engages in scenario exercises designed to further our understanding of climate change implications across multiple areas of policy and what can be done to address these.

As a risk in its own right, the Portfolio considers climate change and climate security threats in the same manner as other enterprise risks. The Portfolio integrates risk management within governance and strategic planning processes, as well as making it a core part of decision-making at all levels. The Department of Home Affairs effectively identifies and manages risk, in accordance with section 16 of the *Public Governance, Performance and Accountability Act 2013* (Cth) and the Commonwealth Risk Management Policy.

The AFP continues to do things well in a rapidly-changing and complex operating environment. Complexity of law, globalisation, advances in technology, communications and electronic commerce, climate and demographic changes all impact on the challenges of policing therefore, AFP responses must also evolve and become more complex.

While the more readily observed impacts of climate change are typically environmental in nature, climate change repercussions will have a significant effect on the way law enforcement responds to crime in the future. Changes in climate could lead to more frequent peacetime deployments of national security agency resources, particularly in response to disaster relief and political or social instability. This is particularly the case in Australia's strategically important regions, including the Indo-Pacific and the Middle East.

In response to the impacts of climate change the portfolio agencies, and particularly the AFP, can expect an increase in operational response and missions related to:

- natural disasters;
- global fragility and the mass movement of people;
- social and political instability;
- critical infrastructure;
- environmental crime; and
- fraud and corruption.

The use of multidisciplinary and multi-agency teams, comprising detectives and specialist investigative capabilities, to resolve standard investigations will become the norm. This will require a recalibration of the AFP's existing workforce and greater public sector partnerships.

WRITTEN COMMITTEE QUESTIONS FOLLOWING HEARING ON 20 MARCH 2018.

Parliamentary Inquiry : 20 March 2018

HOME AFFAIRS PORTFOLIO

(*Inquiry into the implications of climate change for Australia's national security*) – FADT/005: The National Partnership Agreement on Natural Disaster Resilience -

Asked:

The National Partnership Agreement on Natural Disaster Resilience is due to end on 30 June 2018. Please provide details on any other mechanisms for supporting state and territory governments to invest in resilience building (as opposed to post-disaster responses).

Answer:

The National Partnership Agreement on Natural Disaster Resilience contributes to delivering the strategic priorities under the National Strategy for Disaster Resilience (NSDR) aimed at strengthening Australian communities' resilience to, and minimising the impact of a range of natural disasters in Australia.
The Australian Government supports resilience building through a variety of other measures and initiatives across portfolios and sectors. Some examples of existing initiatives are detailed below.

<u>Infrastructure</u>

- In total, the Australian Government has committed over $75 billion to transport infrastructure over the next decade.
    - This commitment includes projects and programs that mitigate the impacts of natural hazards on Australian communities, infrastructure, and the economy. For example, the Government is investing $700 million on Northern Australian roads through programs announced as part of the Northern Australia White Paper. The Government, in partnership with the Queensland Government, has also committed $6.7 billion to an $8.5 billion program of works on the Bruce Highway, which is providing, among a range of other improvements, greater flood immunity to this critical freight route.

<u>Building disaster resilience</u>

- The Australian Government has provided $7.25 million since 2015 to the Australian Institute for Disaster Resilience (AIDR), which provides guidance material to states and territories, business, NGOs and communities, in the implementation and adoption of disaster resilience strategies.
- Approximately $2.1 million per annum is provided under the Disaster Resilience Australia Package to support emergency management projects of national

significance that improve the ability to prevent, prepare, respond to and recover from disasters across social, economic, environmental and governance elements. Funds are provided to both state and non-state agencies to assist in building communities' resilience across Australia.

Reforming the NDRRA

The proposed reforms to the Natural Disaster Relief and Recovery Arrangements (NDRRA) will see Australian Government funding provided to states for the rebuilding of essential public infrastructure based on upfront assessments of damage and estimated reconstruction costs, rather than on an actual costs some years after the severe weather event. The proposed reforms also provide incentives for the states to deliver their reconstruction projects more efficiently in order to realise efficiencies that can be put towards mitigation activities and projects. Subject to final consideration of the Australian Government, it is the intention that new disaster recovery funding arrangements come into effect on 1 July 2018.

WRITTEN COMMITTEE QUESTIONS FOLLOWING HEARING ON 20 MARCH 2018.

Parliamentary Inquiry : 20 March 2018

HOME AFFAIRS PORTFOLIO

(*Inquiry into the implications of climate change for Australia's national security*) – FADT/006: Federal legislation to recognise the role of the Commonwealth and local governments in contributing to domestic emergency management -

Asked:

It has been suggested Australia should consider creating federal legislation to recognise the role of the Commonwealth Government and local governments in contributing to domestic emergency management. Please provide details of any consideration of this by the department or the Attorney-General's department when it held responsibility for this area.

Answer:

The Commonwealth has cooperative and collaborative emergency management arrangements with the states and territories that have proven to be robust, particularly in times of crisis. The Department has not considered creating federal legislation for emergency management.

Each state or territory government is responsible for defining the powers of the local governments within its jurisdiction, including providing clarification on emergency management roles.

WRITTEN COMMITTEE QUESTIONS FOLLOWING HEARING ON 20 MARCH 2018.

Parliamentary Inquiry : 20 March 2018

HOME AFFAIRS PORTFOLIO

(*Inquiry into the implications of climate change for Australia's national security*) – FADT/007: Climate-related migration -

Asked:

The committee has heard various opinions about the likely scale and pace of climate-related migration. Is any planning occurring to prepare for migrants, including from Pacific Island countries?

Answer:

The Department of Home Affairs is participating in whole of government discussions on the impact of climate change in the Pacific and the implications for Pacific island countries.

WRITTEN COMMITTEE QUESTIONS FOLLOWING HEARING ON 20 MARCH 2018.

Parliamentary Inquiry : 20 March 2018

HOME AFFAIRS PORTFOLIO

(*Inquiry into the implications of climate change for Australia's national security*) – FADT/008: the Australian Government Disaster and Climate Resilience Reference Group -

Asked:

Please provide more information on the Australian Government Disaster and Climate Resilience Reference Group, including a full list of participating departments, the group's terms of reference, examples of recent and future agendas and outcomes.

Answer:

In July 2016, the Australian Government Disaster and Climate Resilience Reference Group (the Reference Group) was established to integrate disaster and climate policy and strategies in Commonwealth initiatives and programs. The Reference Group's aim is to consider cross-cutting impacts of climate change and disaster risks, and drive coordinated action across government to address the impacts. A copy of the Terms of Reference for the Reference Group is attached, which sets out a full list of participating departments and its role and purpose.

To date the Reference Group has met six times—20 July 2016, 30 November 2016, 30 March 2017, 29 June 2017, 4 October 2017, and 16 February 2018.

At the most recent Reference Group meetings members discussed:

- the role of the insurance industry in climate and disaster risk management and ways of addressing climate risks within the public service and how to better identify them, and
- risk management within the public service, and considered tools and scenarios that can assist with public service climate risk decision making.

Current activities for the Reference Group include:

- Developing and endorsing a set of guiding principles to assist Australian Government agencies to consider disaster and climate resilience in policies and programs and for assets.
- Identifying tools, guidance and case studies that are required to enable Australian Government agencies to consider disaster and climate resilience in policies and programs, and for assets.
- Developing and endorsing tools, guidance and case studies as required.
- Overseeing the mapping of Australian Government policies, programs and assets that relate to disaster and climate resilience, and identify linkages and interdependencies.

- Establishing an Officer-Level Network with representatives from all member agencies.
- Identifying existing mechanisms that members use to engage with the private sector.
- Developing and agreeing an approach for further engagement with the private sector on disaster and climate issues.
- Inviting Geoscience Australia, CSIRO, the Bureau of Meteorology, the Australian Bureau of Statistics and others to deliver briefings to the Reference Group on disaster and climate science and research.

The Officer Group on Climate Risk supports the Reference Group, progressing its action items. The Officer Group is coordinated by the Department of the Environment and Energy. Both the Reference Group and Officer Group encourage information sharing, whole of government collaboration and discussions on climate and disaster resilience matters.

AUSTRALIAN GOVERNMENT DISASTER AND CLIMATE RESILIENCE REFERENCE GROUP

Terms of Reference

Role and Purpose

The purpose of the Australian Government Disaster and Climate Resilience Reference Group (the Reference Group) is to act as a forum to progress the integration of whole of Australian Government policy and approaches on matters arising from the disaster and climate resilience agenda. This will assist with improving the integration of disaster and climate resilience planning, policies and programmes at the national level to deliver a sustainable and coordinated national approach to natural disasters and climate change.

Functions

The Reference Group brings together representatives from across Australian Government agencies to form whole-of-government views and approaches on items arising from the disaster and climate resilience agenda, including:

- Understanding and integrating risk and resilience considerations into Australian Government planning, policies and programmes.
- Establishing and maintaining relationships and cooperation, including with relevant peak bodies and committees, to share knowledge and lessons learnt.
- Coordinating whole-of-government implementation of domestic and international policies and programmes, including the National Strategy for Disaster Resilience, the Sendai Framework for Disaster Risk Reduction, the National Climate Resilience and Adaptation Strategy, and the adaptation and resilience components of the Paris Climate Change Agreement
- Providing coordinated policy advice to the Government on cross-portfolio issues
- Supporting a coordinated adaptation and emergency management research agenda, for example by identifying whole-of-Government policy priorities.

Reference Group Method of Operation

<u>Membership</u>

Australian Government Departmental representatives from the Senior Executive Service level of member agencies are invited to attend meetings up to four times a year. More than one representative from each department may attend if required. Representatives from agencies with technical expertise may attend and participate in meetings in an observer capacity.

<u>Chairing and Operational Management</u>

The Reference Group is co-chaired by the Director General, Emergency Management Australia, Department of Home Affairs, and the Deputy Secretary, Climate Change and Renewables Innovation, Department of the Environment and Energy.

Secretariat support is provided by the Department of Home Affairs, and the Department of the Environment and Energy on an alternating basis.

Decisions

The Reference Group will, where possible, seek to form a consensus on items. However, where a consensus is not possible, final discretion lies with the Reference Group co-chairs.

Further details on the governance procedures for the governance and operation of the Reference Group are at **Appendix A**.

Members

CHAIRS
Department of Home Affairs
Department of the Environment and Energy
MEMBERS
Attorney-General's Department
Department of Agriculture and Water Resources
Department of Communications and the Arts
Department of Defence
Department of Education and Training
Department of Finance
Department of Foreign Affairs and Trade
Department of Health
Department of Human Services
Department of Industry, Innovation and Science
Department of Infrastructure, Regional Development and Cities
Department of Jobs and Small Business
Department of the Prime Minister and Cabinet
Department of Social Services
Department of Veterans' Affairs
The Treasury

Observers
Australian Bureau of Statistics
Bureau of Meteorology
CSIRO
Geoscience Australia

Other Governing Documents

The Australian Government Disaster and Climate Resilience Reference Group *Terms of Reference* should be read in conjunction with the Rationale (Attachment A).

The roles and responsibilities of the Secretariat will be governed by a joint protocol as agreed by the Department of Home Affairs and the Department of the Environment and Energy (*Governance and Operating Protocol*).

ATTACHMENT A

AUSTRALIAN GOVERNMENT DISASTER AND CLIMATE RESILIENCE REFERENCE GROUP

Rationale

Australia is experienced at dealing with natural hazards and climate variability. We have developed robust science and early warning systems, institutions that focus specifically on emergency management and disaster resilience, and strong collaboration between the Australian Government and states, territories and local authorities during disasters.

Despite Australia's robust emergency management procedures, the influence of climate change on extreme weather will challenge existing emergency management processes and reduce our resilience to these events. For example, the changing frequency, magnitude and distribution of extreme weather may result in natural disasters occurring in areas where they have not previously occurred and where emergency management experience is limited. Furthermore, natural disasters could increasingly occur in close succession, limiting the time available for a community to recover between events. Through changing temperatures, precipitation and sea levels, among other factors, climate change is already modifying hazard levels and exacerbating disaster risks.

Considering the clear overlaps between disaster and climate resilience, and the similar tools and resources required to address these risks at both the policy and programmatic level, there is benefit in unifying these two issues and addressing them in a coherent manner.

Improved integration of disaster and climate resilience planning, policies and programmes at the national level can help to deliver a sustainable and coordinated national approach to natural disasters and climate change. Specific benefits of this approach include:

- Improving baseline understanding of the relationship between disasters and climate change across Australian Government
- Improving consideration of disaster and climate resilience across Australian Government planning, policies and programmes
- Identifying the knowledge base and articulating of a coordinated research agenda for disaster and climate resilience in Australia
- Improving networking between disaster and climate resilience experts, including peak bodies and committees, to promote knowledge sharing and lessons learnt
- Streamlining reporting on domestic and international policies related to disasters and climate resilience.

In December 2015 at the Paris Climate Change Conference, the Australian Government released the *National Climate Resilience and Adaptation Strategy* (NCRAS). NCRAS sets forth a set of principles to guide effective adaptation practice and resilience building, highlights leading practice nationally, and considers areas for future review, consultation and action.

The launch of NCRAS was supported by a commitment to establish an inter-agency committee to consider the cross-cutting impacts of climate change and disaster risks across the Commonwealth. This function is consistent with the third NCRAS priority area; to evaluate progress towards building resilience and adaptation to climate change and review our plans and actions.

The benefits of a coordinated approach to natural disasters and climate change could be achieved through the formation of the Australian Government Disaster and Climate Resilience Reference Group (the Reference Group).

APPENDIX 1

Reference Group Governance and Operating Protocol

The Co-Chairs

1. The Reference Group is co-chaired by the Director General, Emergency Management Australia, Department of Home Affairs; and the Deputy Secretary, Climate Change and Renewables Innovation, Department of the Environment and Energy.
2. The co-chairs will host the Reference Group alternately.
3. The role of the co-chairs is to:
    a. Jointly chair up to four Reference Group meetings per year, and any additional meeting as agreed.
    b. Approve the agenda, agenda papers and associated or additional information for each agenda item one week prior to each meeting.
    c. Undertake any post-meeting activities as required.
4. The host co-chair will chair the meeting, but may refer the chairing role to the other co-chair for parts of the agenda that relate most closely to their work. For example, the Director General, Emergency Management Australia, Department of Home Affairs will chair agenda items related to disaster resilience, and the Deputy Secretary, Climate Change and Renewables Innovation, Department of the Environment and Energy will chair agenda items related to adaptation or climate change.
5. Agenda items that relate to both disaster and climate resilience will be led by the host co-chair unless otherwise agreed.
6. Where one of the co-chairs is unable to attend a Reference Group meeting, they may nominate an acting co-chair for that meeting. Meetings where neither co-chair can attend may be rescheduled if required.
7. The Secretariat Governance and Operating Protocol can be found at Attachment A.
8. Attachment B contains an indicative timeline to assist with the delivery of secretariat activities in 2016-2017.

Meeting Rules

9. In all cases when considering a decision on any matter the Reference Group shall use its best endeavours to achieve consensus. The co-chairs will only put a matter to a vote of those members present if it is considered that such a consensus cannot be achieved. In the case of a vote, each member Department represented will have one vote. Agencies attending meetings as observers will be represented by their portfolio department and thus will not have voting rights at meetings.
10. Where a consensus or vote is not possible, final discretion lies with the co-chairs.
11. At the request of a Reference Group member, any dissenting views and abstentions with regard to a decision may be recorded in the minutes.
12. The Reference Group shall make decisions or recommendations only on such matters as are listed on the agenda for that meeting, unless all members present at the meeting agree otherwise. Other business may be raised for discussion at a meeting with the approval of the majority of members present.
13. Observers with a particular purpose, (including but not limited to representatives from the private sector, invitees invited to deliver presentations in relation to agenda items and nominated officials), may be admitted by the co-chairs to meetings, although the co-chairs may exclude them from certain proceedings if it is considered that the Reference Group needs to meet in closed session.

Amending the Reference Group Governance and Operating Protocol

14. This Reference Group Governance and Operating Protocol may be amended in writing by the Department of Home Affairs or the Department of the Environment and Energy. Amendments requested by one of the Departments must be agreed to by the other Department. “In writing” includes an agreement made by email exchange.

Review of the Reference Group

15. To ensure the Reference Group remains effective and relevant, the co-chairs may call a review of the Reference Group as appropriate.
16. The review may, among other things, include a review of the Terms of Reference, Rationale, Memberships or consideration of the Reference Group’s progress against its work plan. Any review may incorporate input from members.
17. Co-chairs will report the findings of the review back to the Reference Group as appropriate.

Disbanding the Reference Group

18. There is no set term of operation of this Reference Group.
19. Co-chairs may disband the Reference Group at any time. The Reference Group will continue to exist until it is formally disbanded by the co-chairs.
20. Members will be notified of the disbanding of the Reference Group in writing.
21. If the Reference Group is disbanded, all documents from the relevant document sharing platform will be copied and stored within the Department of Home Affairs and Department of the Environment and Energy record management systems. Both Departments will share relevant documents and information with the other Department to ensure a complete administrative record of the Reference Group exists in both Departments.

ATTACHMENT A

SECRETARIAT GOVERNANCE AND OPERATING PROTOCOL

Roles and responsibilities of the Secretariat

1. Secretariat support is provided by the Department of Home Affairs and the Department of the Environment and Energy on an alternating basis aligned with the hosting co-chair. Both Departments will work together to support the Reference Group as required.
2. The Department responsible for providing secretariat support for a particular meeting will be confirmed at the previous meeting.
3. Secretariat responsibilities include, but are not limited to:
    a. Maintaining secretariat documents, including membership lists, work plans, trackers, and any other administrative or support documents
    b. Confirming meeting dates, distributing invitations and tracking responses
    c. Coordinating and distributing meeting documents (including the agenda, discussion papers and any additional documents)
    d. Signing participants in for the meeting and escorting visitors in accordance with agency procedures, as required
    e. Providing support during the meeting
    f. Minute taking, circulating minutes to participants for comment, and distributing the final minutes.
4. Some secretariat duties require the involvement of both Departments, regardless of who is hosting the meeting. These include:
    a. Confirming meeting dates and locations with the co-chair's (or delegated representative) office
    b. Seeking co-chair endorsement of relevant meeting documents where required
    c. Organising pre-meeting briefing for their respective Departmental co-chair (or delegated representative) as required.
5. To comply with records management requirements, documents for a particular meeting are to be stored within the records management system of the host co-chair. Documents will be shared between the host and non-host secretariat as appropriate to ensure full compliance with records management requirements.

6. To support the joint-secretariat function, shared working documents (such as draft agendas, RSVP trackers) may be stored on an appropriate Government-approved document sharing platform. It should be noted that only unclassified documents can be stored on these platforms.

Conduct of meetings

Calling of meetings

7. The secretariat will call meetings of the Reference Group in consultation with the co-chairs.
8. Where practicable, members are to be given three weeks' notice of meetings.
9. Future meeting dates should preferably be at each preceding meeting. Where possible, a yearly meeting schedule will be communicated to Members.

Meeting agendas and documents

10. A draft agenda shall be circulated to members three weeks prior to the meeting for which it is intended, where practicable. Members should notify the secretariat of additional agenda items and provide any associated discussion papers and meeting documents as soon as practicable after the meeting agenda is circulated and before the final agenda is distributed.
11. The secretariat will circulate a final agenda and relevant meeting documents one week prior to the meeting, where practicable.

Minutes of the meeting

12. Minutes of the meetings shall be taken by the host secretariat.
13. Minutes of meetings shall summarise discussions and shall record any decision taken or recommendations made by the Reference Group. The minutes are not intended to be a transcript of proceedings.
14. Draft Minutes shall be circulated to members for comment and agreement within two weeks of the meeting concerned, where practicable. Comment by members will be sought within one week of circulation.
15. Final minutes will be made available to Members within four weeks of the meeting concerned, where practicable.
16. A register of attendance shall be taken by the secretariat, or a person nominated by the co-chair, at each Reference Group meeting.

ATTACHMENT B

Australian Government Disaster and Climate Resilience Reference Group: Indicative Meeting Preparation Timeline

Timelines	Activity
5 weeks before	Confirm meeting date in co-chairs diary Book meeting room (with teleconference facilities)
4 weeks before	Email to Members and participants to: a) Confirm meeting date and location b) Request agenda items and papers.
3 weeks before	Email to those facilitating an agenda item: a) With a draft agenda b) Requesting the submission for final meeting documents Meeting documents (including draft agenda and discussion papers) sent to co-chairs for clearance
1 week before	Finalised meeting documents sent to Members and participants and uploaded to the relevant document sharing platform
REFERENCE GROUP MEETING	Sign Members and participants in. Escort as per agency procedures Set up teleconference facilities and IT as required Take minutes Support other meeting logistics and the co-chairs as required
2 weeks after	Provide draft minutes to co-chairs or their delegate for clearance (provide draft minutes to non-host co-chair for comments, and then to host co-chair for final Minute clearance) Circulate draft minutes to Members and participants for comment
3 weeks after	Collate feedback and comments on the minutes from members

4 weeks after	Final minutes circulated to Members and participants Ensure all meeting documents are provided to other department. Ensure all meeting documents are uploaded to the relevant document sharing platform

WRITTEN COMMITTEE QUESTIONS FOLLOWING HEARING ON 20 MARCH 2018.

Parliamentary Inquiry : 20 March 2018

HOME AFFAIRS PORTFOLIO

(*Inquiry into the implications of climate change for Australia's national security*) – FADT/009: Commonwealth agencies, Defence and state emergency services coordinate domestic disaster -

Asked:

How does the department ensure Commonwealth agencies, Defence and state emergency services respond in a coordinated manner to domestic disasters?

Answer:

Emergency Management Australia (EMA) is the Australian Government's central crisis coordination resource and primary source of information and situational awareness in domestic emergencies and crises. EMA provides Ministers and Australian Government departments and agencies with Incident Notifications, Situational Reports and other information, and coordinates a whole-of-government approach to crisis management in support of response and recovery through the Australian Government Crisis Coordination Centre.

Australian State and Territory Governments have responsibility for coordinating and planning for the response to and recovery from a disaster within their borders. The Australian Government Disaster Response Plan (COMDISPLAN) provides the arrangements for the provision of Australian Government non-financial assistance to states and territories or its offshore territories in an emergency or disaster. The Director General EMA is responsible for activating COMDISPLAN, and under current Ministerial arrangements, the Minister for Law Enforcement and Cyber Security may approve requests for assistance.

When the total resources (government, community and commercial) of an impacted jurisdiction cannot reasonably cope with the needs of the situation, a nominated jurisdictional official can seek non-financial assistance from the Australian Government under COMDISPLAN, including the deployment of EMA Liaison Officers.

Under COMDISPLAN, Defence and other Australian Government agencies can be tasked to provide assistance with response efforts. To reduce response time, in certain circumstances, EMA may request the pre-positioning of Australian Government assets or resources in anticipation of a hazard or threat impact and a formal request for assistance.

When requested, EMA will also coordinate inter-jurisdictional assistance and manage domestic and international offers of assistance on behalf of an affected jurisdiction.

EMA coordinates domestic resources to support the Australian Government's response to international crises, which it does through the Department of Foreign Affairs and Trade.

EMA also maintains relationships with the states and territories through the Commissioners and Chief Officers Strategic Committee (CCOSC) of the Australasian Fire and Emergency Services Authorities Council (AFAC), coordination and planning bodies such as the multi-jurisdictional Deployment Working Group, and through annual preparedness briefings conducted in partnership with each state and territory.

WRITTEN COMMITTEE QUESTIONS FOLLOWING HEARING ON 20 MARCH 2018.

Parliamentary Inquiry : 20 March 2018

HOME AFFAIRS PORTFOLIO

(*Inquiry into the Implications of climate change for Australia's national security*) – FADT/010: Civil maritime threats -

Asked:

Defence's submission noted the Maritime Border Command provides a whole-of-government response to civil maritime threats. How does this operate? How does it contribute to Australia's national security?

Answer:

Maritime Border Command (MBC) is a multi-agency taskforce, within the Australian Border Force, which utilises assets assigned from ABF and the Australian Defence Force (ADF) to protect Australia against civil maritime security threats within its maritime jurisdiction. These non-military security threats include:

- Illegal exploitation of natural resources;
- Illegal activity in protected areas;
- Illegal maritime arrivals;
- Prohibited imports/exports;
- Maritime terrorism;
- Piracy, robbery and violence at sea;
- Compromise to bio-security; and
- Maritime pollution

The ADF contributes forces under Operation RESOLUTE, through Joint Task Force 639, to MBC maritime security operations. Commander Maritime Border Command (COMMBC) is a Navy (two-star) Rear Admiral who is dual assigned as Commander JTF639. This dual command authority allows COMMBC to control both ADF and ABF assets.

Significant collaboration between the ABF and ADF ensures appropriate assets are available to meet operational requirements, including routinely tasking additional vessels to respond to suspected illegal activity.

MBC maintains a multi-layered approach which incorporates intelligence systems and assessments for early identification of threats, aerial surveillance to identify threats in high priority areas and on-water patrol and response assets which enable the lawful interception of vessels involved in illegal activity in the Australian Maritime Domain.