STATE AIRCRAFT UNIT VICTORIA

# Annual Report 2008/09

STATE AIRCRAFT UNIT
VICTORIA


*Helitack 342 at Aldi Road, Seaford fire. Photo courtesy of K. Pakeham CFA.*

# State Aircraft Unit Charter

The State Aircraft Unit (SAU) will be a centre of excellence within the Victorian Government and be responsible for the delivery of the aviation program for a number of government entities. The aviation program will be known as the Joint Agencies Aviation Program (JAAP) and will embrace the aircraft and associated aviation service requirements of the Department of Sustainability and Environment (DSE), Country Fire Authority (CFA) and a number of partner agencies.

Whilst safety will be the paramount consideration in all aircraft operations, services will be provided with due regard to value for money and minimised environmental impact.

Although the primary focus of the SAU will be on supporting fire suppression and management operations, the broader emergency management requirements of partner agencies, particularly those concerned with community safety, will also be serviced. The SAU will use its expertise and resources to support land management and other operational activities of partner agencies.

Governance of the SAU will be provided by the Aviation Management Committee. The SAU Manager will be accountable to the Committee for the administration and operation of the SAU and the establishment and provision of services under the JAAP. The Committee is currently an entity of DSE and CFA and these agencies will be obliged to provide funding, strategic direction and support to the SAU and the JAAP. The delivery of services by the SAU will be in accord with a Strategic Plan and annual Business Plan approved by the Committee.

The SAU will take such measures as to ensure the safety and quality of the aviation services provided, the establishment and monitoring of standards and procedures, the skills and expertise of relevant aviation personnel and the investigation and implementation of new and emerging technologies.

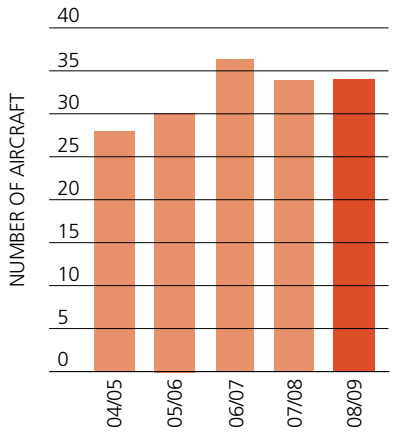
In delivering the aviation program the SAU will engage with personnel from partner organisations and work across a range of cultures and capabilities with both tolerance and respect. The program will be delivered in such a way that gives confidence to the aviation industry, strives to improve services and is compatible and complimentary to the operations of interstate agencies. The SAU will seek synergies with interstate, national and international agencies in areas of mutual interest, in a cooperative and constructive manner.

The SAU will be a desirable place to work that respects the ideas and opinions of the individual, fosters a strong spirit of team work and cooperation, draws strength through the collective skill and efforts of its members and cares for the ongoing well being and professional development of its employees.

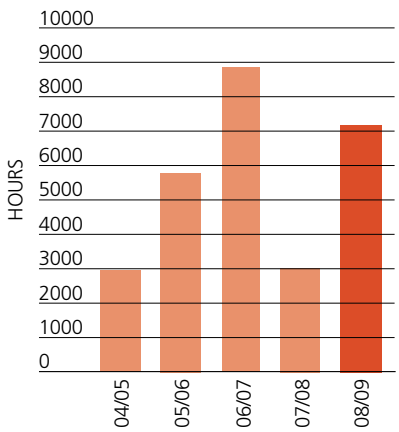
# Highlights 2008/09

- A total of 34 aircraft services were contracted and activated in 2008/09.
- An additional 214 aircraft were available through the "Call When Needed" register administered by the SAU.
- 23 additional aircraft services were engaged during late January and early February for preparedness and response to the fire situation.
- There were 1,310 dispatches recorded by the State Airdesk.
- A total of 7,233 hours of aircraft flight time was recorded by the State Airdesk.
- Approximately 225 hours were flown on Saturday 7th February 2009.
- During periods of peak demand up to 57 aircraft were simultaneously dispatched to incidents.
- First time Australian military AP-C3 Orion aircraft fitted with infra red and aerial photography equipment used in Victoria.
- First draft of the new State Aircraft Unit Procedures (SAUPs) completed
- Development of international exchange program with United States Forests Service.
- Review and implementation of an expanded SAU Audit Plan.
- Extensive post fire season debriefing program with agency staff, aircraft operators and air crews.
- Development of Aviation Research and Development Strategy and formation of Reference Group.
- Enhanced accuracy of multispectral data gathered for pre and post prescribed burn mapping.
- Development of improved maintenance programs and schedules for aviation related equipment and infrastructure.
- Attendance at international conferences in Greece and Spain.

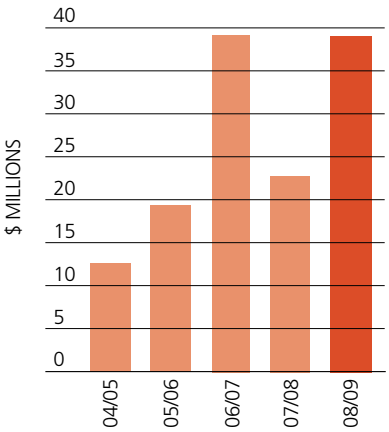
**CONTRACT AIRCRAFT ACTIVATED**




**TOTAL HOURS FLOWN**




**TOTAL EXPENDITURE**



# Contents

# Message from the Manager
## State Aircraft Unit

2008/09 was a year of consolidation for the SAU. After putting significant effort into restructuring the unit last year, the focus this year was directed more towards getting systems bedded down and operating smoothly as well as steadily advancing programs as time and resources permitted. Important strategic matters such as business planning, auditing of services, quality assurance and the investigation of occurrences were all significantly advanced. I have been particularly encouraged by the developments made to improve budget monitoring, resource modelling and expenditure forecasting within the SAU.

From a financial perspective the aviation program was well funded in 2008/09. The State through DSE and CFA provided more than 85% of the total funding expended on the program together with a major contribution from the Commonwealth through the National Aerial Firefighting Centre (NAFC). Melbourne Water Corporation, Hancock Victorian Plantations, Parks Victoria, VicForests, and the Department of Primary Industries continued to be key partners and significant contributors to the aviation program.

After a relatively quiet lead in to the 2008/09 fire season the 7th of February 2009 gave us a clear demonstration of the ferocity and might of wildfires in an increasingly dry environment. In the aftermath of these fires it is difficult to find many positives, however I am pleased to be able to report that the aviation program punched above its weight through the provision of safe and effective support during the fire emergency. Despite the incredibly trying conditions 51 aircraft were dispatched on the day as weather and fire behaviour permitted. Pilots, aircrew, agency and company support personnel and incident teams worked tirelessly in the lead up period, on the day and for several weeks after the 7th of February to ensure aircraft were available for use where needed. Early in the day the focus was on preventative strategies but by lunchtime, when conditions had deteriorated, the focus clearly became one of protection of life and assets. All participants in the aviation program should be proud that their significant efforts were appreciated by many in the community.

In 2008/09 aircraft flew a total of 7,233 hours which is the second highest total on record (only exceeded by 2006/07 season). Expenditure of $39.3 million is the highest on record which is largely due to the use of greater capacity and more expensive aircraft.

The future for the SAU will see a strengthening of the focus on safety and accountability, whilst continuing to meet the demands of fire suppression and an increasing prescribed burning program. Innovation will be critical, particularly in the area of intelligence gathering using Linescanning and Forward Looking Infra Red (FLIR) technologies. Recent trials and exposure to the use of night vision technology will also be further explored and could result in large gains for the prescribed burning program and the gathering of intelligence at incidents.

I wish to commend and thank all SAU personnel for their efforts and for the support provided by the many aircraft operators and agency personnel - the aviation program cannot operate without the combined good will of all involved. The system has been tested significantly over the past few years and will no doubt be tested again. The biggest challenge we all face is to be as effective as possible whilst remaining as safe as possible.

**Nick Ryan**

# Service Delivery

## Readiness & Response

### Standards and Procedures

The first draft of the State Aircraft Unit Procedures (SAUPs) was developed and the process of requesting feedback from targeted aviation personnel commenced. The consultation process will take several months with the aim of seeking Aviation Management Committee approval by the end of the 2009 calendar year.

Revised standards and procedures for the aerial incendiary equipment were completed and the development of procedures for the use of Australian military fixed wing aircraft in wildfire support operations was begun.

The SAU distributed seven Briefing Notes to agency staff on the following topics:

- Ammunition & Firearms Transport
- Carriage of Veterinary Drugs in Aircraft
- Alcohol and Other Drugs Initial Advice
- Air Displays
- Carriage of Agency Personnel during Contractor Check Flights
- Quality of Stored Chemical Retardant at Firebombing Bases
- Maintenance & Replacement of Aviation PPE.

## Advice

The Department of Primary Industries (DPI) requested SAU strategic planning and preparedness support for the potential requirement to manage plague locust operations. SAU personnel assisted in reviewing procurement documentation and participated on the tender evaluation committee, reviewed training requirements, reviewed operational guideline and procedural documentation and provided specialist advice regarding radio and tracking equipment.

Parks Victoria (PV) continued to have a significant number of land management operations across the state ranging from aerial spraying of weeds, to sling loading equipment and construction materials into remote areas. With the improved operational planning process introduced by PV, these were very efficient and effective operations.

## Support to Aircraft Operators

Fourteen aircraft companies held contracts to supply State and National Fleet aircraft services in Victoria in 2008/09. The annual preseason pilot briefing was held in October, with later briefings conducted for the internationally based pilots of National Fleet aircraft.

Significant progress was made in the development of the online Aircraft and Pilot Registry. Targeted trialling of the system was undertaken by several aircraft companies, with their feedback being incorporated into the program. Release of the online Registry is scheduled for July 2009 to allow companies to submit information well before the 2009/10 fire season.

## Procurement

Following 12 consecutive years of below average rainfall, the predictions for the 2008/09 fire season were again indicating a potentially long and difficult fire season. The CFA and DSE agreed to commence many of the aircraft service periods earlier than the average commencement date.

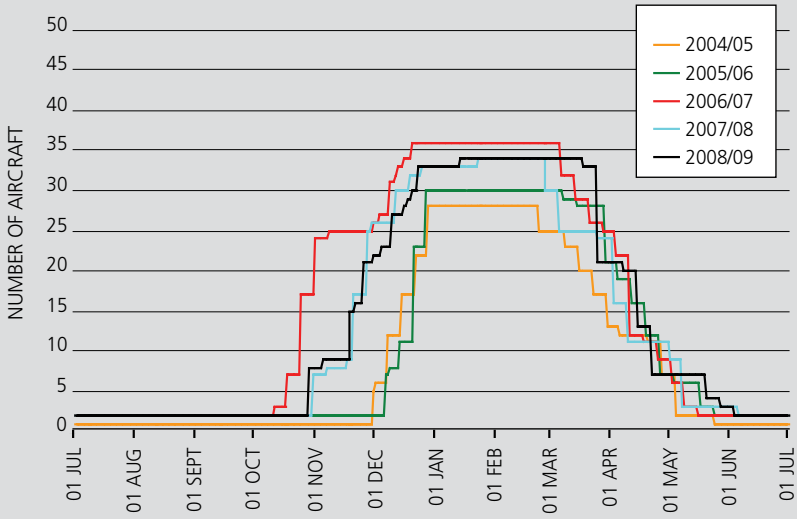
The activity levels of fire incidents combined with the prescribed burning program saw the continuation of these service periods well into April and May, generally later than in previous years.

Thirty four aircraft services were activated from State and National contracts. In response to the extreme fire activity in late January and early February, 23 additional services were engaged from the National Fleet secondary list and the State Call When Needed register.

Several tender processes were undertaken during the year, including the SEATS services, the Infra Red Linescanning aircraft service, the DSE light fixed wing reconnaissance aircraft and an initial attack helicopter service on behalf of Hancock Victorian Plantations Pty. Ltd.

The Call When Needed Register contained 176 fixed wing aircraft and 38 rotary wing aircraft.

**CONTRACT AIRCRAFT AVAILABILITY**
**Does not include "Call When Needed" or regional aircraft**



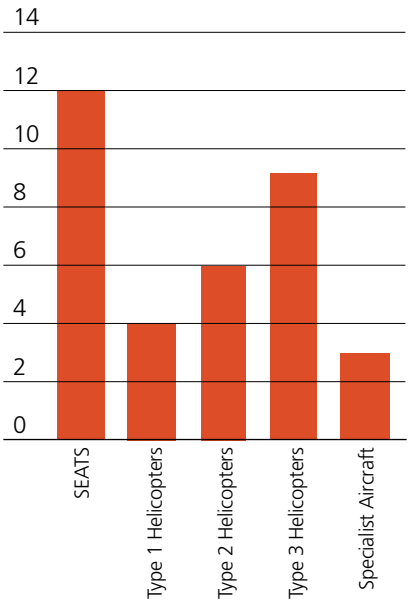
## State Airdesk

The State Airdesk had an above average number of dispatches this year, reflecting the busy fire season. The number of dispatches to the end of December was following the average trend, however with the extreme temperatures in late January and February, the number of fire incidents increased dramatically and aircraft were dispatched regularly.

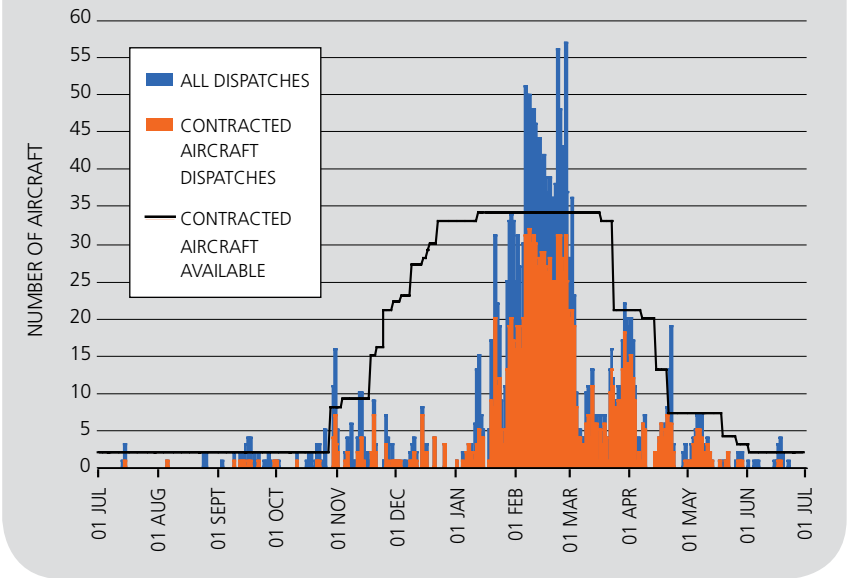
There were 1,310 dispatches recorded including response to fire incidents, regional preparedness flights and a large number of land management operations.

The prescribed burning program also relied heavily on aircraft throughout April and May, to assist in achieving the goals set for hectares treated.

**AIRCRAFT CONTRACTS ACTIVATED IN 2008/09**




**AIRCRAFT DISPATCHES IN 2008/09**
**Does not include all "Firespotters" or other regional aircraft**




## Operations Overview

In 2008/09 the total aircraft flying time recorded by the State Airdesk was 7,233 hours. This compares to the average over the past ten years of 4,045 hours. Some flights arranged directly by regions for training and other operations are in addition to these times.

Detailed State and National Fleet aircraft usage figures are found in Appendix 3.

The following fires were the incidents during 2008/09 with the highest recorded aircraft usage:

- CFA Kilmore East / Murrindindi North 1,140 hrs
- DSE Bunyip Ridge Track 673 hrs
- DSE Kilmore East / Murrindindi South 514 hrs
- DSE Wilsons Prom. NP - Cathedral 350 hrs
- CFA Churchill Jeeralang 263 hrs
- CFA Delburn Complex 234 hrs
- CFA Muskvale, Hogans Rd 217 hrs
- DSE A-Up Track 177 hrs

Of particular interest were obviously the events of Saturday 7th February 2009. Preparedness arrangements began several days in advance, after the State received the weather predictions from the Bureau of Meteorology. In addition to the fleet of 34 contracted aircraft, a further 23 services were engaged both before and in response to the fire incidents that occurred. These included 3 Aircranes repositioned from New South Wales and South Australia, and a Mil 8 flown from New Zealand.

| AGENCY FLYING TIMES | | | | | |
|---|---|---|---|---|---|
| **Agency & Operation** | **2008/09** | **2007/08** | **2006/07** | **2005/06** | **2004/05** |
| CFA – fire | 1,656 | 158 | 736 | 609 | 187 |
| CFA – training | 24 | 15 | 3 | 1 | 5 |
| Agreed strategic positioning (shared equally by CFA and DSE) | 105 | 60 | 116 | 74 | 27 |
| DSE – fire | 4,025 | 1,401 | 6,748 | 2,516 | 1,717 |
| DSE - training | 159 | 209 | 198 | 192 | 245 |
| DSE – burning & seeding / other works | 620 | 608 | 546 | 375 | 656 |
| PV – other works | 145 | 212 | 109 | 0 | 0 |
| DPI – locusts | 0 | 0 | 0 | 812 | 0 |
| VicForests – burning & seeding | 396 | 256 | 198 | 137 | 168 |
| SAU projects and programs (non-operational) | 55 | 46 | 72 | 49 | 0 |
| **Victoria Total hours** | **7,185** | **2,965** | **8,726** | **4,765** | **3,005** |

**Does not include all flying times for aircraft arranged directly by regional staff for training and other operations. Does not include any flying time charged to other agencies.**

In total, aircraft flew approximately 225 hours on this day; a remarkable achievement from pilots, agency staff and support crews, in incredibly trying conditions.

This fire event also introduced for the first time in Victoria, the use of the Australian military AP-C3 Orion aircraft fitted with infra red and aerial photography equipment, which assisted with impact assessment mapping from high and low levels.

## Land Management Operations

The multispectral linescanning project for DSE continued with pre and post prescribed burn scans completed for the purpose of mapping fire severity.

Work was carried out to further improve and refine the multispectral capabilities by increasing the accuracy of the georectification of linescan data, leading to the production of more accurate mapping products.

The SAU also worked in conjunction with RMIT's Math and Geospatial Sciences Unit, to verifying that the scanner's detector head was working correctly through spectral calibration.

The SAU has been approached by other stakeholders who are interested in accessing this technology, and are actively planning to use multispectral data collection for a variety of land management projects.

The impact of the February 2009 fires on significant forested areas across the state, required extensive remedial works to be carried out. The SAU assisted DSE and VicForests with their large aerial seeding programs to make the best use of favourable weather and seedbed conditions. These operations, combined with ground based revegetation and stabilisation works, contribute to the recovery of the environment after fire events.

*Bomber 365 at Hogan's Rd, Muskvale fire. Photo courtesy of Wayne Rigg SAU*

# Programs

## Rappel & Hover Exit Programs

During the 2008/09 season there were 19 rappel deployments of crews within Victoria, a significant reduction compared to previous years.

Nearly 3,200 rappel descents were conducted for the season. These totals include initial tower and helicopter training, currency and fire operations.

## National Aerial Firefighting Program

As a member of NAFC, Victoria was pleased to provided staff to participate in the various tender processes being conducted by the centre through the year. SAU staff attended at both Procurement Committee and Evaluation Committee meetings to assist NAFC in finalising these approaches to market.

SAU staff were able to provide technical advice on specific aircraft services and their application in the Australian environment, enhancing the safety, effectiveness and efficiency of fire fighting operations. In particular, specialist advice and analysis was given for the Type 1 Helicopter service in Western Australia.

In 2008/09 the Commonwealth Government disbursed $4,963,000 to Victoria. This funding initially contributed to the procurement of 5 aircraft services, with some funding going towards the engagement of additional aircraft during the February 2009 fire situation.

## SAU Training Program

This year saw the introduction of the Learning Manuals into aviation courses with the Air Attack Supervisor and Aircraft Officer.

These Learning Manuals have been developed out of the restructure of the DSE Air Operations Manual.

Thirteen pre season briefings were held at 9 locations across the state. These were well attended.

In 2008/09 the SAU training program delivered a number of aviation related courses to a variety of participants at Mangalore Airport, Mt Buller, Point Cook Airfield, Victoria Valley, Kinglake, Halls Gap and the DSE North Altona depot.

Aerial driptorch operators and support crews were accredited via on-the-job assessments.

The SAU facilitated "Working in the Wire Environment" and training for a number of CFA and DSE/DPI/PV operational flight personnel, using an external trainer.

The list of courses delivered and facilitated by the SAU during 2008/09 on behalf of CFA and DSE is contained in Appendix 4.

Organisations represented at the training courses were:

- CFA
- DSE
- Dept of Conservation – New Zealand
- Dept of Primary Industries, Victoria
- Fire & Emergency Services Authority- WA
- Parks Victoria
- VicForests
- Victoria Police

*Bunyip Ridge fire. Photo courtesy of John Goodman DSE*

Pre-season agency briefings were held in late October and early November in regional and metropolitan locations. The SAU consider these briefings essential in the delivery of information and support to agency staff that may use aircraft in their operations.

State Fleet and regionally based light fixed wing aircraft, were involved in regional recurrency days held this year at the following locations:

- Anglesea
- Avondale firebombing base
- Ballarat
- Bendigo
- Casterton
- Delegate
- Linga firebombing base
- Mangalore
- Melton
- Parkside
- Victoria Valley

## Support to Agency Training Programs

The Aviation Management Committee was presented with the first draft of the review of the Aviation Training Program, completed by an external company. Recommendations from this review are being considered by the AMC, in parallel with findings from the debrief process and Victorian Bushfires Royal Commission.

The SAU will continue to emphasise to our stakeholders, the importance of providing quality training and education to all personnel involved with aircraft across the various fire, land and emergency management operations.

An innovation this year, was the development of a retardant and suppressant education unit for ground based operations personnel, incorporated into an Operations Officer training course on a trial basis.

# Partnerships

## Stakeholders

The SAU regard service excellence to our stakeholders as a high priority, and have continued to participate in a wide range of working groups and committees convened by CFA, DSE and partner agencies.

Of note this year have been the Statewide Radio Communications group, DSE OHS and Personal Protective Clothing groups, Fatigue Management meetings and provision of technical advice to the CFA Radio Replacement program.

With the effects of climate change becoming more apparent every year and Victoria's dwindling water supply impacting firefighting operations, the SAU has begun investigating the potential for remote area water supplies facilities across the state.

The aviation industry is also a stakeholder in the SAU and as such, we focus a significant amount of time on maintaining valuable relationships with aircraft operators and aviation related support service suppliers.

## Interstate & International Relationships

The "Contract Compliance Team Project" (CCT-Project) is being developed as a key action in the partnership between two partner organisations; the United States Forest Service (USFS) and the SAU; both internationally recognised experts in the field of management and operation of aircraft for aerial fire fighting. The CCT-Project was conceived to allow fire related aviation specialists to share professional experiences in a reciprocal manner by exchanging technical information in quality assurance, contract oversight and 'best practices' for the use of aerial resources for fire fighting.

The primary objectives of the CCT-Project are to encourage and develop an efficient and seamless exchange of fire related aviation expertise between the SAU and the USFS and promote the safe, effective and efficient use of aircraft in association with the SAU and the USFS, the aviation industry and other associated stakeholder groups. The SAU acknowledges the dedicated cooperation and assistance of Pat Norbury, National Aviation Operations Officer, USFS in the development of the CCT-Project. It is anticipated that the first exchange under this project will take place in 2009/10.

A joint delivery system investigation project with USFS and the Canadian Interagency Forest Fire Centre was also instigated, as was an Aircraft Operations Consultative Group with USFS.

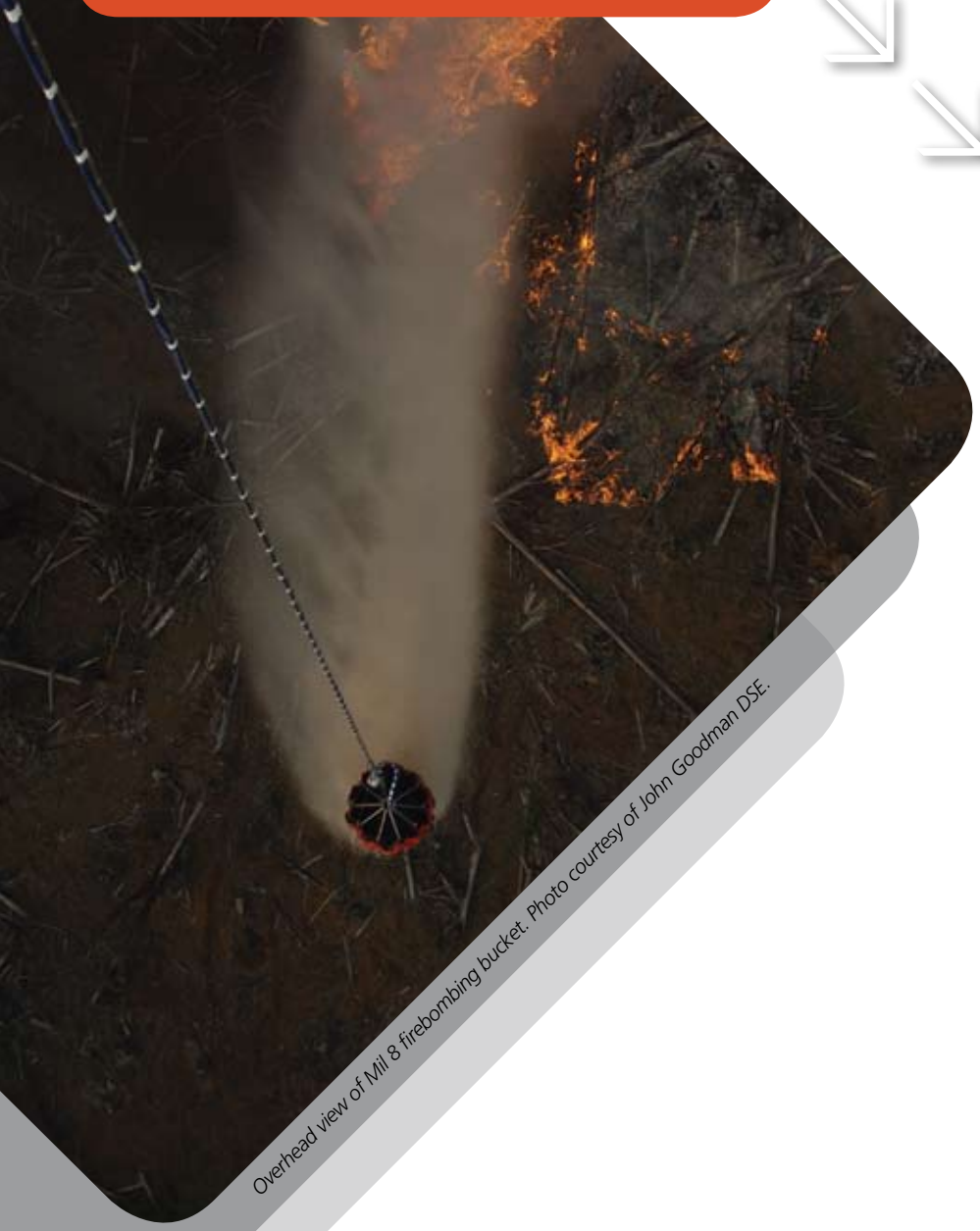
Representatives from the SAU and AMC attended conferences in Spain and Greece, examining some of the latest advances in aerial firefighting and their applicability in the Victorian situation.

## External Consultative Services

During the year, the SAU provided specialist advice to the USFS regarding Sikorsky S61 Type 1 helicopters and participated in a technical and administrative investigation into a helicopter accident in the United States.

We were also pleased to provided advice and support regarding the technical and operational aspects of S61 helicopters and Fire Boss Air Tractor AT802 aircraft types and systems to the Royal Hellenic Fire service in Greece.

# Continuous Performance Improvement



*Overhead view of Mil 8 firebombing bucket. Photo courtesy of John Goodman DSE.*

## Audits

The SAU completed an extensive audit process during 2008/09, with the Audit Analysis and Systems Review Officer in place before the beginning of the fire season.

All contract aircraft services underwent a compliance audit, with any issues identified either being resolved at the time or during the availability period. Any major concerns with compliance against the contract specifications were also followed up in the post season contractor debriefs.

One company audit was undertaken on a company undergoing Contract Service reassignment. This audit examined the aircraft company as an organisation, particularly in regards to the operational structure, and their ability to support the State's service requirements.

Call When Needed aircraft were not audited this year, however the SAU is implementing a significantly increased level of surveillance over these services for future years.

Infrastructure and equipment at half of the fixed firebombing bases was audited and opportunities were taken to audit temporary airbases and helibases whilst they were operational during incidents.

The Audit Strategy was reviewed and updated, identifying a broader scope of scrutiny of the SAU operations and facilities. This strategy will result in a more rigorous audit process and provide greater service delivery to our stakeholders.

# Aviation Occurrences & Aviation Related Fireline Occurrences

The overall number of reported occurrences this season increased from the previous year. This is a reflection of the level of operations and hours flown resulting from the major fires in February. These numbers are comparable to significant fire seasons in previous years. Emphasis on the requirement for mandatory reporting has continued to increase formal notification of occurrences, continuing a positive trend which allows collection of information to identify potential risks in aviation operations.

A total of 45 occurrences were reported by the end of the season. All reports have been classified under the headings of Management, Procedure/Training or Equipment, assessed and actions undertaken, including full investigations on a number of significant occurrences. Summaries of these investigations and initial trends that have been identified are detailed in the following pages.

## Aviation Occurrences in 2008/09

### Runway Overrun

***Grovedale, Victoria Australia***
***6th January 2009***

A reconnaissance flight undertaken from Grovedale resulted in a runway overrun with significant damage to the aircraft but fortunately no injuries to the occupants. During a pre-landing check the pilot identified that the aircraft brakes were inoperative. A landing alongside an uphill runway was attempted with the intention of using the uphill grade to sufficiently slow momentum and stop the aircraft. The result was that the aircraft did not stop within the expected distance and overran the runway, colliding with the boundary fence before impacting a drain and crossing a roadway, before coming to rest inside the fence line on the far side of the road. A full investigation of the occurrence was undertaken.

### Incomplete Rappel Dispatch

***Yambulla North, Victoria Australia***
***22nd January 2009***

A rappel crew dispatched to Yambulla North fire in the DSE Cann River District reported an incident which resulted from the rappelling operation. The investigation reported that during the initial rappel of two crew, the rappel ropes became entangled in a tree resulting in one crew member becoming stuck in the tree and the other member having to drop several feet to the ground from the end of the rope. The crewman was able to be lowered from the tree with the assistance of rappel crew on the ground.

### Hot Refuelling

***Cann River, Victoria Australia***
***22nd January 2009***

Aircraft participating in the suppression of the Yambulla North Fire were being supported with fuel from a Cann River helibase. The pilot of an interstate contracted helicopter left the controls whilst undertaking a hot refuelling operation to assist the refuelling crew. The hot refuelling crew continued to refuel the helicopter contrary to established Victorian procedures.

### Accidental Bucket Release

***Nariel, Victoria Australia***
***4th February 2009***

During fire suppression activities a Type 1 helicopter engaged in firebombing operations with bucket and longline accidentally released the bucket from the aircraft. It was found that the pilot lost situational awareness of the location of the bucket release and whilst manoeuvring the aircraft for the firebombing drop, accidentally activated the release on the aircraft controls. The bucket and longline fell to the ground approximately 30 metres from ground crews working in the area.

### Wire Strike

***Kilmore, Victoria Australia***
***7th February 2009***

Aircraft operations on the 7th February 2009 were challenging given the number of aircraft operating, extreme weather conditions and complex operations experienced. A Type 2 helicopter operating in the Wandong area sustained damage to the tail boom of the aircraft from the belly tank snorkel. The aircraft had just loaded with water and while climbing away from the dam, struck a previously unseen electricity wire causing the suspended snorkel to swing back damaging the tail boom. The aircraft was immediately stood down.

### Uncontrolled Approach to Operating Aircraft

***Upwey, Victoria Australia***
***24th February 2009***

Firebombing aircraft deployed to a fire at Belgrave were being supported with fuel from a temporary helibase established at a nearby sports ground. When returning to the helibase, the pilot of a Type 2 helicopter noted a large crowd had gathered to view the Aircrane on the oval. The pilot landed his aircraft away from the crowd outside the oval. While shutting down the helicopter a person from the crowd of spectators jumped over the fence and ran to the aircraft whilst the rotors were still turning.

## Aviation Related Fireline Occurrences in 2008/09

### Airspace management

Reported incidents of aircraft incursions into operational airspace were again received. The events of February 7 obviously attracted many aircraft including media and privately chartered aircraft trying to view the affected areas. Pilots of interstate media aircraft were unfamiliar with the accepted procedures causing concern for aircraft undertaking fire suppression operations by entering into areas of active fire bombing without announcing their presence or intentions.

# Reports on Services & Operations

## AAS Reports

Collection of the Air Attack Supervisor reports continued throughout the 2008/09 fire season with a significant number received as a result of the February fires. These reports now total 792 reports submitted over a 6 year period.

The performance and effectiveness of the program can be assessed from these reports to demonstrate how it contributes to the continuous improvement of decision making, policies and procedures in aerial fire fighting operations.

Data entry of this season's reports has been completed and analysis of the information will be undertaken prior to the 2009/10 aviation briefings program.

## Performance Management Program (AIRCHECK)

Twenty nine contract services were reviewed in the performance program this year, achieving an average of 88.04%. This was lower than in previous years, perhaps attributable to the longer availability periods and higher hours of flying, leading to a greater opportunity of performances being affected. The SAU also had a more thorough audit compliance system this year, recording greater detail than has been possible in the past.

## Post Season Contractor Debriefs

Each contracted aircraft operator was formally debriefed after this season; a particularly important process given the level of activity and nature of many of the fire incidents. These debriefs serve to strengthen the partnership between the SAU and service providers, and improve the quality of operations for our stakeholders by addressing issues in a timely fashion.

## Post Season Agency Debriefs

Due to the intensive fire season and number of fire incidents, the SAU scheduled a series of agency debriefs specifically aimed at aircraft operations. These were conducted by an external facilitator to ensure attendees felt comfortable in sharing feedback and that SAU staff could input as participants.

Findings from these debriefs will be considered by the AMC and included in preseason briefings before the 2009/10 fire season.

# Bushfire CRC

The SAU reviewed documentation and information relating to the effectiveness of aircraft fire bombing drops for the Bushfire CRC this year.

# Application of New & Improved Technologies

## Research on Emerging Technologies

A new development for the SAU has been the introduction of the Inno word information note, a document used to highlight developments and innovation by JAAP partners and industry stakeholders for information and reference.

Towards the end of the fire season the SAU in conjunction with Coulson Air Crane Ltd., a Type 1 helicopter service provider, undertook a joint project to install and operate a load control event and recording controller for the fire bombing system. The trial produced some positive results for monitoring the fire bombing performance of the helicopter, with further trials planned when the aircraft returns for the 2009/10 season.

The SAU participated in a the DSE South West Region Operations Officer course and provided a practical "hands on" training session relating to the evaluation and assessment of retardant and water injected with foam concentrate. The program was considered a success and as a result, the SAU is in the process of developing a formal suppressant and retardant education unit for ground based operations personnel including a reference and assessment hand book. Following on from this project there has been conceptual development of draft rate of production scenario reference for firebombing aircraft.

The SAU has also been a key contributor with Agency Regions in the development for remote portable water supplies. Two items operationally implemented were the Container Dip Tank at Portland and the High Volume Poly Dip Tank in Ballarat.

### SAU Aviation Research and Development Strategy (ARDS)

A Draft SAU ARDS has been prepared for the next three years. The intent of the ARDS is to provide guidance to implement a program of fire related aviation research and development, which aligns with and anticipates the needs of JAAP partners, land managers, industry clients and stakeholders. It recognises the need to coordinate research activities with partners in other organisations and responds to fire related aviation management and research priorities identified in numerous programs. The ARDS takes an integrated and coordinated approach, focussing on the most important research needs by identifying priorities in the strategic goal areas. The ARDS will enable the SAU to identify any gaps in knowledge and will assist us in recommending possible directions in research to the Aviation Management Committee. The ARDS is currently undergoing peer review.

### Aviation Research & Development Reference Group (ARDRG)

To further assist in the development and delivery of aviation services, a strategic aviation related research and development reference group is being proposed. It will consist of senior and experienced fire and aviation personnel who are familiar with and have a key focus on aerial fire fighting procedures and operations. Participants will be representative of regional Agency personnel, JAAP members and other SAU stakeholders. The key requirement of ARDRG is to provide new, safe, practical, effective and cost efficient solutions and equipment, which integrate into JAAP and SAU stakeholder systems and that are sustainable for the future.

## Aircraft Delivery Systems Program

### Ascent Aerospace 50001 Aerial Fire Suppression System

Ascent Aerospace (Canada) has developed a new generation Type 2 helicopter fixed tank delivery system for fire bombing. The development of the delivery system has been undertaken over many years and has included an extensive consultative process with the Aircraft Delivery System Program (ADSP) of the SAU. The ADSP and SAU have participated in numerous field inspection and operational field trials for a number of years (pictured below), where SAU input was incorporated in to the development.

While the system has been primarily designed to meet the needs for fire bombing in remote areas within the Northern Hemisphere, the system has demonstrated some key attributes which will be ideally suited to Victorian vegetation. These include the ability to fill the system in 20 seconds, combined with the ability to cruise at maximum speed with the hover fill pump stowed and fully loaded. This offers distinct advantages over other commercially available delivery systems and importantly the suppressant exits the system without impediment.

### Operational Investigation of the Fire Boss Air Tractor 802F

A representative of the SAU undertook an operational evaluation of the "Fire Boss" Air Tractor 802F. The Fire Boss is a highly modified Air Tractor AT802F which has after market amphibious floats fitted along with other air frame modifications, allowing the aircraft to scoop water into the hopper while aquaplaning from suitable water bodies.

It has the capability to scoop up to 3,104 litres of water in less than 14 seconds, ram loading water at the rate of 400 litres per second at over 100 kilometres per hour and return within minutes to the fire. A report has been written and is currently being published.

The Fire Boss has the ability to work as a land-based aircraft or as a Scooper[1]. It can drop an initial load of retardant then remain close to the fire by scooping water from a nearby lake or suitable water source, injecting foam concentrate into the loaded with water.

1 Refers to a class of aircraft, with the ability to scoop up water while skimming across the surface of a water body.

## Intelligence Gathering Development

The SAU commenced an extensive investigation and evaluation program on digital information gathering capability and its' application in air operations. The main focus of the program was to evaluate live transmission and hard copy storage of digital image vision captured during intelligence and reconnaissance gather operations.

Various media are being considered during the ongoing program and incorporate digital image capture, infra red capability and appropriate transfer systems. It is planned to implement an operational program which will develop a cost effective hardware system that can be fitted to either Agency regional Call When Needed or contracted aircraft to assist in intelligence gathering.

*Fire Boss Air Tractor AT802F fitted with the Wipline amphibious undercarriage*

*The above images show a drop from the Fire Boss*

## International Aviation Conferences

In October 2008 several European emergency response organisations took the opportunity to align international aerial fire fighting conferences with scheduled aviation industry trade and expo programs to capitalise on the opportunity to capture both the aviation industry and emergency response organisations to attend.

The first of the aerial fire fighting conferences was incorporated into the Helitech 2008 Helicopter Exhibition held in Lisbon Portugal, which was also conducted in conjunction with the European Helicopter Safety Team and International Helicopter Safety Team annual safety conference.

The second conference was conducted and held in Athens, Greece in association with The Global Fire Monitoring Centre, United Nations International Strategy for Disaster Reduction, and the International Association of Wildland Fire.

The aims of the conferences were to bring together world experts and focus on aerial fire fighting technologies and operations, including jurisdictional cooperation and collaboration. Key objectives were to address issues, techniques and technologies necessary to improve and develop the ways to tackle wildfires using aerial means.

*Kamov KA 32 A 11BC. Helitech Lisbon, Portugal*


*Agusta Westland AW139 Helitech Lisbon, Portugal*

# Development & Maintenance

## Maintenance Program for specialist Aviation Equipment

Maintenance programs and schedules for aviation equipment have been prepared and distributed to field locations. These include pre and post fire season maintenance works to ensure specialist equipment is ready for the fire season. The equipment includes Jet A1 refuelling tankers, floating collar tanks, fixed and mobile retardant eductor mixers, Robwen foam inductors and all the hose and pump equipment associated with loading bombing aircraft.

## Firebombing Airbase Upgrades

General airbase upgrades continued at Casterton, Latrobe Valley, Walsh's airstrip at Mansfield, Bairnsdale and Bendigo. Plans are being developed for continuing updates to other airbases which include the development of a new base at Mt Hotham.

## Communications Facilities

Five portable radio kits were developed and are planned to be supplied to CFA during winter 2009 for evaluation.

Technical staff were also involved in the CFA radio replacement program, ensuring that operational aviation requirements were addressed.

## New Generation Aerial Incendiary Machines

Additional Arlos aerial incendiary machines have been purchased for the DSE burning program, which brings the total number of available machines to eight.

All machines worked well during use at fire incidents and the autumn burning program, with 66 operational flight days and 142,000 capsules dropped.

## Infra Red Downlinking System

New computer hardware was built to replace the ageing computer infrastructure at all ten existing downlink sites. A pre season installation and testing program was undertaken to make sure all sites were online prior to the fire season

## Portable Realtime Automated Tracking System (RATS)

As part of a national trial of tracking systems, Victoria participated in the NAFC Aircraft Tracking and Event Logging (ATEL) Trial. The trial evaluated the integration of different tracking technologies into a single system. Victoria participated by making spider tracks data available to the trial, and trailing a raw data feed into DSE RATS system.

Work has continued to enhance the RATS display in Fireweb, with new icons and data fields added to make the information displayed more user friendly to end users.

A successful trial of portable rats was undertaken with the Rappel and Hover exit crews throughout the fire season. This enabled the crews to be located when working in remote areas.

Investigating into a direct SMR network connection for incoming data has been undertaken. A direct connection will elevate the congestion currently experienced the rats receiver site

## Forward Looking Infra Red (FLIR)

Following FLIR operator feedback, the SAU undertook a review of the current equipment and explored options for using new technologies.

Several systems have, and will continue to be examined to ensure that the most appropriate equipment is implemented for the wide range of uses this application has.

## Multispectral Linescan

As part of the fire severity mapping project, extensive work was undertaken on the linescan system to improve the spatial and spectral accuracy of imagery. This involved the development of high accuracy calibration methods using roundabouts, and a partnership with the Royal Melbourne Institute of Technology, who helped to validate the spectral accuracy of the linescan equipment.

*Bulk retardant mixer used at the Bunyip Ridge fire. Photo courtesy of John Goodman DSE.*

# SAU Business Management

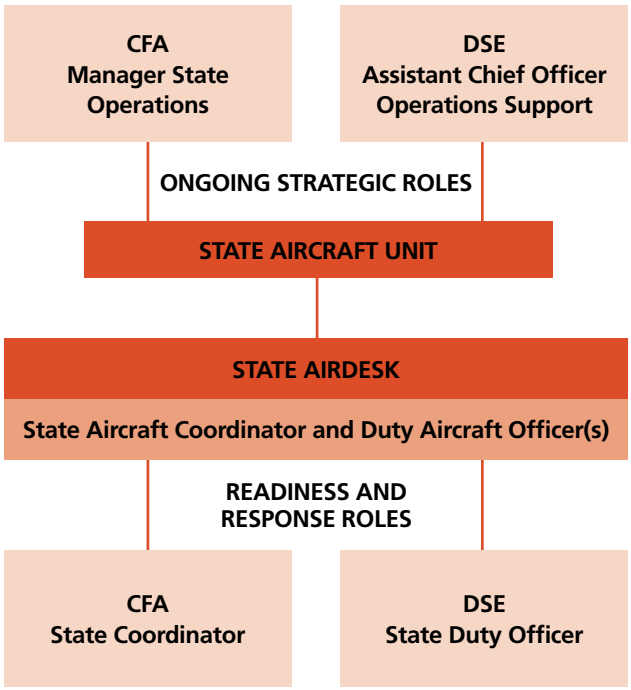

## Governance

The SAU is governed by the Aviation Management Committee, comprising

- DSE Chief Officer, Fire & Emergency Management (Chair);
- CFA Chief Officer;
- CFA Manager State Operations;
- DSE Assistant Chief Officer, Operations Support; and
- Manager, State Aircraft Unit.

## Functional Structure

The SAU reports to the CFA Chief Officer and DSE Chief Officer, Fire and Emergency Management. The SAU is responsible for the operation of the State Airdesk, the aircraft fleet coordination and dispatch function of the unit.




## Operational Structure


## Marketing

The SAU website has been operational for over 5 years and as new information products are developed and areas of interest are explored, the current design has become outdated. The SAU plans to redesign the website during 2009/10 to increase user operability and enable greater information sharing.

# Financial Summary

This financial summary covers the SAU as an entity of CFA and DSE.

| | 2008/09 $'000 | 2007/08 $'000 | 2006/07 $'000 |
|---|---|---|---|
| **Revenue** | | | |
| Revenue from Commonwealth Government | 4,963 | 2,669 | 1,880 |
| Recurrent Revenue from State Government | 9,670 | 8,540 | 6,751 |
| Revenue from other parties | | | |
| (Melbourne Water, VicForests, Parks Victoria) | 892 | 666 | 770 |
| Additional Revenue from State Government | 23,798 | 10,599 | 29,501 |
| Total funding | 39,323 | 22,474 | 38,902 |

| **Expenditure** | | | |
|---|---|---|---|
| Aircraft Standing Charges | | | |
| CFA | (5,412) | (6,103) | (6,468) |
| DSE | (11,874 ) | (8,354) | (9,006) |
| DPI | (104) | (1) | (-) |
| PV | (21) | (102) | (10) |
| VF | (21) | (32) | (54) |
| Other | (735) | | |
| | | | |
| Aircraft Operating Charges | | | |
| CFA | (4,144) | (759) | (3,450) |
| DSE | (11,213) | (4,237) | (12,489) |
| DPI | (2) | (5) | (76) |
| PV | (158) | (310) | (111) |
| VF | (165) | (123) | (199) |
| Other | (156) | | |
| | | | |
| SAU Business and State Airdesk Operating Charges | (1,691) | (1,763) | (1,518) |
| Other Agency Operating Charges* | (3,536) | (685) | (5,521) |
| Total expenditure | (39,323) | (22,474) | (38,902) |

* includes aviation fuel, fuel truck hire, retardant and foam

# Appendix

## Appendix 1: State Fleet and National Fleet aircraft for 2008/09

| Aircraft Callsign | Type | Nominated Base | Firebombing system (Full capacity) |
|---|---|---|---|
| **Type 1 Helicopters** | | | |
| Helitack 341 * | Aircrane S64F | Essendon | 9500 litre Belly Tank |
| Helitack 342 * | Aircrane S64E | Essendon | 7500 litre Belly Tank |
| Helitack 347 * | Sikorsky 61N | Colac | 3000 litre Bucket |
| Helitack 348 * | Sikorsky 61N | Mansfield | 3000 litre Bucket |
| **Type 2 & 3 Firebombing Helicopters** | | | |
| Helitack 331 | Bell 212 | Moorabbin | 1400 litre Belly Tank |
| Helitack 332 | Bell 212 | Benalla | 1400 litre Belly Tank |
| Helitack 333 | Bell 212 | Heyfield | 1400 litre Belly Tank |
| Helitack 334 | BK117B2 | Bendigo | 1200 litre Belly Tank |
| Helitack 335 | Bell 205 | Ballarat | 1400 litre Belly Tank |
| Helitack 345 | Bell 212 | Olinda | 1350 litre Belly Tank |
| **Type 3 Helicopters** | | | |
| Firebird 301 | Bell 206B3 JetRanger | Horsham | 410 litre Bucket |
| Firebird 302 | AS350 Super D Squirrel | Moorabbin | 500 litre Bucket |
| Firebird 303 | AS350BA Squirrel | Ovens (Myrtleford) | 410 litre Bucket |
| Firebird 304 | AS350BA Squirrel | Bairnsdale | 500 litre Bucket |
| Firebird 305 | Bell 206B3 JetRanger | Bendigo | 410 litre Bucket |
| Firebird 306 | AS350BA Squirrel | Essendon | 410 litre Bucket |
| Firebird 307 | Bell 206L3 LongRanger | Essendon | 500 litre Bucket |
| Firebird 309 * | Bell 206L1 LongRanger | Essendon | 500 litre Bucket |
| Firebird 311 ** | AS350BA Squirrel | Latrobe Valley | 680 litre Bucket |
| **Single Engine Air Tankers (SEATS)** | | | |
| Bomber 351 | AT802F | Stawell | 3200 litre Hopper |
| Bomber 352 | PZL M18A Dromader | Portland | 2500 litre Hopper |
| Bomber 353 | PZL M18A Dromader | Hamilton | 2500 litre Hopper |
| Bomber 354 | AT802F | Albury | 3200 litre Hopper |
| Bomber 355 | PZL M18A Dromader | Bairnsdale | 2500 litre Hopper |
| Bomber 356 | AT802F | Albury | 3200 litre Hopper |
| Bomber 357 | PZL M18A Dromader | Moulamein | 2500 litre Hopper |
| Bomber 358 | PZL M18A Dromader | Leongatha | 2500 litre Hopper |
| Bomber 359 | PZL M18A Dromader | Benambra | 2500 litre Hopper |
| Bomber 360 | AT802F | Stawell | 3200 litre Hopper |
| Bomber 361 | PZL M18A Dromader | Leongatha | 2500 litre Hopper |
| Bomber 365 | PZL M18A Turbine Dromader | Bendigo | 3000 litre Hopper |
| **Specialist aircraft** | | | |
| Firescan 300 | Beechcraft KingAir 200 | Essendon | -NA- |
| Firescan 350 | Cessna 404 Titan | Essendon | -NA- |
| Birddog 366 | Cessna 337 | Essendon | -NA- |

* Resource acquired through the National Aerial Firefighting Centre
** Resource engaged for Hancocks Victorian Plantations

# Appendix 2: Start and finish dates of 2008/09 Service Periods for Contract Aircraft (Requirement 1 and 2)

| Aircraft Callsign | Start Date | Finish Date |
|---|---|---|
| **Type 1 Helicopters** | | |
| Helitack 341 * | 20 Dec 2008 | 24 Mar 2009 |
| Helitack 342 * | 24 Dec 2008 | 24 Mar 2009 |
| Helitack 347 * | 18 Dec 2008 | 24 Mar 2009 |
| Helitack 348 * | 16 Dec 2008 | 14 Apr 2009 |
| **Type 2 & 3 Firebombing Helicopters** | | |
| Helitack 331 | 5 Dec 2008 | 24 Mar 2009 |
| Helitack 332 | 19 Nov 2008 | 14 Apr 2009 |
| Helitack 333 | 1 Dec 2008 | 14 Apr 2009 |
| Helitack 334 | 29 Oct 2008 | 21 Apr 2009 |
| Helitack 335 | 29 Oct 2008 | 21 Apr 2009 |
| Helitack 345 | 19 Nov 2008 | 17 Mar 2009 |
| **Type 3 Helicopters** | | |
| Firebird 301 | 26 Nov 2008 | 19 May 2009 |
| Firebird 302 | 29 Oct 2008 | 26 May 2009 |
| Firebird 303 | 19 Nov 2008 | 19 May 2009 |
| Firebird 304 | 26 Nov 2008 | 19 May 2009 |
| Firebird 305 | 19 Nov 2008 | 21 Apr 2009 |
| Firebird 306 | 10 Dec 2008 | 26 May 2009 |
| Firebird 307 | 29 Oct 2008 | 21 Apr 2009 |
| Firebird 309 * | 24 Dec 2008 | 24 Mar 2009 |
| Firebird 311 ** | 14 Jan 2008 | 44 Mar 2009 |
| **Single Engine Air Tankers (SEATS)** | | |
| Bomber 351 | 29 Oct 2008 | 14 Apr 2009 |
| Bomber 352 | 26 Nov 2008 | 24 Mar 2009 |
| Bomber 353 | 26 Nov 2008 | 24 Mar 2009 |
| Bomber 354 | 19 Nov 2008 | 14 Apr 2009 |
| Bomber 355 | 10 Dec 2008 | 14 Apr 2009 |
| Bomber 356 | 10 Dec 2008 | 24 Mar 2009 |
| Bomber 357 | 29 Oct 2008 | 24 Apr 2009 |
| Bomber 358 | 5 Nov 2008 | 14 Apr 2009 |
| Bomber 359 | 29 Oct 2008 | 21 Apr 2009 |
| Bomber 360 | 29 Oct 2008 | 21 Apr 2009 |
| Bomber 361 | 24 Dec 2008 | 24 Mar 2009 |
| Bomber 365 | 19 Nov 2008 | 24 Mar 2009 |
| **Specialist aircraft** | | |
| Firescan 300 | 19 Nov 2008 | 2 Jun 2009 |
| Firescan 350 | 10 Dec 2008 | 7 Apr 2009 |
| Birddog 366 | 26 Nov 2008 | 24 Mar 2009 |

* Resource acquired through the National Aerial Firefighting Centre
** Resource engaged for Hancocks Victorian Plantations

# Appendix 3: Aircraft Usage 2008/09

## Type 1 Helicopters

| Aircraft | Location | Hours | Hours by task (ferry time not included) | |
|---|---|---|---|---|
| | | | Firebombing | Passenger transport |
| Helitack 341 | Essendon | 166.10 | 153.33 | 0 |
| Helitack 342 | Essendon | 111.41 | 96.31 | 0 |
| Helitack 347 | Bacchus Marsh | 87.18 | 65.60 | 0 |
| Helitack 348 | Mansfield | 189.43 | 160.83 | 4.30 |
| Total | | 554.12 | | |
| CFA Total | | 172.18 | | |
| DSE Total | | 380.50 | | |

## Type 2 and 3 Firebombing Helicopters

| Aircraft | Location | Hours | Hours by task (ferry time not included) | | | |
|---|---|---|---|---|---|---|
| | | | Firebombing | Rappelling | Firefighter transport | Training |
| Helitack 331 | Moorabbin | 135.01 | 119.73 | 0 | 0 | 0 |
| Helitack 332 | Benalla | 125.03 | 81.30 | 18.61 | 0 | 0.42 |
| Helitack 333 | Heyfield | 167.42 | 101.83 | 39.88 | 6.77 | 0.20 |
| Helitack 334 | Bacchus Marsh | 125.59 | 100.47 | 0 | 0 | 2.40 |
| Helitack 335 | Colac/ Essendon | 124.68 | 70.48 | 9.86 | 0 | 0.70 |
| Helitack 345 | Olinda | 125.00 | 119.92 | | | |
| Total | | 802.73 | | | | |
| CFA Total | | 134.77 | | | | |
| DSE Total | | 658.82 | | | | |

## Type 3 Helicopters

| Aircraft | Location | Hours | Hours by task (ferry time not included) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Air Attack | Aerial Ignition | FLIR | Other | Reconnaissance/ Detection | Transport |
| Firebird 301 | Horsham | 208.05 | 19.46 | 27.79 | 3.70 | 28.96 | 83.10 | 0 |
| Firebird 302 | Moorabbin | 435.26 | 144.58 | 74.75 | 14.21 | 19.94 | 115.71 | 0 |
| Firebird 303 | Ovens (Myrtleford) | 289.18 | 94.49 | 39.18 | 0 | 14.05 | 114.94 | 0 |
| Firebird 304 | Bairnsdale | 501.57 | 145.65 | 96.40 | 46.17 | 13.01 | 101.40 | 15.62 |
| Firebird 305 | Bendigo | 243.73 | 116.65 | 40.33 | 4.00 | 0.88 | 33.17 | 0.40 |
| Firebird 306 | Moorabbin | 314.28 | 37.92 | 36.21 | 116.67 | 9.10 | 65.97 | 0 |
| Firebird 307 | Essendon | 209.17 | 101.58 | 34.91 | 0 | 6.37 | 37.65 | 1.27 |
| Firebird 309 | Essendon | 178.93 | 136.52 | 4.13 | 0 | 1.63 | 11.04 | 0.57 |
| Firebird 311 | Latrobe Valley | 93.57 | 3.55 | 11.98 | 0 | 58.21 | 6.20 | 0 |
| Total | | 2,473.74 | | | | | | |
| CFA Total | | 397.57 | | | | | | |
| DSE Total | | 1,808.25 | | | | | | |

# Appendix 3: Aircraft Usage 2008/09 continued

## Single Engine Air Tankers (SEATS)

| Aircraft | Location | Hours | Hours by task (ferry time not included) | |
|---|---|---|---|---|
| | | | Firebombing | Training |
| Bomber 351 | Stawell | 110.40 | 84.15 | 0.25 |
| Bomber 352 | Portland | 55.73 | 64.67 | 0 |
| Bomber 353 | Hamilton | 14.95 | 9.5 | 0 |
| Bomber 354 | Albury | 64.62 | 56.99 | 0.24 |
| Bomber 355 | Bairnsdale | 71.11 | 59.66 | 1.78 |
| Bomber 356 | Albury | 93.77 | 82.89 | 0 |
| Bomber 357 | Deniliquin | 94.81 | 40.56 | 2.18 |
| Bomber 358 | Leongatha | 80.00 | 71.44 | 0.13 |
| Bomber 359 | Benambra | 107.25 | 86.94 | 0 |
| Bomber 360 | Horsham | 52.10 | 46.50 | 0 |
| Bomber 361 | Leongatha | 78.88 | 75.71 | 0 |
| Bomber 365 | Bendigo | 64.02 | 61.73 | 0.31 |
| Total | | 887.64 | | |
| CFA Total | | 206.52 | | |
| DSE Total | | 681.13 | | |

## Specialist Aircraft

| Aircraft | Location | Hours | Hours by task (ferry time not included) | | |
|---|---|---|---|---|---|
| | | | Infra red | Passenger Transport | Training |
| Firescan 300 | Essendon | 168.96 | 165.48 | 0 | 0 |
| Firescan 350 | Essendon | 33.75 | 23.57 | 10.18 | 0 |
| Total | | 202.71 | | | |
| CFA Total | | 34.89 | | | |
| DSE Total | | 167.82 | | | |
| | | | | | |
| | | | Air Attack | Reconnaissance | Passenger Transport |
| Birddog 366 | Essendon | 76.23 | 17.97 | 25.71 | 12.55 |
| Birddog 367 | Ballarat | 58.25 | 28.86 | 10.37 | 9.32 |
| Total | | 134.48 | | | |
| CFA Total | | 93.35 | | | |
| DSE Total | | 39.77 | | | |

# Appendix 4: Training Program courses

| Course | Participants |
|---|---|
| Aerial Driptorch Operators | 7 |
| Aerial Driptorch Support Crew | 23 |
| Aerial Incendiary Bombardier | 20 |
| Air Attack Supervisor | 12 |
| Airbase Manager | 11 |
| Aircraft Officer | 10 |
| Air Observer | 10 |
| Basic Wildfire Awareness - online | 104 |
| Fly in Wire Environment training | 12 |
| Helicopter Sling load | 16 |
| Helipad Marshall | 6 |
| Hot refuelling | 59 |
| Hover Exit | 12 |
| Rappel | 30 |
| Rappel Dispatcher | 7 |
| Safety Management Systems | 2 |
| Aviation Audit Systems | 1 |

STATE AIRCRAFT UNIT VICTORIA

# Annual Report 2008/09

STATE AIRCRAFT UNIT
VICTORIA