

# F18 HORNET SQUADRON

It's not just the 32,000 pounds of thrust that gets the 20 tonnes of F/A-18 fighter into the air. There's a small army – or rather, an air force – of men and women behind the scenes and in the wings who ensure our primary air defence asset gets off the ground and stays there.

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**T**he F/A-18 jet fighter is the backbone of Australia's airborne defence capability with 55 of the highly capable strike fighters organised in three squadrons in our country's front-line defence.

With more power at his fingertips than any of us mere mortals are likely to experience, today's Aussie fighter pilot commands the respect of not only the world's air-combat fraternity, but also the not-so-secret awe of many a young tyke around Australia.

While many of us may harbour a secret desire to fly an F/A-18, the reality is that

there are very limited opportunities to experience that thrill first hand. And, while many average Australians content themselves with all-too infrequent opportunities to see the beast in action at airshows, car races and other major public gatherings, there are hundreds of young Aussie men and women who have more than a passing interest in the health and wellbeing of our Hornets.

Based at Williamstown, north of Newcastle, NSW, 77 Squadron is one of three F/A-18 Hornet squadrons arranged under the umbrella of the Royal Australian Air Force's Air Combat Group. But more importantly

than that, 77 Squadron is a family of almost 300 men and women who love their Hornets.

Closest to the front line are the pilots, of course, and, confirming what we all suspect, Squadron Leader Phil Eldridge, the squadron's XO (Executive Officer) says – with a huge grin – that flying the Hornet is a real adrenaline rush, and always was.

Citing Exercise Red Flag in the US late last year as some of the most intense, exciting and rewarding training he has experienced, he says flying the Hornet can get very intense at times.

"We actually led some missions over there where there were up to 70 aircraft

flying at once and we were flying against real SAMs (surface-to-air missiles) that were locking us up with their radar and simulating shooting at us," Squadron Leader Eldridge says.

"We had lots of adversaries flying against us and we were dropping live ordnance on targets on lots of different ranges.

"Even the terrain we were flying over was very different to anything we see here in Australia – mountains over 10,000 feet high and a desert floor that was more than 6000 feet above sea level."

But it's not always knuckle whitening. Working 12 to 13 hours a day, mostly in mission planning, it all comes down to just 20 minutes or so of seat-of-the-pants action in a mission of less than two hours total flying time.

"Sometimes it's all cool, cruisy and calm with nothing much going on, but then as the words "fight's on" comes over the radio, everyone's attention starts to peak a bit. And when someone actually shoots at you or you get locked up by enemy or SAM radar, then yeah, you don't want to die so you start manoeuvring and it can get real physical up there."

In an aircraft capable of pulling 7.5g (7.5 times normal gravity) 'real physical' makes for a heavy workload, yet, probably with a fair degree of modesty, Squadron Leader Eldridge says that F/A-18 pilots are not super-fit individuals.

"A few of us go to the gym to stay in shape, and some run but, while I'm sure we are probably above the average fitness level of the general populace, we are certainly not in the athlete category. It's really a matter of just being healthy overall."

One man who is super fit (and not shy about saying so) is physical training instructor Sergeant Tony Benfer. Tony is very interested in the health and wellbeing of the pilots – as well as everyone else in the RAAF – and is also integral to keeping the Hornets in the air in his own small way.

"Of course pilots need to be physically fit to fly jets but there are no special requirements for them. Everyone in the RAAF has to pass a basic fitness test and maintain a minimum standard," he says.

"Most pilots seem to like doing their own fitness regimes, but many of them will also supplement what they do by coming here for a personalised program to help them in specific areas. When they do, I consider not just the requirements of the individual but the requirements of the job as well.

"Cardiovascular fitness is probably the most important thing for pilots in keeping their weight down – to ensure that they can actually fit in the aircraft – and to help them cope with the similar workouts they get in the cockpit."

Coping with the cockpit workout,

according to Squadron Leader Eldridge, is a matter of conditioning.

"The first time you experience g forces, it feels very weird, but you get used to it. Then, in a mission where you'd be trying to out manoeuvre a SAM, for example, there'd be times where you're pulling 5 or 6g for extended periods. That is very physically draining, but you get used to that too."

Senior NCO (non-commissioned officer) in charge of maintenance, Warrant Officer Nev Engler says that another area that requires a lot of hard work – especially now that the jets are getting older – is in the maintenance hangar.

Daily flying operations require two shifts of maintainers at 77 Squadron – from 7am until 1 or 2am, with a changeover at 4pm.

A typical flying day starts on the flight-line with up to 10 maintenance specialists laying hands on each aircraft before it leaves the ground.

"About 30 blokes start a typical day about two hours before the first flight, checking everything on each aircraft from



## YOU DON'T WANT TO DIE SO YOU START MANOEUVRING AND IT CAN GET REAL PHYSICAL UP THERE



## REPLACING OUR FIGHTING HORNETS

Australia's F/A-18 Hornets are nearing the end of their service life after being on the RAAF's inventory for 20 years.

With replacement in mind, the Australian Government has taken the unusual and possibly very prudent step of signing up as a partner in the research and development phase of a new generation of fighter aircraft – the F-35 Joint Strike Fighter.

JSF, already at test-down-prototype stage, is expected to be an affordable, supersonic, multi-role, stealth fighter with an internal weapons bay, that will take full advantage of developments in software and radar technology.

Three models are planned with the RAAF interested only in the conventional take off and landing version.

Its relative affordability stems from economies of scale in the size of the production run – up to 6000 airframes – and through cost-sharing partnerships with customers like Australia and the UK.

Getting in on the ground floor will not only allow opportunities to influence the design but benefit our economy through flow-on contracts that have already begun to pour in to Australian aeronautic and support industries.

Full-rate production and delivery of the F-35 is expected to commence from 2012.



the ground up," Warrant Officer Engler says.

"One bloke does a general before-flight inspection, a gunnie checks weapons, an armourer inspects the ejection seat and any loaded stores, another two blokes check and replenish nitrogen systems on the undercarriage and on missile cooling systems. And, if chafe/flares are required for the mission, then that's another five blokes on that alone.

"So, by the time the aircraft launches, we have had between five and 10 blokes working on it for a couple of hours – and we could have up to 10 aircraft flying at any one time."

Further along the airfield is a man highly trained to cope with emergencies if things go wrong in the sky – especially during takeoff or landing – Corporal Mark Eadie.

Mark is a team leader in 381 Expeditionary Combat Support Squadron's Fire Section. He, his team and their colleagues at Williamtown Fire Section are a dedicated bunch, on duty 24 hours a day, seven days a week, 365 days a year – one of a handful of sections on any military base to be manned so extensively.

As a military fire-fighter, Mark and his team of four are responsible for all domestic and airfield fire-fighting emergencies at RAAF Base Williamtown and at the collocated Newcastle commercial airport.

The airbase is staffed by a total of 35

military fire-fighters, although this figure is likely to almost double in coming years.

"Williamtown is a CAT 5 airfield, based on the number of air movements it caters for and the size of the aircraft that use it," Corporal Eadie says.

"When the new AEW&Cs and air-to-air refuellers are based here, that's likely to be increased to CAT 6 or even CAT 8 – which will require twice the personnel and extra vehicles as well."

While fire fighting and emergency response is the core of the section's responsibilities, the mere fact that they operate in the military environment means further considerations and training are imposed on the fire-fighters. The threat of nuclear or chemical attack, for example, means these men could have to operate in very hostile environments indeed. Consequently they are trained and equipped accordingly.

Of the three different trucks at their disposal, the RAAF fire-fighters at Williamtown have one – the Truck Fire-fighting General Purpose – in which they can don a full suite of personal protective equipment while still inside the fully- airtight vehicle.

This truck, unlike the primary truck of the section – the Crash Truck – is fully air deployable and has, in fact, seen operational service in East Timor. In this

roll it is painted in the standard military camouflage pattern, but while at home, traditional fire-engine red makes them both stand out on the paddock.

The third truck on the inventory is a Hino Ranger tanker truck used for supplying water to the scene of the fire. Like all the trucks in the vehicle bay at RAAF Williamtown's Fire Section, the tanker is four-wheel-drive.

As mentioned, RAAF fires operate in an environment where potential military or even politically motivated attacks are considered a real threat. The value of the aircraft and facilities at RAAF Williamtown in financial as well as strategic terms, means the fire-fighters cannot afford to take anything for granted. Consequently they work very closely with one other section on base that is also permanently manned – Military Working Dogs Section.

Military working dogs at Williamtown are specialists in trailing and detecting humans and are trained to attack on command as well as in self-protection or the protection of their handler.

Shift Commander at the Military Working Dogs Section Corporal Robert Samara says the dogs, which are trained as a team with their individual handlers, would not normally allow a stranger to approach them or their handlers without letting the stranger know he was intruding.

"They are taught to disregard any command given by anyone other than their own handler. In other words, if I command him to attack, he will not desist until I call him off," Corporal Samara says.

"I can also put him in 'stay-watch' whereby he needs no further command from me if the intruder does anything threatening or untoward."

Just as the fire-fighters must respond to any fire alarm whether suspected false or otherwise, the doggies also respond, accompanying the firies – just in case.

All this hard work would surely make any man or woman hungry? In that case, the staff at the various mess' (Other Ranks', Sergeant's and Officer's Mess') on RAAF Base Williamtown step in to do their bit in

small sandwich-type meal, just because of the space restrictions in their cockpits, whereas on a Herc, they have reheating facilities and so on and can therefore take a larger meal. Their flights are more usually longer haul anyway, so they need more sustenance."

Squadron Leader Eldridge points out one exception to that generalisation – transiting from Williamtown, New South Wales to Los Vegas, Nevada for Exercise Red Flag.

"Getting to America is a huge task. It's about 20-odd hours of actual flight time, staged through Guam and Hawaii, in a four- to six-day cycle."

On this particular occasion, 77 Squadron enlisted the assistance of American air-to-

"We regularly do it on training missions, but it's really just a number on a clock. There's no big voodoo associated with it like there was 40 years ago."

If the Hornet was a big stick, then its sharp end is the weapons suite. The F/A-18 as a fighting platform is capable of deploying a wide array of air-to-air and air-to-surface weapons on its nine external weapon stations, as well as its internal 20mm cannon.

All these are maintained, loaded and restocked by 77 Squadron's Armaments Section, manned by five leading aircraftsmen, five corporals and five sergeants.

Senior NCO in charge, Sergeant Gianni Querin, says that the variety of weapons



support of flying operations.

Sergeant Graham Hognio, Senior Non-Commissioned Officer in charge of the OR's (Other Ranks) Mess, knows all too well that an army – or in this case, an air force – marches on its stomach.

He and his staff – made up of both uniformed and civilian personnel – are responsible for providing three square meals per day to between 100 and 180 people, below the rank of sergeant, depending on base activities.

"It can get quite busy here with various courses going through. We may have to cater for troops in the field by providing hot-box meals, or have an influx of extra visitors here for a short time. And we cater to individual diets for medical, religious or other special requirements."

He says a lot of effort goes into planning meals and menus so as to offer a wide variety of choices, but at the same time considering all the rules of a healthy diet. And considering the physical constraints of aircraft types.

"We are responsible for preparing in-flight meals for all kinds of aircraft and these vary depending on the aircraft type.

"F-18 pilots for example can only take a

air refuelling aircraft.

"We typically plug in ever hour-and-a-half or so, so if it's a five-hour leg you'd plug in three or four times for a top-up.

"We try to leave the tanks as full as possible on a flight like that, but on a normal transit we could go about three-and-a-half hours or so."

He says that on a typical transit flight he and his colleagues would normally only fly at about the same speed as an average commuter jet, just because it is more fuel conservative – and fuel consumption is their biggest issue.

"We normally fly at about 747-type speeds – that is, about .84 or .81 Mach or even slower.

"At other times, for example Townsville back to Williamtown, I might shoot it out to about .9 Mach.

"Of course we can also go supersonic if we wanted to but then you really start consuming your fuel."

Flying supersonic, he says with a shrug, is no big deal.

"You notice a slight bump as you go over and a slight bump as you come back under the Mach, but it's really nothing these days.

available and the mixture of configurations that can be mounted on the aircraft makes for a very interesting and varied working day.

"Of course we look after the aircraft out on line, but we are also responsible for servicing the bombs, guns, missiles, ejection seats and chaff/flare systems and all the associated elements on the aircraft.

"Actually arming an aircraft is not a straightforward exercise. We need to be told first of all what configuration is required for a particular mission, then we order stocks, test the aircraft and systems, fit the stores to the right pylons and test the whole lot again.

"Hypothetically, if we had to arm an aircraft from scratch, we could do it in less than 24 hours. We did an exercise recently where we rearmed four jets in under 24 hours, but that was air-to-air only."

Sergeant Querin says that working around so much explosive materiel is not dangerous if procedures are followed.

Most of the work they do around the weapons and on the aircraft is based around a three-signatures system whereby a junior person does most of the actual work under the guidance and supervision

## F/A-18 HORNET

**Manufacturer:** Boeing

**Role:** Multi-role fighter

**Engines:** Two low-bypass General Electric F404-GE-400 turbofans 7258kg thrust\* each

**Thrust-to-weight ratio:** 8:1

**Airframe:**  
Length: 17.1m  
Height: 4.7m  
Wingspan: 12.4m  
Weight: 10,660kg basic, 20,412kg maximum

**Speed:** Mach 1.8 (2,200km/h)

**Fuel:** 11,000 pounds internal (approx.)

**Range:** 2700km ferry  
740km combat radius  
1000km interdiction

**Ceiling:** Above 45,000 feet

**Weapons:** Up to 17,000 pounds on nine stations  
AIM-120 AMRAAM active radar guided missiles  
AIM-7 Sparrow radar guided long-range missiles  
AIM-9 Sidewinder infra-red-seeking missiles  
Harpoon anti-ship missiles  
Conventional and laser-guided bombs  
M61 20mm nose-mounted cannon

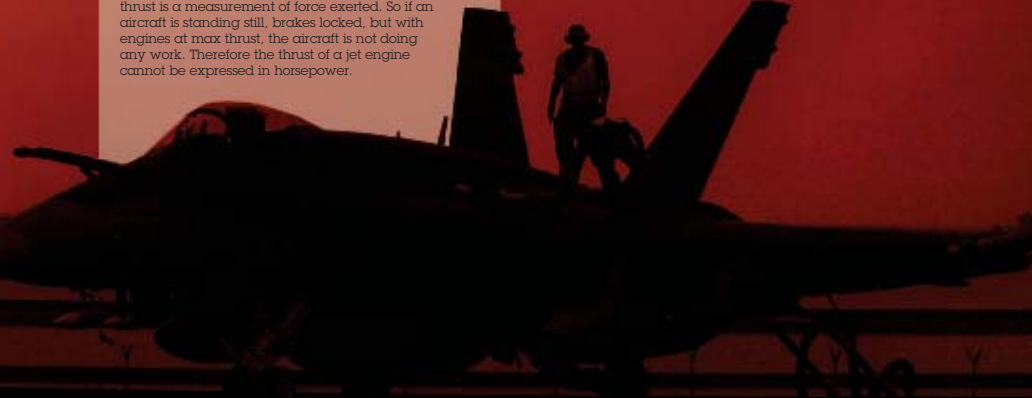
**Avionics:** Hughes APG73 multimode radar  
GPS

Inertial navigation system  
VHF omni-directional range/instrument landing System  
Two mission computers  
Head-up cockpit display  
Multi-functional cathode-ray-tube displays

**Crew:** Pilot

**Force Size:** 54 single-seat F/A-18A  
17 two-seat F/A-18B

\* Horsepower is a measure of work done, while thrust is a measurement of force exerted. So if an aircraft is standing still, brakes locked, but with engines at max thrust, the aircraft is not doing any work. Therefore the thrust of a jet engine cannot be expressed in horsepower.



of a corporal. Then, finally, a suitably authorised sergeant or other senior person, who has not had a hand in the job, performs an independent inspection on the completed work or on specified stages of it's progress.

"There's hardly a single system on the aircraft that doesn't require three signatures. Everything we do is based on teamwork."

He also outlined an aspect of weapons delivery that came as a little surprise to me – it seems small explosions in the weapons stations essentially throw bombs away from the aircraft rather than simply allowing them to fall off.

"There are two primary cartridges that fire when the pilot pickles the bomb. They open the hooks holding the store and push it away from the pylon or the rack.

"There's also a third, backup cartridge that allows the pilot to let the bombs just fall away in emergency situations. For example if he has to make an emergency landing and doesn't want bombs hanging off his wings when he does it, he can drop them without arming them and they fall to ground without exploding.

"In a case like that, or if one that was supposed to explode on the range and didn't, we also have guys here in this section who are qualified to go out and find those bombs and destroy them."



## WE ALSO HAVE GUYS HERE WHO ARE QUALIFIED TO GO OUT, FIND UNEXPLODED BOMBS AND DESTROY THEM

Sergeant Querin confided that he is well paid and usually works fairly standard hours, "Except when we go on what we call bombing camp.

"That's when we work the hardest. That's when it's real. Because whether it's on exercise or on operations, the bombs are real and our job doesn't change much."

There's one more section of RAAF Base Williamtown I was invited to visit in researching this story of which I will give but a passing description. It's a section cloaked in secrecy that actually wields more power than even the Hornet itself.

Think of old war movies where, as intelligence and battle reports came in over radio waves, commanders pushed model airplanes and ships around on a giant map, indicating the progress of the battle. EASTROC (Eastern Region Operations Centre), or at least one part of it, houses what is essentially the modern equivalent of that battle control room. Except in place of giant maps, are projected computer graphics, in place of banks of radios are individual computer screens. And, whereas the WWII room tried to keep up with the progress of the battle based on after-action

reports, today's ROC, thanks to real-time computer inputs and communications, is designed to actually orchestrate the progress of the battle.

From what I was allowed to see, I can best equate the system to a real-life version of Age of Empires or Warcraft, where every Orc (F/A-18) can be tasked individually or in groups and each one's "health" status is available by clicking on his icon.

*On my recent tour of RAAF Base Williamtown, I didn't get to meet everyone who has a hand either directly or indirectly in supporting our Hornets. Nor have I attempted to mention them all here, for in doing so, I am sure to leave out some important element. But I will point out, for the sake of clarity, that not all those mentioned above are part of 77 Squadron, but are in their own way, part of the RAAF Base Williamtown family, without whom our Hornets couldn't fly.*

