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# A41 – Boeing C-17A

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A No 36 Squadron C-17A conducts a low-level flying display during the 'Wings Over Illawarra' 2019 Air Show. Source: Department of Defence



Australian Army soldiers of the 7th Battalion, the Royal Australian Regiment, board RAAF C-17A aircraft A41-209 of No 36 Squadron in Adelaide prior to their deployment to Victoria in support of Operation *Bushfire Assist* in January 2020. Source: Department of Defence

After almost fifty years of outstanding service, the venerable C-130 Hercules was joined in the strategic airlift role by the Boeing C-17A in 2006, operated by No 36 Squadron at RAAF Amberley.

Until the arrival of the C-17A, the Australian Defence Force relied upon chartered strategic airlift solutions to deploy to major exercises and support a growing commitment to operations around the world, most notably the Middle East Area of Operations. The 2005 Defence Update to the Defence White Paper identified a need to consider a heavy airlift option to address the growing operational tempo on operations and in support of other Australian interests. In March 2006, the Australian Government approved the establishment of a responsive global airlift capability centred on a fleet of initially four C-17As.

The Globemaster III was originally designed and built by McDonnell Douglas in response to a 1970s United States Air Force (USAF) requirement for a

replacement of the C-130. By the 1980s, the USAF also needed to replace its ageing C-141 Starlifter fleet. In 1980, the USAF set mission requirements for a larger airlifter which could be refuelled in flight and had relatively short and rough field capabilities.

McDonnell Douglas offered a new four-engined design based to some extent upon its YC-15 prototype, while Boeing offered a new three-engine design drawing on its YC-14 concept. McDonnell Douglas won the USAF competition and produced the C-17A Globemaster III.

In 1990, the US Government reduced its order for the C-17A from 210 to 120 aircraft as its development program was enduring significant design and budget challenges. The C-17A first flew at the Long Beach, California, plant on 15 September 1991, with deliveries to the USAF commencing in 1992. The first USAF unit was declared operational in 1995.

In 1997, Boeing merged with McDonnell Douglas and the C-17A became a Boeing product. The C-17A is a high wing, four-engined, T-tail aircraft

with a rear cargo ramp and door and can carry up to seventy-four tonnes of cargo. With reverse thrust, it can 'back up' a two per cent slope fully loaded.

The USAF initially acquired 120 aircraft, but in 1999 Boeing offered a reduced price if the USAF acquired a further sixty aircraft. Further orders were placed, taking the USAF final fleet size to 224. A number of international buyers (United Kingdom, United Arab Emirates, Qatar, Canada, Kuwait, NATO and Australia) took the global fleet size to 256 aircraft.

The C-17A production line closed in 2015 along with aircraft manufacturing at the famed and historic former Douglas facility at Long Beach. Despite receiving United States (US) Congressional approval to acquire up to ten C-17As, Australia eventually took delivery of eight.

The Australian Government stated that the ADF's airlift capacity remained a critical element in support of humanitarian operations and the C-17A would therefore become a significant component of Australia's Humanitarian Assistance and Disaster Relief (HADR) response. This demonstrated the platform was considerably more than simply another airlift option, but a 'highly visible strategic asset', able to carry oversized and heavy cargo over long distances and provide a significant contribution to the ADF's ability to reach and respond to events of national interest very quickly, anywhere in the world.

The C-17A fleet was acquired under Project AIR 8000 Phases 3 (Heavy Airlift project) and 4 (Additional Heavy Airlift project). Defence sought accelerated acquisition approval under the US Government's Foreign Military Sales program. To achieve this, the



Three Australian C-17As (A41-206, A41-207 and A41-208) on the tarmac at Yokota Air Base, Japan, as part of Australia's contribution to the recovery effort in the aftermath of the earthquakes and tsunami in Japan, March 2011. Source: Department of Defence





Boeing C-17A A41-207 landing at RAAF Williamtown in June 2007. Source: Department of Defence



Visiting dignitaries viewing a No 36 Squadron Boeing C-17A gain a sense of the internal capacity of the aircraft's interior. Source: Department of Defence

RAAF entered into an agreement with the USAF to acquire the aircraft via a 'borrow-pay back' program, where the USAF offered yet to be delivered aircraft in advanced stages of production, then placing an order for replacements. A C-17A took about thirty-four months from start of manufacture to delivery.

The project gained government approval in March 2006, with the first aircraft (A41-206) delivered just five months later in August. The remaining three aircraft of the first tranche (A41-207, A41-208 and A41-209) were delivered by 2008, along with a flight simulator and training aids for loadmasters and technical and ground training. A full scale cargo compartment trainer, a facsimile of the C-17A cargo compartment for loadmaster, load certification, aeromedical evacuation and air movements training was delivered in 2010.

Also in 2010, Defence considered acquiring additional C-130J Hercules to supplement the existing fleet after the retirement of the C-130H. However, this program was cancelled in favour of acquiring an additional C-17A in 2011. On delivery of this fifth aircraft (A41-210 in September 2011), government identified a requirement for a sixth aircraft at a time of considerable operational tempo and HADR airlift demand.

The sixth aircraft (A41-211) was just under delivery in November 2013 when a further demand for strategic airlift emerged with the loss of the Malaysian Airlines Flight MH17 Boeing 777 in the

Ukraine. To support concurrent demand by Defence and HADR operations, the purchase of a further two C-17As was approved, bringing the fleet size to eight aircraft.

A41-212 was delivered in November 2015 and the eighth RAAF C-17A (A41-213) arrived at Amberley in July 2015 (the eighth aircraft was delivered before the seventh after an aircraft computer swap).

The final product delivered in support of the C-17A program was a maintenance hangar, complete with a state-of-the-art telescopic docking system, the first of its kind in Australia. The C-17A requires a number of scheduled major maintenance activities, the Home Station Check (HSC), conducted at Amberley, and a deeper maintenance program conducted in the USA.

Apart from their national markings, Australia's C-17As are identical to USAF aircraft, enabling them to dovetail directly into the USAF global logistics support and training systems. The initial cadre of training for air and ground crews was conducted in the US by the USAF but the acquisition of simulators enabled most training to be conducted at Amberley. Ground crews, however, continue to attend the USAF training program. The establishment of an aircraft repair and maintenance service implementing arrangement for all logistics and engineering support increased interoperability with other C-17A operators, delivering greater platform flexibility and mission assuredness.



A Royal Australian Navy MH-60R Seahawk helicopter of No 816 Squadron is loaded onto Boeing C-17A A41-207 from No 36 Squadron at HMAS *Albatross* for transportation to Scotland to participate in Exercise *Joint Warrior 2018*. Source: Department of Defence

The C-17A, along with the KC-30A, C-130J and C-27J, provides Australia with a flexible air mobility capacity able to deliver strategic, operational and tactical level resources to inter and intra theatre areas, providing end-to-end solutions to deployed units and HADR support direct from Australia.

As the C-17A's load management system allows for efficient and rapid unloading operations, its design and operational characteristics allow it to perform some tactical transport tasks. Combined with the aircraft's load capacity, this greatly increases the efficiency of air terminal operations, allowing quick redistribution of loads to operational and tactical transports (C-130J and C-27J) for delivery to remote and forward areas.

The C-17A possesses enhanced take-off and landing performance enabling it to operate on

natural surfaces (snow, ice and unsealed) and short runways, along with personnel and cargo parachute-drop aerial delivery capability.

The RAAF C-17A fleet has the ability to carry up to eighteen Intensive Care Unit (ICU) patients concurrently on three aircraft. The fleet repatriated a number of Australians killed in action from the Middle East. This 'flying hospital' can carry up to six ICU patients, and medical teams can perform significant medical procedures while airborne.

One significant achievement was the repatriation of seven severely wounded Australian soldiers from the Middle East in 2011. The aircraft departed RAAF Amberley, staged through Diego Garcia to Afghanistan, returning via the same route. On the return leg, a severely injured US Navy sailor at Diego Garcia was taken aboard,

along with the Australian soldiers, to Perth General Hospital, saving his life.

Since acquiring the initial four aircraft in 2006, considerably more HADR missions have been performed than originally expected. The substantial public interest in the aircraft following the natural disaster and humanitarian relief efforts after the 2011 Queensland floods, Cyclone Yasi, the Christchurch

earthquake and Japanese earthquake and tsunami, support to the Australian Antarctic Division, and Operation *Bushfire Assist*, highlight the significant contribution the C-17A Globemaster III has made to supporting Australia's national interests.

The RAAF's C-17As continue to deliver outstanding service on both operational and humanitarian missions all over the world.

## TECHNICAL DATA: Boeing C-17A

### DESCRIPTION:

Heavy strategic airlifter.

### POWER PLANTS:

Four 179.9kN (40 440lb) thrust Pratt & Whitney F117-100 turbofans.

### DIMENSIONS:

Span 51.74m (169ft 9in); length 53.04m (174ft 0in); height 16.79m (55ft 1in).

### WEIGHTS:

Operating empty 128 1420kg (282 500lb); max loaded 265 356kg (585 000lb).

### CREW:

Pilot, co-pilot, loadmaster.

### LOAD CAPACITY

Up to 144 passengers, 102 paratroopers or thirty-six medevac litters. Max cargo payload 74 795kg (164 891lb); hold can accommodate eighteen 463L military pallets or three helicopters up to AH-64 Apache size or one CH-47 Chinook.

### PERFORMANCE:

Max cruising speed 819km/h (509mph); ceiling 13 106m (43 000ft); max payload range 4481km (2784 miles); range with 18 144kg (40 000lb) payload 10 389km (6455 miles), both extendable by aerial refuelling.



The arrival of the first of the RAAF's C-17A, A41-206, at RAAF Amberley on 6 December 2006. Source: Department of Defence



A No 36 Squadron C-17A performs a handling display during the 'Wings Over Illawarra' Air Show 2019. Source: Department of Defence