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# A97 – Lockheed Hercules

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Lockheed C-130J-30 A97-440 taking off. Source Alan Flett

For more than six decades the Lockheed C-130 Hercules has been the RAAF's workhorse transport aircraft, with forty-eight of them operated over the years in four versions. Today, the twelve C-130J-30s of No 37 Squadron based at Richmond, NSW, continue the RAAF's 'Herc' tradition.

First flown in August 1954, the turboprop Hercules represented a substantial step for the United States Air Force's Tactical Air Command when it entered service in late 1956. For Australia and the RAAF it provided nothing short of an air transport capability revolution.

The Hercules has proven to be one of the great aircraft designs of the post-war era, adaptable to a multitude of roles and built in numerous variants and subvariants. In continuous production since first flown, over 2500 have been built so far and the air arms of sixty-seven nations currently operate the world's most widely-used military transport aircraft.

Like many other air forces, the RAAF relied heavily on the Douglas C-47 Dakota to fill its transport needs after World War II (see entry A65 in the second series). With the original C-130A operated by the RAAF offering nearly four times the payload, twice the speed and range and three times the troop carrying capacity (in a pressurised cabin) of the Dakota, it represented a massive leap in all areas of performance and airlift capability.

Australia was the first export customer for the Hercules and investigations into a new transport for the RAAF had begun as early as 1954. The Lockheed design was favoured from the start but also evaluated were the Blackburn Beverley, Bristol Models 179B and 195, Fairchild C-119G Flying Boxcar, Fairchild C-123B Provider and the Shorts PD 16/1 project.

In October 1957 an order for twelve C-130As was announced to replace the Dakotas of No 36 Squadron, then based at RAAF Fairbairn, ACT. The squadron moved to Richmond, NSW, when deliveries of the Hercules began.

The twelve RAAF aircraft were from the final C-130A production batch and were delivered between December 1958 and March 1959 with the serial numbers A97-205 to A97-216. They quickly settled in to service but by 1965 the demands of the Vietnam War, Australia's increasing commitments in South East Asia generally and ever-growing needs at home left the RAAF short of air transport capability.

As a result, twelve of the more capable C-130E were ordered for the reformed No 37 Squadron in February 1965 and delivered between August 1966 and January 1967 as A97-159, A97-160, A97-167, A97-168, A97-171, A97-172, A97-177, A97-178, A97-180, A97-181, A97-189 and A97-190. Also based at Richmond, the C-130Es settled into a basically strategic air transport role including supporting the massive Vietnam effort, taking over



Lockheed C-130A Hercules serial A97-214 of No 36 Squadron in its overall bare metal colour scheme. Source: Alan Flett



Lockheed C-130H Hercules A97-005 of No 36 Squadron in its original camouflage colour scheme, deploying a parachutist. Source: RAAF

from No 36 Squadron's C-130As. This resulted in Richmond becoming the focal point of what was then Australia's largest air freight operation.

No 36 Squadron's C-130As had commenced flying to Vietnam from mid-1964, with Vung Tau on the coast in South Vietnam's Phuc Toy Province their usual destination. An infrastructure was established there to handle the flow of cargo, and operations were also conducted to Phan Rang, Bien Hoa and Tan Son Nhut.

The Vietnam airlift was a fine achievement for the RAAF and the Hercules. In the first eighteen months of operation into Phan Rang, the base's Air Movements Section handled over 907 tonnes (1000 tons) of freight and 3600 passengers; between April and June 1967 a detachment of three No 36 Squadron C-130As flew 2400 Australian soldiers from Darwin to Vung Tau and brought a similar number home; and a fortnightly courier service between Richmond and Bien Hoa was established in November 1965 and continued until 1972 carrying personnel, spares, equipment and medical supplies.

The most emotive of the Hercules's Vietnam duties was the repatriation of the killed and wounded sailors, soldiers and airmen home to Australia. Early medevacs were undertaken by the C-130A, subsequently replaced by the C-130E with its (relatively) more comfortable cabin. The RAAF repatriated 3164 patients, the vast majority by Hercules.

No 36 Squadron's C-130As were replaced by twelve C-130Hs between July and October 1978. They were ordered in June 1976 and allocated the serial numbers A97-001 to A97-012, their camouflage paint schemes underlining their mainly tactical transport role. No 36 Squadron's C-130Hs and No 37 Squadron's C-130Es operated side-by-side for more than two decades, undertaking a multitude of military and civilian support tasks without suffering a single major mishap.

The RAAF has always played a large part in supporting the community and in the case of the Hercules fleet this has been significant. There has been numerous examples over the years of evacuating injured people from accidents both in Australia

and overseas, disaster relief in the form of food and supplies drops and evacuation, searching for missing or distressed shipping and boats, and many others.

One of the most important was the evacuation of nearly 3700 people from Darwin in the three days following Cyclone Tracy, which hit the Northern Territory capital on Christmas Day 1974 and virtually destroyed the city. Flights into Darwin delivered urgently needed medical and other supplies and twelve Hercules were made available on one-hour stand-by at Richmond.

The ill-conceived and destructive Australian domestic airline pilots' dispute began in August 1989, escalated into mass resignation the following month and wasn't finally resolved until well into 1990. With Australia's commercial air transport system in chaos the RAAF was directed by government to assist, contributing a couple of Boeing 707s, HS748s and a number of Hercules from both squadrons to establish what was quickly dubbed 'RAAF Airlines'.

Under the name Operation *Immune*, the RAAF started carrying passengers on 25 August 1989 and ended the operation on 15 December when a No 37 Squadron C-130E touched down at Sydney Airport after a flight from Canberra. In the meantime the RAAF had logged 6524 flying hours and carried 172 287 very grateful passengers all over the country, the vast majority in the Hercules. The public's response to the operation was overwhelmingly positive and for many the chance to fly in a comparatively noisy and uncomfortable RAAF aircraft was regarded as a great adventure!

In 1994, No 37 Squadron was still looking after the strategic transport requirements of the Australian military, although with its C-130Es approaching three decades of service there was need of a replacement. The leading candidate was Lockheed's proposed C-130J 'Super Hercules' with new engines and propellers, two-crew 'glass' cockpit (the need for a flight engineer and navigator was eliminated) and upgraded systems.

Twelve C-130Js were ordered in December 1995 to replace No 37 Squadron's C-130Es and allocated the serial numbers A97-440 to A97-442, A97-447

to A97-450 and A97-464 to A97-468. The stretched C-130J-30 variant was selected for the RAAF, its 4.57m (15ft 0in) longer fuselage providing thirty-eight per cent more cabin volume.

Australia's first C-130J (A97-440) was the sixth of the new model off the line and first flew in February 1997, but due to development problems—mostly aerodynamics issues caused by the new engines and propellers—the first handover to the RAAF (A97-464) did not occur until 7 September 1999, almost two years late.

Four more were delivered in September and October 1999 and the others during 2000. A97-442 remained in the United States (US) until late 2001 for various tests and trials and achieved some fame by being put to use after the September 11 terrorist attacks on New York and Washington, DC.

In the immediate aftermath of the attacks the US was concerned that a biological hazard might exist. The Atlanta, Georgia-based Centre for Disease Control (CDC) needed urgent transport to take staff and equipment to New York but all air transport systems were closed down. The CDC contacted the Georgia Air National Guard which could not help because its aircraft were all on standby for the ongoing emergency. The CDC then approached Lockheed Martin's Marietta, Georgia, facility (where the Hercules is built) for assistance in finding an aircraft to fly its people to New York.

Lockheed Martin was engaged in C-130J software update acceptance negotiations with Australia, Britain and others with A97-442 and a Royal Air Force (RAF) C-130J being involved. Lockheed Martin then asked if either could assist in flying the CDC team to New York. The RAF was unable but the RAAF offered A97-442 provided the aircraft was flown by an RAAF crew.

The Hercules flew to New York's La Guardia Airport with an RAAF crew but it was notionally captained by a Lockheed Martin pilot for regulatory and legal reasons. The CDC team was duly delivered and happily, there were no biological issues to add to what was already a major tragedy.

There were delays in bringing the C-130Js up to full operational capability due to them being delivered with an interim avionics and hardware suite. An upgraded but still interim standard was introduced in 2001 but it wasn't until a year later that full mission capability was achieved.

No 37 Squadron operated the C-130J and C-130E side-by-side during much of 2000 as the new model was gradually integrated into squadron operations, adopting basically the strategic transport role of its predecessor. The C-130Es were withdrawn from service during the year, its last official flight occurring on 14 November 2000 when A97-160 was ferried from Richmond to the RAAF Museum at Point Cook.

The Hercules fleet provided the backbone of the ADF contribution to the response to the Bali



A Lockheed C-130H Hercules about to land. Source: Department of Defence



A line up of taxiing Lockheed C-130E Hercules of No 37 Squadron. Source RAAF



Lockheed C-130A Hercules preparing to have Dassault Mirage IIIIO A3-1 unloaded from its interior on delivery from France, on 27 November 1963. Source RAAF



A line up of four generations of Lockheed C-130 Hercules—C-130A A97-214, C-130E A97-160, a C-130H and a C-130J-30—operated by the RAAF, at RAAF Point Cook. Source: ADF-Serials

bombings which occurred on 12 October 2002. Five C-130s, twelve crews and five aero-medical evacuation teams assisted with the evacuation effort. The aircraft transported urgently needed medical stores to Darwin, flew aero-medical shuttles between Bali and Darwin, and transported two ambulances to Bali. In total, there were fifteen C-130 flights (including one Royal New Zealand Air Force flight and medical team) from Bali during the operation, with seventy casualties transported to Darwin, and thirty-nine then flown to southern cities to relieve the strain on Darwin Hospital.

Following the devastating Tsunami which struck Sumatra (and other parts of South East Asia) on Boxing Day 2004, four C-130s were assigned to Operation Sumatra Assist and deployed initially to Medan, Indonesia, and Butterworth, Malaysia. The aircraft supported intra theatre airlift from major ports such as Jakarta, Medan and Butterworth into Banda Aceh airport. The C-130s accounted for the majority of the air transport of 1200 tonnes of stores, evacuation of seventy aero-medical evacuation patients from Banda Aceh and relocation of 2500 Indonesian military personnel as part of the operation.

By 2003, No 36 Squadron was maintaining a detachment of C-130Hs in the Middle East and in order to spread the load, it was decided to share the deployment with the C-130Js of No 37 Squadron.

The RAAF's Air Lift Group was worked very hard in the opening decade of the twenty-first century due to Australia's commitments in Afghanistan, Iraq, East Timor and elsewhere. It became apparent that additional capacity was urgently needed, the strain on the Hercules fleet being considerable.

For many missions involving overseas deployments and the moving of people and equipment, even the Hercules was inadequate with the result that Australian Defence Force charters of larger aircraft such as the Antonov An-124, Ilyushin Il-76 and Boeing 747 became common. The ageing C-130H fleet—which itself reached the milestone of thirty years of RAAF service in 2008—was in particular suffering serviceability and therefore availability issues.

Something larger, faster and with longer range was required and in March 2006 it was announced that four Boeing C-17 Globemaster III transports would be acquired for the RAAF, this subsequently increased to eight (see entry A41 in the third series). The C-17 provided the ADF with a much-needed boost to its heavy airlift capability, the aircraft having four times the carrying capacity of the C-130J Hercules. Delivery of the C-17s began quickly, the first aircraft arriving in Australia in December 2006.

The arrival of the C-17 prompted a reorganisation of the RAAF's Hercules squadrons. No 36 Squadron relinquished its C-130Hs, the aircraft joining No

37 Squadron's C-130Js in a 'super squadron' based at Richmond at the end of 2006 and creating the RAAF's largest unit in terms of both aircraft (twenty-four) and personnel (about 650). No 36 Squadron was reformed at Amberley to operate the C-17. The C-130H was retired in 2012 after thirty-four years of service. The Middle East deployment had meanwhile become an all C-130J operation from 2008.

From 2014 and following the retirement of the C-130Hs, No 37 Squadron's C-130Js began to develop a more tactical role which included the ability to operate into unlit and unsealed runways in low ambient light conditions, night visual formation flying and an expanded airdrop capability. This was especially relevant to the Army's Special Forces, as the C-130H had provided an insertion capability into unlit and unprepared airfields in low light conditions using night vision goggles.

The withdrawal of the C-130H meant that many of these tactical roles could not be performed without modification of the C-130Js and the work to certify the C-130J and its crews for this expanded role

was undertaken throughout 2014. Since then, No 37 Squadron has continued to support the Middle East deployment as well as responding to calls for humanitarian aid throughout the region.

The C-130J fleet celebrated twenty years of service in 2019 and is now about two-thirds of the way through its probable service life. There will soon be the need to start investigations into finding a replacement but it is reasonable to assume that the Hercules in one form or another will still be in production a decade from now. There is the possibility more will be ordered but there is also increased competition from several newer designs.

Regardless, the Hercules will remain in RAAF service for at least another decade. It will see seventy years of service since the first C-130As were delivered in 1958 and could even make its seventy-fifth anniversary in 2033. With sixty-three years of service already behind it when the RAAF celebrates its centenary, the 'Herc' is the RAAF's longest-serving aircraft type, beating even the venerable Douglas C-47 Dakota.



Lockheed C-130E Hercules A97-189 of No 37 Squadron in its original overall bare metal colour scheme. Source: Alan Flett

## TECHNICAL DATA: Lockheed C-130A Hercules

### DESCRIPTION:

Medium-range transport; flight crew of four (pilot, co-pilot, navigator and flight engineer) plus loadmaster.

### POWER PLANTS:

Four 2796kw (3750eshp) Allison T56-A-11 turboprops.

### DIMENSIONS:

Span 40.41m (132ft 7in); length 29.79m (97ft 9in); height 11.66m (38ft 3in).

### LOAD CAPACITY:

92 troops, 64 paratroops, 74 casualty stretchers or up to 16 600kg (36 600lb) of freight.

### WEIGHTS:

Typical empty 28 577kg (63 000lb); max loaded 56 337kg (124 200lb).

### PERFORMANCE:

Max cruising speed 595km/h 370mph; normal cruise 539km/h 335mph; initial climb (mid-weight) 731m/min (2400ft/min); ceiling 10 363m (34 000ft); range with max payload 2945km 1830 miles; max range 5390km (3349 miles).

## TECHNICAL DATA: Lockheed C-130E Hercules

### DESCRIPTION:

Medium-range transport; flight crew of four (pilot, co-pilot, navigator and flight engineer) plus loadmaster.

### POWER PLANTS:

Four 3020kW (4050eshp) Allison T56-A-15 turboprops.

### DIMENSIONS:

Span 40.41m (132ft 7in); length 29.79m (97ft 9in); height 11.66m (38ft 3in).

### LOAD CAPACITY:

92 troops, 64 paratroops, 74 casualty stretchers or up to 20 412kg (45 000lb) of freight.

### WEIGHTS:

Operating empty 33 064kg (72 892lb); normal loaded 70 308kg (155 000lb); max overload 79 380kg (175 000lb).

### PERFORMANCE:

Max cruising speed 593km/h 368mph; normal cruise 547km/h 340mph; initial climb 558m/min (1830ft/min); ceiling 7010m (23 000ft); range with max payload 3890km 2417 miles; max range 7565km (4700 miles).

**TECHNICAL DATA: Lockheed C-130H Hercules****DESCRIPTION:**

Medium-range transport; flight crew of four (pilot, co-pilot, navigator and flight engineer) plus loadmaster.

**POWER PLANTS:**

Four 3362kW (4508eshp) Allison T56-A-15 turboprops.

**DIMENSIONS:**

Span 40.41m (132ft 7in); length 29.79m (97ft 9in); height 11.66m (38ft 3in).

**LOAD CAPACITY:**

92 troops, 64 paratroops, 74 casualty stretchers or up to 19 505kg (43 000lb) of freight.

**WEIGHTS:**

Operational empty 34 373kg (76 000lb); normal loaded 70 308kg (155 000lb); max overload 79 380kg (175 000lb).

**PERFORMANCE:**

Max cruising speed 602km/h 374mph; normal cruise 556km/h 345mph; initial climb 579m/min (1900ft/min); ceiling 8077m (26 500ft); range with max payload 3790km (2355 miles); max range 7876km (4894 miles).

**TECHNICAL DATA: Lockheed C-130J-30 Hercules****DESCRIPTION:**

Medium-range transport, flight crew of two (pilot and co-pilot) plus loadmaster.

**POWER PLANTS:**

Four 3423kW (4591shp) Rolls-Royce AE 2100D3 turboprops.

**DIMENSIONS:**

Span 40.41m (132ft 7 in); length 34.37m (112ft 9in); height 11.81m (38ft 3in).

**LOAD CAPACITY:**

128 troops, 92 paratroops, 97 casualty stretchers or 21 772kg (48 000lb) of freight.

**WEIGHTS:**

Operating empty 39 765kg (87 667lb); normal loaded 74 390kg (164 000lb); max overload 79 380kg (175 000lb).

**PERFORMANCE:**

Max cruising speed 657km/h 408mph; normal cruise 628km/h 390mph; initial climb 640m/min (2100ft/min); ceiling 9315m (30 560ft); range with 15 786kg (35 000lb) load 5245km (3259 miles).