# The RAN's HS748s

Fleet Air Arm Association of Australia
**HERITAGE FEATURE**


**By Kim Dunstan**

In 1973 the Royal Australian Navy (RAN) took delivery of two Hawker Siddeley HS-748 aircraft for fleet support duties, personnel and cargo transport and electronic warfare (EW) training. The aircraft were land-based at HMAS Albatross, the Naval Air Station at Nowra (NAS Nowra) south of Sydney. The HS-748s replaced the RAN's elderly Dakota C-47Bs which were phased out after 24-years of service.

The British aircraft company A.V. Roe & Co Ltd. (Avro) developed the Type 748 during the late 1950s with the first prototype trials in June 1960. It was designed as a rugged, high performance twin turboprop airliner, powered by Rolls-Royce Dart engines, to replace the Douglas DC-3. Apart from being pressurised and with weather radar in the nose, the 748s had short-field and unsealed runway capabilities, aided by large Fowler flaps, 4-blade Dowty Rotol reverse thrust propellers, strong tricycle undercarriage, and heavy-duty brakes. When Avro was absorbed into Hawker Siddeley Aviation Ltd in July 1962 the aircraft designation was changed to HS-748.

Aimed at regional airlines the HS-748 was highly successful with world-wide sales to airlines, and for military transport. Numerous variants were produced with a total of 381 aircraft built including 89 licence-built by Hindustan Aeronautics. The HS-748 went into series production in 1961 and continued until 1988.

The Royal Australian Air Force (RAAF) operated ten HS-748s the first of which arrived in April 1968. Eight aircraft were for navigation training and two for VIP work. They were the 268 model with the more powerful Rolls-Royce Dart 550-2 engines.

The two HS-748s series 268-2A aircraft ordered by the RAN were flown to Australia by RAN personnel from the Hawker Siddeley factory at Woodford near Manchester in the UK – notable long-distance flights. The first aircraft (serial N15-709) arrived at 851 Squadron at Nowra on 07 June 1973, the second (serial N15-710) arrived on 17 August 1973.

The first flight from England was crewed by LCDR Winston James, LEUT Bob Salmon, LEUT Jack McCaffrie and LEUT Owen Nicholls. It was flown in stages from the UK via the Middle East, India, South-East Asia, arriving at Darwin. After refuelling at Alice Springs it made the last leg of the flight to NAS Nowra. On the flight were four aircraft maintenance sailors who had specialist training on the 748 systems. They were Air Artificer Bob Griffith, Leading Seaman Air Technicians Doug Lange, Alan Bird and Michael Rischin.

## CONTENTS

**HS748 Main Story .....1**
by Kim Dunstan
**HS748 Basics .....2**
**Flying the 748** Kev Rasmus **.....6**
**An Observer's Reflections ...7**
by Jack McCaffrie
**Cyclone Tracey .....10**
Peter Adams/Lyall O'Donoghue
**Flying the 748** Jeff Dalgliesh **.....11**
**Hangar Fire** John Brown **.....12**
**Fitting the EW Kit.....13**
**EW Operations** Al Byrne **.....16**
**RANTEWSS** Neil Austin **.....18**
**The End Of The Line .....19**

# New HS748 aircraft arrives at Nowra

The RAN took delivery of the first of two Hawker Siddeley 748 turbo prop aircraft at the Naval Air Station, Nowra, on June 8.

Lieutenant Commander Winston James is met by Captain D. A. H. Clarke, Captain N. E. Lee and Commander R. McKenzie, when the HS748 arrived at ALBATROSS.

| RAN HS-748 Basics | |
|---|---|
| **Type:** | Land-based Fleet support, transport, and EW training |
| **Manufacturer:** | Hawker Siddeley Aviation Ltd, UK |
| **Number:** | Two delivered 1973 |
| **Crew:** | Three (pilot, co-pilot, navigator) plus EW operators as required |
| **Wingspan:** | 30.02 M (98 ft 6 in.) |
| **Length:** | 20.42 m (67 ft) |
| **Height:** | 5.57 m (24 ft 10 in.) |
| **Engines:** | Two 2280 shp Rolls Royce Dart R Da.8 Mk 550-2 turboprops |
| **Max speed:** | 260 knots (482 km/h; 299 mph) |
| **Cruising:** | 230 knots (425 km/h; 265 mph) |
| **Range:** | 1400 nm (2600 km; 1611 miles) |
| **Endurance:** | Approximately six hours |

*Performance figures subject to conditions*

***First Page.*** *The very first RAN HS748 undertakes a test flight in the UK, prior to its long flight to Australia in June of 1973 - the longest of any new aircraft type purchased at that time.*

***Left****. "Navy News" reported on the arrival of the first HS748 at Nowra in June of 1973, which spelled the end of the Dakota era.*

***Below****. Avro had designed the 748 with easy maintenance in mind - a fairly novel concept for British aero engineering! To a large extent they succeeded, as one photo shows - access to the two Rolls Royce Dart engines couldn't have been much easier, with plenty of room to work. (Image: Martin Edwards).*♣

## The RAN HS-748s

At NAS Nowra the HS-748s joined 851 Squadron, a fixed-wing training and fleet support unit (FRU) flying Grumman Trackers and Dakota C-47s. With the arrival of the new aircraft the Dakotas were retired and the HS-748s took over ship and aircraft equipment trials, radar tracking for ships, transport and communication flights, and assisting with long-range air-sea rescue (ASR) operations. A future role for the HS-748s was electronic countermeasures. Once EW equipment was fitted it enabled the aircraft to simulate hostile targets while exercising with fleet ships, producing realistic electronic warfare (EW) conditions.

On delivery the RAN HAS-748 livery colours were white roof with Royal Australian Navy letters in red, blue along the fuselage side, light grey on the underside, and kangaroo roundels. Photographs show some starboard-side windows were blanked-off. At some point (circa 1991) the overall paint scheme changed to light grey with Navy in black on the fuselage rear.

## RAN HS-748 Summary

The HS-748s were acquired for transport, communications and later electronic warfare (EW) training. The cockpits were well designed with seats for Pilot and Co-pilot, with the Observer/navigator's station immediately aft of the cockpit with a full set of instruments. Both aircraft were equipped for use at civil or military airports.

The HS-748s were indispensable workhorses ready to assist in emergency situations, medical evacuations, ferrying equipment, personnel and VIPs, also assisting with long range off-shore search and rescue (SAR) operations, plus the on-going Fleet Requirement duties. When delivered the HS-748s operated with 851 Squadron until it was disbanded in 1984. Both aircraft were then transferred to HC723 Squadron, NAS Nowra's main training and fleet requirements squadron, where they continued to operate until delisted in 2000. During their service life the HS-748s maintained a high level of serviceability.

## HS-748 Activities

Important duties for the HS-748s included ship and aircraft equipment trials; range clearing operations; gunnery and radar tracking for ships, and radio communication checks for RAN ships and aircraft, and later electronic warfare exercises.

The HS-748s could make lengthy flights over the ocean in daylight or night-time conditions. This was helpful in preparing (both fixed or rotary wing) aircrew for flying at sea away from visual reference points or the refuge of land, operating day or night in all kinds of weather – a vital part of RAN FAA training which sets high standards for aircrew. Pilots converting to the HS-748s to captain level took approximately six months, this includes many long-distance and instrument flying exercises.

Observers flying in the 748s were specialist officers responsible for navigation and the employment of the aircraft's sensors, tactical communications, liaison with aircrew and all ship/s and ground bases they operated with. The Observers conducting electronic warfare exercises were highly skilled operators.

The HS-748s could also be fitted with (limited) seating for passenger transport. This included annual deployments to Singapore for the Five Power defence exercises and other occasions such as ferrying personnel and equipment from NAS Nowra to distant locations such as Broome in WA where RAN Tracker aircraft were conducting fishery patrols. The 748's also had a cargo carrying capacity which was used to advantage in emergencies like Darwin following Cyclone Tracy in 1974. *(Continued on page 4)*

# HS748 Background and Rationale


**FIRST FLIGHT** On June 24, 1960 the Avro 748 touched down at Woodford airfield and ushered in a new age of low-cost turbo-prop flying. For the watching band of designers, technicians and officials, this first flight marked the climax of months of intensive effort developing a successor to that veteran jack-of-all-air-trades, the DC-3.
Now the 748 has arrived! With all the robustness, simplicity and cheapness of its predecessor, it offers a level of performance and passenger comfort never achieved in any similar aircraft. Capable of operating under the most difficult conditions to be found in any world market, the 748 carries payloads of 44 passengers, or 10,990 lbs. freight. Cruises at 230 knots high above the weather in smooth, pressurised comfort.
New minds, new materials, and traditional Hawker Siddeley experience and know-how have made the Avro 748 possible.
'This is the cheapest aircraft of its kind on the market'— *The Aeroplane, September 11, 1959.*

**HAWKER SIDDELEY GROUP** 18 St. James's Square, London S.W.1.



**FACTS ON THE 748**

Two Rolls-Royce Dart Engines
Take-off in 2,520 feet
Wide track undercarriage
Low-pressure tyres
High-efficiency flaps
Fail-safe structure

Operates with ease from high-altitude, short and unprepared airstrips.

TO FETCH AND TO CARRY...
CHOOSE THE AVRO 748

***Above**. An advertising blurb by Avro, later to be absorbed into Hawker-Siddeley. The HS748 made its maiden flight back in 1960. It was introduced as a replacement for the venerable Douglas Dakota - a feature that the RAN took at its word - and was designed to be rugged and simple to operate and maintain. It went into production in 1961 and was highly successful with regional airlines all over the world, eventually selling more than 380. Production ceased in 1988.*

The decision of the British Government to terminate development of almost all manned military aircraft spurred aircraft manufacturers to look more to civilian markets, and Avro was no exception. In 1958 it commenced work on a 'clean-sheet' design which would eventually become the HS 748.

The four-engined Viscount produced by rival Vickers had already secured the larger end of the short-haul market, so Avro aimed at a smaller regional airliner, powered by a pair of Rolls-Royce Dart turboprop engines. Fair and square in their sights was the replacement for the venerable DC-3 Dakotas that by then were by then reaching the end of their economic lifespan. According to aviation periodical Flight International, a major goal for the design team was to produce an aircraft that would be capable of operating from any airfield that the DC-3 could.

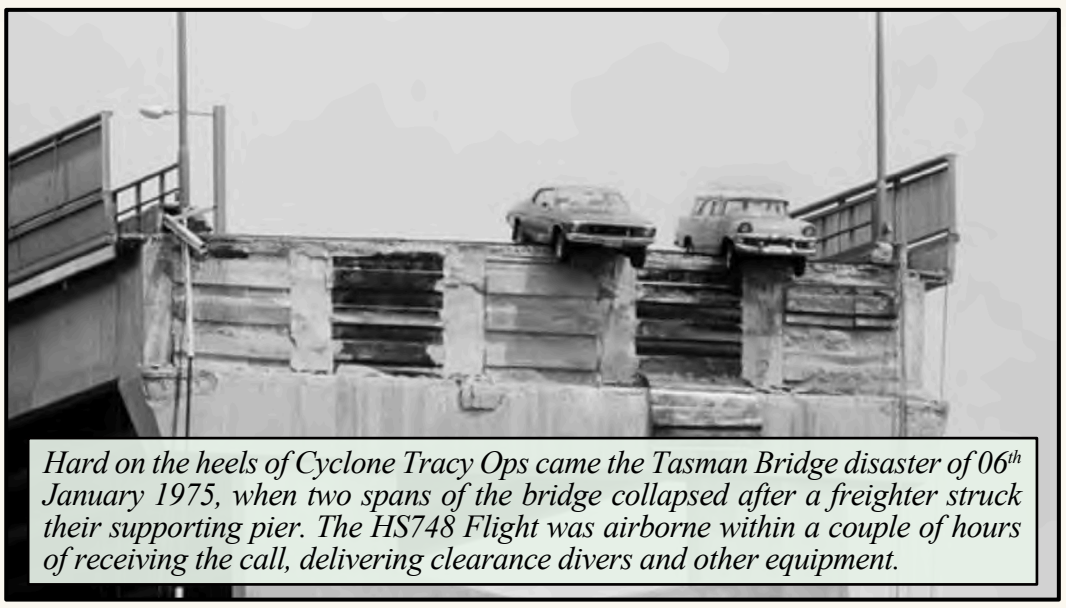
The early design called for a 20–30 seat aircraft, adopting a somewhat similar configuration to the future rival Fokker F27 Friendship; however, following discussions with several potential customers, the company opted for a low-wing 40-seat configuration. It was this latter arrangement that was chosen for the 748 project. Another important focus for the prospective airliner was compliance with both British and American standards of airworthiness; accordingly, it would be one of the first medium-sized aircraft to incorporate fail-safe design principles for its structure in place of the then-common safe-life principles being practiced. The airframe effectively lacked any imposed lifespan; during development, it was successfully tested using a water tank for up to the equivalent of 100,000 flight hours.

Avro was not the only company to see the potential for a DC-3 replacement and, by this point, work on the 748's direct competitor, the Dutch-built F27 Friendship, was well advanced. To differentiate itself from the competition, Avro decided to focus its efforts upon achieving a more rugged design that offered superior short takeoff and landing (STOL) performance, which enabled the prospective airliner to be operated from smaller and more austere airports, including those without modern runways. This STOL capability was accomplished via several features, including the adoption of a long, high lift wing, which was fitted with a unique single slot flap with a hinged flap tab at the trailing edge. This wing was mounted low on the fuselage with dihedral from the root, allowing for good overall ground clearance and the easy mounting of strong landing gear. Operationally, pilots were provided with a choice of three takeoff flap settings to select the level of STOL performance required.

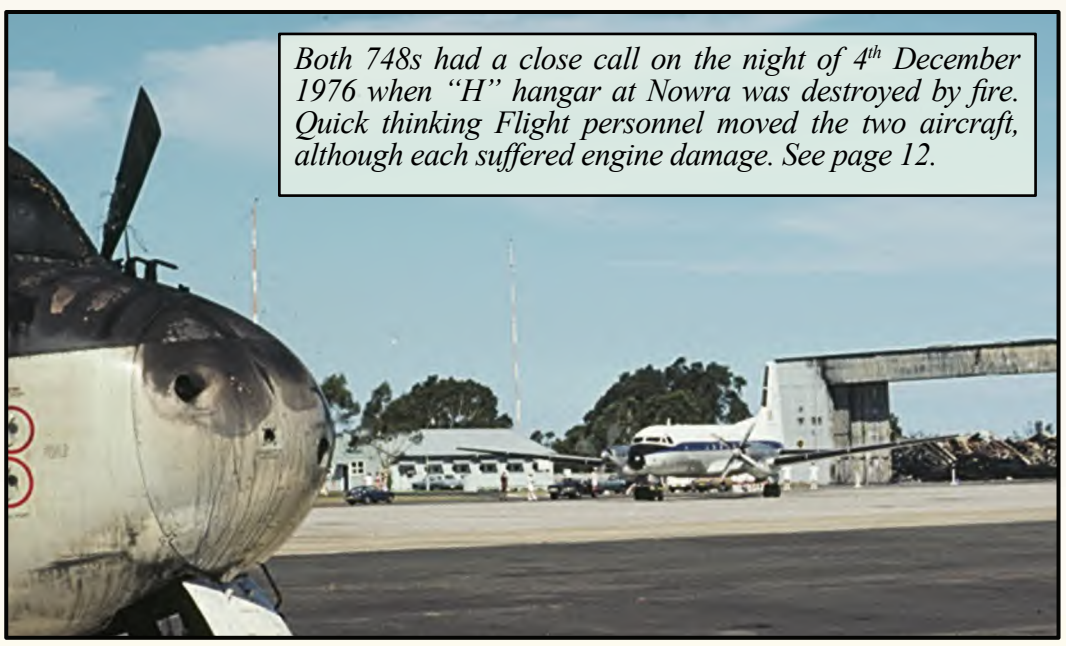
Another supportive feature of the 748 was a design decision to adopt straightforward systems and use proven components where realistically possible. For operator convenience, the engines were provided with an internal ignition system;and various other systems and structures throughout the airliner were designed to be easy to inspect and to perform repairs upon, even when at unprepared airstrips with limited equipment available. As a consequence of these favourable qualities, the 748 quickly attracted the attention of a variety of airlines, particularly those that typically operated in remote areas, which has been attributed to its ability to operate from short rough fields without any ground service equipment while being capable of hauling payloads in excess of 10,000 lb.[Source: Wikipedia]♣


*Taken on the line at NAS Nowra, this stunning photograph shows a 'clean bird', before the EW equipment was fitted. This was the original colour scheme before it was changed to an overall light grey around 1991.♣*

*One of Australia's worst natural disasters occurred on Christmas Eve in 1974 when Cyclone Tracy struck Darwin, decimating the city. A Navy HS748 was the second aircraft to land after the cyclone, and in the following days the Flight flew numerous sorties back and forth carrying essential supplies and returning evacuees.*



*Hard on the heels of Cyclone Tracy Ops came the Tasman Bridge disaster of 06th January 1975, when two spans of the bridge collapsed after a freighter struck their supporting pier. The HS748 Flight was airborne within a couple of hours of receiving the call, delivering clearance divers and other equipment.*



*Both 748s had a close call on the night of 4th December 1976 when "H" hangar at Nowra was destroyed by fire. Quick thinking Flight personnel moved the two aircraft, although each suffered engine damage. See page 12.*

## Electronic Warfare (EW) Training

The plan was always to use the 748s for Electronic Warfare Training, but it took some eight years before the aircraft were modified and that role began. See later in this document for details.

Generally EW flights operated with Pilot and Co-pilot, Observer/ navigator and three system operators. An extra Observer as the Tactical Officer (TACCO) was included when needed. During exercises with fleet ships the HS748 could simulate a variety of hostile EW threats. Sorties could be up to six hours providing training for Navy personnel and sometimes Air Force and occasionally Army assets. Most of the work was radar and communications jamming with chaff and some signal simulation. EW exercises were conducted off the coast of NSW, WA, SA, Qld and NT.

When not engaged in EW work the aircraft cabins could be adjusted for cargo or passenger/VIP use. In cargo/passenger mode the ram air turbine, underside antennas and chaff dispenser were removed. In latter days N15-709 reverted to a full-time passenger/cargo fit-out to focus on fleet support tasks – whereas N15-710 continued in the EW role.

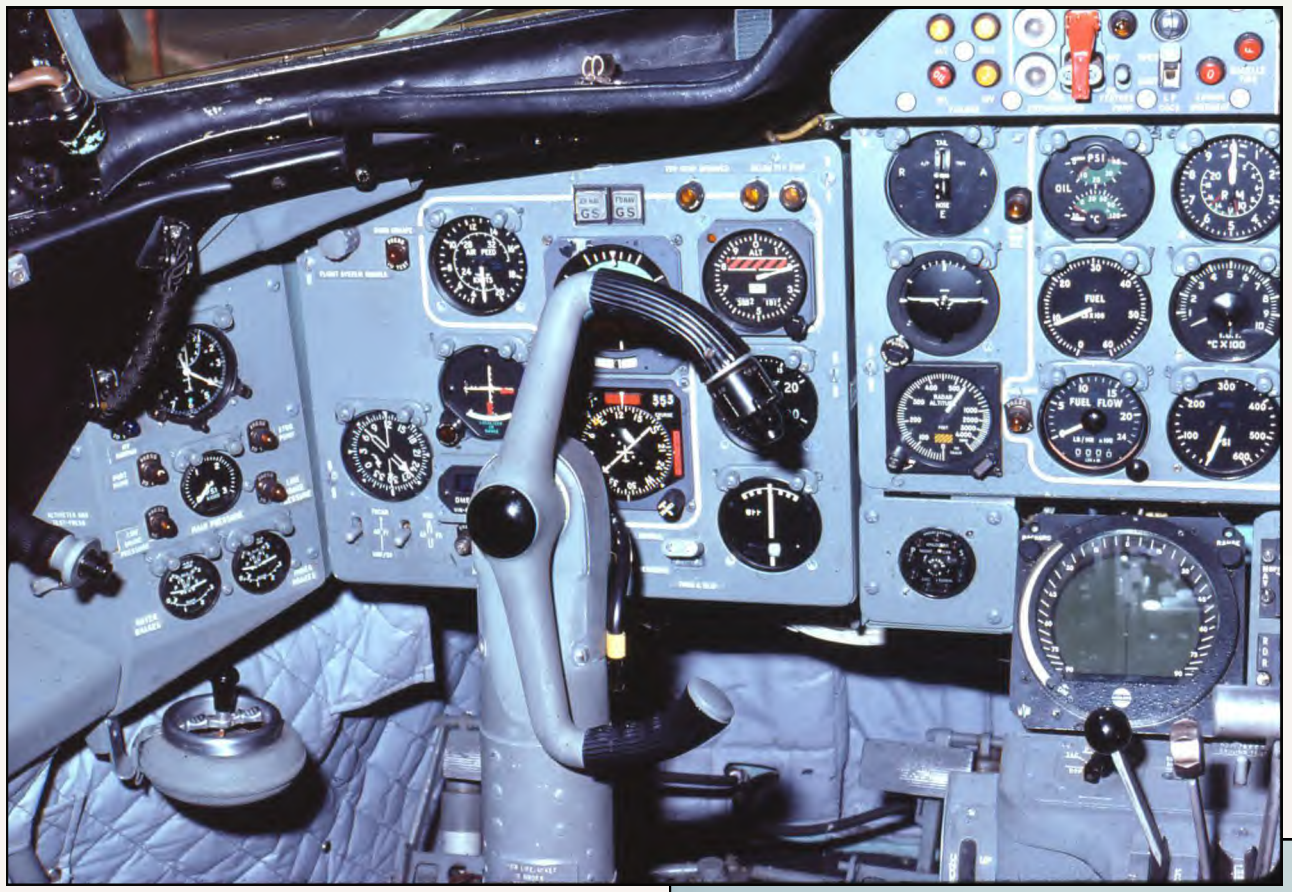
## Cyclone Tracy Relief

On Christmas Eve 1974 the City of Darwin was hit by Cyclone Tracy causing widespread destruction. 851 Squadron personnel were quickly involved in the relief operation 'Navy Help Darwin'. On 26 December an RAN HS748 flying from Nowra via Sydney was the second aircraft to arrive at the stricken city, carrying blood transfusion equipment and Red Cross workers. A second HS-748 carrying a Clearance Diving Team (CDT1) arrived soon after.

The HS748's approach to the Darwin airfield was made over a relatively unpopulated area so the full devastation of the Cyclone was not immediately apparent to the crew. However, the Commanding Officer of VC851 Squadron, Commander Jim Campbell, later said that the force of Tracy was evident when he saw "a large white refrigerator firmly wedged in the branches of a tree about 40 to 50 feet (12-15 metres) above the ground."

There was no hangar for the crew to work in once they landed, just an open concrete area. Engineering support consisted of the maintenance personnel who accompanied the flight, and the tools and spares they brought with them. The maintainers would double as flight stewards for those being evacuated on the return flight, mainly naval dependants from HMAS Coonawarra, and converted the rear sections of the planes into an area for children to play and sleep. Maintenance personnel at Albatross were then faced with a 12 hour overnight period to service, prepare and load the aircraft with freight for an 8:00am departure the next morning. The families of Albatross personnel also collected pharmaceuticals for distribution in Darwin as well as toys and magazines.

Over the next 10 days the two 851 Squadron HS-748s aircraft completed 14 return flights involving 222 flying hours, carrying 485 passengers, moving specialist personnel into Darwin and flying evacuees out – plus flying in 22,700 kg of stores and equipment. In total the RAN conducted its largest peacetime disaster relief operation, involving 13 ships, 11 aircraft and some 3000 personnel. The RAN was awarded the Navy League of



***Above**. The cabin in utility mode, with standard airline seats. **Left**. The cockpit was also standard airline of the '60s era, with analogue instrumentation...and an ash tray! Compared to its predecessor, however, it was like the starship Enterprise. **Below**. A 'clean bird' makes a tricky crosswind landing at Nowra during the 1978 Air Day Display. Photo: Steve McDonald. Last. A newspaper article comparing the operating cost per hour of Navy's aircraft of the time gave a thumbs up to the 748. The calculation methodology isn't known. ♣*

Australia Plaque for aid to the civil community following Cyclone Tracy. By any measure the two 851 Squadron HS-748s did an exceptional job.

### Tasman Bridge Disaster

A few days after Cyclone Tracy struck, 851 Squadron acted swiftly to assist at the scene of another disaster, the collapse of the Tasman Bridge over the Derwent River in Hobart. The call to provide transport for a team of Navy clearance divers was received at NAS Nowra in the early hours of Monday 06 January 1975. At 9.27 pm the previous night the bulk carrier Lake Illawarra collided with the Tasman Bridge collapsing two piers and 127 metres of bridge decking.

While maintenance personnel readied a HS-748 for the flight, aircrew were briefed and at 2.30 am the aircraft took off for Sydney where the clearance divers and their equipment was loaded on and the aircraft flew to Hobart arriving at 7.30 am. At Hobart a convoy of Civil Defence vehicles was waiting on the tarmac as the HS-748 taxied into the parking space and the divers and their equipment were rushed to the disaster area.

After the two disasters the the Flag Officer Commanding East Australian Area, Rear Admiral Neil McDonald sent a signal as follows:

*"I have been informed by the Commanding Officer, HMAS Albatross of the exceptional devotion to duty of the Commanding Officer, Officers and sailors of VC851 HS748 Flight during the period 25 December, 1974 to 10 January, 1975.*

*The zeal and enthusiasm displayed throughout the preparation for, and conduct of the 14 sorties as part of Operation NAVY HELP DARWIN in the aftermath of Cyclone Tracy, and which enabled a sortie to transport a rescue team to Hobart as a result of the Tasman Bridge disaster during this operation, is most commendable.*

*The conduct of the flight, the motivation displayed despite personal discomfort caused by long hours reflects great credit on all officers and sailors concerned. I would be grateful if you would inform all those involved of my admiration of their conduct."*

### Operation Trochus 75

The intrusion of foreign fishing vessels in Australia's northern waters and concerns about poaching, drug smuggling, and the threat of exotic diseases led the government to establish air surveillance patrols in 1975. After conducting a flypast during the Festival of Perth three Grumman Trackers and a HS-748 flew to Broome where the Trackers began air patrols off the coast of NW Western Australia covering thousands of square kilometres from the mainland to off-shore reefs 550 kms to the north. Although the HS-748 returned to NAS Nowra they flew regular resupply and crew change-over services. Meanwhile, the Trackers remained in Broome for what was planned to be a one-month deployment, but being so successful the patrols continued (with some operating from Darwin) until December 1980.

# HS748 ... bargain at $2332 an hour

**Thinking of renting one of the Navy's aircraft for the weekend or to take the girlfriend for a quick spin?**

The table of operating costs of the Navy's fleet of aircraft below is based on an answer given in the Senate recently.

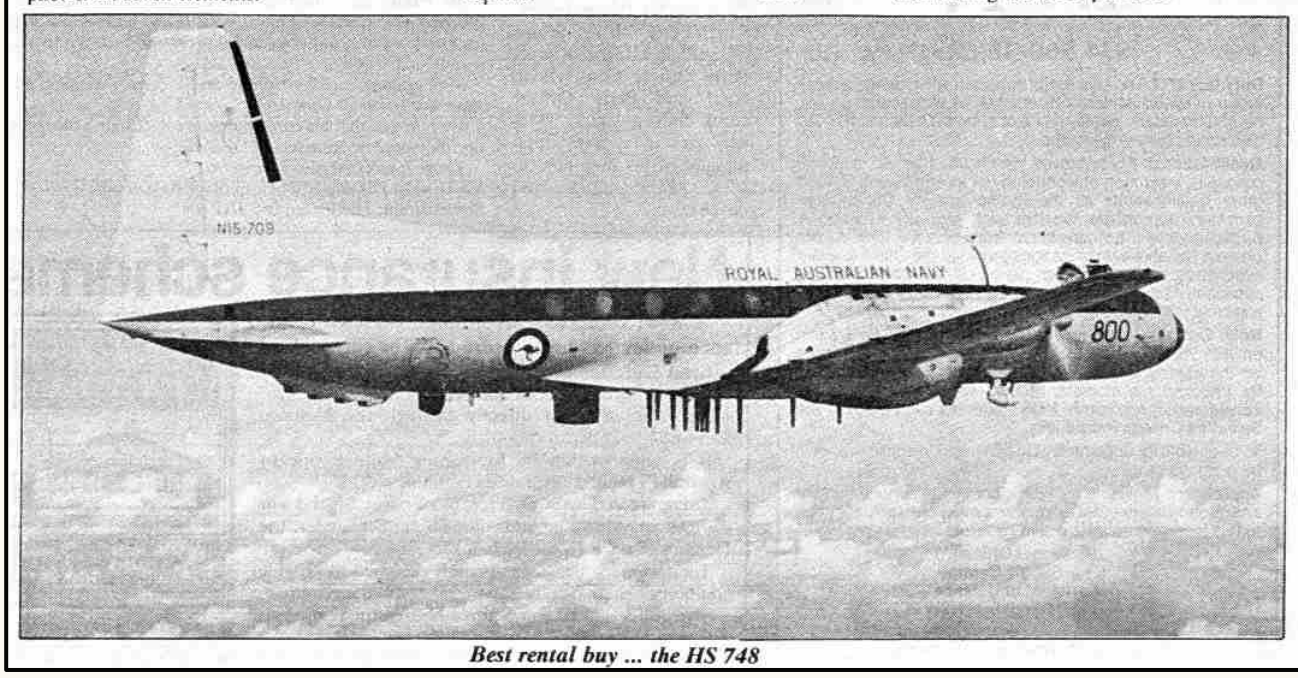
The costs, which were valid for December 1990 and so are probably more now, are compiled from seven elements.

These are: petrol, oil and lubricants (POL), spare parts, servicing (both contract and in-house), crew wages, overheads and amortisation of capital costs.

| Aircraft | $ per hour |
|---|---|
| HS748 | 2332 |
| SeaKing | 6969 |
| Squirrel | 2336 |
| Kiowa | 1031 |
| Seahawk | 6223 |

From the above it looks as if the best bet is the 748 ... more seats and probably more comfortable than the helos.

However, getting approval to hire the aircraft, unless you cue another government department that is, may prove far more difficult than raising the $2332 per hour.




*Best rental buy ... the HS 748*

### Integrated Air Defence System Exercises

The Five Powers Defence Arrangement (FPDA) group (including Australia, Malaysia, New Zealand, Singapore and the United Kingdom), was a defence agreement established in 1970, but

not a formal alliance like NATO. Part of the arrangement was staging regular multi-lateral land, air and sea exercises in the Malaysia region. In the 1980s a greater emphasis was placed on naval exercises with the RAN HS-748 aircraft participated for many years – these exercises were named 'Bersama Lima' meaning working together.

### Operation Immune

In August 1989 Australian domestic airline pilots went on strike in support of a pay rise disrupting domestic air travel and damaging the tourism industry. The Hawke government ordered the RAAF and RAN to use their aircraft to provide air services until the strike was broken. The two RAN HS-748s, operated by just three crews, flew for four months carrying over 10,000 civilian passengers between Sydney, Canberra, Melbourne, Hobart and Launceston. At the end of the strike the HS-748s returned to their Naval training duties, Prime Minister Hawke then visited NAS Nowra to personally thank HC723 Squadron.

### Exit the HS-748s

Being the last of the RAN's 'fixed-wing era' aircraft the HS-748s were disposed of in June 2000 when HC723 Squadron decommissioned them – after 27-years of service. The last HS748 duty flight was conducted on 9 June; then on 26 June they left NAS Nowra for the last time flying to RAAF Base East Sale for disposal, with official delisting on 30 June 2000.♣

## Personal Perspective - Flying The RAN HS748

*By Kevin Rasmus*

I joined VC851 Squadron at NAS Nowra from pilots course in April 72, and while awaiting a Grumman Tracker S2E course I flew the Dakota C47s as a 'gear and flap' co-pilot. I completed No 8 OFS (Operational Flying School) on the Trackers in December 72 and remained with VC851 for the next year.

In January 74 I joined VS816 for nearly two years operating off HMAS *Melbourne* including Kangaroo 1 and Rimpac 75. Then two stints at Broome flying surveillance on Operation TROCHUS. By then my total flying time was 1400 hours of which 1200 hours were multi-engine. This was valuable experience prior to converting to the twin-engine HS748.

Upon return to NAS Nowra in January 78 after a two-year stint as QFI at 1 FTS at RAAF Point Cook instructing on CT4A and Winjeel aircraft, I began HS748 training. This was done on the squadron at NAS. The conversion to Captain took nearly six months, including dedicated General and Instrument Flying phases followed by lots of line and route flying. I believe my check flight was from Canberra to Perth to coincide with the opening of HMAS *Stirling*. By then I was a QFI on type and RHS checked on the aircraft.

The HS748 was a pleasure to fly but heavier on flight controls than the S2E. By comparison the 748 was a lot more modern with a suite of civil navaids which the RAN didn't have in their aircraft at that time. The HS748s could easily join the bigger aircraft when we went into the large, controlled airports around the country and also the world.

Both N15-709 and 710, (nose number 800 and 801) flew until late October 78, when 709 was delivered to Hawker de Havilland (HDH) at Bankstown for the airframe and internal modification and trials prior to it being flown to the USA in Oct 79 for fit-out of the EW gear.

The number of pilots on the remaining aircraft 710, dwindled down to two; me and LEUT MacKenzie. We flew 710 exclusively while 709 was at HDH. With the exception of a few flights after 709 came out of the modification programme. Kevin MacKenzie and I were the only two pilots to fly 709 till mid-September 80. N15-710 went into HDH for its modification after 709 left HDH in about Aug/Sep 79.

Initially the HS748s were bought for 'communications' and training. Communications meant hauling people and freight around as a taxi service for the RAN. I think the highest ranking or VIP was the Governor General, with lots of Admirals and their staff on trips. We ranged from a VIP aircraft to a freight service. Recently graduated RAN Observers from RAAF East Sale were used as spare navigators for most trips before they commenced their S2E/G conversions.

Only one aircraft (709) was flown to the USA for the EW fit out at Sanders Associates at Manchester, New Hampshire, USA. What was to be about a 4-month trip turned into 11 months away due to equipment not meeting specifications. 710 went into HDH at Bankstown for its EW modifications just before we left. There was one EW kit obtained from the USA, which could be used by either aircraft.

When the HS748 aircraft went on interstate EW missions one aircraft flew with backup spares. I'm pretty sure that's how it worked. I remember both aircraft being at Rockhampton I believe with one being used as a repair workshop for the EW gear if it broke down and the other one flying.

There is an article I wrote for 'Navy News' I believe in late 79 or early 80 about our trip to the USA taking 21 days. It is titled '12 days, 19 stops… Long hop for the Navy' I have a yellow-coloured paper clipping of the article that was published.

Upon our return to NAS Nowra in September 80, we started to train EW crews and I trained up I believe four pilots to Captaincy. There was no, 'navigator training,' like the RAAF in our 748 aircraft. Our Observers were qualified navigators when they appeared at NAS.

The EW training sorties were generally in the East Coast Exercise Programme area where they trained the ships and our aircrews. This was mostly off the coast of Nowra with a few sorties further away at other times. As I left the HS748s in April 82 to go the USN on exchange, after that I was not aware what flying or EW sorties were done in Australia or overseas.

Meanwhile, here is a little story about the time N15-709 flew to the USA. The crew for the trip to Manchester, New Hampshire, USA consisted of two pilots, two navigators, and three ground engineers. The aircraft cabin had a number of seats to carry 'passengers.' I'm not sure how many seats were fitted, but that is where the ground engineers sat for the trip.

At the Navigator's station, apart from the usual equipment there was an old style 'drift sight', for the navs to assess drift, particularly over water. The interesting part was the drift sight could be swivelled around to view the underside of the aircraft fuselage, also the main undercarriage was easily viewed when down and aircraft taxying.

To encourage some camaraderie amongst us, our trusty detachment commander came up with a brilliant idea. He suggested that we should mark one of the main wheels into seven equal parts with a marker pen and be numbered accordingly.

Each of us was given a number which we used for the whole trip over. When the aircraft was parked, there would be a dash outside by the ground engineers to see which number was closest to the ground. The person with the number closest to the ground bought the first round of drinks at the bar that night.

Funnily enough, it was the engineers buying almost all the time. What they didn't know was that the navigators could see the numbering of the wheel rim and talked to us on the intercom when to stop. Due to the layout of the aircraft, the engineers couldn't see what was going on. After a few weeks, they latched on to what we were doing. It was quite funny at the time.♣

# An Observer's Reflections on Flying in the HS748

By Jack McCaffrie

My introduction to the HS-748 was both unexpected and sudden. As we were returning in HMAS Melbourne, from Hawaii and Exercise RIMPAC 72 in November of that year, a signal from Navy Office asked for my flying hours. Being a confirmed hourhog I doubt I even had to consult my log book to answer the question. The reason for the request was not revealed to me until we returned to NAS Nowra and I was informed that I would be the observer for the two HS-748 delivery flights from the UK in 1973. This was surprising on two fronts. Firstly, we all knew that there was already an observer undergoing the Advanced Navigation Course at RAAF East Sale for this purpose. Clearly, he must have displeased the Air Force. Secondly, as one of the eleven observers sent to Pensacola Florida for flight training in the late 1960s I had not even completed a formal basic navigation course, instead graduating from the one-off course put together by LCDR Peter Moy at Nowra in 1968. (For more details, please see Wings of Gold by Trev Rieck, Jed Hart and myself - a top read!).

In any event, straight after Christmas leave. in late January 1973. I found myself heading down the Princes Highway to join the three pilots, Winston James, (the late) Bob Salmon (Sam) and Owen Nicholls (Nick), at RAAF East Sale. I spent about two months there undergoing an informal 748 navigation conversion before heading to the UK with Nick – the others left before us.

I was given a desk in the fairly spacious open plan office inhabited by the navigation instructors at the School of Air Navigation and so was not short of good advice. LCDR John Tapping was SNO at the time and the late Ted Wynberg RAN was also on the staff. Both were extremely helpful. The Crabs were a really good bunch too, from maritime, transport and bomber backgrounds and so all had their own particular approach to navigation. Some of the RAAF names I recall include Tony Taylor, the late JJ MacKenzie, Ray Gibson, John Riches and Al Gilbert. As it turned out I found the bomber nav approach most to my liking, probably because it was less formal than that of the others and more in tune with what I had been doing myself in the S2E.

Clearly there were major differences between sitting in the Tacco seat of an S2E/G and sitting at the spacious navigation table in the 748. The navigator position was on the starboard side of the aircraft, behind the pilots and forward cargo space. Although the seat swivelled fore and aft for take-off and landing the normal working position was sitting facing the starboard side of the aircraft.

The navigator's instrument panel had two compass readouts and readouts of all the nav equipment such as ADF and VOR and TACAN as well as a very useful Doppler navigation system about which I remember little more than that I wished it had been fitted to our own aircraft. Ours came with a much-reduced version which was situated between the two pilots and thus of limited use to us observers. I don't recall using it very much. Our 748s also had a repeat of the weather radar on the navigator's table.

Flying above 10,000 feet was also something of a novelty for me given that 8-9000 feet on an airways trip would have been the maximum experienced in the S2E. The extra speed was not an issue with the aircraft trueing at about 225kts at FL250. What did get my attention and was something I enjoyed, was having a Performance Manual and a Cruise Control Manual ,which among other things took account of the aircraft performance and fuel usage at different altitudes and temperatures. Top of climb and top of descent became really significant points.

I undertook quite a few flights, many of which were quite lengthy day and night cross country navexes, along with the RAAF and I think Navy students who were on Navigator and Observer course. One of the really enjoyable aspects of these flights was the hot inflight meals provided. Possibly the most memorable (well I haven't forgotten it) was a weekend landaway to Darwin, on which John Tapping came along for the ride. We only got to Alice Springs before the aircraft became unserviceable and so had an enjoyable weekend in the Alice instead. Highlights included being looked after very nicely by the local Naval Association blokes and dinner at a local restaurant on the Saturday night. We had a fairly large round

*L to R: LEUT Jack McCaffrie, LEUT Owen Nicholls, LCDR Winston James & LEUT Bob Salmon♣*

table for 7 or 8 of us and the defining moment was John T's response to the waitress when she asked how he would like his steak done. "Lop its horns and wipe its arse and stick it on the plate" was the response, which was accompanied by an audible intake of breath from those around us.

In any event I felt reasonably comfortable in the aeroplane by the time Nick and I set off to join Winston and Sam in the UK.

The aircraft were built in the Hawker Siddeley factory at Woodford in Cheshire, just southeast of Manchester. This had been the Avro factory where many of the Lancasters were built during the War. As well as building the 748s the factory was also engaged in modifying the Victor bombers to air-to-air refuelling tankers. The factory social club was called "The Lancaster Club" and I still have the tie! As well as we four aviators there was a resident RAN AEO, Don Phipps, and a small number of technical sailors who looked after the engineering aspects of the aircraft build and learned what they could about it.

In the two months before we made the first delivery flight, we flew the aircraft quite a few times, often with Bill Else, the Hawker Siddeley test pilot. His party trick was doing a complete HS 748 circuit including take off and climb to 1,000 feet in 50 seconds. One of our more memorable local flights involved picking up then Captain David Leach, who was the Australian Naval Adviser in Australia House, from RAF Northolt in London and taking him to RNAS Culdrose in Cornwall, where we all enjoyed an overnight with a bunch of RNers and the RAN aviators who were there on exchange.

trips to London – by train – liaising with the RAN staff and the aviation staff officer, Mike Astbury, in particular. The RAAF staff officer, Wing Commander Dave Sutherland, a navigator, was also very helpful to me and if I remember correctly, had taken part in the delivery of the RAAF 748s. I also visited RAF Northolt where I was able to get all of the charts, enroute supplements and approach plates we were likely to need on the delivery flights. Because the Middle East was a bit unsettled, we chose a different route to that taken by the RAAF when delivering their 748s some years previously – we avoided Egypt, Saudi Arabia and the Gulf States. The route we took is shown in the Table. Overnights are marked by asterisks for each night – all multiple overnights, except for the two in Singapore, were caused by unserviceabilities.

Rather than recount a day by day description of the flights I'll just list a number of the highlights from both of them.

- Firstly, I should mention that flight planning never presented any problems. Although there were a few interesting experiences, RAF Northolt had provided us with all the charts and publications we needed.
- We had a passenger with us on the first ferry, as well as the four maintainers who had been at Woodford – Bob Griffiths, Doug Lange, Alan Bird and Michael Rischin. The passenger was Surgeon Commander Rex Gray, who somehow wangled his way onto the flight. Happily, we had no need of his professional services along the way. On the second ferry flight we carried Tom Cordner, who was the Hawker Siddeley representative who spent two years at Nowra.
- A highlight on the very first leg was the late Bob Salmon's determination to sound as 'Strine' as possible to the French air traffic controllers, who were working equally hard to sound ineffably French.
- We were supported on the ground by British Airways people at virtually all our stops and they were excellent. The food they provided us at the first stop, Ciampino in Rome and in Athens, was quite outstanding – limited as it was to cold selections.
- For our first overnight, in Athens, our British Airways host took us on a tour of the major attractions, including the Acropolis. He then took us to dinner at an outdoor restaurant in the city, making for a memorable end to the first day.
- The day after we left Athens on the second ferry, members of the Black September terrorist group killed three and wounded fifty five in the terminal, using sub machine guns and hand grenades. Thirty five were taken hostage for a period of time. I guess we, in our military flying suits, would have been choice targets had it been when we were there.
- The fuel stop in Ankara was interesting in that I was escorted to and from flight planning by a young lady in some kind of uniform with a sub-machine gun slung over her shoulder. I'm still not sure whether she was protecting the Turks or me.
- For the leg from Ankara to Tehran our RNCs advised that there were navaids on the Soviet side of the country borders with very similar frequencies to those we would be using. They caused no problem and of at least equal interest was the mountainous terrain, with peaks in places above our single engine altitude. We had planned for this (-happily unfulfilled) possibility by having escape routes down valleys to suitable emergency landing airfields. Interestingly, we had just got through that area when we ran into standing waves (downward flowing air as a result of wind blowing over the high mountains) and spent a few tense minutes at very high power on both engines just to maintain altitude. I guess you cannot plan for everything!
- Tehran (still under the rule of the Shah before the revolution) was most notable for the line up of US-origin military aircraft on the Air Force side of the main airport and for the name of the British Airways representative – Manny Shyster - who looked after us incredibly well.
- On the second ferry flight at Tehran we had a failure of the cabin air supercharger (an engine driven compressor that delivered air for pressurisation and air conditioning). This caused a few days delay while a replacement was sent to Tehran.
- Karachi was our introduction to the sub-continent and the pace of life in the flight planning offices was much slower than elsewhere. I also recall getting the sense that, when I opened the NOTAM folder, I was the first one to have done so for a while. In an enjoyable and surprising end to the day, the Foreign Affairs guys from the Consulate and their wives, had us over for a BBQ dinner that evening.
- Delhi was a very different experience. After overnighting on the first ferry, we had aimed to leave at around 0400 in the morning for Kolkata – to beat the heat. When I got to the aeroplane, after lodging the flight plan, I was surprised to see everyone standing around under the centre section near the main wheels. The reason became clear fairly quickly as there was a large pool of fuel on the ground. We had a major problem and were helped out promptly by an Indian Air Force Sikh Sergeant. We had to defuel, dry the tanks and then investigate the cause of the leak and repair it. This task fell to CPO Bob Griffiths and over the succeeding couple of days I don't think anyone envied him the task of crawling inside the tanks.
- The other immediate problem we had was that Indian Immigration were unsure how to deal with us…we had left but we hadn't left. That took some time to resolve.
- On the morning before we looked likely to be able to depart I made a point of submitting the flight plan – that is 24 hours in advance - to ensure it would be dealt with by the time I rocked up the next day. I didn't know India. When I went to the office early next morning the flight plan was still sitting exactly where I had left it – untouched.
- During the approach to Kolkata on the first trip we were following a British Airways VC 10 when suddenly the airfield lost power to communications and navaids. Fortunately, we were VMC and so just carried on with the approach. Power was restored shortly before we landed and we switched across to Kolkata ground control just in time to hear the VC 10 captain venting furiously to air traffic.
- The subsequent legs to Bangkok, Butterworth, Singapore and Jakarta were uneventful and we were entertained very well in Jakarta by Ian Josselyn who was the Naval Attaché. This was unplanned, as we had earlier left Jakarta for Bali when about an hour into the flight those in the cabin alerted us to a slight oil leak from the starboard engine. We turned back to Jakarta, carefully monitoring engine indications. The problem turned out to be the cabin air supercharger again. Engineering in Australia approved us removing the supercharger drive shaft and blanking off the oil lines to get home. This led us to discover that the 748's screaming

| **Ferry N15-709**<br>29 May – 08 June 1973 | **Ferry N15-710**<br>03 August – 15 August 1973 |
|---|---|
| Woodford | Woodford |
| Rome | Rome |
| Athens* | Athens* |
| Ankara | Ankara |
| Tehran* | Tehran* |
| Karachi* | Karachi* |
| Delhi*** | Delhi** |
| Calcutta | Calcutta |
| Bangkok* | Bangkok* |
| Butterworth* | Singapore** |
| Djakarta | Djakarta* |
| Bali* | Bali |
| Darwin | Darwin* |
| Alice Springs* | Alice Springs |
| Nowra | Nowra |

Auxiliary Power Unit (APU) is in fact relatively quiet – it is the supercharger it normally drives that produces the noise!

- The Bali to Darwin leg was far and away the longest over water leg of the entire journey and the final day on the second ferry flying from Darwin to Nowra was easily our longest day in the air, but it felt good to be home.

Once the aircraft were in service at Nowra and prior to them being fitted out with the ECM training gear they did a lot of 'trash hauling' around Australia. Our most enjoyable runs in those early days were undoubtedly those to Perth, on some occasions to carry over or pick up Fleet Staff. The main entertainment on the return flights from Pearce was trying to find the altitude where we would get most help from the Jetstream, and try to eke the fuel out to make Sydney nonstop. We succeeded several times and I do remember clocking a groundspeed of 336kts once.

Even these flights had their occasional dramas, such as the electrical fire in the cockpit one afternoon when we were about 140nm southwest of Ceduna, heading west. Jim Campbell and Lyall O'Donoghue were in charge as I recall. We diverted of course and even allowed ourselves thoughts of a good night in the local pub in Ceduna. As luck would have it, however, the maintainers we had on board were able to fix the problem very swiftly and we were on our way to RAAF Pearce again in no time.

Yet another interesting and unusual experience was really the story of two 748s. One day in October 1973 we delivered one of our Admirals (FOCEA I think) to Creswell via JB Airfield. He came down to accompany the Duke of Edinburgh who was making a brief visit to the College. The Duke also arrived via JB Airfield, in a Queen's Flight 748 and I believe he may have been flying it at the time. Winston James and Jim Campbell were flying our aircraft (710). While the Duke and Admiral were at the College the two 748s remained parked at opposite ends of the airfield. We flashed up the APU so we could boil water for a brew. The sound of the APU was enough to alert the RAF pilots who wandered over and asked if they could have a look at our brand new 748.

After a look around and a coffee they invited us to have a look at their bird and have a drink with them. We accepted and as I entered the aircraft via the rear stairs I was greeted by the navigator, sitting at a table at the rear of the aircraft with pen in one hand and can of beer in the other, casually working on his flight plan. Before we knew it, the two RAF pilots and we had cans of beer in our hands too. To say we were a bit surprised doesn't quite do it. Nevertheless, we joined the two pilots and the navigator in a few obligatory sips as they showed us through their very nicely appointed but considerably older 748. They made a point of showing the stowage for the extensive range of uniforms the Duke would be wearing while on tour. For the three of us naval aviators I'm sure this rates as a unique flying experience.

My time in the 748s pretty much came to an end in late 1974 with a posting back to VS 816. Yet there was a brief interlude at the end of 1974. Like many others, I returned from leave immediately on Boxing Day 1974 and after driving nonstop from Adelaide and a few hours sleep, was heading for Darwin in one of the 748s. We evacuated two groups of people, the first to Brisbane and the second to Sydney I think. Apart from the scenes of widespread devastation in Darwin, one of the odd memories I retain is that while flight planning for the trip to Brisbane I can recall one of the RAAF NCOs, on the phone to someone in Townsville telling him to be sure not to forget to send up the red pencils! The paperwork must go on!

Our flight to Brisbane was for a group of very young children in the care of a nurse and they sat wherever they could find space. The nurse's name was Kaye Hogan. I didn't know that at the time, but she was then and remains a very good friend of the lady I met three years later and married. We managed to get a few hours sleep onboard one of the LCHs in Moreton before heading back to Darwin. That return flight was memorable as the aircraft was full of freshly baked bread and the smell was tantalizing to say the least. Both 748s took part in the evacuation operation and I believe the late Windy Geale was the navigator for at least some flights in the other aircraft.

Just a few nights after returning to Nowra I was woken up a little after midnight and told I was going flying. We got airborne around 0100 on 6 January with Jim Campbell and Owen Nicholls the pilots. We headed to Sydney to pick up a Clearance Diving Team and their gear. We then headed to Hobart where they took part in the search for victims of the ship collision with the Tasman Bridge that had brought one of the spans down. We could see the yawning gap in the structure on our descent into Hobart. As anyone who has ever done any SAR or other humanitarian type flying knows well, being able to help, in however limited a way, is immensely satisfying.

On return to VC 851 in mid - 1981 as Senior Observer I did several flights as navigator in the then ECM trainer- fitted 748s. Others are far better placed to describe the observer and other back seat roles in the aircraft then. For this article my thanks especially to Owen Nicholls, who added to my own store of memories and corrected where necessary. Thanks also to Winston James and Jim Campbell for helping me confirm one of the anecdotes.♣

## HS748 Cyclone Tracey Emergency #1

*By Peter Adams*

During the early hours of Christmas Day, 25 December 1974, Cyclone Tracey hit Darwin with wind gusts of 200 kph plus devastating the city. More than 70 percent of Darwin's buildings were destroyed with 80 percent of houses gone and 71 people killed. With many of the population now homeless a massive evacuation was necessary.

Operation NAVY HELP DARWIN was swift. The first RAN asset to arrive in the stricken city, on 26 December, was an 851 Squadron HS748 aircraft flying from Nowra, collecting blood transfusion equipment and a team of Red Cross workers from Sydney. A second HS748 aircraft with a Clearance Diving Team One (CDT1) arrived shortly thereafter.

It is some time ago now but it is hard to forget the impression it made on me flying into Darwin on Boxing Day to see just how much devastation Cyclone Tracey created. The HS748 I was flying was one the first aircraft to arrive in the city and our mission was to assist in the evacuation of the city. In total Tracey kept us busy from 26 December 1974 to early February 1975.

When news of the disaster arrived 851 Squadron swung into action to assist with the relief effort including personnel called back to NAS Nowra. At the time, because of the restrictions on the use of the 748s and pilot training, we only had three HS748 pilot captains and one of those had appendicitis - so there were only two of us available. Fortunately, we were able to put together scratch crews using co-pilot volunteers, generally Grumman Tracker pilots familiar with twin-engine aircraft.

The RAN contribution to the rescue effort was considerable, including 13 ships and the Wessex helicopters, so I will just focus on a few of the lesser-known aspects concerning the HS748s. It was during one of the early evacuation flights out of Darwin that we found a friendly F27 Fokker Friendship at Alice Springs airport, so we were able to land and load it up with new Mums and babies, which was then able to fly them south.

On 29 December we ferried 29 passengers to Brisbane. As we arrived late in the day we overnighted in bunks on HMAS *Brunei,* a navy landing-craft docked at HMAS *Moreton* at Brisbane. Next morning we returned to find the aircraft filled with hundreds of freshly baked loaves of bread - apparently a gift from a local bakery. Darwin was desperately in need of bread so we were very welcome. Another Brisbane surprise was a friendly airline filled our Esky box with cans of cool drink and ice without charge.

After flying passengers to southern cities we would load up with whatever supplies we could. The list of items is long, but one of the unusual items was a load of disposable nappies, also pharmaceuticals and magazines which were in short supply. And so it went - with evacuees going south and resupply cargo going north. Interestingly, some of the squadron maintenance people who accompanied us doubled as flight stewards, then serviced the aircraft overnight before returning to Darwin. Remarkably in the midst of all this, on 6 January, one the 748s was diverted to Hobart with a team of divers, because a ship hit the Tasman Bridge collapsing a large section of the bridge decking.

One incident - not funny at the time - happened as we flew into Alice Springs during a rainstorm. Standard procedure is the captain flies on instruments while the co-pilot looks ahead for the runway, when sighted the captain takes over and lands. With all going well I told the co-pilot to turn on the windscreen wipers for touchdown, but as we slowed to taxi the cockpit filled with smoke. We radioed the control tower, shut down and quickly evacuated the passengers into the pouring rain. Upon investigation it was found that the co-pilot had turned on the duct heaters instead of the wipers which overheated. So, after refuelling at Alice Springs, we reloaded 27 wet passengers went on our way.

When we finished all the Cyclone Tracey flights, I thought it would be a good thing to thank the cooks and stewards from HMAS *Coonawarra* at Darwin who looked after the flight crews so well during our overnight rest periods. So we took them on a joy ride down to Halls Creek where we stopped for lunch then back over Katherine Gorge sightseeing. We also had them up front in the co-pilots seat. It was great to give them a well-deserved day out which I'm sure they enjoyed.

During the Cyclone Tracey emergency the two 851 Squadron HS748 aircraft completed 14 return flights involving 222 flying hours and carried 485 passengers and 22,700 kg of freight.

Following the Darwin relief effort 851 Squadron Trackers were sent to Broome WA for Operation Trochus 75 to carry out illegal fishing patrols. To provide backup the HS748s began flying fortnightly courier services for the Broome detachment bringing supplies and changeover personnel. An assignment the 748s did extremely well.

Apart from the Cyclone Tracy effort, the best HS748 memory I have is a VIP job we did for the RAAF who asked us to help out. The task was to fly about 20 people from Canberra to Point Cook for an RAAF College Graduation Parade. Notable passengers included the Chief of Air Force and a grumpy civil Defence character who lived up to his reputation on the flight.


Usually the flight would have been handled by RAAF 35 Squadron, but all their aircraft were occupied carrying politicians around prior to an election. My trusty co-pilot and I dressed in long white trousers and short sleeved shirts, and the Wardroom came to the party by providing two immaculate WRAN stewards as flight attendants.

It was an unusual job for VC851 Squadron and kindly acknowledged by a very complimentary signal of appreciation from the Chief of Air Force - a good one for the Navy. ♣

## HS748 Cyclone Tracey Emergency #2

*By Lyall O'Donoghue*

When Cyclone Tracy struck Darwin, I was on annual leave at my parent's house in Whyalla S.A. and recovering from an out of the blue appendicitis operation. As a consequence of the general recall of service personnel, I drove back to Nowra asap.

Due to the chronic shortage of qualified HS 748 aircraft captains, I commanded flights to Darwin on January 7th and 9th of January 1975. The initial flight north was made less pleasant than normal in that I still had the stitches from my operation in place and the seat belt caused quite a bit of aggravation. (Getting medical clearance to fly was problematic, but since I believed in the adage that rules are made for the guidance of wise men and the blind obedience of fools, and the needs of the residents of Darwin was very great, I elected to remain silent as to my condition. Co-pilot Phil Landon of course was in the know.)

Upon arrival in Darwin, and having unloaded a cargo consisting mainly of portable chain-saws, we went to an underground shelter at HMAS *Coonawarra*. There I sought out some medical treatment for my wound and the "fun" really started! Apparently, some patients from the wrecked Darwin Hospital had "escaped" and the police were out looking for them. It took quite some time to convince all and sundry that in fact, I was to command the flight south the next morning!

We departed on schedule with twice as many passengers as there were seats in the aircraft (refer to adage above) and some plastic skin from a spray can liberally applied to my stomach made the flight far more comfortable. The passengers were naturally showing signs of exhaustion and stress as a consequence of the ordeal through which they had all suffered.

Some time into the flight, Observer Peter Robottom advised that they were getting a bit unmanageable and that they may well open the emergency escape hatches as a bit of a lark! The only thing I could think of to do was to feather the starboard engine (which rotated the propellor VERY slowly), have Peter advise the rebellious passengers that we had a bit of a problem and that they should behave themselves! We relit the engine, and to my great relief, the pax were as quiet as church-mice for the remainder of the flight to Nowra!

Prior to returning to Darwin the following day, the Doctor at the sick-bay removed the stitches and cleared me for flight! It became very clear in Darwin that what the women of the city wanted most of all were the usual cosmetics to which they had had no access for some days. We had radioed these desires ahead, and the wives/sweethearts of NAS Nowra personnel organised a large collection of partially used/donated cosmetics which were gratefully received on our second trip north.

Our return journey routed via Brisbane and Sydney was memorable mainly for a radio conversation near Mt Isa. In the cockpit jump-seat we carried a WRAN radio operator from Shoal Bay. We had her make our Mt Isa position report which she did in the voice of the angels. After a stunned silence the ground ATC controller replied - "Navy 710, if you get her to say that again, you'll make an old man very happy!"♣

**Personal Perspective**

## RAN HS 748 History: 12 June 1982 – 09 April 1984

*By Jeff Dalgliesh*

I was posted to VC851 Squadron for HS748 Conversion on 12th June 1982. A return to flying saw me cover all facets of HS748 operations during the conversion which continued until 5th November 1982 when I flew my final check flight. During the conversion, Electronic Warfare (EW) operational flights were also flown so that when I was signed up for Command, I had also been checked out operationally. LCDR Trevor Peck, LEUT Larry Mills, LEUT John Purnell Webb and SBLT Dale Omera were all involved in the training.

On 14 January 1983 I assumed Command of VC851 relieving Lieutenant Commander Trevor Peck and I continued in Command until relieved by Lieutenant Commander Richard Scott on 9th April 1984.

While two HS 748 Aircraft were operated by VC851 only one aircraft could be operated in the Electronic Warfare Training Role at any one time as while both aircraft were fitted with the EW racks required for the EW Training mission only one set of EW Equipment had been procured. It took a tangible time to swap over the equipment and get all the elements aligned which included a Ram Air Turbine (RAT) to supply stable electrical power in excess of what the aircraft electrical system could supply for the EW fit.

(Note: If the aircraft was deployed transit was undertaken with the RAT removed as when fitted it was a fixed instillation on the forward fuselage below the Co Pilots window and created significant drag which effected Cruise, Take Off, Go Around and Engine Inoperative Performance. The EW aerial array when fitted were fixed and also effected how the aircraft performed).

The aircraft not fitted with the EW equipment was operated as required as a Transport and Passenger aircraft by the squadron and it was not unusual to fly an EW Mission one day in the EW aircraft and the next take Fleet Staff to Hobart for a Fleet Unit Inspection in the Transport Aircraft. Fleet Requirements flying was the order of the day with EW Training working up Fleet units being the primary task.

Once fitted with its ECM suite the aircraft was operated by a crew of seven (two pilots, one observer/navigator, a tactical coordinator and three ECM operators). The HS 748 now became a regular sight for ships working up on the east coast where the aircraft simulated a hostile electronic warfare environment. It would be remiss not to mention the importance of the EW crew when operating the HS748 in the EW Training role.

Fundamentally the Pilots and the Observer/Navigator job was to position the aircraft as directed by the EW Tactical Coordinator whether it was for a jamming, spoofing or simulated missile launch where the Pilot was required to manoeuvre into a launch position and provide a stable platform for the simulated missiles. Some of the EW Observers who ensured that this all occurred were LCDR's Neil Austin and Peter Robottom, LEUTs Dave Rendell, Greg Tindall and Neal McQueen.

Morale within the squadron at that time was pensive as the future of the remaining fixed-wing units of the Fleet Air Arm was very much in doubt noting that HMAS Melbourne was not to be replaced. To the dismay of all affected, the anticipated decision to disband the fixed wing elements was finally announced in May 1983 and would come into effect on 30 June 1984.

In the meantime, a unique opportunity presented itself for me to crew an HS748 flying members of a board of inquiry from Australia to Singapore in May. The unscheduled ten-day deployment was to prove a good opportunity for the aircrew to experience a long-range deployment in international air space without the usual support that they enjoyed when operating from a carrier. LCDR Peter Robottom, SBLT Dale Omeara and CPO Bob Griffith were happy to volunteer to accompany the CO on this deployment.

On 17 September 1983 VC851 deployed to Port Hedland for Exercise KANGAROO K83. One EW HS748 and four Trackers made the long overland trip via Broken Hill, Alice Springs and Broome to join a tent city at the Port Hedland airport. The Trackers formed part of Orange Force and the EW748 acted as both Purple and Orange Force. HS748 EW Operations were conducted out of Port Headland, Geraldton and RAAF Base Learmonth. The Squadron returned to Nowra on 15 October 1983 and during this period of operations I notched up my 6000th flight hour. At that time I was thought to be the first RAN pilot to reach that milestone: (Image: 'Navy News' 9th March 1984).

In the lead up to the cessation of fixed-wing operations in June 1984, NAS Nowra hosted visits from senior officers, politicians and Defence public servants to discuss the future of the FAA. The plan finally formulated for the two HS 748 Aircraft was for those Aircraft, Flight and Maintenance personnel to transfer to HC723 Squadron.

Unbelievably, this came at a time when the tempo of operations in support of Operation ESTES patrols continued on a daily basis for the Trackers, as did the commitment to supporting the RAN Fleet's insatiable requirements for working up its units. The RAN's two EW HS748s were equally busy with Fleet requirements simulating hostile electronic warfare environments.

The New Year saw operations for the two HS748 aircraft continue at the same tempo with participation in Exercise SEA EAGLE operating from RAAF Bases Williamstown and Amberley in conjunction with VC851 Trackers and HS 817 Dalgliesh as the new look SEA EAGLE without an aircraft carrier utilising land-based FAA assets.

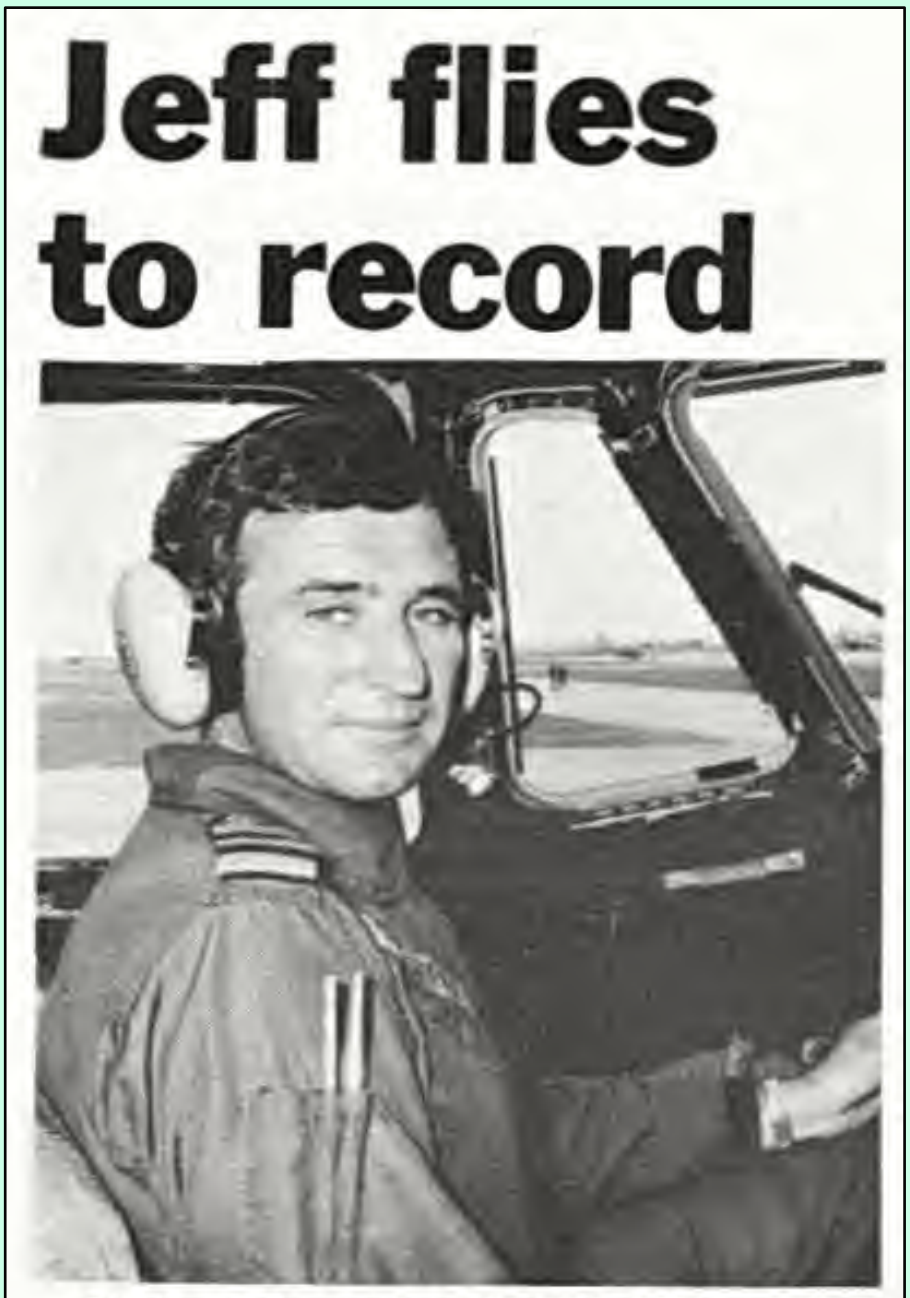
April 1984 saw the EW element of the HS748 Flight involved with Jindalee OHT trials with Aircraft 800 operating out of or transiting thru Northern Australian ports of Charleville, Mount Isa, Tennant Creek, Darwin, Gove, Weipa, Cairns, Rockhampton and returning to NAS Nowra via RAAF Base Amberley.

As the 30 June deadline approached FAA Fixed Wing personnel were given options to transfer to rotary wing, change category or Service, or retire. While on the surface this may not appear to affect the HS748 Flight in actuality it did as Flight Crew and Maintenance personnel made career decisions which required significant re-training to maintain the capability to operate the HS748 in both the EW and Transport role when the aircraft transferred to HC723 later in the year.

My time as CO of VS851 was both challenging and rewarding and I was to reflect that:

"It was an honour to be in that position it was also sad, frustrating and disheartening as it marked the demise of the FAA fixed-wing flying. My last flight in the RAN was as lead of a three-ship formation - an HS748 with two S2G's as wingmen on 27 April 1984".

I retired from the RAN on 17th May 1984 having thoroughly enjoyed flying the "Speedbird" in both roles as a Pilot in a Transport Aircraft and an Electronic Warfare Training platform, having achieved 520.0 hours on type. ♣




**Lieutenant Commander Jeff Dalgliesh, Commanding Officer of VC851 Squadron, recently notched up 6000 flying hours, becoming, it is believed, the first RAN pilot to do so.**

LCDR Dalgliesh joined the RAN as a junior recruit in 1963 and commenced flying in 1965.

He has flown Winjeel, Vampire, Iroquois, Wessex, Trackers, Macchis and HS748 aircraft.

During the Vietnam conflict, he was mentioned in despatches while serving with the RAN Helicopter Flight Vietnam.

He is pictured at the controls of an HS748.

## THE HS748 AND THE HANGAR FIRE

*By John Brown*

This incident occurred on the night of 'The Wardroom Summer Ball' on Saturday 4th December 1976 at the naval air station HMAS *Albatross*. While the ball was in full swing somebody mentioned to me there seemed to be a fire in the Bomb Dump, well away from buildings and infrastructure, so nothing to be concerned about. Shortly thereafter that was corrected to "H" Hangar being ablaze.

In view of my new job as Flight Safety Officer, for NAS Nowra, I had a responsibility - apart from the subsequent paperwork - and drove to the hangar with three other Officers. As we approached the Western end of the hangar the most amazing sight was revealed.

Massive explosions shook the hangar with the western doors bowing outwards with each blast. Then out of the sky came balls of burning AVGAS (115/45 aviation gasoline). The smaller ones disappearing as they fell, but with the larger ones landing before burning out. In all - a very surreal scene.

A major concern was that one of the HS748 aircraft (N15-709) was parked close to the hangar, and had some of the larger fireballs landing on it and burning for a short time. The priority for a group of us was to move the aircraft. So we obtained a nose-wheel tow-bar and attached it to the aircraft and my little 4-cylinder Subaru vehicle. It soon became clear the aircraft would not move as the 748's parking brake was ON.

Because the aircraft's cabin door was locked, we decided to break-in through the observation bubble/emergency exit over the wing. One person who climbed onto the wing was about to swing a heavy wheel chock at a very expensive window, when a voice from the dark yelled - stop! Fortunately one of the VC851 Squadron pilots had forced open the 748 Shop and retrieved the keys.

While the pilot entered the cockpit, the rest of us went around the 748 checking for red safety flags (indicating engine intake blanks, etc). As the pilot started the starboard engine, he remembered he hadn't closed the door and started back down the aircraft. About halfway he heard the sound of fire bells going off in the cockpit and ran back to shut-down the engine. Then with the door closed and the port engine started the pilot moved the aircraft away from the burning/drifting AVGAS.

The cause of the starboard engine burn-out was the engine intake blank had not been removed. At least 4 pilots went around to check that engine and everyone missed it. The reason was believed to be the glare from the fire on the other side and the fact the red flag attached to the blank was excessively short.

[Note: As a safeguard against a repeat of the inlet blank problem; from then-on a lanyard from the inlet blank was attached to a propeller blade to pull out the blank if an engine start was attempted.]

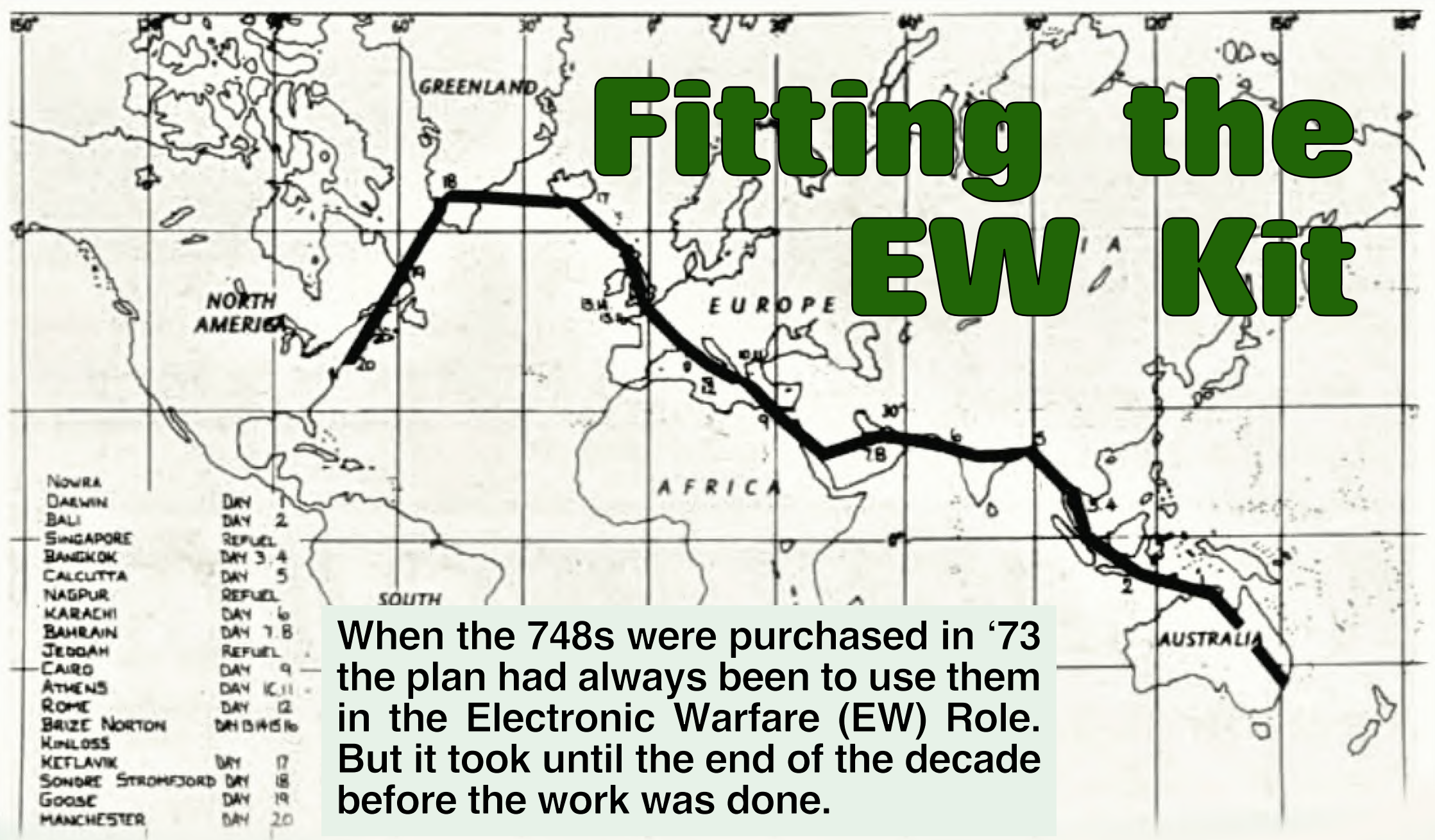
With the tow-bar removed and the nosewheel steering link reconnected the pilot taxied the 748 to safety, immediately contacting Sydney ATC by radio instructing them that NAS Nowra was closed until specific approval from the Commanding Officer was obtained. This action saved another impending disaster as the Press were trying to fly in as soon as they got wind of the fire.

With no runway lights and the A4 Skyhawks from "J" Hangar moved away from the fire onto runway 26, any unauthorised landing would have been catastrophic. Despite the pilot's quick thinking and starting the other engine to move the aircraft to safety he was censured by the investigating enquiry and "logged" for destroying the engine. I believed that, despite the engine damage, the pilot should have been commended for closing the airfield. But that was not to be.

Regarding the fire, police suspected arson and a Board of Inquiry was immediately announced. On 19 January 1977, a 19-year-old junior sailor from one of the Tracker squadrons admitted to starting the fire. He was subsequently found to be mentally unstable at his court-martial.

*J R Brown* LCDR (Rtd) RAN ♣

# Fitting the EW Kit




**When the 748s were purchased in '73 the plan had always been to use them in the Electronic Warfare (EW) Role. But it took until the end of the decade before the work was done.**

When the HS748s arrived in 1973 it was intended to fit them with special equipment for Electronic Warfare (EW) training. But this was delayed until 1978 when N15-709 was finally sent to Hawker de Havilland (HDH) at Bankstown for airframe and internal modifications.

In October 1979, after test flights, 709 was flown to Manchester (New Hampshire) in the USA, where defence contractor Sanders Associates installed a range of electronic countermeasures equipment with aerials, antennas, chaff dispenser and a Ram Air Turbine (RAT).

The flight to the USA took a west-bound route, due to range considerations of the aircraft, which involved 19 refuelling stops. – and the return to Australia reversed the route. In August 1979, following the departure of 709 to the USA, N15-710 went to HDH Bankstown for its EW fit-out.

Although both aircraft had identical airframe and internal modifications, only one EW electronics suite was ever purchased. This was swapped


*Clockwise from Top. [1] A nice shot of 709 post EW fitment showing the multitude of aerials that gave rise to the Echidna logo the Flight eventually adopted. [2] The EW Flight Patch, with a PR photo of a 748 for good measure. [3] View of the underside of the 748, from tail looking forward, showing various dispensers for chaff, flares etc.♣*

between aircraft according to mission and aircraft serviceability. When N15-710 underwent its conversion (at Bankstown) the gear was not sent to Hawker De Havilland for fitment as it was being used the in the other aircraft, and so Navy accepted 710 on a build-to-print basis which, surprisingly, worked well. The gear took about 2-3 days to move from one bird to the other, and usually involved a number of post-fitment test flights to iron out wrinkles.

As an aside the Ram Air Turbine (RAT) was a emergency power unit from a DC-10 and not designed for more than a couple of hundred hours of service life. During the procurement process the stores system determined only one spare was necessary. Marquardt, the OEM, offered to sell Navy five instead of the two requested for not much more, but in Navy's ultimate wisdom they stuck with two. A couple of years later this proved to be an unwise decision. ♣

*Clockwise from top right:*

*[1] A view of the underside of the aircraft showing the RAT and some of the multitude of aerials that adorned the aircraft.*

*[2] The authorities at Athens International Airport were a little concerned about the status of the RAN HS748 that landed for a re-fuel stop - and kept a close eye on it with this armoured car.*

*[3] Greenland has a burst of arctic weather for N15-709.*

*[4] RAMAIR was the name adopted for the HS748 by the pilots – a contraction of their names Rasmus and MacKenzie.*

*[5] After a lengthy multi-stop flight from Australia N15-709 arrives in New Hampshire where the aircraft will receive its EW fit-out.*

*[6] Navy News of 02 Nov 1979 tells the story of the Flight and the people who make the outward journey. The aircraft returned to Australia almost exactly twelve months later following the same route in reverse. ♣*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# HS748's FLIGHT TO USA THE LONGEST BY A RAN AIRCRAFT

**A Navy HS748 turbo-prop aircraft of VC851 Squadron departed RAN Air Station, Nowra, NSW on October 22 on the longest flight by a RAN aircraft.**

The aircraft, one of two operated by the RAN, was flown to Australia from Manchester, United Kingdom in June 1973.

Onboard the aircraft for the 14,000-mile flight to Manchester, New Hampshire, USA were two pilots, two observers and three maintenance personnel.

Because of its medium range capabilities the aircraft will fly a west-about route thus avoiding the long transits in a Pacific crossing.

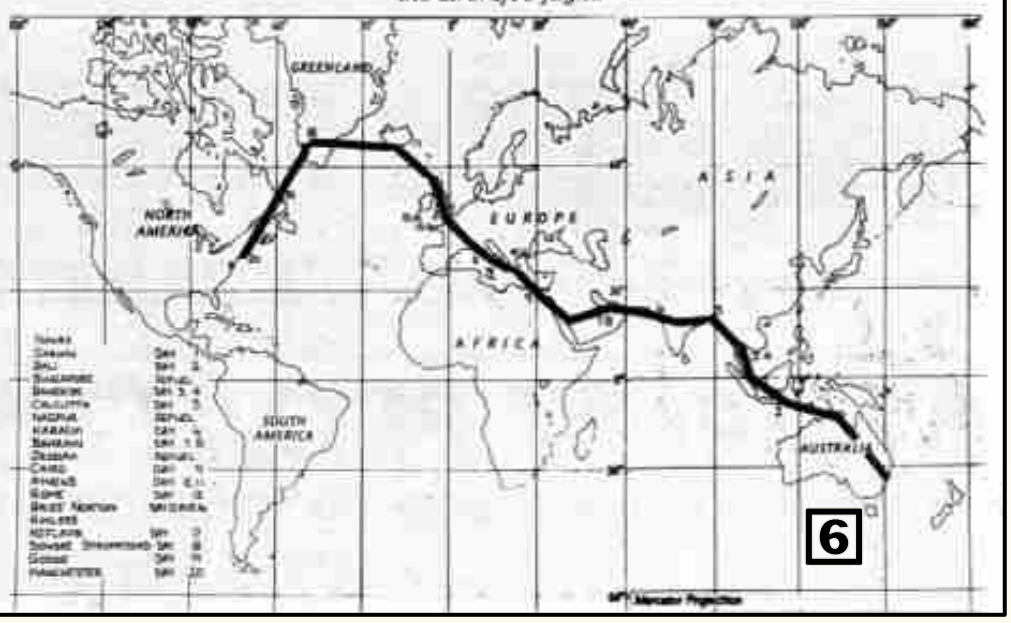
During the long ferry flight the aircraft will make 19 stops for refuelling and rest periods for the crew. The journey will take 12 days.

The purpose of the flight is to deliver the aircraft to Sanders Co of Nashua, New Hampshire, USA for fitment of equipment to enable the aircraft to carry out Electronic Warfare Training for the Australian Defence Forces.

The Officer in Charge of the detachment of four officers and three sailors is LEUT Neil AUSTIN, a Fleet, a Fleet Air Arm observer serving with VC851 Squadron.

The crew, all members of VC851 Squadron consist of: LEUT KEVIN McKENZIE, LEUT KEVIN RASMUS, LEUT AUSTIN and ASLT Mike FITZGERALD.


*MEMBERS OF THE AIRCREW AND MAINTAINERS who flew in the HS 748 aircraft to Manchester, New Hampshire, USA (L to R): Petty Officer Air Technician Anthony Bell of Nowra, Lieutenant Kevin Rasmus, Nowra, Lieutenant Neil Austin, Nowra, OIC of the Detachment, Sub-Lieutenant Michael Fitzgerald, Nelson Bay, Lieutenant Kevin McKenzie, Nowra, Chief Petty Officer Air Technician Gregory Neeasby, Bomaderry, and Leading Seaman Air Technician Bruce Williamson, Mordialloc, Vic. BELOW: The planned route of the aircraft's flight.*



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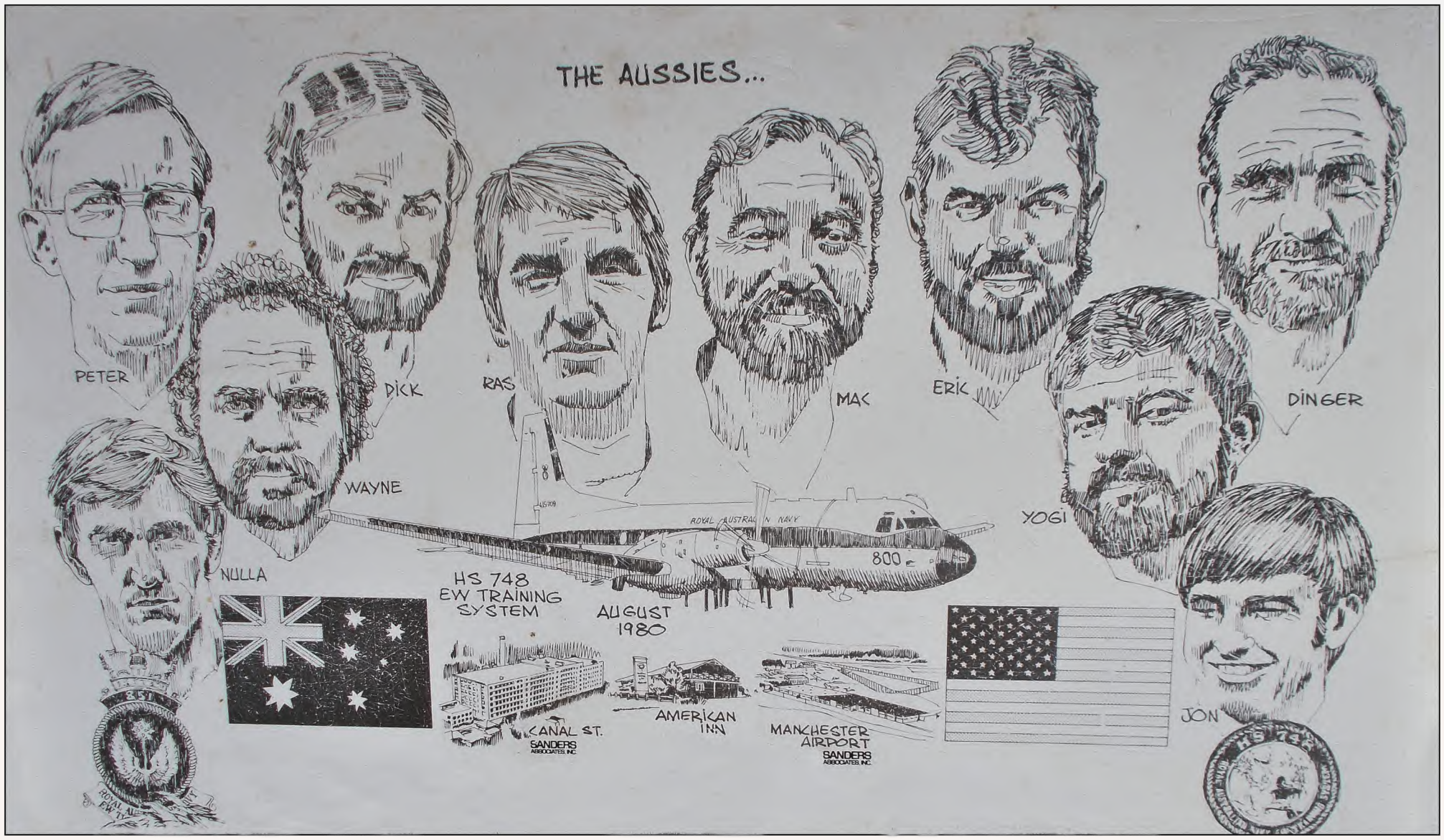



*Above. A poster given to each member by the Sanders graphic artist around August 1980. The sketches were made from photos taken individually in various Sanders facilities, including the hangar at Grenier Field. Wayne was DQA and not a serving member. Clockwise: Neil "Nulla" Austin; Peter Harrison; Wayne ? (Dept of Quality Assurance); Dick Holland; Kev Rasmus (P); Kevin MacKenzie (P);Eric Arnell (ATC); Anthony "Dinger" Bell (ATW); Greg "Yogi" Neasbey (ATA) and Jon Dolan (O). Given that the original fit was only supposed to take three months (but eventually took almost four times that) some team members had moved on and been replaced by others. Not shown are Mike Fitzgerald (O and later P); Bruce Williamson; Russ Loane (ACMN) and Chris Davis (EW). ♣*

# Electronic Warfare (EW) Operations

by Al Byrne

I was posted to FAA's EW Flight, initially at VC851, and then HC723 (when 851 decommissioned, and the EW Flight was subsumed within HC723) from early 1984 to late 1988. I had found the introductory Electronic Warfare ground school on Observer course at RAAF East Sale fascinating, so when I somehow came to be offered the opportunity to make the move from Wessex to the HS748 EWTS, in lieu of the more usual path to the ASW world of Sea Kings, I jumped at the chance.

My course mates on EWTS Operator course were LCDR Roger Scovell (decommissioning CO of 851), POA Mal Hume, POA George Casey and LSROEW 'Charley' Varley. Roughly four months of ground school and airborne training was conducted at the squadron mainly by, as I recall, LCDR Neil 'Nulla' Austin, LEUT Neil McQueen and LEUT Greg Tindall.

Standard EW crew consisted of seven - 2 x pilots, navigator, EW TACCO, and 3 x EWTS operators. Occasionally, two experienced operators could manage the systems, if a third wasn't available and the task not too complex. In transit to the operating areas, the three EWTSOs would reposition from the forward facing passenger seats that they'd occupied for takeoff to the 'bench' in the aft cabin - a starboard facing sliding bench seat located with the EW console aft in the aircrafts cabin. The EW Tacco simply stood behind the operators, leaning over their shoulders, where he could monitor all EW activity.

There was certainly no simulator, so hands-on systems training was conducted either in the aircraft on the ground with external power applied (with lots of limitations on what gear could be flashed up), or airborne on (long!) cross-country or coastal sorties where we could be exposed to a variety of ship-based or ground based radars.

At any one time, only one of the two airframes (709 and 710) was configured with the EWTS, while the other remained in 'clean' configuration. Thus, if the currently fitted EW airframe was approaching a big scheduled servicing or suffered a significant U/S, the kit was swapped over to the other aircraft to ensure a continuing EWTS capability. The EW change was a very significant effort for the small team of maintainers, usually taking a week or two. The EWTS required much more electrical power than the aircraft's standard systems could supply, so the EW airframe featured a fixed Ram Air Turbine (RAT), located on the starboard side just aft of the nose wheel well. Legend had it that this piece of kit was actually the emergency generator from a DC-9 airliner. Whether this was the case or not, it didn't particularly

like vibrating in the airflow for months at a time, with the development of cracks in the base of the RAT mount being a pretty common occurrence. The combination of the drag from the RAT and the numerous extra external antennas, as well as the extra weight, meant that the EW configured aircraft was never a strong performer. I remember that there was never an official performance planning manual for the EW configuration, so I think we simply allowed a conservative 10% decrement to calculated figures for achievable cruise heights, ceiling, drift-down height for one engine inoperative, etc, etc. Keeping all the EW hardware cool also meant that it needed it's own dedicated cooling system. The EW cooling system was flashed up just before going on task, at which point the navigator station became almost uninhabitable, courtesy of the gale of cold air that the EW cooling system generated.

ESM systems included an A/B band (comms), and two C-J band (radars, etc) reception and direction finding systems. The A/B DF could be operated in step or scan modes. In step mode multiple frequencies could be entered, and the system would (almost instantaneously) step between the frequencies, listening for a signal. If a signal was detected the system would stop, indicate a relative signal strength and display a bearing to the emitter. It would then be up to the operator and the EW TACCO to judge the validity of the detection. Multiple comms intercepts at multiple times meant that the aircraft's navigator could back-plot the bearings and come up with a reasonably accurate position for the ship, even if they were radar-silent (occasionally, DDG or FFGs would forget to turn off their TACAN, thus making our navigator's job much easier!). If we'd been lucky, and the TACCO had somehow managed to get hold of the comms plan for the serial or exercise, step mode was always the quick way to a detection. Scan mode simply required entry of an upper and lower frequency limit, and the system would then, as the name suggests, scan through the entire range. This invariably meant that the system would be continually stopping on multiple irrelevant signals, slowing the evolution considerably.

An oscilloscope and associated patch-panel could be connected by short removable cables to the C-J DF systems to allow analysis and identification of incoming signals in those bands. As there was no saved database of emitter parameters for automatic comparison to those received, operators needed a pretty sound working knowledge of the emitters likely to be encountered (frequency ranges, pulse width/s, pulse repetition rates, scan rate, etc, etc). Just like learning the 'numbers' for any aircraft type, it all eventually stuck in the head! A good EW operator could even sometimes isolate a particular ship from a class of ships. There was no fixed EW data recording system, although occasionally a large and clunky analog tape recorder was temporarily installed.

Having identified an emitter, what followed was the need to quickly configure appropriate jammers, and be ready to activate as the training or tactical scenario required. As well as RR140 multi-band chaff (240 packets dispensed from under the tail) the aircraft's ECM systems included omni-directional comms jamming and fixed-direction radar jamming systems. The comms jammer could be linked to a UHF or, rarely, HF, radio. It could be set to transmit any of a range of intentionally annoying modulating tones (imagine a classic 'motorboat' noise) on the target frequency at the flick of a switch. Given the height advantage the aircraft had over the target ship's transmitters, jamming comms between two or more ships was usually quite effective. A shrewd EWTSO would soon learn to strike a balance between simply jamming out everything (thus tempting the ship's operators to switch away to a new frequency); or jamming only the important words of the target's tactical transmissions (voice authentications, bearings and distances, etc, etc). As well as simply making the ship's operators life difficult with jamming on their tactical voice circuits, we actively conducted 'spoofing' (either gently or quite aggressively, depending on the scenario) - making our own transmissions on the various voice circuits pretending to be someone else, issuing fake instructions to their consorts, excitedly warning of non-existent incoming air raids, pretending to be the Task Group's Air Warfare co-ordinator and directing their defending aircraft to RTB, etc, etc, etc. We proved that, often, using an authoritative sounding tone, and using the correct 'jargon' and code-words was enough to convince a busy on-watch PWO that we were legitimate! Most tactics were fair play - re-using callsigns heard on a different circuit, jamming our own transmissions then feigning frustration and ordering a chop to alternative frequency, etc, etc. All good fun - we knew we were having a good day if we ruined their day!

As the transmitters for the radar jamming sub-systems were fixed in position in the nose of the aircraft (pointing slightly down and covering about +/- 15º from the aircraft's heading) radar jamming could not be conducted continuously, because the aircraft had to close towards the target during each jamming run. To gain maximum impact, the aircraft was slowed during the inbound run, and then turned and accelerated to 'buster' outbound once we'd reached radar burn-through range or missile engagement zone from the target. The radar jammers featured spot or barrage modes, which, depending on the technical features of the target radar, could be further swept or modulated for maximum effect. Some jammer modes displayed as one or more bright 'spokes' on the victim's radar scopes, while some introduced false targets, or surreptitiously drove up their radar gain, causing legitimate targets to fade from view.

***Above:*** *Three shots of the EW fit in the main cabin, separated by small bulkheads. There was plenty of room to do their job and move around.*

EW training sorties for the fleet ranged from simple 'serialised' EW demonstrations, where we'd slowly work through various jamming modes, building up in intensity, to allow ship staff to train junior Ops Room crew, right up to full freeplay exercises, timed for maximum impact on the targets. I recall that we became pretty creative in our efforts to surprise the ships in these situations. We knew that, depending on location, the ship's could monitor NAS Nowra's ATC frequencies, thus getting a warning that we were coming, so we would sometimes carefully pre-brief all our players, organise rendezvous positions, negotiate ATC clearances beforehand, and then taxi and takeoff on the strength of a green light from the tower, etc, etc. With the luxury of plenty of fuel we could then track well seaward, and launch our surprise attack from open ocean direction, having been joined 'no radio' by our simulated air-to-surface 'missiles' (a pair, or sometimes a four-ship, of Macchis or Mirages - sometimes operating from Williamtown, or sometimes Nowra). The jets would tightly form up on us, and, on receiving the 'launch' hand signal from our cockpit, roll off our wings and dive to the deck, simulating an ASM's speed and flight profile as they'd run in to the target. Combined with judicious use of chaff corridors for confusion, we could usually manage to camouflage an inbound raid to a reasonable extent, meaning 'Hit A' on the ship was often a surprise.♣


*The caption scribbled on the image above hints at some of the EW threats that HS748 could emulate.*

*The details remain classified, but what is clear is that the EWTS and co-operating fast jets could quite successfully reproduce the tactics likely to be employed by a range of potential adversaries in a reasonable scale air raid on a surface fleet. This might have entailed some 'random' chaff fields at a couple of different quadrants from the target, with occasional 'accidental' transmissions on radar to suggest a raid was forming up in a particular direction.*

*Meanwhile, if working with F-111s (which had accurate navigation and very long legs, even at ridiculously low level), the 748 would have been reporting via coded communication the position of the highest value target in the fleet, and the relative positions of air defence ships. Because that was all the F-111s needed, the 748 could then relax outside the ships' missile engagement zones, and wait for the mayhem to commence as the F-111s hit them from a couple of completely different directions.*

*If, on the other hand, the strike aircraft were Macchis or Mirages (very limited fuel, and really only DR navigation once they were over water) the 748 could, at an appropriately pre-briefed time, depart from a designated point, join up at a planned initial position, and then turn inbound, releasing the fighters to run down the bearing to the target at speed. Ideally, the strike would be hidden in the 748's jamming spoke on that bearing, so, while the target would quickly realise where the inbound raid was coming from, they wouldn't know the range, and, therefore, wouldn't know the likely time-on-top.♣*

## Personal Perspective - The Birth of RANTEWSS


The RAN Tactical Electronic Warfare Support Section, or RANTEWSS, was a key part of the RAN's Electronic Warfare Capability, and the HS748EW Flight relied upon it heavily. But where did it come from? Neil Austin tells the story.

"I spent a couple of days at home and then went to UK for a post grad course in Military Ops Research at RMCS Shrivenham (now part of Cranfield University ) On my return to AUS, in January 1981, expecting to be part of VC851, on the first day back, the CO LCDR Col (Farmer) Talbot told me "you're off to this new job". I said what's that and he said "some type of new EW organisation". The next day or day after I received a posting to RANTEWSS. I rang around and found it all came out of DEWN and they said yup the establishment signal was coming out the next day and you are the OIC to wit I asked - Oh OK where is it and what staff will I have..."

The reply was - "you have to find a building, we have posted a Petty Officer (Chris Davies) to help you and you write all the terms of reference, pick staff, ... and by the way start operations as soon as you can."

There is probably half a book in there but long story short , 2 years later we had a few buildings which were about to be demolished TROSS buildings, 82 staff, quite a few operations under our belt, some of which are still black and of course one of our roles was to support HS748. The HS748 part of RANTEWSS in those days was about a quarter of what we did. Nevertheless while in the job, I flew as a TACCO, along with PO then CPO Chris Davies (later CMDR) , trained up the next generation of 748 gollies, and we RANTEWSS ran the OPEVAL of the 748. A busy couple of years. All of the EW technique development in those years was done by RANTEWSS. By the way some of those first generation trainees as gollie enlisted aircrew went on to become observers CAPT Al Whittaker, CMDR Tony Milsom

The other roles of RANTEWSS was to support Fleet EW library programming (now a function of JEWOSU). COMSEC monitoring and what is now public domain if you google it - a SIGINT role."♣

*Piloted by Jeff Dagliesh a HS-748 (N15-710 complete with EW equipment) with two accompanying Trackers take part in a ceremonial farewell flypast at NAS Nowra to mark the end of his illustrious military flying career. A couple of months later the fixed wing element of the FAA, with the exception of the two 748s, was to be disbanded and every aircraft in this image scrapped or sold off - an act of bastardy that changed the face of the Fleet Air Arm for ever. The sole fixed wing survivors were the two 748s, which were transferred to HC723, a helicopter Squadron, to render another six years of stirling service before they too met their end, as can be seen below.♣*

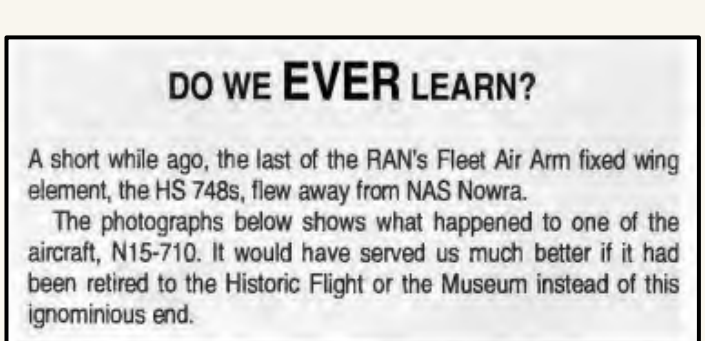
# The End of the Line

## DO WE EVER LEARN?

A short while ago, the last of the RAN's Fleet Air Arm fixed wing element, the HS 748s, flew away from NAS Nowra.

The photographs below shows what happened to one of the aircraft, N15-710. It would have served us much better if it had been retired to the Historic Flight or the Museum instead of this ignominious end.





## In 2000 the 748s reached the end of their lives... but what happened to them?

N15-710 1710 Production Number 202.

First Flight 16/03/73 as N15-710.

Delivered to RAN 03/08/73 arriving Nowra NSW 17/08/73.

Later coded '801'.

Fitted with specialised electronic equipment in 1980/1 and subsequently used for electronic countermeasures training.

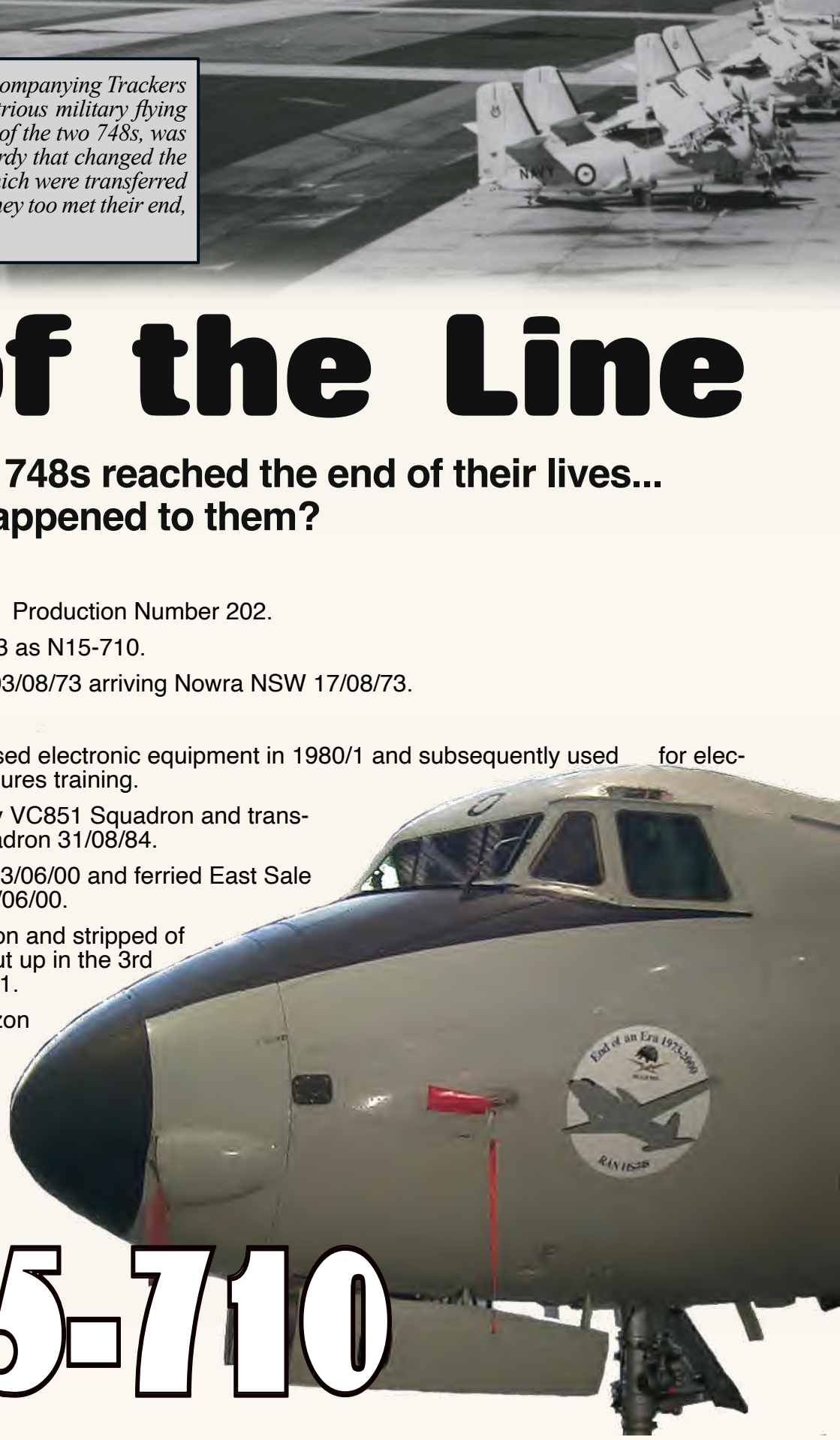
Initially operated by VC851 Squadron and transferred HC723 Squadron 31/08/84.

Decommissioned 23/06/00 and ferried East Sale for storage/sale 26/06/00.

Sold to TAG Aviation and stripped of usable parts and cut up in the 3rd week of March 2001.

Remains with Horizon Airlines?

It completed 12,788 flight hours and 12,388 landings.♣




N15-710

# N15-709

Photo: Stu Harwood, FAAM

From the FAAAA website: *"Ex-RAN HS748 N15-709 was chopped up at Bankstown in October 2019. Apparently it was to go to the Wanaka Transport Museum in New Zealand but they lacked the resources to move it.*

*The aircraft first flew in January 1973 and was delivered to the RAN a few months later, arriving in Nowra early June of that year. It was fitted with specialised electronic equipment between 1978 and 1980 and subsequently used for electronic countermeasures training.*

*Over its operational life, 709 flew over 11,000 hours before retiring in June of 2000, 27 years after its arrival.*

*Subsequently sold to TAG aviation, the HS748 was registered as 3C-QQP and sent to Norwich, UK. It was then sold to Horizon Airlines Pty Ltd and flown back to Bankstown via Rome/Ciampino, Cairo, Jeddah, Djibouti, Mombasa, Mahé, Male, Colombo, Medan, Denpasar, Darwin and Mount Isa.*

*It was scheduled for fitment of large rear freight door from an aircraft of the Tanzanian Peoples Defence Force but before that could happen Horizon Airlines was placed in Administration and later ceased operations. The HS748 was then fitted with dummy engines and props and located at the Australian Aviation Museum at Bankstown.*

*With the closure of the museum there was talk of it going to the Wanaka Transport Museum in New Zealand, as did a number of other museum aircraft. The logistics of moving such a large airframe proved too much, however.*

*709 was also offered to Navy Heritage for the Fleet Air Arm Museum, at quite short notice. Unfortunately the museum did not have room for a complete HS748, not to mention the logistics of moving a complete aircraft at short notice, so only the forward fuselage was acquired (the rest went to scrap). The picture below is 709 returning to HMAS ALBATROSS after 19 years absence (arriving on 23 October 2019). As of the end of 2021 the museum is developing a plan for her display.♣*

***Right**: This clipping from Navy News of 24 July 2000 says it all - the last fixed wing of the RAN's Fleet Air Arm were withdrawn from Service. Like many services previously provided from within the Navy, the business of EW was contracted out to a private operator flying LearJets out of Nowra. ♣*

## The fixed-wing era comes to end

The era of fixed-wing aircraft in the Royal Australian Navy has come to an end.

Late last month the last two fixed-wing aircraft, a pair of HS 748s, were withdrawn from service.The planes had been on the job for 27 years.

Attached to 723 Squadron, the aircraft were built in the UK and accepted into the RAN in 1973.They were bought to replace the venerable Dakota.

The planes were initially used for navigation training and transport duties.

In 1980/81 they were modified to provide electronic warfare (EW) training for the Australian fleet.

As the only EW platform of its type in the south east Asia region the HS 748s took part in most fleet work-ups, domestic and international exercises.

They also provided logistic support to ADF personnel and were awarded the Navy League of Australia Plaque for aid to the civilian community following Cyclone Tracy.

Two years ago one of the aircraft shuttled between Nowra and Merimbula supplying helicopters involved in the Sydney to Hobart yacht rescues with spares, stores and maintainers.

Their departure closed the final chapter of fixed wing operations in the RAN.

Electronic warfare training for the RAN will now be done by a contractor with the appropriate aircraft.


• **The end...the last of the RAN's fixed-wing aircraft has been withdrawn.**

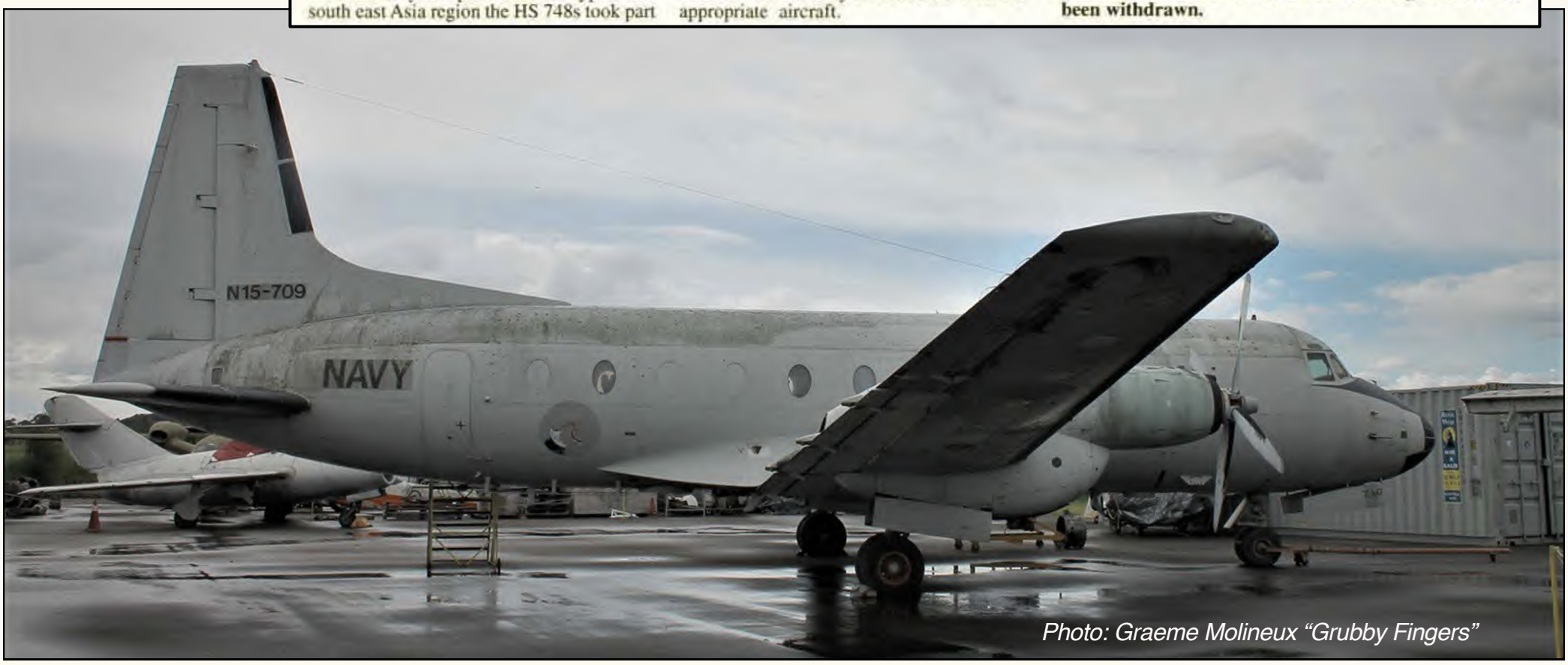



Photo: Graeme Molineux "Grubby Fingers"

*With the HS748 symbolically taxying out of the picture, it had fallen to its rotary-wing siblings to carry the Fleet Air Arm into a future where small-ship Flights were the face of air power at sea. The diminutive Bell 206 (lower) and Squirrel AS350B had been instrumental in that gigantic task. Their story can be seen **here**.*♣


**Acknowledgements**

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**References**


RAN VC851 Squadron history

RAN HC723 Squadron history

Sea Power 'Navy News'

BAE Systems Heritage Avro 748

ADF Serials

Wikipedia. ♣