THE BUSHRANGER STORY

'… and so, a Gunship was born'

by

Wing Commander Brian Dirou, DFC (Retired)

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AUTHOR PREFACE

A unique version of the ubiquitous Bell Iroquois family of helicopters, identified as a 'Bushranger' gunship, was created by No. 9 Squadron, Royal Australian Air Force during the Vietnam War.

The emergence of this military capability is outlined in the story which derives principally from my personal recollections of happenings during progression of the Bushranger development project.

The events related have been correlated with official unit records (where existing) and/or verified by dialogue with others with whom I served in that theatre of war.

No. 9 Squadron aircraft losses and personnel casualties were low over 5.5 years (2,000 days) of Vietnam War involvement reflecting efficient conduct of battlefield support operations and there were hundreds of instances where the squadron was directly involved in ground battle scenarios.

The 58,768 hours flown by this small squadron well exceeded the air effort by any Air Force unit in any campaign in entire RAAF history.

The abbreviated accounts of some operations reflect the proud tradition of a fine Air Force unit that gave dedicated support to the Royal Australian Navy during World War 2 and the Australian Army plus allied forces in the Vietnam War.

Some personal observations are embraced to ensure that invaluable lessons of war are not lost in the mists of time.

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Prologue

This story describes the development and introduction to operational service of the Royal Australian Air Force 'Bushranger' helicopter gunship during the Vietnam War, a derivative of the Bell Iroquois family of aircraft that was unique in the world.

'The Bushrangers' painting – Copyright © Brian & Diane Dirou, 2001
Limited Edition series of 600 prints

Between early 1965 and end of 1968, there was a massive tenfold increase in US forces deployed to South Vietnam with a huge demand on available deficient battlefield air resources to support American forces especially, and the Vietnamese. This necessitated an immense industrial and personnel training effort over about 4 years to back the military commitment.

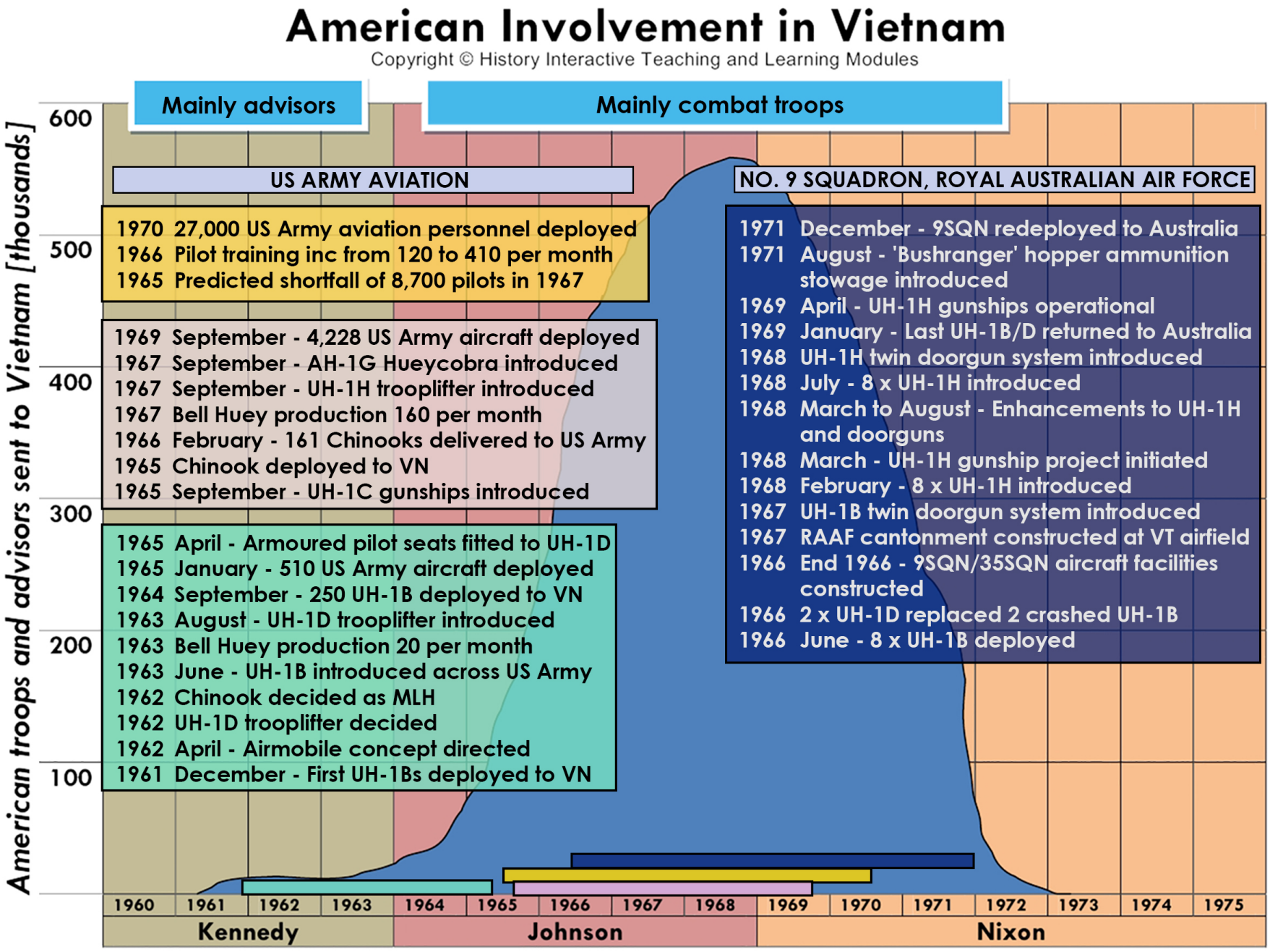
Australia deployed a 2 battalion Task Force to Vietnam mid-1966 expanding to 3 battalions plus increased fighting arms at beginning of 1968. No. 9 Squadron RAAF provided 8 x UH-1B Iroquois mid-1966; but these smaller models had already been proven inadequate for trooplifting and gunship roles in US Army service. 9 Squadron began re-equipping with 16 larger and more powerful UH-1H model Iroquois in 1968.

RAAF Bravo model Iroquois
Image: Air Force

US Army Hotel model Iroquois
Image: US Army

Helicopter Gunship Resources

Initial deployment of Australian forces in 1965 and subsequent expansion of commitment to the Vietnam War effort paralleled the massive US forces build-up and there was sometimes non-availability of US Army helicopter gunship support for 1ATF operations due to escalating American demand on their resources.



Gunship Project Emergence

In 1967, the Australia Army in Vietnam asked the RAAF whether an integral gunship capability could be developed. High US forces demand for emerging UH-1C Iroquois and Hueycobra gunships precluded possibility of near term acquisition by foreign military.

US Army UH-1C Iroquois Gunship and AH-1G Hueycobra – Images: US Army

Temporary Firepower Augmentation

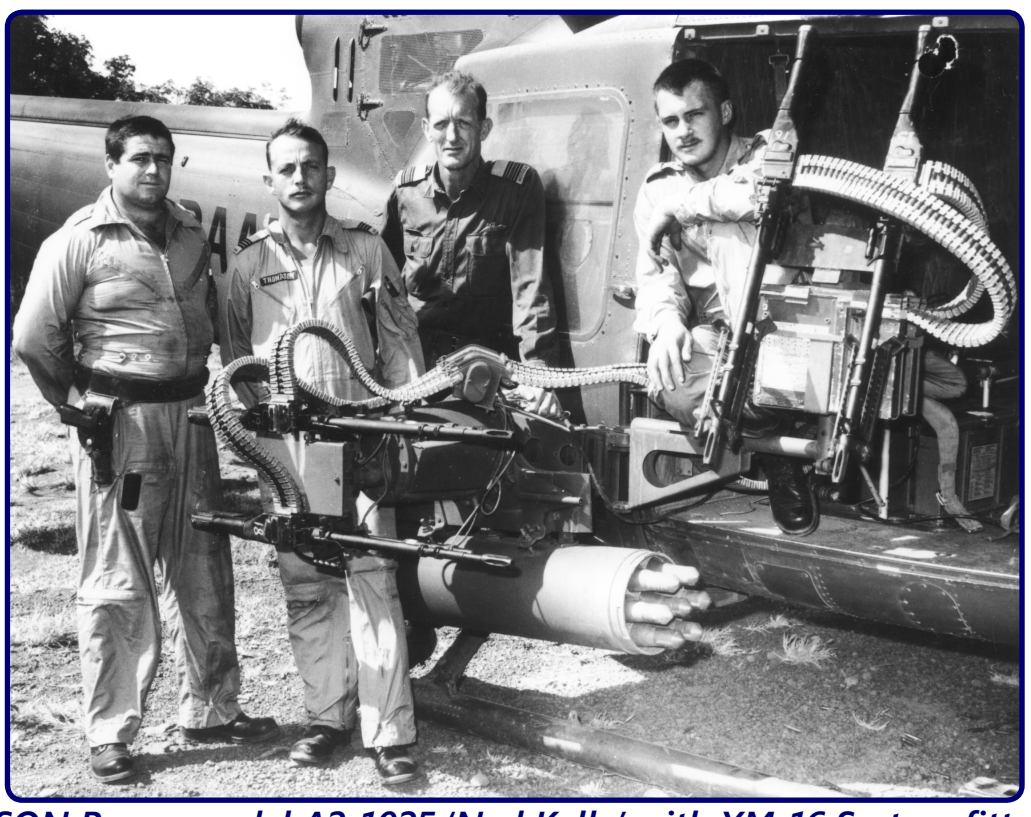
9 Squadron RAAF developed twin doorgun systems for both Bravo and Hotel model Iroquois to provide enhanced integral unit firepower in the absence of US Army gunship support, but this capacity was limited due to shortage of doorgun weaponry.

9SQN Twin Doorgun System – Image: Australian War Memorial

The Spawning of a Concept

Unsuitable 9 Squadron Bravos were being progressively repatriated to Australia as replacement Hotel models were introduced. These larger more powerful platforms were intended as trooplifters by the Americans and gunship versions of this model were not then envisaged.

The obsolescent XM-16 weapon system (XM meant 'Experimental Model') designed for Bravo model Iroquois gunships had similarities to the XM-21 system being fitted to US Army Charlie model gunships, so 9 Squadron borrowed some XM-16 hardware for system analysis fitment to a unit Bravo model.



9SQN Bravo model A2-1025 'Ned Kelly' with XM-16 System fitted
SGT Ernie Moore, FLTLT Bob Thompson, SQNLDR Jim Cox, LAC Ted Maxwell
Image: 9 Squadron Gunship Project

Knowledge gained raised the possibility of the newer XM-21 system for Charlie models perhaps being adaptable to Hotel model Iroquois, so development of a new operating concept for this model aircraft was envisaged.

Around March 1968, those involved with 9 Squadron Bravo model gunship research had all reached end of tours and a new project team was created to progress conceptual Hotel model gunship development headed by myself, then Flight Lieutenant Brian Dirou, Pilot with Flight Sergeant Graham ('Blue') Downer, Electrical Fitter and Sergeant Phil Hodge, Armament Fitter as technical members.

Weapon System Acquisition

Our project did not yet have formal RAAF Australia approval so we had to somehow acquire sufficient Charlie model armaments to begin experimental design work on our Hotel model aircraft. The project team was given tacit in-country blessing to acquire these resources by appropriate means and bartering was the obvious recourse in an environment where black market dealing was rife.

HMAS Sydney of 'The Grey Funnel Line' usually visited Vung Tau at about 2 monthly intervals loaded to the gunwhales with beer, cartons of steak, Four & Twenty Pies (and some military gear); mostly very tradeable commodities. Products of Australian origin much sought after by US servicemen were beer and slouch hats.

HMAS Sydney unloading cargo in Vung Tau harbour – Image: Navy

Our Equipment Officer somehow managed to keep us well supplied with slouch hats and the Commanding Officer authorized purchase of cartons of beer (10 cents per can) utilizing squadron social club funds. This latter measure caused some heartburn initially but dissent diminished as the project began evolving.

9SQN Hotel model Iroquois loaded for a barter mission – Image: Nev Pratt

When the pace of operational activity permitted - perhaps every 2 or 3 weeks - we would load a Huey with beer, tool boxes, slouch hats and eager squadron hands to visit numerous US Army helicopter bases and aircraft graveyards, soon acquiring sufficient weaponry and other components to begin experimental design work on our conceptual Hotel model gunship.

The Design Process

Our initial look at the Bravo model fit dubbed 'Ned Kelly' convinced us that US designed XM-16 and XM-21 systems were akin to something out of a Jules Verne novel and too complicated in design.

US Army Charlie model gunship with XM-21 System encompassing flex miniguns and remote fire control and aiming system fitted to left hand pilot station – Images: US Army

The Charlie model concept required one pilot to primarily fly the aircraft, but he could also fire rockets and the flexible miniguns when they were fixed forward. The other pilot/gunner in the left hand pilot seat operated a complex minigun aiming system which permitted considerable freedom in arcs of fire, but this system was electro-hydraulic and beset with potential technical problems.

From both operational and training perspectives, it was preferable that either pilot should be able to fully control all weapons modes, so we decided that the flexing capability of the miniguns could be removed and the system converted to a fully dual pilot operated fixed forward firing arrangement. This allowed us to eliminate the hydraulics, simplify electrics and discard the complicated pilot/gunner sighting system, also achieving a weight bonus.

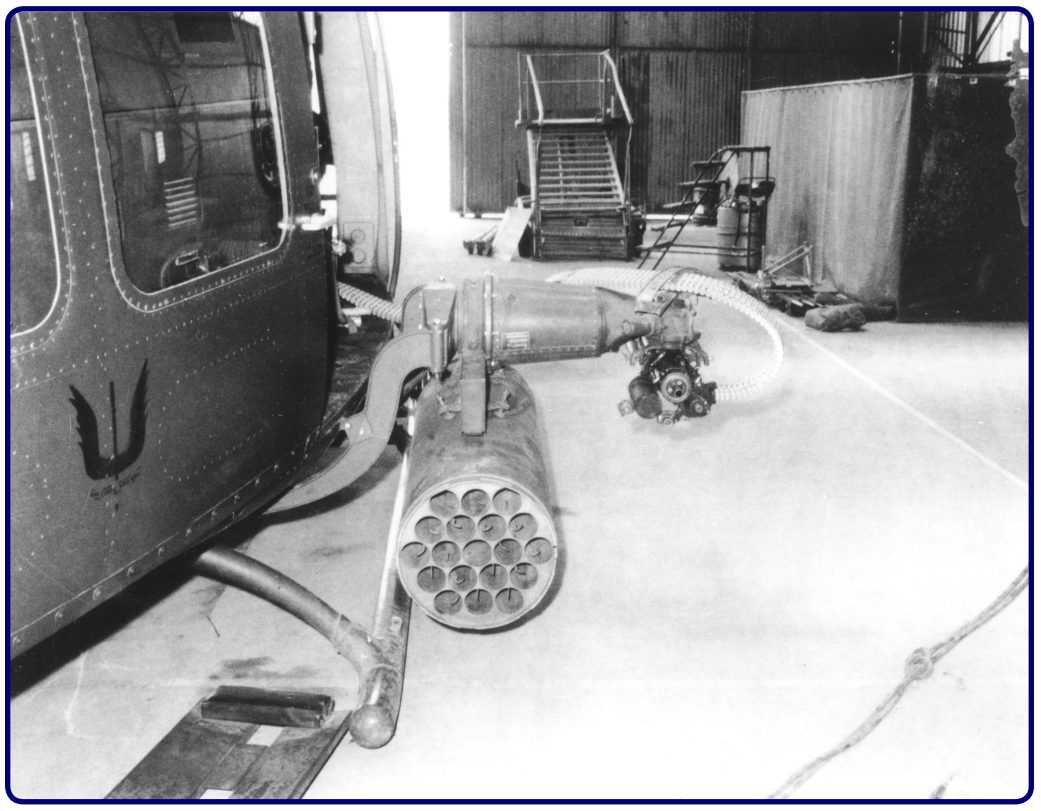
Gunsights

There was no gunsight mounting available in the US Army inventory to allow fitment of a reflector gunsight to both pilot stations so we simply re-engineered the standard swing down mount to adapt it to the left pilot station. With fixed forward firing weaponry and twin reflector gunsights we were able to adopt the standard Air Force process of constructing a 'Reduced Range Screen' for harmonization of the weapons system.

Standard single US Army right hand gunsight and twin sights adaptation for Hotel model Images: 9SQN Gunship Project & Terry Pinkerton

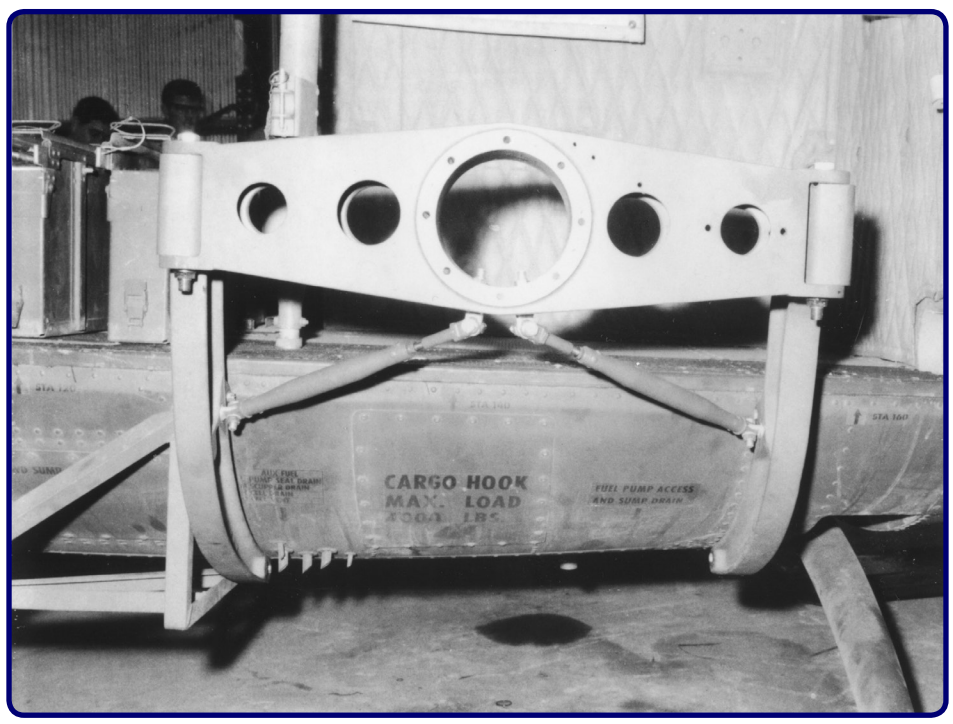
Flight Trialling

In May 1968, we installed some very temporary electrical circuitry on A2-380 for limited flight testing to assess aircraft handling and stability. Handling was fine but longitudinal stability not good for a weapons platform and other problems emerged.



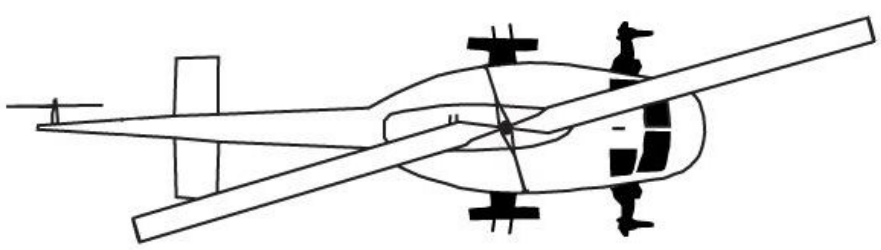
9SQN Hotel model A2-380 early configuration trials – Image: 9SQN Gunship Project

When the rear mounted miniguns were fired, muzzle blast shockwave effects on pilots' ears were very severe. Additionally, the outboard mounting of the miniguns on the rear pylons unacceptably restricted the crewman/gunner fields of fire for their twin M60 machine guns. We decided this configuration was not viable for a Hotel model gunship.



Hotel model rear external stores mount; forward mount similar – Image: 9SQN Gunship Project

The Hotel model Iroquois had rear and forward hard points and we discovered that a forward pylon mounting assembly was available for external equipment fits. We requisitioned this gear and determined that it was possible to mount the miniguns forward adjacent to pilot seats, leaving the rocket launchers mounted rearwards close to the fuselage.

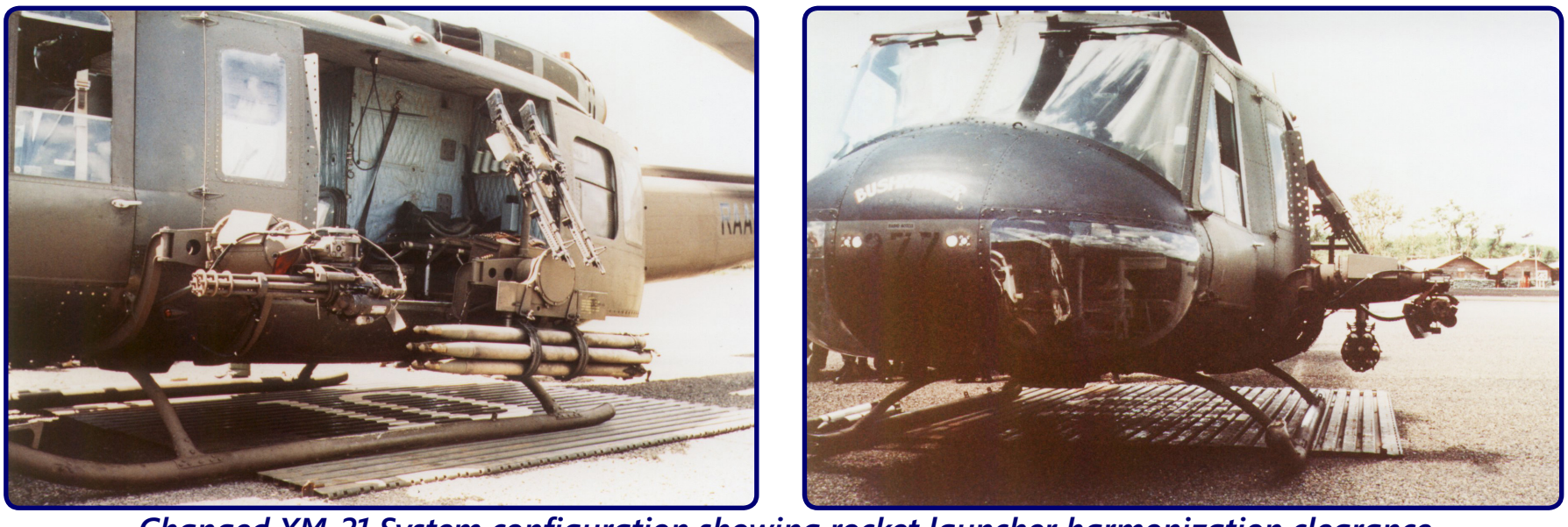


Prototype Development

From July 1968, design work began in the hangar on A2-773 as the prototype aircraft, but became stalled by inability to acquire suitable electrical adaptor plugs for rewiring of the electrics associated with the reconfigured weapons system. It took some frustrating weeks of research before we eventually found a USA source for suitable plugs and when these were acquired we were able to install the necessary circuitry in our prototype.

Within a few months, we had managed to barter enough gear to fully equip 3 aircraft and flight testing began on A2-773 in September 1968 with the rearrangement of weaponry improving longitudinal stability, eliminating the muzzle blast problem and allowing broader door-gun fields of fire.

A resultant problem of this reconfiguration was weapons system harmonization. Could we sufficiently elevate the rear mounted rocket launchers to harmonize with the gunsights for desired range rocket firing and still have safe clearance of extending rocket fins beneath the forward mounted minigun pylons?



Changed XM-21 System configuration showing rocket launcher harmonization clearance
Image: Air Force

Our aircraft metalworkers manufactured some brackets enabling transverse strings to be stretched beneath the minigun pylons. We then coated rocket fins with coloured crayon and determined degrees of fin extension through strikes on the strings when rockets were fired.

There was very safe clearance for harmonization needs and we were chuffed that our conceptual Hotel model weapons configuration had proved feasible. 'Blue' Downer and Phil Hodge were then able to finalize all necessary technical drawings for us to initiate the official RAAF approval process for our design concept.

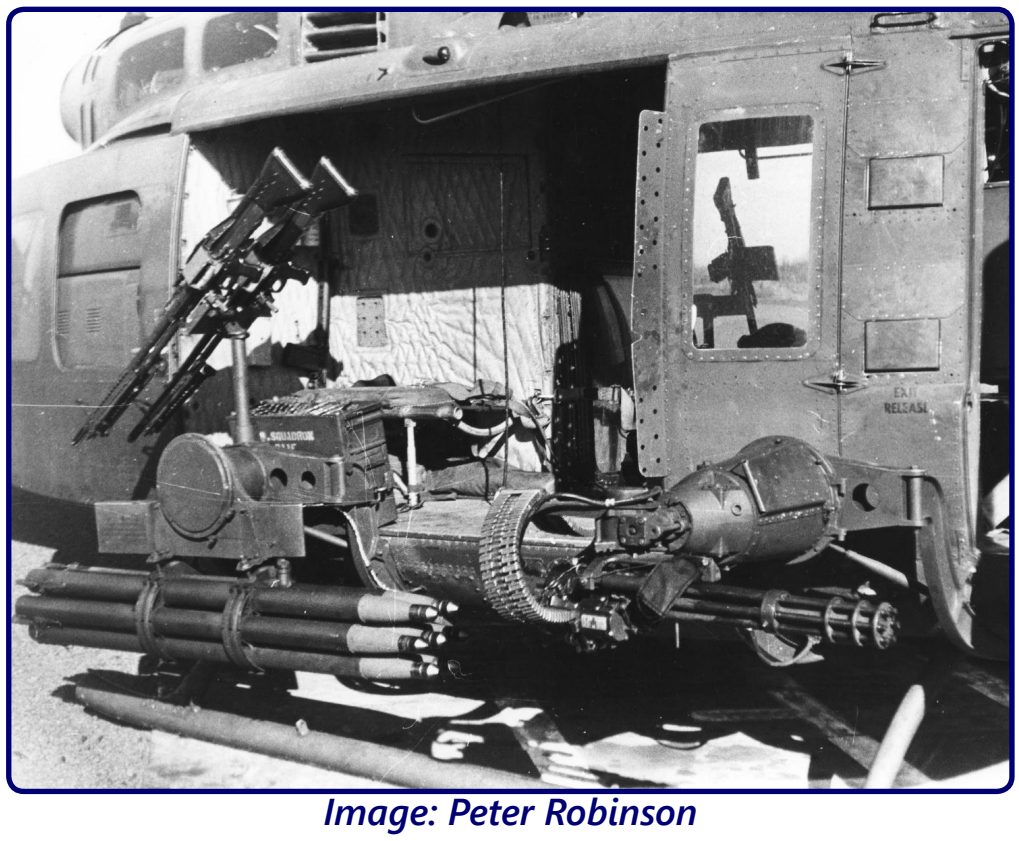
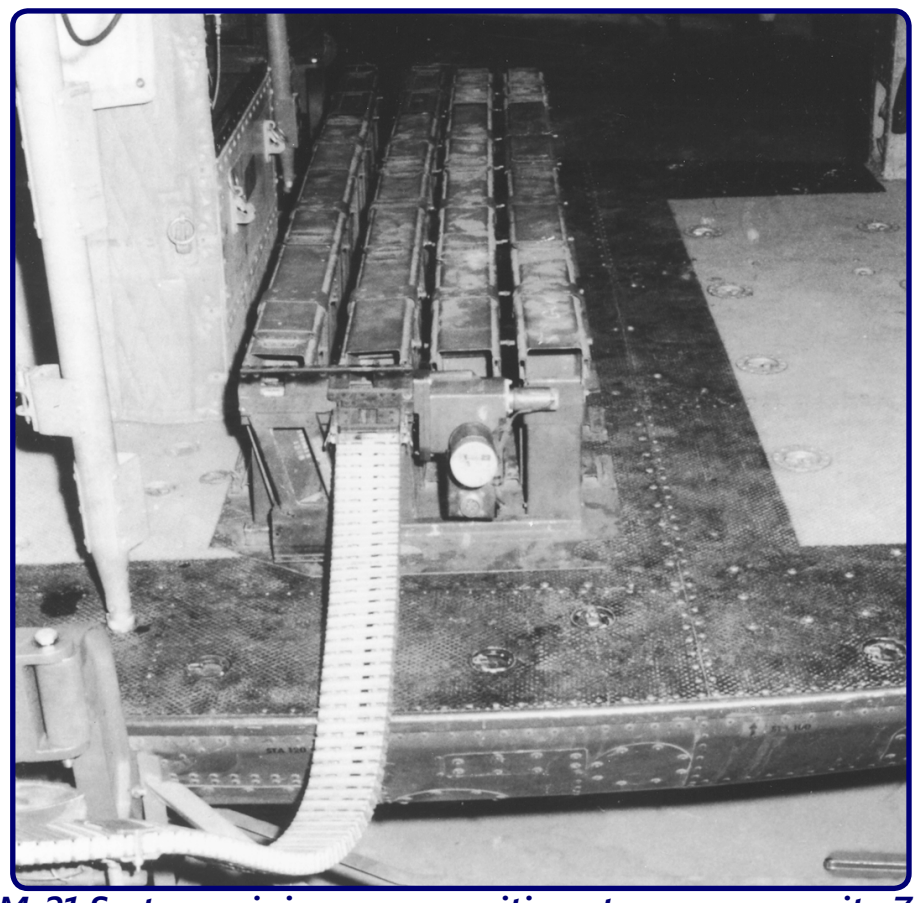


Image: Peter Robinson

Minigun Ammunition Stowage & Capacity

There were very significant shortcomings with the standard Charlie model minigun ammunition stowage. Capacity was 7,200 rounds stowed in 12 interconnected 600 round bins for standard door-gun mountings and these small bins were clipped to a load spreader platform bolted to the cabin floor. The system was very slow to rearm and prone to ammunition jamming from misaligned linked ammunition loaded directly from 1,500 round packaging containers. Redesign was intended, but pressure to acquire Australian Government sanction for the gunship role forced some interim compromise.



Standard XM-21 System minigun ammunition stowage, capacity 7,200 rounds
Image: 9SQN Gunship Project

Our metal bashers extended the spreader platform and we added 4 extra bins to provide stowage for 9,600 rounds of ammunition for the miniguns, which were the primary close air support weapons.

Extended XM-21 System minigun ammunition stowage, capacity 9,600 rounds
Image: Norm Goodall

The standard Charlie model minigun control circuitry programmed each gun to fire 3 second bursts at 6,000 rounds per minute, but we reduced this rate of fire to 4,800 rounds per minute with each minigun delivering 80 rounds per second or 480 rounds from 2 miniguns in a 3 second burst. Our 9,600 rounds of ammunition allowed for around 1 minute of firing in 20 x 3 second bursts and either gun could be selected to conserve ammunition.

Twin Doorgun Refinements

While developing the gunship weapons configuration, we also redesigned the interim twin door-gun system which had 2 rotating ammunition bins and was usually fitted to utility aircraft used for SAS patrol recovery and people sniffer missions.

We had been encountering frequent door-gun stoppages due to ammunition chute flexing plus cartridge and link blowback in the airstream necessitating much trialling of fabricated ammunition feeds and wind deflectors; but we eventually got it right through the ingenuity of our aircraft metalworkers enabling ammunition chutes to be discarded.

Port doorguns airstream deflectors and starboard doorguns ammunition feeds
Images: Roger Buck & Terry Pinkerton

Very simple open ammunition bins were manufactured for the Hotel model gunship configuration from metal packaging containers for linked 7.62 mm minigun ammunition providing 1,500 rounds per door-gun station and these bins were simply secured to the rear pylon mounting with a very strong tie-down strap for quick and easy rearming. These door-gun bins were loaded with 100 percent tracer ammunition to enable quick aim correction and for psychological effect.

Twin doorgun ammunition bin with 1,500 rounds of tracer ammunition – Image: Peter Howe

Aircraft Weight & Balance

When the final design concept had been established, we had to ensure that the weight and balance of the aircraft would be within the prescribed limits otherwise the configuration would not have been approved by Air Force technical authorities, so the fully equipped aircraft was carefully weighed in the hangar with all peripheral equipments included.

After allowing for full fuel and 800 pounds for 4 aircrew, the all up operating weight was about 50 pounds below the 9,500 pound maximum operating all up weight for the aircraft, which gave no margin for carriage of any observer passengers unless the fuel load was reduced.

The weapons configuration moved the aircraft centre of gravity forward conservatively within the allowable limit to improve weapons platform characteristics and the aircraft could hover with the landing skids about level.

Bushranger final design configuration
Image: 9 Squadron Gunship Project

Image: Peter Howe

The Urgency

There was a sense of urgency surrounding the gunship development project.

The primary role of 9 Squadron was direct support of 1ATF which embraced support for all fighting and non-combat arms of the Task Force. The Australian Special Air Service Regiment including a New Zealand component played a very active role in Vietnam and about 1130 of their 1305 patrols were inserted and/or extracted by 9 Squadron Iroquois.

The normal SAS role was covert reconnaissance, but soon after the 1968 Tet Offensive, the SAS squadron in theatre became more involved in ambush activities frequently inflicting casualties upon the opposition. Inevitably, it became more difficult for SAS patrols to break contact with the enemy resulting in increasing contested extractions and it was only a matter of time until a patrol was overwhelmed before extraction could be effected, if gunship support was not immediately available.

Special Air Service Regiment Unit Crest Image: SASR

SAS Patrols before emplaning for insertion – Images: Peter Howe & Peter Robinson

SAS Patrol before take-off for insertion – Image: Peter Robinson

SAS Patrol before take-off for insertion – Image: Bob Upham

SAS trooper enroute for insertion - (Image Peter Robinson)

SAS trooper after extraction - (Image Peter Robinson)

SAS Patrol after extraction – Image: Bill Robb

Winch Extraction

Majority of contested SAS extractions were in jungle where the patrol had to be recovered by rescue hoist through canopy up to 150 feet high. The enemy was at times within cricket pitch proximity of the patrol and the winching process took 20 or more minutes on occasions, with both SAS and 9 Squadron exhausting ammunition.

SAS 2 man hoist training and 2 man winch extraction
Images: Peter Robinson

Suspended Extraction

The enemy had become tuned to SAS insertion practices and contested patrol extractions were becoming more common and hazardous so we had to improve our prospects for mutual survival. During 1967, we had developed rappelling procedures in Australia with the SAS squadron now in country and had since refined a floor mounted roping attachment/release rig in Vietnam for fitment to a Hotel model aircraft so we could develop procedures for suspended extraction with our SAS friends.

The technique involved the recovery aircraft coming to a hover above the patrol in contact and dropping 150 foot long ropes for each patrol member which were attached to the rappelling rig. The SAS would fashion individual rope seats from their personal equipment and attach to a dropped rope. All would link arms and the aircraft would then slowly lift them vertically through the jungle canopy. This procedure greatly reduced hover time during extraction thus conserving ammunition for the patrol and aircraft involved, but had some quite risky aspects.

SAS 'Swiss Seat' and rope extraction training at Nui Dat
Images: Air Force & Bob Upham

The patrol suspended 150 feet beneath the aircraft became a pendulous extension of the aircraft weight. Great care was needed in flying the recovery aircraft to prevent a swinging motion developing which could temporarily move the overall aircraft centre of gravity beyond flight control limits. It was nerve tingling stuff, particularly if engaged with the enemy.

Ropes drop through jungle canopy preceding lift-out of SAS Patrol
Images: Peter Robinson and Bob Upham

Once the patrol was lifted clear of the contact area, a clearing in near proximity was sought where the gunships would orbit while the patrol was 'gently' deposited, ropes released and relieved troopers embarked on the recovery aircraft for return to Nui Dat.

The ferry with patrol suspended was sometimes much further than desirable if over continuous jungle and a selected clearing seldom secure from enemy intrusion; but these risks were preferable to the probability of patrol and aircraft loss during continued long duration rescue hoist recoveries in contested situations.

There were several successful rope extractions of patrols during contested situations, although 2 subsequent accidents.

Image: Bob Upham

On 27 September 1969, Private David Fisher fell from his rope soon after being lifted above jungle canopy. It was thought that he may have attached his karabiner ring to an incorrect loop on his rope while under pressure during the extraction and despite an extensive search at the time, he was not located. His remains, which had been buried by Vietnamese soldiers, were discovered in 2008 and repatriated to Australia.

Personnel involved in the action on 27 Sep 69

SAS Patrol 11	CPL Joe Van Droffelar PTE David Fisher (MIA) PTE Les Liddington PTE Paul Saxton PTE John Cuzens	Albatross 04 A2-769	PLTOFF Tony Wheal PLTOFF Peter Bradford LAC Peter Armstrong AC Ray Price
Albatross 01 A2-378	SQNLDR Brian Nicolls FLGOFF Mike Andrews LAC Geoff Scobie AC Malcolm McIver LAC Paul Pannowitz	Bushranger 71 A2-377	PLTOFF Mike Tardent FLGOFF Chris Ellis LAC David Moles AC John Reale
Albatross 02 A2-766	SQNLDR Graham Derby (RNZAF) FLGOFF John Peterson (RNZAF) LAC Bob Burtenshaw LAC Darryl Macarty	Bushranger 72 A2-382	SQNLDR Mike Robinson PLTOFF Tony Lea LAC Don Neil AC Peter Sutcliffe
Albatross 03 A2-767	PLTOFF Chris Beatty PLTOFF Gary Mulholland LAC Wayne Hay AC Greg Mahony	Bushranger 73 A2-383	PLTOFF Joe Driver PLTOFF Des Long LAC Allan Lamb LAC Clem Walters

On 15 October 1969, a New Zealand SAS patrol had to be extracted by rope after abandoning their packs to run from a large enemy group (see map on page 26). After lifting the patrol from the extraction point and while approaching a clearing to deposit the patrol for rope disconnect and embarkation, an oscillation developed due to assumed hydraulic flight controls failure and the aircraft became uncontrollable. The suspended patrol was dragged about 60 metres along the ground and the Huey pranged, fortunately without serious injury to the patrol and aircrew.

Rope extraction accident A2-766; NZSAS Patrol 32 on 15Oct69 – Images: Air Force

Personnel involved in the action on 15 Oct 69

NZSAS Patrol 32	SGT 'Windy' McGee LCPL Jack Curtis LCPL Denny Makara LCPL Duke Pewhairangi LCPL Mike Cocker	Albatross 03 A2- 766	FLTLT Lloyd Knight GPCAPT Ron McKimm AC Tony Reynolds-Huntley AC Malcolm McIver
Albatross 01 A2-382	SQNLDR Ron Crimmins SQNLDR John Pendreigh (RNZAF) LAC Ted Maxwell Gunner unidentified	Bushranger 71 A2-383	FLTLT John Hazelwood PLTOFF Gary Mulholland SGT Felix Parker LAC Darryl Macarty
Albatross 02 A2-381	WGCDR Roy Hibben FLTLT Max Woolf SGT Terry Pinkerton AC Terry May	Bushranger 72 A2-377	FLTLT Rex Budd PLTOFF Des Long LAC Geoff Smith LAC Clem Walters

Another incident occurred on 2 November 1969 after rope extraction while approaching to a hover for landing of the patrol. A patrol member swivelled inverted while still attached to his rope, but the aircraft captain was fortunately able to ground the patrol expeditiously to recover the situation, despite controllability difficulties.

9 Squadron then declined further rope extractions and reverted to time consuming rescue hoist recovery of SAS patrols.

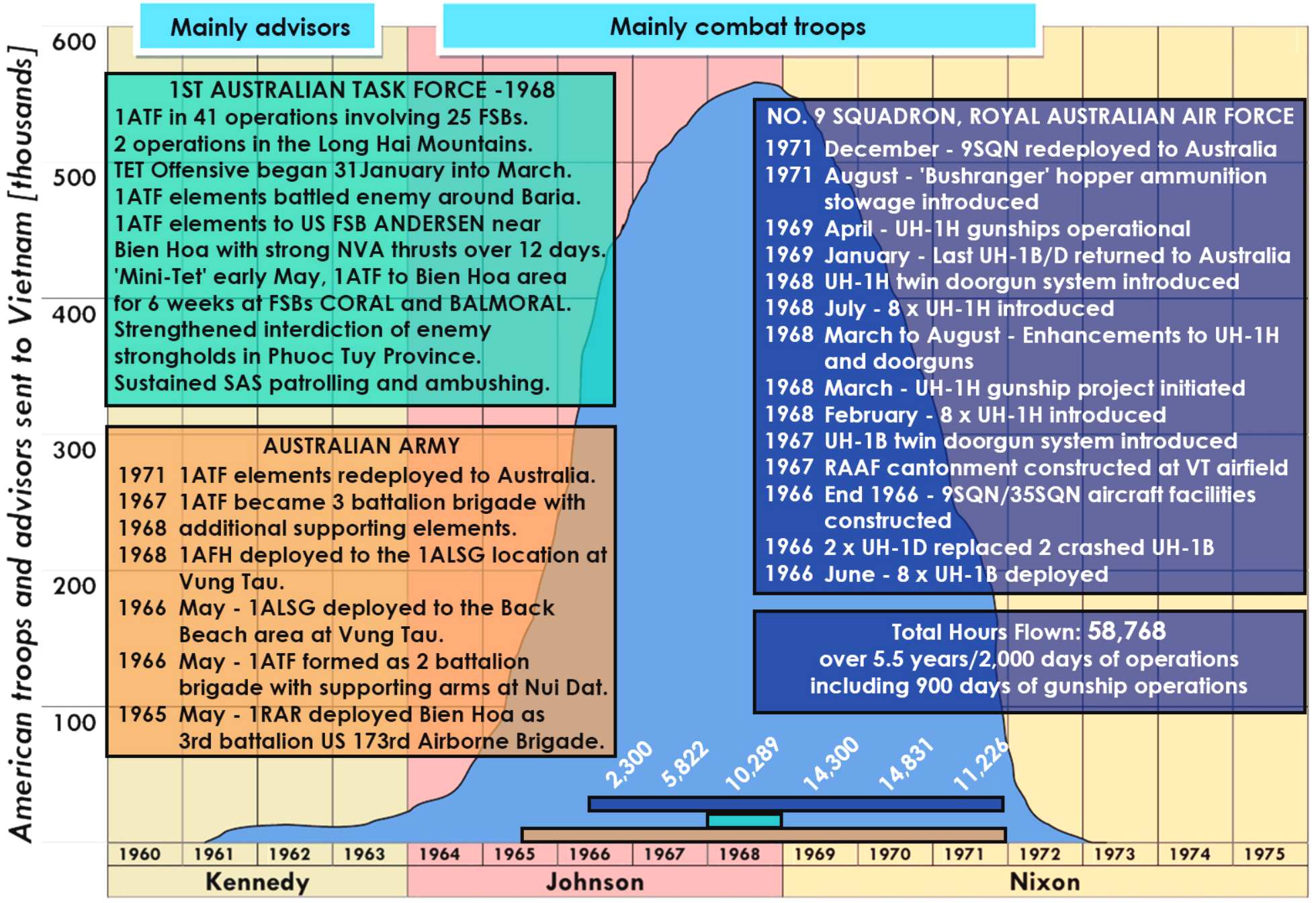
I had left Vietnam again about mid-1969, so was not privy to the reasoning; but felt that the risks involved in rope extraction were preferable to long duration winching, considering enemy awareness of SAS/9SQN operating procedures, which in my view were too stereotyped.

Had the rope technique not been used for some earlier extractions, patrols and aircraft would most likely have been lost.

Australian Government Blessing

Much had been accomplished within the squadron by end of October 1968. The unit had transformed from 8 x UH-1B/D to 16 x UH-1H aircraft complement and near doubled its personnel. Essential modifications/improvements were made to all of the new Hotel models and other new equipments manufactured for command and control communications, psychological warfare and insecticide/herbicide spraying with new operating procedures developed and written for our rapidly broadening roles.

Since 1ATF had been expanded to 3 infantry battalions plus a Centurion tank squadron around the beginning of 1968, there had been major operational involvements for the Task Force with 9 Squadron averaging over 1,000 hours of flying per month. We normally had 13 of 16 aircraft on line daily and the hangar hummed with activity, so our gunship project had to mesh with all of this effort.



By November 1968, we were ready to exhibit our prototype gunship A2-773 for the Minister for Defence, the Hon. Malcolm Fraser, MP who was scheduled to visit Vietnam later in the month. We organized a big lobbying campaign to ensure he was appropriately pressured for Australian Government blessing wherever he visited Australian military elements; so by the time he got to view our pride and joy, he was convinced of the operational need.

About 3 weeks after his return to Australia came the great news; the Australian Government had authorized expenditure of A$95,000 for procurement of equipments to fit 4 aircraft as gunships. ELATION and miles and miles of smiles; we were now going to be able to mix it with the opposition on better terms, but there was still much preparatory work to be done.

Gearing Up

We decided to wire 6 squadron aircraft for the gunship fit to allow rotation in normal roles and for scheduled servicings. The unit engineering workload was heavy due to our high rate of operational activity, so we ordered electrical components to enable opportunity completion of modifications on another 5 aircraft. We were anticipating gunship equipment deliveries in January 1969 and hoping to commence aircrew and maintenance personnel training about February/March.

There were other requirements. We decided to run a competition within the squadron for a callword for our gunships and it had to differ from 'Albatross' used by 9 Squadron utility aircraft, be distinctively Australian, and easily understood in radio communication.

'Bushranger' was chosen from about 20 suggestions and we decided this should be followed by 71, 72, 73, 74 to identify individual gunships crews. The number 7 was selected because it is little used in the Australian Army system of radio callsigns, so the distinctive 'Bushranger 71' was coined as our lead gunship crew callsign.

Our standard aircraft revetments at Vung Tau constructed to protect aircraft against shrapnel damage were too narrow to accommodate gunships and some reconstruction was necessary.

9SQN utility Iroquois revetments at Vung Tau – some required widening for Bushranger gunships
Images: 9 Squadron

The gunship rearming area at Nui Dat was also sub-standard for RAAF weapons safety requirements so 9 Squadron offered to assume control of the facility and the Army obliged with engineering resources for upgrade.

9SQN Aircrew and Army upgrading the gunship arming facility at Nui Dat
Images: Peter Robinson

The next auspicious event to be conducted with some ceremony was delivery of our new gunship equipments. A USAF Caribou taxied to our hangar and disgorged a high rank US Army Officer and 4 sets of Charlie model gunship equipments which were mostly in very poor condition.

It seemed like payback time and the Americans were squaring up for our bartering! I offered some derogatory comments displeasing Senior Officers present when a Corporal standing nearby quietly whispered: 'Don't let it bug you Sir; we'll just slowly feed it back into their system and exchange it for new gear', which is what happened to some extent.

High level representations were duly made in Saigon and we eventually got some better weaponry; however, this matter highlighted an interesting aspect of our involvement. Australia and New Zealand paid their way in Vietnam for all military needs, but we were accorded low priority in the US Army supply system.

Their gunships naturally had precedence for supply of XM-21 weapons system components and there was high demand on miniguns and spares from Hueycobra and Charlie model operators. Spares supply was to cause us later difficulty.

We now had 7 full sets of XM-21 gunship weapons system equipments (3 'acquired' and 4 purchased). During January/February 1969, our Armaments Section at Vung Tau and the rearming facility at Nui Dat were upgraded. These facilities had to be of required standards before we could commence training.

9SQN operated gunship rearming and forward maintenance area at Kangaroo Pad, Nui Dat
Image: John Clarkson

The gunship project had been conceived and condoned in an operational theatre and the customary RAAF process of various levels of technical approval had been conveniently short-circuited during project development.

The wondrous aspect was the faith placed in the project team as we were able to methodically accomplish the task virtually without any intervention from superiors or higher agencies.

We were soon to be visited by technical staff from Australia who would formally bless some of our developments.

Work-up Training

I returned to Australia mid-February 1969 for 4 weeks leave as 11 months of intensive operational activity had taken toll and some rest was needed before commencing gunship workup training.

Early March 1969, 2 Squadron Special Air Service Regiment with whom we had developed new operating techniques headed for home having accounted for 151 of the opposition during their tour and we quietly felt that we had played a significant supportive role in their meritorious military feat.

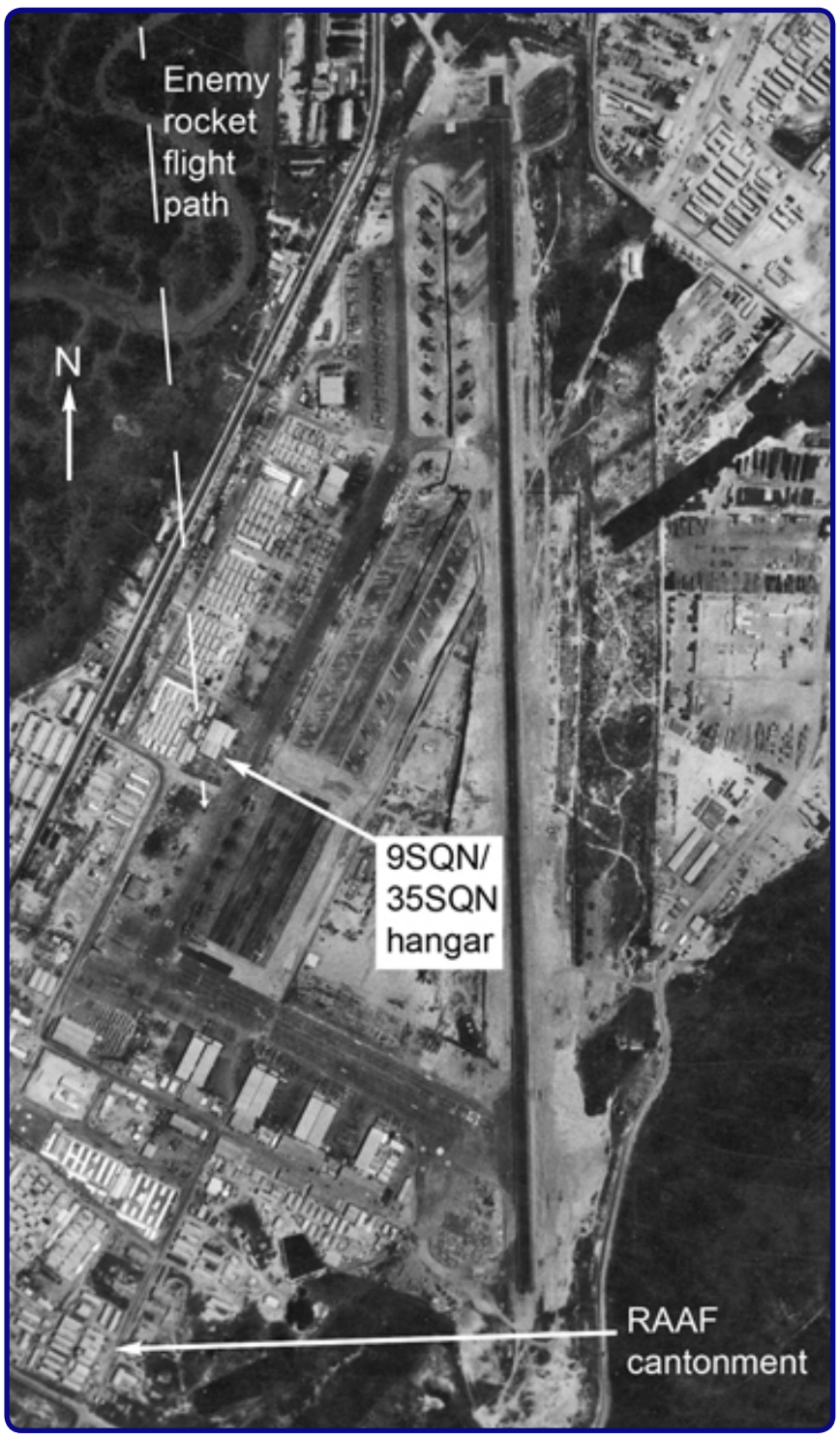
They jokingly changed their motto 'Who Dares Wins' to 'Who Cares Who Wins' and stencilled everything in sight before departing the scene.

On my return to Vietnam in mid-March, we began aircrew and technical training using A2-773 until other modified aircraft became available early April. Some pilots including myself had previous air to ground weapons delivery experience on fighter aircraft and this knowledge aided us in aircrew training and development of gunship standard operating procedures. We determined that about 4 weeks of intensive training would suffice before operational introduction of the Bushrangers.

Our training program had some interesting aspects. We would head for Nui Dat and spend part of a day training in areas where HQ 1ATF believed that expenditure of ordnance might have some positive effects.

Long Son Island – origin of VC 122 mm rocket attacks on Vung Tau airfield
Image: Peter Howe

Enemy rocket attacks on Vung Tau airfield from nearby Long Son Island had become more frequent with damage to fuel installations and a 122 mm rocket passed over the joint 9 Squadron/35 Squadron hangar (where our night casevac standby crew was sleeping) before impacting beneath the wing of a USAF Caribou parked about 70 metres away and igniting leaking fuel that destroyed the aircraft.



Vung Tau US Army Airfield – Image: 'Mac' Weller

USAF Caribou destroyed in 1 of 2 rocket attacks on Vung Tau airfield 22Apr68
9SQN hangar 70 metres from left tailplane – Image: Charles Harris, USAF

Occasional USAF 'Spooky' (AC47 Dakota gunship) work on the island had not deterred the enemy so the resident US Special Forces Advisor requested 1ATF assistance to counter the threat to Vung Tau airfield.

USAF AC-47 Dakota 'Spooky' Gunship – Image: USAF

At end of gunship training elsewhere in the Province, we were authorized to work on Long Son Island so would uplift the resident US Advisor and then attack jungle targets at his direction that varied daily according to local intelligence. Some enemy were killed and some wounded during this 'training' and other local Viet Cong began surrendering due to psychological trauma caused by Bushranger activities.

The threat to Vung Tau airfield was neutralized and our ecstatic Green Beret friend promised to buy us all dinner, when he could get some leave.

One final formality was necessary. About end of March 1969, Squadron Leader Len Evans, an Armament Officer based at RAAF Butterworth and formerly a staff pilot at Aircraft Research & Development Unit, arrived at Vung Tau for airworthiness approval of our gunship. Len and I flew together to complete a US Navy flight test schedule for certification of the aircraft.

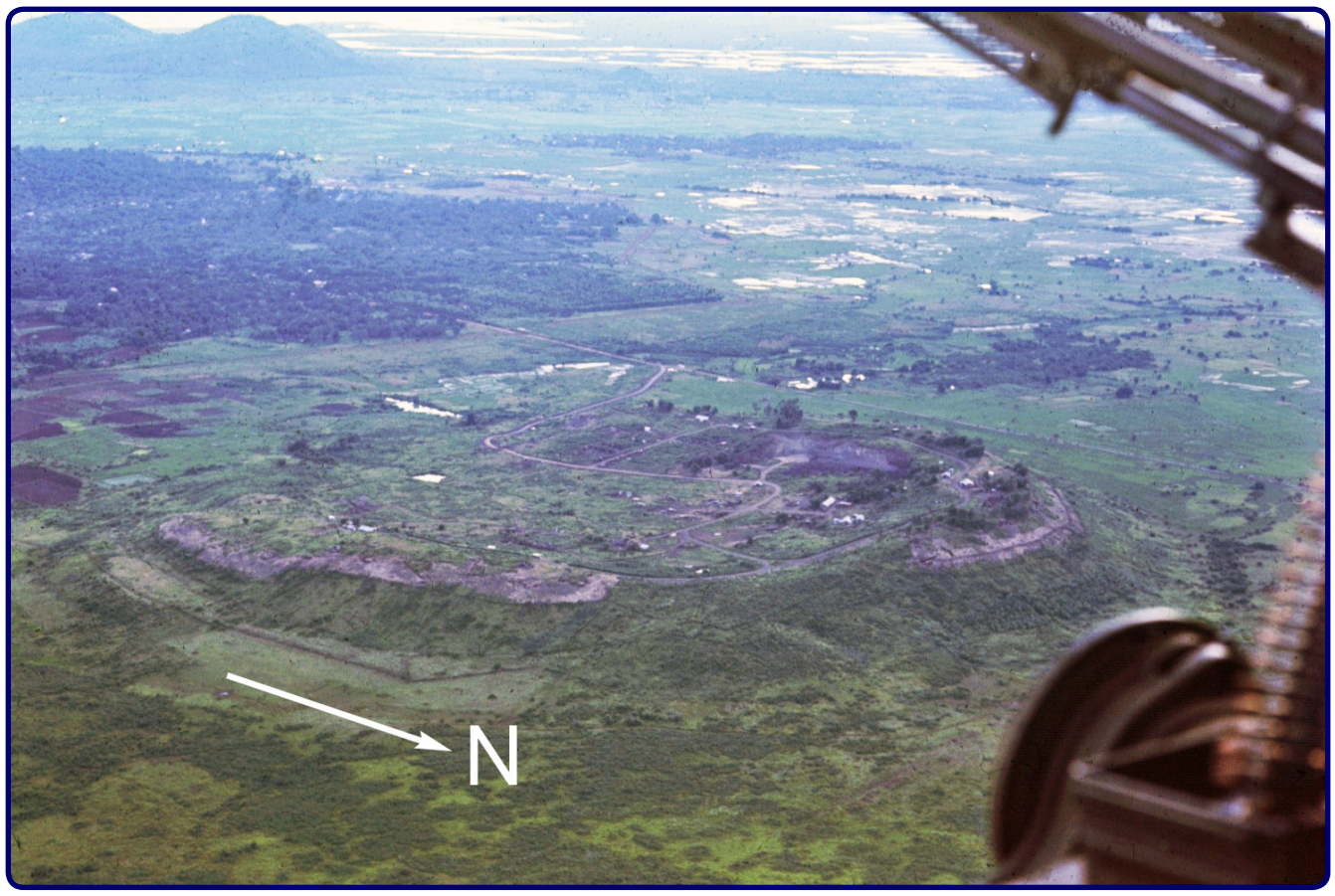
'Operational'

By mid-April, we felt adequately prepared to provide 1ATF with reliable integral gunship support; so, **on 21st April 1969, about 14 months after the gunship project was initiated, the Bushrangers were declared operational.**

The next 6 weeks were action packed embracing contact with the opposition on most days. Squadron morale during the previous 12 months was high, but now soared as we had become a very effective fighting unit with a broad range of roles.

An action on 15 May 1969 warrants mention for its sadness and this condensed account from then Pilot Officer Bob Treloar (later Air Vice Marshal and Commander Australian Theatre) relates:

'It was my first sortie in country and ... I seem to recall that it was late morning. We were en route from Vung Tau to Nui Dat when a crewmember spotted tracer rising from Dat Do. At this stage I was still trying to work out which way was up on the map while Sambo (the aircraft captain) flicked to the Vietnamese military frequency to investigate the situation. An urgent request for help was made by the US Advisor and we promptly responded landing in what I took to be the village square. It was a confused situation and I recall the advisor briefing us that VC had infiltrated the village and attacked his forces. He requested that we evacuate wounded from what was quite an intense fire fight. During this conversation a VC armed with an AK47 rounded a building some 50 metres away and fired in our general direction. The advisor turned and dispatched him. We left shortly after that with half a dozen or so pax … a mixture of dead and wounded … it was a confusion of bodies, blood and bandages in the back of the chopper. … We returned to Vung Tau and washed out the aircraft.'

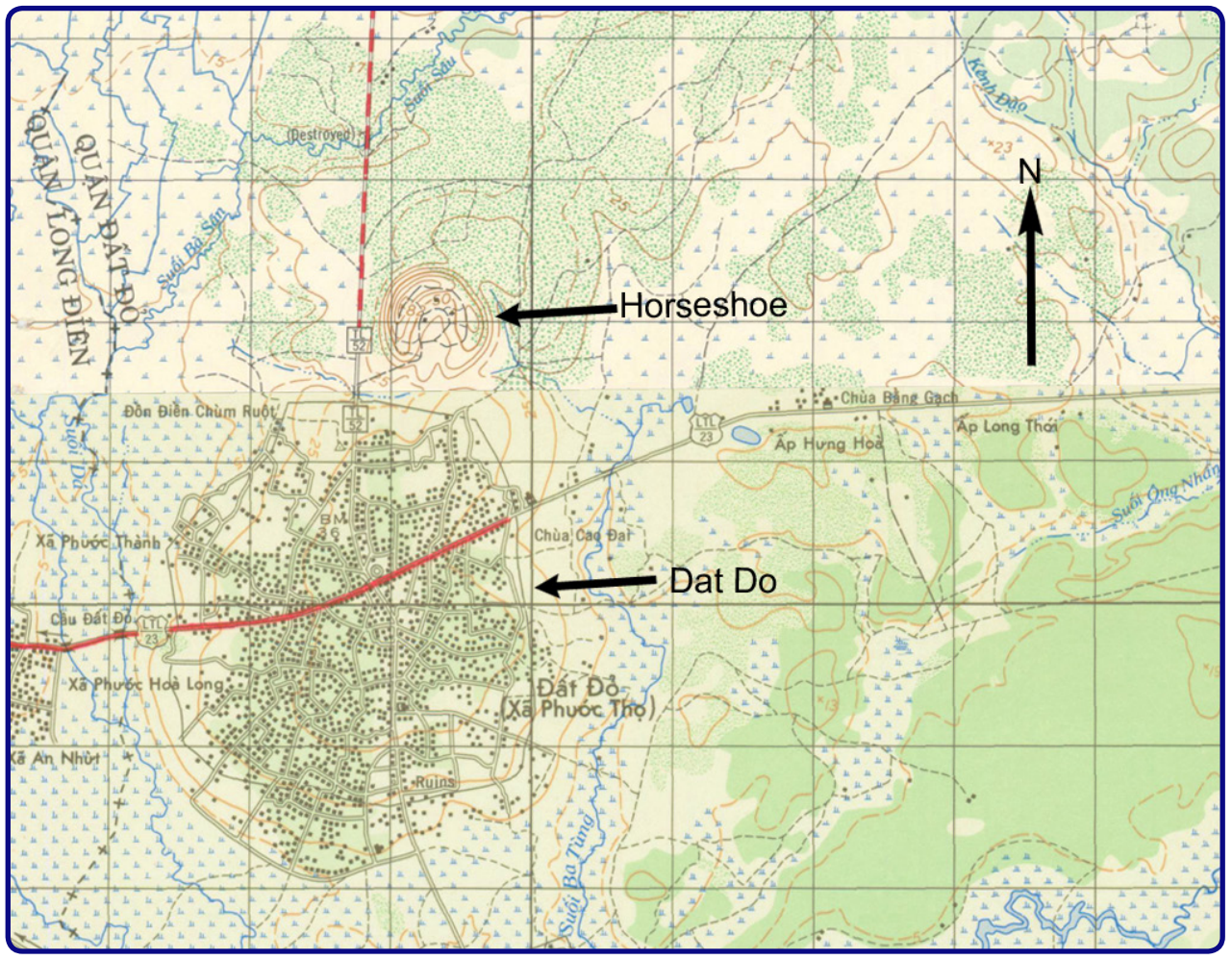


Dat Do township (dark green vegetation) and 'The Horseshoe' Fire Support Patrol Base
Image: Peter Howe

About 2 hours later, 3 x 9SQN Bushrangers from nearby Nui Dat were tasked to assist and our US Special Forces Advisor friend from the Long Son Island 'training' was with the Vietnamese forces opposing the enemy, as identified by his personal radio callsign 'Multi Affair 18'. Dat Do urban area was roughly 2 kilometres in diameter and some of the enemy were located beneath an elevated school building near the centre of town.

We began engaging the opposition at direction of our Green Beret friend making very shallow minigun firing passes from about 200 feet above ground level, trying to get the enemy beneath the building but endeavouring not to destroy the school. At some stage I heard the chatter of automatic weapon fire and looked over the side to see a guy in black at the backdoor of a house emptying a magazine of his AK47 weapon in our direction.

We came under fire from a heavy calibre crew served anti-aircraft weapon located between 2 small houses on the eastern edge of the town about 1,000 metres from the school. My co-pilot was a decorated Korean War veteran and we both thought the weapon, which was manned by 3 enemy wearing black uniforms and green hats, had twin barrels.



1:50,000 map depicting Dat Do township and 'The Horseshoe' Fire Support Patrol Base

It was a very tempting target but our rules of engagement required prior clearance from the ground to ensure no harm to friendly forces and non-combatants. While seeking clearance to engage from our US Advisor friend, his voice lapsed although we could still hear his radio being keyed momentarily and when unable to re-establish contact after maybe 10 minutes of trying, we reluctantly broke off the engagement.

Sometime later, 1ATF elements entered the town and apparently found about 30 dead and wounded enemy near our target area, according to feedback via our Army Ground Liaison Officer from some Australian armoured personnel carrier crews (the HQ 1ATF record of events differs). The Australian troops reportedly also found our Green Beret friend - he had been badly wounded then seized by the enemy who cut his throat. He was a fine soldier and soon due to return home to the US.

Personnel involved in the action on 15 May 69

Albatross 05 A2-770	FLGOFF John Sampson PLTOFF Bob Treloar SGT Felix Parker AC Trevor Hamill	Bushranger 72 A2-773	PLTOFF Mike Tardent FLGOFF Alan Adamson LAC Greg Love AC David Moles
Bushranger 71 A2-383	SQNLDR Brian Dirou SQNLDR Brian Nicolls LAC Monty Jesinowski LAC Darryl Macarty	Bushranger 73 A2-772	FLGOFF Trevor Butler (RNZAF) PLTOFF Nick Hobson AC David Manson AC Eoin Delaney

Perhaps another tale regarding an action the following day might illustrate the very special bond that existed between the SAS and 9 Squadron. On 16 May 1969, the 9 Squadron SAS extraction team was launched to recover a patrol in contact with a large enemy force near the Courtenay rubber plantation on the Phuoc Tuy Province northern border (see map on page 28) and in grave danger of being overwhelmed.

The patrol sounded quite desperate on the radio as we approached their location and Albatross 02 descended quickly toward the extraction point as 3 Bushrangers began suppressing an area within 40 metres of the patrol, attracting ground-fire from along a ridgeline paralleling our approach to the target area.

The recovery aircraft was nestled down among the treetops awaiting hook-up of the patrol on ropes which had been deployed from the Huey, but this became protracted because the SAS were still trying to keep the enemy at bay.

As I broke away from a firing pass, a patrol member shouted on the radio: 'Bring it in closer Bushrangers, they're right on top of us', with great concern evident in his voice. The gunsight pipper was dancing around in turbulence and on the next pass I fired a rocket aiming for about 20 metres from the hovering Huey, but it looked certain to hit the forward rotor blade of the stationary extraction aircraft.

Looking through the gunsight in turbulence – Image: Bob Upham

Rocket flight time to target was below 2 seconds, but time seemed paused until the missile gradually dropped beneath the rotor blade passing about 2 or 3 metres in front of the windscreen before exploding in adjacent foliage. The voice of a normally taciturn RNZAF pilot went up a couple of octaves as he shouted: 'Hey, that's getting a bit bloody close!'

The situation was desperate so we pressed right in to point blank range concentrating high density minigun fire at the edge of the rotor disc (while hoping that the ricochets all went forward) before flying around the recovery aircraft and thus over the enemy which drew the words from the SAS patrol: 'That's shit hot Bushrangers, you're right into them', with great relief in the voice.

Ground-fire intensified as the patrol was slowly lifted vertically through the canopy with patrol members still engaging the opposition. The ground-fire was somewhat mesmerizing and continued for a mile or so of travel as the large enemy force tried to extract retribution, their reaction suggesting that we had knocked them about with our suppressive strafing.

Image: Bob Upham

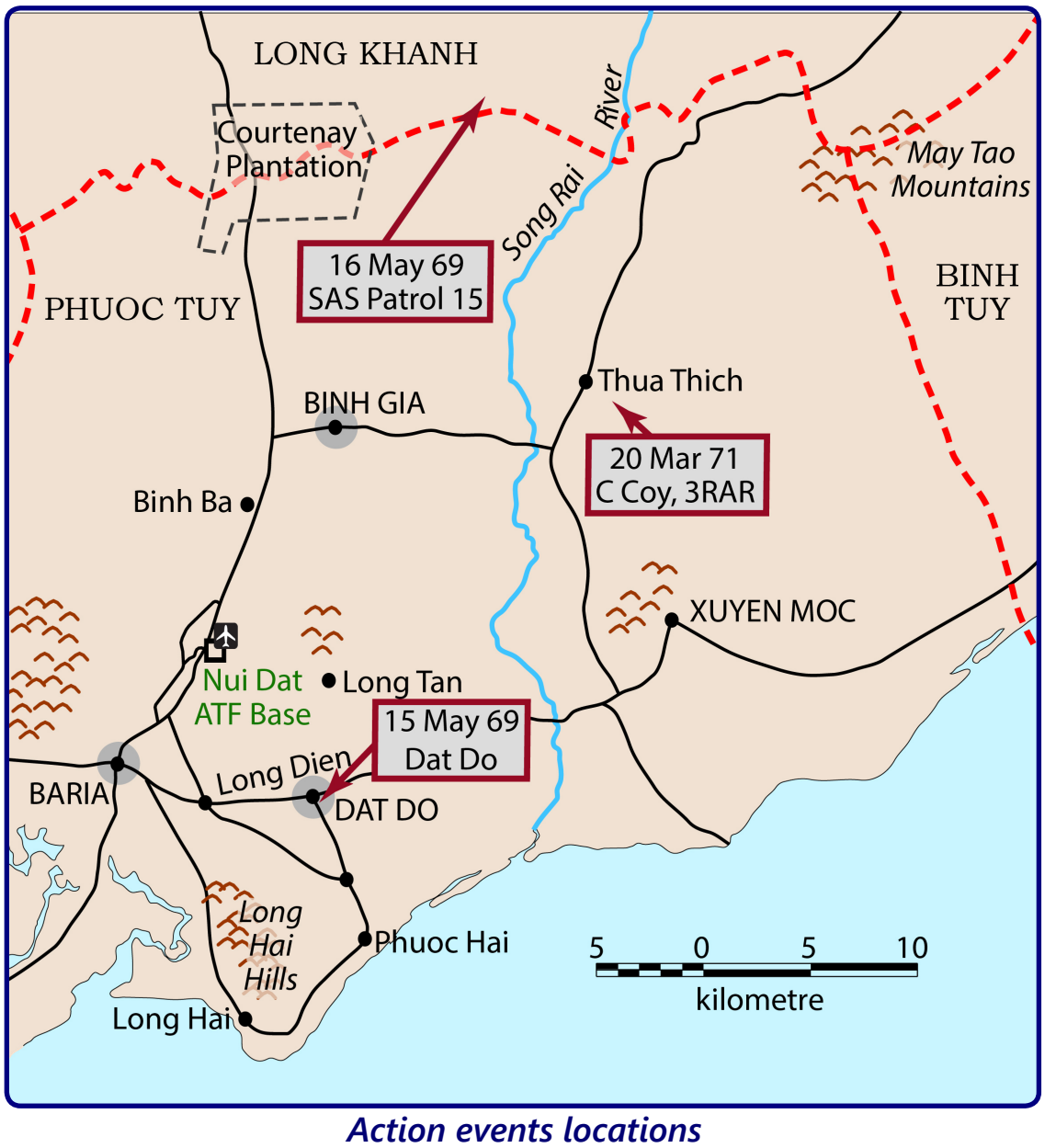
We received no ground-fire damage during this torrid engagement, probably because we were able to maintain continuous fire on the enemy with 3 gunships and slightly varied our attack directions. A much relieved patrol was eventually deposited into a distant clearing and embarked for return to Nui Dat. They knew that we would do anything for them (and vice versa).

Personnel involved in the action on 16 May 69

SAS Patrol 15	SGT John Robinson PTE Nick McKelvie PTE John Dodd PTE Ray Beard
Albatross 01 A2-381	FLTLT George Oldfield (RNZAF) FLTLT Lloyd Knight AC Geoff Smith AC John Edwards
Albatross 02 A2-382	FLGOFF Trevor Butler (RNZAF) PLTOFF Tony Wheal LAC Allan Lamb LAC John Gibson
Albatross 03 A2-770	PLTOFF Les McGrath PLTOFF Gary Mulholland LAC Peter Armstrong AC Gunter Gale

Bushranger 71 A2-383	SQNLDR Brian Dirou FLGOFF Alan Adamson LAC 'Fred' Ferry AC Ray Rennie
Bushranger 72 A2-773	FLTLT Rex Budd PLTOFF Joe Driver LAC Monty Jesinowski AC Ray Martin
Bushranger 73 A2-772	PLTOFF Mike Tardent PLTOFF Tony Lea LAC Greg Love AC David Manson

In June 1969, we were gathered in the bar the evening before I headed home again and I thought I had best tell the RNZAF pilot about that rocket. He was a big fit guy so I backed up a bit before saying: 'About that rope extraction job 3 weeks ago Trevor; this is what happened'. When I described how close the rocket passed in front of his windshield, his eyes widened as he went speechless and strangled his beer can!



Action events locations

Casualties

Considering their hundreds of engagements with the enemy during 30 months of operations, Bushranger casualties were minimal with 1 pilot killed in action and 1 crewman wounded, although a few gunships were lightly damaged by ground-fire.

The action involving loss of a pilot occurred on 20 March 1971 when a platoon of 3RAR had encountered an occupied enemy bunker system. Both their platoon commander and signaller had been wounded and they were low on coloured smoke for location marking. Bushranger 72 engaged the perceived enemy location while Bushranger 71 made a low pass toward the platoon to drop a bag of coloured smoke grenades.

The troops were disoriented in jungle due to the intensity of the engagement and mistook the relative direction of the opposition causing Bushranger 71 to unwittingly overfly the enemy at treetop height and very low airspeed. The aircraft took about 20 hits and the co-pilot was mortally wounded in the head. This unfortunate loss was viewed by all as misfortune of war.

Personnel involved in the action on 20 Mar 71

Bushranger 71 A2-383	FLGOFF Dave Freedman PLTOFF Ron Betts (KIA) LAC Tony Moran LAC Barry Morgan	Bushranger 72 A2-772	FLTLT Norm Goodall FLGOFF Phil Smith LAC Bill Crouch LAC Bob Golley

Minigun Ammunition Stowage

The extended XM-21 system minigun ammunition stowage for the Bushranger was of very inferior design generating stoppage problems and taking far too long to reload. Prompt redesign was intended after operational introduction of the Bushrangers in April 1969, but we were too busy operationally to achieve this before I returned home to Australia again in mid-1969.

Reloading the extended XM-21 minigun ammunition stowage
Images: Peter Robinson & Roger Buck

An alternative system, designed by Armament Officer Flight Lieutenant John Payne, was eventually introduced in mid-1971 which simply welded together 2 x 1,500 round linked ammunition packaging containers to create a hopper style bin with a fabricated detachable pyramid shaped cover atop to facilitate easy reloading. These simple bins provided 9,000 rounds minigun ammunition capacity and the combined rate of fire was adjusted to about 450 rounds in a 3 second burst.

9SQN improved minigun hopper ammunition stowage
Images: Norm Goodall

The ammunition stowage modification enabled refuelling and full rearming of a Bushranger within 10 minutes utilizing a mechanized bomb loader vehicle to lift pre-loaded minigun ammunition bins into the aircraft cabin. The reasons for a 2 year delay in developing this important modification are unknown, but it greatly enhanced operational efficiency.

Reloading minigun hopper ammunition bins – Images: Norm Goodall

Reflections

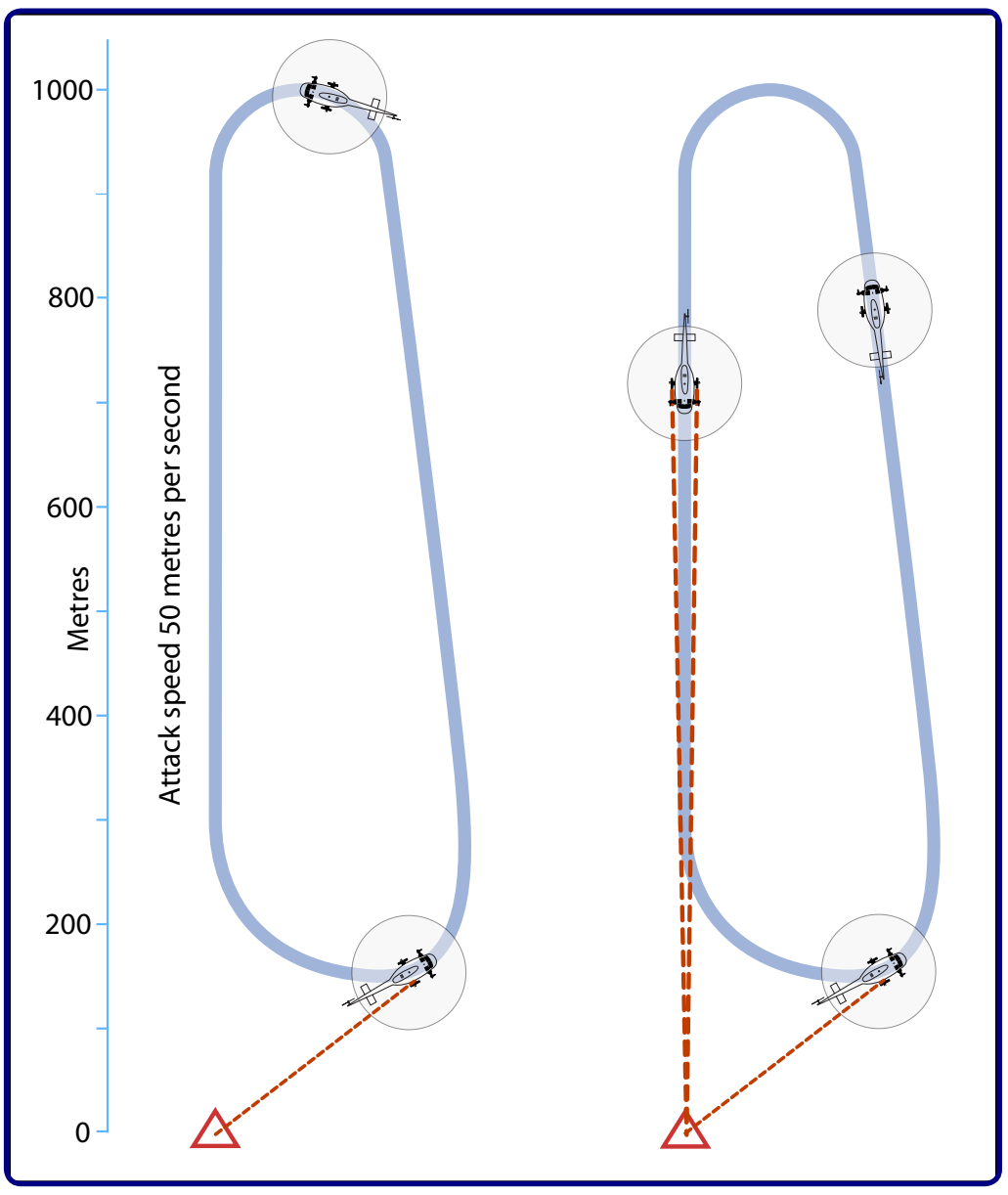
The simplicity of the Bushranger weapons system was a key feature. Miniguns needed frequent parts replacement due to high usage wear, but the overall system only required minimal maintenance and was well suited to operations under adverse field conditions in remote areas and could be fully re-armed by aircrew.

The Iroquois multi-role concept enabled conversion of a modified aircraft from utility helo to gunship within about 90 minutes, including weapon system harmonization. Conversely, gunship to utility configuration took only 30 minutes with the gunsights remaining permanently fitted to a modified aircraft.

These characteristics exemplified Flexibility, Versatility and Economy of Effort; which are long recognized principles for effective conduct of warfare.

Operating Practices

Regarding operating practices; I viewed the US Army Light Fire Team (2 gunships) operating concept, which was subsequently adopted by 9 Squadron, as unsound. Attack profiles and direction were varied to suit the tactical situation, but it was impossible for 2 aircraft to maintain continuous fire on a target although this was achievable with a flight of 3 Bushrangers, also increasing available firepower by 50 percent. This was a much safer operating method whatever the enemy's anti-aircraft capability.



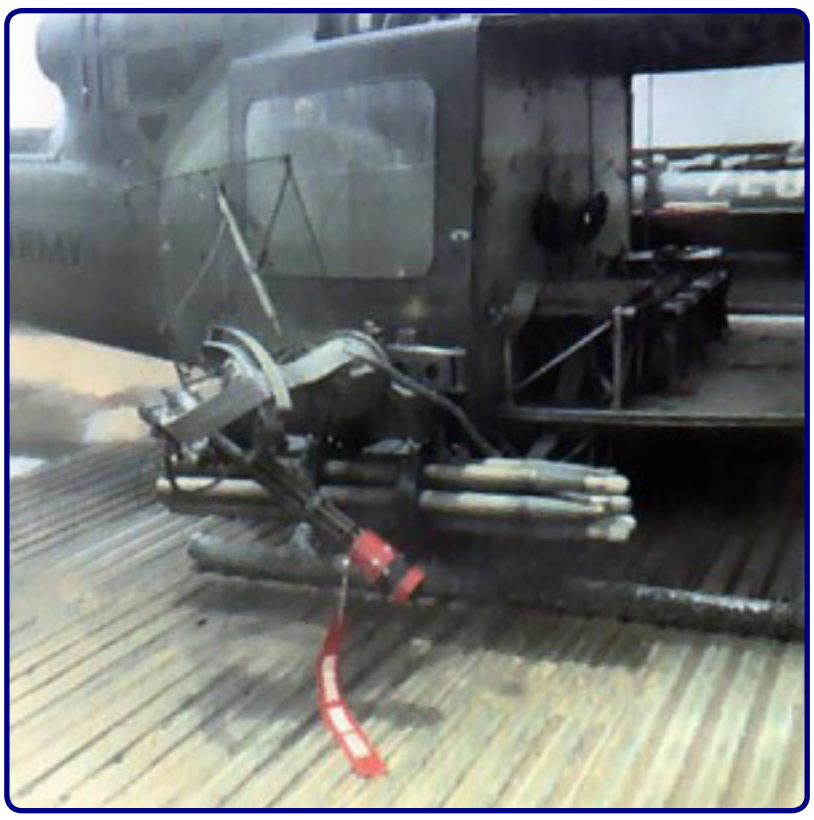
Basic 2 & 3 Bushranger attack profiles

Only a few Bushrangers were hit by ground-fire with most incurring just light damage; but had the squadron continued operating a flight of 3 gunships (plus an on line rotatable back-up aircraft) as standard practice, then the incidence of ground-fire damage over 30 months of Bushranger operations involving hundreds of enemy engagements would probably have been negligible.

Comparisons

The US Army Charlie model mainly carried 7,200 rounds of ammunition for 2 miniguns and 2x 7 tube rocket launchers. Some operating units substituted 19 tube rocket launchers in lieu of the minigun/rockets with upgraded door-gun installations and there were other hybrid combinations of weaponry.

AH-1G Hueycobra weapons configurations varied widely. Some early versions were fitted with a single turreted minigun or an unsuccessful twin turret with dual miniguns or minigun/40 mm grenade launcher combinations. Maximum internal minigun ammunition capacity was 8,000 rounds and some versions also carried 2 podded miniguns each with 1,500 rounds and 2 x 7 tube rocket launchers.



US Army UH-1C Iroquois Gunship with standard XM-21 System weaponry configuration & AH-1G Hueycobra equipped with basic weaponry – Imagery: US Army

The basic Hueycobra configuration with 11,000 rounds of 7.62 mm was less than the Bushranger with 12,600 rounds of 7.62 mm and 14 rockets for each aircraft.

Other Hueycobra weapons combinations emerged embracing a single fixed forward firing 20 mm cannon or 19 tube rocket launchers necessitating reduction of minigun ammunition and/or fuel load in some operating environments to remain within maximum operating weight limitations.

US Army AH-1G Hueycobra with single fixed 20mm gatling cannon port side and podded 7.62mm minigun on starboard side plus 2 x 7 round rocket launchers – Image: Peter Howe

The following extracts are from US military historical sources:

'The range and killing power of the minigun was limited and though the 70 millimetre rockets had much more reach and punch, they were inaccurate and had to generally be fired in salvos to blanket a target… While many (US Army) gunship crews liked the speed, agility and hard-to-hit slender lines of the Cobra, there was another faction that preferred the old Huey gunships since the door gunners not only provided additional eyes and ears, but could lay down suppressive fire to the rear of the helicopter… The debate between the two factions went on through the war.' – **Vietnam Studies, Air Mobility, 1961-1971 – Lieutenant General John J. Tolson, US Army**

Iroquois Bushranger gunships were created specifically to provide intimate close air support for infantry related activities in particular and their fixed forward firing miniguns were very effective at close range in this role, sometimes delivering accurate firepower about 10 metres from friendly forces in necessitous circumstances.

The 4 man crew had all round vision from the Bushranger which was of great advantage in reconnaissance, detecting movement and sighting/hearing sources of ground-fire plus in fighter versus helicopter tactics development pursued by the RAAF in Australia after the Vietnam War.

Multi-role gunship versions of the UH-1Y Venom (Super Huey) and the Blackhawk have since emerged and been operationally employed by US forces.

USMC UH-1Y with miniguns & 70mm rockets – US Army Blackhawk with 20mm cannon & miniguns
Images: USMC & US Army

A laser guided 70 mm rocket version has been developed for non-hardened point target applications; however, cannon is arguably superior for intimate close air support of ground forces.

Conceptual Huey II Gunship

All 25 Australian Defence Force Hotel model Iroquois could have been upgraded to virtual as new high performance Huey II capability for about the cost of just 1 or 2 MRH-90 or Tiger helicopters.

A Huey II Bushranger gunship version could have been substantially improved by addition of an infra-red targeting system and substituting podded low recoil 20mm cannon in lieu of the rocket launchers, enabling accurate delivery of high explosive cannon shells 35 metres from friendly forces with acceptable risk.

Conceptual ADF Huey II Gunship – Primary Image: Australian Army
2 x NC621 podded low recoil 20mm cannon substituted for 70mm rocket launchers

A conceptual Huey II Iroquois gunship with combined minigun and podded low recoil 20mm cannon fixed forward firing armaments and dual twin door guns would be far better suited for a regional wet tropics intimate close air support role than the Tiger tandem seat attack helicopter replacement.

Australian political and military leaders might duly regret that the very cost-effective versatile and enduring Iroquois were not consigned to military reserve storage (in lieu of inappropriate disposal) considering their well-proven capabilities in Australia's regional operating environment.

Fixed Wing Gunships

Contemporary attack helicopters and/or gunships with whatever armaments are not comparable with the awesome all weather firepower and longer range endurance of the versatile AC-130 Hercules gunship. Discarded RAAF C-130H airframes could have been adapted for Special Operations functions.

USAF AC-130 Gunship – Image: USAF

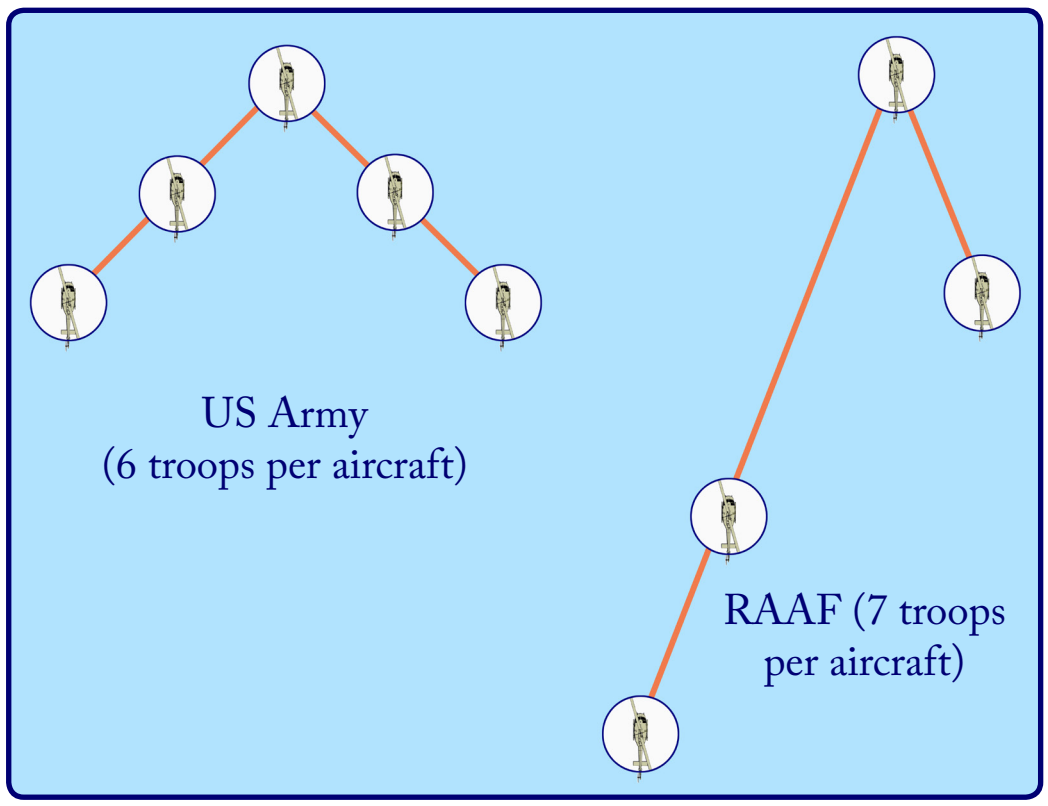
Epilogue

This story has related somewhat to 9 Squadron operations with the Australian and New Zealand Special Air Service forces to explain the urgency for development of an integral gunship capability within 1 Australian Task Force during the Vietnam War.

But the overwhelming bulk of the huge flying effort by 9 Squadron in 5.5 years of operational involvement was support of the other fighting arms of the Australian Army (including New Zealand components) and primarily the infantry battalions. The unit was equally dedicated toward support of all Task Force elements.

The squadron effected 4,357 casevacs/medevacs of Australians, New Zealanders, US, Vietnamese military and civilians, with about 550 of those being night operations.

Infantry support, the primary 9SQN role
Upper image: Bob Upham. Centre and lower image: Air Force.



Trooping comparisons

9SQN tactical trooping – Image: Roger Buck

Aircrew outside 9SQN Alert Hut at Nui Dat; awaiting the happenings of war

The Bushrangers saw 30 months (900 days) of very active service before cessation of 1ATF operations in Vietnam in October 1971. The body count syndrome associated with that war was abhorrent to most and 9 Squadron did not tally such statistics; although the Bushrangers inflicted appreciable casualties upon a mostly concealed enemy, as often determined by post-action intelligence gathering means.

Nothing of course could offset the precious lives of 520 Australian and 35 New Zealand servicemen lost in that conflict, plus the US and Vietnamese forces casualties incurred in the 1ATF areas of operational activity.

I have been dubbed creator of the RAAF UH-1H Bushranger gunship, but SNCOs most deserving of very special mention were Flight Sergeant 'Blue' Downer, Electrical Fitter; Sergeants Phil Hodge, Armament Fitter; Bob Kenworthy and Roy Robinson, Aircraft Metalworkers. It was great to work with these dedicated men.

Bushrangers ready for action on Kangaroo Pad at Nui Dat – Image: Bob Upham

A simple and very effective air weapons system was created through typical Australian ingenuity and sense of purpose and the whole unit contributed in some way. It was a fine team effort.

About the Author

Wing Commander Brian Dirou, DFC (Retired)

Squadron Leader Brian Dirou, 1971

The 'Dirou' family name emerged in France pre-15th century and a reef named 'Les Dirouilles' is located near Jersey in the Channel Islands. A forebear emigrated from near Brest to Australia in the mid-1800s and family heritage then became an intermingling of French, Irish and British genealogy.

Three family perished in WW1 combat with another decorated although badly gassed. An uncle was captured at the fall of Singapore spending 3.5 years as a POW on the Burma railway; a brother of Brian Dirou served with the Australian Army during the Malaya Emergency and 2 nephews served at Swanbourne. Brian's wife, Diane, was formerly an RAAF Nursing Sister.

Sergeant Brian Dirou, 1958

Brian joined the RAAF early 1957 as a Trainee Aircrew Signaller, graduating as NCO aircrew then serving on crashboats, Lincoln and Dakota aircraft before undergoing pilot training after commissioning.

Flying Officer Brian Dirou, 1961

Further service on Dakotas followed then a tour on Sabre fighter aircraft before Iroquois helicopter training in 1967.

Dakotas, 1961-64

Sabre OCU, 1964
Brian Dirou, Geoff Peterkin, Alan Walsh, Les Dunn, Ray Funnell

Iroquois Conversion, 1967
Brian Dirou, Graeme Downs, Bob Rider, Rod Adam, Bob Kendall, John Landale, Don Porter, Lloyd Knight

Brian served with No. 9 Squadron in Vietnam during 1968, 1969 and 1971 accumulating 4,360 sorties and was involved in 211 insertions/extractions of Australian and New Zealand Special Air Service patrols. He was mission leader for 2 of only 4 night extractions of SAS patrols in contact with enemy forces during Australian involvement in that war, earning an 'in-the-field' award of the Distinguished Flying Cross invested personally by Her Royal Highness, Queen Elizabeth II.

DFC Investiture, 1970

'Bushranger' Gunship Prototype A2-773

Paralleling his very active operational roles in 1968/69, he was Project Officer for design development and operational introduction of the RAAF 'Bushranger' gunship, a version of the UH-1H model Iroquois unique in the world. During his overall Vietnam service, Brian participated in 50 engagements with enemy forces including 15 when flying Bushranger gunships in May 1969.

Following completion of Royal Australian Air Force Staff College training in 1975, he commanded No. 9 Squadron at RAAF Base Amberley Queensland during 1976/77 and retired early from the Air Force in 1978 at age 41, after 4 years at Wing Commander rank.

Brian later spent 10 years involved in flight operations training with international airlines in Australia, Austria, Kuwait (post-Gulf War 1) and Brunei preceding retirement in 1999.

CO 9SQN with an ancient cannon found lying on a beach at Guadalcanal during earthquake relief operations. Restored by 3 Aircraft Depot at RAAF Amberley before return.