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THE NAVY

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THE MAGAZINE OF THE NAVY LEAGUE OF AUSTRALIA

THE FUTURE OF THE US AUSTRALIA ALLIANCE IN THE MARITIME DOMAIN

SEMPER FLY – THE USMC HARRIER

NAVAL BRIGADES

THE ORDEALS OF HMAS AUSTRALIA

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Volume 74 No.3

THE NAVY

THE MAGAZINE OF THE NAVY LEAGUE OF AUSTRALIA

Front cover:
A USMC AV-8B Harrier II Plus landing vertically aboard a USN LHD. (USN)

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THANK GOD FOR THE HOWARD ERA!

With the recent financial assault on the Defence budget by the Gillard Government, in an attempt to keep its job rather than do its job, the future of the ADF and Australia's security is being threatened. For short term political gain many major capability projects to either replace old equipment, maintain current capability edge against new threats or improve longevity and cost effectiveness of in-service capabilities, have been delayed or cancelled to squeeze out a tokenistic, meagre and pathetic (and many suggest uncalled for) $1.5 billion surplus - which could easily turn out to be a rounding error.

For no strategic or security reasons whatsoever, the federal budget handed out the biggest defence spending cuts since end of Korean War and sets the level of expenditure at 1.5 % of GDP - the lowest amount spent on defence since 1938 (and didn't that deter international aggression).

The Prime Minister herself on the ABC's *7.30 Report* even tried to explain the defence cuts as "due to capabilities not being available to buy". Rubbish! With the mining boom still in full swing you would think that this "great southern quarry" could do better.

As a comparison, India and China increased annual defence spending by 17 per cent and 12 per cent respectively this year alone. Vietnam, Indonesia, Japan and Singapore are also increasing their defence budgets.

Even New Zealand recently announced a Fiscal Year 2012-13 defence budget which increased by 9 per cent over the previous year.

In the budget the Australian government has committed an extra $83.5 million in events and monuments to the 100th anniversary of the Gallipoli landings, which is more than the cost of new anti-missile Phalanx Block 1B and Block 1B close-in weapon systems upgrades to the RAN's existing armament, or new and effective electronic warfare and torpedo defence systems for the fleet. All those are force multipliers, and ironically have the potential to limit the number of memorial monuments needed from any future maritime conflict. The Navy league wholeheartedly supports the concept of military memorials, but to the Government's spin doctors and focus group researchers, voters care more about sentiment than defence, and feel better about it than Joint Strike Fighters, self propelled artillery and self defence measures for the navy. As long as there is a political perception that the commemoration wins more votes than capability, Australia's defence capability is likely to remain hamstrung.

Of course some, such as this column, saw the budget assault coming with what was a gradual rollback of the 2009 White Paper and the Strategic Reform Program (SRP) - designed to save money for more capabilities. This column claimed the 2009 White Paper was unachievable given the lack of support from the government caucus at large. It also said that the SRP will and was ending up in the government's consolidated revenue ledger. We hate to be right.

What the government has also failed to take into account is the view of our largest defence partner, the US. Recently the US Government criticised NATO nations for their low defence budgets. A former US ambassador to NATO, said Americans were tired of being "defence providers" to Europe's "defence consumers". So with this in mind how soon will it be before that criticism is levelled at Australia and its pathetic 1.5% of GDP? And will there be any repercussions?

Fortunately for Australia's security, and ergo the region, before the current government took office we experienced what is known already as "The Howard Era", after then Prime Minister John Howard. During that time the ADF, as General Peter Cosgrove remarked about the ADF's performance in the Timor Operation, discovered itself and what it is capable of. And more importantly, what it was not capable of.

From that experience and subsequent frank discussion with the Howard Government the ADF experienced the sort of capability improvements it should have always experienced. Some of the major deterrent capabilities acquired included the world leading M-1A1 Abrams Main Battle Tank, four C-17 Globemaster strategic transport aircraft, 24 Super Hornets, six Wedgetail airborne early warning and control aircraft, five air-air tankers and Harpoon Block II anti-ship missiles. The legacy still continues to deliver with three Air Warfare Destroyers and two 27,000 tonne Canberra class amphibious assault ships yet to commission. This will, finally, take our Navy into the 21st century and break it of the capability crippling 'Fortress Australia' policy the last time the ALP was in office.

Of course the assault on the current defence budget means that when the next government is sworn in it will have nothing for some time with which to begin the rebuild. But perhaps the current government has done this deliberately, as their Labour Party brethren did in the UK to the incoming conservatives under David Cameron. In purely strategic terms the Australian Labor Party's defence budget assault could easily be characterised as a scorched earth policy.

Howard Government Defence Minister Brendan Nelson (left) with then Chief of Navy VADAM Russ Shalders chatting over a model of the AWD on the announcement of the winning tender. (Defence)

Dear Sir,

I would like to offer a few thoughts on the "Medium Calibre Gun" article by Anthony G Williams, published in the January-March 2012 edition of *THE NAVY*.

I was surprised to see no mention of the mid-1970s USN/United Defense project which produced a "Major Calibre Lightweight Gun" (MCLWG) of 203mm, the Mk-71 8"/55.

Given geopolitical events since 1978, cancelling this project seems to have been a serious mistake. The gun was successfully tested on the USS HULL, DDG-945. It fired a 117.8 kg shell every 5 seconds (12rpm), more than 29km – a Naval Gunfire Support (NGS) "broadside" of 1413.6kg per minute

By comparison, the 127mm (5"/54 Mark 45 mod 2) on the ANZAC class frigates fires a 31.75kg shell, about 24km, at 17 rpm, amounting to a 540kg NGS "broadside" (from Norman Friedman's The Naval Institute Guide to World Naval Weapons Systems, 5th edition)

The Russian AK130, mounted in two twin turrets on the Sovremenny class, and the Chinese Luda class destroyers, fire 30-40 shells, of 33.4kg, per minute per mount, across almost 30km - some 2000 - 2700kg of NGS. Friedman states a 25% lower rate of fire for the AK130 but a 34% range increase.

Heaven forefend, there will be no SinoAmerican war over Taiwan. Should ever USN and RAN destroyers engage the People's Liberation Army Navy (PLAN) by gunfire, the Arleigh Burke and Hobart/ANZAC class ships could be in grave peril.

The RAN could have used the 203mm, though the ships would have needed 'significant' modification, as the MCLWG mount was 78.4 tonnes with ready use ammunition, compared to 22.3 tonnes for the 127mm. Yet the 203mm was mounted and test fired very successfully, between 1975 and 1979, on the USS HULL, a Forrest Sherman class destroyer about the size of an ANZAC class frigate - or just 2/3 the size of a Hobart Class Air Warfare Destroyer (AWD).

By contrast, the USN's 155mm Advanced Gun System (AGS) would be too massive for the RAN ships. AGS weighs in at 95 tonnes per mount, or 300t with loaded magazines. Each Zumwalt Class (DDG-1000) will mount two AGS, as it will displace 15,000 tonnes.

Rod Olsen
ACT

USS HULL with the trials Mk-71 8"/203mm gun in the A position. Tests in 1976 demonstrated that the gun worked perfectly but was no more accurate than the proposed lightweight Mk-45 5"/127mm gun. Unfortunately, the tests failed to take into account the added destructive effective of the ammunition on the target. (USN)

Dear Editor,

Britain was arguably the greatest military and financial power in the world for almost 300 years. With the Empire, now Commonwealth, Britain won two world wars; demonstrated its martial power in over 10 campaigns since WWII from the 1st Gulf War to the Falkland's War in the South Atlantic. Britain remains one of the world's most active military and successful Armed Forces in the world.

However, as your last editorial pointed out, this position is being tested by Argentina. Argentina's actions have been increasingly threatening to the UK and to the Falkland Islanders. Their actions essentially mean that there is a new Cold War between Argentina and Britain.

In the South Atlantic today, as it stands, it is looking very sad and gloomy for the population of the Falklands. Lack of resources from the mainland (Argentina) has increased the price of living hugely. And as if that wasn't enough, there is increasing risk of an accidental war looming – as in 1982 – around the corner in which undoubtedly many lives would be lost. If the worst comes to the worst and the British do go to war with the Argentineans, it would be a hard war for the British to win. Although the British have a bigger and better army, the Argentineans would still put up a good fight and the casualties would soar. Having said this, the better side would eventually win and the islands will once again stand firmly in the hands of the British.

One fear that I have is that if the Argentineans persuaded (threatened) the other South Americans to get involved this might be a very different story. And all would be the losers.

To me it is a tragedy that Argentina has gone full circle and is returning to a tyrannical junta type government rule. The government is clinging to power by sabre rattling (trying to unite the people by creating a war) and has taken over the levers of civil administration. As a result the Government is no longer believed by respected international journals e.g. The Economist. This is really worrying because one of the great benefits of the Falklands War was the rise of Democracy in Argentina and the fall of dictatorships.

The reason I am writing is not because I am trying to stir up an anti-Argentina campaign or because I am anti-military. I am writing in the interest of peace and because I believe there is always a better way. In the words of Churchill 'it is always better to jaw jaw than war war.' Finally I write in memory of my Father's ship, HMS SHEFFIELD which was lost with many sailors in 1982 and all those who lost their lives from both sides. In their memory may this never happen again.

Samuel John Reay Atkinson
Year 8 Student
Via e-mail

THE PRESIDENT'S PAGE ★★★★

Mr Graham Harris

On 3 May the Prime Minister and the Defence Minister made a number of announcements about defence. On the 8 May the Treasurer in bringing down the 2012 budget included further announcements about defence.

What is to be made of these announcements? For more than a decade under both the Howard and the Rudd governments there was consistent support for defence. For more than a decade the Australian government, both Liberal-National and Labor, has been committed to not just maintaining defence expenditure but to delivering a 3 per cent real increase in defence spending. In 2009 the then Rudd government confirmed that the 3 per cent real growth in defence spending would remain until at least 2018.

From the announcements made on 3 and 8 May it seems clear that this level of support for defence is no longer.

Indeed, significant reductions in expenditure are forecast.

Taken together the two sets of announcements will result in considerable changes to plans and programmes. There are to be further delays in taking delivery of 12 Joint Strike Fighters (JSFs). The Boeing P-8A maritime surveillance aircraft is also deferred. The C-130H transport aircraft are to be retired early.

The army is to have some of its Abrams tanks and M-113 armoured vehicles mothballed. The proposed purchase of self propelled artillery has been scrapped.

It is reported that there will be a number of other deferrals – pilot training systems, defence simulators, armoured vehicles, refuelling trucks, unmanned aerial vehicles (UAVs) and a number of communications and information technology projects. There will be deferrals of bases and facilities upgrades.

Over the forward estimates a total of $5.45billion is proposed to be saved. At present much of the proposed saving is said to be deferrals. It will be interesting to see how many of the deferrals ultimately turn out to be permanent cuts.

So how has Navy been affected by these announcements? At first sight very little. It is perhaps fortunate that the Air Warfare Destroyers and the large amphibious ships are well advanced in their construction.

The Navy is not however unaffected. The Force Posture Review - released together with the other 3 May announcements - calls for the upgrade of Broome, Darwin and Cairns as naval bases. At the time of writing it is not clear how the deferral of bases and facilities upgrades will impact upon this recommendation.

The deferral of the acquisition of the Boeing P-8 aircraft might impact future maritime operations. The 2009 Defence White Paper also included the purchase of seven large high altitude long endurance UAVs. These aircraft too were expected to make a contribution to maritime operations. It appears that they are among the deferrals.

The Navy League in its submission to the 2009 White Paper argued for some of the then 100 proposed JSFs to be the STOVL version. In subsequent articles in *The Navy* magazine and in press releases the League argued for the close support of embarked troops to be provided by the STOVL version of the JSF. In the event that the deferral of JSFs leads to the purchase of only a few aircraft, (or none) then the STOVL option will disappear.

The announcements by the Prime Minister, the Defence Minister and the Treasurer were silent on certain Navy projects which appeared in the 2009 White Paper. These projects are; eight new larger frigates; twenty offshore combatant vessels, much larger and more capable than the vessels they will replace and importantly with the potential to embark helicopters or UAVs; and six new heavy landing craft with ocean going capabilities.

It is to be hoped that the absence of these projects from the list of cuts and deferrals is a positive sign and an indication that they will in due time proceed.

The new submarine programme was confirmed. The Government is to provide $214 million for the next stage of the Future Submarine Project. This sum is to be used for further studies and analysis to inform the government`s decision on the design of the Navy`s future submarine.

Four options are under consideration for this submarine: a existing off-the-shelf European design; an existing off-the-shelf design modified to meet Australian requirements; a design developed from existing off-the-shelf designs including the Collins class; and an entirely new design.

There is, therefore, much still to be determined. On only two matters is the Government decided. First, that whatever design is chosen the submarine will be built and/or assembled in Adelaide. Second, that it will not be nuclear propelled.

Readers of this magazine will know that it is the view of the Navy League that Australia ought to be considering nuclear propulsion for the new submarine. It is a matter of regret that that option is not under consideration.

A further announcement made by the Prime Minister and the Minister for Defence on 3 May was that there is to be a new Defence White Paper.

The next White Paper was not due until 2014. However, as a result of what the Government describes as significant developments that have occurred internationally and domestically since the 2009 White Paper, the new White Paper is to be delivered in the first half of 2013.

The Navy League welcomes a new White Paper. As the Ministers` statement said "the Government needs to periodically and methodically review the future capability requirements of the Australian Defence Force".

The 2009 White Paper involved a comprehensive, nationwide consultation process. It is not yet clear how the 2013 White Paper is to proceed. The Minister for Defence has asked Dr. Alan Hawke, Mr Ric Smith and Mr Paul Rizzo to form a Ministerial Advisory Group to assist in the development of the 2013 White Paper.

Whatever the new White Paper process may be, the Navy League will seek to make its contribution.

A STOVL F-35B landing onboard the USN LHD USS ESSEX. The League has been pushing for sometime the case of the F-35B for our new LHDs in order to provide close air support for the troops disembarking from the ships, as the USMC does. (USN)

SEMPER FLY

Harrier still the US Marine fighter of choice

By Daniel P. Taylor*

The world's premier amphibious force, the United States Marines, is still absolutely wedded to its Harriers to enable it to conduct amphibious operations. With the recent acquisition of 79 spare GR-9 Harriers form the UK the USMC's ability to sustain its current Harrier force through cannibalisation of the GR-9 will ensure its effectiveness well beyond the introduction date of the STOVL JSF designed to replace it.

Despite all of the new technology on the US Marine Corps' horizon, the AV-8B Harrier jump jet remains one of the most iconic platforms in the service. With the vertical-takeoff-and-landing ability of a helicopter and the armament of a strike fighter, it's the kind of capability that has fundamentally allowed the Corps to differentiate itself from the Navy, Air Force and Army for a quarter-century — and the service does not plan to do without it anytime soon.

One of the reasons the Marine Corps craves a capability like the F-35B short-takeoff-and-vertical-landing (STOVL) variant of the Lightning II Joint Strike Fighter to replace its aging Harriers is because of what the service cannot get out of the F/A-18 Hornets it also flies: a strike fighter that can launch from the decks of amphibious assault ships and short runways around the world.

And as the F-35B continues to face delays, the Marines must focus on maintaining the Harriers until the F-35B is able to replace them. And the service has relied heavily on the Harriers in recent operations in Afghanistan, Libya and Iraq.

Maj. William Maples, the Marines' AV-8B requirements officer, said that the STOVL capability the Harrier provides to the Marine Corps is "invaluable in maintaining our role as America's expeditionary force in readiness."

Far from being a mere luxury, the flexibility a Harrier provides has "proven its importance time and again," Maples argued.

Case in point is Operation Odyssey Dawn, he said, referring to the United States' effort last year to implement a no-fly zone over Libya to prevent then-ruler Muammar Gaddafi from carrying out attacks against anti-Gaddafi forces during the Libyan civil war. The United States used Harriers as one of its primary weapons against pro-Gaddafi ground forces.

In that operation, Harriers provided "both a precision strike capacity and tactical rescue of aircraft/personnel," Maples said.

"The AV-8B's ability to operate in austere conditions, both at sea and on shore is essential to the Marine Corps' ability to fight and win our nation's battles, engage with our allies and integrate into the joint force," he added. "The AV-8B will continue in this role as we transition to the fifth-generation Joint Strike Fighter."

The AV-8B's history stretches back to the 1960s, when British manufacturer Hawker Siddeley started developing the first iteration of the Harrier jump jet. The aircraft's ability to take off and land vertically due to its lift fan proved attractive to both the British and American governments, and in 1973, Hawker and McDonnell Douglas — which has since become part of Boeing — sought to develop an advanced version of the Harrier, but costs derailed the program. However, McDonnell went back to the drawing board to build on the lessons learned from the previous program, and the first AV-8B squadron was fielded in 1985.

A USMC AV-8B Harrier II+ is given the signal to takeoff from a USN LHD. The Harrier II+ has the same radar as the F/A-18 Hornet and can use the same weapons such as AMRAAM and Harpoon, however, the USMC is adamant about the aircraft staying within the bounds of close air support for its Marines. (USN)

Twenty-five years and counting is a long time to keep an aircraft in the air, and you can expect to see them in the fleet for more than a decade longer.

"Currently, the platform out-of-service date has been moved out to 2026," Hank Cole, Boeing's AV-8B program manager, said in an interview alongside Scott Hammann, AV-8B chief engineer for the company. "We're hanging in and supporting the transition effort as long as it takes."

Partners Italy and Spain will take the aircraft out even farther than that, Hammann said.

However, just because the platform has been around since the 1980s doesn't mean that the aircraft are that old. The Navy put many of the Harriers through a remanufacture program over the years, which essentially reset the lives of some of the fleet to zero. If you take that into account, the average age of an AV-8B Harrier is in the area of 3,000 hours out of a 6,000-hour projected service life.

There are challenges to keeping the aircraft flying that Boeing must address, however. "The last production aircraft delivered off the line in 2003," Cole said. "Since that point in time, we're continuing to work on the sustainment of the supply base, which is one of the big challenges, just to keep guys around to keep the platform supported. There are some obsolescence things that are starting to pop up, and we are actively addressing those."

The advent of modern weapons and systems has done a good bit to keep the Harrier modern, he added.

Boeing has been tied with BAE Systems under a teaming agreement for the aircraft. Today, the Harrier is a collaborative program through a memorandum of understanding between the United States, Italy and Spain, Cole said. The United Kingdom recently pulled out of the program. Currently, the fleet stands at 144 U.S. aircraft, 17 Spanish aircraft and 15 Italian aircraft, according to Cole.

At this point in the program, it's all about sustaining the aircraft, he said.

"We work a lot of [integrated logistics support] elements under contract from NAVAIR [Naval Air Systems Command], and we've got contracts with NAVSUP [Naval Supply Systems Command]," he noted.

Training is an essential part of sustainment as well. "We have a contract to support the squadrons, where we have maintainer training, where we have guys embedded with the squadron doing basic training of platform skills," he said. "We've got some very skilled, very knowledgeable [people] — mostly retirees from the Marine Corps."

Finally, the company is under contract to provide technical analysis for NAVAIR to help with the incorporation of modifications into the aircraft and other technical support and modernization efforts.

"We're operating under seven or eight contract vehicles either coming out of NAVAIR through [Naval Air Weapons Station] China Lake [in California] back down through NAVSUP," Cole said.

All this work is necessary to keep in the air a fighter that has settled into a role to which the Marine Corps has become very accustomed.

"It really helps the Marine Corps beef up that [forward basing] capability by essentially doubling the number of carriers available that can carry tactical aircraft, so with small-deck ships and the capability of smart weapons, it's a got a force projection the Marines need," Cole said. "It's key to them. They don't want to be dependent on shore based, fixed-wing capability, especially in parts of the world where you can't get there from here."

"It's the only aircraft that's designed and used with the specific purpose to help the person on the ground," Hammann added. "That's why it's so important. You talk to the ground troops, they'll tell you how they feel about the aircraft." ■

A USMC AV-8B seen here fitted with the AN/AAQ-28(V) LITENING targeting pod under the starboard wing. The LITENING is a precision targeting pod system currently operational on all USMC Harriers. LITENING significantly increases the combat effectiveness of the aircraft during day, night and under-the-weather conditions in the attack of ground targets using a variety of standoff weapons (i.e., laser guided bombs, conventional bombs and GPS-guided weapons).

AV-8B, TAV-8B

A: F402-RR-408B/Pegasus 11-61 B: F402-RR-406A/Pegasus 11-21

Dimensions, External	
Length:	14.12 m (46 ft 4 in) [flying attitude, AV-8B] 15.32 m (50 ft 3 in) [flying attitude, TAV-8B]
Height:	3.55 m (11 ft 7¾ in)
Wings	
Wing span:	9.25 m (30 ft 4 in)
Wing aspect ratio:	4.0
Weight	
Operating weight, empty:	6,336 kg (13,968 lb) [incl pilot and unused fuel, AV-8B] 6,451 kg (14,223 lb) [incl pilot and unused fuel, TAV-8B]
Max T-O weight:	14,061 kg (31,000 lb) [435 m (1,427 ft) STO, AV-8B] 9,342 kg (20,595 lb) [S/L VTO, ISA, AV-8B (A)] 8,142 kg (17,950 lb) [S/L VTO, 32°C, AV-8B]
Max landing weight:	11,340 kg (25,000 lb) [design, AV-8B] 9,043 kg (19,937 lb) [vertical, AV-8B]
Fuel weight	
Max fuel weight:	3,519 kg (7,759 lb) [internal, AV-8B] 3,314 kg (7,306 lb) [internal, TAV-8B] 7,180 kg (15,829 lb) [internal, external, AV-8B] 6,974 kg (15,376 lb) [internal, external, TAV-8B]
Payload	
Max payload:	3,062 kg (6,750 lb) (est) [useful load (incl fuel, stores, weapons, ammunition, and water injection for engine), VTO, AV-8B] 7,711 kg (17,000 lb) (est) [useful load (incl fuel, stores, weapons, ammunition, and water injection for engine), STO, AV-8B]
Max stores payload:	external, Pegasus 11-61, AV-8B 6,003 kg (13,235 lb) [A] external, Pegasus 11-21/Mk 105, throughout full manoeuvring envelope, AV-8B 4,899 kg (10,800 lb) [B]
Performance	
T-O run:	435 m (1,427 ft) [STOL, at max T-O weight, ISA] 519 m (1,700 ft) [STOL, at max T-O weight, 32°C]
Max level speed:	575 kt (1,065 km/h; 662 mph) at S/L
Max level Mach number:	0.87 at S/L 0.98 at [at altitude]
g limits:	+8/-3
Range:	1,638 n miles (3,033 km; 1,885 miles) [ferry, unrefuelled with four 300 US gallon external tanks, tanks retained] 1,965 n miles (3,639 km; 2,261 miles) [ferry, unrefuelled with four 300 US gallon external tanks, tanks dropped]
Radius of operation:	90 n miles (166 km; 103 miles) [short T-O (366 m; 1,200 ft), 12 Mk 82 Snakeye bombs, internal fuel, 1 h loiter] 594 n miles (1,100 km; 683 miles) [hi-lo-hi, short T-O (366 m; 1,200 ft), seven Mk 82 Snakeye bombs, two 300 US gallon external fuel tanks, no loiter] 627 n miles (1,161 km; 721 miles) [deck launch intercept mission, two AIM-9 missiles and two external fuel tanks]
Endurance:	3 hr [combat air patrol 100 n miles (185 km; 115 miles) from base]

Three AV-8B Harrier II + on the deck of an LHD preparing for takeoff. The USMC is totally wedded to its Harriers as on call support for its Marines on the ground. (USN)

A USMC Harrier II+ over Afghanistan taking on fuel during a combat air patrol to support ground troops with at call close air support. The Harrier has earned quite a reputation in Afghanistan as a very good close air support aircraft. This aircraft is carrying two 500lb Laser/JDAM. (USN)

* Reprinted, with permission, from Seapower, the official publication of the Navy League of the United States.

MODERN MARITIME WARFARE:

The Future of the U.S. – Australia Alliance in the Maritime Domain

By CAPT George Galdorisi USN (Retd)

The RAN and USN have a long history of cooperation in war and peace. The recent review of US defence strategy sees Australia taking a greater partnership role in that policy and builds upon the decades of cooperation. George Galdorisi takes a look at the new US defence posture and its implications for Australia.

The United States is one of Australia's staunchest - if not *the* staunchest - allies. In fact, the 2009 Defence White Paper *Defending Australia in the Asia Pacific Century: Force 2030* notes, "Our alliance with the United States is our most important defense relationship." At the forefront of that alliance and century-old friendship is the relationship between the Royal Australian Navy (RAN) and the United States Navy (USN). However, lately there has been some doubt cast upon the future role of the USN in the Indo-Pacific region. Much has been made in the press of America's purported decline, and many now voice fears that the United States and the USN will cease to have a major presence in the Indo-Pacific region in general, and in the Pacific Ocean alongside the RAN specifically. In examining the issue of the USN's future role in the Indo-Pacific region, we have analyzed the inexorable trends in global politics, military and economics, and determined that the USN will remain forward-deployed and strongly engaged in the Pacific in both the near and far terms. The RAN can rely on the USN as a navy it will interoperate with through the middle of this century.

As Australia undertakes its biggest naval expansion in generations, and as the nation's equities encompass the incredibly complex and challenging Indo-Pacific region (a region dominated by oceans, not land), it is vital for the RAN to know with some certitude where the USN will likely operate in the future. However, this has been open to wild speculation, with some in the media even positing that in an era of severe fiscal constraints, the U.S. might drastically scale back its presence in the Indo-Pacific region. However, reviewing the macro-level trends in this region and the U.S.' enduring interests there, it strains credulity to argue that the USN would withdraw – or let itself be pushed out of - the Indo-Pacific. Instead, current fiscal realities combined with these trends and interests will likely spur a renewed focus on the region.

THE USN'S STRATEGY IN THE INDO-PACIFIC:

AirSea Battle Concept

To shed light on what the USN's likely strategic approach in the Indo-Pacific region will be in future years, it is necessary to examine both its regional strategy and the factors underlying it. This strategy is best encapsulated in the AirSea Battle Concept (ASBC), which was first outlined in the 2010 Quadrennial Defense Review (QDR). As part of its guidance to rebalance the force, the QDR directed the development of the AirSea Battle Concept in order to "address how air and naval forces will integrate capabilities across all operational domains—air, sea, land, space, and cyberspace—to counter growing challenges to U.S. freedom of action." Although official documents have been reticent in naming a specific country or region as the focus of the ASBC, it is generally understood as a strategy to counter growing anti-access/area denial (A2/AD) challenges in the Pacific region, and (to a lesser extent) in the Persian Gulf.

Admittedly, neither the term "AirSea Battle Concept" nor the concept itself is brand new. Rather, this integration of sea and air forces has roots that extend back over half a century. It is a strategy that was employed during the "Battle of the Atlantic" campaign to defeat German U-boats, and used again in late 1944 by air and naval forces in and around the Philippines. However, by the end of the first decade of the 21st century several trends converged that demanded a new focus on an ASBC. One was the Obama administration's shift in emphasis away from the Global War on Terror and decision to draw down the U.S. commitment to Iraq and Afghanistan on a finite timeline. A second was the startlingly rapid rise of China over this decade. As the Pacific Command Commander, Admiral Robert Willard, has noted, ements of China's military modernization appear designed to challenge our freedom of action in the region."[i] And a third was the unanticipated economic recession faced by the United States.

The Anzac class frigate HMAS PARRAMATTA standing plane guard with the USN Nimitz class aircraft carrier USS ABRAHAM LINCOLN in the Persian Gulf. (USN)

Chief of Navy VADM Ray Griggs with the US Secretary of the Navy Mr Ray Mabus in Canberra recently for Navy to Navy talks. (Defence)

On the heels of the deepest economic crisis since the 1930's, and with the federal budget deficit running in excess of $1.5 trillion in FY 2010, the age-old "guns versus butter" debate has brought into sharper focus the consistent theme that the U.S. military may not have the strategic assets needed to deter, and if necessary prevail, against a high-end peer competitor like China. A key assumption underpinning the ASBC is that without better coordination between and among the U.S. military services, especially the Navy and the Air Force, this outcome is all but guaranteed. Moreover, the ASBC will have limited (or no) effect unless these joint Air and Naval planners tie actual operational requirements to specific capabilities.

Faced with a rising threat of peer and near-peer competitors with alarming anti-access/area denial capabilities – as well as long-term budget pressures – the ASBC can be viewed as more than an attempt to "do more with less." Rather, it is a return to historical precedents when, like today, compelling strategic and operational realities created a perfect storm that forced U.S. naval and air forces to work together in a truly *integrated* fashion to project power against a determined foe.

Outlining the factors that underpin the ASBC's strategic necessity serves to demonstrate the USN's imperative – and commitment - to remain deeply engaged in the Indo-Pacific region. However, the next question that the RAN might rightfully ask is what the ASBC would look like in practice. Stated another way, the USN has established its strategic reasons for continuing to operate in the Pacific theater – now, what exactly will it be doing there?

Although the precise nature of the ASBC will not be known until Pentagon planners complete their work (and even then, the strategy's details will be classified), a study from the U.S. Center for Strategic and Budgetary Assessment (CSBA) entitled *AirSea Battle: A Point-of-Departure Operational Concept* analyzes possible options to counter the A2/AD threat posed by the Chinese People's Liberation Army (PLA).

First and foremost, CSBA argues, the AirSea Battle Concept should help "set the conditions" to retain a favorable military balance in the Western Pacific. CSBA further explains that by creating credible capabilities to defeat A2/AD threats, the U.S. can enhance stability in the Western Pacific and lower the possibility of escalation by deterring inclinations to challenge the U.S. or coerce regional allies. The U.S.'s regional allies – *especially* Australia – will be a vital piece of this strategy to retain a favorable military balance. Indeed, coordination with the RAN will ensure that the U.S. Navy and Air Force has a firm foundation for success. As Joint Chiefs Chairman Admiral Michael Mullen noted at the U.S. Air Force Academy graduation and commissioning ceremony in May 2010, "[The ASBC] is a prime example of how we need to keep breaking down stovepipes between services, between federal agencies and even between nations."

How would the U.S.' strategy to create credible capabilities to counter the A2/AD threat work? Based on the broad outlines of the CSBA's *Point-of-Departure Operational Concept* study, it is likely that in the initial stages of hostilities, the U.S. would need to withstand an initial attack and limit damage to U.S. and allied forces while executing a

blinding campaign against the People's Liberation Army (PLA) battle networks. However, the need withstand an initial attack is a potential flaw in the CSBA plan. Prudence and technical reality would suggest that the ASBC should find a way to make U.S. forces less visible and targetable while retaining the ability to be forward with credible combat power. Being less visible and targetable raises the risk of initiating a first strike and contributes to deterring a potential foe.

Failing deterrence, the ASBC assumes that a conflict with China would involve a protracted campaign where U.S-led forces would then sustain and exploit the initiative in various domains, conduct distant blockade operations against ships bound for China, maintain operational logistics, and ramp up industrial production of needed hardware, especially precision-guided munitions. However, it is important to note that in a shorter – perhaps more likely conflict – blockade, logistics and procurement will have minimal impact on the outcome.

The evidence suggests that the ASBC has indeed gained traction throughout the U.S. military. The Pentagon has moved quickly; a June 2011 article from *Inside Defense* cites an internal bulletin from the Navy's strategy and policy shop as confirming the "completion of ASB Spiral One development," referring to the first draft of the study. But a skeptic, who doubts the ability of the current system to respond in a meaningful way to this rising challenge, may opine that ASBC will only result in a rearrangement of existing doctrine and systems – and not be a truly adaptive and dynamic approach.

THE USN'S "TIPPING POINT"

Examining the USN's force structure options and choices sheds light on the question of whether the AirSea Battle Concept will represent a truly innovative approach or simply a repackaging of previous strategy. The USN's future force structure was comprehensively analyzed in the Center for Naval Analyses (CNA) report *The Navy at a Tipping Point: Maritime Dominance at Stake*, which addressed the hard question—"Given the increasing demand for naval forces and declining budgets, at what point might the U.S. Navy cease to be globally influential?"

While CNA suggested that a Navy of fewer ships than today's fleet of roughly 285 hulls could still generate a modicum of global maritime dominance, the potential is great for tomorrow's fleet to be the "Royal Navy" of the mid-21st Century, unless current trends are reversed. What could a future Navy of, say, only 140 warships do?

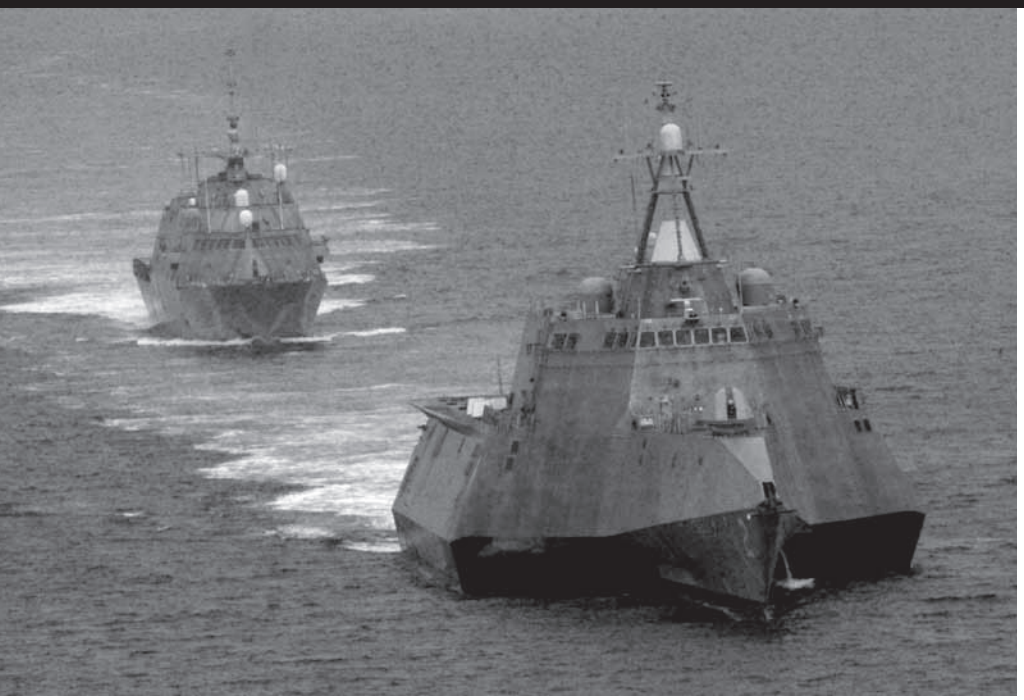
In *The Navy at a Tipping Point: Maritime Dominance at Stake*, CNA examined the dynamics that would shape five possible futures for the U.S. Navy:

- **"Status Quo"** Navy that lets the bets ride
- **"2-Hub"** Navy maintaining combat-credible hubs built around carrier strike groups (CSGs) in the Central Command (CENTCOM) and Pacific Command (PACOM) areas of responsibility (AORs)
- **"1+ Hub"** Navy built around a CSG in PACOM or CENTCOM, but not both
- **"Shaping" Navy** focused on peacetime engagement activities and crisis response, and
- **"Surge" Navy** with most naval forces brought home.

CNA concluded that even with scarce resources, there are a range of "potential avenues for maintaining forward combat-credible presence and exerting influence on a global scale," but they involve "difficult trade-offs from long-held Navy positions."[ii] At the heart of it, when the Navy cannot afford to do all six core capabilities called out for in *A Cooperative Strategy for 21st Century Seapower* "24/7" worldwide, it will be forced into choosing between: (1) meeting the demands of maritime security operations, engagement, and deterrence operations; and (2) unbalancing the fleet to meet potential adversaries with combat-credible forces for "tailored deterrence." The decision impacts all investment decisions Navy leadership will need to make in the coming years.

The Navy at a Tipping Point: Maritime Dominance at Stake study has sparked a spirited debate within the Navy, Department of Defense, Congress, think-tanks and numerous blogs regarding CNA's five alternative futures for the Navy and the nation. However, in examining

The USN Los Angeles-class submarine USS BUFFALO (background) docks at HMAS STIRLING, behind HMA Ships WALLER and COLLINS. USN Submarines are regular visitors to WA to train against the very stealthy RAN submarines. (Defence)



The two lead vessels of the LCS class of ships INDEPENDENCE (Front) and FREEDOM. As part of the Obama Administration's shift to the Pacific at least one LCS vessel will be forward deployed to Singapore. (USN)

each possible scenario in minute detail, these analyses often left the matter completely in doubt. But even as the conversations wax and wane, prevailing trend lines and dynamics will result in one of these futures (or an extrapolation) for the Navy, almost by default. Indeed, as the logic behind the ASBC shows, the momentum pointing toward a most-likely alternative future is powerful. As ASBC gains traction, the two-hub fleet increasingly appears to be the only logical choice for the Navy we will have in 2025 and beyond.

Indeed, mainstream media and defence industry reports indicate that the shift to a two-hub fleet may have already begun. In the spring of 2011, the U.S. began to markedly build up its forces deployed to the Indo-Pacific region, and defence officials hinted at a nascent Global Force Posture Review that codifies this buildup in the USN's future force structure. When this shift in considered along with the many statements in which U.S. Secretary of Defense Leon Panetta categorically rejects the possibility of "hollowing out" the force, it appears that the USN is indeed moving to a two-hub fleet - focused on the Indo-Pacific region – while reducing force posture in the Atlantic. These hard strategic choices suggest that the necessary requirements will be in place to support the ASBC as a dynamic new approach, rather than a reshuffling of existing doctrine.

THE USN-RAN ALLIANCE:

A Way Ahead

For the United States' efforts in the Indo-Pacific region to be successful, this strategy will have to be conducted in partnership with regional allies. The RAN and the USN have a long history of cooperation, and as the 2009 Defence White Paper *Defending Australia in the Asia Pacific Century: Force 2030* explains, both nations "will continue to look for ways to deepen our defence cooperation." The U.S.-Australia alliance forms a cornerstone of maritime security in the Indo-Pacific region. The RAN's clear understanding of U.S. strategy in this area, and assistance with implementing it, will ensure that the alliance remains a cornerstone of security in future years. ■

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i Admiral Robert Willard, prepared statement before the House Armed Services Committee on U.S. Pacific Command Posture, March 23, 2010.

ii "The Navy at a Tipping Point," *op.cit.* pp. 26ff.

The first contingent of US Marines to travel to Australia under the new Australian – US Defence cooperation, arriving in Darwin. Approximately 200 Marines of Fox Company, 2nd Battalion, 3rd Marine Regiment, arrived at RAAF Base Darwin around midnight on the 3rd of April, to begin the lead up to moving out field and commencing exercises with the Australia Army. (Defence)

CODLOG PROPULSION CONFIRMED FOR TYPE 26

BAE Systems Maritime has confirmed a combined diesel electric or gas (CODLOG) propulsion arrangement for the UK RN's next-generation Type 26 Global Combat Ship (GCS).

Intended to enter service from 2021, the Type 26 will replace the RN's current Type 23 frigates with 13 ships planned.

The CODLOG arrangement has been selected following a detailed analysis of options in the initial stage of the Type 26 Assessment Phase. CODLOG means electric propulsion motors are mounted on the shaft line between the main gearbox and propellers for quiet drive forward and astern operation, with electrical power generation for both propulsion and ships services to be provided by four diesel generators usually mounted high and at differing parts of the ship to reduce underwater radiated noise. A gas turbine driving two propeller shafts through a cross-connection gearbox will be employed to boost propulsion to achieve higher speeds.

Formal invitations to tender for both the gas turbine and diesel generator sets have been issued.

BAE Systems says that it requires a gas turbine system able to provide a maximum continuous mechanical output power of at least 30 MW at a constant power turbine speed of 3,300 +/- 300 rpm through to end of life. The engine is required to be contained in a resilient-mounted, acoustic and gas-tight enclosure and supplied as a complete package that can interface with the ship seamlessly.

With the diesel generators and ancillaries, each set is required to provide a maximum, continuous electrical output power of nominally 3 MWe at an alternator voltage of 690 V and frequency of 60 Hz. The diesel generators will be contained in a resilient-mounted, acoustic and gas-tight enclosure and supplied as a complete package.

01 BAMS READY FOR FIRST FLIGHT

The first of the USN's high-altitude Broad Area Maritime Surveillance (BAMS) unmanned aerial vehicles is set to conduct its maiden flight in the third quarter of this year.

After a number of test flights from the Northrop Grumman production facility in Palmdale California, the aircraft will transfer to Naval Air Station (NAS) Patuxent River, Maryland. Milestone C approval, authorising low-rate initial production, is scheduled for July 2013. Initial operating capability is planned for December 2015, when the first 'orbit' of four aircraft will be stood up on deployment providing the capability for round-the-clock surveillance.

The BAMS is based on the USAF's RQ-4B Global Hawk with the addition of a maritime sensor package. This includes a multifunction active sensor (MFAS) radar providing 360-degree coverage, a full-motion video camera, an electro-optical/infrared sensor, electronic support measures, an automatic identification system (AIS) and communications relay.

The naval variant also incorporates significant changes to the airframe to permit all-weather operations. Stiffened wings allow the BAMS aircraft to handle gust loading and the Rolls-Royce AE3007H turbofan engine has a new hot section.

The USN is procuring a total of 22 BAMS systems in five orbits, funded for 55,000 flight hours per year, in parallel with the acquisition of 117 P-8A Poseidon maritime patrol aircraft. Together the two types will replace the USN's fleet of P-3C Orion maritime patrol aircraft.

With a ceiling of 60,000 ft, the unmanned aircraft will provide persistent surveillance within a range of 2,000nms, allowing the P-8 crews to concentrate on their primary missions of ASW and ASuW (Anti-SUrface Warfare).

02 FALKLAND'S VETERAN HMS PLYMOUTH TO BE SCRAPPED

The RN frigate which hosted the Argentine surrender of South Georgia in 1982 is to be scrapped despite an intensive campaign to save it from extinction.

Thirty years ago, the wardroom of HMS PLYMOUTH was where the notorious Argentine Navy officer Alfredo Astiz (head of the South Georgia garrison) surrendered to British Forces in South Georgia. But now the 53 year old vessel, like many former Falklands veterans, is being sold to a Turkish scrap-yard. The only ship left in the UK from the war is the former destroyer BRISTOL which is now alongside as a cadet training ship.

The 2,150-ton Type 12 frigate launched in Plymouth, UK, in 1959 has been laid up since 1991 as a decaying floating museum. A press release from Plymouth City Council said no one had presented a feasible proposal to restore the ship as a tourist attraction.

HMS PLYMOUTH was one of the first RN ships to arrive in the South Atlantic following the Argentine invasion of the Falkland Islands and South Georgia. Together with HM Ships ANTRIM, BRILLIANT, ENDURANCE,

01 A Global HAWK unmanned aerial vehicle taking off on a test flight. With a ceiling of 60,000 ft, the unmanned aircraft will provide persistent surveillance within a range of 2,000nms.

PLYMOUTH took part in the recapturing of South Georgia on 28 April 1982 during Operation Paraquet.

PLYMOUTH assisted in landing Royal Marines from her Westland Wasp helicopter and bombarded Argentine troop positions on the island with her twin 114mm/4.5" Mk-6 gun mount. Later her Wasp helicopter took part in a surface attack on the submarine ARA SANTA FE as it was attempting to make a break for open water. It was badly damaged and later captured by Royal Marines after it limped back to port in South Georgia.

PLYMOUTH rejoined the Task force and supported troops on the ground by bombarding Argentine troop positions with her Mk-6 gun mount.

On June 8 1982, PLYMOUTH was attacked by Dagger fighter bombers of FAA Grupo 6. She was hit by four bombs and several cannon shells. One bomb hit the flight deck, detonating a depth charge and starting a fire, one went straight through her funnel and two more destroyed her Limbo anti-submarine mortar. All of the bombs failed to explode but five men were injured.

It is reported that the Argentine navy officer who signed the unconditional surrender, Captain Aztiz, also known as the "blonde angel of death", is now serving life imprisonment on charges of human rights violations including the death of two French nuns and a Swedish child, during the military dictatorship 1976/1983.

CRUISE SHIP ACCESS TO GARDEN ISLAND REPORT

On 29 March 2012 Minister for Defence Stephen Smith released the report of the Independent Review of the future use of the naval docks at Garden Island in Sydney by visiting cruise ships.

Minister Smith announced the Review in June 2011.

The review, led by Dr Allan Hawke was received by the Minister in February.

The Independent Review assessed whether there is scope to enhance cruise ship access to Garden Island without adversely impacting on its priority national security role of supporting Navy maritime operations.

The Review focused on the opportunities for greater civil-military cooperation in the use of finite berthing resources for very large vessels in Sydney Harbour.

The Review also assessed whether there is scope for a more flexible approach that balances Navy's needs with cruise industry requirements to secure advanced berth bookings for cruise ships visiting Sydney Harbour.

The Review found that current and future Navy capability requirements of Garden Island are essentially incompatible with cruise ship access over the long-term, except on the existing basis, where a limited number of requests for berth bookings is considered by Navy based on extended notice and limited visits per year.

In February, *Queen Mary 2*, the biggest cruise liner to visit Australia, docked at Garden Island with Navy's approval.

It also found that provision of guaranteed shared access to existing berths at Garden Island cannot be achieved without adversely impacting on naval operations.

The Review identified one possible option to meet the cruise industry's short-medium term requirement, involving the addition of a 'dolphin' berth (mooring posts) at the Overseas Passenger Terminal, combined with a maximum one day stay alongside, and transfer of vessels requiring a two day turnaround to the existing Athol Bay Buoy. This could be enhanced further by construction of a more permanent dolphin berth close to the shoreline in Athol Bay.

03 RAM BLOCK II READY FOR PRODUCTION

US Company Raytheon says that work is progressing towards a third flight test of their Rolling Airframe Missile (RAM) Block 2 for an expected initial production contract in the near future.

Two successful test shots - one over land and the other over water, roughly one week apart - in December 2011 had proved the missile's effectiveness. Raytheon expects a low-rate initial production contract to be signed for the US and German navies shortly. If successful, this will be followed by another at-sea firing trial in mid-August. Few details are known of the objectives for the test firing, but unlike the first two launches - which were fired from a land-based launcher at San Nicolas Island, California - it will be conducted from the USN's Self-Defence Test Ship (the ex-USS PAUL F. FOSTER – see *THE NAVY* Vol 74 No.1 pp16-17) and constitute another manoeuvre trial over water.

Pending success, the system will undergo operational testing in late 2012 and initial fleet operating capability in 2014.

Development of RAM Block 2 has been underway since May 2007. It embodies kinematic and sensor upgrades of the existing RAM Block 1 missile to counter more manoeuvrable and faster anti-ship missile

02 HMS PLYMOUTH on fire in Falkland Sound on June 8 1982 after being attacked by Dagger fighter bombers of FAA Grupo 6. She was hit by four bombs and several cannon shells. One bomb hit the flight deck, detonating a depth charge and starting a fire, one went straight through her funnel and two more destroyed her Limbo anti-submarine mortar. All of the bombs failed to explode but five men were injured.

threats, as well as generally expand the system's engagement envelope to include surface targets. The major enhancement is provided by a dual-thrust rocket motor and independent canards, which respectively offer a 50 per cent uplift in range and a three-fold enhancement of the missile's manoeuvrability. Seeker upgrades are mostly to overcome obsolescence issues.

04 HMCS VICTORIA CONDUCTS SUCCESSFUL TORPEDO TRIALS

The RCN's (Royal Canadian Navy's) submarine programme reached a major milestone recently with the first successful test-firing of a Mk-48 heavyweight torpedo from a Victoria-class submarine.

HMCS VICTORIA, the first-of-class, became the first vessel in the four-submarine fleet to successfully fire an exercise version of the US Mk-48 torpedo, during a two-week series of weapon system trials at the Canadian Forces Maritime Experimental and Test Ranges in Nanoose Bay, off Vancouver Island.

The tests involved multiple firings of a telemetry test version of the torpedo, with its warhead module removed and replaced with test data-gathering electronics. VICTORIA is now on track to become fully operational in late 2012.

Canada's flotilla of Victoria-class (Upholder/ex Type 2400) submarines, purchased from the UK in 1998, have been blighted with setbacks and the navy has been without an operational submarine capability since HMCS CORNER BROOK ran aground badly in June 2011.

05 COTS OSV PURCHASE

The Gillard Government has purchased a commercial off the shelf (COTS) offshore support vessel (OSV) to assist the RAN with humanitarian disaster relief tasks until the first Canberra class LHD enters service.

MSV Skandi Bergen was bought for approx $130 million and will be operated under a civilian crewing arrangement. Following minimal modifications, the 6,500-tonne ship is expected to enter service shortly.

Skandi Bergen is the sister ship of the Australian Customs and Border Protection Service-operated *ACV Ocean Protector*. Measuring 105 m in length with a beam of 21 m, the design features a helipad and a 1,000 m 2 deck area.

Following the entry into service of the new Canberra-class LHDs, *Skandi Bergen* will be transferred to the Customs and Border Protection Service for use in maritime surveillance tasks and the apprehension of vessels operating illegally. She will be renamed *ACV Ocean Shield*.

06 SKYHAWK RETURNS TO NOWRA

The New Zealand Government has donated an ex-RAN and Royal New Zealand Air Force (RNZAF) TA-4G Skyhawk jet to Nowra's Fleet Air Arm Museum (NZ-6255 (TA-4K) BuNo.154911, removed from service Dec 2001 and is the former RAN TA-4G 880).

The two-seat aircraft, which will be the only ex-RAN Skyhawk held by the Museum, was delivered to HMAS ALBATROSS in a RAAF C-17 Globemaster.

The Skyhawk was introduced into RAN service in 1967 to provide naval fighter protection to Australian Defence Force assets overseas from the aircraft carrier HMAS MELBOURNE.

The Skyhawk fleet was withdrawn from RAN service in 1984 and subsequently sold to the RNZAF, which undertook to return one aircraft to Australia for heritage purposes after decommissioning.

Following its arrival at ALBATROSS, the Skyhawk will be reassembled by the New Zealand project team and repainted in the RAN's 724 Squadron livery, before going on public display.

The New Zealand government has funded the aircraft disassembly and load preparation, as well as the reassembly and repainting costs. A formal handover ceremony from the New Zealand Ministry of Defence is scheduled for later this year.

RAYTHEON DELIVERS FIRST SHIP SET OF DDG-1000 SONAR TO BATH IRON WORKS

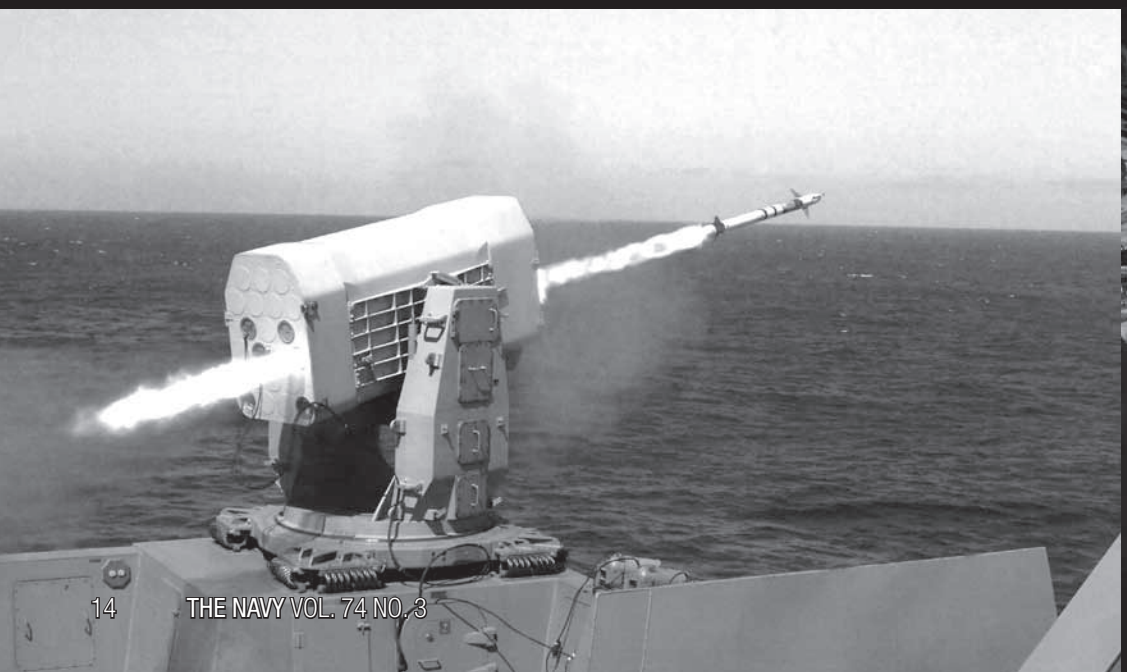
General Dynamics Bath Iron Works has taken delivery of the first ship set of Raytheon's AN/SQQ-90 tactical sonar suite for USS ZUMWALT (DDG-1000), the USN's future multi-mission destroyer.

The system includes the AN/SQS-60 hull-mounted, mid-frequency sonar, the AN/SQS-61 hull-mounted, high-frequency sonar, which enables the destroyer to conduct in-stride mine avoidance, and the AN/SQR-20 multi-function towed array, in addition to towed-array countermeasures.

The AN/SQQ-90 sonar electronics were delivered to Bath Iron Works on 16 April completely assembled and integrated into Electro Mechanical Enclosures (EME) said Bill Marcley, Raytheon's vice-president for Total Ship Mission Systems and the DDG-1000 programme manager.

03 A RAM Blk 1 missile being fired from a 21-cell Mk49 launcher onboard a USN LSD. RAM is a very effective fire and forget counter to anti-ship missiles. (USN)

04 Crew members of HMCS VICTORIA preparing the test Mk-48 torpedo before the successful firing event. (RCN)



"One of the unique ship system-level features of DDG-1000 is that the majority of combat systems, instead of being delivered in hundreds of full MIL ruggedized cabinets, are delivered in 16 EMEs," he said. "They provide shock, cooling, vibe and electromagnetic interference security. It allows us to pretty much use basic commercial off-the-shelf racks internal to the structures, so the sonar has two different EMEs that are delivered."

But it is in the software that the greatest advancements in the SQQ-90 sonar lie. "The software we've developed has drastically reduced the workload on the sonar operator to do a tremendous amount of detect classify and locate functionality," Marcley said.

Raytheon worked with the USN to leverage the service's open business model, the advanced-processor build and advanced-capability build that the undersea warfare community has used to identify the best software modules, he added.

HMS DIAMOND COMPLETES HIGH SEAS FIRING

The third of the RN's six new Type 45 destroyers has successfully completed the first live firing of its Sea Viper guided weapons system ahead of the ship's maiden deployment later this year.

HMS DIAMOND (D34) fired a single Aster 30 missile destroying a Mirach 100/5 air target on the Hebrides range off the west coast of Scotland on 28 April.

HMS DIAMOND has also already been fitted with the two Mk-15 Block 1B Phalanx close-in weapon systems and an Outfit UAT Mod 2 electronic support measures suite. This suggests that the ship will deploy east of Suez, following first-of-class HMS DARING, which received similar enhancements before deploying in January 2012.

SAAB UPGRADES THAI AIRCRAFT CARRIER COMBAT SYSTEM

The Royal Thai Navy (RTN) has awarded Saab a contract to upgrade the combat systems of its aircraft carrier and flagship HTMS CHAKRI NARUEBET.

The scope of the upgrade - worth SEK180 million (AU$26.9 million) - will include Saab's 9LV Mk 4 combat management system (CMS) and Sea Giraffe AMB G-band 3-D surveillance radar. The 9LV currently equips the RAN's Anzacs and will also feature in the Canberra class LHDs.

Saab will also supply datalink equipment to allow for connectivity with the Royal Thai Air Force's Saab 340 airborne early warning (AEW) aircraft and recently acquired JAS 39 Gripen fighters.

Under the terms of the contract the Swedish company will also act as combat system integrator, taking responsibility for the procurement of third-party systems and integration of new and legacy systems in to the existing platform.

Saab said the contract would help to "further strengthen" its position as a principal supplier of combat systems to Thailand, having secured its first major deals with the RTN in June 2011 when it was awarded two contracts totalling SEK454 million to upgrade the combat management and fire-control systems in the two Naresuan-class (Type 25T) frigates.

Work in these Chinese-built vessels will be completed in 2014 and includes the installation of the 9LV Mk 4 CMS, the Ceros 200 fire-control system and datalink equipment, again to allow for connectivity with the Gripens and 340 turboprop aircraft (the latter fitted with Saab's Erieye AEW system).

07 UK CHOOSES STOVL JSF, AGAIN

The UK has done an embarrassing back flip on plans to buy the F-35C Carrier Variant (CV) of the Joint Strike Fighter (JSF). It will now revert back to the original plan of acquiring the F-35B short take-off/vertical landing (STOVL) version

Announcing the move to parliament on 10 May, the UK's Defence Secretary Philip Hammond said cost growth and schedule delays associated with the CV carrier conversion programme had driven the decision to reverse one of the key policy outcomes of the coalition government's 2010 Strategic Defence and Security Review (SDSR). He also held out the prospect that the return to STOVL might eventually allow the UK to continuously maintain one 65,000-ton Queen Elizabeth-class carrier at high readiness.

The STOVL F-35B was originally selected in 2002. However, as part of the UK SDSR the Cameron coalition government announced its intention to switch to the cheaper F-35C variant on the grounds of interoperability with allies, improved performance and reduced through-life costs.

The SDSR also announced that, while both Queen Elizabeth-class carriers would be built, only one would be made operational. The second ship would be placed in extended readiness, or possibly sold, meaning that the UK would face gaps in carrier strike capability during maintenance periods.

Since late 2010 the UK Ministry of Defence

05 The Australian Customs and Border Protection Service-operated ACV Ocean Protector (seen here) is a sister ship of the newly acquired MSV *Skandi Bergen*. (Customs)

(MoD) and the UK Aircraft Carrier Alliance responsible for the design and build of the two ships have been working on studies to adapt second-of-class PRINCE OF WALES for conventional carrier operations from build. A decision was taken in early 2011 to maximise aviation equipment commonality with the US Navy's CVN-78 USS GERALD R FORD carrier programme, including adopting the same Electromagnetic Aircraft Launch System (EMALS) and Advanced Arresting Gear (AAG) systems.

According to Hammond, studies undertaken had revealed that the CV-capable carrier strike capability would not be ready until 2023, some three years later than originally hoped. Furthermore, the cost of fitting catapults and arrestor gear to PRINCE OF WALES was now estimated at GBP2 billion (AU$3.3 billion): about double initial estimates in the SDSR.

In his statement to parliament Hammond said that the SDSR decision on carriers "was right at the time, but the facts have changed and therefore so too must our approach".

He added: "Carrier strike with 'cats and traps' using the Carrier Variant jet no longer represents the best way of delivering carrier strike and I am not prepared to tolerate a three-year further delay to reintroducing our Carrier Strike capability."

The MoD said that about GBP40 million had been spent to date on the carrier Conversion Development Phase. Hammond said that the total cost of the U-turn, taking into account other costs and penalties, came to about GBP100 million.

"Apart from the GBP2 billion for PRINCE OF WALES, we calculated that converting QUEEN ELIZABETH during a subsequent refit would cost towards GBP3 billion. That combined cost of GBP5 billion would simply be beyond the reach of the department and [would be] constraining ourselves to only ever operate one carrier.

"Reverting to STOVL presents the option - for consideration in SDSR 2015 - on whether to have an aircraft carrier available continuously."

Cost growth for the CV conversion is attributed to a number of factors: the more invasive nature of EMALS/AAG equipment installation; US insistence on a government-to-government Foreign Military Sales contract rather than a direct commercial sale; and the additional costs consequent of a longer time in build.

QUEEN ELIZABETH is due to start sea trials in 2017. The MoD said that reverting to the F-35B would enable ship/aviation integration trials to begin in 2018, allowing an initial operating capability from sea to be delivered from 2020.

08 MASS ORDERED FOR SOUTH KOREA

German Company Rheinmetall has secured an 11th customer for its very effective Multi-Ammunition Soft-Kill System (MASS) with the award of a EUR7 million (AU$9.4 million) contract from Samsung-Thales for the Republic of Korea Navy's (RoKN's) new LST-II landing ship tank vessels.

Hanjin Heavy Industries is building four LST-II ships for the RoKN, each of which will be equipped with two MASS launchers. Rheinmetall describes this as a 'pilot project', adding that the system is "poised to become standard equipment throughout the RoKN".

MASS is a lightweight, trainable soft-kill decoy suite. The system fires programmable multispectral 81 mm Omni-Trap munitions, each of which contains a multipart payload covering the radar, infrared, laser, electro-optical and ultraviolet portions of the electromagnetic spectrum.

SEA 1000 SUBMARINE STUDIES TO BEGIN

On 3 May 2012, Prime Minister Julia Gillard, Minister for Defence Stephen Smith and Minister for Defence Materiel Jason Clare announced that the government would provide $214M for the next stage of the Future Submarine Programme (SEA 1000).

Dating back to the now defunct 2009 Defence White paper, SEA 1000 currently calls for up to 12 diesel submarines to replace the six units of the Collins class for an estimated $14-36B.

The detailed studies and analysis will inform the Government on the design of the country's next submarine that will follow the Collins class. First pass approval for the programme is expected by late 2013 or early 2014 and second pass and the corresponding construction phase in 2017.

The detailed studies will include:

- Military-off-the-Shelf (MOTS) design study with DCNS, HDW and Navantia.
- Initial design studies for an updated Collins class submarine with Kockums.
- An analysis of options to conduct cost and capability trade off analysis with all options.
- A capability modelling study by Electric Boat.
- Scientific and technological studies primarily by the Defence Science and

06 The ex-RAN and RNZAF Skyhawk for Nowra's Fleet Air Arm Museum (NZ-6255 (TA-4K) BuNo.154911 and former RAN TA-4G 880) being towed to a hangar for restoration to RAN 724 Squadron livery before going on display.

Technology Organization (DSTO).

- Future Submarine Industry Skills Plan (announced in December 2011).

The studies, when complete, will form the basis for the government's First Pass approval, which is the decision for Defence to move forward with further development including its first Request for Tenders (RFT). Second pass approval, scheduled for 2017, is the defined scope for the programme and first allocated budgets followed shortly after with the construction phase.

Any delays past 2017 in the construction phase will create a capability gap as all six of the Collins class are currently scheduled to decommission from 2025 through 2031. The first unit would have to be in the water by 2022 in order to commission prior to the first Collins decommissioning in 2025. This equates to a razor thin margin assuming construction begins in 2017. Five follow-on units would have to commission at the rate of one per year in order to retire the Collins on time, a schedule that will be extremely difficult to meet.

09 FLIGHT III DDG-51 AMDR TECHNOLOGY ADVANCEMENT

It has been reported that the critical component of the USN Arleigh Burke Class Destroyer (Flight III) Programme, the proposed Air and Missile Defence Radar (AMDR), is advancing more quickly than previously thought and is estimated to mature in time for Flight III to begin on schedule in 2016.

Programme Executive Director for the USN's Integrated Defence Systems, Rear Admiral James Syring, calls the development of the Gallium Nitride (GaN) semiconductor technology as "Especially promising," GaN is expected to address the weight, cooling and operational requirements of fitting AMDR on Flight III destroyers.

At the 2012 US Navy League's Sea-Air-Space Exhibition RADM Syring also stated, "The maturity of GaN technology has been far greater than we expected." As this was taking place, the USN released a draft request for proposal (RfP) for AMDR, with the final RfP arriving by the end of May 2012 and a contract by year's end.

AMDR is a key component for the FIII-DDG-51 and is one of the cornerstones of the USN's – and US – plans for ballistic missile defence; however, recent reports including the US Government's General Account Office's (GAO) report *Arleigh Burke Destroyers: Additional Analysis and Oversight Required to Support the Navy's Future Surface Combatant Plans* have questioned the development of GaN technology for the AMDRs transmit/receive modules.

According to the draft RfP, AMDR is envisioned as a radar suite designed to be scalable and accommodate current as well as future mission requirements for multiple platforms. AMDR will consist of an S-band radar (AMDR-S), an X-band radar (AMDR-X) and a radar suite controller (RSC). Current technologies such as silicon semiconductors are limited in power output and efficiency. GaN presents a significant opportunity to advance solid-state radio frequency (RF) power amplifiers.

The GAO report states that while the current DDG-51 only carries four SPY radar arrays, FIII-DDG-51 is envisioned to carry four AMDR-S arrays, plus three additional AMDR-X band arrays. The deckhouse portion of the superstructure will need to be redesigned to accommodate these arrays to remain flush with the superstructure surface. Adding the 4.26-metre (14.0ft) AMDR may also require additional power-generating and cooling equipment for the radar to properly function. USN data shows that as a result of adding AMDR on the new Burke class DDGs, the ships will require 66% more power and 81% more cooling capacity than the current flight of destroyers. If the USN elects to use a smaller AMDR for the FIII these impacts may be reduced, but the ships will also have a significant reduction in capability and radar performance.

The GAO report also identified other deficiencies, including:

- Sufficient space for the cooling units, as each measures 2.43m x 1.82m (8ft x 6ft) and a new electrical grid to power the units and each support system.
- Overall weight addition will change the ship's vertical centre of gravity (VCOG). A ship's weight and VCOG are closely monitored in the design phase, due to the impact they have on ship safety and operating performance.
- Delivery weight of the DDG-51 has considerably increased, with the current Flight IIs being 700 to 900-tons heavier than the first of the class. The FIII-DDG-51 is stretching limits of capacity and allowing very little room for future growth.

The USN has not yet determined the size of AMDR for FIII-DDG-51 and two sizes are under consideration:

07 The UK's first production JSF being rolled out of the factory. (Lockheed Martin)

08 The very effective Multi-Ammunition Soft-Kill System (MASS). MASS is a lightweight, trainable soft-kill decoy suite that can be used for multi-spectral protection against anti-ship missile seekers.

- A 4.26m array with the sensitivity of SPY +15.
- A 3.65m (12ft) AMDR with sensitivity of the SPY +11.

The 14ft AMDR will meet operational requirements and the draft RfP indicates a significantly larger (SPY +30) array is required to meet the USN's desire for a scalable system to match developing and new threats. However, the GAO report points out, "FIII with a 14ft AMDR will not be powerful enough to meet the Navy's objective or desired integrated air and missile defence capabilities. Adding an array larger than 4.26m to the FIII-DDG-51 is unlikely without major structural changes to the ship."

If the Navy decides to add the larger array, then new designs and physical characteristic considerations for the type of superstructure and materials to be used will need to be seriously considered for the ship's required service life allowance (SLA). The GAO report indicated the USN's Ticonderoga class cruisers and Oliver Hazard Perry frigates were affected by inadequate after service life allowance (SLA) requirements. Two CG-47 units were retired fully 15-years short of their 35-year SLA and 21 of 49 FFG-7s were retired early after an average life of 17-years. Reduced SLA also means a majority of the remaining hulls of both classes could not accept much weight or VCOG growth.

US inquiries into GaN date back to 2008, when the Office of Naval Research (ONR) conducted a feasibility study of the technology. ONR conclusion were semiconductor transistors designed for microwave and higher frequency RF operation can be incorporated into microelectronic-based circuits, which include components such as transmission lines and capacitors, resulting in a low-cost, high performance monolithic microwave (MM-Wave) integrated circuits (MMIC) technologies.

The inclusion of GaN technology will probably address all of the GAO's issues and concerns. Once fully integrated GaN will reduce the overall weight of the arrays and also reduce overall power requirements, allowing the FIII-DDG-51 to incorporate a larger AMDR array. Additionally, the reduced size should also allow for future expansion and growth.

The USN has estimated AMDR will cost US$2.2B for R&D activities and an additional US$13.2B to procure at most 24 suites. At the end of the two-year technology development phase, the US will hold a competition leading to an award of an engineering and manufacturing contract.

Across the entire build of 22 ships, the total cost of the FIII-DDG-51 programme averages approximately US$63.1B (which is about US$2.79B per unit).

AEGIS MULTI-TASKING

Lockheed Martin's Aegis Combat System recently demonstrated simultaneous anti-air warfare and ballistic missile defence capabilities during its first integrated air and missile defence test.

The successful test verified the capabilities of the most recent upgrade to the Aegis system, known as Baseline 9, which will provide integrated air and missile defence for the USN's fleet to engage multiple threats at the same time. This test also marks the first time the Aegis system has used the multi-mission signal processor (MMSP) in a real-world environment where external aircraft are "jamming" the system.

"It's an exciting time to be part of Aegis' evolution," said Jim Sheridan, director of Aegis Baseline 9 programmes for Lockheed Martin's Mission Systems & Sensors business. "This test is the culmination of two years of hard work by our Lockheed Martin engineers and marks the start of a new era where the Navy no longer has to choose between air or missile defence capabilities for any given mission."

The demonstration was conducted at the USN's land-based test facility, the Vice Admiral James H. Doyle Combat Systems Engineering Development Site in Moorestown, N.J. Manufacturing work for the programme will be performed in New Jersey, as well.

As a supplement to the Navy's Baseline 9 system, MMSP combines next-generation Aegis BMD and anti-air warfare capabilities in an open combat system architecture. The processor is scalable and easily upgradeable.

10 SM-3 BLK 1B SUCCESS

The US Missile Defense Agency (MDA) and USN sailors aboard USS LAKE ERIE (CG-70) successfully conducted a flight test of the Aegis Ballistic Missile Defence (BMD) system May 9.

This test resulted in the first intercept of a short-range ballistic missile target over the Pacific Ocean by the USN's newest Missile Defence interceptor, the Standard Missile-3 (SM-3) Block 1B.

At 8:18 p.m. Hawaiian Standard Time the target missile was launched from the Pacific Missile Range Facility, located on Kauai, Hawaii. The target flew on a north westerly trajectory towards a broad ocean area of the Pacific Ocean. Following target launch,

09 A computer generated image of Raytheon's concept for the Flight III Arleigh Burke class destroyers new radar fit showing the planned final AMDR configuration with the S-band (lower) and X-band antenna apertures integrated into the deckhouse. (Raytheon)

10 The new Standard Missile-3 (SM-3) Block 1B missile being fired from the Ticonderoga class cruiser USS LAKE ERIE (CG-70) on 9 May

LAKE ERIE detected and tracked the missile with its onboard AN/SPY-1 radar. The ship, equipped with the second-generation Aegis BMD 4.0.1 weapon system, developed a fire control solution and launched the Standard Missile-3 (SM-3) Block IB interceptor.

LAKE ERIE continued to track the target and sent trajectory information to the SM-3 Block IB interceptor in-flight. The SM-3 manoeuvred to a point in space, as designated by the fire control solution, and released its kinetic warhead. The kinetic warhead acquired the target, diverted into its path, and, using only the force of a direct impact, engaged and destroyed the threat in a hit-to-kill intercept.

The event, designated Flight Test Standard Missile-16 (FTM-16) Event 2a, was the first successful live-fire intercept test of the SM-3 Block IB interceptor and the second-generation Aegis BMD 4.0.1 weapon system. Previous successful intercepts were conducted with the Aegis BMD 3.6.1 weapon system and the SM-3 Block IA interceptor, which are currently operational on USN ships deployed across the globe.

Aegis BMD 4.0.1 and the SM-3 Block IB interceptor improve the system's ability to engage increasingly longer range and more sophisticated ballistic missiles that may be launched in larger raid sizes. The SM-3 Block IB interceptor features a two-colour infrared seeker, which improves sensitivity for longer-range target acquisition and high-speed processing for target discrimination. The SM-3 Block IB interceptor also features an upgraded onboard signal processor and a more flexible throttleable divert and attitude control system to manoeuvre the IB interceptor to intercept.

Initial indications are that all components performed as designed. Programme officials will conduct an extensive assessment and evaluation of system performance based upon telemetry and other data obtained during the test.

FTM-16 Event 2a is the 22nd successful intercept in 27 flight test attempts for the Aegis BMD program. Across all Ballistic Missile Defence System programmes, this is the 53rd successful hit-to-kill intercept in 67 flight test attempts since 2001.

Aegis BMD is the sea-based midcourse component of the MDA's Ballistic Missile Defence System and is designed to intercept and destroy short to intermediate-range ballistic missile threats. The MDA and the USN cooperatively manage the Aegis BMD Programme.

11 EX-RAN SUPER SEASPRITES TO FLY AGAIN?

The New Zealand Ministry of Defence (MoD) has begun preliminary negotiations with US helicopter company Kaman Aerospace over the potential purchase of the ex-RAN SH-2G(A) Super Seasprite helicopters, which were controversially rejected by the Australian government.

New Zealand interest in the 11 helicopters is as possible replacements for its own SH-2G Super Seasprites, which have been in service since 2001. New Zealand's 2011 Defence Capability Plan outlined a requirement to upgrade or replace its five Seasprites from 2012-16 which have been plagued by parts issues.

The potential purchase is said to be worth up to about US$200 million and would include a flight simulator.

The Australian Government under Kevin Rudd cancelled the Seasprite project, worth approx $1.2billion, in March 2008 following software integration and airworthiness certification problems that had put the programme nearly seven years behind schedule.

The NZ MoD recently carried out an independent evaluation of the Seasprites to assess their airworthiness, as well as the technical issues that led to the Australian government cancelling the contract, some say prematurely.

Under the terms of the agreed cancellation, ownership of the 11 helicopters was transferred to United States-based Kaman along with spare parts and associated equipment. Kaman has since been seeking to sell the aircraft and will share 50 per cent of the proceeds of each sale with Australia. The process is subject to US government approval given some of the restricted technology items fitted to the aircraft for the RAN's use. ■

11 A New Zealand Super Seasprite helicopter (closest to camera) with a RN Lynx helicopter over a combined fleet in Malaysian waters for an exercise. The New Zealand government has had parts issues with their current Super Seasprite helicopters and are keen to buy 11 ex RAN SH-2G(A) Super Seasprites. (RAN)

2ND PLACE

THE AUSTRALIAN NAVY SERVING ASHORE BUSINESS AS USUAL SINCE 1901

By CMDR Greg Swinden RAN

***THE NAVY's* 2011 essay competition second place winner for the professional category was an essay on the Navy's considerable contribution to events onshore from WW I to Afghanistan.**

It is a little known fact that in 1901 the new Australian Government found itself at war. Prior to Federation the six Australian states had committed military forces to the war against the Boers in South Africa. In 1900 New South Wales, Victoria and South Australia had committed Naval forces to the Boxer Uprising in China. Of this Naval commitment New South Wales and Victoria had sent elements of their Naval Brigade; effectively naval infantry.

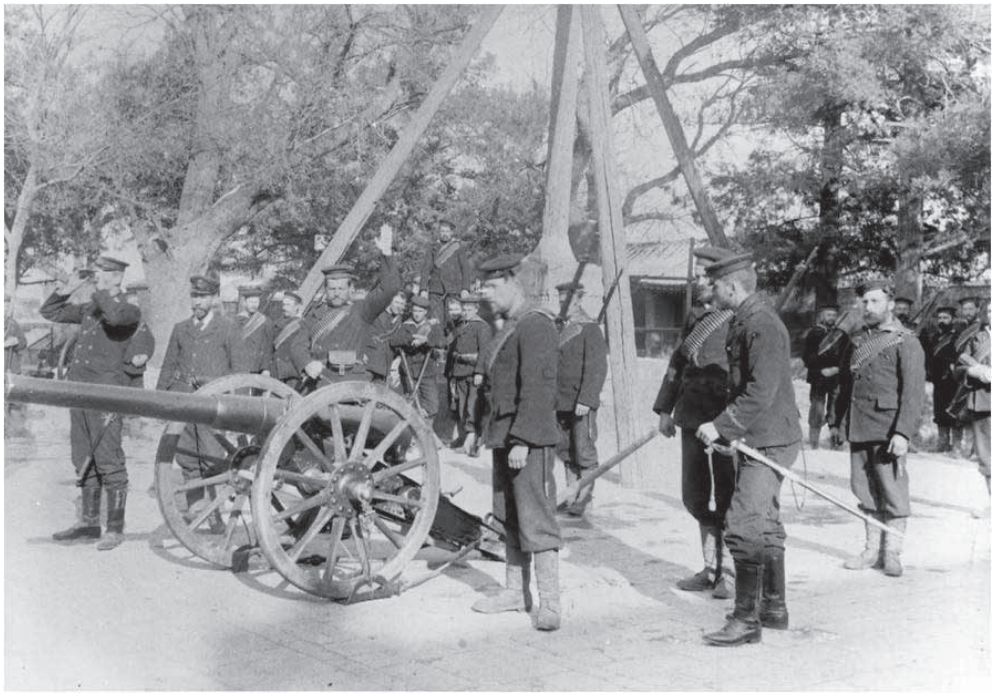
That at the dawn of the 20th Century, Australia found it had a Naval Brigade was no accident. The Commonwealth Naval Forces (CNF) which later became the RAN in 1911, was based closely upon the Royal Navy which had found that during the 19th Century the bulk of its fighting was not at sea but ashore. The RN had a long tradition of landing shore parties throughout the British Empire, and other trouble spots, to deal with enemy forces and uprisings and it was during the 19th Century that these Naval Brigades came of age.

RN Brigades were formed often from the crews of RN ships and ranged in size from a dozen men to thousands. They fought ashore alongside their military counterparts in the Crimean War (1854-56), the Indian Mutiny (1857-59) the 2nd Maori War in New Zealand (1860-64), the South African War (1899 – 1902) and the Boxer Uprising (1900-01) as well as a host of smaller campaigns in Burma, China, Japan and throughout Africa. In many cases guns from the ships were landed and mounted on improvised gun carriages for use as mobile artillery. In one campaign, that in New Zealand, the Victorian Government vessel HMCS VICTORIA also landed seaman to fight as infantry.

Thus the Australian states created their own Naval Brigades. These brigades became part of the CNF in 1901 and later became known as the RAN Brigade in 1911. The RAN Brigade was officially disbanded in 1920 but the concept of Australian naval personnel being used ashore remains as valid now as it did in 1901.

THE BOXER REBELLION

The first service ashore for the Australian Naval Brigades was in China during 1900-01. For many years China had been effectively ruled by a collection of foreign powers which included Britain, the United States, Germany, France, Italy, Austria – Hungary and Japan. The Chinese Government was ineffectual and control of most portions of the Government lay with the foreign powers. A strong Chinese nationalist movement had begun to form in the late 1890's and amongst these was the Society of Righteous and Harmonious Fists; otherwise known as the Boxers. In May 1900 the Boxers commenced a large and coordinated uprising across northern China and the foreign legations at Peking were besieged.



The training of the colonial naval men was rudimentary and because of the paucity of ships and opportunities to serve at sea, much of their training was oriented on parade drill, musketry, cutlass drill and field gun work. This training was to have an unforseen benefits early in WW I.

With the bulk of her military forces committed to the fighting in South Africa the British Government suddenly found its forces over-stretched and an offer of naval forces from the Australian colonies was gratefully accepted. South Australia sent the gunboat PROTECTOR which was attached to the RN forces operating at sea, whilst Victoria and New South Wales each offered a Naval Brigade of mainly naval reserve personnel. The NSW contingent was of 250 men and Victoria provided a 200 man Brigade which was a mixture of permanent and reserve personnel.

The state brigades departed Australia in August 1900 and arrived in China too late to see much fighting. They were then employed in a variety of peace enforcement and civil administration duties as part of the coalition of foreign forces serving in northern China. They returned home in April 1901 having

Victorian Naval Brigade men at their depot at Williamstown prior to embarking in the troop ship SALAMIS for service in China.

suffered six casualties. In 1901 the state naval brigades were transferred to Federal ownership and with the introduction of universal military training (effectively national service) the size of the Naval Reserve expanded to cater for the induction and training of Naval Cadets and Reservists.

WORLD WAR I CAMPAIGNS

When World War I broke out in 1914 the RAN Brigade numbered over 1,600 officers and men as well as some 3,100 naval cadets. Australia quickly announced it would support Britain with the dispatch of a 20,000 strong expeditionary force to Europe and recruiting commenced for the 1st AIF. But at the same time Australia received a request to take action against the German colony in northern New Guinea. The RAN quickly realised that a Naval Brigade could be formed from the Naval Reservists in the eastern states. The New Guinea Expeditionary Force, later to be termed the Australian Naval and Expeditionary Force (ANMEF) was raised based upon six companies of naval infantry and a hastily raised force of 1,000 military personnel. The ANMEF left Sydney in late August 1914 and headed north.

On 11 September 1914 the ANMEF landed at Rabaul (German New Guinea) and in a single day of hard fighting defeated the German forces opposing them. The Naval Reservists bore the brunt of the fighting and the casualties. The ANMEF then formed the garrison for the conquered colony up until February 1915 when an specialist occupation force took over. Of note also is a 25 man naval shore party from HMAS MELBOURNE landed at Nauru (German Territory) in August 1914 and secured the surrender of this island. Some Naval personnel remained in New Guinea to control the ports and harbours as well as the wireless telegraphy system in use throughout the colony. The bulk, however, returned to Australia and further employment.

One of the ideas soon mooted for employment of the Naval Reservists was to form a RAN Bridging Train, a horse drawn engineering unit for service with the Royal Naval Division (RND) on the Western Front. The RND was the British answer to effective employment of a large number of RN/Royal Marine Reserve personnel, who could not be employed at sea, and saw service throughout the war at Gallipoli and the Western Front.

The 300 man Bridging Train was quickly formed and many of its officers and men were veterans of the campaign in New Guinea and some had even served in China in 1900-01. The Bridging Train was dispatched from Australia in June 1915 and later saw active service on the Gallipoli Peninsula (1915) where they controlled the wharves, water supply and engineering stores depots at Suvla Bay. They later operated the pontoon bridges over the Suez Canal during (1916-17) and were involved in an amphibious landing on the coast at El Arish to set up wharves for an advanced logistics depot. The unit was eventually disbanded in March 1917.

Two other RAN shore based units were proposed for overseas service during World War I. The first was an RAN Reserve Field Gun Battery using 4.7 inch guns from obsolete ships, but the problem of supplying ammunition to these weapons (which were of a peculiar naval type) and a shortage of army field guns caused this plan to be shelved. The second plan was to create an RAN Battalion, for service alongside the RND, and recruiting commenced in 1915 but the availability of suitable personnel soon petered out. Again this plan was shelved and the 300 men who had enlisted were loaned to the 1st AIF and most served in the 30th Battalion.

Yet another shore based navy unit during World War I was the RAN Radio Service which was created in 1915 when the RAN took over the many Post Master General's coastal wireless facilities in Australia and New Guinea.

But it was not just the Reservists who saw

Officers and men of the NSW Naval Brigade, Peking, 1901.

service ashore. In early 1915 the cruiser HMAS PIONEER was dispatched to German East Africa for blockade duties and destruction of the enemy cruiser KONIGSBERG. Amongst her many and varied duties she landed a large shore party at the town of Sadani, in August 1916, where they relieved a British Army unit of their garrison duties. This allowed the army unit to be re-deployed as part of the Allied force sent to capture Bagamoyo.

RN Naval Brigade efforts in the form of a floating harbour/logistics point at Cape Helles in 1915 at Gallipoli.

Ships deployed in the Pacific were utilised to provide shore parties to assist control the native populations in the New Hebrides (jointly controlled by Britain and France). HMAS UNA was deployed in October 1916, with the French gunboat KERSAINT, to put down a native uprising on the island of Malekula where French and British citizens were attacked. The joint force landed and fought a short action in which several natives were killed. One Australia sailor was wounded and several French native police were killed.

In September 1918 a similar incident took place on Malekula and HMAS FANTOME was dispatched to deal with the situation. A landing party from the ship armed with rifles and heavy machine guns was sent ashore and engaged a large group of armed natives. The machine guns were used to good effect against the natives and a dozen or so were killed.

The most dramatic use of naval personnel ashore during the war was the amphibious raid on the German held port of Zeebrugge, Belgium in April 1918. A significant landing force of naval personnel and Royal Marines was gathered from the ships of the RN Grand Fleet in February 1918 and trained in infantry tactics. The plan was to sink three blockships in the Bruges canal to prevent German U-Boats and destroyers from using the port. Storming parties were to be put ashore to destroy the German defences, mainly heavy guns, and allow the blockships to enter the canal.

The attack was a partial success with blockships sunk in the canal but only partially blocking it at high tide. The storming parties disabled some of the German guns but suffered heavy casualties in doing so. Amongst the hundreds of men involved were 11 men from HMAS AUSTRALIA, who all survived with seven decorated from bravery.

THE INTER WAR YEARS

With the disbandment of the RAN Brigade in 1920 the Navy's formal capability to deploy a force ashore ceased but the requirement did not. In February 1920 the sloop HMAS MARGUERITE was dispatched to Fiji, as a show of force, during a period of tension when imported Indian labourers threatened to revolt. None of her crew were landed but the potential to do so was available and this demonstration of force had the desired effect in calming the population.

In an example of one of the first 'aid to the civil power' operations the destroyer HMAS PARRAMATTA was dispatched, in February 1923, to fight fires on Wilson's Promontory. The roads in the area were limited and some of the fires could only be reached by landing personnel from the sea. The loan of naval personnel to fight fires has become a regular occurrence. For example in January 1985 over 200 naval personnel from HMAS CERBERUS were deployed to fight fires in Bright/Porepunkah region).

During the 1923 Victorian Police strike naval personnel were landed from ships to guard Commonwealth property in Melbourne and this was the first instance in Australian Federal history of the Government using 'troops' to protect its own interests. In 1925 the cruiser HMAS BRISBANE, on exchange with the RN on the China Station, landed personnel in Hong Kong, following a general strike, to assist maintain civil order and also run some of the domestic services such as the power station, ferries and trams. One of BRISBANE's officers recalled that they were all armed but never 'put to the test'.

The most notable use of Naval personnel ashore was the 1927 Malaita Expedition. In October 1927 there was an uprising by natives on the island of Malaita (Solomon Islands) in which two District Officers and several Melanesian police officers were killed. The British Government requested assistance from Australia and the cruiser HMAS ADELAIDE was dispatched. The sloop HMAS GERANIUM was placed on standby; but not committed.

ADELAIDE arrived at Malaita on 16 October and put over 150 personnel ashore to provide communications and logistics support to the British Solomon Islands native police; who then carried out the search inland for the rebellious natives. The Australian sailors set up the initial 'Beach Base' and then set up other camps further inland from which the native police conducted forays out in to the surrounding jungle. By mid November the rebellious natives had been rounded up and ADELAIDE returned to Australia in mid November. While the Australian sailors had not taken an active part in capturing the rebellious natives they had provided all the support services needed to keep the native police force in the field for the four weeks of the operation.

WORLD WAR II

There were three notable uses of RAN forces ashore during this period which reflect the traditional flexibility of naval forces and also display

An RAN Wessex helicopter assisting in the rebuilding efforts over Cyclone Tracy in Darwin.

the diplomatic as well as military use of naval forces. The first of these was HMAS HOBART's role in the campaign in British Somaliland. In August 1940 the cruiser HOBART was operating in support of British forces defending the port of Berbera in British Somaliland (northern Somalia) against the advancing Italian forces. Sailors were landed to control the wharves and provide communications support and three men also manned a makeshift anti-tank gun made from the ships three pound saluting gun and a mounting made from a 40 gallon drum.

This gun crew fought alongside the army until their position was over run and the three sailors became Prisoners of War, but were later liberated in April 1941. This role was similar to the RN involvement in the Norwegian Campaign, in 1940, when RN Gun crews were landed to supplement Army Artillery units.

Secondly in September 1940 there was ADELAIDE's involvement in the peaceful 'coup' in New Caledonia. Vichy elements within the local Government were expelled and replaced with French officials who were supportive of the Free French movement. ADELAIDE transported the new Free French Governor to New Caledonia then stood off and provided the 'threat of violence' against Vichy forces until the situation was resolved ashore by the French themselves. Following this ADELAIDE landed armed shore parties, and the ships band, as a display of force to fortify the local population.

Thirdly was the creation of the RAN Special Service Beach Commando's who operated in Borneo in the final stages of the war. These units were formed in 1943/44 to augment the Army Beach Groups which were required for amphibious operations. The Beach Commando's were responsible for the communications between the beach and the landing ships offshore and also assisted with the movement of troops, stores and equipment from the landing ships to the beach as well as repairing damaged vessels. They also carried out demolition tasks such as blowing up obstacles and removing mines which were obstructing the beach landings. These units operated in the landings at Sadau Island, Tarakan, Labuan, Balikpapan and Brunei Bay.

Finally during the immediate post war era (1945-47), RAN shore parties were involved in affecting the Japanese surrender in the Pacific, post war reconstruction activities and the search for and recovery of Prisoners of War.

POST WORLD WAR II

Post war there was a continued use of naval personnel ashore in a variety of roles. HMAS COMMONWEALTH was established in Kure as the naval shore base to support the RAN's efforts as part of the British Commonwealth Occupation Force in Japan. And large numbers of naval personnel worked ashore in Singapore and Malaysia during the period 1948 – 1971. These men and women carried out a wide range of administrative, logistics, communications and medical tasks in support of the Far East Strategic Reserve involved in the Malayan Emergency and Confrontation. They also provided support to those ships involved in the war in Vietnam.

The creation of the Royal Malaysian Navy (RMN) in the 1960's saw a large number of RAN personnel ashore in training and administration roles and for some years the Chief of the RMN was an Australian Naval Officer. The RAN continues to provide a small presence ashore in both Singapore and Malaysia to this day.

The Vietnam War (1962-1972) saw a return of naval units ashore to conduct combat operations. These were the RAN Helicopter Flight Vietnam which operated Iroquois helicopters in troop transport and gunship roles (attached to a US Army 135th Aviation Unit) and Clearance Diving Team 3 which carried out EOD tasks in the Vung Tau area and throughout the variety of rivers in South Vietnam. Both units operated in Vietnam during the period 1967 - 1971

AID TO THE CIVIL POWER

The RAN's use of shore parties to provide aid the civil power is nothing new but in December 1974 the RAN was put to its greatest test following the devastation of the city of Darwin following Cyclone Tracy. Every available ship was dispatched north to Darwin and unlike Army and Air Force units the RAN came self contained and imposed no logistics drain on the already limited resources available in the city. As part of Operation Navy Help the RAN delivered thousands of tonnes of humanitarian stores to the city and provided significant manpower to clean up the city and restore essential services.

Clearance Divers and Hydrographic ships surveyed the harbour to ensure it was clear to bring in more ships and the vital humanitarian aid. Helicopters from the aircraft carrier MELBOURNE lifted tonnes of building materials ashore for the reconstruction of the city. At one point MELBOURNE's generators were supplying most of the power to Darwin and the most capable medical facility for the treatment of the injured. Many Darwin residents also recall being brought onboard for their first hot meal in days.

The use of naval shore parties and deployed helicopter flights for this type of work has continued to the present day and examples include the 1985 Victorian fires, 1990 Nyngan Floods and the continued support following cyclones in northern Australia (the most recent being Cyclone Larry in 2005 and Cyclone Yasi in 2011). Also RAN personnel continue to deploy to the Antarctic to provide a variety of support to the Australian National Antarctic Research Establishment.

PEACEKEEPING AND PEACEMAKING

The resurgence of ADF operations overseas in the last 20 years has also seen the deployment of RAN personnel ashore in a variety of roles. In Cambodia (1992-93) RAN personnel operated ashore in communications, movement's control, administrative and logistics roles. In Rwanda (1993-94) a number of Navy medical personnel were deployed alongside their Army and RAAF colleagues.

The ongoing operations in East Timor, which began in 1999, have also seen RAN personnel deployed ashore initially to open the port of Dili (i.e. clearance divers, hydrographic teams and the Harbour Master and

An RAN Clearance Diver rehearsing a beach reconnaissance. The Clearance Divers conduct a number of duties on land during major littoral operations. (Defence)

An RAN Seahawk embarking personnel from 3 RAR during the opening stages of Operation Stabilise in East Timor. (Defence)

their staff). They were followed by a variety of personnel in logistics, communications, administrative, movements control and medical roles. Individual navy personnel continue to be deployed to Timor even today and amongst these were a number of naval personnel who were unarmed UN Military Observers.

The campaign in Iraq (2003 – 2009) again saw more sailors serving ashore. During this period RAN personnel were deployed ashore in Iraq and surrounding nations to provide logistics, administrative, medical, legal advice, movements control and EOD support. Following the cessation of major combat operations a specialist RAN Training Team was deployed to help train personnel for the future Iraqi Navy. The peacekeeping activities in Bougainville (1997 – 2003) and the Solomon Islands (since 2000) have also seen many naval personnel deployed ashore again in a variety of roles.

Currently in Afghanistan and other parts of the Middle East, RAN personnel are filling HQ staff positions, undertaking logistics and administrative work, and Clearance Divers have regularly deployed to assist with EOD tasks.

CONCLUSION - THE FUTURE

The RAN Brigade ceased to exist in 1920 but the need to deploy naval personnel ashore has not. Throughout the last 90 years Navy personnel have operated ashore in a variety of roles in support of the Military, Constabulary and Diplomatic aspects of Maritime Doctrine. With the likelihood of ADF operations continuing to occur offshore and the limited chance of ship to ship combat their continues to be a role for RAN personnel to operate ashore using their core skills as either discrete naval shore parties or as part of Tri-Service unit.

Cooks can still cook whether it's in a ship or a field kitchen, Medics can still provide treatment whether it be in a ships sickbay or a tent, communicators can still operate their systems regardless of whether the radio sits in a steel compartment or on a wooden trestle table. There are other roles such as logistics and administration, mechanical and electrical maintenance, aircraft maintenance, financial expertise, chaplaincy, service policing, physical training support, language skills, legal advice, movements control and other skills where the colour of uniform does not matter. In the current manpower constrained ADF the use of only one service to provide personnel operating ashore shows a distinct lack of initiative and a risk of 'burning out' certain personnel with key skills; as they are continually deployed on exercises or operations.

Navy personnel working and fighting ashore - It's not just a 19th Century historical oddity but just business as usual. ■

1ST PLACE

THE ORDEALS OF HMAS AUSTRALIA

"An Inspiration to Us All"

By Nigel Beake

***THE NAVY's* 2011 essay competition winner for the non-professional category was an essay on the World War II experiences of the Battlecruiser HMAS AUSTRALIA in the face of the new and devastating anti-ship threat, the Kamikaze.**

INTRODUCTION

HMAS AUSTRALIA (II) was one of the two British-built "County" class heavy cruisers commissioned into the RAN in 1928. She was the flagship of the Australian fleet and performed meritorious service early in World War II in the North Atlantic, Mediterranean and off West Africa before arriving back in Australia in 1941.

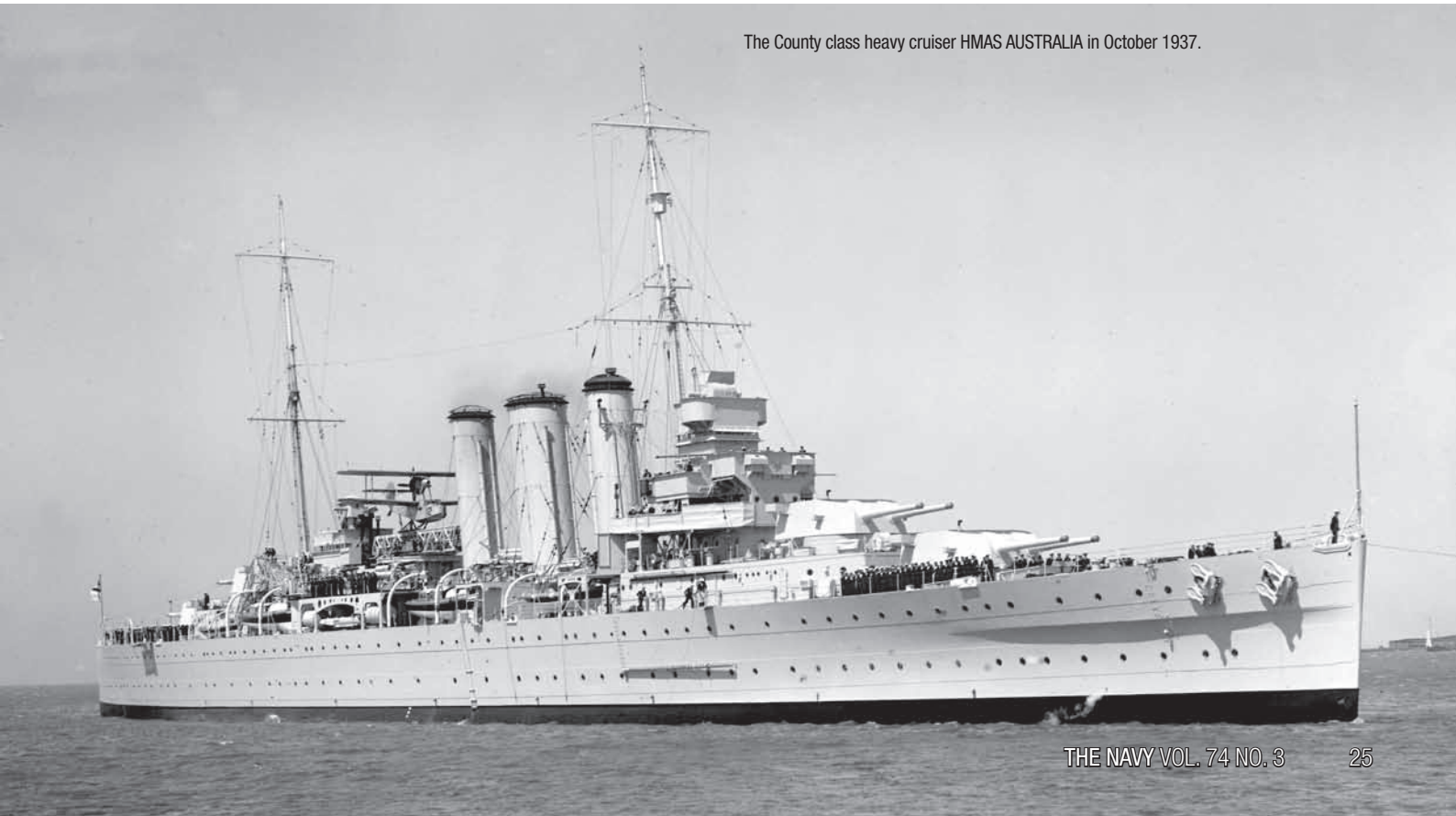
After narrowly avoiding the disastrous battle of Savo Island that claimed her sister ship CANBERRA, AUSTRALIA served in a variety of escort and shore bombardment roles in the South West Pacific. She arrived off Leyte in October 1944 as part of the force supporting the liberation of the Philippines. There she suffered heavy damage in what is often claimed to be the first Kamikaze (suicide plane) attack on Allied shipping – in a grim foretaste of what was to come she suffered scores of casualties including her Captain Emil Dechaineux. Repaired in time for the Lingayen Gulf operation, over five days in January 1945 she was hit by five kamikazes. Despite considerable damage and grievous personal losses, she continued with her mission, earning the admiration of our American allies. This is the story of AUSTRALIA's ordeals at the hands of the "Hell Birds".

THE SHIP

A graceful, three-funnelled heavy cruiser, AUSTRALIA was designed as a long range commerce protection cruiser. She displaced 10,000 tonnes was 630 ft long, armed with a main battery of 8 X 8" guns, a dual-purpose secondary battery of 8 X 4" guns, plus by 1944 a light automatic suite of 20mm Oerlikons, 40mm Bofors, and multiple two pounder pom-poms.

AUSTRALIA was well armoured, with the main battery turrets protected by up to 2" armour, the ship's vitals protected by a 1.5 to 3" thick steel deck and a 4.5"side armour belt.

However, a feature of World War II era warship design and operations was the number of men (several hundred on AUSTRALIA) whose action station offered minimal protection from enemy action, particularly overhead protection – this included most of the bridge command team, signallers, lookouts, crews of the 4" guns, ammunition parties, and operation and control of the light AA automatic weapons. This was not poor design - the RN/RAN had learnt that when attacked by enemy aircraft it was best to be able to see them (USN destroyers in the Pacific actually had bridge roofs removed for this reason), and practicalities of topweight and function restricted the protection that could be provided for many positions. This exposure was to have dreadful repercussions at both Leyte and Lingayen.



The County class heavy cruiser HMAS AUSTRALIA in October 1937.

KAMIKAZE!

By mid 1944 Japanese naval airpower was a shell of its former strength. The cadre of elite aviators that cut a swath across the Pacific in 1941 and early 1942 were lost, and replacements were of lesser quality due to inadequate planning and training. The once all conquering Zero fighters were outclassed by newer Allied planes. An indication of the dire state of Japanese naval aviation can be shown by the 1944 interception of a force of sixty Japanese planes – a mix of bombers and fighters - by a mere seven USN fighters, who in what can only be described as a massacre shot down nearly half the Japanese force without loss to themselves.

Against this background, it occurred to the Japanese First Fleet air commander that conventional air warfare tactics could not stop the Allies advance, and the idea of volunteer "special attack units" - who would suicidally fly their bomb and fuel laden planes directly into ships - was conceived. These Kamikaze attacks could be devastating – the planes were virtually guided missiles – as it was necessary to utterly destroy and shatter the attacking plane as merely shooting it down for it to crash into your ship anyway was not good enough.

From October 1944 until the end of the war approximately 2800 Kamikaze missions were launched, with approximately one in seven being successful, although hundreds of missions never even saw their targets before being shot down by the Allies' swarm of fighter escorts. However, 34 Allied ships were sunk and 368 damaged, with approximately 4,800 Allied seaman killed and a similar number injured. Despite these losses, the preponderance of Allied naval power meant that their control of the sea was never really tested, and the loss of thousands of Japanese planes and pilots was an ultimately wasteful exercise.

PROLOGUE

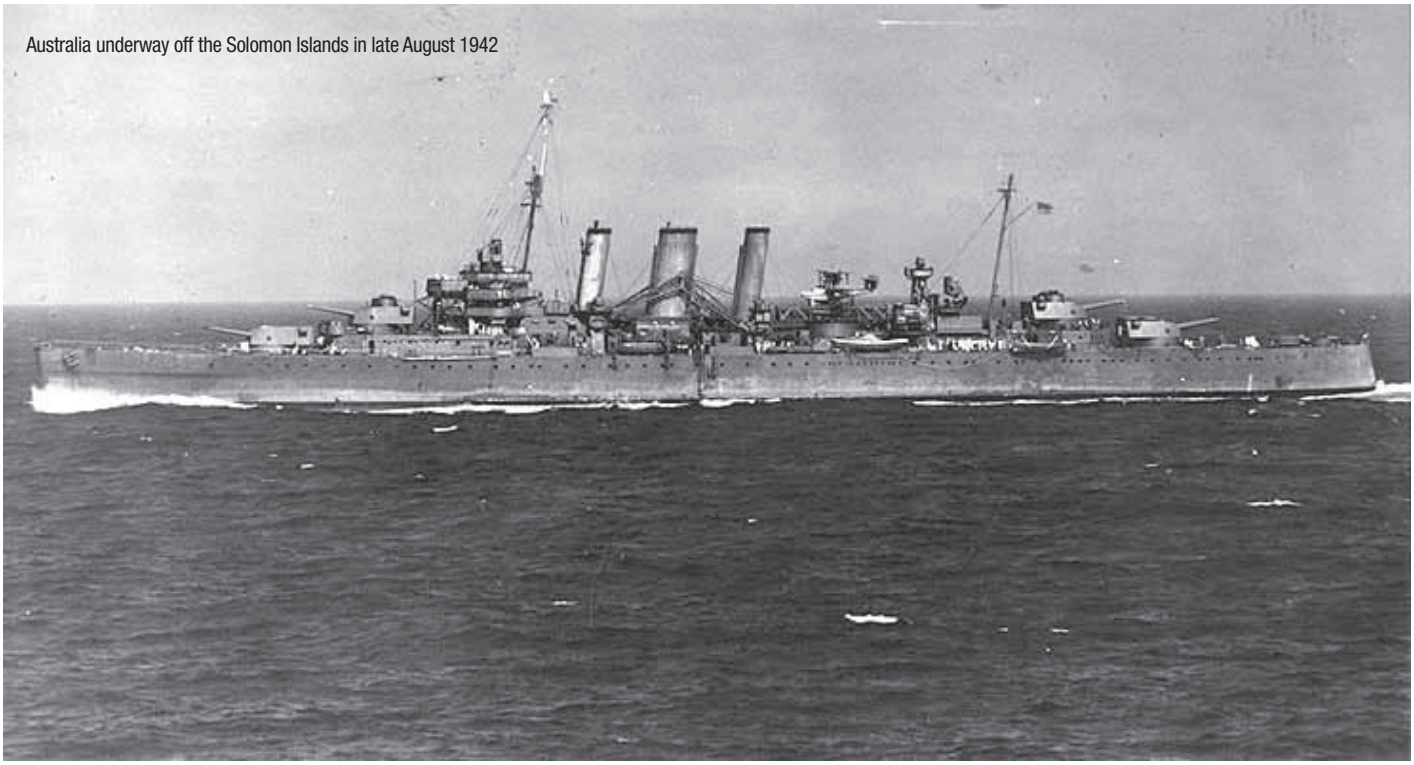
By October 1944 the Allies were ascendant in the Pacific. The next stage in the advance on the Japanese homeland was the liberation of the Philippines. A mighty armada of 700 ships, mostly from the United States, was assembled for this task. AUSTRALIA formed part of the Close Support and Covering Group supporting the invasion of Red Beach on Leyte Gulf and was in position performing bombardment duties on the 20th October.

At dawn the next day, a Japanese Val dive bomber eluded the Group's antiaircraft defences and crashed into AUSTRALIA's foremast. What followed was a grim morning for the RAN.

The Val struck the foremast with its wing root, spraying debris and blazing petrol over AUSTRALIA's bridge structure, killing or injuring the majority of the bridge and control personnel. The plane wreckage mostly carried over the ship's side, but the damage to the bridge was serious. Fires started which put both High Angle Directors and the Director Control Tower out of action and caused the Type 273 radar hut and lantern to collapse onto the compass platform. Thirty officers and men were killed, with 64 wounded, many seriously. The Task Unit Commander, Commodore Collins – the victor of Cape Spada - was seriously injured and the respected Captain Dechaineux and the navigator Commander Rayment died of wounds.

A former crewman described the shocking scene on the bridge:

"And the captain was in a sitting position - Captain Dechaineux ... we were able to get him down into the rec room - recreation room - which was two ... two flights down from there ... from the bridge, and ... Two decks down. And Admiral Collins had gone by then, he'd been wounded, had a nasty cut under the eye. And Captain Dechaineux had this hole in his stomach, and he was burnt a little, his lips were rather swollen. And ... and it was a tragic sight. Commander Rayment was dead. And there were a lot of badly burnt people around that area. Some were dead, some were still alive. And I was down - by then we'd got the Captain down and others down, they kept coming down into the rec room. Those that were alive. And the sick-bay attendants were there. The commander-surgeon, Flattery, he was there. And very active. A very big man. And I remember Captain Dechaineux saying - he was conscious but ... and he was asking all the time whether there were sufficient ... whether the troops were ... those that were injured were being looked after. You know, you're very conscious of his role as a gentleman, and … as a very much-loved captain. And he kept saying, 'Look after them,' Just how serious are the injuries? And that, that's all he was interested in."



Australia underway off the Solomon Islands in late August 1942

The open and exposed bridge and forward superstructure of HMAS AUSTRALIA in September 1944. This area was badly damaged when a Japanese bomber dived into and collided with the ship on 21 October 1944. The ship's commanding officer, Captain Emile Dechaineux (facing right), was among those killed.

[Reg Walker, HMAS AUSTRALIA, interview June 1989, Keith Murdoch Sound Archive, AWM as quoted in Kamikaze – AUSTRALIA's War at Sea 1939 - 45]

Other witnesses recall:

"We were on the port side of the ship; the plane seemed to go past in a flash. We had opened fire, not absolutely sure we hit it. The next thing we saw was a bright flash followed by a loud explosion.' One man ran past (our) position, on fire from head to toe. A member of (my) pompom crew had lost both legs, they did what they could for him but he died that night."

"There were fires to put out, bodies to be removed and the rescue of wounded men trapped under debris .....We were working in the forward part of the ship and I could see the bridge in flames . . . almost everyone on the upper deck was in shock but they all did what was required to save the ship."

[Jim Bell and Roy Ashton, as quoted in HMAS AUSTRALIA – Kamikaze Attack 1944]

Although the fires were put out within half an hour, and command of the ship was assumed from the aft emergency conning position, the loss of AAA and surface gunnery control and the radar, and the incapacitation of so many skilled command and control personnel, had effectively crippled the ship's "brain". She was no longer a capable combat unit.

At 11.00 a.m. AUSTRALIA was ordered from the front line. In company with several other cripples she made her way via Palau and Manus – committing her dead to the sea on the way - to Espiritu Santo, where repairs were commenced. The ship was battle worthy again by the 28th November.

Many witnesses were convinced of the suicidal intent of the Japanese pilot, and this attack is often quoted, including in the official Australian Naval history, as the first Kamikaze attack of the Pacific war. However, it is now generally accepted that the first suicide mission by dedicated, trained Kamikaze – "the special attack units" did not occur until four days later upon USN escort carriers. AUSTRALIA was most likely the victim of the last actions of the doomed pilot of a crippled plane, a scenario that had precedents amongst pilots of many nations.

"HER PERFORMANCE ....WAS EXCELLENT"

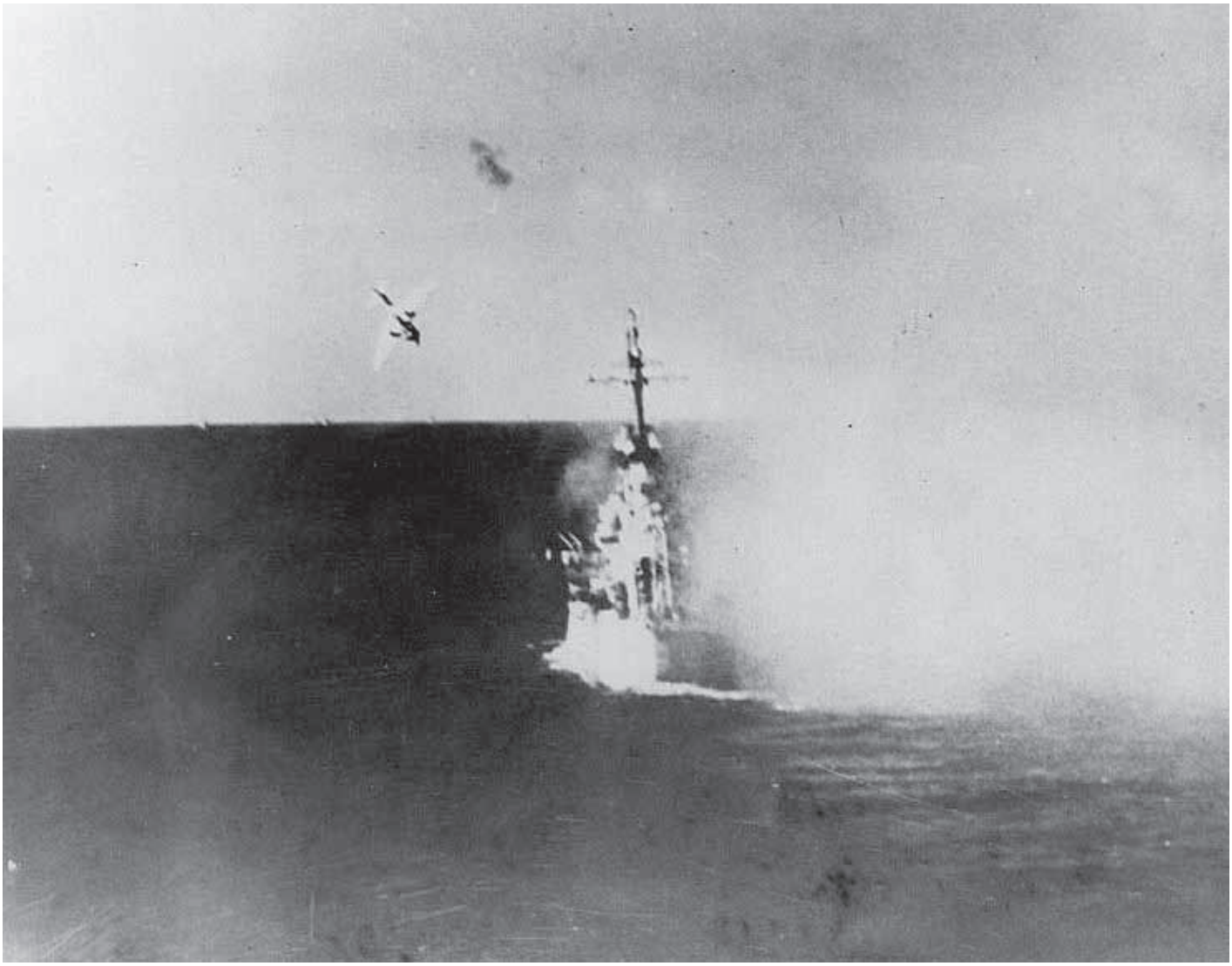
The next stage in the Allies' advance was the invasion of Luzon, the largest and most important of the Philippine Islands. The chosen invasion site was Lingayen Gulf, a relatively undefended area 100 miles NNW of the capital, Manilla. The repaired and recrewed AUSTRALIA formed part of Admiral Oldendorf's bombardment and fire support group consisting of six battleships, twelve escort carriers and eight cruisers with forty - six screening destroyers.

On the afternoon of 5th January the group was approaching Lingayen to be in position to commence pre-invasion bombardment duties the next day. Over a period of two and a half hours the group was attacked by 50 – 60 Japanese planes. Despite the combat air patrol downing many attackers, some did penetrate the screen and seven ships were damaged, including light damage to HMAS ARUNTA and in a depressing repeat of Leyte, devastating casualties on AUSTRALIA.

At 1735 a bomb-laden plane eluded the ship's anti – aircraft artillery and dived vertically into the port side of AUSTRALIA, striking the upper deck amidships. Structural and equipment damage was minimal and fires were soon extinguished, but the AAA crews were not so lucky. Twenty five men were killed and 30 injured. Casualties included all of the port number two 4" mount (P2) crew and most of the P1 crew, members from the crews of numbers 2, 3, 4, 5, 6 and 10 Bofors, crews from both multiple pom-poms plus most of the ammunition supply parties.

Despite these severe losses AUSTRALIA was on schedule for her

Japanese school girls wave goodbye to a Kamikaze pilot on his one way mission to attack allied shipping.



The USS COLUMBIA seen here about to be hit by a diving Kamikaze fighter off Lingayen Gulf, 6 January 1945. Little could be done to fight off the fast and nimble fighters once past the USN fighter screen of aircraft. Masses of fire would be poured into the sky to destroy the aircraft before it could carry out its mission.

bombardment duties the next day, during which the Group experienced sporadic air attacks. However, in an eerie repeat of the previous day's disaster, AUSTRALIA was struck by a second Kamikaze at nearly exactly the same time of day and again on the upper deck amidships, with the starboard AAA crews bearing the brunt this time.

Again, the material fighting efficiency of the ship was little affected Only the starboard number 2 mount (S2) of the secondary battery was put out of action – but a further 14 men were killed and twenty six injured.

Two days of action had made fully one-eighth of AUSTRALIA's crew casualties. Even with emergency replacements from other parts of the ship, there were now only sufficient available men to crew one secondary mount each side of the ship. However, AUSTRALIA again fulfilled her assigned duty of providing counter battery fire the next day.

On the morning of the 8th AUSTRALIA was the last heavy ship in line as the bombardment group steamed again into Lingayen Gulf. In a mere 19 minute span, AUSTRALIA was to suffer its third and fourth Kamikaze strikes.

At 0720 a two engine plane attacked from AUSTRALIA's port quarter but was shot down, crashing into the sea twenty yards short of the ship. The wreck went on to plough into the ship's side, causing minimal damage. However, at 0739 hours a far more damaging hit was recorded.

The attack again developed from the port quarter. A bomb carrying Kamikaze was shot down just short of the port side, blasting a 14' X 8' hole in the ship's hull. A fuel oil tank was torn open, and the bilges and adjacent compartments flooded, with the ship quickly developing a 5 degree list to port. Counter flooding was ordered to correct the list, and battle damage flooding was soon controlled, although the port side inner bulkheads were strained. There were no serious casualties, despite a lot of debris coming aboard, including the kamikaze's propeller. The accumulating damage was starting to affect the combat efficiency of the ship, with the strained bulkheads limiting the main battery to starboard side firing except in an emergency.

Despite these dramatic events, a mere 21 minutes after the second hit AUSTRALIA commenced its scheduled 0800 bombardment mission on schedule.

The next day landings on Luzon commenced, with AUSTRALIA completing its scheduled bombardments by 1030, and remained on station to engage any "targets of opportunity" which may arise. At 1311 hours the Group was attacked by two Kamikazes – one striking the US Battleship MISSISSIPPI – the other targeting AUSTRALIA in a curving dive from in front of the ship. The pilot appeared to be aiming at the bridge, but struck a strut of the foremast, then smashing the top third of the fore funnel before the wreck carried over the side.

Mercifully there were again no serious casualties. However there was significant structural damage – radar and wireless aerials were

HMAS AUSTRALIA post war in 1946 with repairs completed.

damaged or destroyed, the foremast weakened and the shattered funnel giving the ship a very battered appearance. The two boilers in A boiler room exhausting through the wrecked fore funnel had to be shut down due to lack of draught, until some of the wreckage could be cut away.

The exhausted crew did not know it, but this was the end of AUSTRALIA's war.

With the landings proceeding very well, AUSTRALIA and a number of damaged US ships were ordered to attach to a fast transport convoy returning to Leyte that evening. After transferring 12 seriously wounded men to HMAS MANOORA – to ease conditions in her own aid posts – AUSTRALIA departed for Leyte.

Before leaving Lingayen, AUSTRALIA received high praise from our American allies:

The commander of the Task Group, Vice-Admiral Oldendorf, signalled: "Your gallant conduct and that of your ship has been an inspiration to all of us. Sorry to lose you at this time."

Rear-Admiral Wyler commented in his report: "The performance of AUSTRALIA is particularly to be commended. Heavily hit three times and with the greater part of her dual purpose battery out of commission, she nevertheless executed scheduled fires in her usual effective manner."

No less a personage than Admiral Kinkaid, Commander Seventh Fleet, in a report to the Commander-in-Chief, United States Fleet, noted: "HMAS AUSTRALIA received two minor and three major hits from enemy suicide planes. Despite the resulting damage and casualties, the fire schedule was executed in a very satisfactory manner. Her performance during the entire operation was excellent."

EPILOGUE

AUSTRALIA arrived at Leyte 12th January, 1945, where the ship's side was temporarily patched before sailing to Sydney for further repair work. She then proceeded to the UK for a major refit, and was still in the UK when the war ended, not returning to AUSTRALIA until January, 1946.

AUSTRALIA spent the twilight of her career as a training cruiser, firing her 8" main battery for the last time on the 6th May 1954 – the last main battery firing for any of Her Majesty's heavy cruisers.

AUSTRALIA was paid off for disposal on 31 August 1954, and was scrapped in the UK in 1956 – as one of the most "Kamikazed" ships in history to survive to see the breaker's yard. ■

The British Pacific Fleet
The Royal Navy's Most Powerful Strike Force

By David Hobbs

Seaforth Publishing

ISBN 978 1 84832 048 2

Hardcover: 480 pages

Reviewed by Assoc Prof Simon Reay Atkinson

This is a hugely powerful and important telling a story not told often enough in the annals of British and Royal Navy history. It also tells of a forgotten Fleet much like General Slim's Forgotten Army. And we forget about this Fleet at our peril. There was one Army and one Fleet that the British should have learned from at the end of World War II and in both cases the British chose to learn and apply more the lessons of the battles of Atlantic and for Europe rather than the Pacific theatre. In this they adopted a siege and garrison type mentality totally at odds to an offshore asymmetric counter balancing (OACB) strategy – of the type the US and, with some struggle, the UK and AS are seeking to adopt today as we extricate ourselves from an Asian War. This type of strategy requires the type of strike force that the British achieved at the end of WWII; initially, against the wishes and indeed support of the US Navy. A Navy that, in the 1930s, had plans for engaging the Royal Navy. Slim was greatly lauded at the end of WWII and rightly so. The accolades, perhaps, for Admiral Fraser of the Cape were 'slimmer'; although I can remember, on a wind-swept day in 1981 on the deck of the then new, soon-to-be-'sunk', Type 42 HMS SHEFFIELD, sprinkling his ashes at sea, with a full honour guard. How we would have wished for a strike force like his in 1982. The stories of success after failure – of learning and showing humility; of leading a rag-bag collection – initially – of ships and crews and of 'making do' across the vast ranges of the Pacific are stories that should be to the forefront of our thinking today. Instead, it is as if the Royal Navy wishes not to know – and has buried its thinking behind the old gunnery officer mentality that so nearly cost it Jutland. It is also the mentality of terminal decline – which cannot be changed unless the RN (and USN and RAN) change fundamentally their designs. These designs need to turn back to those of a war time Fleet – when 15 year builds for an aircraft carrier simply could not be countenanced and one designed anew and afresh to meet the requirements of tomorrow, today. Think Rensis Likert; think versatility; think modularity; think systems and you have all the virtues we are trying to achieve today, writ large in the designs for the last British Pacific Fleet of 68 years ago. Arguable it was also The Royal Navy's last great Fleet and last Fleet to engage fully across the spectrum of Fleet Action and War. Something the latter day RN could not even contemplate let alone scale or think towards. In this I think David Hobbs may be wrong when he considered the RN learned from the BPF in its post war re-construction. In part, only, I would argue because the cultural step change of war at scale and range was never truly taken 'on board'.

So buy this book – it tells a hugely important story for both the RN and RAN and does it well, cogently and spiritedly. Hobbs is a graceful and compassionate storyteller – supported by his significant collection of photographs and experience as a Fleet Air Arm pilot. There are few of those like him and those that are, are dead – old Scottish proverb. Notwithstanding, on an equally wind-swept moor in the North of England spoke of this book to a FAA Corsair pilot who had been there and had fought and crashed, on more than one occasion – to tell the tale. His eyes danced and he was back there as a 20 year old – thinking through and remembering still. What opportunities we have missed and so this book, coming towards the end of living memory of the Pacific campaigns of WWII, is perhaps both a talisman of future work and a hugely important reminder of who we were and what we might yet again aspire to be. And yes after a similar time in service as David Hobbs I still can believe in a future Great Britain and a Royal Navy re-found and redesigned to face the challenges of tomorrow, today. This book perhaps points to those greater virtues upon which the great Navies of the world have always been based. Great reading; great story; great book.

British Warships & Auxiliaries 1952

By Steve Bush

Hardcover: 376 pages

Publisher: Maritime Books; Diamond Jubilee edition (19 Dec 2011)

ISBN-10: 1904459455

By Vic Jeffery

Renowned British publisher, Maritime Books, has just released a superb, and fitting, 376 page hard cover tribute to commemorate Queen Elizabeth's accession to the throne in 1952.

The result of hundreds of hours over many months researching the ships, submarines and aircraft that were serving in the Royal and Dominion Navies 60 years ago, this encyclopaedia is supported by more than 250 photographs from this bygone era of battleships, monitors, cruisers and large numbers of aircraft carriers, destroyers, etc.

Author Steve Bush said at the book's launch, "what initially started out as a project to commemorate the Diamond Jubilee, turned out to be a fascinating comparison between the Royal Navy of 1952 and the diminutive RN of today. In both periods, the country was in recession, there was widespread unemployment and a massive national debt. The UK was fighting a war east of Suez (Korea in 1952 and Afghanistan today) and on both occasions the defence budget was under immense pressure and the RN was having to reshape to new emerging threats.

"But the significance for today lies with how the different governments dealt with the situation. Today the UK Armed Forces and the Royal Navy in particular, have been cut to the bone with capabilities being totally withdrawn, or left vacant until a few new ships can be brought into service.

"In 1952, the government embarked upon a new build programme which saw no less than seven aircraft carriers, dozens of frigates and over 100 minesweepers under construction."

The book is divided into five sections; The Royal Navy; The Reserve Fleet, The Royal Fleet Auxiliary, The Dominion Navies (Royal Australian Navy, Royal Canadian Navy, Indian Navy, Royal New Zealand Navy, Royal Pakistan Navy, South African Navy, Royal Ceylon Navy, Malayan Naval Force and Royal East African Navy); and Naval Aviation.

The last and largest ship ever built for the Royal Navy, the handsome 44,500 ton (51,420fl) battleship HMS VANGUARD, commissioned in 1946, too late for World War Two, was the only ship of its type in commission as flagship of the Home Fleet with the recently completed 41,200 ton (41,950 full load) AUDACIOUS-class aircraft carrier EAGLE (its sister ARK ROYAL, under construction, was commissioned in 1955).

Fourteen other aircraft carriers were in service with the former ferry carrier HMS CAMPANIA being refitted as a transport for scientific staff for atomic tests at the Monte Bellos Islands off the West Australian coast and then to return to the UK on completion. HMS UNICORN, designed as an aircraft repair ship, was based in the Far East where she provided support to the carriers and their aircraft engaged in combat operations off Korea.

Other active Fleet units included 15 cruisers, eight minelayers, 44 destroyers (four more building), 72 frigates, 40 submarines, 28 minesweepers, 41 tank landing ships and 49 auxiliaries.

The RN obviously had hundreds of ships surplus to peacetime requirements at the end of World War II, and wary of the poor decisions made at the cessation of World War I, many of the newer vessels (some virtually brand new) were placed into reserve where they could be rapidly re-activated if needed whilst the tired old battleships, cruisers, escort ships and mass produced corvettes were scrapped or sold.

In 1952 the number of ships and submarines had been reduced to more than 300 ships and submarines laid-up in lochs, bays and commercial ports around the UK plus others plus at Singapore and Malta.

A redefinition of ships in reserve took place in 1952 which saw Category A ships (Operational Reserve) to be ready for service in three months, if possible at 30 days' notice; Category B Supplementary Reserve) after Category B,

Category C (extended reserve) and Disposal List (Category Z).

Among the destroyers laid-up in reserve were former HMA Ships NEPAL and NORMAN in category C reserve at Devonport and NAPIER and NIZAM along with a fifth surviving ship of the class, NOBLE, in reserve at HARWICH. It had been announced in 1951 that the whole class is allocated to the Type 18 anti-submarine frigate conversion programme but there had been no movement with the programme and eventually all were broken-up during the 1950s. NORMAN had been also considered as a RN drillship, but this was also cancelled.

The Reserve Fleet boasted four battleships, the renowned aircraft carrier HMS ILLUSTRIOUS, two monitors, 10 cruisers, eight minelayers, 47 destroyers, 102 frigates, 14 submarines, 50 minesweepers and 19 auxiliaries laid-up in its care.

In 1950 the British Government had announced that 89 vessels in reserve, including seven destroyers, nine frigates and 16 fleet minesweepers would initially be refitted to place them in a more practical state of readiness to counter deterioration. The other vessels would comprise boom defence vessels, tank landing craft, minesweeping launches and motor torpedo boats.

Obviously the most imposing ships of the postwar Royal Navy Reserve Fleet were the four KING GEORGE V-class battleships ANSON (paid-off into reserve 1949 after serving with the Training Squadron), DUKE OF YORK Flagship of the Reserve Fleet for two years before being reduced to reserve in 1951), HOWE (reduced to reserve in 1950), and KING GEORGE V (Flagship of the Home Fleet until 1950 when reduced to reserve. All four were broke-up in Scotland in 1958.

Construction was proceeding on two uncompleted light carriers, POWERFUL and MAGNIFICENT which had been sold to Canada and Australia and had been re-named BONAVENTURE and MELBOURNE.

In 1952 the RAN boasted a strength of two light aircraft carriers, SYDNEY and VENGEANCE (on loan from the RN until MELBOURNE's completion), two heavy cruisers, the war-weary former flagship AUSTRALIA in her final role as the fleet training ship, with SHROPSHIRE laid-up in reserve at Athol Bight along with the light cruiser HOBART, placed in reserve in 1947 and awaiting a planned modernisation and refit to operate as fleet training ship which was cancelled whilst in progress underway.

The Battle-class destroyers ANZAC and TOBRUK with the Tribals, ARUNTA, BATAAN and WARRAMUNGA were in service and four new Daring-class destroyers (WATERHEN later cancelled) were under construction, two at Cockatoo Island and two at Williamstown.

Four of the five ex-RN Q-class destroyers loaned to the RAN between 1943-45 and transferred permanently in 1950 were commencing conversion to Type 15 fast anti-submarine frigates along similar lines to the Royal Navy with the fifth, QUALITY, laid-up in reserve and never converted.

Eleven frigates, 28 minesweepers, two survey ships, three each, tank landing ships and boom defence vessels made up the strength of the RAN in the Queen's Jubilee year.

The Fleet Air Arm aircraft listed in the front line aircraft types are an interesting flashback; they include De Havilland Sea Vampires, Sea Hornets, and Sea Venoms, Fairey Barracudas, Fireflies and Gannets, Hawker Sea Hawks, Sikorsky S-55 Whirlwinds, Supermarine Seafires and Attackers, Westland Wyverns and Dragonflies.

Support naval aircraft types include the venerable Avro Anson, Airspeed Oxford, De Havilland Tiger Moth and Sea Mosquito, Gloster Meteor, the list goes on . . .

This is truly a superb reference work as well being a most enjoyable and nostalgic read. It certainly maintains the high standard of naval books, magazines and DVDs we have come to expect from Maritime Books, located at Lodge Hill, Liskeard, PL 14 4EL, Cornwall, England over many years.

Most highly recommended, this book retails at 25 pounds (UK) and it is available on their website, **ww.navybooks.com**

Another recent release from Maritime Books is their annual new edition of BRITISH WARSHIPS 7 AUXILIARIES 2012 which they have published every year since 1979. It contains a hard-hitting editorial and as well as being a good ready reference, is supported by quality photographs. It retails at 8.99 pounds.

THE HISTORY OF
THE NAVY LEAGUE OF AUSTRALIA

The Federal Council of the League is planning to produce a history of the organisation, dating from the time its first branches were formed in Tasmania in 1900 up to the present day.

In this regard it has commissioned Mr Malcolm Longstaff, who has been a member of the NSW Division Executive Committee since 1970, to undertake the necessary research as a prelude to the production of the history in a form yet to be decided.

If any reader, including especially those who may have been office-bearers in a Division, has any personal reminiscences or memorabilia relating to their involvement with the League that they believe may assist the research, it would be appreciated if they could as a first step **kindly contact Malcolm**:

Telephone: Sydney (02) 9988 3563
E-mail: nla.history@iinet.net.au

In writing: Navy League History
PO Box 518
Turramurra NSW 2074

The strategic background to Australia's security has changed in recent decades and in some respects become more uncertain. The League believes it is essential that Australia develops the capability to defend itself, paying particular attention to maritime defence. Australia is, of geographical necessity, a maritime nation whose prosperity strength and safety depend to a great extent on the security of the surrounding ocean and island areas, and on seaborne trade.

The Navy League:

- Believes Australia can be defended against attack by other than a super or major maritime power and that the prime requirement of our defence is an evident ability to control the sea and air space around us and to contribute to defending essential lines of sea and air communication to our allies.
- Supports the ANZUS Treaty and future reintegration of New Zealand as a full partner.
- Urges close relationships with regional powers and particularly with the nearer ASEAN countries, PNG and South Pacific Island States.
- Advocates the acquisition of the most modern armaments, surveillance systems and sensors to ensure that the Australian Defence Force (ADF) maintains some technological advantages over forces in our general area.
- Advocates a significant deterrent element in the ADF capable of powerful retaliation at considerable distances from Australia.
- Believes the ADF must be capable of protecting essential shipping both coastally and at considerable distances from Australia.
- Endorses the control of Coastal Surveillance by the defence force and the development of the capability for patrol and surveillance of the ocean areas all around the Australian coast and island territories, including the Southern Ocean.
- Endorses measures being taken to foster a build-up of Australian-owned shipping to assist the economy to support the ADF and to ensure the carriage of essential cargoes to and from Australia in time of conflict.

As to the RAN, the League, while noting the important peacetime naval tasks including border protection, flag-showing/diplomacy, disaster relief, maritime rescue, hydrography and aid to the civil power:

- Supports the concept of a Navy capable of effective action in war in both the Pacific and Indian Ocean proximate areas simultaneously and advocates a gradual build up of the Fleet and its afloat support ships to ensure that, in conjunction with the RAAF, this can be achieved against any force which could be deployed in our general area.
- Believes that the level of both the offensive and defensive capability of the RAN should be increased and welcomes the Government's decisions to acquire 12 new Future Submarines; to continue building the 3 Air Warfare Destroyers (AWDs) and the two landing ships (LHDs); and to acquire 8 new Future Frigates, a large Strategic Sealift Ship, 20 Offshore Combatant Vessels, 24 Naval Combatant Helicopters, and 6 Heavy Landing Craft.
- Noting the deterrent value and the huge operational advantages of nuclear-powered submarines in most threat situations and the need to train our own submarine forces, recommends that the future force include proven off-the-shelf nuclear-powered vessels.
- Noting the considerable increase in foreign maritime power now taking place in our general area, advocates increasing the order for Air Warfare Destroyers to at least 4 vessels.
- Welcomes the decisions to increase the strength and capabilities of the Army and Air Force and to greatly improve the weaponry, and the intelligence, surveillance, reconnaissance, cyberspace, and electronic warfare capabilities of the ADF.
- Advocates that a proportion of the projected new F35 fighters for the ADF be of the short-takeoff and vertical-landing (STOVL) version to enable operation from small airfields and suitable ships in order to support overseas deployments where access to secure major airfields may not be available.
- Advocates that all warships be equipped with some form of defence against missiles.
- Supports the development of Australia's defence industry, including strong research and design organisations capable of constructing and maintaining all needed types of warships and support vessels and advocates a continuous naval ship-building programme.
- Advocates the retention in a Reserve Fleet of Naval vessels of potential value in defence emergency.
- Supports a strong Naval Reserve to help crew vessels and aircraft and for specialised tasks in time of defence emergency.
- Supports a strong Australian Navy Cadets organisation.
- Advocates improving conditions of service to overcome the repeating problem of recruiting and retaining naval personnel.

The League:

- Calls for a bipartisan political approach to national defence with a commitment to a steady long-term build-up in our national defence capability including the required industrial infrastructure.
- While recognising budgetary constraints, believes that, given leadership by successive governments, Australia can defend itself in the longer term within acceptable financial, economic and manpower parameters.

The USN's oldest aircraft carrier the USS ENTERPRISE, launched in 1960. ENTERPRISE is still the longest warship ever built and was the first nuclear powered aircraft carrier made. She is due to decommission next year. (USN)

The Indian Navy's newest warship, INS SATPURA. SATPURA is a Project 17 Shivalik class frigate built by India's Mazagon Dock Limited. She was launched on 4 June 2004, handed over to the Indian Navy on 9 July 2011 and was commissioned on 20 August 2011. (USN)

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