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THE NAVY



THE MAGAZINE OF THE NAVY LEAGUE OF AUSTRALIA

**CHINA'S
RE-EMERGENT
NAVY**

**FORCE 2030
- THE DEFENCE
WHITE PAPER**

**NUCLEAR SUBS
FOR AUSTRALIA?**

MARITIME WILL



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Front cover: A Russian made Kamov Ka-25 'Hormone' ASW helicopter flying ahead of a Chinese made Luyang II (Type 52C) class air warfare destroyer. China's advances in naval technology are rapid and at times not fully appreciated.

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FORCE 2030, THE RETURN OF 'FITTED FOR, BUT NOT WITH'

The long awaited Defence White Paper, called Force 2030, was released last May on the flight deck of the Anzac class frigate HMAS STUART in Sydney. Surprisingly, given the nine years since the last White Paper, it did not seem to get the fanfare arrival that the Government may have been hoping for in the media. Perhaps their media strategy of leaking parts of the Paper before the actual publication did not have the intended effect.

The Paper, interestingly, reaffirmed every one of the Howard Government's capability initiatives and laid out some interesting plans on future capabilities to complement those already ordered, or started. Those additional capabilities seem to indicate a measure of enlightened thinking, particularly on naval issues, not usually associated with Labor Governments. So does that mean there may be a catch? You bet!

While the White Paper appears to be a dream come true for the ADF, particularly for Navy, there are some issues that need to be understood. Firstly many of the dream come true items are so far into the future that the Rudd government will not be held accountable to provide them, given the most likely scenario of a change of government over the next 5-10 years. Further, given the announcement of a new White Paper every five years the dream can be modified and 'rescoped' into a nightmare.

However, the real catch in the White Paper is the funding. Defence has been told to make savings of \$20 billion over 10 years i.e. \$2billion a year or roughly a little over one Hobart class destroyer each year. Although Defence gets to keep the savings, for now, to put back into future capability, somewhere else in our defence has to be cut in order to pay for the White Paper. With Defence spending constantly under the microscope of the Senate and the media it would be surprising if there was anything left to cut. So, ironically, to pay for the White Paper promises the savings will have to cut into the very future capabilities the Paper advocates.

Another catch is that when Defence's capability plans fail or are delayed

from lack of funds, due to an overly ambitious uncosted White Paper, then the government can blame Defence. Regrettably, Defence has to go willingly into this metaphorical mouse trap if it wants the slightest chance to acquire the capability it needs.

The White Paper also states that there will be no additional funds for capability cost blow outs. While cost increases during major projects are regrettable and embarrassing they are also inevitable and unavoidable. Large items of military equipment are essentially hand made and thus take a long time to make. There is no large production line where Hobart class destroyers are made at a rate of one a week, thus providing cost assurity. In these cases full cost capture at the start of a 10 year project is virtually impossible. Added to this is time. Equipment becomes more expensive as time moves on from when contracts were first signed, given their hand made nature. There will also inevitably be a need to add new equipment as the threat will change during the building phase, adding more cost.

One of the more unrealistic facets of the White Paper is the design and build of 12 new submarines in Australia to replace the Collins class submarines. The operational demands on the design are currently unachievable with today's and tomorrow's propulsion technology given the White Paper's hasty and unconsidered rejection of nuclear power. An absurd decision when one remembers we are one of the largest exporters of uranium.

Many of the problems associated with the Collins class were basically the Government of the day asking for something that contemporary technology of the day couldn't meet. Fortunately nearly 15 years later



HMAS STUART during her initial sea trials. The Anzacs were acquired under the policy of 'fitted for but not with' in order to buy eight hulls instead of six. However, money was saved even further by a change of policy to 'space and weight provided for but not fitted for', which still limits their deployability. (Defence)



An Army Black Hawk helicopter. None of the Army's Black Hawks can be deployed to Afghanistan as they were acquired in less than warfighting trim in order to save costs and buy more platforms for peacetime use. (Defence)



technology has caught up to the then government's ambition for Collins. However, another Government (which coincidentally happens to be Labor) is now ordering submarines with just as much unrealistic ambition for technology as the Collins. Not only are we to find crews for 12 but they also have to carry cruise missiles in addition to the weapons needed for anti-submarine and anti-surface tasks, and do it faster with better underwater endurance than Collins.

The squeeze on funds and 'ambitious' plans mean that the only way Defence can adhere to the Government's White Paper direction is to save money by bringing back the failed and much criticised policy of 'fitted for but not with', which actually degenerated even further to 'space and weight provided for but not fitted with'. The Anzac class ships where acquired under this policy and although they are now the work horses of the fleet they still cannot be sent into harms way without support. This was recognised under the previous government who started a large improvement programme to provide them with warfighting equipment.

The Army's Blackhawk helicopters were also acquired with less than warlike capability during the same time and are now receiving negative attention though their inability to deploy to Afghanistan. Army took the step of ordering them without countermeasures against ground based air defence threats so as to acquire the minimum number required for training and peacetime tasks.

The services will have to resort to 'fitted for but not with' in order to get a baseline capability to meet the basic 'defence of Australia' scenario, and hope that a future project will remediate warfighting deficiencies, much like the Collins and Anzac classes.

One of the other means used during the 1980s to pay for capability was to outsource many support functions. This was not liked in the ranks and also posed legal questions about support to the ADF in war zones - which were irrelevant as the amount of support contracted could only meet the relaxed tempo of peacetime training activities.

All in all the new White Paper has as many positives as negatives. It is a double edged sword for Defence designed to make the government look good in the eyes of the media for its forward planning and yet front loads the blame to Defence when things inevitably become more expensive are delayed and cannot be afforded. It will take a very politically savvy Chief of Defence Force, Defence Secretary and DMO Chief working in unison to realise the capability dream items from the Paper without falling foul of the Force 2030 mouse trap.

CORRECTION

USS ENTERPRISE (CV-6) – THE 'BIG E'

The 20th Century's Greatest Warship

By Ian Johnston

Few warships become legends. In the 20th Century one warship had a wartime record encompassing many battles and countless enemy aircraft and ships destroyed. This ship also symbolised a new type of naval warfare: the lessons of which are in use today. The fighting spirit of this ship and crew brought comfort to her people and their allies, her name struck fear and hatred to the enemy that fought her. That ship is the American aircraft carrier USS ENTERPRISE (CV-6), also known as the 'Big E'.

Her WW II battle honors are unmatched by any other US naval ship. America's 20 Battle Stars, ENTERPRISE was the first American carrier presented with a US Presidential Unit Citation, a USN USN Commendation, and the only foreign warship ever awarded the British Admiralty Pendant. Many ENTERPRISE crewmen were honored as heroes, with 43 USN warships being named after Big E crewmen.

ENTERPRISE was the result of the 1916 Washington Naval Treaty and the postwar depression left by the 1929 Great Depression. Before the depression the USN's carrier tonnage was 55,000 tons short under the Washington Naval Treaty. During the depression America began to plan for two aircraft carriers, designed with lessons from their last commissioned aircraft carrier. In 1933 new US President Franklin D. Roosevelt, with the US Congress, signed a massive public works program called the 'New Deal' - assigned to US America out of the ongoing Great Depression. The 'New Deal' increased American military spending. The USN received \$200+ million, which included

lands to construct two 19,800-ton carriers, the start of the three ships of the Yorktown class. The 'New Deal' package saved America and her shipyards from the Great Depression with positive long term economic and industrial capacity effects. These would come into play when the emergency 1940 Naval Appropriations Rebuilding Act was passed. For these same shipyards had a solid industrial base.

The second Yorktown class carrier became the seventh ship in USN history named ENTERPRISE. Construction began at Newport News shipyard 21 May 1934, lasting four years. ENTERPRISE was 267 feet long and 114 feet wide at the flight deck, with a displacement of 32,000 tons and a top speed of 33 knots. ENTERPRISE had 62 officers and 1,447 enlisted crew when commissioned 12 May 1938.

ENTERPRISE arrived at Pacific Fleet Headquarters at San Diego in April 1939, before sailing on 8 September 1939 to Pearl Harbor, Hawaii, five days after the war began in Europe. From her new



In an article published in the last issue of THE NAVY entitled "The Big E" it stated in the body of the article that:

"At sunset on 22 January 1944; Task Force 58, comprising ENTERPRISE, five Essex class carriers, and dozens of other ships, departed Hawaii. Watched by Undersecretary of the Navy James Forrestal and Fleet Admiral Nimitz, it would be 560 days before ENTERPRISE and many of TF-58 would return to Hawaii. Some never would."

The statement concerning 560 days was inaccurate and should have read;

"With two ESSEX class carriers in the Pacific, ENTERPRISE headed stateside, reaching Bremerton, Washington on July 20. For four months, the crew took liberty as 'Big E' had her wounds tended to, and upgrades to her defensive capabilities, including 90 anti-aircraft guns, new radar, and an enlarged flight deck, as well as improvements in other areas. ENTERPRISE departed Bremerton on 1 November 1943, arriving back at Hawaii. It would be 560 days before ENTERPRISE would return to the mainland of the United States. For now the tide of war was turning. In the Pacific SARATOGA was waiting, as were six ESSEX class carriers as part of Task Force 50 (TF-50)."

THE NAVY apologises for any inconvenience or confusion. Ed...

DEFENCE WHITE PAPER 2009 - NAVY LEAGUE WELCOMES MARITIME FOCUS

The Navy League of Australia welcomes the Government's comprehensive review of Australia's defence needs as outlined in the Defence White Paper.

The maritime emphasis in the paper is particularly appropriate given the build-up of maritime power in a number of countries in East and South Asia, the uncertainties in future international developments and the fundamental fact of our oceanic location.

The acquisition of 12 submarines has gained much attention. This is understandable. However, submarines, no matter how good they are, can never be more than a part of a balanced navy. The White Paper rightly recognises this.

The naval proposals are significant. Three air warfare destroyers (AWD) with the possibility of a fourth; eight new larger frigates; twenty 2,000 tonne offshore combatant vessels, much larger and more capable than the vessels they will replace and importantly with the potential to embark helicopters or UAVs.

The amphibious force will be much stronger with the acquisition of two new Landing Helicopter Dock ships - previously announced - plus a large strategic sealift ship and six new heavy landing craft with improved ocean going capabilities.

The League welcomes two White Paper announcements that it considers of particular importance. First that the AWDs, the eight new frigates and the 12 new submarines are to be fitted with long range land attack cruise missiles.

Second that the AWDs will be equipped with the SM-6 long range anti-aircraft missile and Cooperative Engagement Capability.

The League also welcomes the plan to acquire 30 new helicopters,

attack and utility, for Navy. With the demise of Seasprite and the aging Sea Kings they are much needed.

The White Paper states that the new submarines will have long transits and "need to be able to undertake prolonged covert patrols over the full distance of our strategic approaches and operational areas". The League believes that the Government should not at this early stage have ruled out nuclear propulsion for these submarines. The great advantages of nuclear powered submarines include high speed, great endurance at high speed and longer time on patrol. Already four nations that operate in the Indian and Pacific Oceans, Russia, China, India and the United States operate nuclear submarines. If Australia is to maintain its technological edge it too should opt for nuclear propulsion.

The maritime equipment proposals are not limited to Navy. The RAAF is to get eight new maritime patrol aircraft and up to seven large high-altitude long-endurance UAVs. The RAAF will provide maritime strike capability with Harpoon equipped Hornets and Super Hornets. The government will acquire a new maritime strike weapon for the Joint Strike Fighters.

The RAAF is to receive 100 F-35 Joint Strike Fighters. The League believes that a proportion of the projected purchase should be the short take off and vertical landing (STOVL) version. The inclusion in the JSF purchase of the STOVL version - at present being built for the RAF, RN and the United States Marine Corps - would provide the RAAF with much needed options. These options would include the ability to operate from small airfields or from the large amphibious ships being built for Navy.

Overall the proposals set out in the White Paper are supported by the Navy League.

It is to be hoped that present and future governments provide the necessary resources to ensure that the programme outlined in the White Paper comes to fruition in a timely manner.



From Left to Right: Chief of the Defence Force ACM Angus Houston; Prime Minister Rudd; (behind) Chief of Navy VADM Russ Crane; former Defence Minister Joel Fitzgibbon; (behind) Defence Secretary Nick Warner; National Security Adviser Duncan Lewis; Vice Chief of Defence LTGEN David Hurley; White Paper Special Adviser Prof Ross Babbage and White Paper force structure architect CDRE Ray Griggs (now Rear Admiral) on the flight deck of HMAS STUART at the release of the White Paper Force 2030. (Defence)

CHINA'S RE-EMERGENT SEA POWER

By Seapower Centre Semaphore

One of the more recent issues of 'Semaphore' published by the RAN Seapower Centre involved the rise of China's seapower. Given the recent Defence White Paper's identification of China as a growing regional naval super power the issue of 'Semaphore' is reproduced here as background to our coverage of the White Paper (images and captions provided by THE NAVY).

The traditional Western view of Chinese history has treated China as a continental power with only a sporadic concern with maritime affairs. In part, this view originated due to the European-imposed maritime dominance of China starting in the late-eighteenth and early nineteenth centuries. China's seaborne achievements – perhaps most well known are the 'treasure fleets' of Zheng He – are all too often overlooked in the face of her capitulation at the hands of mercantilist Western powers.[1] In fact, international sea trade has contributed significantly to China's prosperity for over two thousand years, so when discussing the modern People's Liberation Army – Navy (PLA-N), it is important to recognise China as a re-emerging sea power.

Soon after the establishment of the People's Republic of China (PRC) in 1949, the need for a maritime defence was well understood as the nascent nation faced a hostile regional outlook. The threat of invasion by the Chinese nationalists from the island of Taiwan was foremost in the minds of the PRC leadership, as was the strong United States (US) military presence, especially after witnessing the effective use of joint and combined sea power during the Korean War. The few littoral craft the PRC operated were no match for either of these more powerful navies. Planning to counter these threats,

the infant PLA-N was modelled to become a force essentially dedicated to sea denial and coastal defence.

During the 1980s the PLA-N received increased attention from military policy makers in Beijing, as the utility of modern, efficient navies became much more visible. This turn to the sea also owed much to the ability of Chinese Navy leader Liu Huaqing to cast off land-centric strategic philosophies and bring credibility to the concept of offshore defence and protecting the 'first island chain'. [2] This new generation of Chinese visionaries promoted the growth of the PLA-N, but their task was helped by the strengthening Chinese economy and increased liberalism within the PRC.

The last decade has seen a concerted push by China to modernise and consolidate her naval capability. A strong focus has been the promotion and development of indigenous capabilities, while bridging any capability gaps with acquisitions of foreign platforms and technology. In many instances, reverse-engineering has been used to develop in-country expertise which in turn generates an even greater self-reliance in naval capabilities. Significant updates to naval combat and weapon systems have resulted. The Chinese fleet of ten years ago might not have been significantly different in size, but it did not have many of the important technologies that

China's newest Jin class nuclear powered nuclear armed ballistic missile submarine (SSBN) during China's recent Naval Review. China is currently building five of these nation killing SSBNs.



the PLA-N now fields. These include an effective indigenous nuclear submarine program, stealth enhancement technologies, advanced indigenous sensor suites and an increasingly sophisticated command and control infrastructure. The PLA-N's modernisation is backed by a robust and ever growing manufacturing base and an increasingly capable design, research and development sector.

Human factors, such as improved military training and professionalism, have also made major contributions to PLA-N advancement. China's sailors and officers are increasingly well trained and educated; they are regularly at sea and continually practicing their trade. Any analysis of the PLA-N must recognise the professional and technical proficiency of Chinese naval personnel.

Changes in the PLA-N's existing and planned force structure 1997-2008 (reserve numbers not shown). ^[3]		
Type	Number (building)	
	1997/98	2007/08
Nuclear Ballistic Missile Submarines	1	1 (4)
Nuclear Attack Submarines	5	5 (1)
Conventional Attack Submarines	55 (3)	55 (1)
Aircraft Carriers	0	0 (1)
Guided Missile Destroyers	18	27 (2)
Guided Missile Frigates	35 (2)	47 (4)
Fast Attack Catamaran	0	40+ (15)
Fast Attack and Patrol Craft	426 (11)	169
Amphibious Warfare Vessels	107 (5)	269
Supply Ships	111+ (3)	90+
Replenishment Ships	3	5
Hospital Ships	0	3

Changes in the PLA-N's existing and planned force structure 1997-2008 (reserve numbers not shown).³

China's nuclear deterrent capability is being supplemented by the new Jin class nuclear ballistic missile submarines. Meanwhile, the PLA-N's next generation of nuclear attack submarines – the Shang class – will improve its long range submarine capability. Complementing this has been the further development of conventional submarines including the Yuan class, which reportedly uses air-independent propulsion. The PLA-N has also acquired 12 Kilo class submarines from Russia, an example of covering a perceived capability gap by importing foreign platforms.

The PLA-N maintains a large and diverse surface fleet. Significantly, it has removed from inventory many of its aging, shorter endurance vessels, whose effectiveness in modern maritime conflict was somewhat questionable. Instead, the PLA-N is developing its next generation of surface combatants, with new indigenous and Russian built warships rapidly replacing those which are obsolete.

Arguably, the most impressive jump in PLA-N capability can be seen in the destroyer force. The acquisition of the Russian designed and manufactured Sovremenny class destroyer marks a great leap forward. Similarly, the Luzhou and Luyang classes represent a 'coming of age' in indigenous destroyer design and construction. The development of the destroyer force, especially air warfare capable destroyers, is suggestive of the PLA-N's determination to protect its seaborne trade further afield than was previously possible.

Like the destroyers, Chinese frigates have also been the focus of recent attention. Indigenous design has advanced significantly with the advent of the Jiangkai class. Larger and more robust than its predecessors, the newest frigate in the PLA-N boasts improved air defences and



The new Luyang II (Type 52C) class air warfare destroyer HAIKOU. There are two Luyang class ships in service. The panels around the bridge superstructure form her Phased Array radar. Her 48 anti-air missiles are semi-active homing and have a range of 100kms.

stealth enhancing technologies as well as an organic helicopter for anti-submarine warfare.

The sharp decline in the numbers of active fast attack and patrol craft (FAC) over the last ten years (a 60 per cent reduction), clearly reflects the Chinese shift away from coastal defence towards offshore defence. The PLA-N's remaining FACs are generally less capable than comparable vessels in other modern navies. However an exception to this is the Houbei class of fast attack catamaran; the PLA-N is the only navy to operate an advanced, heavily armed, vessel of this type.

Amphibious warfare vessels are an important PLA-N capability with large numbers of ships and watercraft in service. While many of these vessels are restricted to coastal or limited duration operations, they do provide China with a number of strategic options. Indeed, the recent development of the 20,000 tonne Type 071 assault ship may be an early step towards a much more flexible and perhaps expeditionary PLA-N. Also noteworthy are the fleet auxiliaries, which are essential for naval operations in the Pacific. The PLA-N maintains an increasing number of tankers and replenishment ships giving Chinese warships far greater endurance and hence reach. The three hospital ships might also suggest that the PLA-N is willing to contemplate conducting 'soft power operations', such as humanitarian tasks outside home waters.

Notwithstanding these varied developments, the PLA-N continues to rely upon land-based air support and does not appear to be developing forces similar to the US Navy's aircraft carrier battle group (CVBG). This does not mean that such a capability can be ruled out in future. China has been studying carriers for a number of years and has acquired three non-operational carriers for disposal; HMAS MELBOURNE (II) and the ex-Soviet Navy's VARYAG and MINSK. VARYAG has been under conversion at the Dalian shipyards for some years, and despite a repaint and repairs to the superstructure, seems unlikely to be recommissioned any time soon (see image and caption for further details). Until recently, it was doubtful that Chinese shipbuilding industry had the facilities or technical expertise to build an indigenous carrier. The newly completed Changxing shipyards, however, could be used to construct a carrier from the keel-up, if desired.^[4]

Even if China does not pursue the construction of carriers, the PLA-N is fast becoming a more



capable and credible force. The last decade has seen much consolidation and refinement in the fleet. Sea denial operations, to protect home waters from maritime incursions, no doubt remain an important part of Chinese naval doctrine, but the emphasis has most certainly changed. During the 1980s and 1990s the PLA-N developed a capability to defend the 'first island chain'. More recently, the desire to protect China's maritime approaches has led to the development of a fleet for operations further afield into the Pacific, and into a 'second island chain'. [5] In fact, elements of the PLAN have already demonstrated a capability for effective operations in the Indian Ocean.

China's next generation nuclear attack submarines and air defence destroyers are equally capable of providing a defensive 'bubble' around commercial shipping, military sea-lift ships, or a sea control force. This need not, however, suggest that the PLA-N is developing an aggressive power projection and sea control force to dominate the Pacific, or planning to challenge other regional navies for sea supremacy in a Mahanian sense. Indeed, the 2008 PRC Defence White Paper states the Navy has been striving to 'gradually develop its capabilities of conducting cooperation in distant waters and countering non-traditional security threats.' [6]

The growth and modernisation of the PLA-N is a fascinating insight into how a modern China sees its place in the world and deals with its geo-strategic realities. The PLA-N now has the potential to play an important and stabilising role in the region and, in partnership with other navies, across the globe.

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HANG ZHOU, China's first of four Russian made Sovremenny class destroyers aimed at deterring USN aircraft carrier battle groups.



The Type 054A/Jiangkai-II class frigate XUZHOU of the East Sea Fleet. Her 32 vertically launched HQ-16 anti-air missiles have a range of nearly 50kms. Her design looks very Western with obvious stealthing techniques applied to the superstructure.



The ex-Soviet aircraft carrier VARYAG being towed towards drydock for her second dry docking period since arriving in China. It is believed she has been renamed SHI LANG. Ominously, Shi Lang was a Ming-Qing Dynasty admiral who conquered Taiwan in 1681. SHI LANG is expected to start sea trials as a fully fledged unit of the Peoples Liberation Army – Navy this year. She will more than likely fill the role of training carrier for China's own indigenous carrier being built for service in the next decade.



A Type 071 Yuzhao class LPD. This is China's first large amphibious assault ship. Two Houbei class catamaran stealth missile boats can be seen passing in the background.



The newest of China's indigenously made conventional submarines is the Type 041 Yuan class seen here. It is thought to have a Chinese made air-independent propulsion system.



FORCE 2030; THE DEFENCE WHITE PAPER

By Dr Roger Thornhill

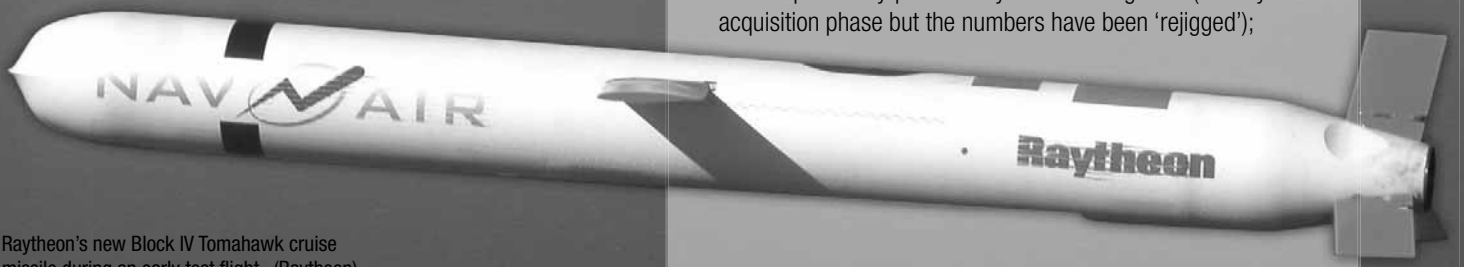
At the beginning of May the long awaited Defence White Paper was released with a couple of surprises in the document for Australia's naval capability. The rest (thankfully) was a reprint of the previous government's defence capability commitments with this Government taking ownership of them, with some expansion of scope. Dr Roger Thornhill takes a look at the expected maritime capability enhancements from the White Paper.

The 2009 Defence White Paper, *Force 2030*, has a significant focus on maritime capabilities. Over the next 20 years, the Navy's force structure will include new destroyers and frigates, submarines, amphibious ships, offshore combatant vessels, naval combat helicopters and other advanced enabling capabilities (as a result of the last White Paper and this one). Capabilities that have long been needed but somewhat unaffordable and beyond the 'political' capacity of previous governments.

The then Minister for Defence, The Hon. Joel Fitzgibbon MP said "The ability to establish local sea control is essential to maintaining freedom of navigation in our immediate region, protecting the ships that carry the life blood of our economy, preventing attacks on Australia or its offshore territories and resources, and supporting land forces." A refreshing view to what many feared might be a return to a 'fortress Australia' model.

Key capability decisions relevant to this enhanced maritime force include:

- A fleet of 12 new Australian designed and built Submarines to replace the current six Collins class;
- Enhancements to the weapons systems of the three Hobart class destroyers through the purchase of SM-6 and Tomahawk missiles, with consideration of acquiring a fourth destroyer in the future;
- A fleet of eight larger frigates, with an emphasis on Anti-Submarine Warfare (ASW) to replace the current Anzac class frigates;
- Continuation of the acquisition of two new Canberra class Landing Helicopter Dock (LHD) ships (already signed for by the Howard Government under project JP 2048 Ph 4A/B);
- A new Strategic Sealift ship based on a proven design (already part of JP 2048 Ph 4C);
- A fleet of at least 24 new naval combat helicopters, equipped with dipping sonars to detect submarines at greater ranges (already covered under AIR 9000 Ph 8);
- Six new MRH-90 helicopters that will replace the general utility service previously provided by the Sea King fleet (already in the acquisition phase but the numbers have been 're-jigged');
- 20 new multi-role Offshore Combatant Vessels equipped with modular mission systems that will at time incorporate the capabilities presently provided by the 14 patrol boat, six hydrographic and six mine hunter vessels;
- Six new ocean-going heavy landing craft with greater range and speed to replace the aging Balikpapan class Landing Craft Heavy; and
- Replacement of the Navy's oldest supply ship, HMAS SUCCESS, with a new replenishment and logistic support ship which will enter service at the end of the next decade.



Raytheon's new Block IV Tomahawk cruise missile during an early test flight. (Raytheon)

To be fair, the White Paper does provide direction and certainty for projects already started under the previous government. The new additions are certainly welcome.

CRUISE MISSILES

The White Paper plans to introduce a land attack cruise missile capability for Navy. This capability did belong to the RAAF with its F-111 fleet but will eventually reside in the RAN.

The cruise missiles, most likely Tomahawk, are intended for the Hobart class destroyers, the future frigates, and the future submarines. The White Paper directs Defence to develop proposals for fitting the necessary fire control systems to the Hobarts as an early upgrade project while incorporating it as part of the design and construction of the future anti-submarine warfare frigates and the future submarines.

The newest version of the Tomahawk family, the Block IV (or also known as Tactical Tomahawk) incorporates some innovative technologies to provide new capabilities while reducing acquisition, operations and support costs by about 30% on previous versions of the Tomahawk.

Tomahawk Block IV uses an integrated GPS (Global Positioning System) and inertial navigation system (INS) guidance coupled with digital scene matching area correlation (DSMAC) and terrain contour matching (TERCOM) systems for the highest accuracy possible however, a GPS-only mode can also be used which provides for very short mission planning response time.

The new capabilities that Block IV brings to the battlespace are derived from the missile's two-way satellite data link. The strike controller in the launch vessel can alter the missile in flight to engage up to 15 preprogrammed alternative targets or redirect it to a new target. This targeting flexibility includes the ability to loiter over the battlefield awaiting an assignment to a time-critical target. The missile can also transmit Battle Damage Indication (BDI) imagery, and missile health and status messages via the satellite data link. Tomahawk Block IV also enables the firing platform to plan and execute GPS-only missions using the Tactical Tomahawk Weapon Control System (TTWCS). Block IV uses a high anti-jam GPS receiver for improved mission performance.

The missile has a 454kg HE warhead but different warheads may also be used. Some of these include cluster munitions and a novel payload called the 'black out bomb' which unravels long metal cables over power lines to short out nearby power stations.

Tomahawk has a range of 1,600kms and is said to be accurate to 10 m.

Before being fired the missile is programmed with target and own-ship location data. It is carried from the launcher by a booster rocket which burns for 12 seconds and takes the missile to the optimum altitude for the cruise phase, during this time the fins deploy. As the booster is ejected, the air intake is extended and a gas cartridge ignites the turbofan. Simultaneously the wings deploy from their slots which are immediately covered by doors to reduce drag.

Missiles launched from submarine torpedo tubes are carried in stainless steel Teflon-coated capsules which are 53 cm (21 in) in diameter and weigh 1,900 kg and are stored in the torpedo room. The torpedo-handling system inserts the capsule into the tube in the same way it loads torpedoes or sub-Harpoon missiles. Before the missile is launched, the tube is flooded as the missile is pressurised to prevent it being crushed by the outside water pressure. The process of loading and preparing the missile can take up to 30 minutes.

The Government said that the acquisition of cruise missiles would provide additional options to conduct strategic strike operations against targets that are hardened, heavily defended and more difficult to access by strike aircraft, while minimising exposure to enemy forces.

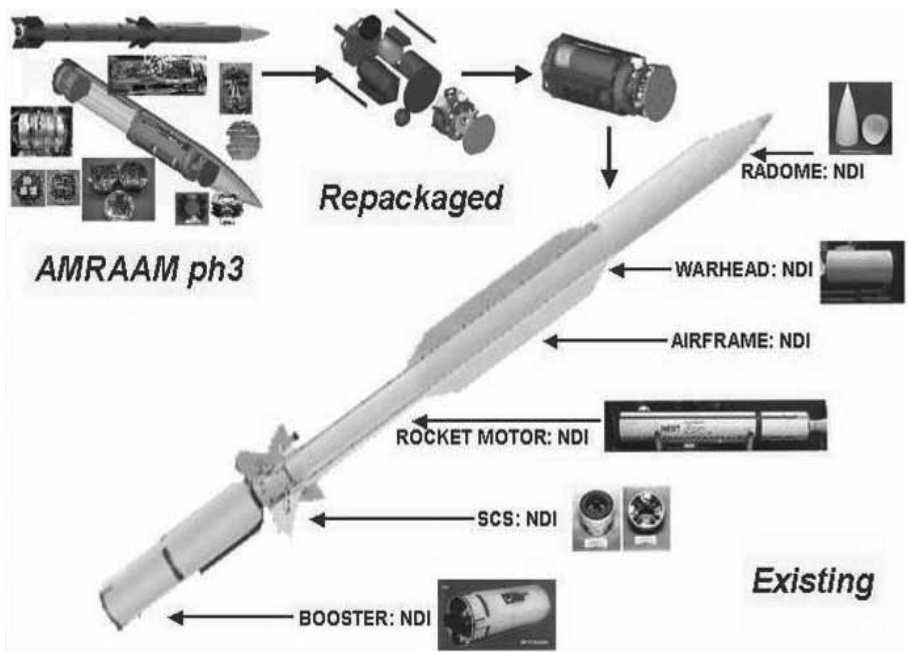
While the missile has some impressive capabilities it should be judged by its combat performance and effect. For example, in the week beginning 16 December 1998 some 330 Tomahawks were launched against Iraqi targets in Operation 'Desert Fox'. An 85 per cent accuracy rate was claimed with 85 of 100 targets hit, of which 74 were judged "successfully" destroyed. It should be remembered that accuracy and effectiveness are not the same thing. Tomahawk can hit it, but it's small warhead may not destroy the target.

Between March and June 1999, during Operation 'Allied Force', 238 missiles (including 20 British) were launched, with 181 of 218 US missiles (83 per cent) and 17 out of 20 British missiles (85 per cent) hitting their targets. Effectiveness is not known but accuracy rates seem to be quite constant.

One of the issues that previous combat performance highlights is the large number of missiles needed to create an effect. Despite the numbers in the examples above none produced war winning results. In fact operation 'Desert Fox' did not stop Saddam Hussein one bit.

Given Australia's limited number of launch platforms, the limited number of weapons they can employ and the fact that the launch platform will have to forgo weapons intended for its primary mission, such as anti-air or ASW, one has to question how the ADF will get the most out of the tactical effect of a massed Tomahawk strike. Also, in the Australian context, what is 'massed', 10 missiles or 110? What this capability will cost to be truly effective for Australia's strike needs will need to be thoroughly examined.

Current users of the Tomahawk include the US, UK and more recently Spain which has requested



An graphical explanation of the anti-air SM-6 missile. (Raytheon)

an initial buy of 20 Block IV Tomahawks for their F-100 class frigates (what the Hobart class is primarily based on) with potential use on their S-80A submarines in the future.

Tomahawk is an effective weapon for creating an environment for other strike assets to exploit. It should not be seen as a sole strike weapon but as a means to complement other strike activities from aircraft, amphibious assaults/raids, Special Forces raids or any other means of imposing a kinetic effect on the enemy. US and UK use of Tomahawk has always preceded other strike assets.

SM-6

In order to enhance the air defence capabilities of the Hobart class destroyers, the White Paper plans to equip them with the Standard Missile 6 (SM-6) long-range anti-aircraft missile. The SM-6 missile is one of the most advanced weapons of its type, with a range of more than 200nms (370Kms), it effectively extends the range of the air defence 'bubble' offered by the host warship.

SM-6 uses the active seeker head from Raytheon's AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM) Phase 3 together with the existing SM-2 Block IVa missile and booster. The weapon is fired in a ballistic trajectory towards the target and attacks from above where the active seeker has the best chance of seeing it. The launch platform provides updates to the missile's autopilot via a data link telling where it needs to be for the terminal or decent phase of its attack. Once the onboard active seeker detects the target the missile takes over leaving the launch ship to engage other targets. All of this is also done without use of the ship's illumination radars. Secondary targeting data is a must if the SM-6 needs to engage targets behind mountains or over the horizon.

Recent computer based experiments run by the USN using an AEW&C aircraft, an Aegis destroyer and SM-6 are said to have produced some "amazing results" for air defence capability.

CEC

As they enter service, the AWDs will be equipped with a system known as Cooperative Engagement Capability (CEC), which enables each vessel to act as part of a wider 'grid' of sensors that can share surveillance and targeting information. This enables a better means of engagement of air threats as more information on the target is gathered and shared amongst CEC equipped vessels.

The White Paper says that Defence will also

investigate fitting CEC to the Wedgetail AEW&C (Airborne Early Warning & Control) aircraft in order to optimise the capability advantages offered by the SM-6 missile when working with naval task forces. Without an overhead AEW&C with CEC the SM-6 can only be used within the range of the ship's own sensors, albeit with the advantage of fire and forget. Having a sensor such as an AEW&C with CEC is vital to the exploitation of SM-6's extended range. However, the integration issue of putting a CEC system in a previously untried aircraft with a different type of radar that CEC was not designed for may prove an obstacle to the government's plans.

CEC also provides another advantage. With so many radars linked and the processing power improved CEC ships in company with other CEC equipped ships can actually detect and track stealth aircraft and stealth missiles.

Stealth technology is all about low observability not invisibility. That low observability is most prevalent at certain ranges and angles to the search radar transmitter. Most radars can usually detect stealth aircraft but as the return is so low the processor usually discards the returned echo as clutter and rejects it. However, with CEC linked radars and processors the system can make the judgement that if two radars from two different positions receive the same piece of 'clutter' then the system will give more attention to that 'clutter'. If a pattern is detected then the system will start a track and display that to the operator.

FOURTH HOBART CLASS AWD

Regrettably the White Paper did not announce the addition of a fourth Hobart class AWD. It said that the Government will continue to monitor and assess its capability needs against strategic assessments, and will continue to assess the capability need for a fourth Hobart

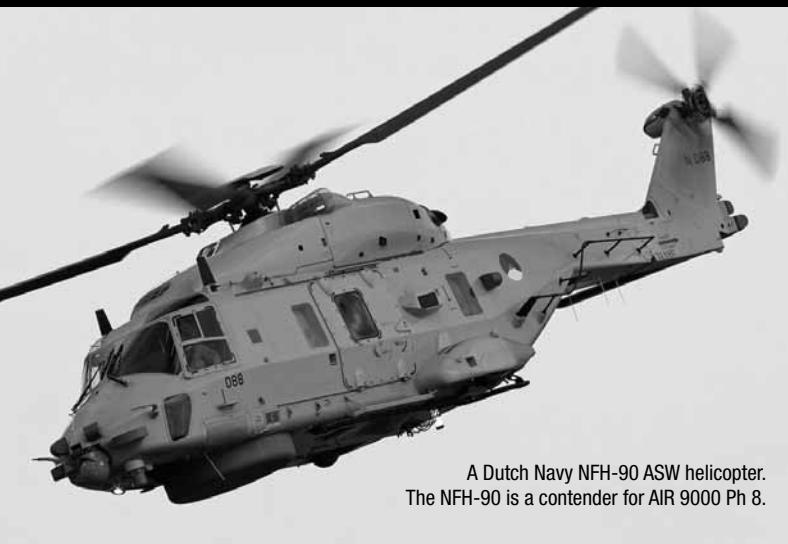
class AWD in the future against further changes in the strategic assessment.

Having a fourth Hobart class destroyer would provide more flexibility and redundancy than three and would enable the destroyer capability to be fully realised. The ADF's strategic plan for Navy is that one Hobart class destroyer can lead a medium sized multi-mission Joint Task Force. Another can lead a small single purpose Task Force (both situations involving limited to no conflict) and the third can be in refit, workups or transit to rotate one of the others off station and back to Australia. This 'bare bones plan' does not take into account any potential battle damage, accidents, extreme weather, political restrictions or any other external issue that could have a bearing on availability or freedom of action. One of those factors may be an intense maritime conflict along the lines of the 1982 Falklands conflict which could require all three at once to be deployed at great distance for six months or more. They may also have to undergo unplanned upgrades to meet emerging and unexpected threats. Having only three will make the destroyer capability, and the new LHD capability that will depend on the destroyers for protection, a partial capability only as it will be unable to sustain prolonged military operations.

One of the advantages of another Hobart class destroyer is that much of the cost has already been spent in the areas of design development; contract fees; shipyard set up; infrastructure development; testing and evaluating the design and so on - in fact over \$2 billion has already been spent before any steel has been cut. Adding another destroyer will represent a very small cost increase (approx 2/40s of the recent Rudd economic stimulus package) but would give more 'breathing space' to the Anzac replacement project and potentially provide uninterrupted work for the local naval

A Spanish F-100 frigate at sea. The Hobart class AWD is an improved version of the F-100. Regrettably the White Paper 'hedged' on the fourth AWD, deciding to leave the decision until much later. (Navantia)





A Dutch Navy NFH-90 ASW helicopter. The NFH-90 is a contender for AIR 9000 Ph 8.

shipbuilding industry. Given the current projected seven year gap in major warship construction from the Hobart class to the SEA 5000 Anzac replacement, the naval shipbuilding industry will have to close down until the new ship class is ordered. If that happens the infrastructure required to start again would have disappeared, and the Taxpayer will have to pay all the set up costs again that are currently being spent on building the Hobart class. Added to this, the gap will mean a loss of skills to build warships resulting in more cost and delays to re-establish those skills. Acquisition of a fourth destroyer would thus save money, which incidentally will stay in Australia, an important consideration given the world economy at the moment

SEA 1000; 12 SUPER-SUBMARINES

The White Paper has plans for 12 new conventional submarines to replace the current fleet of six Collins class in about 2023 under project SEA 1000.

The previous Defence Minister, The Hon. Joel Fitzgibbon, said “This investment will provide Australia with a much greater ability to adequately defend our maritime region, protect and support other Australian Defence Force assets, and undertake strategic missions where the stealth and other operating characteristics of highly-capable advanced submarines is crucial.”

The White Paper reported that “the distances involved in Australia’s maritime geography mean that to defend Australia and our interests we must produce a conventional submarine with significantly higher levels of endurance and capability than exists anywhere else in the world. So while

we may use sub-systems from other successful submarine designs, the overall design will be unique.”

These 12 ‘super submarines’ are the only fanciful promise in the White Paper. One thing the Paper makes clear is that nuclear propulsion has been ruled out. This is despite the need for additional size to accommodate the land attack cruise missile role on top of its normal ASW and ASuW (Anti-Surface Warfare) load and the need for additional speed and underwater endurance.

Rejecting nuclear power so early in the scoping phase is ludicrous and highlights the populist agenda of the Rudd Government. No nation in the world makes or plans to make a non-nuclear submarine of the capability we require in the White Paper. A conservative view of future propulsion technology says that the technology will not be sufficiently mature to permit this capability from realising its requirement.

Discounting nuclear propulsion imposes a constraint on the studies already started into what Australia needs in a submarine warfare capability.

It should also be noted that the cost of building 12 “unique” submarines in Australia will be astronomical and well beyond the defence budget. It would easily surpass the engineering effort that went into the Collins class submarines and the Snowy Hydro electric scheme in South East Australia.

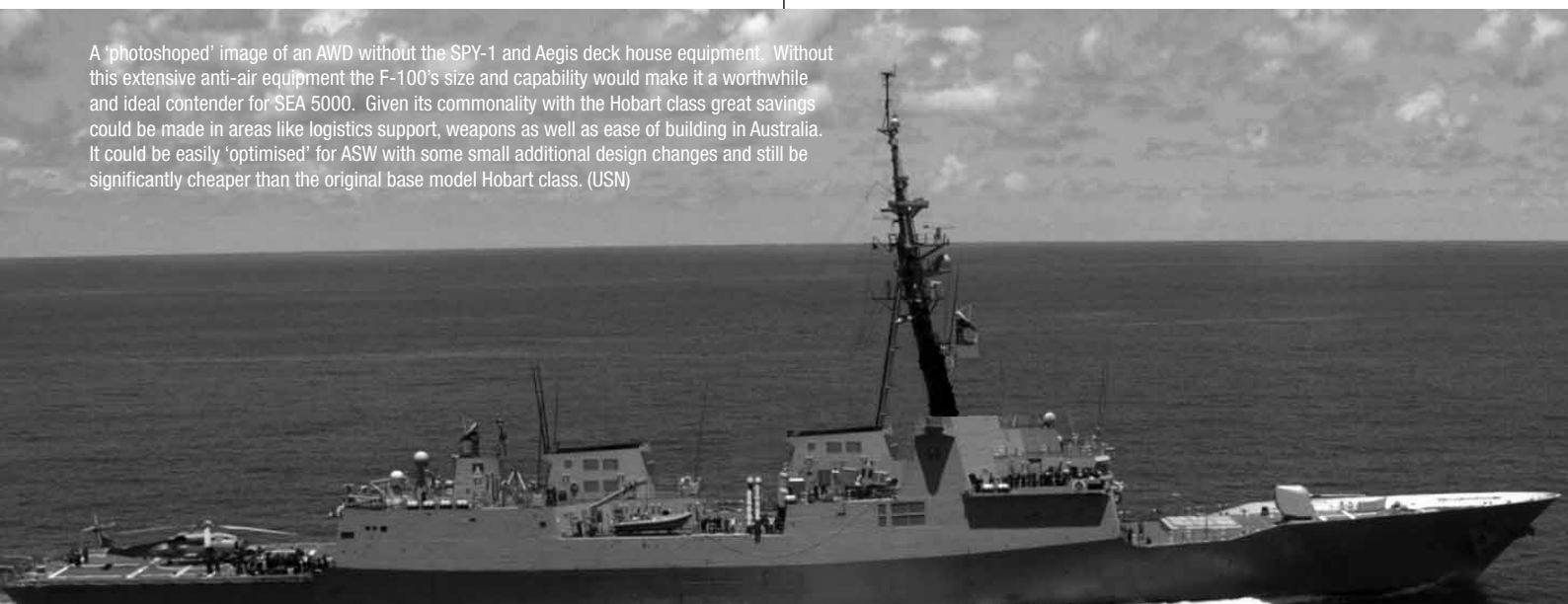
NEW LARGER FRIGATES – SEA 5000

The White Paper outlines the plan for project SEA 5000 to acquire a more capable fleet of eight larger and more versatile replacements for the Anzac class frigates.

The White Paper says that while the new SEA 5000 frigates will be able to defeat threats in the air and on the sea surface, as well as provide fire support to forces ashore, that they will have a specific capability focus on ASW. They will also have greater range and endurance, will support naval helicopters, and will have a sophisticated integrated sonar suite. Some have put the size of the new frigates at approx 7,000 tonnes. To most this would seem to be more destroyer size than frigate.

The extra size is certainly welcome. For many years naval professionals have been writing about the advantages of bigger ships over smaller designs. Larger ships have better sea keeping, have longer endurance (due to the ability to carry more fuel), provide better living spaces for their crew, last longer as the hull doesn’t undergo the same stress as smaller hulls, are able to absorb more battle damage and capable of being upgradeable far easier. As one academic put it “steel is cheap and

A ‘photoshopped’ image of an AWD without the SPY-1 and Aegis deck house equipment. Without this extensive anti-air equipment the F-100’s size and capability would make it a worthwhile and ideal contender for SEA 5000. Given its commonality with the Hobart class great savings could be made in areas like logistics support, weapons as well as ease of building in Australia. It could be easily ‘optimised’ for ASW with some small additional design changes and still be significantly cheaper than the original base model Hobart class. (USN)



A USN SH-60 Seahawk 'R'. The 'R' model will be the standard ASW helicopter of the USN and is a AIR 9000 Ph 8 contender. (Sikorsky)



air is free.”

The first Anzac is due to decommission in 2024. Which means the first SEA 5000 'frigate' will need to start building in 2018 with contract signature around 2014 at the latest.

AIR 9000 PH 8 SEAHAWK REPLACEMENT

Given the unnecessary cancellation of the Super Seasprite helicopter project, AIR 9000 Ph 8 'Seahawk replacement' is now an urgent priority. In fact the then Defence Minister thankfully said "Introducing these new helicopters into service is a high priority for this Government and will be pursued as a matter of urgency." In that the White Paper plans to acquire 24 naval combat helicopters as soon as possible, but still going through the Two Pass Capability Development process.

It is envisaged that 24 helicopters will enable up to nine aircraft to be concurrently embarked on Hobart class destroyers and Anzac class frigates (and their replacement) at sea at any one time.

The new helicopters will be equipped with an active/passive dipping sonar, which is capable of being lowered into the water while the helicopter is in a hover. This capability has been sorely missed since removed from the RAN's Sea Kings.

A dipping sonar will allow the helicopter to penetrate the many thermal and noise layers found in the sea column to provide an increased capability to detect submarines at greater ranges and depths than sonobuoys alone.

The new helicopters will also use sonobuoys so as to take advantage of the modern ASW sonar techniques known as bi-static and multi-static detection. This system allows the active sonar transmissions of one sonar to be received by other sonars in passive mode in order to get a better and faster idea of where the submarine may be in the water, and without giving away the position of the passive receivers.

The new helicopters are to be equipped with modern torpedos and short to medium range anti-ship missiles. The later being a capability that was to be provided in the Super Seasprite/Penguin combination.

The two likely contenders for the project are the USN's SH-60R Seahawk and the European NFH-90. Both would be ideal but each has its advantages and disadvantages.

The Seahawk 'R' is already in service but carries a significantly limited air-surface missile in the form of the Hellfire missile (originally intended for use against small tanks). The ASW torpedo, the Mk-54, is also said to be a lesser performer than the MU90 used by the European contender and the RAN's surface ships. However, the 'R' Seahawk is available and probably cheaper than its rival.

A disadvantage for the European NFH-90 is that it is not yet in service (although being introduced to the Dutch and Italian navies) and may take some time to iron out the bugs even by the time the RAN needs to go to contract. But it does carry a significantly better anti-ship missile in the form of the Marte Mk2/s.

Although the weapons the platform uses should not be a driver for which one to choose, it will be in this case as one of the key White Paper tenets is that equipment must be as 'off the shelf' as possible (super-submarines excluded). Thus for AIR 9000 Ph 8 there is to be no Australianisation of the platform in order to reduce costs and accelerate acceptance into service. While being expedient and cheap it may not be as effective as one might hope.

RETURN OF THE OPV CONCEPT

The White Paper directs Defence to commence studies consolidating Navy's Patrol Boat, Mine Counter Measures, Hydrographic and Oceanographic functions through the design of a new multi-role class of ship.

As part of these studies Navy has been told to look at rationalising the four different classes of ship that currently perform three different roles through the acquisition of around 20 new multi-role Offshore Combatant Vessels (OCV).

The common ship type should be able to employ modular specialised systems which can be tailored for specific tasks. For example, there will hopefully be an uninhabited underwater systems module that can be fitted for mine counter-measures or hydrographic tasks when required.

The ships will be designed for multi-purpose tasking with an anticipated displacement of up to 2,000 tonnes. The study will look at various ship designs to deliver a multi-role ship class with a common hull, propulsion and support systems, a flight deck and self-defence weapon systems, as well as basic networking capabilities.

It is hoped they will also have the ability to embark a helicopter or uninhabited aerial vehicle to allow a surge in surveillance and response capabilities without the need for additional ships to be deployed (although AIR 9000 Ph 8 is not scoped to provide helicopters for this vessel).

A sophisticated sensor and weapons systems module should hopefully be available to allow the ships to conduct a wide range of offshore and littoral warfighting tasks, border protection tasks, and missions in support of security and stability in the nearer region.

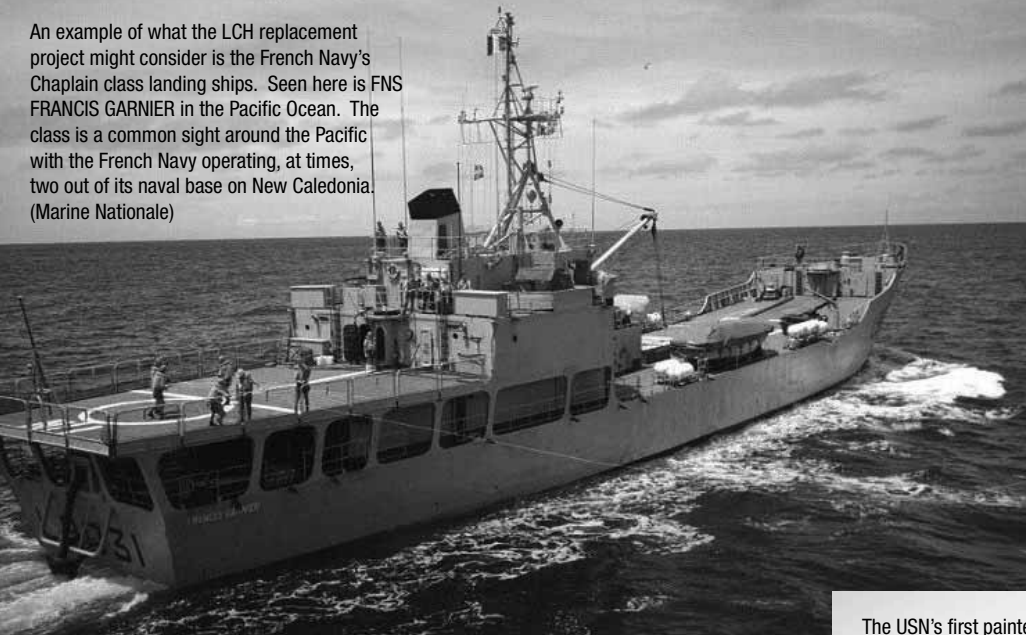
An example of a ship design that could meet this requirement is the German K-130/Braunschweig class corvette. At around 2,000 tonnes and with a significant self defence weapon suite, sensors and a flight deck it could be tailored with modular systems to accept different roles by changing out individual modules.

The study into the OCV design will have to be a quick one as the first Armidale

An example of the sort of capability to be acquired to replace the Armidale patrol boats, minehunters and hydrographic fleets is the German Navy's K-130/Braunschweig class corvette. (German Navy)



An example of what the LCH replacement project might consider is the French Navy's Chaplain class landing ships. Seen here is FNS FRANCIS GARNIER in the Pacific Ocean. The class is a common sight around the Pacific with the French Navy operating, at times, two out of its naval base on New Caledonia. (Marine Nationale)



class patrol boat is due to decommission in 12 years, while the first minehunter will go in the less than 10 and the first hydrographic ship in five years.

Hopefully the study can leverage off the considerable amount of intellectual capital that went into the US Littoral Combat Ship (LCS) concept, particularly from its early days as the USN 'Street Fighter' concept.

NEW LCH REPLACEMENT

The White Paper unexpectedly announced the replacement of the Navy's LCH fleet. Many thought that this capability would be retired given the LHD acquisition and Navy's chronic crew shortage issue. However, there are now plans to acquire six new heavy landing craft with improved ocean-going capabilities to replace the Navy's ageing Balikpapan class Landing Craft Heavy (LCH) vessels.

The new class of landing craft will provide intra-theatre lift to augment the larger LHDs and Strategic Sealift vessel. The new landing craft will have improved seakeeping characteristics and faster transit speeds than the LCHs that they will be replacing.

An example of the type of ship that could meet this requirement is the French Champlain class medium landing ship. With a displacement of approx 800 tonnes, length of 80m, a speed of 16kts and a range of 3,500nms it can carry 140 troops and 12 armoured vehicles and has a helicopter flight deck. The French have at least one based permanently in the Pacific at their naval base on New Caledonia. Thus the class is familiar with Pacific island conditions.

Vessels of this type enable small land forces to use the sea as a manoeuvre space to increase the tempo of operations and outpace

an adversary, particularly in difficult terrain where onshore infrastructure is poor or vulnerable to disruption at key points. They will also be capable of contributing to humanitarian and disaster relief operations.

The LCHs have been regional workhorses for the ADF with regular deployments to Timor and the Pacific Islands. The decision to replace them with a larger ship addresses what was to be a serious capability deficiency. As first of the current LCH fleet is due to decommission in 2016 it is difficult to believe that this new vessel will be on time to replace the LCH.

SUCCESS REPLACEMENT

The White Paper announced plans to acquire a new underway replenishment vessel by the end of the next decade to replace HMAS SUCCESS, which is the older of the Navy's two current underway replenishment ships.

The new replenishment ship will be capable of carrying fuel, stores, food and ammunition and have the ability to transfer this cargo to other major fleet units while underway. Unfortunately there appears to be no plan to link the new Sea Lift ship and the SUCCESS replacement into a common hull or acquire a significantly larger ship than SUCCESS to provide even more out of area combat logistics support.

P-8A POSEIDON

As a replacement for the RAAF's 19 AP-3C Orion the White Paper plans will acquire eight

Boeing P-8A maritime patrol aircraft and seven high-altitude, long endurance uninhabited aerial vehicles to enhance the future ASW and surveillance capability of Air Force.

The P-8 is a Boeing 737-800 series commercial aircraft but with the wings of a 900 series aircraft (minus the turned up wing tips) and fitted for the ASW and ASuW role. Boeing is developing the P-8A Poseidon for the USN who plan to purchase 108 P-8As, the first test aircraft to be delivered this year. Initial USN operational capability is scheduled for 2013.

In January 2009 Boeing was selected to provide eight P-8I long-range maritime reconnaissance and ASW aircraft to the Indian Navy (see THE NAVY Vol 71. No 2. p15). India

The USN's first painted P-8A is backed out of the paint shop at Boeing's Seattle plant. Eight Boeing P-8A and seven high altitude high endurance UAVs will replace the RAAF's 19 AP-3C Orion Maritime Patrol Aircraft. (Boeing)



is the first international customer for the P-8. Boeing believes there are numerous other opportunities for international sales to countries currently operating P-3s or similar maritime patrol aircraft.

Being purely jet driven the P-8's mode of operation is totally different to the Orion its replacing, in that it needs to stay at high altitude to give it a better loiter/time on station. This poses challenges to launching torpedoes and sonobuoys. To overcome this GPS guided add on wing kits are being fitted to the Mk-54 air dropped torpedo to guide it down to the correct height and position above the ocean for release into the sea. A similar system is also being proposed for the sonobuoys. Both are needed as dropping them from altitude will exceed their shock resistance on hitting the sea due to their long high speed decent.

As with the Seahawk replacement this is a purely off the shelf purchase that will come with its own weapons which the ADF will have to use. It is expected that there will be no Australianisation to the systems or types of weapons it will employ.



01 PHALANX AND TORPEDO TUBES FOR AWDs

The Air Warfare Destroyer (AWD) Alliance has announced that it has signed a further two contracts for provision of elements of the combat system for the three Hobart class AWDs it is building.

The latest signings mean that the Alliance has in place contracts for the majority of the AWDs' combat systems.

Recently the Alliance has signed a contract worth \$40million with Raytheon Missile Systems, USA for the provision of the Phalanx Block 1B close in weapon system (CIWS) and with Adelaide based Babcock Strachan and Henshaw Australia for the ships' Torpedo Launch Tubes worth \$10million.

The 20mm Phalanx Block 1B provides terminal defence against anti-ship missiles and other threats that have penetrated other fleet defences. Phalanx Block 1A is presently in service in the RAN. There is significant evolutionary design in the Block 1B making it in many respects a new generation weapon with many enhancements over the Block 1A currently in RAN service. It has longer barrels for greater range and accuracy, a larger 20mm ammunition magazine and a back up IR/Thermal TV camera for engaging all manner of surface targets visually as well as providing more information to the gun's computer for greater accuracy against missiles.

The other contract is for the provision of over the side Torpedo Launch Tubes (TLTs). The TLTs interface to the Torpedo Launch Control System and the integrated system enables the Hobart class AWDs to program and deploy Lightweight Torpedoes in defence against submarine contacts.

Principally, the equipment being purchased is the Mk-32 Mod9 Surface Vessel Torpedo Tubes (SVTT).

The supplier, Babcock Strachan & Henshaw Australia (BS&HA) is backed by the Babcock International Group Plc. BS&HA operates as a management partner, systems provider/integrator and design services engineer to meet the needs of its customers and projects across the entire Concept - Assessment - Development - Manufacturing - In-Service - Disposal (CADMID) cycle.

BS&HA are a local organisation based at Regency Park, Adelaide, with plans to relocate to the Suppliers Precinct at Techport, Osborne adjacent the AWD shipyard in September 2009. BS&HA currently provide Through Life & Materiel Support for the Collins Class Submarine Weapon Discharge System. It specialises in the areas of: Weapon Handling/Deployment Systems, Weapon Discharge Systems, Countermeasure Systems and Integrated Waste Management. BS&HA will undertake, in-country: procurement, assembly, test, installation and set-to-work of the Mk-32 Mod9 SVTT for the Hobart Class AWDs.

FIRST AEGIS SYSTEM FOR HMAS HOBART UNDER TEST

Four antennas destined for first AWDs were recently installed in Lockheed Martin's Aegis Production Test Centre, marking the full system's transition from production to testing.

Testing on the first AWD Aegis shipset began in early May and will be complete in November. When testing concludes, the full Aegis Weapon System will be ready for installation in HMAS HOBART.

Lockheed Martin's Production Test Centre replicates a ship's superstructure and allows for the first integration of all the subsystems of the

Aegis Weapon System, including the SPY-1D(V) radar, illuminators, all computing hardware, and the cabling that will be used in the final ship installation. In its Production Test Centre, Lockheed Martin conducts testing concurrently with each subsystem's installation, as well as with the entire completed Aegis Weapon System, in order to ensure the system is ready for the rigors of sea before it ever leaves land.

Upon completion of the testing, the Aegis Weapon System will be shipped to ASC Shipyard in Adelaide, when the shipyard is ready to install the system.

AWD ALLIANCE SELECTS SHIPBUILDING SUPPLIERS

The AWD Alliance has selected the FORGACS group and NQEA Australia Pty Ltd as the preferred suppliers to build 70 per cent of the blocks that will make up Australia's three Hobart class destroyers.

The AWD Alliance CEO, John Gallacher says the work is worth in the region of \$450 million and the selection of the two preferred suppliers is a major milestone for the \$8 billion project.

"This demonstrates that the Alliance is ready to begin constructing the ships.

"It means the AWD Alliance has moved into the 'production readiness' phase of the project and is on schedule to begin 'cutting steel' later this year.

"The work will create about 450 direct jobs and many more through sub contractors and suppliers, which is good for the project and good for the nation," he said.

NQEA is a Cairns based engineering and shipbuilding business specialising in provision of design, manufacture and project management services to the maritime, industrial and aerospace markets. It has a shipbuilding record dating back to 1966 involving more than 220 vessels in the defence (50), tourism,



01

The 20mm Phalanx Block 1B. This Phalanx differs from the Block 1A in RAN service by having longer barrels for greater range and accuracy, a larger 20mm ammunition magazine and a back up IR/Thermal TV camera for engaging all manner of surface targets visually as well as providing more information to the gun's computer for greater accuracy against missiles. (USN)

02A



commercial and luxury markets.

The FORGACS group, based in NSW, is one of Australia's leading ship construction, ship repair and engineering companies. The group's shipyard has a long history in the construction, conversion and repair of defence and commercial vessels including building hull blocks for the Anzac frigate program.

The AWDs will be built using a modular construction method involving fabricated and pre outfitted hull blocks which are then joined together to form a completed ship. The contracts will see 66 blocks (70 per cent) built at these two sites with the remaining 27 blocks (30 per cent) built at ASC's facility in Osborne, South Australia.

When completed the blocks will be transported by ship or barge to the ASC facility where the block erection and integration will occur. On average the blocks measure 18m x 12m x 7m and weigh up to 200 tonnes. Fabrication of the first ship is expected to begin later this year with final deliveries of blocks for the third ship expected in late 2014.

The comprehensive process of selecting the two preferred suppliers began in January last year and included extensive consultation with industry.

LCM-1E FOR CANBERRA LHDS

First pass approval for a number of landing craft to complement the two new Canberra class Landing Helicopter Dock (LHD) amphibious assault ships currently under construction for the RAN was recently granted.

The landing craft - to be acquired under Phase 3 Joint Project 2048 - will enable the Canberra class LHD ships to conduct operations 'over the shore', where there are no fixed port facilities, through the use of the ships flooded well dock.

The landing craft will be able to lift heavy equipment which may be embarked on the ships, including the M-1A1 Abrams tank in service with the Australian Army and transport it to shore.

During the next stage of the project, Defence will seek offers from Spanish company Navantia for the construction and delivery of the LCM-1E landing craft. This landing craft is specifically designed for inter-operability with the Canberra class LHD and is in service with the Spanish Navy for use from her LHD, which is almost identical to the Canberras.

A final decision on the LCM-1E will be made by Government in 2010, once Defence has developed more accurate cost information and can consider offers sought from Navantia. Options to build the LCM-1E in Australia will also be considered.

02 HARRIERS - 40 YEARS OLD AND STILL JUMPING

Few aircraft can be described as truly iconic, fewer still remain in service over long periods, but this year the British-designed Harrier celebrates its 40th birthday, having spent the past five years as a mainstay on operations in Afghanistan.

No other jet in service has its Vertical/Short Take-Off and Landing (V/STOL) capability where pilots can land on shortened runways, carrier decks or on landing pads in the middle of a forest.

Developed during the Cold War, the Harrier has continually been developed from the first GR-1 that came into service in 1969. This was later developed into the GR-3 which saw active service in the Falklands Conflict of 1982

Its naval variant, the FRS-1, won acclaim in the Falklands with its unbeatable combination of experienced fighter pilots, the AIM-9L Sidewinder anti-air missile and the Harrier's unique means of operation. It was later upgraded to the F/A-2 standard with a long range air search radar and the air superiority anti-air AMRAAM missile. For a while the F/A-2 Sea Harrier was the most lethal fighter aircraft in Europe. The Sea Harrier was decommissioned early as upgrading it further was not seen as cost effective.

Changes to the RAF GR-3 to the GR-5 standard

included larger wings that provided the ability to carry twice the amount of fuel and twice the payload. The cockpit was also designed around the pilot.

The latest Harrier GR-9 is a heavily updated development of the existing GR7 (a further development of the GR-5), incorporating the ability to use a wide range of advanced precision weaponry, new communications, and systems and airframe upgrades. A Harrier can carry six 1,000lb Paveway IV bombs programmable by the pilot.

Qualified Weapons Instructor Squadron Leader Dan Simmons is one of two RAF brothers flying Harriers. He is based at RAF Wittering with 20 (Reserve) Squadron where both the RAF and Royal Navy train for the Joint Harrier Force. "In heat of plus 45 degrees centigrade the Harrier can get airborne with a full war load and we do not have to reduce any of our capabilities. It's an amazing aircraft."

Pilots are taught to land on 26 different types of landing surface at RAF Wittering; including a 'ski-ramp' that mimics the deck of an aircraft carrier. One student was combat-ready just two-and-a-half weeks after leaving his intensive ten-and-a-half month course.

The Harrier's V/STOL capability was a massive benefit in the early days in Afghanistan and the short Kandahar airstrip. In a recent incident where a C-17 slid off the runway with its tail blocking the airstrip, Harriers were the only aircraft that could land and take-off for operations.

But Harriers are soon to be withdrawn from Afghanistan and replaced by Tornado GR4s. And in ten years they will be withdrawn completely from service and replaced by the JSF.

ADF TO HUNT PIRATES – PART-TIME

The government has decided that the Australian Defence Force will contribute to international efforts to combat piracy off the Horn of Africa.

Australia will flexibly task a frigate and AP-3C

02A-B

From the Kestrel (left) to the GR-9 (right). The Harrier has been in service for over 40 years.



02B





maritime patrol aircraft that are currently based in the Middle East between anti-piracy operations and their current counter-terrorism and maritime security patrol duties under OP SLIPPER inside the Persian Gulf.

Australia will also play a significant role in broader maritime security efforts in the region by providing on a rotational basis a Commander and Fleet Battle staff to command counter-terrorism activities under international Task Force 150 from Combined Maritime Forces (CMF) Headquarters in Bahrain. Additionally, Defence will provide a small number of Navy planning staff to CMF Headquarters for multinational anti-piracy and maritime security planning and co-ordination.

In 2008 there were 111 pirate attacks in the Horn of Africa region, with 42 successful hijackings. There have been around 100 registered attacks, including over 25 successful hijackings, so far this year.

03 USN SSN COLLIDES WITH LPD

On 20 March a submerged USN nuclear powered submarine and US amphibious ship collided in the Strait of Hormuz near Iran. The collision between the SSN USS HARTFORD and the LPD USS NEW ORLEANS occurred at about 1 a.m. local time.

Fifteen sailors aboard the HARTFORD were slightly injured but were able to return to duty. No personnel aboard the NEW ORLEANS were injured.

The propulsion plant of the submarine was unaffected by the collision. A fuel tank ruptured on the NEW ORLEANS, which resulted in an oil spill of about 25,000 gallons of fuel. Both ships returned to port under their own power.

NEW ORLEANS, a new San Antonio class LPD, was repaired in theatre. HARTFORD (SSN-768), a Los Angeles-class attack submarine, was given some rudimentary repairs to strengthen her damaged sail/conning tower in order for her to return to the US on the surface.

General Dynamics Electric Boat has since received a USD\$15.8 million contract to plan and perform repair work on USS HARTFORD.

Under the terms of the contract, Electric Boat will perform planning work, material procurement and fabrication of a hull patch and a bridge access trunk, as well as planning and material procurement for the port retractable bow plane. Electric Boat also will perform planning work on the sail to restore USS HARTFORD to full-service condition. Work is expected to be completed by Oct. 31.

RAN SUB PLAN – HOPE FOR THE FUTURE

The Chief of Navy Vice Admiral Russ Crane AM CSM, RAN, has released a plan to dramatically improve Australia's submarine workforce, after concerns a lack of numbers is placing an unacceptable strain on personnel.

"Our submariners remain a professional and ready force. By improving their working conditions we will ensure our Submarine Force remains sustainable now and into the future," Vice Admiral Crane said.

Navy's Submarine Workforce Sustainability Program will follow a five phase strategy designed to stabilise, recover and grow the submarine workforce over the next five years. The program focuses on getting more qualified submariners to sea and on improving support for them once deployed.

The Submarine Workforce Sustainability Review was completed late last year. It made 29 recommendations aiming to improve submariners' work/life balance. Vice Admiral Crane is implementing them all.

The strain on seagoing submariners will be eased by increasing crew sizes from 46 to 58 people. A fourth submarine crew will be operating by the end of 2011.

Three recommendations are already being implemented, including new crewing

arrangements, local area networks on submarines and relocation of the Submarine Communication Centre from eastern Australia to Fleet Base West in Western Australia by the end of 2009.

One of the 29 recommendations may see some Collins class submarines based in Sydney.

"The changes will improve submariners' conditions of service with better training systems, better respite at sea and ashore, and better incentives to remain in the submarine force.

An unclassified version of the Submarine Workforce Sustainability Review is available at www.Navy.gov.au and <http://www.defence.gov.au/header/publications.htm#S>

04 RUSSIA CONFIRMS VIKRAMADITYA DELIVERY IN 2012

Russia will deliver the modernised ADMIRAL GORSHKOV aircraft carrier to the Indian Navy in 2012.

"Under an agreement with India, the aircraft carrier will be delivered in 2012. Almost 2,000 highly-qualified workers are currently involved in the overhaul [of the ship]," Vladimir Pakhomov, the president of Russia's United Shipbuilding Corporation, said in an interview published last April for the Russian newspaper Vremya Novostei.

"We will increase the number of workers and speed up the work, making sure that it does not affect the quality. We are continuing talks with Indian officials about the additional financing of the project," he added.

The original USD\$750 million 2004 contract between Russia's state-run arms exporter Rosoboronexport and the Indian Navy envisioned that work on the aircraft carrier would be completed in 2008.

However, Russia later claimed it had underestimated the scale and the cost of the modernisation and demanded an additional USD\$1.2 billion, which New Delhi said was "exorbitant."

03 USS HARTFORD arrives pier side at Mina Salman pier in Bahrain for rudimentary repairs to enable her to sail, on the surface, back to the US. Notae the lean on the conning tower and ripped port side base of the tower from the collision. (USN)



04 The former Russian carrier ADMIRAL GORSHKOV, to become VIKRAMADITYA, alongside at the Sevماش shipyard in northern Russia during her final fit out.



After long-running delays and disputes, Russia and India agreed in February 2008 to raise retrofit costs for the aircraft carrier, docked at the Sevmash shipyard in northern Russia for the past 12 years, by at least USD\$800 million.

The current contract covers a complete overhaul of the ship and equipping it with modern weaponry, including MIG-29K Fulcrum fighters and Ka-27 Helix-A and Ka-31 Helix-B anti-submarine helicopters.

The ADMIRAL GORSHKOV carrier, renamed the VIKRAMADITYA, will replace India's INS VIRAAAT carrier, which, although currently operational, is now 50 years old.

After modernisation, VIKRAMADITYA is expected to have a service life of 30 years.

BABCOCK STUIDES'S FUTURE RAN SUBMARINE

UK company Babcock is assisting in the development of Australia's future submarine project with a study into payload systems.

Babcock Integrated Technology Australia has been contracted by the Defence Materiel Organisation to undertake a six month study that will enable requirements for the submarine payload systems to be better defined. It will review the impact of the various options on the submarine design.

The work will be undertaken in Australia by Babcock at its Adelaide office, with support from Babcock staff in Bristol, UK, and is scheduled for completion at time of THE NAVY's publication

In undertaking this study, Babcock is applying its considerable experience and expertise in the field. The company provides through-life support management for the UK Royal Navy and Canadian Navy submarine flotillas as well as having extensive experience in the design, integration and management of submarine systems and equipment such as weapons handling and launch equipment for a number of naval defence customers worldwide. Babcock (then Strachan

and Henshaw) supplied the weapon discharge system for the Collins project.

ANZACS TO USE THALES MISSILE CONTROL SYSTEM

On 31 March Dutch company Nederland signed a contract for a user license of Thales's Mid-Course Guidance and Sampled Data Homing function software. This software will be utilised from 2011 within the warfare systems that are part of the RAN's Anzac class Anti-Ship Missile Defence Upgrade Project.

The Mid-Course Guidance and Sampled Data Homing function is based on Interrupted Continuous Wave Illumination (ICWI), a Thales development with the European APAR (Active Phased Array Radar) partners in the APAR programme that enables a single missile control radar to guide several missiles simultaneously to several threats.

With this contract, the number of navies using ICWI has risen to five. The German and Netherlands' Navies are operational users of the Thales APAR multi-function radar that was the first radar system to use ICWI. The Patrol Ships for the Danish Navy, scheduled to be operational in 2011, will also be equipped with APAR radars. The Japanese Maritime Self-Defence Force has purchased the ICWI function for their latest helicopter carriers and future destroyers.

05 THIRD MISTRAL LHD FOR FRANCE

STX Europe has, through its subsidiary STX France Cruise SA, signed a contract to build a third Mistral class LHD for the French Navy. STX France Cruise SA, in which STX Europe holds a majority stake, is jointly owned by STX Europe, Alstom and the French Republic.

STX Europe will build the ship and outfit it at its yard in Saint-Nazaire, France, and DCNS, its co-contractor, will produce the combat system. STX Europe, in charge of the overall coordination of the project for the industrial

part, will build the whole of the ship.

Once trials are completed, the vessel will move to Toulon where DCNS will manufacture and integrate the combat system, which includes communications, navigation and combat management systems.

Being 199 metres in length, with a displacement of 21,000 tons and a speed of 19 knots, the Mistral has a carrying capacity of: 450 troops, 16 heavy-lift helicopters, 2 hovercraft, 4 LCMs (landing craft) or a third of a mechanized regiment. They are equipped with electric pod propulsion and their high level of automation enables the size of their crew to be reduced to 160. They also boast an on-board hospital for large-scale humanitarian missions.

STX Europe has already delivered two Mistral LHDs in cooperation with DCNS; the ships MISTRAL and TONERRE were delivered in 2006 and 2007 respectively.

TERMINAL PHASE CAPABILITY FOR AEGIS AND SM-2 BLK IV

Lockheed Martin's latest Aegis Ballistic Missile Defence (BMD) System recently received full certification from the US Navy. This newest software upgrade to the operational BMD system adds the capability to defeat short-range ballistic missiles as they re-enter the atmosphere in their final (terminal) stage of flight using a SM-2 Blk IV missile. The system is already certified to defeat longer range ballistic missiles above the atmosphere using the SM-3 missile.

By June 2009, Aegis BMD version 3.6.1 will be installed in the US Navy's 17 of 18 existing Aegis BMD-equipped ships. However, beginning shortly, Aegis BMD version 3.6.1 will also be installed on three additional Aegis-equipped ships, all homeported on the US east coast, being modified to perform ballistic missile defence.

Separate from the 3.6.1 installations, the Aegis BMD capable ship USS LAKE ERIE (CG 70),

05 FNS MISTRAL. The two existing French LHDs will be joined by another. (Marine Nationale)





is being fitted with the next Aegis BMD spiral that includes an improved on board computing capability and the newer Standard Missile-3 Block IB. USS LAKE ERIE will begin sea trials of this next spiral in late 2009.

The USN's latest upgrade certification of the proven sea-based missile defence system followed a thorough government test and evaluation, including a June 2008 test mission with the Aegis BMD cruiser USS LAKE ERIE. In the test, LAKE ERIE's SPY-1B radar detected and tracked a ballistic missile test target, and computed a targeting solution to guide two new SM-2 Block IV missiles to a successful endo-atmospheric (within the atmosphere) intercept.

In the recent Australian Defence White Paper, Force 2030, the Government said it "is opposed to the development of a unilateral national missile defence system by any nation... Within this policy framework, Australia's approach to ballistic missile defence will continue to be based on examining capability options appropriate to Australia's strategic circumstances. We will explore the development of capabilities for in-theatre defence of ADF elements and the defence of other strategic interests - including our population centres and key infrastructure." Perhaps the use of BMD 3.6.1 software and the SM-2 Block IV may be appropriate for the RAN to defend ADF forces in an area of operations and to defend against the new Chinese anti-ship ballistic missile.

06 USN DECOMMISSIONS USS KITTY HAWK

The aircraft carrier USS KITTY HAWK (CV-63) was decommissioned on May 12 at Puget Sound Naval Shipyard & Intermediate Maintenance Facility in Bremerton, Washington, USA, after more than 48 years of service. Members of the final crew lowered the ship's commissioning pennant from the main mast and the US Flag and First Navy Jack from their staffs after KITTY HAWK Commanding Officer Capt.

Todd Zecchin closed out the ship's deck log. "It's hard to capture the feeling in words," said Zecchin. "This is the second aircraft carrier that I've decommissioned, and it doesn't hit you immediately until you've lowered the commissioning pennant for the last time." KITTY HAWK's officers of the deck have used the log to track shipboard activities, both in port and at sea, since commissioning April 29, 1961. "She has served her country for almost 50 years - 48 years and 13 days, across the globe," said Zecchin. "There have been a lot of Sailors that have crossed her decks, a lot of airmen that have flown off and on her decks." KITTY HAWK arrived in Bremerton Sept. 2, 2008 to prepare for its eventual decommissioning. The ship spent the previous 10 years operating from Fleet Activities Yokosuka, Japan, and was a familiar sight in some Australian ports. While operating from Japan as the USN's only forward deployed aircraft carrier, KITTY HAWK took part in dozens of exercises and operations, including being the first aircraft carrier to take part in Operation Enduring Freedom in the Arabian Sea, and her aircraft took part in the opening strikes of Operation Iraqi Freedom. She was replaced by USS GEORGE WASHINGTON (CVN-73), which is only the fourth US aircraft carrier to be forward deployed from Yokosuka. KITTY HAWK's voyage to Bremerton started when the ship left Fleet Activities Yokosuka, Japan, May 28, 2008. Since then, the ship made her final port visit to Guam, then on to Hawaii, where it took part in the 21st biennial Rim of the Pacific exercise with nine other nations. On her way to Bremerton, KITTY HAWK made a final stop at Naval Air Station North Island, California, where she was homeported for more than 25 years. Dozens of former crewmembers, including 38 plankowners - members of the 1961 commissioning crew - rode the ship from San Diego to Bremerton on its final at-sea voyage. The decommissioning brings back a lot of memories for the 100,000 or so Sailors who served aboard

KITTY HAWK as part of ship's company or air wing. KITTY HAWK had been the USN's oldest active warship since 1998 and turns over the title to the nuclear-powered aircraft carrier USS ENTERPRISE (CVN-65). KITTY HAWK was also the USN's last remaining diesel-fuelled aircraft carrier. Now decommissioned, the ship will remain in Bremerton for the foreseeable future as part of the USN's Inactive Ships Programme, which includes the aircraft carriers CONSTELLATION and SARATOGA.

07 ONLY EIGHT RUSSIAN SSBNS COMBAT-READY

Russia's Navy has 12 nuclear-powered ballistic missile submarines (SSBNs) in service, but only eight of them are combat-capable, a Russian military analyst has said.

"Out of 12 vessels, Northern Fleet's Typhoon class DMITRY DONSKOI submarine has been overhauled to test new Bulava sea-based ballistic missiles, six Delta-IV class units are being refitted with modernised version of the R-29RM (SS-N-23) missile, known as Sineva, and five Delta-III class submarines are deployed with the Pacific Fleet" said Mikhail Barabanov, editor-in-chief of the Moscow Defence Brief magazine.

"Submarines of the Delta-III class are being gradually decommissioned. About eight [strategic] submarines in total are considered combat-ready," the analyst said.

He added that two Typhoon class submarines, the ARKHANGELSK and the SEVERSTAL, remain in reserve at a naval base in Severodvinsk in north Russia, but they are not fitted with missiles and need further repairs.

Typhoon class subs will be replaced by new-generation Borey class strategic submarines, which will be equipped with Bulava sea-based ballistic missiles. Russia started mooring trials of the first Borey class vessel, the YURY DOLGORUKY, in March (see THE NAVY Vol 71 No 2 p 16).

06 KITTY HAWK now decommissioned and tied up at Puget Sound Naval Shipyard & Intermediate Maintenance Facility in Bremerton, Washington, USA. Two other carriers can just be seen to the right of the image. They being the aircraft carriers CONSTELLATION and SARATOGA. (USN)



The vessel is 170 metres (580 feet) long, has a hull diameter of 13 metres (42 feet), a crew of 107, including 55 officers, maximum depth of 450 metres (about 1,500 feet) and a submerged speed of about 29 knots. It can carry up to 16 ballistic missiles and torpedoes.

Two other Borey class nuclear submarines, the ALEXANDER NEVSKY and the VLADIMIR MONOMAKH, are currently under construction at the SevMash shipyard and are expected to be completed in 2009 and 2011. Russia is planning to build a total of eight submarines of this class by 2015.

THIRD USN LCS ORDERED

The USN has awarded a Lockheed Martin-led industry team a fixed price incentive fee contract to construct the Navy's third Littoral Combat Ship (LCS) to be known as USS FORTH WORTH. Marinette Marine Corporation in Marinette, WI, will construct the ship.

The USN's first LCS, USS FREEDOM, was also built at Marinette Marine. USS FREEDOM was commissioned by the USN on November 8, 2008, following successful sea trials in August and delivery in September.

The Lockheed Martin team design for LCS is a survivable, semi-planing steel monohull that provides outstanding manoeuvrability with proven sea-keeping characteristics and innovative design features to support launch and recovery operations of manned and unmanned vehicles. Reaching speeds well over 40 knots, the ship is a networked surface combatant with operational flexibility to execute focused missions such as mine warfare, anti-submarine warfare, surface warfare and the potential for a wide range of additional missions, including maritime interdiction and humanitarian/disaster relief.

US DUAL BAND RADAR ACHIEVES TEST MILESTONE

US company Raytheon and the USN successfully completed initial 'lightoff' testing of a new Dual Band Radar system.

The Dual Band Radar is an integrated active phased-array radar suite composed of the X-band AN/SPY-3 Multi-Function Radar and the S-band Volume Search Radar, both of which radiated at high power during lightoff at the USN's Engineering Test Centre, Wallops Island, Va.

"This is an enormous milestone for Raytheon and the Navy -- demonstrating the reliability and effectiveness of the most advanced naval surface radar in the world," said Raytheon Integrated Defence System's Bob Martin, vice president and deputy of Seapower Capability Systems.

The system will be installed on the three Zumwalt-class destroyers (DDG-1000), Ford-class aircraft carriers (CVN-78), and other future surface combatants to provide superior surveillance capabilities and support ship self-defence across a broad range of missions. The Dual Band Radar leverages proven technologies to meet mission requirements in deep water and littoral, or near shore, environments.

08 FUTURE LYNX BECOMES LYNX WILDCAT

At a ceremony at AgustaWestland in Yeovil, it was announced that the Future Lynx helicopter is now to be known formally as the AW159 Lynx Wildcat.

The Lynx Wildcat program will deliver a fleet of 62 new light helicopters for the British Army and Royal Navy from 2014 and 2015 respectively.

The Army variant of Lynx Wildcat will perform a range of tasks on the battlefield including reconnaissance, command and control, transportation of troops and materiel, and the provision of force protection. The Royal Navy variant will provide an anti-surface warfare capability and will operate in support of amphibious operations. They will be an important element of ship defence against surface threats and can carry out an anti-

submarine role, as well as acting as a light utility helicopter.

The aircraft will have a high degree of commonality and will be able to switch between Army and Royal Navy roles, principally through the changing of role equipment. Their capability will be a significant advance on that provided in both Iraq and Afghanistan by the current Lynx fleet.

The name 'Wildcat' recalls the name given to the Grumman F4F which was widely used during the Second World War. The aircraft ceased operational service in 1945 but some flying aircraft remain, including one in the collection of the Imperial War Museum Duxford.

FIRE SCOUT AT SEA

The MQ-8B Fire Scout Vertical Takeoff and Landing Tactical Unmanned Aerial Vehicle (VTUAV) has successfully completed fully autonomous flight operations onboard the USN FFG USS McINERNEY. The operations marked the first time that the USN operated an autonomous VTUAV aboard a surface combatant vessel. This follows at-sea operations aboard USS NASHVILLE which included the first autonomous ship landings by a USN Unmanned Aerial Vehicle (UAV).

This brings the Fire Scout programme closer to Operational Evaluation (OpEval) status and eventually to operational status in the fleet. Test flights and OpEval on the USS McINERNEY are part of the USN's risk reduction plan for the VTUAV program in anticipation of eventual test and deployment onboard a Littoral Combat Ship.

The Fire Scout is slated to deploy aboard USS McINERNEY during its next counter-narcotics trafficking deployment later this year.

This current test period completed initial shipboard landings, UAV Common Auto Recovery System (UCARS) wave-offs and expanded the rotor blade engage/disengage wind limits. The Fire Scout system equipment installation on USS McINERNEY was validated, and all components of the system

07 The Northern Fleet's Typhoon class SSBN DMITRY DONSKOI (bottom) has been overhauled to test new Bulava sea-based ballistic missiles. ARKHANGELSK (middle) and the SEVERSTAL (top) remain in reserve.



08 A computer generated image of the Army and Navy variants of the AW159 Lynx Wildcat. 62 helicopters will be acquired from 2014.





were successfully tested.

RUSSIAN SSN FOR INDIA BY YEAR END

India will acquire a leased Akula II class nuclear powered submarine from Russia on a 10-year lease by the end of this year.

Russia was scheduled to deliver the submarine by June however, there has been a delay in delivery as the submarine to be delivered to India met with an accident in Russia, killing a number of sailors.

The Indian Navy will get the submarine, which is now undergoing repairs, after successful sea trials.

Initially the lease will be for 10 years, following which a decision to extend the lease or not will be taken by the Indian Defence Ministry.

09 BUSH CERTIFIED FOR FLIGHT OPS

USS GEORGE H.W BUSH (CVN-77) reached another milestone recently when she successfully completed her first flight deck certification on May 26.

An aircraft carrier's flight deck certification is a two-part certification that ensures the crew can safely and effectively conduct independent flight operations.

The USN's newest aircraft carrier, along with the aircraft and personnel of Carrier Air Wing 1 and Air Test and Evaluation Squadron 23 safely completed 695 catapult launches and arrested landings while underway in the Atlantic Ocean May 18-29. The event was evaluated by Commander, Naval Air Forces Atlantic and received a stamp of approval.

USS GEORGE H.W BUSH, homeported at Naval Station Norfolk, is the 10th and final Nimitz-class carrier. She was commissioned Jan. 10 at Naval Station Norfolk.

NULKA SECURES 11TH PRODUCTION ORDER

The Australian Government has awarded BAE

Systems another contract to produce additional Nulka anti-missile decoy rounds.

The contract, valued at AUD \$48.2 million, will see BAE Systems Australia produce additional Nulka rounds for use by the Australian, United States and Canadian Navies.

BAE Systems is the prime contractor responsible for design, development and integration of the Nulka system.

Two US sub-contractors, Lockheed Martin and Aerojet, manufacture the electronic warfare payload and the rocket motor respectively.

Simon Forrest, BAE Systems Program Manager, confirmed that this latest and 11th successive annual order would see production extended to 2012.

"To date approximately 860 Nulka rounds have been produced for the Australian, United States and Canadian Navies. The Nulka system has now been installed on more than 125 surface combat ships, with deployment on further ship classes planned," Mr Forrest said.

Nulka is a rocket propelled active decoy designed to lure anti-ship missiles away from their intended target. Originally conceived in Australia, and developed under a joint Australian and United States program, it provides warships with a highly effective all-weather defence against anti-ship missiles, bringing together hovering rocket, autonomous system and electronic technologies.

FOURTH CORVETTE FOR INDONESIA DELIVERED

After outfitting and successful sea trials, the fourth SIGMA-class corvette, KRI FRAS KAISIEPO, built by Damen Schelde Naval Shipbuilding (DSNS) was handed-over and commissioned into the Navy of the Republic of Indonesia on 7 March.

The Minister of Defence of the Republic of Indonesia, H.E. Prof. Dr. Juwono Sudarsono, signed the handover documents on behalf of Indonesia. The commissioning into the Indonesian

Navy of the corvette was done by the Indonesian Chief of Navy, Admiral Tedjo Edhy Purdijanto.

The delivery of the last of four corvettes took place within three years after the effective date of contract.

KRI FRAS KAISIEPO sailed home to Surabaya on April the 11th, after crew training by the Royal Netherlands Navy.

10 LAST FALKLANDS WARSHIP DECOMMISSIONS

The last surviving operational Royal Navy warship which took part in the Falklands conflict of 1982, HMS EXETER, retired from service on Wednesday 27 May 2009. The Portsmouth-based ship destroyed four Argentine aircraft - two Skyhawks a reconnaissance aircraft and Canberra bomber - during the campaign. There is also some evidence to suggest that she may have shot down Argentina's last air-launched Exocet missile on 30 May. The Type 42 destroyer was sent to the region from the Caribbean to replace her sistership HMS SHEFFIELD - the first major British casualty of the conflict. A ceremony to mark the end of HMS EXETER's 29-year career, attended by many of her Falklands veterans, was held at Portsmouth Naval Base. Ten of her 21 former Commanding Officers were among the 325 guests at the decommissioning ceremony. The ship's affiliate organisations, including Exeter City Council, were also represented at the ceremony. EXETER's White Ensign was lowered for the last time during the ceremony which was rounded off in Royal Naval ceremonial fashion with the cutting of a decommissioning cake. Built by Swan Hunter shipbuilders on the Tyne, HMS EXETER was launched in 1978 and entered service in September 1980. She was also involved in the Gulf War of 1991, employed as an escort for a US battleship and mine countermeasures vessels off the Kuwaiti coast. In 2005 she took part in the International

09 An F/A-18F Super Hornet of Air Test and Evaluation Squadron 23 was the first fixed wing aircraft to 'trap aboard' the USS GEORGE H.W BUSH. (USN)



10 HMS EXETER during her 29 year career. Her arrival at the Falklands Conflict of 1982 represented a shift in balance of power. As a Batch 2 Type 42 she had a better combat system and radars. This meant the Argentine tactic of flying low to avoid the Sea Dart missile system was no longer applicable. A point she proved on 30 May when two Argentine Skyhawks flying at ultra low level were dispatched almost simultaneously. (RN)



Fleet Review to mark the 200th anniversary of the Battle of Trafalgar. During her lengthy service around the globe, EXETER clocked up 892,811 nautical miles (over 1.65 million kilometres). Over the last few months she has been in a period of extended residence. The RN is replacing its ageing Type 42s with the far more capable Type 45 Daring class of destroyers. The first of the class - HMS DARING - made her first entry to her Portsmouth home in January and the second - HMS DAUNTLESS - is due to arrive next year. Most of EXETER's ship's company have already been transferred to other posts across the RN fleet, including DARING and DAUNTLESS.

SECOND INDONESIAN TYPE 209 TO REFIT

On 28 April 2009, Daewoo Shipbuilding & Marine Engineering (DSME) of South Korea was awarded a US\$75M contract for the modernisation of the Indonesian Navy's second Cakra class Type 209/1300 submarine (NANGGALA).

The modernisation program will likely be similar to the one CAKRA (Indonesia's first Type 209/1300 SSK) completed in 2006 which included:

- Overhaul of the submarine's four engines,
- Replacement of batteries,
- Upgrade of the combat management system,
- Upgrade of the sonar system,
- Upgrade of the electronic support measures (ESM) system, and,
- Replacement of the surface search radar

Based on the timeline of CAKRA's modernisation programme, should NANGGALA enter the shipyard by the end of 2009, it will likely return to service with the Indonesia Navy by the middle of 2011.

PORTUGUESE NAVY GROWING

On 19 May 2009, the Portuguese Navy (PN) commissioned the first of two ex-Royal Netherlands Navy (RNIN) M-class (Karel Doorman) frigates in

Lisbon, Portugal. The ex-HrMs VAN NESS (F-833) was transferred to the PN on 17 January and renamed the BARTOLOMEU DIAS (F-333) at the Dutch naval base in Den Helder.

The second frigate, ex-HrMs VAN GALEN (F-834) is scheduled to be transferred by the end of 2009. The transfers of the two frigates are part of a 2 November 2006 contract signed by the Netherlands and Portugal, which included the sale and overhaul of both vessels.

RUSSIAN NAVY DOWNSIZING

As part of the planned Russian military draw-downs, the Russian Navy will be required to reduce the number of vessels to nearly half by 2016, or around 120 units.

With budget constraints, requirements for reducing personnel and a large number of obsolete vessels, the Russian Navy will have a daunting task in the next seven years. Additionally with new construction units entering service albeit extremely slow, the Russian Navy will have to decommission around 140 units to meet the goal of 123 by 2016.

Many of the vessels in the Russian Navy inventory are already beyond their effective service lives and in need of replacement. These classes of vessels are the most probable candidates for decommissioning immediately without replacement:

- Six Delta III class SSBNs
- One Kashin class DDG
- One Kara class DDG
- Four Krivak class FFG
- Three Grisha III class corvettes
- Four Alligator class LST
- One Polnochny class LSM
- Eleven Natya class MSO
- Twenty-four Sonya class MHC
- Over fifty Auxiliary ships

These 105 vessels will likely be the first units to decommission when the reduction in forces begins at the end of 2009. As new construction units of the Borey class SSBN, Yasen class SSN and St. Petersburg class SSK are commissioned, the Russian Navy will likely decommission older units of their submarine fleet, possibly on a one-for-two basis. The submarine classes that will probably be decommissioned as newer units enter the fleet over the next decade include the Oscar II, Akula, Sierra I, Victor III and Kilo classes.

Also, as new Steregushchiy and Admiral Gorshkov class frigates commission, older units will probably decommission at the same rate as the submarines until their goal of 123 active vessels is met.

With the global economic crisis in full swing and Russia experiencing double digit inflation each year for the past decade, it is important that the nation continue to look for savings in the military budget in order to fund the recapitalization of its armed services.

In addition, Russia faces an outdated military industrial complex that continues to deal with massive cost overruns, inefficiencies and long delays.

11 FIRST F-22P FRIGATE FOR PAKISTAN IN AUGUST

The Pakistan Navy will receive the first of four F-22P type Chinese made frigates in August this year while the second ship will be delivered in December-09.

Construction of the third F-22P frigate is also progressing as per schedule. This ship was launched at Shanghai on May 28, 2009 in a ceremony attended by both Pakistani and Chinese dignitaries.

Construction of fourth ship was started in March this year at Karachi Shipyard and Engineering Works in Pakistan and is expected to be delivered to the Pakistani Navy in April 2013.

11 The Pakistan Navy's first of four F-22P type Chinese made frigates, PNS ZULFIQAR, fitting out in China (Chris Sattler)





DEFENCE – CHANGE IN EMPHASIS NOT POLICY

It might be thought the 2009 Defence White Paper outlining (detailing might be a better word) the Government's plans for Australia's defence during the next 20 or so years involved radical changes; this is not so, it is essentially an update of the 2000 Defence White Paper, itself updated two years later after taking into account changes in the international situation following the terrorist attack on New York. In this respect it is a welcome indication of political bipartisanship on fundamental defence issues.

In addition to its value to the defence community, the 2009 White Paper could be of benefit more widely. Several of the 18 chapters refer to Australia's relations with countries nearby and far away, 4, 5 and 11 in particular; the information in these pages could be helpful for teachers in their efforts to broaden the outlook of youngsters about to enter a world of competing interest and objectives. Even in the defence community however, some may find the 158-page Paper difficult to digest as virtually ever conceivable challenge to Australia's security is discussed as well as some unnecessary repetition.

Early media reception of the Government's defence intentions seemed to be generally favourable although as time passed there was some criticism concerning funding (to which only the last page of the White Paper was devoted): Criticism of this vital Subject is understandable as it is virtually impossible at a time when much of the world is in a state of financial disarray and major items of promised equipment have not even been designed, let alone proven, to provide reliable estimates of future costs: This will be a problem for future governments.

The future of the Australia/China relationship has received a good deal of media attention in recent times, but while China is certainly mentioned a number of times in the White Paper it seems unlikely the Government's defence intentions could cause any alarm in that country. Strangely, PNG, resource-rich underdeveloped and with a relatively small population, vital to Australia's security and literally a hop skip and jump away, is barely mentioned in the Paper (11.32).

The Defence Force; The Services, particularly the Navy, could be expected to be pleased with the Government's materiel acquisition plans and the emphasis placed on maritime defence is most welcome. It is also pleasing to know that a reasonably-sized destroyer/frigate force is to be maintained, with eight Anzacs being replaced by similar ships in due course: Also to be maintained are the many variously tasked vessels and shore facilities that together form an effective navy. It needs to be said the plans to build 12 bigger and better submarines to replace the present six are interesting; the outcome remains to be seen.

Finally, the 2009 Defence White Paper covers a time-scale of 20 years, a period during which, apart from at least six Federal elections (unless the Constitution is changed), a single event can have immediate consequences worldwide. However, given survival, instead of the proposed White Paper every 5 years an update if circumstances changed would seem more sensible.

BILL BOLITHO – MASTER MARINER 1931-2009

Captain William Bolitho AM, a Navy League Advisory Council member who died earlier this year was once listed in 'Who's Who in Australia' as a grazier but in fact was much more a man of the sea than of the land.

'Bill' as he was known to his many friends and colleagues went to sea as an apprentice shortly before his seventeenth birthday in the IRON KNOB, one of BHP's large fleet, several of which he would eventually command. Bill's 21 seagoing years were spent in the main with BHP and the British India Steam Navigation (BISN) and he was essentially a seaman for the rest of his life.

Ashore, throughout the seventies he was involved in the business side of the shipping industry, including stevedoring, transport and other segments of the industry. A strong advocate for an Australian shipping industry, he was appointed chairman of the Australian Shipping Commission in 1984, a position he held until 1989 when he became chairman of the Australian National Line (ANL): During this period he became inaugural chairman of the Australian National Maritime Association (ANMA), subsequently the Australian Shipowners Association (ASA) remaining in office until 1994.

Bill also served with a number of other companies and organisations linked with the sea or transport including Qantas (as a director), National Terminals Australia (chairman 1998-93), Australian Maritime College (Council) and as a member of the Shipping Reform Committee.

In the words of former ASA Chief Executive Officer Lachlan Payne, "Bill Bolitho believed passionately in the merits of Australia having her own shipping capacity....and a man who epitomised the notion of having the courage of his convictions: Bill would not hesitate to do or say what he thought was right even if it meant risking the disapproval and even at times the wrath of others".

In retirement Bill served the community as Mayor of Bairnsdale for a short time: Bairnsdale, a Victorian regional centre linked to the sea by a river and lakes is almost a "seaport" - an appropriate place for a final act of service!

Bill and wife Bridget had three daughters and two sons who survive him.

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NUCLEAR POWERED SUBMARINES FOR AUSTRALIA

By RADM Andrew Robertson, AO, DSC, RAN (Rtd)

With the Defence White Paper's rejection of nuclear power for the SEA 1000 future submarines, Federal Vice President of the Navy League Read Admiral Andrew Robertson argues for the examination of nuclear power on the grounds of strategic and tactical merit.

While today's immediate problems of terrorism, Iraq and Afghanistan must be faced, minds are also turning towards the longer-term defence need to strengthen the ADF, including by providing new submarines for the navy.

At the outbreak of the First World War Australia proudly possessed a powerful navy centred around the new fast battle-cruiser HMAS AUSTRALIA, and modern cruisers, destroyers and submarines. This force proved to be an effective deterrent to the German Pacific Squadron, based in North China, which avoided the Australian area.

By WW II, despite a much increased threat posed by the Japanese fleet, the RAN was somewhat reduced in overall strength and was based on five modern cruisers with some destroyers and other vessels, but no submarines. It posed only a minor deterrent.

Post war, against the background of the Cold War, the introduction of aircraft carriers, modern American guided-missile destroyers, powerful Daring class destroyers, new anti-submarine frigates, the excellent Oberon class submarines, modern minesweepers, and support ships, greatly increased the strength and standing

of Australia's Navy and its deterrent value, and added weight to Australia's voice in international forums.

However, the decision in the early 1980s not to replace the aircraft-carrier HMAS MELBOURNE, to disband the powerful fixed-wing element of the Fleet Air Arm and then the long delay in replacing the capability of the three Perth class guided-missile destroyers, greatly reduced the strike, air-defence and anti-submarine strength of the navy.

Today, although there has been an increase in naval capability, there are a number of navies in the Pacific and Indian oceans which, certainly on paper, outclass our navy.

The recently published 2009 Defence White Paper, *Force 2030*, calls for a considerable increase in naval defence including the building of 12 submarines to replace the six Collins class, which will start to come into service about the year 2025. These boats will indeed bolster our naval capability against any long term threats to our national security.

Nuclear propulsion for these boats has been ruled out. The boats will

The RN SSN HMS SPARTAN arriving home from her 1982 deployment to the Falklands Conflict. SPARTAN's high speed and underwater endurance meant that she was one of the first RN assets in theatre by weeks and was able to establish the means of enforcing the maritime exclusion zone and provide vital intelligence on Argentine naval movements and communications. (RN)



have conventional propulsion systems augmented by the new technology of air independent propulsion (enabling them to remain submerged at slow speed for much longer than can present conventional boats). However, such boats do not offer the flexibility and strategic advantages of nuclear -powered submarines, noting the vast oceans with huge distances surrounding Australia. To date there has been little debate on the possibility of introducing nuclear-powered vessels, though they have been in service with the major maritime powers for the last 50 years or so.

Partly it seems that any mention of nuclear power is thought to be politically incorrect. However, one can imagine that if the facts affecting our future defence were placed before the Australian people by our major political parties, and debated nationally, many attitudes would change, as they have in a number of democratic nations. With our small population and huge area Australia must ensure that it is in the forefront of technology for its effective defence in the 21st century.

There is a misconception in some quarters that nuclear power means some form of minor controlled nuclear explosion driving ship's engines, with always the danger of a large catastrophic explosion, in fact of course the nuclear fission cycle is used to provide heat to fire boilers which produce steam to drive ship's turbine engines. As far as we citizens know, there have been no serious accidents in nuclear powered submarines of the western powers for the last 40 years. Before that time the loss of one or two American nuclear powered submarines was nothing to do with their propulsion systems. The safety record of western nuclear technology is an indisputable fact.

And why have the US and Britain moved entirely to nuclear powered submarines in their navies? The two main reasons are operational capability and deterrence.

Nuclear powered submarines have unlimited endurance, curtailed only by crew endurance. They can circumnavigate the world submerged at high speed. Where vast distant deployments are needed, they can get there submerged in about a third of the time needed by conventionally-powered boats. Once there, they stay longer on patrol. Conventionally powered boats, even with air independent propulsion, are limited in flexibility due to their low endurance at high speed, while nuclear- powered boats can hunt or pursue their quarry and can re-deploy to other operational areas rapidly. Nuclear-powered boats are potent weapons against enemy submarines as well as for other roles, though they may not be as effective as conventional submarines in shallow waters, due primarily to their

One of China's newest indigenously made SSNs, the 6,000 tonne Shang class.



A Russian 9,800 tonne Akula II class SSN on the surface. Russia is still making the Akula class and has leased one of these modern and 'deadly' SSNs to the Indian Navy for an unspecified time.

water inlet scopes being located under the submarine and the danger of ingesting sea bed debris or plant life and depriving the reactor of cooling water. One must assume that after all these years of scientific advance that both types are more or less equally quiet and stealth-like.

At the start of the Iraq War many will have seen on their TV screens the spectacular sight of American missiles, many fired from far distant warships including submarines, striking military targets with remarkable accuracy. It is arguable that nuclear-powered submarines equipped with such long-range weapons in combination with their stealth, speed of deployment, and huge range would provide a significant deterrent to any major attack on Australia. Indeed it could be argued that such boats would provide a greater deterrent than long-range strike aircraft.

But what about the industrial back-up needed? Of course highly trained and skilled technicians will be needed both in the navy and in it's industrial support, and there are obvious great advantages in the possession of a nuclear power industry, not at present in Australia, though one may develop in the coming years noting the need for pollution reduction. However, the latest nuclear-powered submarines do not need reactor refuelling in their



USS VIRGINIA. This is the USN's newest SSN class of submarines. They have a top speed of 35kts and a weapon load of 38 torpedoes/missiles plus 12 vertically launched Tomahawk cruise missiles. (USN)



entire lives, this reduces the support problem considerably. It could be that a maintenance agreement with any allied nation prepared to sell us such boats could include special arrangements for any skilled maintenance and other needs beyond Australia's capabilities.

Clearly these boats would have to be built, at least partly, overseas. So what of our own need to develop naval shipbuilding and retain submarine building and repair capability?

Could it be that a compromise, accepting the added cost (the new British Astute class SSNs costs very roughly the same as that of a projected Air Warfare Destroyer) and the complications of training and support involved, might be to build say eight conventional submarines here and to purchase say three nuclear boats overseas?

Would our neighbours be concerned at our acquisition of such submarines? Possibly, but we threaten no-one. And do other nations take any notice of Australian concerns when they equip their armed forces with whatever they consider to be in their national interest?

Some will assert that, in view of the present difficulties with manning our current submarines, it would not be possible to provide crews for more boats. Our navy, except in world wars, has often experienced shortages in some categories of officers and sailors. However, these problems have always eventually been largely resolved given improvements in service conditions, and the present problems are being addressed. Perhaps the greatest peace-time pressure on naval manpower occurred in the mid 1960s, when, despite severe manpower shortages the government ordered a massive defence expansion. The navy had to face the enormous challenges of introducing advanced guided-missiles; American destroyers with weapon systems, engines, sonars, radars and all equipments different from those of the British-designed ships of the RAN; submarines which had not been in the navy for many decades; new aircraft; new frigates; a tanker; and small craft. Despite the short time available, the difficulties

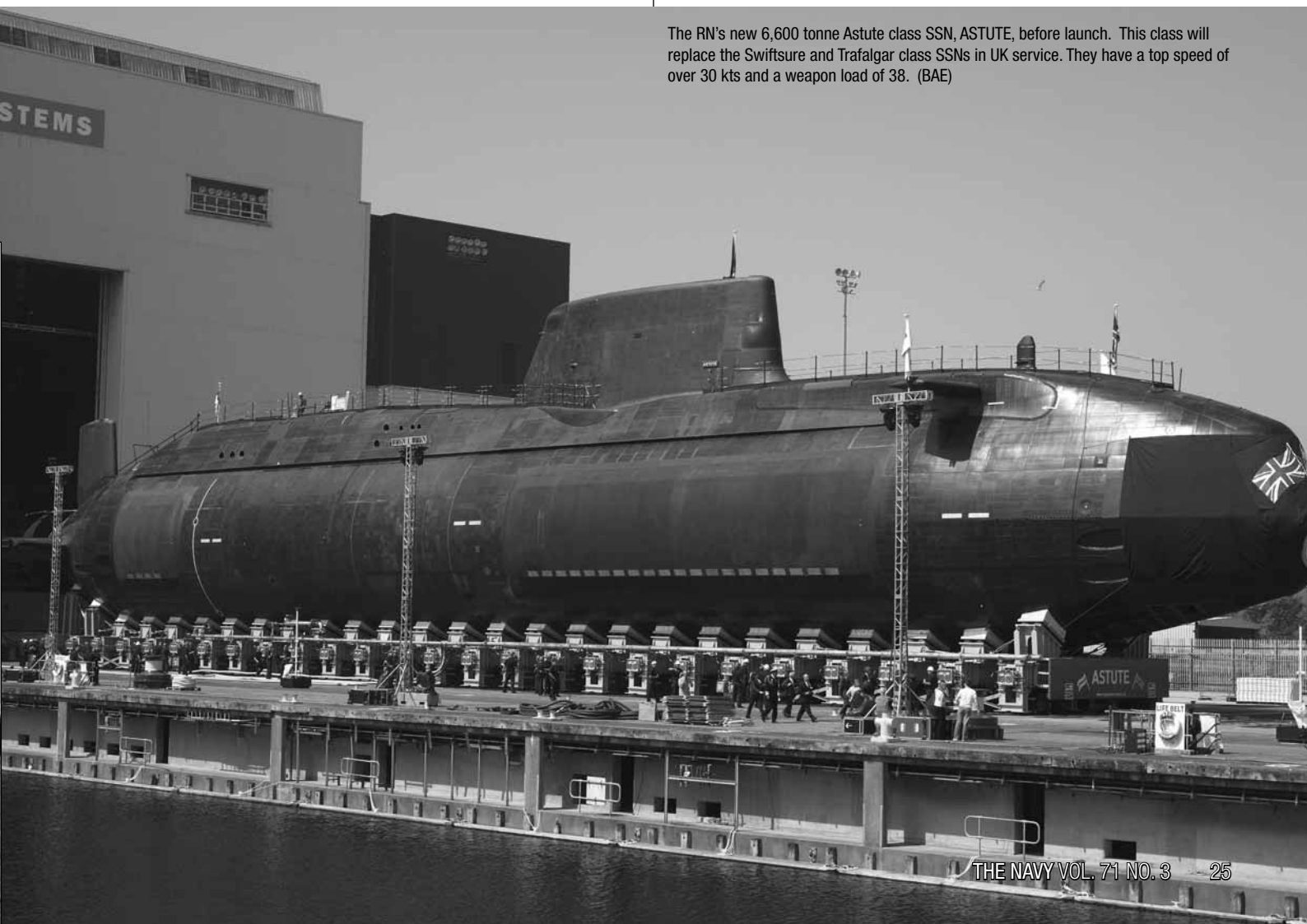


SSNs need not be large. Here the 2,200 tonne French SSN FNS AMETHYSTE prepares to berth on a visit to the US. This class of SSN is actually smaller than the RAN's Collins class diesel electric submarines. (USN)

were overcome by many personnel initiatives in all fields. The proposed submarines will not enter service for about 15 years, which should be time enough to tackle the manpower and support problems involved.

Finally it must be remembered that these new submarines will still be in service in about 40 years time when the world will be very different from today. Already several countries in Asia are steadily building up their maritime strength, China and India possess nuclear-powered submarines. India already has a powerful aircraft-carrier task force, with both China and Japan seemingly interested in these types of naval forces. While all these countries are our friends today, the future cannot be foretold. Our great democratic ally, the USA, may no longer be the only superpower in the time scale involved.

The RN's new 6,600 tonne Astute class SSN, ASTUTE, before launch. This class will replace the Swiftsure and Trafalgar class SSNs in UK service. They have a top speed of over 30 kts and a weapon load of 38. (BAE)



VIRGINIA CLASS SSN (USA)	AKULA II CLASS SSN (RUSSIA/INDIA)	RUBIS CLASS SSN (FRANCE)	SHANG CLASS SSN (CHINA)
<p>Displacement, tons: 7,800 dived</p> <p>Dimensions, metres: 114.9 × 10.4 × 9.3</p> <p>Propulsion: Nuclear; 1 GE PWR S9G; 2 turbines; 40,000 hp (29.84 MW); 1 shaft; pump jet propulsor; 1 secondary propulsion submerged motor</p> <p>Speed: 34kts dived</p> <p>Complement: 134 (14 officers)</p> <p>Missiles: SLCM: Raytheon Tomahawk Block IV; land attack; to 1,600+ km at 0.7 Mach; warhead 454 kg. 12 VLS tubes. Sub-Harpoon to 130kms.</p> <p>Torpedoes: 4 - 533 mm bow tubes. Raytheon Mk 48 ADCAP Mod 5/6/7; wire-guided; active/passive homing to 50 km (27 n miles)/38 km (21 n miles) at 40/55 kt; warhead 267 kg; depth to 800 m (2,950 ft). Total of 38 including SLCM and torpedoes.</p> <p>Radars: Surface search/navigation/fire control: AN/BPS 16(V)4; I/J-band.</p> <p>Sonars: Lockheed Martin BQQ-10 sonar suite including bow spherical active/passive array; BQG-5A wide aperture flank passive arrays; high-frequency active keel and fin arrays; TB-16 and TB-29(A) towed arrays; WLY-1 acoustic intercept. active/passive array; BQG-5A wide aperture flank passive arrays; high-frequency active keel and fin arrays; TB-16 and TB-29(A) towed arrays; WLY-1 acoustic intercept.</p>	<p>Displacement, tons: 7,500 surfaced; 9,100 dived</p> <p>Dimensions, metres: 103 × 14.0 × 10.4</p> <p>Propulsion: Nuclear; 1 VM-5 PWR; 190 MW; 2 GT3A turbines; 47,600 hp(m) (35 MW); 2 emergency propulsion motors; 750 hp(m) (552 kW); 1 shaft; 2 spinners; 1,006 hp(m) (740 kW)</p> <p>Speed: 28kts dived; 10kts surfaced</p> <p>Complement: 62 (31 officers)</p> <p>Missiles: SLCM/SSM: Novator Alfa Klub SS-N-27 (3m-54E-1 anti-ship); active radar homing to 180 km (97.2 n miles) at 0.7 Mach (cruise) and 2.5 Mach (attack); warhead 450 kg.</p> <p>Torpedoes: 4 - 533 mm and 4-25.6 in (650 mm) tubes.</p> <p>Radars: Surface search: Snoop Pair or Snoop Half with back to back aerials on ESM mast; I-band.</p> <p>Sonars: Shark Gill (Skat MGK 503); hull-mounted; passive/active search and attack; low/medium frequency. Mouse Roar; hull-mounted; active attack; high frequency. Skat 3 towed array; passive; very low frequency.</p>	<p>Displacement, tons: 2,410 surfaced; 2,670 dived</p> <p>Dimensions, metres: 73.6 × 7.6 × 6.4</p> <p>Propulsion: Nuclear; turbo-electric; 1 PWR CAS 48; 48 MW; 2 turbo-alternators; 1 motor; 9,500 hp(m) (7 MW); SEMT-Pielstick/Jeumont Schneider 8 PA4 V 185 SM diesel-electric auxiliary propulsion; 450 kW; 1 emergency motor; 1 pump jet propulsor</p> <p>Speed: 25kts</p> <p>Complement: 68 (8 officers)</p> <p>Missiles: SSM: Aerospatiale SM 39 Exocet; launched from 533 mm torpedo tubes; inertial cruise; active radar homing to 50 km (27 n miles) at 0.9 Mach; warhead 165 kg.</p> <p>Torpedoes: 4 - 533 mm tubes. ECAN F17 Mod 2; wire-guided; active/passive homing to 20 km (10.8 n miles) at 40 kt; warhead 250 kg; depth 600 m (1,970 ft). Total of 14 torpedoes and missiles carried in a mixed load.</p> <p>Radars: Navigation: 1 Thomson-CSF DRUA-33A; I-band; 1 Kelvin Hughes 1007; I-band.</p> <p>Sonars: Thomson Sintra DMUX 20 multifunction; passive search; low frequency. DSUV 62C; towed passive array; very low frequency. DSUV 22 (Saphir); listening suite. DUUG 7A sonar intercept.</p>	<p>Displacement, tons: 6,000 dived</p> <p>Dimensions, metres: 107 × 11 × 7.5</p> <p>Propulsion: Nuclear: 2 PWR; 150 MW; 2 turbines; 1 shaft</p> <p>Speed: 30kts dived</p> <p>Complement: 102</p> <p>Missiles: SSM: YJ-82 (C-801A); radar active homing to 40 km (22 n miles) at 0.9 Mach; warhead 165 kg.</p> <p>Torpedoes: 6 -533 mm bow tubes; combination of Yu-3 (SET-65E); active/passive homing to 15 km (8.1 n miles) at 40 kt; warhead 205 kg and Yu-4; active/passive homing to 15 km (8.1 n miles) at 30 kt; warhead 309 kg. Yu-6 wake-homing torpedo may also be carried.</p> <p>Radars: Surface search.</p> <p>Sonars: Hull mounted passive/active; flank and towed arrays.</p>



MARITIME WILL

By Ludwig von Gress

Ludwig von Gress's third place essay in the 2008 Essay Competition argues for a stronger approach to Australia's defence. Threats can materialise swiftly and a real deterrent posture in both the will to fight and the weapons to back the will need to be acquired.

Already in 1911 Admiral Sir Reginald Henderson said - "being girth by sea and having no inland frontiers to protect, Australia is compelled to regard the sea itself as her first and last line of defence". Even today anybody interested in the defence of Australia ought to look at least at the map, but preferably on the globe with a pair of dividers. Adjusting the same, at the conservative speed of 20 knots per hour. i.e. about 480 nautical miles per day and guessing the original points of departure of our potential enemies, one gets somewhat depressed. It is perhaps unnecessary to remind readers that fleet oilers and other supply ships can be prepositioned without anybody taking much notice. I would not recommend doing the divider exercise for the fighter bombers Sukhoi Su-30 recently acquired by Indonesia, because that is particularly depressing. Not just depressing, but horrifying. Some would call it strategic vulnerability.

ALONE

If we assume that the hitherto successful Australian defence policy "she'll be right, mate" will save us again in a future conflict, there is no need to do anything more than what Australia is doing now. A gaggle of planes, a clutch of tanks and a pod of ships, just enough to send a handful of military personnel here or there as our current allies may from time to time for propaganda purposes ask. An occasional humanitarian mission reminds the media that we have some non civilian structure and we have young people (hopefully not all) joining the Navy believing the greatest danger they would be facing would be delivering cornflakes to flood victims. No worries, America will provide.

She may not. After decades of abuse in our media, Fortress America may prove to be as useful for the defence of Australia as Fortress Singapore of unblest memory. Firstly, US and Australian interests do not coincide. What does Australia have that USA couldn't be without or get somewhere else? Pine Gap? Tindal Air base? Secondly, in the case of larger conflict the United States would have other worries, primarily their own defence, then Middle East oil, then Europe, then ... who knows. Australia might come to be considered in the context of denial of our resources to the enemy, but the time honoured tactic of 'scorched earth' may not be exactly our preferred option. Even this assumes a friendly, long term vision, democracy defending US administration. Should it turn isolationist, appeasnik or otherwise morally bankrupt, we would be truly alone. In that context it could be useful to remember that following an ordinary, democratic election Australia within two weeks of the Whitlam / Barnard duocracy approved annexation of the Baltic republics by the USSR, recognised the murderous regimes of communist China and of aggressive, expansionist North Vietnam.

A self-absorbed, politically correct United States would be obviously bad, but not necessarily the worst scenario, and I would like to



The cover of Adolf Hitler's book *Mein Kampf* (My Struggle). The West dismissed his book in what turned out to be clear blueprint for war.

say emphatically that it is my fervent wish it will remain only hypothetical.

However, with the US out of the equation, its satellites also would be out of the equation. As it is, we rely on the goodwill of America to pass on to us whatever information they may think we could need. We also depend on the good will of China and Russia in not shooting the satellites down. Otherwise, as far as I am aware our reconnaissance assets consist of four forty year old F-111s patrolling either 8,148,250 km² of our Exclusive Economic Zone or, more likely just the Gulf of Carpentaria in order to save fuel for afterburner fly passes on Australia Day. I realise that the RAAF is doing the best it can with the resources available in a situation when no serious

military danger exists at least in a foreseeable year or so.

It may well be that our naval and other intelligence monitors every Junk between Hobart and Vladivostok and nothing flying, submerged or floating can surprise us. Somehow I do not think so, and if there is anything to learn from history, it is that politicians do not wish to believe bad news. Even the best intelligence would be ignored, further reducing our response time.

ENEMY

Enemies? What enemies? Great Southern Quarry Inc, formerly known as Australia would not have any enemies and the brave Australian lamb will lie happily ever after next to the docile Chinese lion. That might be true after the Second coming, but let's look at more realistic scenarios.

Dictatorships can rearm and militarise much faster than democracies. Regimes change, sometimes overnight and can become expansive and aggressive very quickly. Just a few examples – Napoleon's France in 1793, Lenin's Russia in 1920, Hitler's Germany in 1938 and Sukarno's Indonesia in 1963. Friends can become enemies. Japanese sailors were happily protecting our troop ships on the way to the Middle East and Europe during WWI yet a few years later equally happily were sinking them, including those marked with a red cross.

During the Cold War we often heard from appeasementers that the peaceful people of the Soviet Union, who lost so many during WWII, do not wish war. That was not of much help to Hungarians or Afghans. Germany, with its total military WWI casualties (including POW) approaching seven million, ought to have remained peaceful forever. True, in June 1945

hardly any German believed that attacking Poland was such a good idea. Simply, peace loving Indonesians or Chinese would have very little say should their rulers decide that Australia is a feasible target.

Great hypocrite Mao, who murdered 80 million of his brethren, still has his overblown picture reverently hanging at Tiananmen Square and, in the way reminiscent of the democracies dismissing a clear war blueprint in Mein Kampf, unmistakable and openly stated belligerent intentions of the Chinese politburo are ignored. In whichever way left-wing commentators may turn it, China is a potential enemy of Australia. Not the Chinese people, but the faceless, spineless apparatchiks of the current governing clique. Of course, as long as we sell uranium ore, iron ore, bauxite, coal and natural gas at the prices China considers benign and allow Chinese Army geologists to prospect for anything else useful we may have overlooked underground, why would China bother? Well, perhaps for ideological reasons.

Indonesia is, to put it mildly, not very stable politically and is busily rearming and modernising its armed forces. To be fair, an Indonesian watching our foreign politicking could be forgiven for not trusting us. There does not necessarily need to be a great divergence in ideology or religion, though the fact that Indonesia is a very large Muslim state and Australia not yet lingers in the mind.

The future Soviet Re-Union will be busily expanding its "near and not so near abroad" for some time yet. Still, the opportunity to pre-empt Chinese expansion into an America-less vacuum may prove to her too tempting to dismiss her as a potential enemy.

SOLUTION

I do not believe that a proper reaction to the forthcoming unpleasant geopolitical situation is to learn Mandarin and sew (sorry, buy Chinese made) white flags. I believe that Australia, even with its faults, is worth preserving and thus fighting for.

Australia's hitherto successful "she'll be right" defence policy just will not do. At the present time, Australia has neither an option of the Swiss defence policy – "leave us alone or you will never see your money again", nor of Israel defence policy – "leave us alone or you will never see anything ever again". Australia has no banks of consequence and no nuclear weapons.

Credible defence obviously requires close integration and cooperation of all three parts of well equipped and trained armed forces. The army ought to be capable of a rapid and decisive response, i.e. be able to get to any part of Australia before the enemy does and in numbers likely to make a difference, for whatever our enemies might lack, it is unlikely they would lack manpower. The Royal Australian Air Force ought to have dispersed and defensible airbases, enough pilots and planes outclassing those of the enemy and the Royal Australian Navy ought to... Let's stop dreaming. For various and complex reasons, mostly relating to the size and mentality of our population, Australia's ability to create and maintain a serious defence capability is limited.

I believe a new approach is needed. That a fight on somebody else's territory is much preferable is known at least from the Carthaginian Wars and at least from that time it is known how essential sea power is. Napoleon, Hitler and the USSR never learned. Even better is not to have

The Ohio class SSBN USS MARYLAND. The USN has recently converted four SSBNs to fire 154 cruise missiles instead of ballistic missiles and to accommodate large Special Forces contingents. The author believes that nuclear power submarines armed with many cruise missiles (including nuclear armed) may be a better deterrent to potential aggressors to Australia. (USN)



to fight at all. That state of affairs is achieved not by weakness, but by strength, sufficient to make the opponent think thrice. Wars start when one side is convinced it would win. Optimism, feelings of invulnerability, of assured victory, not the arms race, leads to aggression.

We can not compete militarily with China, and not even with Indonesia. Australia has to acquire a credible deterrent force, such as is represented by nothing else but nuclear powered and nuclear armed submarines. There is no need for ballistic missiles, cruise missiles such as Tomahawk Block IV would do (since this essay was submitted the new Defence White Paper has conventional cruise missiles as a capability requirement). I believe it is unnecessary to discuss the disadvantages of land based or aircraft carried nuclear weapons, the superiority of submarines in that regard is obvious. Admittedly, the lease of two or three second hand nuclear submarines by the USA to us would be a rather tough test of the friendship and stretching of the trust somewhat, but the United Kingdom, as far as I am aware, has none to spare. After all, if the United States could be assured they would not be used against them and that the blueprints would not be sold to our main trading partner, it would be to their benefit.

For some people anything nuclear, or for that matter anything above 4th grade science, is frightening. They would not allow H₂O pass their lips, they trust only organic, free range water. However, even ex-PM Keating, never noted for any sensible thinking, said in his brighter moment recently (24.08.08) that there is no reason for non-nuclear states not to acquire nuclear capability, as long as those already possessing it show no inclination to disarm themselves.

If the biggest bullies on the block, armed to the teeth, were to get together and say nobody else ought to have means of self-defence, because it could be dangerous, any sensible person would laugh. Yet when such a pact is called The Treaty on the Non-proliferation of Nuclear Weapons, some believe it has got something to do with peace. China, with 1,330,044,605 people (last year), multi million man standing army, lifestyle only a Bangladeshi would envy and, at least according to their propaganda, with an overabundant supply of everything under the sun, is so scared of attack it builds atomic weapons at an unprecedented rate. Yet Australia is expected to cross its fingers.

I realise that submarines require high technology communications, which Australia is unlikely to possess and in the "alone" scenario, unlikely to have access to. Nevertheless, the lack of proper communication might make our nuclear response more unpredictable, thus greater deterrent. A little bit of irrationality works wonders with bullies.

Annoying a nuclear tipped echidna would not be worth the hassle.

PEOPLE

If the news that some of our six conventional Collins class submarines, needing about 40 submariners each, have to be partially manned by US Navy personnel are true, then there is something seriously and drastically wrong with our approach to defence. (A nuclear submarine would need approximately triple that number.) The defence of Australia is too important to leave to the experts and politicians who believe the greatest danger to Australia would be their non-election.

RAN seems to suffer the most. Though the TV series Patrol Boat certainly helped and the occasional media excitement as e.g. when HMAS SYDNEY (II) was found, does no harm, the public generally is hardly aware of the Navy's existence and an average young man can't see beyond the tip of his surfboard. In order to create an Australian maritime mentality it would help if the Government stopped treating sailing and boating generally as a luxurious pastime to be taxed. It would help, if the government actively and generously supported Navy cadets. It would help, if the government actively and generously supported an Australian merchant navy, now practically nonexistent, by, for example, tax relief for Australian companies owning Australian manned commercial ships. It ought to ignore the so

"Annoying a nuclear tipped echidna would not be worth the hassle". Nuclear weapons are the ultimate deterrence as Australia has no international banks of consequence which could threaten an aggressor's funds.



The foreign owned oil tanker *DIAMOND QUEEN* entering Sydney Harbour. Almost 100% of our exports (by volume) goes by sea and only a minuscule proportion of that under the Australian flag. (John Mortimer)



called level playing field myth, to which everybody but Australia pays just a lip service. After all, I think it had been proven quite conclusively some time ago that the earth is not level, but round.

Of course, it would also help if the government diametrically changed its treatment of veterans. The current practice simply is to wait until all but a handful die and the survivors then provide photo opportunities for politicians on Anzac Day. However, in the meantime the might of the Defence Department is employed to drag the veterans through every conceivable administrative obstacle, perhaps in order to save money for feel good recruiting advertisements. In fact, I would be surprised if anybody would want to join the Navy after reading of the Veterans' Struggle for Recognition in chapter 7 of Mr. Pfennigwerth's book. Our treatment of defence personnel is shameful.

The only alternative to the manpower scarcity is obviously conscription. It is difficult to comprehend why anybody, enjoying the undoubted benefits of living in Australia, could object to young men and women devoting one year of their lives (slightly over 1%) to preparation of the defence of the lifestyle, so far secured for them by their fathers and grandfathers. Naturally, those who would like to improve our lifestyle to reach the level of communist China or democratic Zimbabwe, would object. The Defence department bureaucrats may be frightened of additional work and so may a few defence forces officers, who definitely would have to work harder. Media would be against, unless convinced that this is in order to defend ourselves against USA. But the Australian people would be in favour.

COST

Would China finance Australia's rearmament? Hardly. We would have to pay ourselves. The costs would be painful, but the costs of fighting the chimera of global warming would be far greater, not to mention that it would enfeeble Australia, perhaps irretrievably.

Despite the annual "no foreseeable danger" defence budget dance, when it, i.e. that not foreseen danger hits the fan, money are either found or

printed. In the past, Australians were dying for lack of training and proper equipment and I am afraid it would be the same today.

In the very short term sea transport would not be absolutely essential (we could tighten our belts for a few months) but whilst we could import i-pods and similar necessities by air, we could hardly continue exporting our iron ore, wheat or coal. Almost 100% of our exports (by volume) goes by sea and only a minuscule proportion of that under the Australian flag. A shameful situation indeed, of which our various Transport Ministers seem to be totally oblivious. The length of any conflict is always a great unknown, but they usually last much longer than anticipated. The Royal Australian Navy, even if it were to get all the promised surface vessels on schedule, would not be able to protect our sea lanes without being backed by an underwater threat of disproportionate retaliation. The costs of leasing, manning and maintaining a nuclear deterrent would represent a fraction of lost trade.

XXI century Australia, with its vast mineral resources, seems to be emulating XVII century Spain with its South American gold – wealth in, wealth out, not much to show for it. For the opposite, positive example we can look at Singapore. India, with US\$2,700 Gross Domestic Product per capita is currently building its own nuclear submarine. Our GDP per capita is US\$36,300 (2007 CIA estimates). India's GDP of course dwarfs ours, \$2,989 trillion opposed to \$761 billion, but still – we would not need other defence equipment in such large quantities. We have much to lose.

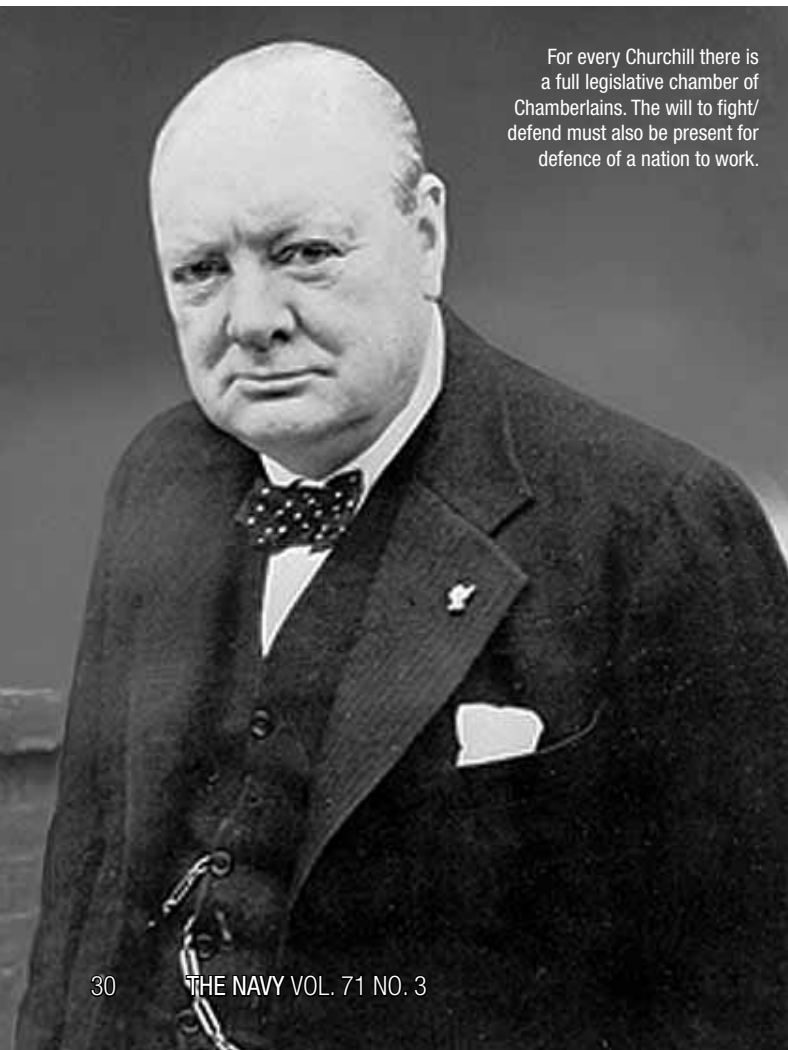
WILL

USN Rear Admiral J.C. Wyllie once said, "the ultimate objective of all military operations is the destruction of the enemy's armed forces and his will to fight". Cynics could say that our politicians are doing the first and our media the second.

Long term considerations, such as the strategy of our defence undoubtedly is, are mostly beyond the attention span of our elected representatives. Pleasing the media and pleasing, or at least bamboozling, the electorate is of paramount importance. Allocating money for defence produces few votes. Even those with an interest in defence matters realise that the election probably will come before any military conflict and their self interest takes precedence. For every Churchill there is a full legislative chamber of Chamberlains.

With the exception of our sporting achievements, our media take malicious delight in denigrating anything they don't understand. With a few honourable exceptions, our journalists, whose IQ is insufficient to comprehend the difference between carbon and carbon dioxide, can't be expected to know the difference between a submarine and a submachine gun. Unfortunately, there is tremendous gap between the will of the people and the wishful thinking of elites or rather a group of semi educated simpletons, calling themselves elites, simply because they are able to manipulate the media. Nevertheless, I believe that in a democratic society sooner or later the will of the people will prevail. It would need significant effort on the part of all, who remember history and are able to see consequences of the current sorry state of the Australian Defence Forces. I do not think there is much time left.

I am painfully aware that in stating the sequence: no will - no maritime defence - no defence – no survival, I am saying nothing new. All that had been said and written before. It is obvious to all from pram tacticians (even a baby knows that loud scream produces milk) to wheelchair strategists, including, I venture to say, even to the defence bureaucrats in front of their computers. If only it was obvious to our politicians.



For every Churchill there is a full legislative chamber of Chamberlains. The will to fight/defend must also be present for defence of a nation to work.

DIE CAST MODELS



F6F-5 Hellcat. Blue Angel 1 – 1946 A-4F Skyhawk. Blue Angel 1 – 1986

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Cost. \$55.00 each + Postage & Handling.

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Reviewed by Ian Johnson

These limited edition Hobbymaster Die Cast Models are of aircraft from the famous U.S. Navy Flight Demonstration Squadron, the 'Blue Angels', based out of N.A.S. Pensacola in Florida.

The two aircraft, the F6F-5 Hellcat and A-4F Skyhawk are painted in the colour scheme of Blue Angel 1, the Squadron Commander's Aircraft.

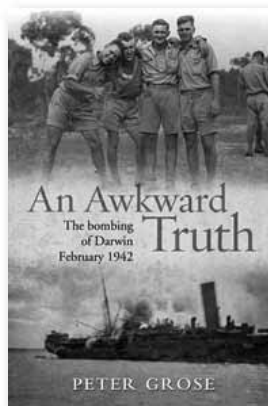
The F6F-5 Hellcat is from the first Blue Angels team formed in 1946, and was commanded by Lieutenant Commander Roy Voris. The detail on the model is good, and the paint job of 1946 faithfully recreated, with the bland dark blue of the time with simple yellow letters reading US NAVY on the wings, number 1 on the tail, and LCDR Voris name next to the cockpit. The model is easy to assemble, with optional open canopy and pilot (presumably of LCDR Voris), and the stand provided can allow the undercarriage to be displayed up or down.

The A-4F Skyhawk is of Blue Angel 1 for the last year the Skyhawk was used as part of the U.S. Navy Flight Demonstration Squadron in 1986 and was commanded by Commander Gil Rud.

This Skyhawk was made famous in the music video of 'Dreams' by Van Halen, and the attention to detail is as good as it gets. The colour scheme is spot on, even with the silver leading edges and the white landing gear. You can just make out the CDR Rud name on the cockpit rail and the logo of McDonnell Douglas on the tail. With a pilot to put in the cockpit (again, presumably CDR Rud), you can have an open or closed canopy. The features of the undercarriage are the same as the Hellcat.

Both kits are great and in the case of the Hellcat the rarity is of a non combat paint job for such a distinguished war veteran. Although Corgi brought out a Blue Angels Skyhawk in the same scale, the Hobbymaster version is better and finely detailed. If you are going to get either or both of these models, do it fast! They will sell quickly at these prices. (Oh, and the Blue Angel 1973 F-4 Phantom II will be released by Hobbymaster later in the year.)

BOOK



An Awkward Truth The Bombing of Darwin February 1942

By Peter Grose

Published by Allen & Unwin Aust

Rec Retail: \$32.95

Paperback Book

272 pages

16 B&W photos

The compelling and very human story of the first foreign assault on Australian soil since settlement - the attack on Darwin by the Japanese in February, 1942.

Darwin was a battle Australia would rather forget. Yet the Japanese attack on 19 February 1942 was the first wartime assault on Australian soil. The Japanese struck with the same carrier-borne force that devastated Pearl Harbor only ten weeks earlier. There was a difference. More bombs fell on Darwin, more civilians were killed, and more ships were sunk.

The raid led to the worst death toll from any event in Australia. The attackers bombed and strafed three hospitals, flattened shops, offices and the police barracks, shattered the Post Office and communications centre, wrecked Government House, and left the harbour and airfields burning and ruined. The people of Darwin abandoned their town, leaving it to looters, a few anti-aircraft batteries and a handful of dogged defenders with single-shot .303 rifles.

Yet the story has remained in the shadows. Drawing on long-hidden documents and first-person accounts, author Peter Grose tells what really happened and takes us into the lives of the people who were there. There was much to be proud of in Darwin that day: courage, mateship, determination and improvisation. But the dark side of the story involves looting, desertion and a calamitous failure of leadership. Australians ran away because they did not know what else to do.

Absorbing, spirited and fast-paced, An Awkward Truth is a compelling and revealing story of the day war really came to Australia, and the motley bunch of soldiers and civilians who were left to defend the nation.

Author Peter Grose is a former publisher at Secker & Warburg, founder of Curtis Brown Australia, and was until recently the chairman of ACP (UK). He is the author of A Very Rude Awakening published by Allen & Unwin in 2007.

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 the future reintegration of New Zealand as a full partner.
- Urges close relationships 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.
- Believes there must be a significant deterrent element in the ADF capable of powerful retaliation at considerable distances from Australia.
- Believes the ADF must have the capability to protect essential shipping at considerable distances from Australia, as well as in coastal waters.
- Supports the concept of a strong modern Air Force and a highly mobile well-equipped Army, capable of island and jungle warfare as well as the defence of Northern Australia and its role in combatting terrorism.
- Advocates that a proportion of the projected new fighters for the ADF be of the Short Take Off and Vertical Landing (STOVL) version to enable operation from suitable ships and minor airfields to support overseas deployments.
- Endorses the control of Coastal Surveillance by the defence force and the development of the capability for patrol and surveillance in severe sea states of the ocean areas all around the Australian coast and island territories, including the Southern Ocean.
- Advocates measures to foster a build-up of Australian-owned shipping to support the ADF and to ensure the carriage of essential cargoes in war.

As to the RAN, the League:

- Supports the concept of a Navy capable of effective action off both East and West coasts 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 decision to build at least 3 Air Warfare Destroyers (AWDs).
- Noting the increase in maritime power now taking place in our general area, advocates increasing the order for AWDs to at least 4 vessels.
- Advocates the acquisition of long-range precision missiles and long-range precision gunfire to increase the RAN's present limited power projection, support and deterrent capabilities.
- Welcomes the building of two large landing ships (LHDs) and supports the development of amphibious forces to enable assistance to be provided by sea as well as by air to island states in our area, to allies, and to our offshore territories.
- Advocates the early acquisition of integrated air power in the fleet to ensure that ADF deployments can be fully defended and supported by sea.
- Supports the acquisition of unmanned surface and sub-surface vessels and aircraft.
- Advocates that all warships be equipped with some form of defence against missiles.
- Advocates the future build-up of submarine strength to at least 8 vessels.
- Advocates a timely submarine replacement programme and that all forms of propulsion be examined with a view to selecting the most advantageous operationally.
- Supports continuing development of a balanced fleet including a mine-countermeasures force, a hydrographic/oceanographic element, a patrol boat force capable of operating in severe sea states, and adequate afloat support vessels.
- 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.
- Advocates the retention in a Reserve Fleet of Naval vessels of potential value in defence emergency.
- Supports the maintenance of a strong Naval Reserve to help crew vessels and aircraft and for specialised tasks in time of defence emergency.
- Supports the maintenance of a strong Australian Navy Cadets organisation.

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.

A Marine Machinery Mechanic sprays water onto a fin stabilizer of the FFG-07 class frigate USS CROMMELIN (FFG-37) as the Ticonderoga class cruiser USS PORT ROYAL (CG-73), left, and CROMMELIN rest on blocks in Dry Dock 4 at Pearl Harbor Naval Shipyard. (USN)



A Mexican Navy BO-105 helicopter fires 2.75 inch high-explosive rockets at the decommissioned Spruance class destroyer ex-USS CONNOLLY during the SINKEX phase of the annual US-led exercise UNITAS Gold. Participating ships and aircraft from Canada, Chile, Colombia, Germany, Mexico and the United States fired a variety of weapons at CONOLLY during the exercise. The exercise took place off the coast of Florida last April. (USN)



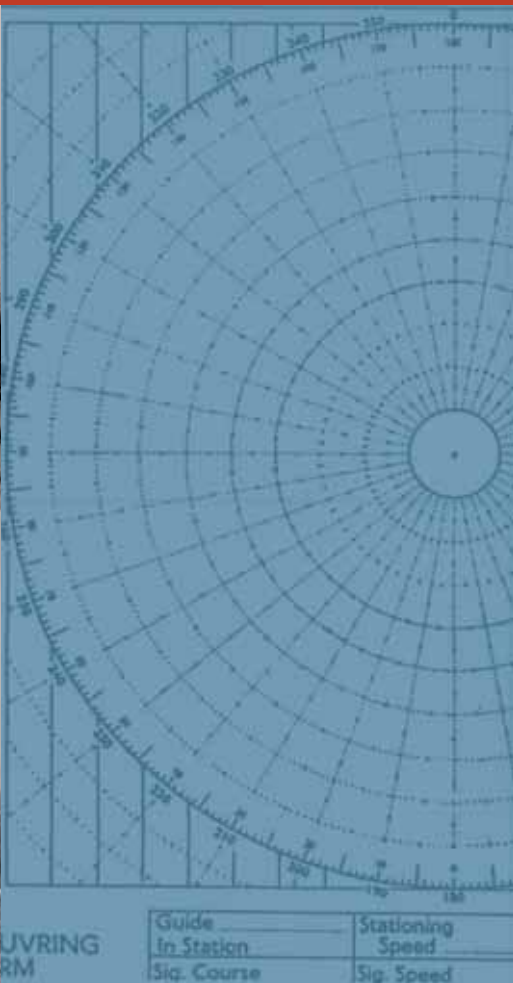
THE COMMONWEALTH NAVIES: 100 YEARS OF COOPERATION

The sixth biennial King-Hall Conference will be held in Canberra on 30-31 July 2009. The conference will be organised by the Sea Power Centre - Australia with assistance from the School of Humanities and Social Sciences, University of New South Wales at the Australian Defence Force Academy. The King-Hall Conference has become a significant event in the national and international sea power communities for its wide-ranging discussion of topical naval historical and maritime strategic issues. The conference is open to the public, and previous events have attracted a wide range of naval historians, academics and retired and serving military personnel, as well as interested lay people from Australia and overseas.

The theme of the 2009 conference is 'Commonwealth Navies: 100 Years of Cooperation'. In 1909, Australia, with the encouragement of the British Admiralty, decided to acquire a modern ocean-going fleet; one which would not only protect local ports and shipping from enemy incursions but also support the Royal Navy in its determination to retain command of the sea. Other members of the Empire followed, and over the next 100 years the various Commonwealth navies have routinely sailed together in both peace and war and with a remarkable degree of interoperability. Arguably the most successful international grouping of its type, Commonwealth naval cooperation can also be seen as the precursor to more recent initiatives such as the US Navy's Maritime Partnership.

The Commonwealth Navies: 100 Years of Cooperation

2009 King-Hall Naval History Conference 30-31 July 2009



GENERAL INFORMATION

Venue:

Adams Hall, Australian Defence Force Academy, Canberra ACT.

Registration:

Registration will be at no cost, however, the number of delegates will be limited by the size of the venue. Early contact with the Sea Power Centre - Australia is recommended.

(Registration includes lunch and light morning tea)

FURTHER INFORMATION

Sea Power Centre-Australia
Conference Co-ordination Cell
Department of Defence
CANBERRA ACT 2600

Tel: (02) 61276514

Fax: (02) 61276521

Email: Seapower.conferences@defence.gov.au



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