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VOL 76 No1

THE NAVY

THE MAGAZINE OF THE NAVY LEAGUE OF AUSTRALIA

SEAPOWER 2013

AUSTRALIA'S FIRST SUBMARINES

AEGIS BASELINE 9 AND BEYOND

APPLICATIONS OF DOCTRINE: THE RAN IN 1914

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HMA Ships SYDNEY, DARWIN, PERTH & PARRAMATTA re-enacting the first RAN Fleet Unit entry into Sydney Harbour 100 years ago under a White Ensign from a Navy Seahawk helicopter. (RAN)

The Indonesian Navy Sigma class corvette KRI SULTAN ISKANDAR MUDA in formation with (L-R) the Japanese Takinami class destroyer JDS MAKINAMI, the Chinese Luhu class destroyer ROCS QINGDAO and Indian Navy P-17A class frigate INS SAHYADRI at sea participating in exercises prior to the RAN's IFR 2013. (RAN)

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Front cover: The French patrol frigate FNS VENDÉMIAIRE in Jervis Bay, NSW, prior to exercises off the NSW coast leading up to the RAN's IFR 2013 in Sydney Harbour. (RAN)

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VPN SIGHTED

If previous Defence White Papers are anything to go by then regional countries with developing military capabilities are often cited as areas of strategic concern warranting attention. That being the case then Vietnam should rate more than a mention in the next Defence White Paper, now less than 18 months away.

In 1988 the Vietnam People's Navy (VPN) fought a battle against the Chinese Navy at Johnson Reef over sovereignty of the Spratly Islands in the South China Sea. The battle was won by the Chinese Navy, who had fewer ships and sailors but more advanced weaponry. The VPN lost approximately 80 men and two naval craft, which brought into sharp focus the importance of a world class navy to the Vietnamese Government.

This importance however, has only recently taken form with renewed Defence policies that place the Navy as the priority for modernisation and expansion. As stated on August 5, 2011 by its Minister of Defence, Phung Quang Thanh, "The direction of building up the armed forces is one to follow the revolutionary spirit, regularisation and effectiveness and gradual modernisation. Within this context, the Navy…will proceed directly into modernisation to protect the country".

Vietnam has witnessed many Asian neighbours building and developing their naval forces, given the expectation that future regional conflicts will be maritime in nature. It, like many, have also realised that safe passage of goods at sea is vital to national security and prosperity – Vietnam is now very reliant on sea borne imports and exports.

Vietnam's response to its 1988 loss and subsequent developments in the South China Sea has been impressive, and largely unnoticed by Australia's armchair strategic academics. Recent acquisitions and announcements for new submarines, ships and advanced supersonic and subsonic Anti-Ship Cruise Missiles (ASCMs) should have China-centric Canberra worried and refixing its gaze.

Vietnam's first Modified Gepard class frigate DINH TIEN HOANG. The VPN will be acquiring four of these advanced and well armed frigates from Russia over the next four years.

While it had a small submarine arm on which to build - two North Korean Sang-O class midget subs with Soviet advisers - the acquisition of six new Russian built Type 636 Improved Kilo-class submarines represents a significant increase in capability. In fact, with new heavyweight Anti-Submarine Warfare torpedoes and SS-N-27 supersonic ASCMs, it will be the largest and most potent underwater force in South East Asia and, geographically, the closest threat to Australia's underwater dominance.

Construction of the Improved Kilo class submarines is proceeding rapidly. The first two, launched in 2012, were commissioned in 2013, with the remaining boats all due in service by 2016.

The Improved Kilo class submarine
HA NOI of the Vietnamese People's Navy in Russia after her sea trials.
Six of these new submarines will be delivered to Vietnam over the next three years.

The Type 636 Improved Kilo class has many advances on their Russian forebears. The class are slightly longer to accommodate raft mounting of their electric propulsion motor for enhanced quietness. Auxiliary machinery has been moved aft to reduce interference with their passive sonar equipment. They have redesigned bows to reduce flow noise over the hull which is also coated in rubber anechoic tiles to reduce noise and absorb active sonar transmissions.

The VPN's surface fleet is also growing in size and technical ability. Two new Russian modified Gepard-class stealth frigates, built at Zelenodolsk, were commissioned in 2011. A further two are expected shortly. The class is armed with eight long range SS-N-25 'Switchblade' ASCMs and short range anti-aircraft/missile systems. Their ASW capability is also quite impressive.

The Navy also recently signed a contract with Schelde Naval Shipbuilding-Netherlands to build four Sigma class corvettes. The Sigmas are becoming quite a popular class of advanced corvette with Indonesia acquiring four (with two more on order) and the Royal Moroccan Navy having three with more to follow. Vietnam's Sigmas will be armed with advanced European weapons and sensors such as MM-40 Block 3 Exocet and Mica IR anti-aircraft missiles.

These recent acquisitions build on the existing force of five Petya frigates, corvettes and potent missile armed patrol craft whose mission in the past has been confined to brown water defence. The new acquisitions reach out into the green water space and can potentially reach much further for short periods.

The expansion of Vietnamese maritime forces also raises the intriguing possibility that the deep-water port of Cam Ranh Bay may again be made available for use by foreign warships through mutual defence treaties etc. The port was developed into a major base by the US in the 1960s but was captured by North Vietnamese forces in 1975. Thereafter it was used by the Soviet Navy and subsequently as a Russian listening station until 2002. Speculation has been heightened by recent reports of renewed Russian interest. A significant Russian presence and influence on the region would complicate Australia's future strategic planning and reinforce the idea that Vietnam is potentially more of a strategic concern to Australia than previously thought.

USN POWERING ON

Despite the US sequestration bill cutting defence spending, the USN still appears to be powering on into the future.

As reported in this column in the Jul-Sept 13 issue, the USN's preparation for the future of war at sea through advances in laser weapons, autonomous Unmanned Combat Aerial Vehicles (UCAVS) and high altitude long endurance Triton maritime reconnaissance drones is potentially encouraging for medium power navies like the RAN.

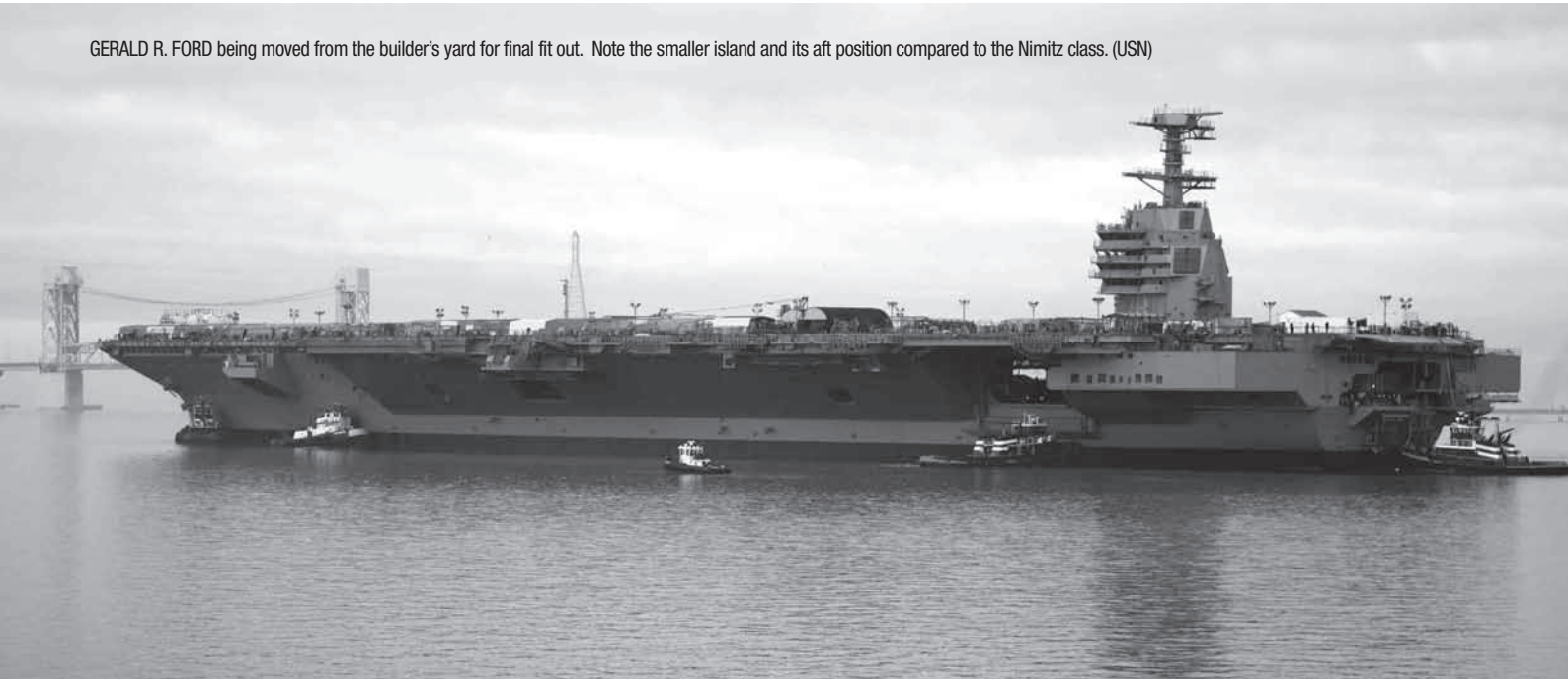
However, the two most recent and subsequent naval events in the US will have little impact on the nature of medium sized navies, but instead support the USN's hegemony of the seas for decades to come. These events involved the launching of the world's most advanced aircraft carrier and new surface combatant.

GERALD R. FORD

In November last year the USN launched its newest and most technically advanced super aircraft carrier ever, the GERALD R. FORD. Due to commission in 2016 she has a similar hull to the previous Nimitz class but virtually not much else in common from there on.

The CVN-78, or Ford class, flight deck and below deck areas have been optimised to increase sortie rates and improve weapons movement.

GERALD R. FORD being moved from the builder's yard for final fit out. Note the smaller island and its aft position compared to the Nimitz class. (USN)



The new island houses a Dual Band Radar (DBR) system to replace 10 other individual radars. The DBR consists of an X-band SPY-3 Active Electronically Scanned Array radar and a S-band volume search long range radar. Other features include four new Electromagnetic Aircraft Launching Systems (EMALS) to replace the old steam driven catapults, a new Advanced Arresting Gear (AAG) system, new anti-aircraft/missile open architecture combat system and a fully integrated warfare system.

The new A1B nuclear reactor plant is a smaller, more efficient design that provides approximately three times the electrical power of the Nimitz-class A4W reactor plant. The modernisation of the plant led to a higher-core energy density, lower demands for pumping power and a simpler construction which uses modern electronic controls and displays for added safety and performance. These changes have also resulted in a two-thirds reduction of crew watch standing requirements and a significant decrease in maintenance requirements.

CVN-78 class ships will have 1,300 fewer personnel than the Nimitz class. Increased sortie generation rates (by 25%) and reduced depot maintenance requirements will increase the fleets' operational availability. A new command centre combines force networking with flexible open system architecture to support simultaneous multiple missions such as integrated strike planning, joint/coalition operations and special warfare missions.

Each ship has a planned service life of 50 years with only one mid-life refuelling. The next to be laid down will be JOHN F. KENNEDY followed by ENTERPRISE with another seven to follow.

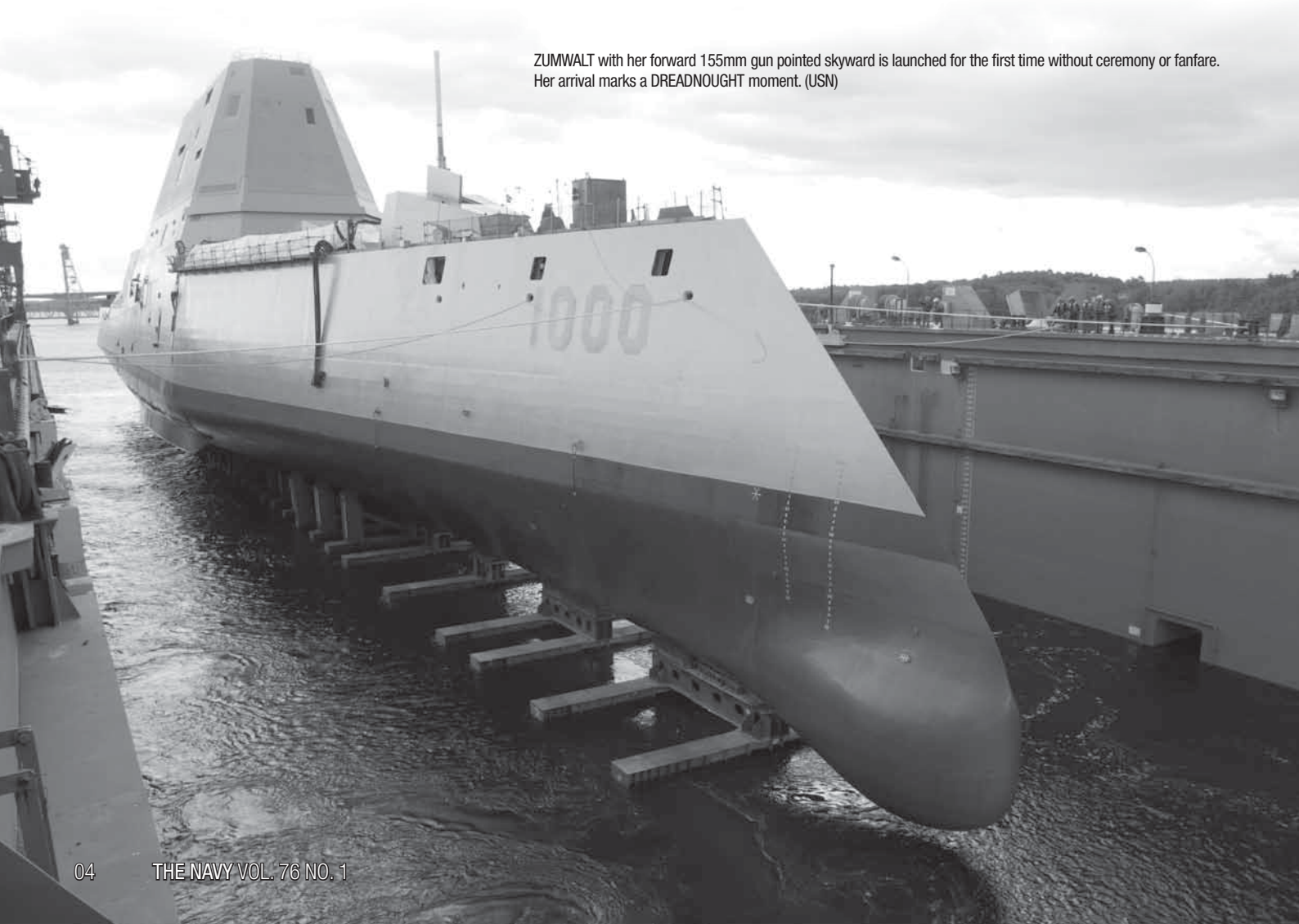
A DREADNOUGHT MOMENT

Due to the US fiscal position the launch of the USN's newest surface combatant went unnoticed and with no fanfare whatsoever. This was rather disappointing as ZUMWALT's launch signifies a DREADNOUGHT moment given the similarities with history.

Consider this, when HMS DREADNOUGHT was launched in February 1906 she revolutionised surface combatants with a number of technical and conceptual advances, such as an all-big-gun armament scheme, steam turbine propulsion for high speed, advances in gunnery fire control and armour to sustain damage.

ZUMWALT also represents a number of similar revolutionary changes. The big gun is back in the form of two automatic 155mm (6.1-inch) guns (compared to the standard 127mm/5-inch gun used in most navies). She has a wave-piercing 'tumblehome' hull and bow, optimised for speed and stealth. The hull structure and missile cells are designed to spread impacts outward to increase survivability and reduce the risk of a single-hit ship loss situation. An integrated deckhouse and composite superstructure encapsulates the ships masts, sensors and antennas, as well as the bridge and exhaust trunking to increase stealth. There is an 80-cell peripheral (port and starboard) new Mk-57 Vertical Launch System for both land attack and air defence missiles. ZUMWALT is powered by two Rolls Royce MT-30 gas turbine generators feeding into a new Integrated Power System (IPS), enabling electrical power to be distributed to any system on the ship as the tactical situation demands. The IPS is also designed to create sufficient reserves of energy to power future energy hungry weapons, such as the close-in laser system. Her new dual band radar also enhances her ability to detect and accurately engage targets like never before.

ZUMWALT's presence in a theatre will be as influential as DREADNOUGHT was in her day, or, like more recently, the USN's Iowa class battleships. Such is the capability and technology she represents. ■



ZUMWALT with her forward 155mm gun pointed skyward is launched for the first time without ceremony or fanfare. Her arrival marks a DREADNOUGHT moment. (USN)

FEDERAL COUNCIL AND THE AGM

The 2013 Annual Meeting of the League and a meeting of our Federal Council took place in Sydney in the midst of the celebrations commemorating the arrival of the First Royal Australian Navy Ships into Sydney Harbour, one hundred years before.

The League Annual Meeting is normally held in Canberra at the end of October. This year we changed the time and place of the meeting so as to be in Sydney at the time of the International Fleet Review and various associated events.

Necessarily there were a few changes to our usual programme. When in Canberra our meeting is over two days. On this occasion we got our meeting done in an afternoon and evening, so that no one missed any of the events going on around us.

We managed to conduct all the essential business of an annual meeting. The reports from our State Divisions showed that the League is over all in good shape. We also received a report on New Zealand League activities. Despite limitations of time we fitted in discussion on a number of topics, including the League`s Policy Statement, our history project and our website.

Our election of office bearers brought some changes. In place of the late RADM Holthouse Mr John Jeremy was elected the new Federal Vice President. The other two Vice Presidents are now Mr Roger Blythman and Mr Mark Schweikert. Among other virtues these three represent a significant reduction in the average age of our executive!!

The winners of the Navy League Maritime Essay Competition were announced at our Federal Council meeting. This year there was a very strong field of entrants. The judges considered that the essays submitted were the best yet received

The winner of First Prize in the Professional Category was PO Pete Cannon for his essay "Application of Maritime Doctrine (the RAN in 1914) PO Cannon has won first prize previously. He will receive his $1000 for another excellent work.

Second Prize was awarded to CAPT George Galdorisi USN Rtd for "The US pivot to the Pacific Real or Memorex?"

Third prize in the professional category was won by Greg Swinden for his essay "Rising Sun – White Ensign (Aust/Japanese Relations before 1941)"

It is usual only to award three prizes in each of the professional and the non-professional categories. The judges were however sufficiently impressed with the quality of the finalists that, uniquely, they determined to award a fourth prize in the professional category. That prize went to CPO Jamie McIntyre for "Flower Class Corvettes (the little ships that could)"

In the Non-Professional Category the winner of First prize was Brendan Alderman for "The first Submarine Service of the RAN"

Second prize went to Kelvin Curnow for "The Queen Elizabeth Class CVF (An excellent design poorly executed)"

Third prize was awarded to David Rees for "The remarkable exploits of the U9"

THE FLEET REVIEW – A WEEK OF ACTIVITIES

A lot was happening in Sydney and the League was there to be part of it. On the morning of Friday 4th October League members took up positions around the harbour to witness the re-enactment of the entry of the RAN fleet. The weather was kind. It was a beautiful morning. I was fortunate enough to be invited to Bradley`s Head where the Governor General and the Chief of Navy welcomed the RAN ships. After the ships had passed Chief of Navy spoke of the importance of the event and the day, Navy Day as he called it.

The Ceremonial Fleet Review was held on Saturday the 5th. The day was perfect. The ships of the Royal Australian Navy and of the many visiting navies were looking their best. The Governor General, accompanied by Prince Harry, embarked in HMAS LEEUWIN to review the assembled ships. League members were at vantage points around the harbour. Some of our members were out on the water, including a number in the sailing ship *James Craig*.

The day concluded with an evening Pyrotechnics and Lightshow Spectacular.

On Sunday the 6th members of Federal Council, other League members, friends and supporters of the League spent an enjoyable three hours cruising about Sydney Harbour. It was a good way to see the warships. It was also a good opportunity to see some of the historic places around the harbour. Our cruise was greatly enhanced by the commentary provided by our new Federal Vice President.

The 2013 Navy League of Australia AGM members. (back row, L to R); Mr John Bird; Mr Harvey Greenfield; Mr Neil Baird; Mr Bill Dobie (NZ NL); Mr Trevor Vincent; Mr Bill Gale; Mr Mason Hayman; Mr David Rattay; Mrs Dianna Hill; Mr Robert Albert; RADM Andrew Robertson. (seated L to R) Roger Blythman (Federal Vice President); Mr Graham Harris (Federal President); and Mr John Jeremy (Senior Vice President). Not pictured, Mr Mark Schweikert, Federal Vice President & photographer).

The Sea Power Conference began on Monday 7th. A report on the Conference by RADM Robertson appears elsewhere in this edition.

Alongside the Sea Power conference at Darling Harbour was the Maritime Trade Show. Members of Federal Council were able to attend the Conference and visit the Trade Show.

On Wednesday 9th thousands of sailors from the ships of all participants marched up George Street to Sydney Town Hall. The ships departed Sydney for Exercise Triton Centenary 13 on Friday 11th.

It was a great week of celebration and the League was very glad to be part of it.

NAVY LEAGUE OF AUSTRALIA TROPHY

The Navy League Trophy is each year awarded to the Most Efficient Training Ship in Australia. This year the winner of the Trophy is *TS Sydney*. *TS Sydney* is located on Spectacle Island in Sydney Harbour.

TS Sydney was formed in 1921 as the Drummoyne Unit, one of only three Navy League Cadet Units in Sydney. It became known as *TS Sydney* in 1954. The Unit currently parades four staff and 42 cadets. The League congratulates Lieutenant Robert McClay ANC, his staff, the Cadets and all associated with *TS Sydney* on winning the Navy League Trophy.

KEEPING WATCH

The Chief of Navy has recently launched a new Navy charity called Keeping Watch. It is CN`s hope that this benevolent fund will become a charity of choice for the entire Navy community.

Keeping Watch`s mandate is strongly aligned with and builds upon the long held role of the RAN Relief Trust Fund. While there are numerous sources of support for naval families in financial need, there are times when short term urgent assistance is required to fill the gaps in established systems caused by the unique nature of naval service.

Donations will be tax deductible. Funds donated will be managed by the Board of the RAN Relief Trust Fund.

I commend this charity to all. I invite readers of *THE NAVY* to visit the Keeping Watch website: http://www.keepingwatch.org.au. ■

HMAS SYDNEY leads HMA Ships DARWIN, PERTH and PARRAMATTA for the re-enactment of the first RAN Fleet Unit entry into Sydney Harbour 100 years ago. (RAN)

RAN SEAPOWER 2013 CONFERENCE

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

The RAN's international Seapower conference and maritime exhibition was brought forward to October last year to coincide with the 2013 International Fleet Review. This meant that for one week in 2013 Sydney was the maritime activity and affairs think tank capital of the world. Former Federal Vice President of the Navy League of Australia, RADM Andrew Robertson, filed this report on the conference proceedings.

As part of the many naval activities associated with the International Fleet Review, the RAN Seapower Conference took place at the Convention Centre at Darling Harbour, in conjunction with an International Maritime Conference. The latter was organised by the Royal Institution of Naval Architects; the Institute of Marine Engineering, Science & Technology; and Engineers Australia. At the same time the Pacific 2013 International Maritime Exposition, organised by Maritime Australia Ltd, took place in the adjoining Exhibition Centre where some 400 companies and organisations from 40 countries displayed their wares.

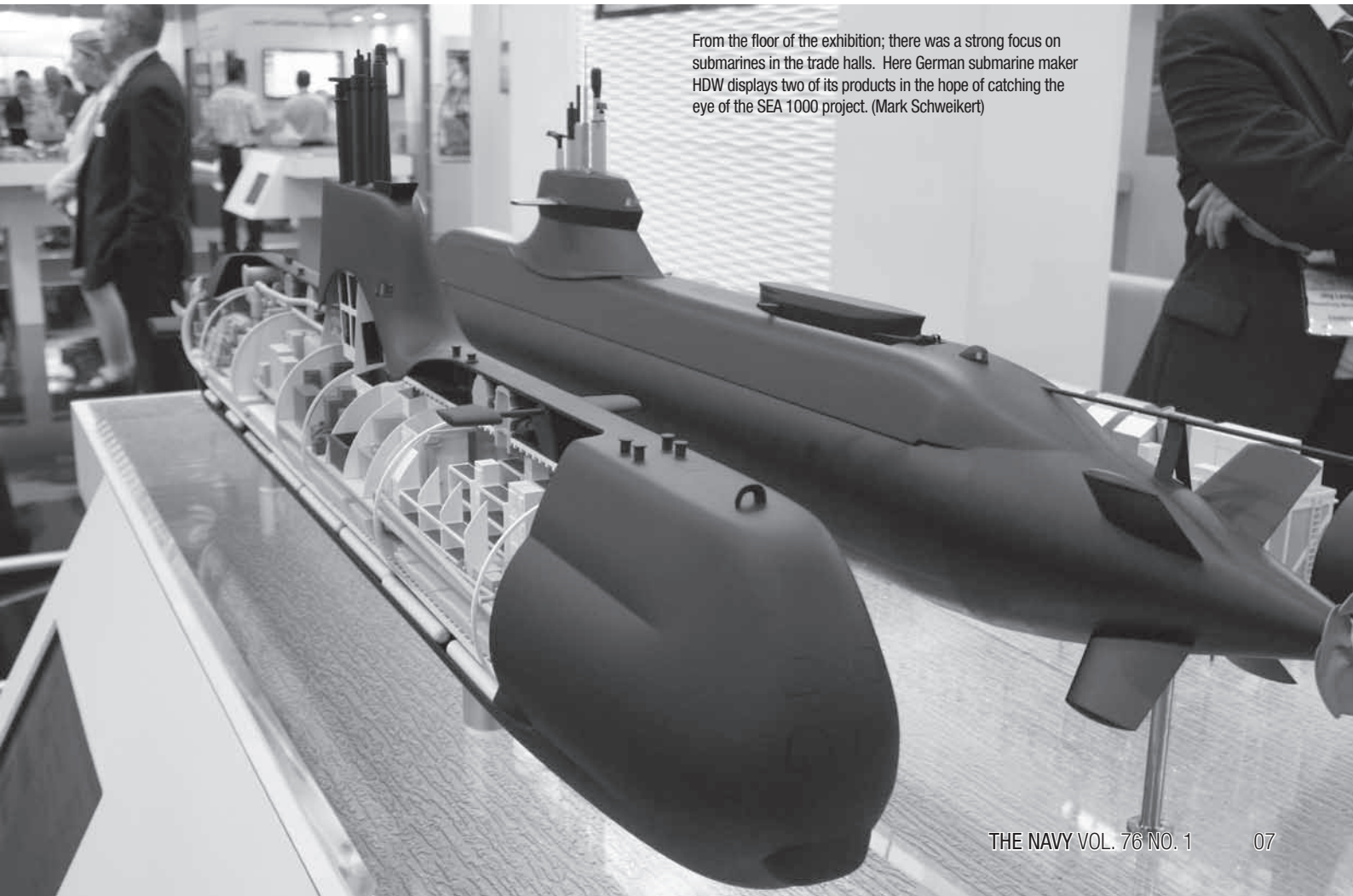
The Seapower conference theme was "Naval Diplomacy and Maritime Power Projection: The Utility of Navies in the Maritime Century".

The opening ceremony included speeches by the Minister for Defence, Senator the Hon David Johnston, Mr Tim Owen AM MP representing the Premier of NSW, the Chief of Navy, Vice Admiral Ray Griggs AO, CSC RAN, and the chairman of Maritime Australia Ltd., Vice Admiral Chris Ritchie AO RAN (Rtd).

The Minister spoke of Australia's utter dependence on its maritime lines of communication. The Government now sought a partnership with Defence Industry, not just a relationship. Australia had world-class technology as shown by the CEA equipment now in HMAS PERTH and the NULKA system now fitted in 150 ships of the RAN, the USN and the RCN. NULKA produced $700 million of exports in one year.

Mr Tim Owen outlined the importance of Defence to NSW noting that many defence facilities and some 28% of defence personnel were based here. He was fully supportive of maritime defence needs.

Vice Admiral Chris Ritchie AO RAN (Rtd) the chairman of Maritime Australia Ltd welcomed all to the International Maritime Conference and Exhibition.



From the floor of the exhibition; there was a strong focus on submarines in the trade halls. Here German submarine maker HDW displays two of its products in the hope of catching the eye of the SEA 1000 project. (Mark Schweikert)

In his keynote address Vice Admiral Griggs remarked that the strength of the international presence at the International Fleet Review and the exercises which took place presented the best tangible demonstration of the theme of the conference. These activities furthered Australia's ability to co-operate in the pursuit of good order at sea. He particularly acknowledged the success of the first ASEAN Defence Ministers Meeting and the Field Training Exercise co-hosted with Malaysia and held in the Jervis Bay area involving 11 ships and 13 countries.

The new Northrop Grumman MQ-8C Fire Scout. The MQ-8C is essentially a Bell 407 converted to be a VTUAV (Vertical Takeoff Unmanned Aerial Vehicle) for shipboard use. While some question why such a large aircraft its performance statistics and thus potential for tasks such as Fleet Airborne Early Warning speak for the themselves, i.e. 1,000lb payload and endurance of 15 -20 hours. (Mark Schweikert)

The international nature of the Fleet Review reinforced one of our most fundamental maritime security messages – maritime security is an inherently co-operative and collaborative venture.

Naval diplomacy springs from the common bonds amongst mariners which do not replace national allegiance, but a shared understanding of the marine environment offers different ways of viewing a subject. This can offer alternative paths to understanding and co-operation. Maritime forces remain a very practical expression of a nation's willingness and ability to be involved in a region.

The idea of giving practical expression to a nation's policy direction is important as it distinguishes good intentions and substantive action. This enables maritime forces to be one of the primary tools nations employ in difficult circumstances, whether that be humanitarian assistance and disaster relief, surveillance and enforcement, or the threat or ultimate projection and use of maritime power.

Vice Admiral Griggs outlined changes in the way humanity was using the maritime environment including the development of fish farming, offshore oil and gas platforms, wind and wave energy, wind farm arrays, and huge floating offshore liquid natural gas production and storage ships. World economies are as intimately linked as they ever have been and the influence of the global maritime trading system is all-persuasive.

The shift of strategic interest and weight to the maritime region of the Indo-Pacific leads to three conclusions:

Firstly, we need to re-examine the basis of our strategic thinking centred on the emerging notion of a Maritime school of Strategic Thought, to counter the continentalist and expeditionary schools of thought that have dominated Australian strategic thought for some time.

Secondly, it is beyond the capacity of any nation to unilaterally protect its maritime interests everywhere and all of the time. Maintaining good order at sea is fundamentally a collective and co-operative activity.

Thirdly, as nations seek to make more intensive use of marine resources, maritime forces are likely to be at the forefront of regulating that use. Good order at sea may well require a larger and more specific body of knowledge; a rules-based order which enables all nations to benefit will inevitably need maritime forces which can observe and enforce order. This involves a mix of constabulary and diplomatic tasks.

He felt that we need to look at how we integrate our land and air forces into a naval-diplomatic approach and not the solely naval approach of the past.

Changes in technology could alter the character of naval diplomacy. For instance as vital national infrastructure extends deeper into maritime zones, nations may well seek to place conditions on access to areas around such infrastructure, and our understanding of innocent passage may be affected.

The Admiral also outlined "Smart Defence" giving examples of the co-operation with New Zealand in building Anzac frigates; Australian sailors helping to crew HMNZS ENDEAVOUR; New Zealand providing specialist crews in our frigates in the Middle East; and the deployment of the Spanish replenishment ship SPS CANTABRIA to operate with the RAN for nine months.

Lieutenant General David Morrison AO, the Chief of the Australian

Raytheon Australia's stand with mock up of a Mk-48 533mm heavy weight torpedo and a smaller 324mm ASW torpedo. (Mark Schweikert)

Army, gave a strong and perceptive speech on the importance of Maritime Power outlining some of the deliberations of that great sea power theorist Alfred Thayer Mahan and their relevance to Australia, stating:

"The achievements of our soldiers, enhanced, indeed perhaps even distorted by the Anzac mythology, has, in my view, created a foundation narrative that has led to our Nation accepting the fruits of our maritime security as a free public good. It is as invisible as Mahan's blockade.

"Our trade flows freely, our petrol stations are replenished, our supermarket shelves are full to meet our whims and our commerce flourishes. Yet Australians collectively do not reflect on the enormous national investment involved in sustaining the maritime conditions for that happy state of affairs, nor do they consider overly that much of it is also underwritten by the United States as the leading global power of our era.

"While many of Mahan's insights are today of primarily historical value, his assertion that the oceans of the world constitute ubiquitous highways is so profoundly obvious as to conceal its genius much the same way that Clausewitz's observation that war is the violent prosecution of policy now sounds self-evidently banal, having become conventional wisdom. That Australia is an island, albeit one of immense mass, is equally as obvious. So our survival, even in peace time, depends on the sea".

Indian Company Bramhos Aerospace had a stand for its new Brahmos supersonic anti-ship cruise missile, which now also has a coastal land attack capability. (Mark Schweikert)

He pointed out the sea-blindness of Australia deriving from a deeply entrenched continental mindset, quoting Admiral Griggs' remark that a more appropriate stanza in our national anthem may have been 'girt by beach' rather than 'girt by sea'.

"And so, while we revere the sacrifice of our diggers at Gallipoli, how many people really understand the naval and amphibious campaign which lodged us on what Chris Masters has termed *The Fatal Shore*? The digger legend is powerful, but it skews the way Australians view security especially the wider contribution of this nation to the global order of the last Century and our obligations to maintaining that benign order in this one.

"Yet, this absence of pervasive oceanic consciousness, disguises the fact that European settlement of this Great Southern land was achieved by the leading maritime power of that era. Likewise, it ignores the reality that our security was initially founded in no small part on Great Britain and, later, on its liberal democratic successor the United States.

"In plain language, our prosperity and role in the world is reliant on freedom of navigation and the unimpeded use of Mahan's great highways which is guaranteed by the dominant maritime power of the day, at a most significant discount to the expenditure of our own national treasure".

General Morrison observed that, while local sea control was a strongly desirable capability, area sea control was unachievable for us and remained the monopoly of great naval powers. We could only contribute to good order at sea and achieve limited force projection in coalition with our allies.

He outlined the re-equipment and modernisation program of the Australia Army including lessons from the East Timor experience. The army was re-organising to field three standard multi-role medium weight combat brigades. It was shifting from a light infantry army to a light mechanised army deployable by sea rather than just air and capable of implementing the guidance of the government which decrees that we be able to deploy a battalion group for a contingency within our Primary Operating Environment while simultaneously sustaining a brigade group on operations in the immediate neighbourhood.

Air Vice Marshal Mel Hupfield DSC, the Air Commander Australia, spoke on Air Power across the Maritime Domain including its roles in intelligence, surveillance, reconnaissance, strike, and control of the air. He outlined the relevance and developments of the RAAF's aircraft and equipments in the projection of power and the protection of sea trade. anti-submarine warfare needed to be at the forefront of our maritime capabilities.

Professor Michael Wesley (Professor of National Security at the Australian National University) spoke on "Asia's Restless Giants and the challenges to Asia's Maritime Commons". He outlined the rapid empowerment and wealth of emerging nations, the rise of the middle classes with new attitudes, and the increasing need for energy. This had resulted in a huge reliance of China, Japan, India, Korea and Taiwan on energy from the Gulf countries. Despite the interdependence of their economies, rivalry was growing. These nations were worried about their maritime lines of communication passing other countries. No country in East and South Asia could afford to let anyone dominate these routes.

Mr Peter Jennings PSM, the Executive Director of the Australian Strategic Policy Institute, gave an overview of the Defence White Paper 2013. This has been short-lived and a new White Paper is likely to be released in 2015. Major changes to the strategic view were unlikely. The language on China may change. Co-operation with the US may be re-inforced. It would be hard for the present government to lift expenditure to 2% of GDP over the next 10 years.

A model of the MBDA Sea Ceptor anti-aircraft/missile missile. The RN will be installing the new missile on its Type 23 frigates in place of Sea Wolf and the yet to be built Type 26 global combat ship. The RNZN had also just announced it would be installing the missile and support systems on its Anzacs. (Mark Schweikert)

Professor Thomas G Mahaken of the Jerome E Levy Chair of Economic Geography and National Security at the US Naval War College spoke on "Navies and the Flexible Application of Power". He outlined the flexibility of Sea Power including its mobility and persistence and underlined its value in time of peace. Peace time roles included presence, deterrence and re-assurance.

Presence gave an expression of strategic interest. Deterrence involved a perception of credibility and resolve. Re-assurance was to convince allies they would be supported. Force structure and posture, including local basing, were very important.

There was now a changing environment. The spread of precision weaponry will threaten power projection, including naval surface forces, and could undermine the freedom of navigation. Budget pressures were squeezing allied navies. There was a long-term growth in costs of equipment and personnel. He considered these trends needed a new approach to the types of naval deployments which needed to be more survivable and required an increased ability to strike at long distances. It was likely that navies would become even more important.

The Commander of the US Pacific fleet, Admiral Cecil D Haney USN spoke on Navies and Global Security. He emphasised the importance of collective action and co-operation between navies. The US was re-balancing its posture in the Pacific and would remain forward. Interoperability was essential to increase the abilities of partnerships. The RIMPAC naval exercise of 2012 involved 22 nations and the US was keen on more multilateral exercises. An example of the importance of partnerships was the co-operation of Malaysia, Indonesia, and Singapore resulting in control of piracy in the Malacca Straits.

Admiral Haney stated that three Chinese Navy vessels had visited Hawaii and taken part in rescue exercises. He had visited China and met the Chinese Navy Chief who had been to the US. He had invited the Chinese to the next RIMPAC Exercise (the Russians attended in 2012). Port visits and high level meetings were very important.

While the US Senate has not ratified the international Law of the Sea, the US acts in accordance with that treaty. Some nations had ratified but did not follow the rules.

On the role of submarines Professor Mahnken considered that they were the premier attack means whose value would increase as the maritime domain becomes more contested. Admiral Haney stated that submarines, particularly those nuclear powered, were part of deterrence. More nations wanted them. They were not as good as surface ships in the "presence" role but were more impressive for what they could do.

Professor James R Holmes the Professor of Strategy at the US Naval War College spoke on "Ken Booth's Navies and Foreign Policy Three Decades On". He gave an example of the use of the Navy in diplomacy when, only three years after the destruction of the Russian Fleet at the Battle of Tsushima in 1905 by the Japanese, the US President Theodore Roosevelt ordered the round-the-world cruise of the Great White Fleet. This was a message to Japan that the US Fleet could deploy worldwide without the debilitation suffered by the Russian Fleet. It also gave re-assurance to probable allies. He also noted the important diplomatic roles of Coastguards, instancing their use by China in the South and East China Seas to send a clear political/strategic but not threatening message while naval and air forces remained "over the horizon".

The First Sea Lord of the Royal Navy, Admiral Sir George Zambellas KCB, DSC spoke on Britain's interest to be fully engaged in world affairs including a more integrated approach of Government and Defence. The Royal Navy's recent activities including visits to 90 countries last year; formal meetings with 26 nations; and a presence with 14 ships in the Gulf. The navy gave value for money as it was not dependent on overflight of countries, access to other countries' harbours or airfields, and left no foot-print ashore overseas. Today there were 20 Chiefs of Navies worldwide who had been trained at the RN College Dartmouth. Defence engagement was not new but today there was a more integrated/joint approach.

The Indian Navy's Regional Engagement – Looking East and West – was discussed by Dr C Raja Mohan the Head of Strategic Studies at the Observer Research Foundation. Asian powers were now at a stage when they could control their own maritime areas. The Indian Navy was now much involved in diplomatic activity in an area from the Eastern Mediterranean to the South China Seas and from the gulf to South Africa involving joint exercises and aid in natural disasters.

The opening up of the Indian economy to the world had changed India's interests. This demanded a strong Navy and a departure from a strong land strategy to an ability to influence the outside world. There was a move towards power projection; an ability to operate far from India; to contribute to regional security; and to work with major powers. India was moving from inward-looking to outward-looking.

Dr Evan Graham the Senior Fellow Maritime Security at the Rajaratnam School of International Studies spoke on South East Asian perspectives of Regional Engagement. The eleven countries were all very different. The Association of South East Asian Nations (ASEAN) had been successful but there was a disconnect over bilateral problems as in the South China Seas. The ASEAN area was a predominantly maritime area with a number of middle powers mostly having coastal views and different interests. The exception was Singapore whose geography dictated the needs of survival and a fully developed defence force.

Co-operation between South East Asian states and Japan and India was growing, as was regional maritime engagement. There was now an annual meeting of the ASEAN Chiefs of Navy and co-operation in patrols of the Malacca Straits.

There was now an arms race underway. Challenges were presented including some friction between China and India in the Indian Ocean and the South China Sea.

He believed India had no problem with Australia developing increased amphibious warfare capabilities with the advent of the large landing ships (LHDs) and that there should be more co-operation between the two countries. Vietnam had concerns over resources in the South China Sea. Relations between Vietnam and India had developed since the 1970s and were expanding with Indian training and financial support for new ships, and more naval visits.

The Hon Kim Beazley AC, the Australian Ambassador to the US, spoke by video conference on Navies, Diplomacy, and Maritime Power Projection 1983-1996. He gave a historic rundown covering the end of the Cold War, the move to regional requirements, the Gulf Tanker War, and the Gulf War.

The Hon Robert Hill, AC a former Defence Minister, covered naval operations in the period from 1996 to 2007 including sanctions on Iraq, interdicting smuggling, the Southern Ocean fisheries problems, fishing patrols 1997/8, Bougainville, East Timor, Solomon Islands operations in The Gulf, Iraq War, the tsumami in Sumatra, and the Fiji Operation. All these showed the value of a balanced flexible defence force.

Emeritus Professor Paul Dibb AM, of the School of International Political and Strategic Studies at the Australian National University, commented that Australia's defence policy faced two crucial challenges: our strategic priority must now shift from Afghanistan to our region of primary strategic concern to our north, which is primarily a maritime theatre of operations; and we face a period of fiscal austerity in which resources available for defence will be constrained.

Our maritime strategy requires a joint force to operate from the eastern Indian Ocean to the South Pacific and from South East Asia to the Southern Ocean – some 20% of the earth's surface.

However because of our preoccupation with expeditionary forces in distant theatres we have run down some crucial capabilities including anti-submarine warfare, mine hunting electronic warfare and maritime surveillance. Our bases and facilities in the north and north-west are inadequate for high tempo military operations.

We must be able to intervene if requested to support the security and stability of our immediate neighbourhood whether it be for humanitarian relief, capacity building and governance, potential peacekeeping operations, or for military intervention. Australia's two new large landing ships (LHDs) will have an important role in these possibilities. He considered the third area of enduring strategic focus was South East Asia (including the South China Sea) because of its proximity to our northern approaches and crucial shipping lanes. Additionally meeting our alliance commitments to the United States might involve niche contributions.

Noting the constraining financial situation, Australia will need to take a harsh look at the entire structure and functions of the Defence Organisation and how it spends its money. Too often defence decisions have been dominated by the domestic politics of defence policy, parochial bureaucratic interests – both military and civilian – and sheer inertia in the cumbersome defence machinery.

Personnel costs – now 42% of the Defence Budget – need review. Over the last 13 years there had been an increase of 63% in civilian senior officers and 58% in the military. Officers in the ADF had grown from 17% to 24% of personnel. To develop required capabilities it may be necessary to consider obtaining less than the projected 100 fighters, 12 submarines, and some Army projects.

Naval diplomacy is one of the key non-threatening areas of military co-operation

A display of a bridge simulator. (Mark Schweikert)

that we need to develop further for this does not have the same territorial sensitivities as boots on the ground or aircraft over-flights. It can embrace the entire gamut of our international interests ranging from fostering goodwill, demonstrating our way of life, supporting our trade interests, showcasing our military capabilities, and supporting our regional engagement.

Maritime security was of crucial interest to us due to the importance of shipping and seaborne trade. Areas for regional co-operation included state sovereignty, piracy, terrorism, natural disasters, drug smuggling, and search and rescue. One aspect of keeping the peace with naval diplomacy was the need for an agreement on how to avoid serious incidents at sea, as had been arranged between the US and the USSR during the Cold War.

Professor Sarah Percy of the University of WA considered that most people had little understanding of what navies do in the whole range of maritime security. International co-operation was essential in combating organised crime at sea. There had been much focus on land conflicts and maritime security had been neglected.

OVERALL COMMENTS

The recent Fleet Review and the associated conferences and exhibitions would seem to have increased public interest in the RAN and maritime matters. The problems involving the boat people, the huge offshore oil and gas developments, port construction, pollution questions, increased shipping in the Great Barrier Reef, and whaling and fishing in the Southern Ocean have also drawn attention to the ocean areas around us. In the defence field the obvious Maritime Strategy for an island nation in our geographic situation has been embraced. However at the political level only lip-service has been paid to the needs of such a strategy. While it is true that two large landing ships (LHDs) and three Air Warfare Destroyers – ordered some years ago – are under construction, the announcement in 2009 of a major naval program has not been followed with the necessary finance and action. No orders have yet been placed for the projected submarines, eight new frigates and 20 offshore combatant ships,

The Fleet Review celebrated the 100th Anniversary of the arrival of Australia's first naval Fleet in 1913 – a modern fleet of a new

Dreadnought battle cruiser, cruisers, destroyers and submarines. This was a Fleet at the highest level of naval power and supported by a nation of only about five million people, determined to defend itself. The Fleet proved an invaluable deterrent to the German Pacific Fleet in WW1, and enabled the capture of German New Guinea, Samoa and other islands. It also ensured the safety of the convoys carrying our troops to the Middle East.

Today our Fleet, while well equipped and with excellent trained crews, is only perhaps of the 4th level of naval power. The world would seem to be entering a series of decades when maritime affairs are likely to be of major importance as economic and military power flows steadily from western to eastern nations and a major build-up of maritime power takes place in our general area.

Early action to implement comprehensively the Maritime Strategy seems essential for our future security. ■

BAE Systems Australia's BVS-10 Amphibious Armoured Vehicle. BAE has brought its BVS-10 to Australia to promote its unique capabilities in an unsolicited bid to the ADF to see if it can fill a niche role given the new amphibious capability being introduced through the LHDs CANBERRA and ADELAIDE. (Mark Schweikert)

AEGIS BASELINE 9 AND BEYOND AEGIS UPGRADES ADVANCE FLEET AIR AND MISSILE DEFENCE CAPABILITIES(*)

By Richard R. Burgess, Managing Editor, SEAPOWER Navy league of the United States

Australia's Hobart class destroyers will enter service with the Aegis baseline 7.1 combat system. While very effective the USN has already progressed onto Baseline 9 with many advanced features, including anti-ballistic missile capabilities. To stay with the USN's upgrade path the RAN will need to consider an upgrade to Baseline 9 in the not too distant future.

The USN's capabilities in network-centric warfare took a step forward in March and April 2013 with the initial sea trials of the Aegis Baseline 9 combat systems upgrade in the newly modernised Ticonderoga-class cruiser USS CHANCELLORSVILLE, which is slated to be a test ship for the new Navy Integrated Fire Control-Counter Air (NIFC-CA) capability.

During the trials, CHANCELLORSVILLE successfully detected, tracked and engaged a medium-altitude subsonic target with a Standard Missile-2 (SM-2).

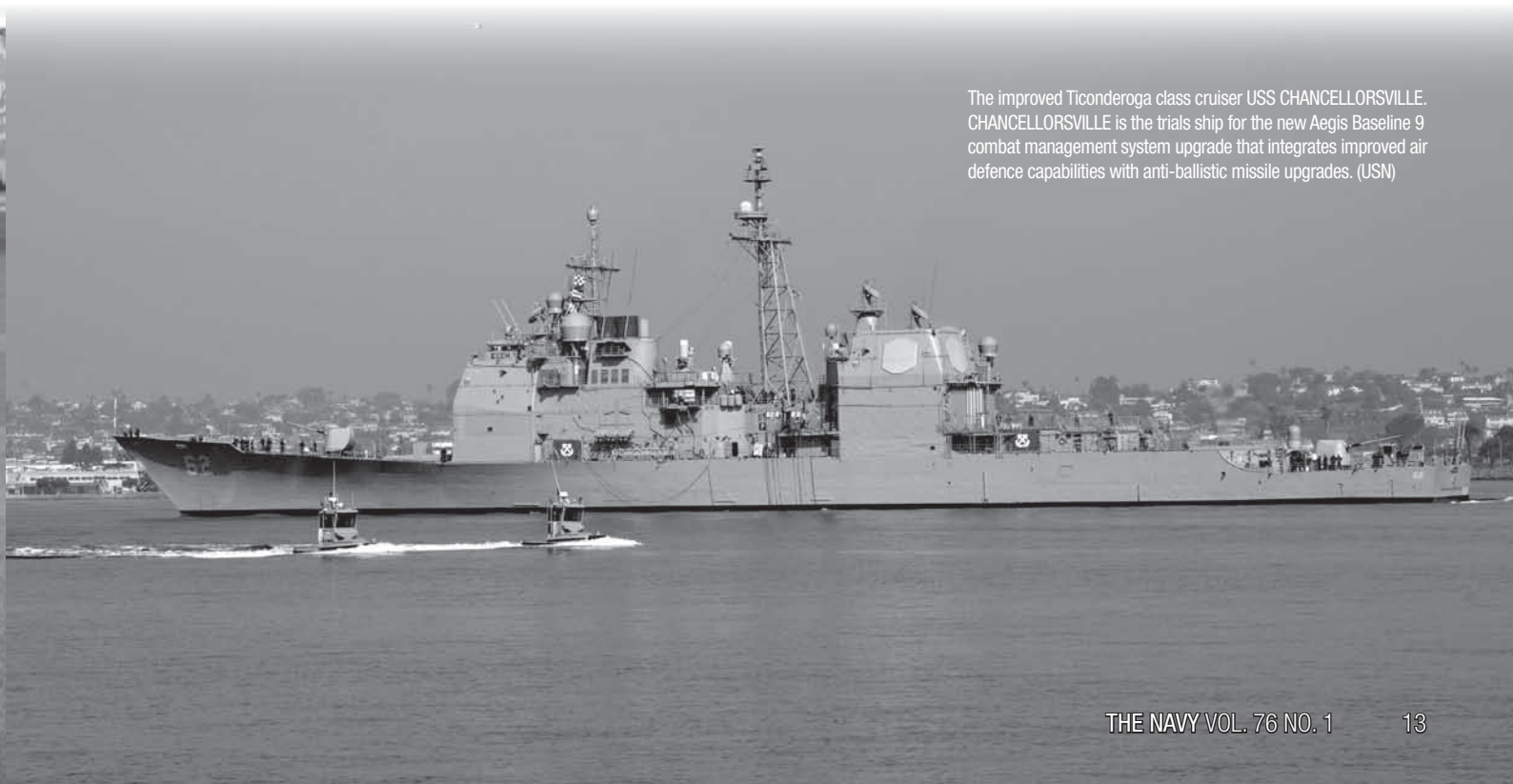
Baseline 9, also known as Advanced Capability Build 12 (ACB12), is the newest upgrade to the Aegis Combat System that is the heart of the air and missile defense combat capability of the USN's cruisers and destroyers.

"The Aegis Combat System (ACS) is the collection of sensors, communications capabilities, weapons, countermeasures and computing equipment to fight the ship," said Capt. Jon Hill, major programme manager for Aegis Integrated Weapons Systems for the Program Executive Office for Integrated Weapons Systems. "The Aegis Weapon System is the heart of the ACS, and is comprised of the SPY-1 Radar, MK-99 Fire Control System, Weapon Control System, Command and Decision Suite, Aegis Display System, Operational Readiness Test Set, Aegis Combat Training System and Standard Missile family of missiles.

"Aegis capabilities are essential for power projection against missiles and other threats, for both national and international security," Hill said. "Aegis provides the ability to forward deploy the most sophisticated and advanced combat system to any place in the world within days of notification. With the introduction of Baseline 9 into the fleet, Aegis now provides additional capability to perform multiple missions simultaneously, including ballistic missile defense."

Hill said Baseline 9 features an overall Aegis Weapon System software upgrade, and includes an improved Cooperative Engagement Capability; the SPQ-9B radar integrated for anti-missile defense; the SQQ-89A(V)15 upgraded undersea warfare system; a gun weapon system upgrade that includes installation of two Mk-45 5-inch/62-caliber gun mounts; the Electro-Optical Sighting System; and the MK-160 Fire Control System.

While all modernized cruisers will be fitted with the RIM-162 Evolved



The improved Ticonderoga class cruiser USS CHANCELLORSVILLE. CHANCELLORSVILLE is the trials ship for the new Aegis Baseline 9 combat management system upgrade that integrates improved air defence capabilities with anti-ballistic missile upgrades. (USN)

Sea Sparrow Missile, the SM-6 missile and NIFC-CA capability will installed on 14 cruisers (CGs 59-73).

"Baseline 9 is the first time we're bringing together an integrated air and missile defense capability," said Jim Sheridan, director of USN Aegis programs for Lockheed Martin. "There has been an evolution of BMD [ballistic missile defense] capabilities. In parallel with that, there has been some AAW [anti-air warfare] improvement that has been happening with [earlier baselines]. Now, we've brought these two capabilities together into an integrated air and missile defense capability in a Multi-Mission Signal Processer [MMSP] that allows us to do that."

The MMSP is a commercial, off-the-shelf replacement for the signal processor in the Aegis system's SPY-1D radar. It incorporates the capabilities of the BMD signal processor on earlier BMD-configured ships and merges it into one set of cabinets.

The MMSP "will be going on all destroyers — in both backfit and new construction — as well as part of our Aegis Ashore configuration," Sheridan said. "Unfortunately, the cruisers will not be getting the MMSP and as a result will not getting the BMD 5.0 capability with their modernization. That was a budgetary decision that was made several years ago. The destroyers are getting the best of the best, the latest BMD capability, 5.0. That will go to the first few destroyers to get modernised and then we'll introduce the BMD 5.0 CU [Capability Upgrade]."

NIFC-CA will be a Baseline 9 capability for cruisers and destroyers. The ships will be equipped with an onboard processing capability that will enable them to network with the E-2 Hawkeye AEW&C aircraft and the US Army's Joint Land-Attack Cruise Missile Defence Elevated Netted Sensor system aerostats, and to fire SM-6 missiles at remote tracks of incoming cruise missiles.

"Aegis ships employ a number of C4I [command, control, communications, computers and intelligence] capabilities to exchange data with other platforms and sensors, including TADILs [Tactical Data Information Links] for line-of-sight and satellite communications, primarily Link 16 and Joint Range Extension" Hill said.

"Aegis BMD-capable ships also are equipped to participate in the C2BMC [Command, Control, Battle Management and Communications] communications architecture for the exchange of BMD plans and situational awareness," he said. "Aegis BMD-capable ships, which participate in the U.S. Ballistic Missile Defence System (BMDS), have the Joint Tactical Terminal to receive Integrated Broadcast, and Multiband TADIL-J"

Two older versions of the BMD software currently provide a BMD capability to cruisers and destroyers in high demand by combatant commanders. BMD 3.6 is installed on three cruisers and 22 destroyers. BMD 4.0 is installed on two cruisers and two destroyers.

CHANCELLORSVILLE began combat system ship qualification trials of Baseline 9A in April 2013. The ship is expected to return to fleet operations in June 2014 after a "period of post-availability underways that will include both live and simulated firing events, as well as Baseline 9 developmental and integrated test events," Lt. Kurt W. Larson, a spokesman for the Naval Sea Systems Command (NAVSEA), said in a March 29 release.

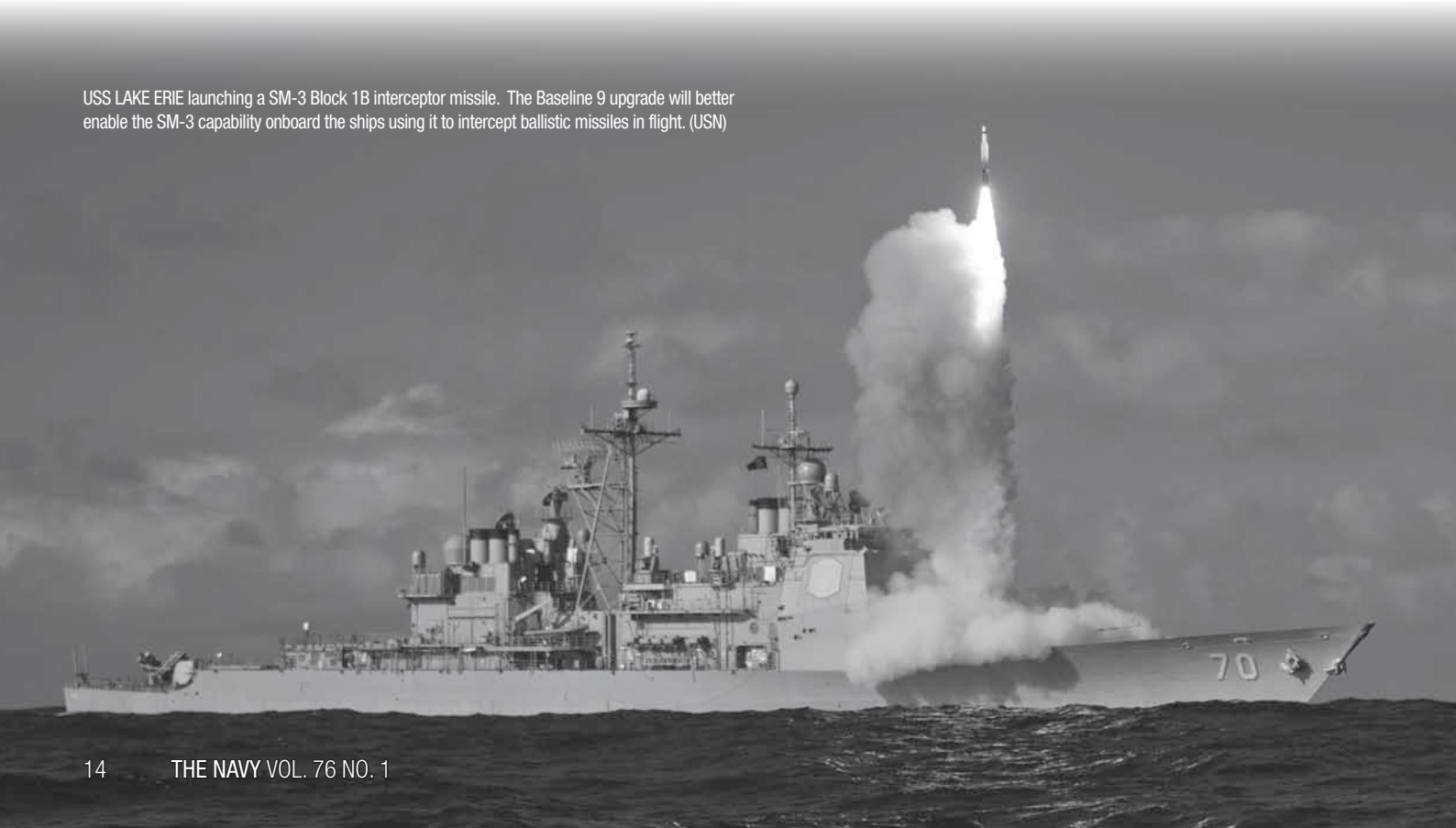
"With its newly enhanced air defence capability, USS CHANCELLORSVILLE will be one of the most powerful warships operating in the fleet today," Capt. Ted Zobel, programme manager for the Cruiser Modernisation Programme in NAVSEA's Surface Warfare Directorate, said in the release.

Baseline 9A also has been installed in the cruiser USS NORMANDY, with Baseline 9C — with the MMSP — installed on the Arleigh Burke-class destroyer USS JOHN PAUL JONES. The latter ship is the first with the MMSP installed.

CHANCELLORSVILLE "will be shortly having her first live firing of a Standard missile utilizing Baseline 9," Sheridan said. "Years 2013 and 2014 will represent significant at-sea testing for Baseline 9 with multiple live-firing events including NIFC-CA. This summer will be a live-firing event with the NIFC-CA and SM-6 missile onboard the CHANCELLORSVILLE."

Two more destroyers, USS BENFOLD and USS BARRY, and the cruiser

USS LAKE ERIE launching a SM-3 Block 1B interceptor missile. The Baseline 9 upgrade will better enable the SM-3 capability onboard the ships using it to intercept ballistic missiles in flight. (USN)



USS PRINCETON, are scheduled for Baseline 9 installation this year. The destroyers USS ARLEIGH BURKE, USS MITSCHER, USS MILIUS, and the cruiser USS CAPE ST. GEORGE, are scheduled for the installation in 2014 and 2015.

The first new-construction destroyer to feature Baseline 9, JOHN FINN (DDG-113), is scheduled to light-off its system in January 2015 and will be followed by DDGs 114 through 118. These ships will feature Baseline 9D, the version tailored for the new-construction ships. Baseline 9E is tailored for Aegis Ashore, the BMD capability being placed in Romania and Poland.

DDG 119 will be the first destroyer to receive the next baseline, ACB 16, Sheridan said.

ACB 16 development is part of a US$100.1 million contract awarded to Lockheed Martin on March 4 to continue for five years as combat systems engineering agent (CSEA) for the Aegis system. The company, which has performed as CSEA for Aegis for four decades, had to compete for the contract under a recent Navy initiative to reduce costs through increased competition.

"The USN evaluated Lockheed Martin's proposed approach to the Aegis CSEA competition as being the best value to the government," Hill said. " The Navy's choice of Lockheed Martin as the Aegis CSEA allows continued development in Aegis Common Source Library (CSL) enabling additional commonality across the USN, as well as the potential to extend that commonality into Foreign Military Sales. Lockheed Martin will build upon the Baseline 9 architecture and will introduce additional open-architecture components, which enables reuse across the USN."

"We want to make sure that the system performs correctly every time, right from initial installation, so performance has always been key and will continue to be," Sheridan said. "The competition, however, afforded us the opportunity to push for additional innovation that would offer the best capability to the customer at the right price.

"We were looking for a way of taking costs out of every element of that development, test and delivery lifecycle," he said. "We introduced some of that on Baseline 9 with our desktop testing initiatives, predominantly with the Common Source Library. With Baseline 9, we're building a product out of the CSL that serves as many configurations where we build the product once in the CSL and deliver it to cruisers, destroyers — both backfit and new construction — as well as for Aegis Ashore."

"As we introduce capabilities into the CSL, those capabilities go in one time, they get developed, they get coded, they get tested one time and then, unlike what we used to do in the past where we followed a much different process, those capabilities can then fan out and get used multiple times on the different configurations that go to the different ships," said Nick Bucci, director of Aegis BMD programs for Lockheed Martin.

"The development of the ACB 16 capabilities will begin in FY14 with a Combat System Certification planned for FY18," Hill said. "Since Lockheed Martin is responsible for assisting the USN with installation and testing of all Aegis baselines, they incorporate lessons learned from previous efforts into new baselines. For example, the lessons learned from installing Baseline 9 (ACB 12) will also be included in the development and delivery plans for ACB 16."

ACB 16 will include the next-generation BMD software upgrade, 5.1, plus adding the SPQ-9B surface search radar on destroyers as it is on the modernised cruisers. ACB 16 will include a new inertial navigation system, as well as "a lot more integration of the MH-60R [helicopter]," Sheridan said.

Bucci expects that, like Baseline 9, the ACB 16 baseline will be produced in various versions according to the ship class and for Aegis Ashore.

"That spiraling in of capability into that Baseline 9 architecture is what allows us to especially have a single baseline with the multiple variants potentially coming out," he said. "We've got that 'build it once, use it multiple times' philosophy.

"The two capabilities that come with the BMD 5.1 are engage-on-remote and the SM-3 Block IIA missile, which allows us to go after a broader threat spectrum," Bucci said. "The engage-on-remote

The Japanese Atago class destroyer ASHIGARA arriving in Pearl Harbor for a RIMPAC exercise. The Japanese Atago class will be one of the first foreign customers for the baseline 9 upgrade. The question remains when will the RAN be considering Baseline 9 for its Aegis equipped destroyers? (USN)

capability is where, instead of the SPY radar on the ship detecting, tracking and controlling the SM-3 through its flight, in this case, all forward sensors provide information to the weapon system on the ship and that information is used to do all of the calculations for whether that threat can be engaged.

"On our last flight test back in February, we launched the SM-3 using remote information, but eventually acquired it with a SPY radar and finished off the engagement using the SPY radar on the ship, USS LAKE ERIE," Bucci said. "When we get to [BMD] 5.1 and engage-on-remote, we would be able to have the engagement performed all the way with remote information."

"As we start rolling out ACB-16 and that gets certified, that will also be applicable to not only the ships that are coming in to the modernisation," Sheridan said. "We have a requirement to make that work on the ships that have already received a previously assigned modernization such as JOHN PAUL JONES, CHANCELLORSVILLE, NORMANDY, etc."

The CSEA contract also includes development of the ACB after ACB 16, notionally called ACB-Next, which Sheridan estimates will be delivered in the 2020 timeframe.

"The significant component, as best as we can tell right now, with ACB-Next would be the Air and Missile Defence Radar [AMDR]," Sheridan said, speaking of the radar that will replace the SPY-1 in the Aegis system. "If that's the case and we believe that is going to be the case that would be introduced on [Arleigh Burke] Flight III destroyers."

Lockheed Martin also is preparing to install exportable capabilities of Baseline 9, including BMD 5.0, on the two Atago-class destroyers of the Japanese Maritime Self-Defense Force under the J6 Japanese Modernisation Program, with demonstration of that capability scheduled for 2016. The company was awarded a US$65 million Foreign Military Sales contract on March 29 2013 for Aegis modernisation for Japan.

Bucci said that eventually BMD 5.1, would be installed on the Atago ships, enabling them to fire and direct the SM-3 Block IIA missile. ■

(*) Reprinted with the kind permission of the editor of SEAPOWER, the magazine of sister organisation The Navy League of the United States.

The Arleigh Burke class destroyer USS BENFOLD. BENFOLD will be one of the first Arleigh Burke class destroyers to trial the Baseline 9 upgrade. (USN)

01 MISSILE FIRST FOR RAN

The RAN and the Defence Materiel Organisation (DMO) have recently completed the final Operational Acceptance Trial for the Australian-designed Phased Array Radar and Combat Management System upgrades to the Anzac class frigate Anti-Ship Missile Defence (ASMD) system.

The trial included a number of successful Evolved Sea Sparrow Missile (ESSM) firings from HMAS PERTH at the Pacific Missile Range Facility (PMRF) in Hawaii. During the trials, the ASMD system was challenged by a number of demanding firing scenarios. These included successful missile engagements against multiple sea-skimming targets including, for the first time in the RAN, an engagement by an ESSM against one of the world's most advanced supersonic targets.

PERTH's Commanding Officer, Captain Lee Goddard, said the firing clearly demonstrated the effectiveness of the upgraded ASMD system.

"The targets were detected by the Australian designed and built CEA Phased Array Radar and the missiles were successfully launched and controlled in flight by the ship's ASMD systems, resulting in the destruction of the targets," Captain Goddard said.

"This proves the accuracy and precision of the upgraded systems to guide the weapon in a complex warfighting scenario."

PERTH is the first of eight Anzac Frigates to enter the ASMD upgrade to improve her weapons systems and sensor arrays.

The Chief of Navy, Vice Admiral Ray Griggs, said "The ASMD upgrade provides the Anzac class with a significantly enhanced level of self and local area defence against modern anti-ship missiles. The complexity of the firing scenarios is unsurpassed in the RAN's history, particularly the successful firings against supersonic targets. The results from this activity are a ringing endorsement of the capability flowing from the ASMD program."

The RAN and DMO acknowledge that the success of the program has largely been due to the outstanding efforts and collaboration by Navy, the DMO, Canberra-based CEA Technologies, SAAB Systems and the Defence Science and Technology Organisation.

BAE AUSTRALIAN TO OVERHAUL RAN MK45 GUN SYSTEMS

BAE Systems Australia has secured a five-year contract to overhaul the Mk-45 127mm guns on the RAN's Anzac fleet.

BAE Systems was chosen as the sole source provider of Mk-45 Gun In Service Support, Removal, Replacement and Overhaul services to the RAN.

Director of BAE Australia Maritime Bill Saltzer said the contract was awarded earlier last year following the successful overhaul of the ex-USS RADFORD Gun and Loader for HMAS STUART, which is now ready to resume operational service.

"Our Technical Services team demonstrated its capability by overcoming the challenges the project presented, including major realignment requirements when fitting the gun and loader on HMAS STUART," Mr Saltzer said.

"The overhaul of the remaining guns for the ANZAC fleet will be carried out at the BAE Systems shipyard in Williamstown, Victoria and then installation of the guns will be done in conjunction with the ASMD upgrade when the ships are dry berthed at the BAE Systems shipyard in Henderson, WA.

"Accomplishing the gun overhauls concurrently with the ASMD upgrade will ensure these vital assets will not be out of service for any additional length of time.

"It also means the Navy can be confident that when the ships resume operation they will have both the benefits of the ASMD upgrade and a fully re-conditioned gun with an extended length of service."

02 ADIÓS ARMADA

The Spanish Navy's (Armada Española's) combat replenishment ship SPS CANTABRIA departed Sydney on 1 November after nine months on deployment in Australian waters supporting the RAN.

The 19,500-tonne ship arrived at Australia in February from Spain.

CANTABRIA's operations off Australia included two international exercises and 63 replenishments at sea with more than 10,500 m 3 of marine fuel transferred to Australian, New Zealand and United States naval ships.

Nearly 250 RAN personnel also received the opportunity to familiarise themselves with ship systems similar to those that will equip the RAN's two under-construction Canberra-class landing helicopter docks (LHDs) and three Hobart-class Air Warfare Destroyers (AWDs), given the common Spanish heritage.

CANTABRIA's deployment also provided a unique opportunity for the RAN to essentially test drive a lead contender for its SEA 1654 project to replace the RAN's supply ships HMAS SUCCESS and HMAS SIRIUS.

01 HMAS PERTH on Sydney Harbour after her very successful test against subsonic and supersonic anti-ship missile targets off Hawaii. (Mark Schweikert)

03 16 STOVL JSF TO DEPLOY TO ASIA-PACIFIC IN 2017

Officials from the USN and USMC have announced that they remain on track to reach the initial operational capability of the F-35B Lightning II Joint Strike Fighter (JSF) in 2015, and that plans are in motion to operationally deploy the fifth generation fighter for the first time on board an amphibious assault ship.

USS WASP (LHD-1) is expected to forward deploy to the Asia-Pacific region in 2017 with a squadron of 16 F-35Bs, the USMC's short take-off/vertical landing (STOVL) JSF variant.

"That's going to be very impressive capability if you think about a big deck platform out there with potentially 16 F-35s on board - the first time we'll put fifth generation capability on any platform deployed anywhere," USMC Major General Robert S Walsh, director of expeditionary warfare on the USN staff, said at the National Defense Industrial Association Expeditionary Warfare Conference in Portsmouth, Virginia.

To prepare for the operational deployment, WASP, which hosted the F-35B's at-sea trials in October 2011 and August 2013, is completing the final phase of hull alterations during a harbour availability period in Norfolk, Virginia.

Navy Captain Erik Ross, who heads the amphibious warfare branch (N953), said that the modifications include applying the heat-resistant coating Thermion to the flight deck to enable it to withstand heat from F-35B operations, moving antennas and other topside structures to avoid engine blast, upgrading the ship's electrical service, and installing internal mission-planning spaces.

"That's a pretty robust package they're putting into all the LHDs, starting with WASP" Capt Ross said at the conference. He noted that the two new America-class ships under construction, AMERICA (LHA-6) and TRIPOLI (LHA-7), will also receive the modifications. Both ships were designed to optimise aviation operations. AMERICA is expected to be delivered with some of the F-35B upgrades completed, while TRIPOLI will be delivered with a majority of upgrades completed, Capt Ross said. AMERICA commenced sea trials in early November 2013 and is scheduled for handover in early 2014; TRIPOLI is expected to deliver in 2018.

Both officials said that the critical component to integrating F-35B operations on board the large deck amphibious ships is command-and-control. Communications upgrades including the USN's next-generation tactical afloat network, Consolidated Afloat Network Enterprise Services (CANES), Co-operative Engagement Capability (CEC), and Link 16 are among the systems necessary to leverage F-35B capability.

INDIA AND RUSSIA IN TALKS OVER SECOND SSN LEASE

It has been reported that India is in advanced negotiations with Russia to lease a second Schuka-B ('Akula')-class nuclear-powered attack submarine (SSN) for 10 years.

Indian Navy (IN) sources said the US$1.5 billion leasing of the SSN featured in discussions on defence co-operation between Indian Prime Minister Manmohan Singh and Russian President Vladimir Putin in Moscow on 21 October 2013.

Sources also suggest that the IN expects the boat to be based on the incomplete hull of IBRIS, a Schuka-B-class boat abandoned in the 1990s after the Soviet Union's collapse, and expects it to include design elements of the latest Yasen ('Severodvinsk')-class guided-missile attack submarines.

International treaties forbid the sale of nuclear-powered submarines, but leases are permitted provided the boats are not equipped with missiles with ranges in excess of 300 km. Leased for 10 years for about US$920 million, CHAKRA is presently used as a training platform for the 6000-ton ARIHANT, the first of five indigenous IN ballistic-missile armed nuclear powered submarines.

The joint statement issued at the end of the two-day 14th Indo-Russian summit, which concluded on 22 October, announced a mutual intent to "enhance co-operation in the fields of rocket, missile, and naval technologies and weapon systems". In the statement several successful co-operation programmes were noted, such as the aircraft carrier conversion VIKRAMADITYA and the delivery of INS TRIKAND - the sixth and final Russian-built guided missile frigate.

04 RAN TO TEST UAVS

At the recent Pacific 2013 Conference and Exhibition the RAN announced that it will begin testing Unmanned Air Vehicles (UAVs) from its warships with the objective of outlining requirements for a formal capability proposal.

Operations are expected to take place on a number of ships to help the navy better understand limitations and factors that affect UAVs performance in a maritime environment.

02 The Spanish Navy's (Armada Española's) combat replenishment ship SPS CANTABRIA entering Sydney Harbour during the recent IFR 2013. (RAN)

03 Two F-35 STOVL JSF undergoing testing on the LHD USS WASP. The USN will be deploying 16 aircraft on the one LHD to the Asia-Pacific region in 2017. (USN)

It is understood that at this point there are only three UAVs in operation in the Australian region that have suitable performance characteristics to meet the scope of testing envisaged. Those three systems are: the Insitu Pacific ScanEagle, the AAI Aerosonde 4.7G and Schiebel S-100 Camcopter.

Payloads are yet to be decided on with the testing focusing on flight characteristics, integration with the ship and procedures development

SEA CEPTOR FOR RN AND RNZN

The RN has signed a £250 million (AUD$400 million) contract for the naval MBDA Sea Ceptor air defence missile.

The contract will provide a new short-range surface-to-air missile capability for the RN's Type 23 frigates, and future Type 26 Global Combat Ships (GCS).

The announcement comes after a five year funded demonstration phase for the Sea Ceptor programme.

The Sea Ceptor, formerly known as the Common Anti-Air Modular Missile (CAMM), will replace the legacy Vertically Launched (VL) Seawolf missile in RN service aboard the country's 13 Type 23 frigates.

Sea Ceptor is part of MBDA's CEPTOR family of next-generation, all-weather, air defence weapon systems that has application to Sea, Land and Air environments.

Sea Ceptor can be launched from the European Sylver Vertical Launch System (VLS) or the US Mk-41VLS and can be quad packed into each VLS cell. The missile is soft launched from the tube by compressed air and ignites its rocket motor and turn over pack outside and away from the launcher, eliminating the need for trunking etc of rocket efflux and exhaust gases.

While having a similar range to the US ESSM (Evolved Sea Sparrow Missile) the Sea Ceptor's targeting is different with the missile having a fire and forget active radar homing head, meaning many can be fired at numerous targets simultaneously. The ship's combat information centre tells the missile where the target is and the missile does the rest. Its instant turn over manoeuvre also allows the engagement of missile sized targets at a shorter range than ESSM, giving it a greater last ditch defence capability.

New Zealand also recently selected Sea Ceptor to meet the Local Area Air Defence (LAAD) system requirement for its ANZAC Frigate Systems Upgrade (FSU) project.

The announcement followed a meeting in Wellington on 4 October between Des Ashton, the New Zealand Ministry of Defence's (MoD's) Deputy Secretary of Defence (Acquisition), and Andrew Murrison, UK Minister for International Security Strategy.

New Zealand's selection of Sea Ceptor marks the first export success for the missile.

The RNZN FSU programme is intended to modernise the combat system fit on board her two ANZAC frigates, HMNZS TE KAHA and HMNZS TE MANA.

Slated for implementation in the 2016-2017 timeframe, the FSU will replace the hardware and software of the combat management system, modernise radars and sensors, and replace the existing RIM-7P NATO SeaSparrow point defence missile system with a more capable LAAD system.

05 SUCCESSFUL TORPEDO FIRING

The RAN has successfully conducted the world's first firing of a "war shot" MU90 Lightweight Torpedo, said Chief of Navy, Vice Admiral Ray Griggs AO, CSC, RAN.

The Anzac class frigate HMAS STUART fired the explosive warhead against a specially designed target in the East Australian Exercise Area. The successful firing was the final milestone before the torpedo is accepted for operational service across the fleet.

"The MU90 Lightweight Torpedo has already completed an extensive test program using exercise (non explosive) variants. This firing is the final Test and Evaluation event for the MU90 and demonstrates the full capability of the torpedo," Vice Admiral Griggs said.

The torpedo was assembled and prepared at the Torpedo Maintenance Facility at HMAS STIRLING in Western Australia with Navy personnel onboard the firing ship handling, loading and firing the MU90 torpedo.

The target for the firing was specially constructed in Victoria by the Defence Science and Technology Organisation and was successfully attacked by the torpedo.

"The MU90 Lightweight Torpedo provides a significant enhancement to the Anti-Submarine Warfare capabilities of all the RAN's surface combatant ships," Vice Admiral Griggs said.

"The weapon provides the RAN with one of the most capable lightweight submarine torpedos in the world."

The MU90 Lightweight ASW Torpedo is three metres long, weighs 300 kilograms, has a range of greater than 10 kilometres and is designed to detect and attack deep quiet-

04 The Schiebel S-100 Camcopter UAV. (Mark Schweikert)

running submarines.

The firing success was also acknowledged by Mr Warren King, Chief Executive Officer of the Defence Materiel Organisation (DMO).

"Delivery of this important defence capability is due to the combined and concerted efforts of DMO, Navy, and defence industry to remediate the MU90 Lightweight Torpedo Replacement which was removed from the Projects of Concern list in November 2012," Mr King said.

06 NEW DDH FOR JMSDF

On 6 August the Japanese Maritime Self-Defence Force (JMSDF) unveiled its largest-ever built ship at the Japan Marine United shipyard in Isogo, Yokohama.

Displacing 24,000 tonnes, the helicopter carrier IZUMO (DDH-183) is the largest Japanese warship to be built since WW II.

IZUMO and its planned sister ship, DDH-184, will replace the JMSDF's Shirane-class destroyers, which were built in the 1970s.

Described by Japan Marine United as an "evolution" of the two 18,290-tonne Hyuga-class helicopter carriers that entered service in 2009 and 2011, the through-deck ship has an overall length of 248m and a beam of 38m and will carry up to nine helicopters. The air wing will consist of seven Sikorsky/Mitsubishi SH-60K Seahawk anti-submarine warfare helicopters and two mine-countermeasures types. The latter will be AgustaWestland/Kawasaki MCH-101s, which are replacing the existing Sikorsky/Mitsubishi S-80M-1 (MH-53E) Sea Dragons.

Unlike the Hyuga-class carriers, IZUMO is not fitted with torpedoes, although its defensive armament will include two SeaRAM (Mk-15 Mod 31) short-range surface-to-air missile launchers and two Phalanx Block IA close-in weapon systems. An OQQ-22 bow-mounted sonar will also be installed.

IZUMO can embark up to 970 personnel, including the ship's company and Japan Ground Self-Defence Force troops, although officials have emphasised that it will not be used for offensive operations.

WHAT TO DO WITH AN AIRCRAFT CARRIER

The UK MOD is looking for ideas on how best to preserve the legacy of the Royal Navy's Invincible class aircraft carriers.

The last of the ships, HMS ILLUSTRIOUS, is due to retire in late 2014 after 32 years of distinguished service that has seen her involved in operations around the world.

Following the announcement last year that the 22,000-tonne ship will be preserved in some form, the UK MOD is now inviting private companies, charities and trusts who are interested in buying her to come forward with ideas for her future use.

HMS ILLUSTRIOUS is currently the UK's high readiness helicopter and commando carrier, able to deploy Merlin, Chinook, Sea King, Lynx or Apache helicopters. The ship, which is 210 metres long, the equivalent of 18 double-decker buses, was involved in the First Gulf War and the conflict in Afghanistan in 2001, and supported evacuations from Sierra Leone in 2000 and Lebanon in 2006.

The UK MOD wants HMS ILLUSTRIOUS to remain in the UK and bids for her future use must be viable and include plans for part or all of the ship to be developed for heritage purposes.

The UK Minister for Defence Equipment, Support and Technology, Philip Dunne, said: "HMS ILLUSTRIOUS, like her two sister ships INVINCIBLE and ARK ROYAL, has provided an invaluable service to this country over more than three decades. This competition will provide the opportunity for organisations to put forward innovative and viable proposals to honour the role and history of this iconic class of ship and all those who served on board them."

Once proposals are received, an industry day will be held this year to discuss the ideas further. It is expected a final decision will be made after the ship is decommissioned and handed over to the Disposal Services Authority.

The UK's new Queen Elizabeth class aircraft carriers, which will replace the Invincible class ships, are currently under construction. HMS QUEEN ELIZABETH, which is almost complete, will begin sea trials in 2017 before undertaking flight trials with the F-35 Lightning II aircraft in 2018.

07 JAPAN LAUNCHES SIXTH SOURYU-CLASS SUBMARINE

Japanese company Kawasaki Heavy Industries (KHI) has launched the sixth Souryu-class diesel-electric (SSK) submarine on order for the Japan Maritime Self-Defense Force (JMSDF) at its shipyard in Kobe on 31 October, 2013.

Laid down in January 2011, KOKURYU is scheduled to enter service in March 2015.

Displacing 4,100 tonnes submerged and fitted with a Swedish supplied Stirling AIP (Air-Independent Propulsion) system, the 84m Souryu-class boats are an improved version of Japan's 11-strong fleet of 3,500 tonne, 82m Oyashio-class SSKs.

Acceptance into service is currently running at a rate of one boat per year, with

05 Seen here is the world's first firing of a "war shot" MU90 Lightweight Torpedo from the Anzac class frigate HMAS STUART. (RAN)

06 The helicopter carrier IZUMO (DDH-183) at her launch. She is the largest Japanese warship to be built since WW II. (JMSDF)

construction alternating between KHI and its neighbour Mitsubishi Heavy Industries (MHI). The first (SOURYU), third (HAKURYU), and fifth (ZUIRYU) boats were built at MHI and commissioned in March 2009, March 2011, and March 2013 respectively. The second (UNRYU) and fourth (KENRYU) boats were built at KHI and commissioned in March 2010 and March 2012 respectively.

Two additional boats have been requested in the FY13 and FY14 budgets, marking further progress towards the government's targeted expansion of the submarine fleet from 16 to 22 boats by the early 2020s.

As a comparison, the RAN's Collins class submarines are 77m long and displace 3,300 tonnes.

08 FREMM FRIGATE NEWS

The Royal Moroccan Navy took delivery of its first French built FREMM (Frégate Européenne Multi-Missions) multi-mission frigate on 25 November 2013.

MOHAMMED VI was handed over at French shipbuilding and systems house DCNS's shipyard in Brest, after a build and trials programme. The ship was launched in September 2011 at the DCNS Lorient yard.

The anti-submarine warfare-focused vessel will also be used to patrol Morocco's maritime domain and participate in combined operations with NATO and other navies. The arrival of the FREMM MOHAMMED VI will make the Royal Moroccan Navy one of the most capable in Africa.

In other FREMM news the French Navy's second FREMM multi-mission frigate, NORMANDIE , sailed for its first sea trials on 25 October 2013. The ship put to sea off Brittany for sea trials from the Lorient shipyard of the French shipbuilding firm DCNS.

Prior to her sea trials, NORMANDIE had completed harbour trials at Lorient. Once the sea trials were complete, the ship returned to Lorient for several weeks of quayside work before a second set of sea trials - focusing on the combat system.

Although NORMANDIE is the second-in-class, it is the first to fit a number of key capabilities straight from build. These include the Nexter Narwhal 20mm remote gun turret, and MBDA's Missile de Croisière Naval (MdCN) naval cruise missile and its supporting combat system software. Lead FREMM frigate AQUITAINE will retrofit these systems in due course.

NORMANDIE was launched at the Lorient yard on 18 October 2012.

The French FREMM frigate is a very impressive ship and will easily be a contender for the RAN's SEA 5000 future frigate programme, but with mostly US and Australian sought weapons and sensor fit outs.

09 LCS DEFENDS AGAINST SWARM

The USN's third Littoral Combat Ship fired its 57mm and 30mm guns against mock enemy targets while moving quickly through the water and coordinating with an MH-60R helicopter during its recent live-fire test of the surface warfare mission package aboard the USS FORT WORTH, USN officials said.

The live-fire exercise aboard LCS-3, which took place at Point Mugu Range, California, was designed to place the ship's surface warfare weapons in a combat-like scenario in order to assess its ability to defend the ship from fast-moving small boats, said Capt. John Ailes, an official with Programme Executive Office, Littoral Combat Ships.

"We demonstrated in day and night environments that the optical sights would slew to the target, hit the target, and destroy things despite the high speeds of maneuvering small boats. From a fire control standpoint, this showed that you have an end to end capability and can bring ordnance on targets," Ailes said.

The surface warfare mission package on the LCS will improve the Navy's existing ability to counter the swarming small boat threat, he added. The LCS has endured rounds of criticism following a report by US Defense Department's director of operational test and evaluation that the ship is "not expected to be survivable" in combat.

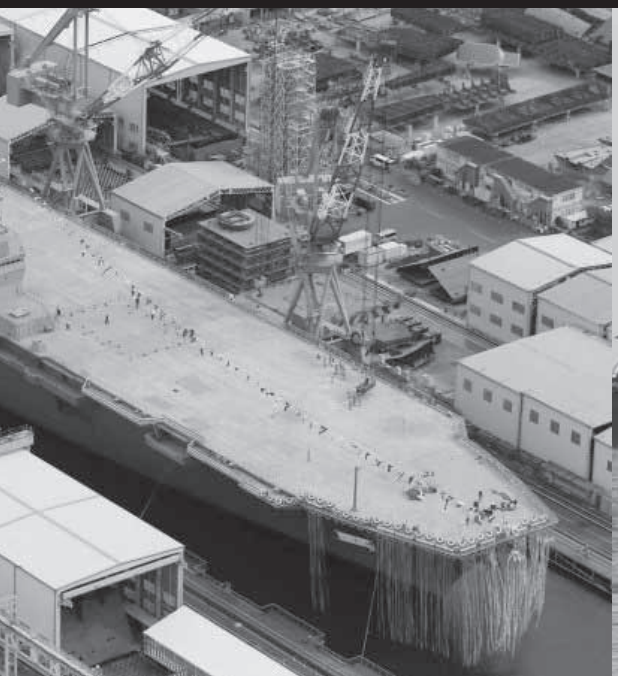
The LCS' maneuverability, speed and ability to identify and destroy fast-moving approaching threats such as small boats speaks to the ships' overall survivability in combat, Ailes added.

The testing at point Mugu represents the second phase of developmental testing for the surface warfare mission package, a suite of technologies designed to integrate with the boat's infrastructure and give the LCS an ability to use speed, munitions, helicopters, radar and other things to bear upon a potential surface-combat scenario.

"This is a final verification that all challenges were behind us. Daytime and nighttime firings were spectacular. The 57mm and 30mm guns destroyed the targets and an MH-60R helicopter provided radar data which we then passed to the fire control system," he explained.

The surface warfare mission package draws upon air assets such as the MH-60, but also

07 The submarine KOKURYU being launched.



integrates 11-metre rigid hull inflatable boats and a full suite of on-board weaponry and munitions. The mission package contains gun mission modules firing a MK-46 gun weapons system with a MK-44 30mm automatic cannon and surface-to-surface missiles capable of engaging fast-moving small boat threats.

The surface warfare mission package also includes a 19-person surface warfare detachment and a 23-person aviation detachment, Navy officials said.

The LCS mission packages, which also include mine-countermeasures and anti-submarine warfare configurations, are designed to improve the ship's offensive and defensive capabilities, as they are engineered to bring a new level of technical ability to the Navy fleet, service officials explained.

The mission packages and the LCS seaframe are engineered to be able to accommodate technological advances in areas such as electronic systems, weapons, electronic warfare equipment and intelligence, surveillance and reconnaissance as they emerge.

These live fire tests for the USS FORT WORTH will be followed by technical and operational evaluations designed to finalise development for the technology. The initial operational test and evaluation for the surface warfare mission package will be conducted in early 2014.

RAM TEST SUCCESSFUL

The USN completed the first fleet firing of the Rolling Airframe Missile (RAM) Block 2 as part of its ongoing developmental and operational testing (DT/OT).

In an at-sea test conducted from the USS ARLINGTON (LPD-24), two RAM Block 2 missiles engaged a subsonic target in a scenario designed to demonstrate the advanced missile's defensive capabilities.

This test builds on three DT/OT tests conducted from the USN's Self-Defence Test Ship earlier this year. Those firings successfully engaged both supersonic and sub-sonic manoeuvring targets with all RAM Block 2 missiles meeting test objectives. The RAM Block 2 missile is now a perfect 4-for-4 in DT/OT engagements since the start of government testing.

"The first RAM Block 2 firing from a USN ship is the culmination of a very strenuous government and industry test program," said Rick Nelson, vice president of Raytheon Missile Systems' Naval and Area Defense product line. "We now focus on the USN's initial operational capability milestone along with delivery of the first RAM Block 2 production missiles in 2014."

Raytheon and its manufacturing partner RAMSYS of Germany were awarded the second USN RAM Block 2 low-rate production contract for 61 missiles in December 2012. In addition Raytheon and RAMSYS received a production contract for 445 RAM Block 2 missiles from the German navy earlier last year.

RAM is a supersonic, lightweight, quick reaction, fire-and-forget missile providing defence against anti-ship cruise missiles, helicopter and airborne threats, and hostile surface craft. The missile's autonomous dual-mode, passive radio frequency and infrared guidance design provide a high-firepower capability for engaging multiple threats simultaneously. RAM is installed, or planned for installation, aboard more than 170 ships as an integral self-defence weapon for the navies of Egypt, Germany, Greece, Japan, the Republic of Korea, Turkey, the United Arab Emirates and the United States.

The RAM Block 2 upgrade includes a four-axis independent control actuator system and an increase in rocket motor capability, increasing the missile's effective range and delivering a significant increase in manoeuvrability. The improved missile also incorporates an upgraded passive radio frequency seeker, a digital autopilot and engineering changes in selected infrared seeker components.

10 USS GUARDIAN INVESTIGATION COMPLETE

The USN has released the results of an investigation that assessed circumstances surrounding the ex-USS GUARDIAN grounding that occurred in Philippine waters on January 17, 2013.

Characterising the ex-GUARDIAN's grounding on Tubbataha Reef in the Sulu Sea as a "tragic mishap," Adm. Cecil D. Haney, commander of the U.S. Pacific Fleet, wrote in the 160-page document that "USS GUARDIAN leadership and watch teams failed to adhere to prudent, safe, and sound navigation principles which would have alerted them to approaching dangers with sufficient time to take mitigating action."

Haney further summarised that a "lack of leadership" led to the watch team's disregard of visual cues, electronic cues and alarms in the hours leading up to the grounding, and that an ultimate reliance on what would turn out to be inaccurate Digital Nautical Charts (DNC) during the planning and execution

08 The Royal Moroccan Navy French built FREMM (Frégate Européenne Multi-Missions) multi-mission frigate MOHAMMED VI. The FREMM is a very impressive class of warship and one that will gain in popularity with many navies. (DCNs)

of the navigation plan ultimately led to a degradation of the ship's navigation ability.

Haney did however have words of praise for the "heroic efforts of the crew to save their ship." Highlighting the actions of the Engineering and Damage Control teams, Haney wrote that their efforts were instrumental in reinforcing the ship's hull integrity despite multiple breaches. He also commended the Boat Coxswains, Damage Control Assistant, and the Navy rescue swimmers who all ensured the safe evacuation of the crew without significant injuries.

The commanding officer of ex-GUARDIAN, Lt. Cmdr. Mark Rice, the executive officer/ navigator Lt. Daniel Tyler, the assistant navigator, and the officer of the deck at the time of the grounding were relieved of their duties on April 3 by Rear Adm. Jeffrey A. Harley, commander, Expeditionary Strike Group (ESG) 7. Further administrative action is under consideration.

The Avenger-class mine countermeasures ship had just completed a port call in Subic Bay and was en route to Indonesia and then on to Timor-Leste to participate in a training exercise when the grounding occurred, approximately 80 miles east-southeast of Palawan Island. GUARDIAN was subsequently dismantled, decommissioned and stricken from the naval registry.

After the incident, the United States and Philippines conducted a joint marine damage assessment. The U.S. government is prepared to work with the Philippines to provide compensation for the damage to the reef caused by the grounding.

GUARDIAN had served the USN honourably for over 23 years. ■

09 The LCS USS FORT WORTH on sea trials. (USN)

10 The ex-USS GUARDIAN mine hunter aground on Tubbataha Reef in the Sulu Sea being dismantled in situ after 23 years of service. (USN)

APPLICATIONS OF AUSTRALIAN MARITIME DOCTRINE:
THE ROYAL AUSTRALIAN NAVY IN 1914

By Petty Officer Peter Cannon

PO Peter Cannon's 2013 Navy League Essay Competition first place entry explains Australia's decision to embark on a blue water navy in contemporary maritime doctrine terms. This provides a unique perspective on the early history of Australia's naval capability development.

The new Battlecruiser HMAS AUSTRALIA in Australian waters. Her arrival in Australia with the first Fleet Unit of RAN warships changed the balance of power in the pacific considerably. (Seapower Centre)

Australian maritime doctrine provides the framework within which the Royal Australian Navy (RAN) operates and prepares for future contingencies in support of national objectives. This doctrine focuses upon the employment of armed force at sea, as well as the projection of seaborne force ashore, and as such recognises the inherent joint nature of maritime operations. Whilst Australian doctrine can trace its origins back to the Royal Navy's original Fighting Instructions of 1672 and is broadly based upon international experience of conflict at sea, the RAN's own history provides invaluable insight towards the framing of modern strategic and operational principles.

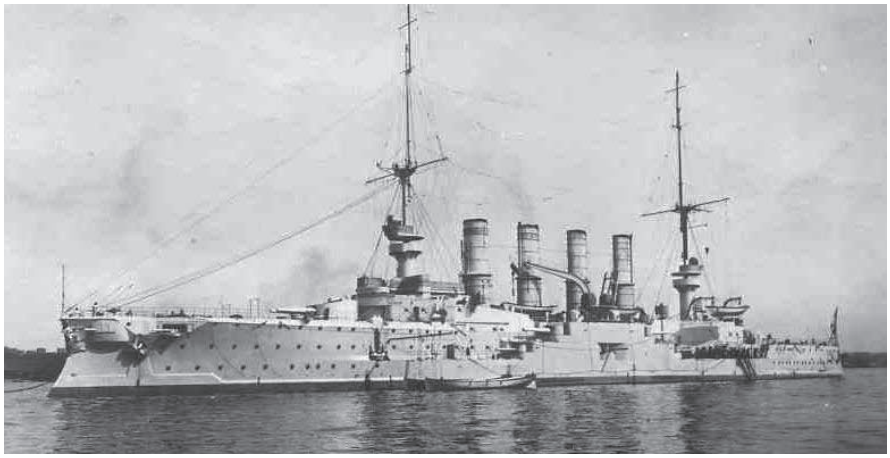
The strategic impact of the RAN during the conflicts of the Twentieth Century was arguably never more significant than during the opening months of the First World War. In late 1914, barely a year after the arrival of its first fleet unit, the Navy secured control of the seas in Australia's vital areas of interest through the deterrence of enemy seaborne aggression, rapid joint operations to secure hostile territory as well as the protection of expeditionary forces committed to the main European theatre. Despite the fact that the Navy of the time would hardly recognise modern doctrinal writing and terminology, contemporary theories of maritime doctrine and Australian defence are readily identifiable in the events of 100 years ago. 1914 provides significant precedents to strategists and commanders in today's Australian Defence Force (ADF) as well as the wider community in illustrating the vital nature of sea power to the nation's security.

The historiography of the First World War is dominated by the unprecedented slaughter within continental Europe as huge armies engaged in attrition warfare during the world's first experience of total war. Indeed, by far the largest and most obvious Australian contribution to the conflict was the despatch of the first Australian Imperial Force (AIF) to European battlefields. This commitment created an enduring perception of the nation's experience of war, based upon the involvement of the Army and focused upon the commemoration of ANZAC Day.

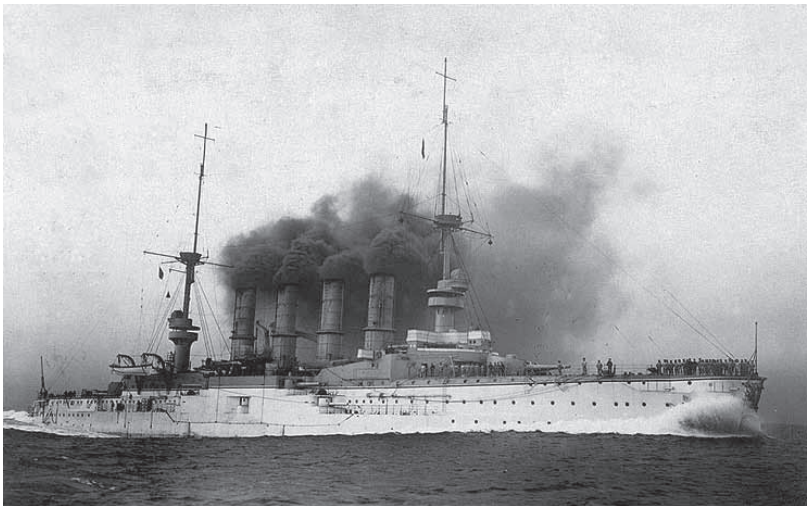
In fact, the First World War was a global maritime conflict. The Western Allies were able to command access to the world-wide resources their economies and war machines required whilst at the same time denying such access to their enemies. The AIF was one of the resources facilitated by Allied sea power. Naval control of Australian and adjacent waters was the essential precursor to the transport of troops to the fateful battlefields of Gallipoli in April 1915. All of Australia's military commitments have been expeditionary in nature and coalition expeditionary warfare remains a cornerstone of current defence doctrine.

The principal task of the British and Australian navies in 1914 was to deter and defeat armed attacks on global Empire interests, just as the role of the modern ADF is to afford the same protection to Australian security. Maritime doctrine as articulated today is a multi-faceted concept; combinations of different strategic and operational components may be tailored to the situation and desired outcome. The dominant maritime strategic concept of the early Twentieth Century, command of the sea, relied upon one nation establishing uncontested control of the high seas and denying their use in any capacity to an enemy. The original Australian fleet unit was viewed as a component in the overall British Imperial aim of achieving command of the sea.

However, this theory proved to be illusory as the concept of sea denial,



The German armoured cruiser SMS GNEISENAU of the German East Asia Cruiser Squadron.



The German SMS SCHARNHORST of the German East Asia Cruiser Squadron.

usually embodied through attacks upon trade and logistical systems, allowed a weaker power to contest such unfettered use of the sea by an adversary. Sea denial was practised in a number of different forms by the Allies' Imperial German Navy opponents with varying degrees of success throughout the conflict. However, what the Allies did achieve through superior naval strength was the more practical concept of sea control.

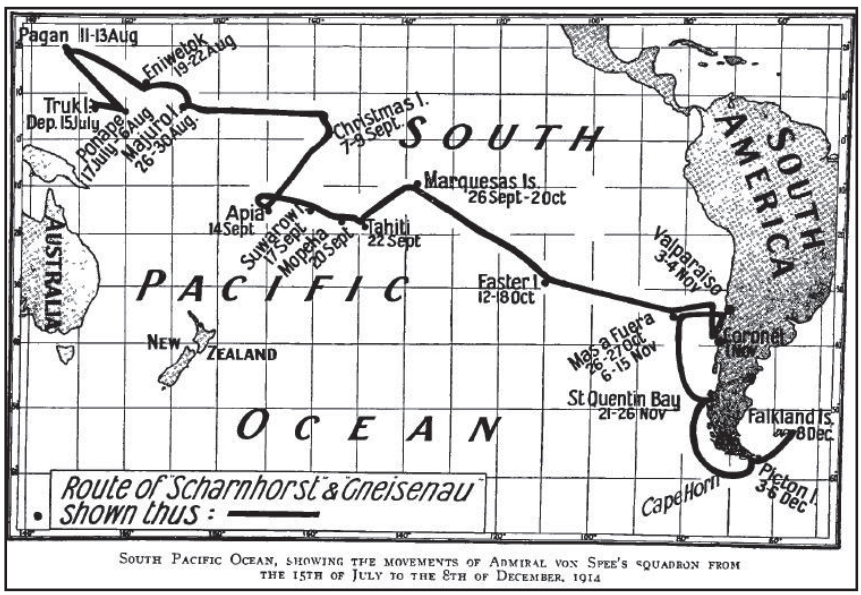
Sea Control is attained when a nation's forces are able to exercise freedom of action in a given area for their own purposes for a period time with or without enemy opposition. It may be supported by the defeat of the enemy in key battles or prolonged campaigns and used to hold the initiative. It may also facilitate the application of decisive force at critical points in enemy held areas. Sea control enables the application of maritime power projection entailing offensive military operations designed to deliver force from the sea. Maritime power projection can take a variety of forms but is principally associated with the landing of amphibious forces, assets which are inherently vulnerable whilst at sea, and or the bombardment of enemy positions ashore. The first four months of the war would see the RAN involved in establishing sea control and applying maritime power projection in the Indo-Pacific region against German attempts at sea denial.

Australia's island geography dictates its dependency upon the sea. Whatever the intention of the enemy, threats must develop in the country's maritime approaches. In 1914, with submarine and aircraft development in its infancy, the only threat was from surface warships. Attacks could develop upon either coastal assets ashore such as vital military and civilian infrastructure, or sea lines of communication both within the approaches to major population centres or on the high seas.

The Navy's first major contribution to Australian security was through the deterrent effect of its offensive capabilities. Deterrence aims to prevent enemy forces from acting against a nation's interests through fear of the consequences of retaliation. It is embodied by the Royal Navy's motto, Si vis pacem para bellum, 'If you wish for peace, prepare for war'. Despite deterrence failing to prevent the outbreak of hostilities on 4 August 1914, the 1909 decision to establish an Australian manned, owned and controlled ocean-going fleet to assume responsibility for the defence of Australian waters now yielded immediate results. The maintenance of naval forces capable of inflicting unacceptable losses upon the German Navy in the Pacific prevented the enemy from forcing Australia to fight for sea control.

The Germans had acquired modest imperial possessions in the Pacific, including the north-eastern portion of New Guinea and the Bismarck Archipelago to Australia's immediate north, in the late Nineteenth Century. These interests were protected by the China-based East Asia Cruiser Squadron under Vice-Admiral Maximillian Von Spee. This powerful and well-trained force, including the 11,420-ton armoured cruisers SCHARNHORST and GNEISENAU along with the light cruisers EMDEN, LEIPZIG and NURNBERG, constituted the only real threat to Australia. The squadron's war orders saw Von Spee tasked with the disruption of sea lines of communication in both the Pacific and Indian oceans to prevent raw materials and foodstuffs reaching Britain. If realised, such interference would be catastrophic to Anglo-Australian trade and heavily impact upon the fragile Australian economy. However, when it came to war, Von Spee concluded the risks of attacking the Australian Station too high due to the presence of the RAN's fleet unit.

The fleet unit was designed as a microcosm of a traditional fleet and consisted of the battlecruiser HMAS AUSTRALIA as well as her supporting vessels; the cruisers SYDNEY, MELBOURNE and ENCOUNTER along with destroyers, submarines and auxiliaries. It was capable of patrolling the trade routes and possessed sufficient strength as a self-contained tactical unit to defeat enemy detached squadrons, such as Von Spee's, attempting to operate in Australian waters. The 19,200 ton battlecruiser, a faster and more heavily armed evolution of the armoured cruiser was capable of both outrunning and outgunning the German ships and could therefore dictate the course of any action. Von Spee concluded that even on her own AUSTRALIA was such a superior opponent that she must be avoided.



South Pacific Ocean, showing the movements of Admiral von Spee's squadron from the 15th of July to the 8th of December, 1914

To avoid a sea battle with the new RAN the German East Asia Cruiser Squadron withdrew across the Pacific Ocean hoping to get back to Germany. The decision to build a blue water RAN was now fully justified.

Faced with a Japanese declaration of war rendering the northern Pacific untenable coupled with intelligence that AUSTRALIA and her consorts were steaming to locate and engage him, Spee opted to withdraw across the Pacific in a bid to actively contribute to his country's war effort elsewhere whilst returning to Germany. Without firing a shot, the case for a blue-water Australian navy had been fully justified in the deterrent value it exerted on the German squadron. The correctness of Von Spee's decision is best illustrated by the outcome of the Battle of the Falkland Islands on 8 December 1914. In eluding the AUSTRALIA hunting him in the Pacific,

his squadron was intercepted by two British battlecruisers soon after entering the South Atlantic. Unable to disengage, the German force was annihilated. The RAN had achieved sea control but was yet to realise it. However, during the period Von Spee remained at large, his force still exercised considerable influence on Allied operations.

Warships should be prepared for a contingency and readiness is essential. Units not undergoing maintenance and at ordinary levels of training can be rapidly deployed to be on station early and undertake a wide variety of tasks. This concept is enshrined in today's ADF with rapid deployment forces held at a high state of readiness and will be further enhanced by Amphibious Ready Groups embarked in the RAN's latest CANBERRA class assault ships. The Navy of 1914 was able to deploy the fleet unit without delay to hunt and ultimately deter the East Asia Squadron. The destroyers PARRAMATTA, YARRA and WARREGO covered by SYDNEY raided anchorages in New Britain in search of Von Spee only seven days after war was declared. It also provided a force of reservists to spearhead an amphibious expedition aimed at German possessions.

Von Spee's whereabouts and intentions were unknown for some time. To counter him, the British immediately requested Australian assistance in seizing the German colonies of Nauru, the Caroline Islands and New Guinea to prevent them supporting naval operations against Allied outposts and shipping. From the outset, Australian naval forces operated in what would now be called joint operations with the Australian Army as well as combined operations with British, French and New Zealand forces. Interoperability, whilst no where near as advanced and cultivated as is the case today, was a key enabler towards the success of the ensuing series of operations.

On 29 August, AUSTRALIA and MELBOURNE operated with British and French warships to land an expeditionary force of 1,400 New Zealand infantry ashore in Western Samoa. The RAN then led a joint expedition against New Britain in conjunction with Australian Army forces. The Australian Naval and Military Expeditionary Force (ANMEF) consisted of 1,000 hastily recruited soldiers stiffened by 500 well-trained naval reservists acting as infantry. They were transported, protected and sustained by Rear Admiral Sir George Patey's AUSTRALIA, MELBOURNE, ENCOUNTER, PARRAMATTA, YARRA, WARREGO, the submarines AE1 and AE2 as well as auxiliaries.

The reservists led the initial assault on 11 September at Kabakaul soon followed by a further two landings at nearby Herbertshöhe and the capital Rabaul. 14 September saw the RAN fire on an enemy for the first time when ENCOUNTER provided naval gunfire support against German positions. On 17 September, with overwhelming Australian land forces ashore and HMAS AUSTRALIA and her consorts standing by to deliver further heavy ordnance if required, the acting Governor was forced to surrender the whole of German New Guinea. The brief fighting resulted in the first Australian combat casualties of the war; costing the landing forces the lives of five naval personnel and one soldier.

In examining the lessons of Australia's first ever joint operation a number of concepts of maritime doctrine, particularly relevant to modern amphibious operations may be discerned, such as sea control, maritime power projection, concentration of force, flexibility, cover, sustained reach, as well as presence and coercion.

Firstly, sea control conferred upon Australia the freedom of action to undertake offensive maritime operations and exploit it through the projection of maritime power.

Unaware of the German decision not to employ naval forces to defend their colonial possessions, the Australians employed concentration of force in preparation to fight for local supremacy. Concentration of force is the fielding of superior military numbers, firepower, skills and mobility to engage the enemy at the right place and the right time to achieve a decisive result. The assigning of almost the entire fleet unit to operations in German New Guinea was calculated to outclass any potential adversary and enable the successful projection of maritime power ashore through the landing of troops.

The inherent flexibility of warships allows employment across the entire spectrum of operations from diplomacy to combat. They are difficult to detect and track, may deploy into an area either covertly or overtly and can be used to create uncertainty in the enemy as to their motives and employment. Lacking accurate intelligence, the Germans were unaware of Australian intentions; the RAN could pursue the East Asia Squadron, cut German sea communications or land forces at any point amongst their scattered possessions. Furthermore, once in theatre, the fleet could be employed in a number of different ways in response to evolving events ashore.

Vulnerable assets require protection from enemy interference whilst conducting their tasking. Defenceless transports laden with troops in transit are undoubtedly one of the most highly prized of targets. It is both militarily and politically imperative to ensure the safety of land forces at sea before they are able to deploy and project their own inherent power ashore. Covering forces of warships may either operate in direct support of units requiring protection or provide deterrence at a distance by posing the threat of intervention. Von Spee was still assessed as a potential threat to the operation and the powerful escort ensured the ANMEF transports remained free of enemy interference during the approach and assault phases. Should events ashore have gone wrong, the landing forces could have been successfully evacuated under heavy gunfire support and removed to safety.

A successful amphibious lodgement requires the ongoing support of forces ashore; forces that may be engaging the enemy in order to attain their objectives. Sustained reach requires robust logistical arrangements to support prolonged military operations ashore. The ability of the ANMEF to deploy at such a distance from land-based support and conduct sustained operations was due to the provision of auxiliary vessels as an integral part of the force.

HMAS SYDNEY. Her victory over SMS EMDEN signalled Australian Sea Control had arrived.

SMS EMDEN on the rocks after her battle with HMAS SYDNEY.

Finally, the presence of warships demonstrates political interest; they are powerful instruments of diplomacy in peace and overt coercion in war. Naval forces may coerce through demonstrating a readiness to employ sufficient force to render an adversary's aims unachievable and thus may have a deterring effect. The presence of the fleet unit in German waters displayed Australian resolve in ending German hegemony in the area through a demonstration of capability. Its overwhelming firepower was employed to coerce the opposition ashore into ending resistance, often without needing to actually resort to force.

Concurrent to operations aimed at neutralising German naval power in the Pacific, both Australia and New Zealand prepared to despatch an initial land contingent of almost 30,000 troops and 8,000 horses across the Indian Ocean to Europe. Transports were ready to begin sailing for their concentration point at Albany, Western Australia by late September. However, with the whereabouts of the East Asia Squadron unknown, the British Admiralty refused to send transports away from the Australian coast without strong naval escort until the Germans had been accounted for. When Von Spee's 14 September appearance off Samoa became known, both the Australian and New Zealand governments cancelled all sailings pending Admiralty provision of adequate escorts.

To further complicate matters, Captain Karl von Müller's EMDEN had earlier been detached by Von Spee and now established her presence in the Indian Ocean through independent raiding operations. Hence threats from widely dispersed enemy forces now had to be taken into consideration. In maritime strategy terms, what the Germans had achieved with the modest forces at their disposal across two oceans were two different forms of sea denial; force in being and maritime strike and interdiction.

By avoiding a head-on confrontation with Allied forces, Von Spee's squadron acted as a force in being. Aided by poor Allied intelligence regarding its location and intentions, the Germans forced the Allies to make adequate dispositions to protect vulnerabilities within conceivable range of their forces. Despite losing sea control off New Guinea to the Australian fleet, he had, temporarily at least, completely shut down the movement of European-bound Australasian expeditionary forces. EMDEN on the other hand, contested Allied sea control through maritime strike and interdiction. Her employment as a commerce raider succeeded spectacularly as she disrupted Allied shipping and affected the economies and war effort of Allied combatants. EMDEN sank or captured 21 merchant ships, destroyed two small Allied warships, raided shore installations and drove up insurance rates. She also acted as a force in being; with considerable economy of effort she tied down a disproportionate number of Allied cruisers dedicated to bringing her to action.

The 30 September news that Von Spee was indeed heading east across the Pacific removed the perceived threat to Australian and New Zealand transports. However, the disruption ensured that the concentrated convoy of 38 transports would not leave Albany until 1 November. Provision against attack by EMDEN was still required; HMA ships MELBOURNE and SYDNEY again demonstrated RAN interoperability in company with the British cruiser MINOTAUR and the Japanese IBUKI. On 9 November, the convoy received transmissions from the Cocos Islands wireless station that a strange warship was approaching. EMDEN was unaware the convoy with its powerful escort was in the vicinity and whilst endeavouring to destroy a significant Allied communications post, lost the ensuing action against Captain John Glossop's faster and better-armed SYDNEY.

Vital to SYDNEY being in position to defeat the Germans was the role of intelligence. No less important in 1914 than today, the timely identification of EMDEN by personnel ashore and the broadcast of an alarm alerted the convoy escort and enabled the application of superior force where required. The reaction of the escort's Senior Officer, MELBOURNE's Captain Mortimer L'Estrange Silver, was tactically mindful of his responsibilities to the convoy. He appreciated his duty to remain at his post and detached Glossop to achieve his enviable position as the victor of the RAN's first naval battle. Maintenance and selection of the aim, remaining cognisant of the fact that military action is a means to an end, dictates that the overall aim of the mission must be foremost in the mind of commanders when formulating plans and conducting operations.

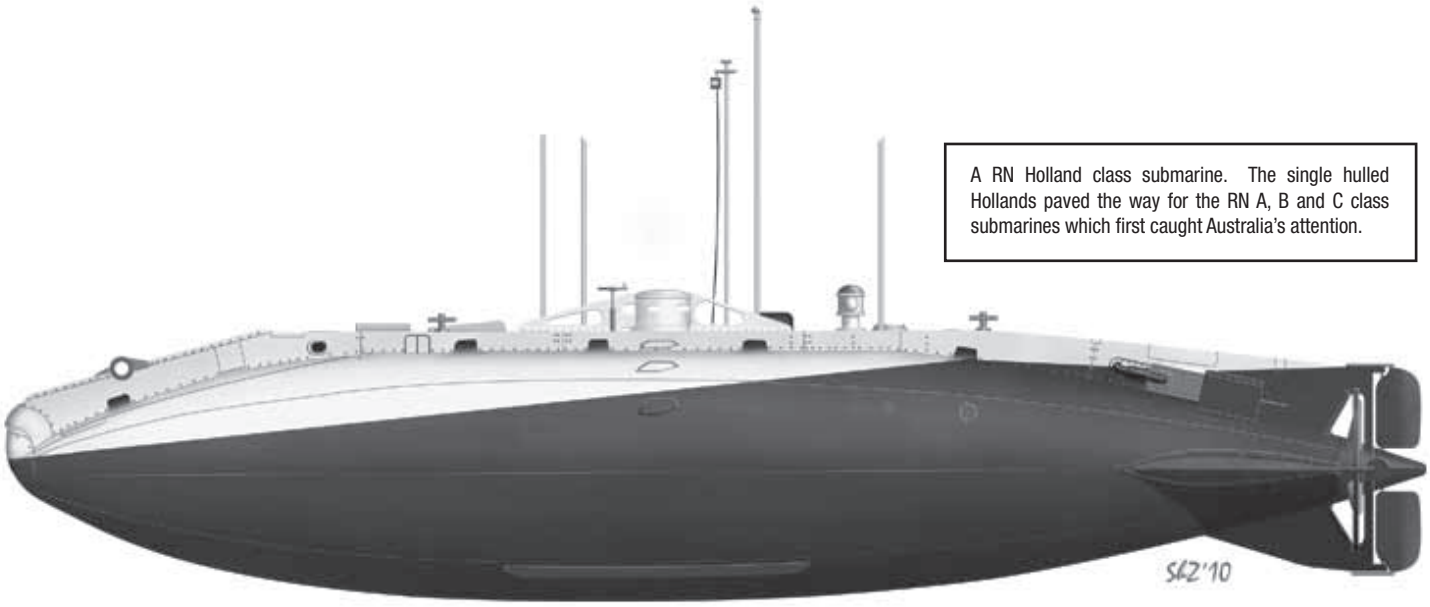
Whilst engaged in one of the most crucial of naval roles, the protection of merchant shipping, the Navy not only made it safe for trade and logistic operations throughout the Indian Ocean, but released numerous Allied warships for operations elsewhere. In defeating the EMDEN, the last German threat to Australia's area of interest, L'Estrange Silver and Glossop ensured that troop convoys could safely transit to the European theatre; confirming both Australia and New Zealand's ability to project maritime power abroad.

Between August and November 1914, the newly established RAN exerted more influence than at any time in its history and achieved a far reaching strategic victory through the elimination of enemy influence from Australia's areas of interest. Whilst the Imperial German Navy was able to accomplish a momentary disruption to Allied shipping in two oceans through a combination of sea denial actions, the offensive employment of the Australian fleet served to drive the Germans from their operating bases in the Pacific as well as destroy the threat to the nation's sea lines of communication in the Indian Ocean. No Australasian troops were lost to enemy action at sea and their ability to take part in the ANZAC landings seven months after the RAN first went into action was entirely due to the safety conferred by Allied sea control. Thus, the security achieved in home waters allowed Australia to engage in what has always been and remains to this day its preferred method of waging war: expeditionary operations in support of a powerful coalition far from the nation's shores and vital interests. ■

1ST PLACE

AUSTRALIA'S FIRST SUBMARINES

By Brendan Alderman



A RN Holland class submarine. The single hulled Hollands paved the way for the RN A, B and C class submarines which first caught Australia's attention.

The interesting story of Australia's first entry into the submarine game is told here by Brendan Alderman in this his first place Navy League of Australia Essay entry for 2013 in the non-professional category.

The first Submarine Service of the Royal Australian Navy (RAN) was formed just under a century ago with the introduction of the submarines *AE1* and *AE2* into the newly formed RAN in 1914. This milestone had a turbulent history leading up to it due to a number of significant political events and technological advances. The aim of this article is to examine the development of Australia's submarine-specific naval defence policies between 1901 and 1914. A variety of factors influenced Australia's naval defence and submarine policy during this period, such as significant international events, breakthroughs in British submarine technology and the efforts of key Australian and British military and political leaders.

THE FIRST BRITISH SUBMARINES

The submarines that first caught the attention of Australian leaders and defence planners were the coastal submarines that were derived from the *Holland*-class submarines. Britain built five *Holland*-class submarines from 1901 to 1902, which was around the time submarines became more prominent in The Australian media. The submarine was a small, single-hulled vessel that could not be operated on the high seas. The ballast and fuel tanks were also arranged inside the single-compartment hull itself, which made the interior of the submarine cramped for the crew members.

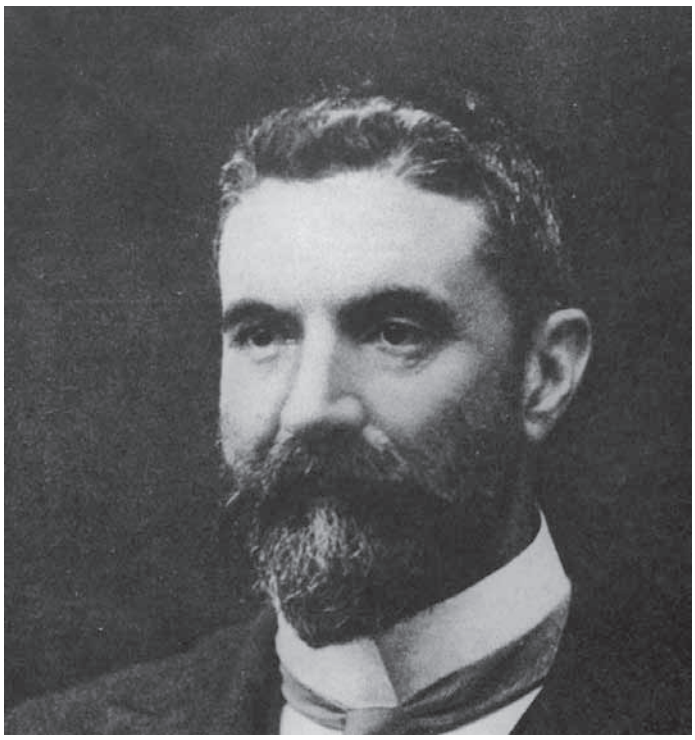
Navigation was a hazardous task for crew of the *Holland*-class. The original submarines had no periscopes, and were only added later to help the crew navigate whilst submerged. The submarine had to surface often in order to navigate, as a normal magnetic compass was useless if used inside the hull of a submarine. Regular surfacing was also needed in order to replenish the oxygen supply. A Holland-class submarine was also powered by gasoline engines on the surfaces and by an electric motor when submerged. Hazardous fumes built up inside the hull, so much so that the submarines carried mice in cages to help provide an early warning. The first accident involving a *Holland*-class submarine occurred in 1903, when gasoline fumes were ignited by a spark from unshielded electrical components. Despite all of these problems, these "pre-Adamite" submarines managed to use their stealth and torpedoes to track and "sink" British dreadnoughts in military exercises without fear of retaliation. Sir John Fisher witnessed the abilities of these submarines first-hand when he was Commander-In-Chief at Portsmouth in 1903-1904. Fisher's support of the development of British submarines played a large role in the formation of the first Submarine Service of the RAN.

The *Holland*-class submarines paved the way to the development of the first three British-designed military submarines, known as the A, B and C-class submarines respectively. Each class was a refinement of the *Holland*-class, increasing in size and displacement, but still being limited to the role of harbour defence. It was during the development of these submarines that Australian began to notice what they could offer to the naval defence of Australia.

EARLY AUSTRALIAN INTEREST IN SUBMARINES

The prospect of establishing an Australian navy was a key issue in the hearts and minds of many Australians at the time of Federation. Australia's naval defence largely relied on the Royal Navy (RN) and its Australia Station. Although the RN was the dominant naval power in

Australian Defence Minister James MCay. In May 1905 he was the first to write a requirement for submarines as harbour defence assets for the Australian Navy.



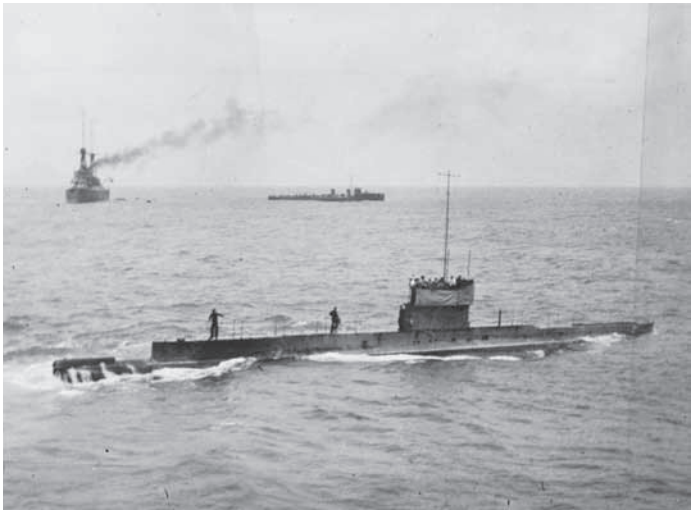
Prime Minister Alfred Deakin. Deakin saw submarines as being essential to ensuring the defence of Australian harbours.

the world at the time of Federation, events like the Crimean War of 1854-1859 showed that British warships could be transferred away from the defence of Australia in times of conflict. Australia also relied on its isolation from foreign powers as a means of naval defence, as it would take an enormous amount of resources for any foreign power to launch a major attack on the Australian mainland. By 1900, several foreign powers (such as the United States, Japan and Germany) managed to gain territories in the Pacific. Although British and Australian military advisors agreed that the most likely threat to Australia would be in the form of "raiding cruisers", this threat became more worrisome with strong naval powers like Germany gaining a strong foothold on Australia's doorstep.

The Colonial Conference of 1902 was held in order to renegotiate Australia's pre-existing naval defence arrangements with Britain. The Conference was also held in order to address concerns posed by Defence Minister John Forrest regarding Australia's inability to defend itself from threats like raiding cruisers. A new Naval Agreement was formed as a result of the Conference, strengthening the British forces assigned to the Australia Station. In order to bring the Agreement into effect, the Naval Agreement Bill of 1903 had to be passed by the Australian Federal Parliament. There was much debate over the Naval Agreement Bill before it was passed. One of the MPs involved in the debate was Arthur Groom. He favoured the conditions of the Bill, which would lead to Australia increasing its contribution to the Royal Navy in order to strengthen the Australia Station. Groom also brought up the issue of submarines as a means of harbour defence. Groom stated that submarines would 'at no distant date' take the place of forts in the role of harbour defence. He also noted that submarines would be much cheaper to acquire than cruisers. Australian and British interest in submarines continued to increase as British submarine technology was refined and developed. In December 1903, Defence Minister Sir Austin Chapman met with Vice-Admiral Edward Fanshawe of the British Admiralty. The concept of acquiring one or two submarines for the defence of Port Phillip was floated at this meeting. Chapman and Fanshawe stated that the Admiralty would make an enquiry regarding the feasibility of the idea before any action was undertaken. A contemporary commentator described the proposal as a "hopeful plan", stating that "the presence of one submarine in the bay would be sufficient to scare away half a dozen of an enemy's cruisers." Another prominent military leader to consider the purchase of a submarine for Australia was Sir George Clarke, who was part of the Committee for Imperial Defence. In 1904, Clarke left Victoria on a trip to Britain to enquire about the purchase of a submarine for Australia. After seeing the submarines in Britain, Clarke decided that no purchase of a submarine should be made on the grounds that submarines "were not yet clear of the inventor's hands." It was not until 1905 that submarines truly became a part of the political debate regarding the composition of the RAN.

NAVAL DEFENCE DEBATES OF 1905-1906

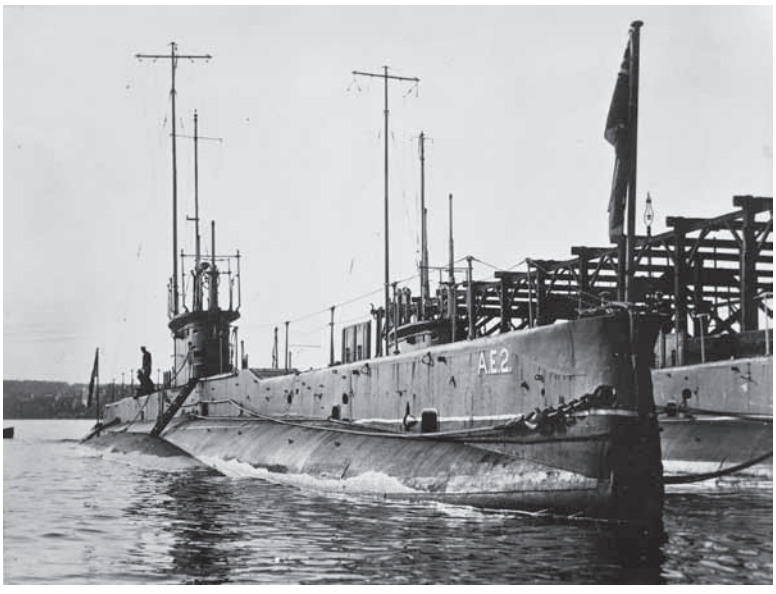
In 1905, Australia's naval defence was still the Royal Navy warships attached to the Australia Station. The rivalry between Germany and Britain played a large part in the redistribution of the Royal Navy's warships around the world. A lot of the more powerful warships were moved closer to British waters, which meant that the Pacific Fleets (including the Australia Station) were weakened. The need for a local Australian navy was more important now than ever, as Britain could not be entirely relied upon for the defence of Australia. On the 12th of May in 1905, Defence Minister James McCay wrote that Australia should complete her harbour defences as a top priority. McCay also wrote that the best vessels suited for harbour defence would be destroyers, torpedo boats and submarines. At the first Defence Council meeting in 1905, Director of Naval Forces (DNF) Captain William Rooke Creswell put forward his own plan for a local Australian Navy. It consisted of three cruiser-destroyers, sixteen torpedo destroyers and twelve torpedo boats. There were no submarines in Creswell's proposed navy, suggesting that Australia's leading naval adviser did not believe that Australia should have submarines as part of its fleet.



AE-1 on the surface. The (Australian) E-class was an improvement over the RN D-class. It had an increased displacement over the D class, improving its endurance, habitability and sea-worthiness. (Seapower Centre)

On the 12th of June in 1905, Alfred Deakin gave a speech outlining government policy for the next three years. Deakin stated that Australia should focus on making sure that its harbour defences were "in a fit state of readiness." Deakin also saw submarines as being essential to ensuring the defence of Australian harbours, in addition to a flotilla of destroyers and torpedo boats. There were other Australian politicians who supported the idea of an Australian navy with submarines. On the 24th of October in 1905, MP Henry Bourne Higgins stated in the House of Representatives that "Australia needed coastal defences in the shape of torpedo boats and submarines." Other parliamentarians opposed submarines. In the same sitting, MP William Henry Kelly criticised Higgins' comments, stating that "submarines would be useless in Australian waters, since the fastest of the type yet built could not travel more than ten knots an hour." Shortly after this sitting in Parliament, DNF Creswell proposed that the Commonwealth should purchase a fleet of torpedo boat destroyers. Creswell emphasized the need for torpedo boat destroyers in an Australian fleet. Creswell did not recommend the purchase of any submarines, as they were "still in the experimental stage" and that "the forces acting on submerged vessels have not yet been accurately determined."

At the beginning of 1906, DNF Creswell released a report on the year 1905 to the Federal Parliament. He outlined a much stronger case for the need for a local defence flotilla. Creswell believed that Australia was very much at risk of attack from raiding cruisers. He stated that even a cruiser could maintain a state of panic if there was no fleet available to stop it. His preferred method of defence was in the form of torpedo craft and not submarines. Shortly after delivering the report, Creswell was sent on a trip to Britain to "study the latest achievements of the British Admiralty in connection with torpedoes and submarines..." When Creswell returned from England, he stated that submarines, whilst much improved, could not be relied upon as an effective means of defence. Whilst the debate for the establishment of an Australian Navy continued throughout 1906, it was not until 1907 that submarines became a major part of the debate.



AE-2 and AE-1 at Garden Island, Sydney in 1914. At the time the image was taken these two submarines were the most technically advanced in the world. (Seapower Centre)

AUSTRALIAN NAVAL DEFENCE POLICIES 1907-1909

On the 13th of December in 1907, Prime Minister Alfred Deakin presented his government's defence policy to the House of Representatives. It was during this speech that Deakin justified his decision to acquire nine submarines in addition to six torpedo boat destroyers. Deakin noted the "fragility" of the C-class submarines, as well as the needed to produce submariners with "expert knowledge and training." Deakin also acknowledged that "though the submarine may prove to be the weapon of the future, its superiority has not been demonstrated as yet." Deakin also referred to the advice of the then-First Lord of the Admiralty, Lord Tweedmouth, who "strongly recommended submarines", saying they were the weapon of the future. Drawing on his own experiences in London, Deakin explained how a modern submarine could use its stealth to severely demoralise and deter any attacking cruiser squadron. In short, submarines appeared to be the best means to provide the right defences for the threats that Australia could face. Deakin also added that whilst the first submarines would be built in London, he would endeavour to ensure that future submarines are built in Australia, in order to develop Australia's naval defence industry. On the same date as Deakin's speech, DNF Creswell advised Defence Minister Thomas Ewing against the acquisition of any submarines. Deakin's defence policy had not yet been implemented when Deakin lost office in 1908, so no destroyers or submarines were built under this policy. On the 4th of February in 1909, DNF Creswell advised the new Fisher government to acquire an Australian navy composed of torpedo boat destroyers. The Fisher government decided to enact Creswell's proposal, despite the advice given to the Deakin government in 1907 by Imperial authorities recommending the acquisition of submarines. By early March 1909, it appeared as though the new Australian navy would be entirely composed of destroyers and would not have a submarine service.

On the 16th of March in 1909, Sir Reginald McKenna (the First Lord of the Admiralty) announced that Britain would be accelerating the construction of new warships in response to the drastically increased rate of production of warships in Germany. Britain needed to do this, or else it would lose numerical superiority over the Germans. This naval scare made the issue of imperial defence an urgent matter of the utmost importance. On the 30th of March in 1909, the Fisher government announced that it would increase the production of destroyers, stating that "the new boats will include four ocean-going destroyers...and also 16 other River-class, making a total, with the three on order, of four ocean-going

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Inside the control room of an E-class submarine. External ballast tanks gave quite a bit of room inside the submarine compared to previous boats.

destroyers and 19 River-class, or 23 in all." This policy was never carried through, as Alfred Deakin was sworn into the office of Prime Minister on the 2nd of June in 1909. One of the Deakin government's first responsibilities was to contribute towards imperial defence. An Imperial Conference was to be held in London on the 28th of July in 1909. Deakin and Defence Minister Joseph Cook were unable to attend the Conference, so they delegated MP Justin Foxton to be the official representative of the Commonwealth of Australia at the Imperial Conference. Foxton was accompanied by DNF Creswell and Colonel Bridges. The Australian delegation party took with them to London an offer from the Deakin government of an 'Australian dreadnought'. At the Imperial Conference, the Admiralty proposed a strategy for imperial defence that determined the final composition of the RAN.

THE AUSTRALIAN FLEET UNIT

The First Sea Lord of the Admiralty, Sir John Fisher, had developed a method of imperial defence known as the 'fleet unit' concept. Fisher proposed that Australia acquire a fleet of one dreadnought battlecruiser, complemented by a fleet of three cruisers, six destroyers and three submarines. These ships would form the Australian fleet unit. According to Fisher's imperial naval strategy, the colonies would maintain fleet units based at Australia, China and the East Indies. In times of wars, these fleet units would combine to form a Pacific Fleet, which greatly aided the defence of the Empire. In peacetime, the fleet unit could defend Australia from the threat of foreign cruisers. Submarines were included as a vital part of the fleet unit. The submarines complemented the coastal defences of the Australian fleet unit, essentially adding another layer to Australia's naval defences. The Australian delegation was originally hesitant to accept the proposal. The fleet unit was much larger than Australia could afford and most of the construction would be in Britain, instead of developing the Australian industry. The Australian delegation eventually decided to accept the fleet unit as the basis of the RAN.

Although Lord Fisher recommended C-class coastal defence submarines for the Australian fleet unit, he was preparing the Australian fleet for the future. Lord Fisher wanted the Australian fleet unit to give Australia the foundations of a permanent naval force. If submarines were the future, Australia needed submarines as part of its fleet unit. Lord Fisher considered submarines to be a part of an "impending revolution" were submarines will become powerful "offensive weapons of war." The D-class submarine under development in Britain was the first British submarine that was designed for offensive operations. The D-class submarine was significantly larger than previous classes and featured external ballast tanks. This made the interior of the submarine more spacious and also made the submarine able to cope with rough weather on the high seas. It also carried more fuel, making able to operate on the high seas. The D-class submarine was also the first British submarine class to incorporate a diesel engine for propulsion (as opposed to the gasoline engines on previous classes). The use of diesel over gasoline significantly reduced the risk of explosions and hazardous fumes inside the submarine, making them safer. The submarine carried two diesel engines, each one linked its own propeller shaft, making the D-class the first British twin propeller submarine. The use of twin propellers not only increased the horsepower available to the D-class, but it also provided a back-up in case one engine ceased functioning. Finally, the D-class was the first submarine to be fitted with wireless communication equipment. The equipment could not be used underwater, but it could be used for intelligence gathering on the surface.

On the 24th of November in 1909, Defence Minister Cook stated that "it is more likely that two submarines of the D class will be substituted for three of the C-class." The Deakin government also delayed the acquisition of the submarines, even as construction on the other elements of the fleet unit began. On the 10th of December in 1909, Deakin announced that his government did not want to order submarines at that time, as "improvements were being made" and that they "only want the latest" for the Australian fleet. No submarines had been ordered by the time Andrew Fisher was sworn in as Prime Minister in April 1910. A decision was not made until the end of 1910. The Admiralty advised the Fisher government to build two E class submarines in place of the three C class submarines. In December 1910, the Fisher government decided to acquire the E class submarines. The E class submarine was a refinement of the D class submarine. It had an increased displacement over the D class, improving its endurance, habitability and sea-worthiness. The E-class was also the first British submarine to incorporate transverse bulkheads into its design. In the event of a hull breach, these bulkheads could be closed off in order to isolate the flooding section, increasing the survivability of the submarine.

The construction of the Australian E-class submarines, AE1 and AE2, began in late 1911. It was not until the 24th of May in 1914 that the submarines arrived in Sydney and were officially accepted into the service of the RAN. This event was the fruit of hazardous submarine pioneering and development and over a decade of intense political discussions and debates. The acquisition of AE1 and AE2 can be considered an enormous success, as it resulted in Australia gaining two of the world's most capable submarines at a time when they were most needed. ■

STATEMENT OF POLICY

For the maintenance of the Maritime wellbeing of the nation.

The Navy League is intent upon keeping before the Australian people the fact that we are a maritime nation and that a strong Navy and capable maritime industry are elements of our national wellbeing and vital to the freedom of Australia. The League seeks to promote Defence self reliance by actively supporting defence manufacturing, and the shipping and transport industries.

The strategic background to Australia's security is changing and in some respects has become less certain. The League believes that Australia should pursue the capability to defend itself, paying particular attention to maritime defence. Through geographical necessity Australia's prosperity, strength, and safety depend to a great extent upon the security of the surrounding seas and island areas, and on unrestricted seaborne trade.

The Navy League:

- Believes Australia can be defended against attack by other than a 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 with our allies.
- Supports a continuing strong alliance with the US.
- Supports close relationships with all nations in our general area and particularly New Zealand, PNG and the island States of the South Pacific.
- Advocates the acquisition of the most capable modern armaments, surveillance systems and sensors to ensure that the ADF maintains technological advantage over forces in our general area.
- Advocates a significant deterrent element in ADF capability enabling powerful retaliation at significant distances from our shores.
- Believes the ADF must be capable of protecting commercial shipping both within Australian waters and beyond, recognising that this means in conjunction with allies and economic partners.
- Endorses the control of coastal surveillance by the ADF, and the development of the capability for the patrol and surveillance of all of Australia's ocean areas, its island territories and the Southern Ocean.
- Welcomes Government initiatives concerning the recovery of an Australian commercial fleet capable of supporting the ADF and the carriage of essential cargoes to and from Australia in times of conflict.

As to the RAN, the League, while noting the vital national peacetime tasks conducted by Navy, including border protection, flag showing/ diplomacy, disaster relief, maritime rescue, hydrography and aid to the civil power:

- Supports the concept of a Navy capable of effective action in war off both the east and west coasts simultaneously and advocates a gradual build-up of the fleet and its afloat support elements to ensure that, in conjunction with the RAAF, this can be sustained against any force which could be deployed in our general area.
- Welcomes the announced increase in Defence expenditure to 2% of GDP over the next 10 years.
- Believes that the level of both the offensive and defensive capabilities of the RAN should be increased and is concerned to see that the substantial surface and sub-surface capability enhancements contained in the 2009 Defence White Paper should survive the forthcoming 2014 review of Defence capability; in particular a substantially strengthened submarine force, 3 Air Warfare Destroyers (AWDs), 2 landing ships (LHDs), 8 new frigates (Anzac class replacements), 20 offshore combatant ships, 6 heavy landing craft and substantial numbers of naval combatant and ASW helicopters.
- Strongly supports the acquisition of large, long range and endurance, fast submarines and, noting the deterrent value, reliability and huge operational advantages of nuclear powered submarines and their value in training our anti-submarine forces, urges the consideration of nuclear power as an option for those vessels.
- Notes the potential combat effectiveness of the STOVL version of the JSF and supports further examination of its application within the ADF.
- In order to mitigate any industry capability gap following the completion of the AWD program, recommends bringing forward the start date of the planned future frigate (Anzac replacement) program, recognising the much enhanced capability projected for these ships.
- Urges that decisions to enhance the strength and capabilities of the Army and Air Force and to greatly improve the weaponry, and the intelligence, surveillance, reconnaissance, cyberspace and electronic warfare capabilities of the ADF be implemented.
- Supports the development of Australia's defence industry, including strong research and design organisations capable of the construction and maintenance of all warships and support vessels in the Navy's order of battle, and recognises the fundamental importance of a stable and continuous shipbuilding program for the retention of design and building skills and the avoidance of costly start up overheads.
- Supports the efforts by Navy to rebuild the engineering capability to ensure the effective maintenance and sustainability of the fleet.
- Advocates the retention in preservation (maintained reserve) of operationally capable ships that are required to be paid off for resource or other economic reasons.
- Supports a strong Naval Reserve and Australian Navy Cadets organisation.
- Advocates a strong focus on conditions of service as an effective means of combating recruitment and retention difficulties.

The League:

- Calls for a bipartisan political approach to national defence with a commitment to a steady long-term build-up in Australia's 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.

HMA Ships SYDNEY, DARWIN, PERTH & PARRAMATTA in line astern coming down Sydney Harbour re-enacting the first RAN Fleet Unit entry 100 years ago surrounded by spectator craft. (RAN)

The official review ship for the IFR 2013 was HMAS LEEUWIN. Seen here with HMAS GASCOYNE rendering honours. (RAN)

An RAAF flypast of F/A-18 Hornets and Hawk aircraft over the assembled ships in Sydney Harbour for the IFR 2013. (RAAF)

(from R to L) HMAS STUART, SYDNEY and DARWIN during the fireworks spectacular on the Harbour. The ships acted as the launch platform for many of the fireworks and also had images and a light show projected onto them. IFR themed images were also projected on to the Opera House and Harbour Bridge pylons. (RAN)