THE





# THE CREATION AND ESTABLISHMENT OF THE JAPANESE NAVY - PART 3

SOLWARA WANTOK: THE RAN AND THE PNGDF

# THE EMERGENCE OF ZOMBIE FLEETS (AND BMW BUILDS MINIS IN OXFORD)



**AUSTRALIA'S LEADING NAVAL MAGAZINE SINCE 1938** 

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# Volume 81 No.2

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#### Front cover:

HMAS COLLINS, HMAS FARNCOMB, HMAS DECHAINEUX and HMAS SHEEAN in formation while transiting through Cockburn Sound, Western Australia Image LSIS Richard Cordell.

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#### All letters and contributions to:

The Office of The Editor *THE NAVY* Navy League of Australia GPO Box 1719 Sydney, NSW 2001 E-mail to: editorthenavy@hotmail.com

All Subscriptions, Membership and Advertising enquiries to:

The Hon Secretary Navy League of Australia, NSW Division GPO Box 1719, Sydney NSW 2001

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# FROM THE CROW'S NEST

**By Aeneas** 

# TRUST, BUT VERIFY

In this issue of *The NAVY* there are four important papers. The first is by John Jeremy and takes forward a review of submarine development over the past century, through to the current day. The second connected paper is by Robert Blake and considers alternative modular designs with regard to refitting Western Fleets - based, in part, on the recent sinking of the HMNoMS HELGE INGSTAD (F313), a subject raised in Flash Traffic (The NAVY) Jan-Mar 2018, Vol. 81, No.1. The third paper by Commander Masashi Kuratani JMSDF (Ret.) is the penultimate in the series regarding the creation and establishment of the Japanese Navy, covering the periods 1976 to 2007, and 2008-2018. The final paper of this series will cover 1925-1945 and the Second World War. The fourth paper by Greg Swindon, examines the RAN's relationships with the PNG Maritime Element, from their formation to date. It is a rich history, and probably no more



The Hon Christopher Pyne (outgoing Defence Minister) and Mme Florence Parly, sign the Attack-class Strategic Partnering Agreement 11 Feb 2011.

important than now as Australia seeks to re-secure its northern belt and roads.

Before signing the Strategic Partnering Agreement for the *Attack-class* (Future) Submarine on 11 February, Mme Florence Parly, French Minister for the Armed Forces made a philosophical observation (reported in the French media):

Il faut beaucoup de confiance de la part de l'Australie pour parier sur la France, et beaucoup de confiance de la part de la France pour partager avec l'Australie des compétences qui sont tellement au coeur de notre souveraineté, de notre autonomie stratégique et qui résultent d'investissements immenses pendant des décennies.

It takes a lot of trust from Australia to bet on France, and a lot of [confidence] trust from France to share with Australia skills that are so central to our sovereignty, our strategic autonomy and resulting in huge investments for decades.

There is not a direct translation for 'Trust' into the French, and 'Confiance' is more a state of mind, including confidence in a relationship or, for example, a strategic partnering agreement. In her reported speech (in English), Madam Parly mentioned Trust only once, when she eloquently stated (on ending):

An entire industry needs to be reshaped for the operation of this project. This will be no mean feat. It will require a lot from Naval Group, but a lot from Australia too. It will create vast opportunities locally, but it will also be an enormous challenge. But by joining forces, I *trust* that we will rise to it. Professor Bogais' (University of Sydney Business School) analysis noted:

The tone conveyed by the Minister in her French statement was clear: 'sharing knowledge is a matter of national security for France, as this knowledge is core to France's sovereignty and so its sovereign capability'. There must be trust (confiance) on both sides, she said. Implying that any relationship naturally begins from a position of understandable distrust. Trust itself is difficult to define, largely abstract, and does not translate directly from the French and English. However, distrust is evidence-based and measurable. Consequently, controls can be configured as a basis for forming and enabling a reliable relationship for ongoing negotiation, where trust may be developed. Distrust is a more reliable platform and starting point for (any) negotiations – but clearly not a successful outcome or end point...

There are parallels with what Madam Parly said and the Russian proverb *Doveryai*, *no proveryai*, 'trust, but verify' – used as a basis for President Ronald Reagan's successful 1984-86 nuclear disarmament negotiations. More recently, the lack of ability to verify and therefore trust has led to the U.S. (and Russia) threatening to walk away from the Intermediate-range Nuclear Forces (INF) treaty.

Writing in *The Australian* (2 March 2019) Greg Sheridan [1] reports Michael Thawley, [former Ambassador to Washington and head of the Prime Minister's Department (in 2014)] asked "Defence whether it had undertaken a proper due-diligence study of whether it would be possible to lend-lease nuclear-powered Virginia-class submarines from the U.S". Ross Babbage (in the same article) argues "we need lots of stuff and we need it soon, really soon....[in order to] adopt an asymmetric force structure, as the Chinese have done towards the Americans, so we could rip the arm off even a big aggressor".

Sheridan goes on to state inter alia:

We are a land of lotus eaters, loitering in paradise, unaware of everything that is happening around us.

It is the most foolish, crippling fiction to think we cannot defend ourselves: we know what to do if we want to defend ourselves. We could easily afford it. We have decided not to do it. Over the next 10 years...we could face the most serious threats to our national interests since World War II. Our forces are too small and too diverse... As Stalin (paraphrased) said, "in the contest between quality and quantity, quantity has a quality all of its own". Or as soldiers put it, "80 per cent on time is better than 100 per cent too late".

In the same article [1]

Senator Jim Molan fears the Chinese could Finlandise Australia. They could do that in 22 days because we have no liquid fuel reserves. [Furthermore] if you wanted to establish



Oberleutnant zur See Karl Dönitz standing watch in U-39 in WW1.

four planes continuously over [a convoy] travelling along the coast, it would take 16 planes and 20 or 30 pilots. And if we've got more than 60 fighter-pilots in this country I'll [eat my hat!] Peter Jennings notes that China's occupation of the South China Sea has gravely worsened Australia's strategic outlook: "It's every bit as audacious and game-changing as what the Russians have done in Ukraine. It changes our outlook dramatically".

The NAVY has maintained and elucidated similar positions over the years, which returns to the questions of trust, and knowledge sovereignty described by Madam Parly. Australia's deterrence is based upon 'others' trusting in Australia's ability to respond in a timely, proportionate manner to a threat. The deterrenceweapon of political choice is the submarine, with or without nuclear weapons. In order to negotiate the 'escalator' up and down and to be an effective deterrent, the submarine has to be connected to 'conventional' forces (and diplomacy). Extended Deterrence (provided by the U.S.) is based on Australia being trusted to manage its own escalator – and not becoming a 'tripwire', such as West Germany during the Cold War.

The assumption is that Australia can trust the U.S., which raises a series of questions:

- 1. Can / does the U.S. trust Australia particularly if Australia cannot look after itself for "90 days before the cavalry arrives"? The tripwire question...
- 2. What is Australia doing tangibly to reinforce Australia-U.S. assumptions?
- 3. Working, if not from a position of distrust, then one of understanding Australia's own (unique) critical sovereign interests, what is the negotiation process by which Australia can *verify* trusted assumptions?
- 4. Are there mechanisms for mitigating common risks (mistrusts), from which new trusts may emerge?

For example, the biggest risk Naval Group may perceive is to its reputation, caused by delivering the first *Attack-class* submarine in the 2030s. This may be a shared risk! How could this be mitigated? A logical mitigation-contingency-



Japanese Mini submarine (IJN HA14) recovered near Bradleys Head June 1942 (Image AWM).

strategy might be the '2+12 option': building the first two Attack-class submarines in France, for delivery in the 2020s. During which time, knowledge sovereignty and sovereign capability is transferred to Australia. Fourteen submarines also answers the (full) Dönitz cycle – maintaining a standing Deterrence force of three co-dependent patrols (E,W and N/S), with two submarines in design and build (so also avoiding the shipbuilding valley of death).

His Excellency, The Governor of Western Australia, the Honourable Kim Beazley AC and Patron of the NLA, apparently advocated the '2+12 option' in 2008-2009 (the best last Defence White Paper). It is Labor who is pushing for the restoration of the 90 day strategic fuel reserve (and local refining capacity), and the development of a strategic shipping fleet. In an election year this raises other questions, such as:

- Who (post-election) will tackle the *disjuncture* between a sovereign and a submarine capability (Australian National Audit Office)? Noting;
   80% of outgoing Minister Pyne's Naval Shipbuilding Advisory Board are Americans, supported (apparently) by a similar proportion of contracted U.S. 'Commonwealth' program directors; led by a U.S. DG; supported by a U.S. Prime raising three follow-on questions:
  - a. Can sovereign interests be verified?,
  - b. Can this ever be a sovereign capability?, and
  - c. What must the French / Naval Group think?
- 2. Is verification possible unless the program is a sovereign negotiated capability?
- 3. Can a delivery model be developed based upon measurable distrusts and verified opportunities?
- 4. Could France potentially be / become Australia's more trusted strategic partner of choice? ■

**Apology and Erratum:** It is sincerely apologised that Mr Kelvin F Curnow's (1st Prize, Essay Competition - non-professional) name was misspelled throughout the previous issue. Please accept this correction and apology.

#### REFERENCES AND NOTES

[1] Greg Sheridan (2019) 'As threats mount, we must start taking defence seriously', *The Australian*, 2 March

# **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 many respects has become much less certain following increasing tensions, particularly in East Asia involving major powers, and in Europe and the Middle East. The League believes that Australia should rapidly increase 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 particularly New Zealand, PNG and the South Pacific island States.
- Advocates the acquisition of the most capable modern armaments, surveillance systems and sensors to ensure technological advantage over forces in our general area.
- Advocates a strong deterrent element in the ADF 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, in conjunction with allies.
- Endorses the development of the capability for the patrol and surveillance of all of Australia's ocean areas, its island territories and the Southern Ocean.
- Advocates Government initiatives for rebuilding an Australian commercial fleet capable of supporting the ADF and the carriage of essential cargoes to and from Australia in times of conflict.
- Welcomes the 2016 Defence White Paper and the Government intention to increase maritime preparedness and gradually increase defence expenditure to 2% of GDP.
- Urges the strength and capabilities of the Army (including particularly the Army Reserve) and Air Force be enhanced, and the weaponry, intelligence, surveillance, reconnaissance, cyberspace and electronic capabilites of the ADF be increased, including an expansion in its UAV capability.

**As to the RAN, the League,** while noting 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.
- Considers that the level of both the offensive and defensive capabilities of the RAN should be strengthened, in particular with a further increase in the number of new proposed replacement frigates and Offshore Patrol Vessels, noting the

escort requirements of our 5 new major warships and the many other essential maritime tasks.

- Recommends bringing forward the start date of the replacement frigate program to both strengthen the RAN and mitigate the local industry capability gap on completion of the current guided missile destroyer program.
- Recommends the timely replacement and increase in numbers of the current mine-countermeasure force.
- Strongly supports the early acquisition of large, long range and endurance, fast submarines and notes the deterrent value, reliability and huge operational advantages of nuclear powered submarines and their value in training anti-submarine forces.
- The League is concerned at the very long time before the projected 12 new conventional submarines can enter operational service, noting very serious tensions in the NW Pacific involving major maritime powers.
- Recommends very early action to provide a submarine base on the Eastern seaboard.
- Notes the potential combat effectiveness and flexibility of the STOVL version of the Joint Strike Fighter (F35 Lightning II) and supports further examination of its application within the ADF.
- Supports the development of Australia's defence industry, including strong research and design organisations capable of the construction and maintenance of all warships, submarines and support vessels in the Navy's order of battle, and welcomes the Government decision to provide a stable and continuous shipbuilding program.
- Supports the efforts by Navy to rebuild the engineering capability to ensure effective Fleet maintenance and sustainability.
- Advocates the retention in 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.

# **THE PRESIDENT'S PAGE** \*\*\*\* Mr Matthew Rowe

Welcome to another great edition of The *NAVY* – The Magazine of the Navy League of Australia. Inside this edition you will find much to read and reflect on regarding the maintenance of Australia's maritime well-being. In addition, in the middle pages, you will find an application form inviting you to join the Navy League. The Navy League was established in 1900 with the aim of creating an interest in the sea and keeping before the Australian people the fact we are a maritime nation and that a strong Navy and a sound maritime industry are indispensable elements to our national well-being and vital to the freedom of Australia.

If you have not joined the *Navy League*, we encourage you to take up the opportunity. Those of you who do, will receive four quarterly editions of *The NAVY* magazine delivered to your home, as well as becoming members of the *Navy League*. Please join us in this important task, or consider giving the gift of an annual membership to a friend, colleague or family member who would benefit from the fine reading.

We thank you for your ongoing support in this most important national task.

# THE NAVY LEAGUE OF AUSTRALIA PERPETUAL TROPHY – COMMUNITY AWARD

The Navy League Perpetual Trophy – Community Award is presented each year to the ship or establishment that has made the best contribution to the community. Nominations are reviewed by the Fleet Commander before a shortlist is considered by the Federal Council. The award was established in 1981 and as noted last year, the Federal Council received a short list of seven applicants across the Fleet, each achieving highly in the service of the community and deserving of recognition.

The shore base, HMAS STIRLING, has the primary purpose of providing operational and logistic support to RAN ships, submarines and aircraft based in and operating around Western Australia. HMAS STIRLING has again been chosen as the



Ministers and Chiefs of Defence Force including Chief of Navy gather for Signing of the SPA with Naval Group.



Commanding Officer HMAS STIRLING Captain Brian Delamoint and Chief Petty Officer Toni Ralph accepting Certificates for the Navy League Perpetual Trophy. HMAS STUART (FFH 153) in background.

Community Award winner having represented Navy and the Australian Defence Force across the State with fundraising and participation in over 360 community events, involving the entire ship's company and with contributions from all departments across HMAS STIRLING. These events included the Red Cross 'Red 25' Blood Challenge, a cancer charity high tea and Celebrate Maritime Day among many others

This is the second year in a row that HMAS STIRLING has been the award winner, and a credit to the recipient Commanding Officer, Captain Brian Delamont RAN, the entire ship's company and especially the Navy Community Engagement WA Regional Coordinator, Chief Petty Officer Toni Ralph.

Well done HMAS STIRLING.

# STRATEGIC PARTNERSHIP AGREEMENT

Early in February this year the Australian government and French Shipbuilder 'Naval Group' signed a Strategic Partnership Agreement (SPA) setting out the terms and conditions for entirety of the \$50billion Future Submarine Program. The SPA provides for continued transition between phases of the complex program to build 12 non-nuclear submarines, based on

> the re-engineering of a nuclear submarine design. Mounting time pressure on the build program, with boats scheduled to commence service in the 2030s, gives further credence to the real need for revisiting the nuclear design and the consideration of a nuclearpowered future in Australia.

# BIPARTISAN POLITICAL APPROACH TO DEFENCE AND SECURITY

With a Federal election due before our next edition, it is timely to remind readers of *The Navy League's position* regarding Australian defence, industry and security. While we encourage spirited debate on all issues, the *Navy League* calls for a bipartisan political approach to national defence, with a commitment to a steady long-term build up in our defence capability, including the required industrial infrastructure. It is the League's view that national defence and security are issues too important to politicise for short term benefit and encourages calm heads and a bipartisan political approach.

# **IN THIS EDITION**

In this edition you will find a range of fascinating reading.

The article reflecting on A Century of Submarine Development, written by the Navy League's Vice President, John Jeremy AM, is testament to the breadth of knowledge and depth of experience of the author while being written in terms that all readers can embrace. I commend it to you.

R.C. Blake's commentary on shipbuilding and designs will be of interest not only to those with an engineering and design focus, but with principles that extend to maritime trade and warfare, should find favour with all readers.

Those of you who have been following the Japanese Naval History series will be pleased to find the third instalment in this edition. This article brings us from 1976 up to date and any reader who has missed the first two parts will be reaching for past editions once having read this latest and most fascinating commentary.

Australian historian Greg Swindon's article on the RAN and PNGDF offers very useful observations on the relationship and benefits from the author's research skill, as well as his extensive operational experience – including in the region and beyond.

# HAPPY READING

I continually encourage readers of *The NAVY* and members of the Navy League to revisit our Statement of Policy which appears in the front of the magazine. We are a maritime nation and a strong Navy and a capable maritime industry are indispensable to our national wellbeing and freedom.

The Statement of Policy is our guiding principle and if we are to fulfil our objectives it is important that we continue to reference it and annually we refine it.

I encourage you to revisit the Statement of Policy along with your reading of this edition.

Happy reading.

Let us have your feedback at <a href="mailto:editor@navyleague.org.au">editor@navyleague.org.au</a>



# **RESPONSE TO NUCLEAR SUBMARINES 1**

#### **Dear Editor**,

The article by the very experienced Admiral Peter Briggs (*The NAVY* Jan 2019 edition) is a most welcome and comprehensive coverage of the need for Australia to introduce nuclear-powered submarines.

While 10 or 12 such submarines, with double manning, might be an ideal force for Australia, a somewhat smaller – a force of say 8 such boats, without double manning, would provide a powerful deterrent with economic, political, and manpower-achievable advantages. Maybe a target of about 1400 nuclear-trained submariners over the building stage of the submarines would be viable and achievable and the boats be in commission over a much reduced timescale to the date of 2054 proposed.

The world is now in a state of considerable tension and a form of cold war. An incident, maybe quite unforeseen, could result in the outbreak of a major war, despite the great efforts of many nations to avoid such a catastrophe. We should remember the major developments in the Korean War.

Many years have already been expended in endless lengthy studies and the international situation and doubts on future great power policies would seem to indicate that the time has come for explanation to our people, bi-partisan political support, urgent decision, and action.

We should not send our young men and women to sea in anything less than the most proven, effective, and survivable submarine we can obtain. And that means nuclear-powered boats. And we should remember one of the most famous sayings of the former Chairman Mao Tse Tung of China in his "little red book" which enunciates Marxist/Leninist strategy for that country:

Political power grows out of the barrel of a gun

Andrew Robertson, Rear Admiral RAN (Rtd) RAN Director of Manning and Training, 1964-1967. Sydney, NSW

## RESPONSE TO NUCLEAR SUBMARINES 2 AND PLAN AIRCRAFT CARRIERS

.....

#### Dear Sir,

Noting the retreat of the USA to its pre-WWII isolationist stance [1], abdicating the Asia Pacific Region to China's 21st Century ascendancy to dominant global power, Beijing will not respond kindly to Australia's purchase of nuclear-powered submarines as it would consider such vessels (if fitted with Tomahawk cruise missiles) as an existential threat to China itself.

In the Menzies era it was the UK's refusal to countenance a nuclear-powered Australia that precluded our purchase and deployment of nuclear weapons as the key component of our 1950s national defence. Subsequent U.S. opposition to expansion of the "nuclear club" precluded our purchase and deployment of nuclear weapons or nuclear-powered submarines. In truth, Australia could not maintain nuclear-powered submarines.

One small PLAN carrier with perhaps a dozen combat aircraft would be no threat to even one of the USN's 100,000 tonne aircraft carriers. The actual threat to USN and RAN warships



A Russian Navy Sovremenny-class Destroyer test fires the Moskit antiship missile in February of 2015.

comes from China's deployment of later iterations of the Russian Navy's P-270 Moskit/SS-N-22 Sunburn anti-ship missiles. The USN lacks a supersonic equivalent, and is only capable of "high subsonic" speed.

I am no Naval or weapons expert, so I offer my views as a contribution to the much-needed dialogue on such matters in the lead-up to the Federal Election. Further, I suggest the Electorate must inform the incoming Government of voter concerns regarding National Defence. The USA and some European countries are paying the social discord price of voter anger provoked by their governments seeming lack of interest in such issues.

Yours Sincerely

Rod Olsen Lynn, ACT

 The Trump slogan "Make America Great Again (MAGA)" is from pre-WWII Isolationist America First opposed to U.S. military aid to the UK prior to Pearl Harbour.

# **ON HUNTERS & KAISER WILHELM II**

#### Dear Sir,

If we are to have sister ships named in honour of Australian Admirals, may Martin be included?

There were Hunters in the RAN before the present class, she was a Diving Tender. Others belonged to the Royal Navy, including Attack Carriers employing up to 20 Seafires (a [marinised] version of the Spitfire); embarking at various times, FAA squadrons 834 and 807. There were also Hunters of the H-Class Destroyers and Landing Ship Tank, LST 3042, still going up to 1956 as the Empire Curlew.

The article by Robert O'Neill concerning Kaiser Wilhelm is very well done. Having previously lived opposite Sir Winston Churchill, at Hyde Park Gate, it was rather amusing to see the photograph of both. From reports, the Kaiser was not unreasonable. Prior to WWI, a telegram was sent to Germany from the Balkans [Citation?], it appears that because the European Post and telegraph Offices closed at 1800, the Telegram was not transmitted until the next day – by then too late. It was 4 August, and the Kaiser was not at home!

In the 1960s I was serving in East Africa in what was formerly Tanganyika and had placed at my use the East African Railways, Harbour Railway Coach, which had been supplied by the Kaiser for his intended tour of his colonies. It was rather pleasant to have the experience of sitting at the same dining table and desk that the Kaiser would have used, in 1914. Thank you, Otto and Liz, and the Editor of *The NAVY* for forgoing my subscription [and to the RSL Welfare and the Royal Commonwealth Ex-Services League (ANZAC and HAIG House)] – I am looking forward to the remedy!

John E.R. Shepherd Mullumbimby, NSW

# ON HELGE INGSTAD AND RUSSIANS

#### Dear Editor,

*The NAVY* magazine (Jan-Mar 2019 issue) stimulating as always: just a couple of random thoughts:

What would the disaster recovery crewing look like for commercial vessels? This is not just from a versatile modular ship (VMS) viewpoint, though obviously it is relevant. We know that there have been great advances in the design of commercial vessels and that they are so big now. The HELGE INGSTAD was really small compared to the size of current merchant ships that Navy's might use. Presumably the TS Sola was 15 to 20 times as big as the naval vessel, so survived the collision?

500,000 Russians seems high. A desultory trawl round the internet comes up with a wide variety of guesstimates, but they are all lower. I feel that if there were as many as this, I would know more Russians.

Yours sincerely

Richard Golding London, UK

**By Editor** 

#### Dear Richard,

Red Duster on Fires at Sea, Flash Traffic, and the article by Robert Blake in this Issue addresses some of the points you raise, however I think your calculations may be high? The *TS Sola* has a tonnage of 62,557t compared to the HELGE INGSTAD at 5,290t, making the *TS Sola* only 11-12 times as big.

.....

I am told that the 500,000 comes from analysis in/around 2007/8 and comprised four population estimates:

- 1. The declared number of Russians living in the UK at the time representing 50-70% of the figure;
- 2. Recognition that, for various reasons, Russians have passed themselves off as Poles and Ukrainians / 'other Eastern Europeans' (including for access to EU and UK) rather than Russians. Representing potentially up to 10-15% of the numbers;
- 3. Second generation Russians who still claimed dual nationality (or was claimed of them) 10-15%;
- 4. Underreporting of numbers as also by the last UK census which, by some estimates, was up to 15% underreported of the actual British population.

If the above figures are put together it is possible to get up to '500,000', although other declared figures suggest anywhere between 250,000 to 350,000.

Yours Sincerely

Aeneas

# A CENTURY OF SUBMARINE DEVELOPMENT

By John Jeremy

The first submarine to engage and sink a warship was the Confederate submarine HUNLEY. Built in 1863, HUNLEY was made from a cylindrical iron steam boiler, fitted with tapered ends and powered by a propeller driven by hand cranks operated by eight of her crew of nine. On 17 February 1864, HUNLEY rammed USS HOUSATONIC with a spar torpedo, sinking the 1,240 ton sloop. The explosion also sank HUNLEY, and it was to be 131 years before the wreck was discovered on the bottom of Charleston Harbour. The submarine has since been raised and is being conserved as a museum exhibit. Progress with the design of an effective submarine gathered pace during the following decades, particularly with the Nordenfelt submarines of the 1880s. Nordenfelt's design, patented in 1881, was propelled by steam but the real innovation was the provision of torpedoes which could be fired from the submarine, setting the pattern for the modern submarine of the 20th century. Nordenfelt sold two submarines, one to Greece and one to Turkey.



HMS HOLLAND (1).

# INTRODUCTION

In the United States an Irishman, J. D. Holland, developed an idea for a small submarine which could be carried across the Atlantic by a mother ship and used to attack British warships with mines. Holland's first boat was built in 1878, and efforts to construct a truly effective submarine continued through the 1880s and 1890s culminating in Holland No 9 in 1897, the first truly satisfactory submarine. In April 1900 the Holland Torpedo-boat Company sold the submarine to the United States Government. HOLLAND (as she was known) became the first submarine of the United States Navy.

The British Admiralty had been following these developments with interest, but dismissed the submersible boats as 'a weapon for maritime powers on the defensive'. Change in this attitude came quickly, after an American lawyer, Isaac Rice, who by 1897 monopolised the storage battery business in the United States, bought the Holland patents in 1900 and formed the Electric Boat Company, which still builds submarines for the US Navy today.

From its earliest days the Electric Boat Company planned to sell submarines to the world and, with an introduction to Lord Rothschild, Rice sailed to England where Rothschild's links to Vickers led to him granting Vickers a licence on 27 October 1900 for twenty five years to build submarines to Electric Boat designs.

The Admiralty ordered five Holland-type submarines from Vickers in 1901 and the first submarine for the Royal Navy was launched on

2 November 1901. This small 104-ton submarine was only 63 feet 11 inches long and was the first of a long line of submarines to emerge from Barrow in Furness for the Royal Navy, including almost all British nuclear submarines.

Britain's first submarines, the A, B and C classes were small boats largely restricted to coastal service. They were single hull designs with low reserves of buoyancy, low speed and limited endurance. Power for surface running and to charge the batteries was provided by petrol engines, a hazardous selection. The D class, ordered in 1906, nearly twice the size of the C class, were the first to introduce the saddle tank type of construction which became the standard configuration for most submarines for the next four decades. Diesels replaced the petrol engines and manoeuvring was improved by twin screws. Speed and endurance was also improved.

The *E-class*, which followed in 1910, was similar but considerably larger, displacing about 800 tons with a length of 178 feet (54 m). They had two Vickers diesels and electric motors for a speed of 15 knots on the surface and 9 knots submerged. Fifty six of boats this design were subsequently ordered and they became the backbone of the Royal Navy's submarine service during World War I. Twenty one were lost during the war. The *E-class* boats were considerably larger than the D class, mainly because of the inclusion of broadside torpedo tubes. Australia's first submarines, AE1 and AE2, were of the *E class*. They were commissioned in February 1914. For such small vessels, the journey to Australia was something of a marathon and was finally completed in May 1914, partly under tow. Both were lost early in the war, AE1 in September 1914 and AE2 in the Sea of Marmora after her penetration of the Dardanelles on 25 April 1915.

# **EMPIRE DESIGNS**

The *J-class* submarines, six of which were given to the RAN in 1919, were large and fast submarines capable of some 19 knots on the surface and were designed following a 1914 report (actually false) that the German Navy was building submarines capable of 22 knots on the surface.

The concept of a fast fleet submarine was revived in 1915 when Vickers proposed a three-shaft design combining steam and diesel power with the diesel on the centre shaft. The best features of this design were combined with the 1913 Admiralty design, resulting



HMAS AE2.

in one of the most novel and largest submarines of the time, the K class. Twenty seven were ultimately ordered, although only 17 were completed.

The *K*-class submarines were complex and difficult to handle. The safe diving depth was 200 feet with a safety margin of about 50%, and the long submarine could easily exceed the safe depth when diving if great care was not taken, particularly as the hydroplanes had an unfortunate tendency to jamb. The fastest diving time recorded was 3 minutes 25 seconds. The reputation of submarines suffered from an unfortunate series of accidents and collisions but, as fleet submarines they were regarded as a success. We will never know how they might have performed with the battle fleet in action, as all were completed after the Battle of Jutland and the opportunity to test them in the role for which they were designed never arose. Steam power was not to return to submarines until USS NAUTILUS took the first nuclear reactor to sea in 1956.

During the wars British submarine development was largely concentrated on long range patrol submarines beginning with the *O-class*, two of which, OXLEY and OTWAY were built for Australia. These two submarines displaced 2038 tons submerged and were just less than 275 feet (83 m) long.

As war approached in the 1930s, British submarine development concentrated on three classes, the long range *T-class* submarines of about 1,575 tons submerged displacement, a smaller class for coastal operations, the S *class*, and a small submarine for training, the *U class* which were of similar size to the old *E class*. The *T-class* submarines were the most numerous and saw extensive service, operating successfully throughout the war forming the basis for the Royal Navy's submarine squadrons in the immediate post-war period, together with the war developed *A-class*.

The *A-class* submarines were designed for operations in the Pacific, with a design emphasis on range, maximum torpedo stowage and habitability. They had welded pressure hulls designed to dive to 500 feet (151.5 m). Only 16 were completed between 1945 and 1948 and 30 were cancelled. They had a submerged displacement of 1620 tons, could achieve 18.5 knots on the surface and 8 knots submerged. They had ten torpedo tubes and could carry 30 torpedoes. The complement was 61 men.

# **USN DESIGNS**

The US Navy's submarine development in the period of disarmament attempts between the wars was slow, but development gathered pace after 1931. During World War II the United States built many very-long range patrol submarines. After 1941, 339 submarines were ordered to a standard design — the Gato, Balao and Tench classes. 221 were completed during or just after the war, the remainder were cancelled or broken up on the ways. Four were retained to be rebuilt to new post-war designs. These submarines had a submerged displacement of 2,415 tons, could achieve 20.25 knots on the surface or 8.75 knots submerged. They had a patrol endurance of 75 days and a cruising range on the surface of 11,000 miles at 10 knots.

Despite many years of development, these World War II submarines were still only achieving submerged speeds similar to the submarines of World War I. With dieselelectric propulsion, they had to spend considerable time on the surface to charge batteries which rendered them vulnerable to detection, particularly from the air or by radar. The big changes were in weapon capacity, range and endurance, and diving depth.

# **GERMAN DESIGNS**

A German submarine built in large numbers, the Type VII, which caused so much damage during the Battle of the Atlantic, was also of very conventional design. This submarine, of which there were several variants, was quite small at about 860 tons submerged with a length of 220 feet, not much bigger than Australia's first two submarines. It was the most numerous class of submarine ever built, with 703 boats completed. The most numerous were the Type VIIC of which 568 were completed between 1940 and 1945. The range of these submarines was modest, and to operate on the far side of the Atlantic, for example, refuelling was necessary from a surface ship or submarine tanker. The Type VIIC was capable of 17.7 knots on the surface and 7.6 knots submerged.

Two developments were made during the war which radically changed the nature of submarine warfare. One was the snorkel, or snort as it is widely known, and the other was the high-speed submarine.

The snorkel, intended to enable a submarine to charge its batteries while submerged, was first patented by Scotts Shipbuilding and Engineering Company of Greenock in 1916, but the Admiralty made no use of the idea. Later, the Italians developed a similar concept but it was a Dutch snorkel which attracted the interest of the Germans. Initially regarded simply as a means of ventilating the submarine, high losses in the Battle of the Atlantic during 1943 prompted its use for recharging the submarine's batteries when submerged. Snorkels were retrofitted to Type VIIC and IXC submarines and designed into later submarines. It is now commonly fitted to diesel electric submarines.



USS NAUTILUS (SS-571) On Trials.



USS ALBACORE (AGSS-569) Launching in 1953.

Developed during the war, the German Type XXI submarine introduced radical changes which were to greatly influence postwar submarine design. Of about 1800 tons submerged, the Type XXI had a streamlined hull which permitted higher underwater speed with much less hydrodynamic noise, a much bigger battery which improved submerged endurance, power-loaded torpedo tubes and improved crew accommodation. They were fitted with a snorkel from the outset and were the closest to a true submarine yet designed, rather than a surface vessel which could submerge to attack or escape detection. Underwater speed was increased to about 18 knots for 1.5 hours, or 12-14 knots for ten hours. At an economical speed of 6 knots they could manage 48 hours of silent running submerged.

The characteristics of the German Type XXI submarine were widely adopted after the war. The Soviet *Whiskey-class* submarine, designed after 1946, drew heavily on the design of the Type XXI, as did most submarines designed immediately after the war. The Soviets built 236 of this class of submarine, which subsequently served in eight navies.

# **COLD WAR DESIGNS**

Selected British T and A class submarines were modernised after the war — lengthened to accommodate larger batteries and streamlined to reduce underwater resistance. The US Navy also modernised many WWII submarines as part of the Greater Underwater Propulsive Power Program or GUPPY. Like many other submarines designed after the war, the British Porpoise and Oberon classes, had many of the features of the German Type XXI. With greatly enhanced batteries and more powerful electric motors, these submarines could achieve something like 17 knots submerged. The latter class, of which Australia bought six, was particularly successful and has been regarded by many as one of the best diesel electric submarines built.

Despite the quality of the Oberon class, they were still designed for relative efficiency on the surface, rather than submerged. The form of the hull can be seen in this photograph of HMAS ONSLOW on the slave dock during a refit at Cockatoo Island in Sydney.

The best form for a submerged submarine is some form of prolate spheroid — or tear drop. In the early 1950s the US Navy built a diesel-electric research submarine with this form, USS ALBACORE. This 1500 ton submarine introduced a new pressure hull steel, HY80, and tested new hydroplane configurations, anechoic tiles to reduce detection by active sonar, new propeller configurations, new pressure hull configurations and features which are common in submarines, conventional and nuclear, today. ALBACORE was capable of 33 knots submerged.

The Australian *Collins-class* submarines illustrate these demands very well, with a large bow for the active/passive sonar transducer, passive sonar windows in the casing, and a tail to stream a towed array clear of the propeller.

# DIESEL-ELECTRIC (SSGS)

Despite all these improvements, the diesel electric submarine retains the limitations imposed by its propulsion plant. It has limited range when fully submerged, depending on speed, and must either surface or use the snort mast to recharge the batteries whilst still submerged or to make a high-speed submerged transit on diesels. These needs make it vulnerable to detection, and high-speed submerged transits, often part of the life of Australian submarines, place enormous strain on masts, diesel engines and the crew. The advantages of conventional diesel-electric submarines are their relatively low cost and ready supportability, and particularly their ability to operate very quietly at low speeds, undetected in relatively shallow water conditions. For these loitering conditions, air-independent propulsion systems have been developed to increase underwater endurance at low speed, but these systems demand considerable space and some need volatile and dangerous fuel.

The best way to create a true submarine is to fit a power plant which does not require air and can enable a submarine to remain submerged indefinitely, with its endurance limited only by that of the crew and the supplies which they require. That power plant is, of course, nuclear.

# **NUCLEAR DESIGNS**

In the United States, Westinghouse were authorised in December 1947 to design and test a nuclear power plant for a submarine. The pressurised-water plant which was developed, known as S2W, was of quite low power (about 10 MW) but formed the basis for the subsequent reactors which have powered nuclear ships and submarines of the US Navy. Construction of the first nuclear submarine, USS NAUTILUS, was begun by General Dynamics, Electric Boat Division, in June 1952 and she was completed in April 1955. Her construction was supervised by a remarkable US Navy officer, Captain (later Admiral) Hyman G Rickover, a powerful personality who propelled the US nuclear submarine program with unstoppable determination for many years.

NAUTILUS displaced about 4,000 tons and had a submerged speed of about 23 knots. The US Navy ceased building diesel electric submarines in the 1950s.

The first British nuclear submarine was HMS DREADNOUGHT, completed by Vickers at Barrow in April 1963. She had a Westinghouse S5W nuclear plant, as fitted in the contemporary American Skipjackclass submarines. Later British submarines had UK developed propulsion plants, although the relationship between UK and US programs remains close.

The ballistic missile submarine, or SSBN, is an immensely powerful weapons system. The eighteen US *Ohio-class*, which were completed between 1981 and 1997, displace 18,570 tonnes submerged, are 560 feet (170 m) long, have a crew of about 155. The have four torpedo tubes but the main weapons are the 24 Trident II submarine launched ballistic missiles with a range of 6,100 nautical miles. Each missile can carry up to 12 warheads of 300 to 475 Kiloton yield. These submarines are now ageing, and their successors, the twelve slightly larger submarines of the Columbia class, are now being designed



USS GEORGE WASHINGTON (SSBN-598).

and will begin construction in 2021 for deliveries starting in 2031. The service life of the submarines, which will not require refuelling, will be 42 years and they will serve until the mid-2080s.

Today six nations have, or are developing, a submarine-based nuclear deterrent. It is no surprise that they also possess, or are in the process of obtaining, nuclear attack submarines, a necessary part of the system.

## **AUSTRALIAN STRATEGIC CONTEXT**

In our context, what is the role of the modern submarine? Australia does not possess a nuclear deterrent. Nevertheless, our submarines have an important part to play as part of a balanced navy. They continue to be very hard to detect, and this quality gives them considerable flexibility. They are able to operate covertly in areas where surface forces would be unwelcome or provocative. They provide tactical initiative, operational flexibility and strategic value. The roles of our submarines may be summarised as:

#### 1. Covert surveillance, reconnaissance and intelligence gathering.

A submarine can loiter undetected in areas of interest gathering acoustic, visual, communications and electronic intelligence. With modern secure, high-data-rate communications, submarines can operate effectively as part of a networked force.

#### 2. Covert insertion and recovery of Special Forces.

This was a role performed by the Royal Navy's conventional submarines during the Falklands War in 1982.

#### 3. Covert land-strike.

Submarines can carry a significant number of long-range submarineto-surface missiles capable of striking land targets and then clear the launch area without delay to evade counter attack. Made from the sea, such a strike does not require access to land bases or long air transit from a home base.

#### 4. Anti-ship warfare.

Equipped with modern weapons like the Mk 48 long range homing torpedo, submarines can inflict serious losses on the naval combat and logistic support vessels of an adversary. A single Mk 48 torpedo will generally sink large surface combatants and disable bigger ships.

#### 5. Anti-submarine warfare.

A submarine equipped with superior acoustic sensors, processing systems and torpedoes, crewed by a highly-trained team is very effective as an anti-submarine system. Correctly deployed, a submarine might be the most effective way of neutralising an

#### adversary's submarine capability.

Australia's submarines, at present the six *Collins-class* submarines, are amongst the largest and most capable diesel-electric submarines in the world. All submarines are expensive to operate and maintain, not least because of their complexity and the importance of submarine safety. They operate in a most demanding environment. Why do we need such big and expensive submarines? Europe, and particularly Germany, has for decades provided the world's navies with high-quality diesel-electric submarines around 1500-2000 tons displacement.

The type of submarine Australia needs depends on the payload we want them to carry and the way in which we intend to operate them. Our maritime interests extend from the North Pacific

to the western Indian Ocean. The operational areas could be a very long way from the submarines' base, currently at HMAS *Stirling* at Garden Island, south of Perth. Our submarines are required to transit long distances, undetected, from their base to their operational area and back again. Many modern submarines, like those sold in large numbers to other navies around the world, operate close to home — compare a ping-pong bat to a squash racquet. Australian submarines have a long way to go to work, demanding high transit speeds and long endurance.

#### **GOING NUCLEAR?**

May we go nuclear in the future? Many people think that we must, but we have some work to do first, we are not ready yet. This work includes:

- Gain political and social acceptance of nuclear power At present the Environment Protection and Biodiversity Conservation Act and the Australian Radiation Protection and Nuclear Safety Act specifically prohibit nuclear fuel fabrication, power, enrichment or reprocessing facilities in Australia.
- Negotiate a deal with the US, UK or France for nuclear technology transfer
- Establish a Naval Nuclear Regulatory framework for Australia
- Decide a procurement strategy import complete or part-build in Australia
- Decide on a location for the submarine base or bases and complete all environmental and security assessments
- Define the nuclear specific facilities required for the construction and support location
- Achieve local acceptance of a nuclear presence at these locations
- Establish a training programme for civilian and naval nuclear engineers

If we are to switch to nuclear powered submarines, we need to be starting this work now. Meanwhile, we have entered into a relationship with France for the design of our new submarines based upon the French *Barracuda-class* nuclear submarines. This relationship appears likely to provide us with the best means of changing to nuclear propulsion at some time, perhaps in the 2030s. RAN submarine personnel already have some experience with the operation of nuclear submarines through exchange programmes with the US Navy.

# **FUTURE IMPERFECT?**

The future of submarines in the RAN appears to have been plotted for several decades presuming, of course, that the best laid plans are not interrupted by war or other catastrophe. Coming decades will see many changes in submarine technology and the tactical environment in which they will operate if the past century is anything to go by. For example, we are now seeing the development of small autonomous submarines, primarily for commercial applications but holding much promise for naval application as an inexpensive platform for surveillance and intelligence gathering. Boeing's *Echo Voyager* is an example. It is a fully autonomous extra-large unmanned undersea vehicle. The 51-foot-long craft has a range of 6,500 nautical miles and is designed to incorporate modular payloads for multiple uses up to 34 feet in length and 2000 cubic feet in volume. The Royal Navy has unveiled a series of futuristic submarine concepts which mimic real marine lifeforms and may radically change the way underwater warfare could look in 50 years.

With a crewed mothership shaped like a manta ray, unmanned eellike vessels equipped with sensor pods which dissolve on demand to avoid enemy detection, and fish-shaped torpedoes sent to swarm against enemy targets, these are concepts aimed to inspire the world's future underwater combat environment.

Technical advances in propulsion will also occur, today lithium batteries have some attractions for submarine applications and nuclear propulsion systems are likely to become smaller for the same power output making smaller, more-affordable nuclear submarines an attractive prospect.

For those involved in the world of submarines today, it looks like a challenging and exciting future.



USS DELEWARE (SSN-791)Translation Launch Dec18.

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# THE EMERGENCE OF ZOMBIE FLEETS (AND BMW BUILDS MINIS IN OXFORD)

By Robert Cuthbert Blake

The UK from the 1980s gave up on its maritime and industrial base – and surrendered its natural co-adaptive, comparitive advantage, the sea. A collapse seen in the reduction of Britain's Merchant Fleet until, in 2017, Shipping Minister John Hayes set a strategy for "doubling the size of the UK ship register from 16 to 30 million gross tons after Brexit". The sinking of HNoMS HELGE INGSTAD (F313), following a collision with a Tanker in a Norwegian Fiord in November 2018, brought current navy ship designs and builds into sharp focus [1]. This paper considers that naval ship designs are at a critical juncture [2] – they are simply unaffordable politically, economically, and militarily to keep on building to current (1970) designs. This is a time of 'step change', when new versatile modular system designs and builds are required if we are to keep our countries and our populations safe and secure in uncertain and unstable times.



HMAS MAITLAND (PB 88) at HMAS COONAWARRA Darwin 21 January 2018 (Image CPL Sebastian Beurich).

# INTRODUCTION

This paper argues 'we live in a world turned upside down' (as during the U.S. and French Revolutions (a)), when German banks own ships and yards that refit the world's Merchant Fleets, and Britain has become Napoleon's 'nation of shopkeepers' – populated by 'hairdressers, accounting [consultancy] executives (b), film makers, security guards, telephone sanitisers, and the like...' [3]. Napoleon, Kaiser Wilhelm, and Hitler, would all have been delighted. Britain no longer makes ships (and only so much specialised steel) – other than the failing *Type-45-class*. While other vessels, like the RN's recent *Tidespring-class* of Fast Fleet Tankers, will be built and imported from the Far East, and refitted in Europe. The world, though, is turning as Brexit testifies. Europe cannot go on as it is, in or outside the EU / Euro – and has to change. For example, the ongoing protests of the Gilet Jaune – drawn from both the 'old' French Left and Right and finding common cause. A new politic?

The title refers to a point made in *Flash Traffic* (Jan-Mar, 2019) regarding the sinking of the HNoMS HELGE INGSTAD. [1] It also alludes to the Financial Crisis of 2007-2008:

> ...on the one hand, Germany was not one of the epicentres, although the still ongoing crisis in shipping is an exception to this assessment – German banks fuelled the boom that laid the ground for this crisis. On the other hand, the fiscal costs of support to German financial institutions were very large, even in comparison to countries that were epicentres of crises. [4]

For the first time in its history, Germany found itself owning a significant proportion of the World's Commercial Shipping Industry. The shakiness of Germany's Banks (c); the emerging of an on-off U.S. China Trade War; the collapse in demand for new

vehicle registrations in Germany (significantly down from 2018); weaker demand (for predominantly diesel German cars) from China; China's economic slowdown; and Brexit, all meant that Germany escaped recession in the last quarter of 2018 only by a technicality. A second European sovereign debt crisis may emerge, as Euro countries experience another collapse of financial institutions (like Deutsch Bank), high government debt, and rapidly rising bond yield spreads in government securities – just as shipping (from a brief recovery in 2016-2017) potentially experiences another prolonged downturn.

Returning to the subtitle 'And BMW Builds Minis in Oxford' the point being made is not that Britain cannot rebuild its shipbuilding industry, or that the British cannot do the essential redesigns – as set out in Sir John Parker's much delayed (and thrice denied) report [5] – but, twofold:

- 1. Designs (like the Mini) (d) have to be right, and;
- 2. The current surface ship designs are potentially dangerous hence the critical juncture.

#### **CRITICAL DESIGN JUNCTURE**

A critical juncture may be defined as:

A *disequilibria* (e) when the concurrence of connected past, present and future knowledge reaches a moment of decisive individual and collective rupture with preceding Ages and the changes necessary to decide upon alternative futures. [2]



Figure 1: Defence Cost Inflation (DCI) – Frigate (FF) and Destroyer (DD) Cost per Basic Mass Empty (BME) and Crew per BME based on Type-42 and Type-45 designs and builds, 1975-2015. [1]

Beyond an *existential juncture* it may be fundamentally dangerous, potentially unethical, and almost certainly immoral to keep doing what one was doing before the juncture. In the analysis provided in *Flash Traffic* [1], it was suggested, *inter alia*:

In the case of Frigates and Destroyers (FF/DDs) it appears that newer ships have in fact been *dis-automated*. The crews no longer fit the ship – they are operating unknowingly and sub-critically below the 'survivability moment'. The damage to USS COLE (DDG-67) attacked in 2000 looks very similar in size and place to that suffered [in collision] by KNM HELGE INGSTAD. USS COLE with a crew of 280, and despite losses survived.

There appears to be a juncture – current FF/DD versions [may no] no longer be 'fit for purpose', or fitted to the sailors that crew them.

Looked at from the perspective of a *juncture*, the 'survivability moment' for Frigate and Destroyer designs (between cost per BME, and Crew per BME), that occurred in about 1985, is just such a *critical juncture*. Put kindly, these ships – through the mismatch between crews and designs – might (like the HELGE INGSTAD) not be in a position by themselves to survive a peacetime collision, or a (relatively low-intensity) terrorist attack. That in itself is bad enough but warships are designed to survive in war; to fight in war – their primary purpose. If that is not the case, then navies are at risk of placing young men and women in harm's way, in *floating death traps* – where they can do all the thinking they like, but are unable to fight, float, survive and win. If true, that is a fundamentally dangerous, unethical and immoral position to be in – putting our young people in dangers way, without a 'fighting' chance of surviving and coming home.

#### TARGETS

In semi-jocular naval parlance, 'submarines are submarines, and *skimmers* are *Targets*'. Unfair, perhaps, but the point being made is that Frigates, Destroyers (and other surface ships) are vulnerable. It therefore stands to reason that designs should reflect vulnerability in terms of costs, numbers, and scale. As Stalin reportedly stated: "Quantity has a Quality all of its Own". It is the averaging of quantity that becomes fundamental to surface ship designs – for it is not the best that wins state-on-state wars but the average performance of "our" ships and sailors being better-for-longer, than those of the enemy. The smaller the fleet (as with any class numbers less than 11) (f), the harder it is to identify good, from average, from aberrant, from lucky. Which is the bases of networking disaggregated capabilities to create capability-at-scale (capacity)– in which:

- 1. The whole is more than the sum of the parts, and;
- 2. The loss of any one part (or node), will not overly impact the sum of the whole.

In observing Naval Design & Build Cycles, Dr Richard Golding [6-8] noted that "there were war-time and peace time cycles: a war-time cycle when ships, designs and indeed names (such as the iniquitous *Flower-class*) are matched to warfare; the other a peace time cycle, when designs become increasingly unaffordable and vulnerable, for example HMS HOOD (B51)" or, indeed HNoMS HELGE INGSTAD. Recognition of the need to build scale and survivability into warship designs, led the UK Versatile Modular Fleet (VMF<sup>TM</sup>) Design Team (g) to conclude:

That to survive in the modern battlespace, Navies will need to be able to afford to take the hits and the losses: hence, designs will need to be militarily, economically, and politically affordable in order to be used and vice versa.



Figure 2: DCI – FF/DD and SSN Cost per Basic Mass Empty (BME) and Crew per BME based on Type-42 / Swiftsure-class and Type-45 / Astute-class designs and builds, 1975-2015. [1]

The VMS Team argued, this was a 'non-attritional' approach and designs could improve survivability of ships, crews, and sailors, through disaggregated dispersion of capabilities; employing larger numbers, more metal, and reduced individual crews. In other words:

- 1. Enabling compositions for 'crewing the ship (and unmanned vehicles that it operates and sustains); rather than shipping the crew';
- 2. Scaling capability-networks for *'fitting the kit; rather than kitting the fit'*. [8]

The answer to the USS COLE (DDG-67) terrorist attack in 2000



Image of Attack-class Submarine (Artists Impression Navy).

was "to have had a new COLE alongside within 24 hours of its loss; thereby sending the 'So what?' message to the attackers." [6] The Doge's 14th Century subliminal message to his friends and enemies (when showing them around the Arsenale) was:

"I can build a ship in twenty-four hours; a fleet in a month – what can you do?"

When HMS DUNCAN (D37) was buzzed by seventeen Russian Fighter Bombers in May 2018, the Task Force Commander, Commodore Mike Utley RN, commented: "I think their tactics are naive. What they don't know is how capable the ship is". (h) This rather reinforces the quantitative point the Russians were actually making – 'that one ship, no matter how capable only has so many missiles, and eventually an aircraft or missile will get through'. As the IRA / *Sein Fein* chillingly commented (i) (following the 1984 Brighton attack against Mrs Thatcher and Her Cabinet):

"Today we were unlucky, but remember we only have to be lucky once – you will have to be lucky always."

Ships cannot be designed to be lucky all of the time. Indeed their designs and builds should take "luck (and surprise) out of success" – neither hope nor luck is a plan or design! Yet that is apparently what the British are hoping for based upon the, reportedly very unhappy, *Type-45*. By almost any yardstick, everything that can go wrong has gone wrong – so it is also an unlucky class. (j)

If ships are indeed targets (for aircraft, missiles or submarines), then it stands to reason that their survival has to be vested in capacity (numbers) and that for every submarine, a balanced fleet (including support ships, carriers, assault ships, and Mine Counter Measure vessels (MCMs) will necessarily need to be able to afford 'so many surface ships, for every submarine'. (k) Today, Frigates and Destroyers are costing the same as submarines – hence, due to affordability, while the number of submarines has increased (and is increasing as a proportion), the number of Frigates and Destroyers is falling (1) – exactly because of comparative cost advantages. [9] This explains the double Critical Juncture at Figure 2:

- The first *Critical Juncture* occurred when the designs (after 1985) were no longer fitted to the crews placing survivability at question in peace and war.
- The second *Critical Juncture* occurred in the last decade, when (as forecast by Pugh in 2007 [10]), Submarines became less / as expensive as Frigates and Destroyers. For example, an *Astute-class* submarine costing \$2.1B AUD; compared to a *Type-45* at \$1.9B and a *Type-26* at \$1.86B.

# AFFORDING TO FIGHT OR FIGHTING TO SURVIVE?

The global *stasism* of Defence research adaptation and design (RAD), outside of a few key areas in the U.S. and China, is clear in reviews like Bitzinger [11], where specific to maritime he covers the U.S. Navy DDG-1000 program. Bitzinger cites Luttwak [12] as concluding that, 'instead of shaping new platforms and weapons configurations to *fit* today's information technology, communications, sensor and guidance equipment, we are shoving, cramming and moulding such technology to fit the nooks and crannies of 1945era platforms.' And the *fit* is not working – designs have ended up 'shipping and crewing fits; rather than fitting ships and crews'. [8]

Analysis by Ronald O'Rourke / CRS [13] shows the size of the U.S. Navy has been halving in numbers every 25 years since the late 1980s, from about 570 ships in 1987, to around 280 ships in 2017/18. Of these 280 ships, in

2018 there were about 79-80 submarines (of all types). In the 2018 National Defense Authorization Act (12 December 2017), President Donald Trump mandated the 'as soon as practicable' – realisation of a 355 Ship U.S. Navy. This included aspirations for a 100 submarine USN Fleet – effectively reducing the ratio of submarines to surface ships to 1:3.5; and submarines to FF/DDs, from 1:1.48 to 1:1.38.

While seeking to increase the US Fleet to 355 ships no timeline was set, and no increase in funding – from the current average delivery outlay of about \$4 Billion per ship (including all types), see Figure 3. [13] To sustain a 280 ship navy about the current Design Life of 40 years will cost \$40B a year, an increase of the 2018 shipbuilding budget of 12.5%. This will not avoid hollowing out – in other words, running on ships beyond their Design Lives. To avoid hollowing out, a 280 ship navy may require 24-25 new ships a year; representing an increase in the annual shipbuilding budget of 275% for existing warship designs and builds. [14]



Figure 3: Hysteresis and Step Changes in U.S. Navy Ship Procurement, 2004-2017. [13, 14]

To grow the U.S. Navy to 355 ships in, say, 8 years or two Presidential terms and sustain it thereafter (to avoid hollowing out), will require significantly increasing the shipbuilding rate. Based on existing designs and a Design Life of 40 years, the U.S. shipbuilding budget would need to increase by 250% over 8 years, and then be sustained at 170% its 2018 value thereafter. To avoid hollowing out during the

build-up to 355 ships and thereafter, a BME DCI of 8% would require 450% increase in the shipbuilding budget for 8 years; then 350% its 2018 value thereafter. [14]

# **ZOMBIE SHIPS AND FLEETS?**

Amongst other complaints about the *T45-class* are concerns about crew messing arrangements. Designed for comfort and modern conditions of service, the mess-decks were reduced to four-crew, ensuite cabins – for junior and senior sailors. The net effect was that the old social learning between sailors of different categories (engineers, cooks, supply, warfare etc.) that used to take place in 20-25 crew mess decks, no longer occurred. Additionally, given the size of the *Type-45* and its relatively small crew (per BME) – daily interaction between crew-members reduced significantly; giving rise to an off-watch '9-to-5' mentality. A similar issue appears to be occurring in the *Zumwalt-class*. Sailors are reporting the spookiness and loneliness of the ship when on rounds that is impacting their morale and empathy with the ship – a fundamental bond between every sailor and their ship. This is giving rise to the idea of *Zombie-ships*, where:

...the reduction and inability of political economies to restore productivity (for example, other than by reducing crew sizes) has created *Zombie* generations, organisations and companies. In an economic sense, they are essentially dead – not able to earn enough to support themselves, pay off (education) debts and start a family; and unable to raise their individual productivity (or an organisations) without being given the opportunity to do so. [Current military industrial complex economic models] simply maintains them as the living dead, or *Zombies...* they are too costly to kill off; and too uneconomically unproductive to revive. They exist like *Zombies*, adding to the lack of productivity while consuming assets and lives that might otherwise do so. [2]

The Knowledge that today is the social, might be surrendered or lost through a process of *Zombification* – exactly by preventing humanity becoming knowledgeable and so effective (productive) again. This suggests a *Perfect Nihilism*, in which knowledge has been taken from humanity, exactly in order to prevent future uncertainty, instability, violence and conflict – but which concomitantly, wilfully and potentially deliberately impacts humanity's ability to learn, adapt, change (fight) and so survive. [2].



Figure 4: Contemporary Ship Classes assessed against Type-42 Cost and Crew per BME (1975-2018) - CCDR = Crew Cost per BME Deprecation Rate.

Examination of figure 4 connects the progeny of Western Frigates and Destroyers, back to the FFG and the *Type-42* – the last Revolution in Naval Affairs [15] – and Pugh and Augustine's broad recognition of compound DCI (for defence-military equipment) running at between 6-8% per annum. [10, 16, 17]; suggesting:

The FFG(X) – the next generation USN Frigate (that was at one time being considered as the *Type-26* Global Combat Ship / *Hunter-class*) at 3,500t is the most expensive (from recent estimates) of the current classes (per BME), with a 8.9% DCI – due largely to its relatively small size (and cost), it is also most closely matched to the crew survivability-moment for its BME (tonnage).

The *Zumwalt-class* is potentially not the step-change claimed, at least in terms of its cost per BME and DCI (8.8%) – as traced back to the FFG. It also may be the least survivable in combat?

The *Type-26* (in 2018 costings) showed a DCI of 8% – directly in line with Pugh's upper predictions and, although bunks allows for up to 250, its core crew of 118 places it below the survivability-moment.

The *Type-45* aligns largely with the *Type-26* at 7.9% DCI, which may not be surprising since both ships come from the same stable.

The *LCS-class* (Independence and Freedom) show potentially improved value for money (at a DCI of 6.7% and 6.5% respectively) but also fall well below the survivability-moment and their designs can still be traced back to the FFG and *Type-42*.

The *Type-31e* – a cut-down version of the *Type-26* – largely aligns to the LCS-class, with a DCI of 6.4%; it lies well below the survivability-moment for its tonnage, design, and size of crew.

#### **IMMUTABLE CHANGE**

The immutable facts that are seemingly being placed before all Western Navies – brought home by the HELGE INGSTAD sinking – is that current surface ship designs and builds are simply unaffordable in the numbers required, and may no longer be either 'fit for purpose', or 'fit for the crews' that serve in them. This is not to argue against the choice of the *Hunter-class (Type-26* GCS) for the RAN – it is a fine ship, and without a shadow of doubt the best of the designs available. However, it is perfectly matched to a *pre-juncture* (pre 2010s) rather than a *post-juncture* era. This is not the same for submarines.



Figure 5: SSN BME Model Showing Step Change between Swiftsure and Astute-Class Design and Build Costs.

Figure 5 shows the transition between *Swiftsure* and *Attack*class submarine designs, between 1975 and 2018. Overall there was downward pressure on DCI, running at 0.11% below Historic Inflation over the same period. This can only be achieved through regular re-design of the submarines (and yards) and investment in the products. Which occurred in the UK largely by accidents (not design), because the British had run down its submarine shipbuilding capability and capacity to such an extent that it had to completely re-tool for the *Astute-class*. Notwithstanding, figure 5 shows that a significant step-change was achieved; resulting in much more costcompetitive submarine designs and builds than would have been the case if the designs had simply been incrementally advanced from the *Swiftsure-class*. Reinforcing the point regarding surface vessel builds and designs.

As significantly, submarine designs remained matched to crews. For example, the *Attack-class* submarine applying the Cost and Crew per BME Model, Figures 5 and 6, would be forecast to have a crew of about 57 (it is declared at 60), and a cost of about \$1.3B per submarine – depending on exchange rates (AUD:EURO and AUD:US). It should be noted the model is for an SSN design, and risk has been taken to redesign the *Attack-class* with conventional propulsion – as advised against by, amongst others Rear Admiral Peter Briggs RAN (Rtd.), in the January issue of *The NAVY* [18].

The question surrounding the costs of the *Attack-class* submarine is "why the \$50B build costs, when twelve perfectly reasonable submarines could be bought off-the shelf for \$12-16B". The answer, is that the delta between \$16B and \$50B - \$34B - represents the "Price of Admiralty". [19] It is the sovereign capability and achieving the necessary knowledge transfer – which Australia will need to pay, build, and fight for – so that the next generation (or indeed later batches of the *Attack-class*) of RAN submarines are Australian submarines: designed, built and sustained in Australia. So placing the RAN as a *Prime Navy* alongside the U.S., French, Japanese, and (just about) British Navies. (m)



Figure 6: SSN Cost and Crewing BME Model.

#### **CATCHING THE JUNCTURE**

A juncture can be seen as being like a weather front moving through (see figure 5). As Sailors, this provides choices to sail round; catch the winds, or steer for the centre. Standing still or stasism is not an option - leading ultimately to nihilism, zombiism and strategic failure.

If the empirical rule of thumb is "for every one submarine, there should be five surface ships", and "for every one submarine, 2.5

Frigates and Destroyers (or equivalent escorts)" (1), then it may also be suggested that the cost per BME of current Frigate and Destroyer designs should be commensurate. In other words, a 6,900t Frigate such as the *Type-26 / Hunter-class* costing about \$750M – as opposed to \$1,860B a ship (depending on exchange rates). If the submarine crew per BME is considered to also reflect fitting crews to ships, then the complement of such a ship might be 85. However, this does not assume radical alternative design and costing models as suggested by VMS<sup>TM</sup> designs, which go much further; reflecting a disaggregation of capability – while retaining capability within the Network. A single *Hunter-class* with a crew of 110 would be the equivalent of 2.5 VMS Frigates, costing the same as a single *Hunter*, each with a crew of 44. This marks a fundamental design change – a *critical juncture* with previous designs.

The last Revolution in Naval Affairs (RNA) was led by the revolutionary designs incorporated into the FFG-7 class, and the Israeli Navy's *Sa'ar* / *Reshef-class* of missile boats. [8, 20] It occurred at the chaotic transition between the Industrial Age (1920-1965), and the Information Age (1970-2015). [2] Disparaged at the time, the FFG-7 recapitalized scale in numbers and size; enabling President Ronald Reagan to build his 600 ship Fleet. FFG-7s should have been replaced by new designs in the 1990s but were not – resulting (at 8% DCI) in the halving of fleet numbers, see figure 3. When investment in Research, Adaptation and Design has been maintained, DCI has been reduced. For example, in submarines resulting in a DCI below Historic Inflation [6, 10, 21]. Concomitantly, submarines have become comparatively more affordable than warships.

NSN	280	355?	Future VMS™ Balance?	RAN	2019	Future	Future Balance?	Future VMS™ Balance?
Aircraft Carriers (ATCs)	13	16	32	LHDs / ATCs	2	2	2	3
Amphibious Assault Ship (ATCs)	26	32	64	LSD (Heavy Lift)	1	1	1	4
Attack Submarine	60	77	77	Submarine SSG	6	12	12	12
SSBN	19	24	24	AORs	2	2	4	5
Cruiser	25	32	55	DD	3	3	4	7
Destroyer	79	100	170	FF	8	9	12	13
Dock Landing Ship (Heavy Lift)	14	18	60	OPVs	0	11	14	16
Mobile Base Ship	1	2	6	МСМ	6	6	6	12
Littoral combat ship	13	16	30	Hydrographic	6	6	6	12
МСМ	13	16	35	Patrol Boats	15	0	0	16
Patrol Boats	15	19	50	Total	49	52	61	100
Submarine Tenders	2	3	3					
Total	280	355	606					

Table 1: Potential USN and RAN Fleets - Restoring Design Balance and Capacity by VMSTM design. (p)

# THE EMERGENCE OF ZOMBIE FLEETS . . . continued

Ullman (2017) considers that it is necessary to deal with the strategic "Black holes" caused by hollowing out. [22] He is right but the order may be wrong. First it is necessary to give our people the tools by creating and abstracting the designs and thinking necessary to build and sustain a Fleet Refresh Rate at no more than 14-15 years, as determined by the 'natural order of things' and an empirical peacetime DCI of 8%. Numbers need to be set-aside from the cosy political-finance-defence-industry complex. A balanced U.S. Fleet of 500-600 ships of different designs may do the same and more, differently. And the same might apply to the RAN – with such balanced VMS designs supporting a possible future Fleet of a hundred or more 'affordable' designs.

The answer will not be 355, 606 (61 or 100) but different – hence the step change. Achieving this will restore thinking, invention, and productivity to industries and readiness to fleets, exactly by preventing political, economic and military hollowing out (and Black holes forming). It will require a whole new tempo and strategic way of critical thinking, designing, capitalizing and scaling – that will also potentially be of value and applicable to Merchant Fleets. This will prove our foremost Deterrence. The Allied navies can do this. They have the designs, passion, ingenuity and people – including in industry, commerce, and in the financial sectors – to create the step change and invent anew from this Critical Juncture. (q) The alternative – staying on the same course – is simply not worth thinking about!

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UK MoD February 2019 Press Releases on Converted Ships applied Fast Ferry Class VMSTM images.

#### NOTES

- a. "The World Turned Upside Down" is a British Civil Wars ballad first sung in the mid-1640s as a protest against the policies of Parliament. Apocryphally, the British Army played the tune when they surrendered to Washington at Yorktown.
- Belonging to the type of Accountancy Consultancy Companies (ACCs) who introduced Performance Management, Lean 6 Sigma, System Engineering etc., in the 1980s as the "ultimate answer".
- c. In January 2019 Deutsch Bank's share price sank to a new low, with investigators pursuing a moneylaundering inquiry linked to the Panama Papers tax evasion disclosures.
- d. Sir Alexander Arnold Constantine Issigonis (18 November 1906 2 October 1988) was a British-Greek designer of the Mini – he and his family were rescued by Royal Marines from Smyrna in 1922 on its fall to Turkey.
- e. This reflects von Hayek's notion of disequilibrium introduced in his 1936 Lecture 'Economics and Knowledge,' ((1937) *Economica IV* (new series). p. 41; reprinted in F.A. Hayek (1949), *Individualism and Economic Order*. London: Routledge & Kegan Paul.
- f. In other words the classic soccer (football) team size of 11 an inherently asymmetric prime!
- g. With acknowledgement to Anthem Corporate Finances Limited: Versatile Modular Systems for a Versatile Modular Fleet (VMS<sup>TM</sup>/VMF<sup>TM</sup>), London, UK, and, in particular, Mr Andrew Swinburne (Managing Director); Colonel Martin Romilly OBE (Retd) Senior Associate Fellow, Military and Technical Systems Policy Adviser; Dr David S Aldwinckle, Principal Surveyor Lloyds Register & Visiting Professor, University of Southampton; Dr Richard Golding, Partner, Anthem Corporate Finance; and Simon Hudson, Vice President, Anthem Corporate Finance.
- Following disastrous power and energy distribution problems, the unhappy Type 45, HMS DUNCAN spent the most time at sea of any of the British Royal Navy's T45s in 2017 – but still for only 45% (23 weeks) of the year.
- i. Later attributed to Jerry Adams or Martin McGuinness.
- j. Napoleon is famously quoted as saying "I'd rather have lucky generals than good ones." Eisenhower later said "I'd rather have a lucky general than a smart general. They win battles." The point being made is that Admirals or Generals cannot rely only on being lucky, if their ships and crews are not inherently available, at sea, smart and good.
- k. President Reagan's design for a 600 Ship Fleet had a ratio of 1 Submarine for every 5 Surface Vessels (including Carriers, Supply Ships, MCMs, FF/DDs, etc.) and 1 Submarine for every 2.5 Frigates and Destroyers.
- Currently the US has 1 Submarine for every 3.5 Surface Vessels and 1 Submarine for every 1.48 Frigates / Destroyers.
- m. A Prime Navy is considered akin to a Prime Currency capable of keeping its Fleet in Class through owning and refreshing its own Bureau type Design Authorities.
- n. In actuality, the full costs of the Attack-class programme applying the usual rule of thumb for building and sustaining a warship, over its life-cycle, and including Base porting (in this case West and East) will be more like \$150B in total.
- o. In line with Western Cold War fleet designs and scaling.
- p. The RAN VMS model assumes that PBs will be retained along with interchangeable MCMs and Hydrographic vessels to retain both layering and balance across the Fleet, in addition to junior Commands at the Lieutenant level. ATC = Air Transport Capable, including for Strategic / Tactical Lift, UAS, UAVs, etc.
- q. The British Royal Navy and the UK RN is apparently embarking on some form of re-design, that does not appear to have recognised or incorporated the full capitalization, crewing, and scaling designs offered by VMS, or to acknowledge the model or IP developed on a voluntary basis.

# FLASH TRAFFIC 🐔



At the Helm - Captain John Stevenson, AM, RAN (Ret.).

#### VALE CAPTAIN JOHN PHILIP STEVENSON. FROM 1969 MELBOURNE – EVANS Collision

Reproduced in full from / by Historical Section of the Sea Power Centre – Australia

The Royal Australian Navy has honored the life of the man in change of HMAS MELBOURNE (II) when the U.S. Navy Destroyer USS Frank E EVANS turned under the Australian aircraft carrier's bow and was cut in half.

Captain John Philip Stevenson died on January 30, aged 98, after a career marked with distinguished service in war and peace, as well as tragedy and controversy.

In 1969 he was in command of HMAS MELBOURNE (II) when the tragedy occurred in which 75 U.S. Sailors died. He was subsequently cleared by Court Martial for any responsibility and in 2012 received an official apology from then Defence Minister Stephen Smith for having been tried. The apology letter acknowledged the unnecessary stress the Court Martial caused to Stevenson and his family.

Stevenson received a ceremonial funeral in

the Garden Island Naval Chapel in Sydney, something normally reserved for officers who pass away during their service at the rank of Captain. This is the first time in the Royal Australian Navy's history that a serving Captain's funeral has been held for a retired officer.

#### **Chief of Navy**

Chief of Navy, Vice Admiral Mike Noonan, said the ceremonial funeral recognized the very great contribution made by Stevenson in peace and war to the Navy and the nation. "Captain JP Stevenson has been accorded a ceremonial funeral of a serving Navy Captain to recognize that the circumstances in which he resigned from the Navy were unique and to ensure there can be no doubt as to the very great esteem in which he is now held across our Navy," Noonan said.

"There can be no doubt that past mistakes were made that impacted both Captain Stevenson and his family. The Navy of 2019 is a more people focused organization and strives to ensure that similar mistakes are not repeated.

"With the passing of Captain Stevenson,

our Navy family has lost a fine leader and consummate gentleman, who served Australia with pride in war and peace over a 35 year career and continued to support our Navy long after his time in uniform. We hope today's formal farewell, in addition to the formal apology Captain Stevenson received from Government in 2012, will help ease the burden which the Stevenson family has had to bear over the past five decades," Vice Admiral Noonan said.

As part of the ceremony, Stevenson's coffin was carried into the Garden Island Naval Chapel by six serving junior sailors from HMAS MELBOURNE (III). As the hearse passed through Fleet Base East, MELBOURNE's ship's company lined the rails of the warship as a mark of respect, while wharf sentries from other ships saluted. Stevenson was also given a seven gun salute, which is normally reserved for serving officers who die while in command of a ship or shore establishment.

#### A Remarkable Career

Stevenson entered the Royal Australian Naval College (which was then at HMAS CERBERUS) as a 13-year-old Cadet Midshipman in 1934.

As a junior officer, he saw war service in HMA Ships CANBERRA, NESTOR, NAPIER and SHROPSHIRE. He was present in Yokohama Bay for the Japanese surrender in 1945 and witnessed the results of the atomic bomb dropped on Nagasaki. He was engaged in getting many sick and malnourished prisoners of war embarked for their return to Australia.

After the war, Lieutenant Stevenson went to the United Kingdom on loan to the Royal Navy where he saw operational service in the early days of the Malayan Emergency.

Promoted to Lieutenant Commander in 1950 he returned to Australia in the aircraft carrier HMAS SYDNEY (III).

Upon arrival in Australia he took command, in March 1951, of the frigate HMAS BARCOO which operated as the Royal Australian Navy's training ship.

He later served in the heavy cruiser HMAS AUSTRALIA (II) as navigation officer, and later re-joined SYDNEY as the Fleet Navigation Officer.

SYDNEY visited the United Kingdom for the coronation of Her Majesty Queen Elizabeth II where Stevenson commanded the Royal Australian Navy detachment during the coronation parade.

In 1954, Commander Stevenson was Director of Plans in Navy Office and also served in HMY BRITANNIA as the naval equery to His Royal Highness the Duke of Edinburgh during the Royal visit to the 1956 Olympic Games in Melbourne. He commanded the destroyer HMAS ANZAC (II) from January 1957 to June 1958 and in May 1959 was appointed as the Defence attaché to Thailand, where he was promoted to Captain in December 1960.

Captain Stevenson assumed command of HMAS WATSON, in October 1961, and the following October took command of the destroyer HMAS VENDETTA (II) as well as commanding the 10th Destroyer Squadron.

In April 1964, he commanded the fast troop transport HMAS SYDNEY (III) which took Australian troops to Borneo. In 1965 he commanded HMAS CERBERUS. Then in late 1966 he became the Australian naval attaché in Washington, DC. After returning to Australia he assumed command of the aircraft carrier HMAS MELBOURNE (II) in October 1968.

#### **Bereft of Proof**

In the early hours of June 3, 1969 in the South China Sea, the American destroyer USS FRANK E EVANS crossed MELBOURNE's bow and was cut in two. The forward section of EVANS sank immediately, resulting in the loss of 74 lives, and MELBOURNE sustained extensive damage to her bow.

Ajoint U.S. Navy/Royal Australian Navy Board of Inquiry in Subic Bay held Stevenson partly responsible, stating that as Commanding Officer of MELBOURNE he could have done more to prevent the collision from occurring. However, a subsequent Royal Australian Navy Court Martial cleared him of any responsibility and commended him for his efforts to prevent the collision.

The integrity of the initial Board of Inquiry has since been questioned, particularly as it was presided over by the U.S. Navy Admiral in overall tactical command of EVANS at the time of the collision.

Stevenson's defense counsel at his Navy Court Martial, Gordon Samuels, QC, stated he had:

"never seen a prosecution case so bereft of any possible proof of guilt."

#### Clearance, Resignation, and Apology

Despite being cleared, Stevenson subsequently resigned from the Royal Australian Navy - bringing his distinguished 35-year naval career to an end.

In December 2012, Stevenson received an official apology from the Minister for Defence, Stephen Smith, in which the Minister stated that Stevenson was not treated fairly by the government of the day and the Royal Australian Navy following the events of 1969. Smith described Stevenson as "a distinguished naval officer who served his country with honour in peace and war." Following a successful civilian career, Stevenson continued to work with service charities and was appointed as a Member of the Order of Australia (AM) in the 2018 Australia Day Honours List.

#### The Collision

The collision between HMAS MELBOURNE and the USS FRANK E EVANS occurred at about 0300 on June 3, 1969 in the South China Sea about 650 miles south-west of Manila, when the EVANS ran under MELBOURNE's bow in the course of changing station from ahead to astern of MELBOURNE.

EVANS was cut in two. The forward part sank shortly afterwards while the after part of the ship swung around and was secured to MELBOURNE's starboard side aft. U.S. Navy personnel from the after section of EVANS were taken on board MELBOURNE, either onto the flight deck or onto the quarterdeck. Then, after a search confirmed that no one remained in this section of EVANS, it was let go.

MELBOURNE was badly holed forward of the collision bulkhead, and the trim tanks were flooded. Immediate action was taken to shore up, and at that time it was predicted that it would be ready to proceed at slow speed in approximately six hours. MELBOURNE suffered no personnel casualties.

74 U.S. sailors out of 272 were lost, all inside the bow section of the ship when it sank. Of these, only one body was recovered, that of Seaman Kenneth Wayne Glines, 19, a sailor from the bow section of the EVANS. He was picked up by one of MELBOURNE's boats.

EVANS was one of five escorts traveling with the MELBOURNE during a SEATO exercise, Exercise Sea Spirit, employing 40 ships from six nations. In the morning of the third of June, the EVANS was ordered to act as planeguard for the MELBOURNE. EVANS' function as planeguard was to recover any aircraft that happened to ditch into the sea.

On execution of the flying course signal, EVANS was to take up position as planeguard, 1,000 yards astern of MELBOURNE. EVANS had experience acting as a planeguard for MELBOURNE, and had done this on four other occasions.

Stevenson told EVANS that the flying course was 260 degrees. The EVANS was 3,500 yards in front of MELBOURNE on the port side, steaming a parallel course to MELBOURNE's. MELBOURNE had all navigation lights on at full brilliance, which was not usual practice, because she had come close to a collision with USS LARSON two nights before.

When the order to take up planeguard position came through, the commanding officer of EVANS, Captain Albert McLemore was asleep in bed. Lieutenant Ronald Ramsey, officer of the watch, was reading, and left the maneuver in the hands of his assistant, Lieutenant Hopson, McLemore had left instructions to be awakened if there were to be any changes in the formation. Neither the officer of the deck nor the junior officer of the deck notified him when the station change was ordered. The bridge crew also did not contact the combat information center to request clarification of the positions and movements of the surrounding ships.

The EVANS turned to starboard to cross in front of MELBOURNE. Stevenson sent a message over voice radio from bridge to bridge warning EVANS that she was on a collision course, which EVANS acknowledged. MELBOURNE radioed to EVANS that it was turning to port and sounded two blasts on its siren. At approximately the same time, EVANS turned hard to starboard to avoid the approaching carrier. Each ship's bridge crew claimed that they were informed of the other ship's turn after they commenced their own. After having narrowly passed in



Pallbearers from HMAS MELBOURNE (III) carry the late Captain John Stevenson, AM, RAN (Retd) into the Naval Chapel at HMAS KUTTABUL.

front of MELBOURNE, the turns quickly placed EVANS back in the carrier's path. MELBOURNE hit EVANS amidships at 3:15 am, cutting the destroyer in two.

#### **Inquiry and Court Martial**

A joint board of inquiry was established to investigate the incident, following the passing of special regulations allowing the presence of Australian personnel at a U.S. inquiry. The board was in session for over 100 hours with 79 witnesses interviewed.

Despite admissions by members of the U.S. Navy, given privately to personnel in other navies, that the incident was entirely the fault of EVANS, significant attempts were made to reduce the U.S. destroyer's culpability and place at least partial blame for the incident on MELBOURNE.

The unanimous decision of the board was that although EVANS was partially at fault for the collision, MELBOURNE had contributed by not taking evasive action sooner, even though doing this would have been a direct contravention of international sea regulations, which stated that in the lead-up to a collision, the larger ship was required to maintain course and speed.

Two charges of negligence—for failing to explicitly instruct EVANS to change course to avoid collision and for failing to set the carrier's engines to full astern—were laid, with the court martial held from 20 to 25 August. Evidence presented during the hearing showed that going full astern would have made no difference to the collision, and on the matter of the failing-to-instruct charge, the presiding Judge Advocate concluded that reasonable warning had been given to the destroyer and asked:

"What was [Stevenson] supposed to do - turn his guns on them?"

Of the evidence and testimony given at the court-martial, nothing suggested that Stevenson had done anything wrong; instead it was claimed that he had done everything reasonable to avoid collision, and had done it correctly.

#### Acquittal & Retirement

Stevenson was then subject to court martial. Two charges of negligence - for failing to explicitly instruct EVANS to change course to avoid collision and for failing to set the carrier's engines to full astern - were laid. The defence submitted that there was "no case to answer" resulting in the dropping of both charges, and the verdict of "Honourably Acquitted." Despite the findings, Stevenson's next posting was as chief of staff to a minor flag officer; seen by him as a demotion in all but name. The posting had been decided upon before the court-martial and was announced while Stevenson was out of the



September 2018 Commander Nathan Gray RN makes the first landing and take off of a F-35B Lightning II from HMS QUEEN ELIZABETH (R08).

country for the courts-martial of EVANS's officers; he did not learn about it until his return to Australia.

Stevenson requested retirement, as he no longer wished to serve under people he no longer respected. This retirement was initially denied, but was later permitted.

#### SENIOR OFFICERS WHO ACCUSED MACRON OF "TREASON" RISK SANCTIONS

Twelve senior officers, who left active service and are linked to the right, have denounced in virulent terms the signing of the Marrakech Migration Pact.

By deciding alone to sign this pact (...), you would be guilty of a denial of democracy, even treason with regard to the nation.

The statement was published on December 10th. It aims to oppose the pact of Marrakech on migration, a non-binding text also opposed by the Gilet Jaune (Yellow Vests). Among the signatories are eleven generals and a colonel, who are no longer on active duty but still have Reserve duties.

"These remarks are inadmissible and unworthy", commented the cabinet of the Minister of Armed Forces to stating:

The generals who have signed this text leave the reserve duty to which they are subject. This reserve duty obliges them and all the more so (...) that they embody the top of the military hierarchy, that is to say to say they have the responsibility to lead by example.

#### **USN COLLISION**

A U.S. guided-missile cruiser and Navy resupply ship collided off the coast of Florida during a training exercise in February. USS LEYTE GULF (CG-55) and USNS ROBERT E. PEARY (T-AKE-5) collided during a training exercise as part of a pre-deployment workup. There were no casualties and only minor damage above the waterline to both ships, three sources familiar with the collision reported. A Navy official stated that the supply ship suffered a 20cm gash above the waterline and LEYTE GULF suffered minor damage to flight-deck netting and two lifeboats were dislodged. Neither ship took on water.

The ships were operating with aircraft carrier USS ABRAHAM LINCOLN (CVN-72) as part of a training exercise when the collision occurred.

LEYTE GULF and PEARY re-joined the exercise the following week.

#### NUCLEAR – JUST NOT REAL WORLD

Outgoing Defence Minister Christopher Pyne considers it is unrealistic to suggest Australia will *ever* establish a nuclear energy industry. He cannot see the overwhelming opposition towards nuclear power shifting in the foreseeable future.

The minister said Australia would have been the only country in the world with nuclearpowered submarines and no domestic industry to back them up. "I wish we'd had a nuclear energy industry from the 1950s onward and then this wouldn't even be an argument," Mr Pyne said:

"Bob Hawke said the same thing, but I think the horse has completely bolted."

My Pyne described the debate around nuclear energy as a "parlour room" discussion:

"Which prime minister of any political persuasion is going to say, 'I know what we're going to do, we're going to start a nuclear energy industry?"

"We have the most, in some respects, irrational debate occurring around the Adani mine but people think we're going to have a new debate around nuclear energy? I mean, it's just not real world."

# FLASH TRAFFIC

#### **JMSDF GO STOVL-ARG?**

On 18 December 2018, the Japanese cabinet approved a plan to modify the JMSDF's two Izumo-class helicopter carriers to embark F-35B (Lightning II) stealth fighters. At the same time as the Japanese cabinet approved the ship modifications, it also endorsed the purchase of 42 F-35Bs from Lockheed Martin, see this issue, Paper 3 (Japanese Naval History, 1976-2018 by *Masashi Kuratani*)

The Japanese Maritime Self-Defense Force has long argued that carriers with fixedwing aircraft to defend Japanese shipping, but in the past constitutional limitations and opposition from regional countries have prevented Japan from taking this step. More recently Japanese Prime Minister Shinzo Abe has argued that Japan has to become a 'normal' country with a normal capacity for self-defense' and has taken steps to broaden the interpretation of the Constitution; including the development of a Amphibious Rapid Deployment Brigade (ARDB). The combination gives Japan the potential for operating Amphibious Readiness Group (ARG) capabilities, with fixed-wing Air support. A combination that proved invaluable to the UK during the recapture of the Falklands / Malvinas in 1982.

# RUSSIA-JAPANESE TALKS ON DISPUTED ISLANDS

In November 2018, Prime Minister Shinzo Abe met with President Putin on the sidelines of the East Asia Summit in Singapore and agreed to negotiate the future of the islands based upon the Soviet-Japan Joint Declaration signed in Moscow in 1956.

The Japanese government has for decades demanded that the Soviet Union / Russia return to Japan all the four disputed islands – Iturup, Kunashir, Shikotan, and the group of Habomai islets.

Following stalled talks in January, the position seemingly being taken is that the 1956 declaration only mentions the two smaller islands - Shikotan and Habomai - that would be transferred back to Japan "after conclusion of the peace treaty." The sticking point, which may still be overcome, is that Japan would have to admit that the "Soviet Union legally took possession of the southern Kurils from the defeated aggressor. Japan, and now has legitimate sovereignty over them". Notwithstanding, it seems likely that Japan will continue along this path, also as a way of stabilising the region through a Peace Treaty; noting that Shikotan and Habomai are of little strategic significance. Whereas Iturup and Kunashir guard the straits into the Sea of Okhotsk.



The Cargo of Cars afire on board the Grande America - but she did not sink.

#### **NEW PLAN DESTROYER AND FRIGATE**

A Type 052D (Luyang III-class) destroyer (119) and a Type 054A (Jiangkai II-class) frigate (542) were apparently commissioned in late February. They are due to enter service with the PLAN North Sea Fleet. Type-052D destroyers are 175m long and displace over 7,000. Sixty-four vertical launch tubes, fitted with HHQ-9 surface-to-air missiles and the anti-ship variant of the YJ-18A longrange cruise missile, are installed in two beehives, forward and midships.

The *Type-052D* destroyers are mainly built in Jiangnan Changxingdao, where the first of class was launched in August 2012. The eighth *Type 052D* was built by the Dalian Shipbuilding International Company. Two further Type 052Ds have been built by this company.

#### **GREENWICH STATION**

#### National Security

Britain's national security will be severely weakened if the UK leaves the EU without a deal and it could take "years and years" to rebuild, warned Sir John Sawers, the former head of MI6, Lord David Richards, the former Chief of the Defence Staff, and Lord Peter Ricketts, the former National Security Adviser: "Any form of Brexit makes our security more difficult to manage... the harder the Brexit, the greater the damage," said Sir John Sawers: "We've been the only country in the world that has been a member of NATO, a member of the European Union and a member of the Five Eyes intelligence alliance. It's given Britain a uniquely powerful and influential position in the world":

"We're now kicking away one of those pillars by leaving the European Union".

#### Saving Souls at Sea

HMS ARGYLL (F231) ship's company saved 27 people from a container ship after its cargo caught fire. The frigate was heading

back to Plymouth when it responded to a mayday call in the middle of the night off the coast of France.

It took eight hours to save the crew members, and the Royal Navy said the crew of the *Grande America* "were fighting a losing battle against the flames and abandoning ship". They fled the 56,642-tonne merchant ship in a lifeboat which smashed into heavy seas as it launched.

Despite the "very difficult sea conditions", HMS ARGYLL successfully launched her sea boat - nudging the lifeboat against the frigate's side so the crew of the *Grande America* could be brought aboard by "Royal Marines on the ropes hauling people up."

The 27 rescued sailors were taken to the French port of Brest, see Red Duster.

#### New Dreadnought-Class Submarine

The third Royal Navy nuclear deterrence submarine will be named HMS WARSPITE (SSBN 103?). She is expected to be operational in the 2030s, alongside HMS DREADNOUGHT, VALIANT and a fourth, as yet unnamed, submarine, each carrying Trident nuclear missiles on deterrence patrols for three months at a time. The \$55B *Dreadnought* program will see the submarines enter service in the 2030s.

The 152.9-meter vessel HMS WARSPITE will be the eighth warship to bear the name which dates back to 1595 and was the last "great ship" to be built during the reign of Queen Elizabeth I.

The sixth WARSPITE, a *Queen Elizabeth-class* battleship, earned more battle honors than any other single warship in Royal Navy history. She served through both World Wars, was badly damaged at both Jutland and Crete, involved in battles at Narvik and Matapan and Normandy and was hit by a guided bomb off Salerno. Her motto is *belli dura despicio* (I despise the hard knocks of war).

# RED DUSTER

#### DRY BULK SHIPPING CONTAINER SHIP FIRES AND DANGEROUS GOODS

Fire remains one of the greatest perils at sea. Each year more than 100 million containers are shipped around the globe in some of the largest ships ever built, however, the trade is not without its hazards as we shall see.

Containers comes in a number of types, Dry Bulk, Open Top, Flat Rack, Tank and Reefer, however, the enclosed Dry Cargo container is the most common. The original configuration of the ubiquitous box was 20 feet x 8' x 8'6" ( $6.068 \times 2.438 \times 2.591$  m), however, the 40' x 8' x 8'6" configuration is now the most common size in the international trade.

Whilst the container has justified the acclaim of its advocates in providing a standardised package offering good protection and security for its contents, a drawback is that all boxes are alike and there is no external means of verifying their contents. Thus the Carrier is totally reliant on the Shippers correct description of the goods and the correct method of packing.

With general cargo this may not matter, if cargo is damaged or spoiled due to inadequate packing this will be on the Shippers own head. However, it is a different matter when it comes to Hazardous or Dangerous Goods.

#### **DANGEROUS GOODS**

Internationally the carriage of Dangerous Goods is covered under the International Maritime Dangerous Goods Code which lists most of the known dangerous goods, their risks and sets out the quantities which may be carried, the required method of packaging and stowage requirements within a vessel.

In addition to the restrictions imposed on their carriage, dangerous goods invariably attract a freight premium and human nature being what it is, when it comes to paying extra, it is not unknown for Shippers to 'mis-describe' their cargo or use a trade name in an attempt to make their cargo sound more innocuous. If it is in a box, who will know?

The UK P&I Club has cited statistics that indicate that 27 percent of cargo-related incidents on ships can be attributed to cargo being mis-declared, second only to poor packaging. Over the past 17 years there has been a succession of major fires aboard container ships which have resulted in loss of lives, ships and property. A number of these ship fires, if not all, have been attributed to dangerous goods.

#### **RECENT INCIDENTS**

Hanjin Pennsylvania at Sea off Sri Lanka, 11th November, 2002. Fire following



Hyundai Fortune afire 21 March 2006.

an explosion in No.4 hold followed by a large explosion on 15th November. One Seaman killed, one missing. Vessel towed to Singapore. Declared a Constructive Total Loss, though subsequently repaired. Cause of fire an unknown container full of fireworks.

**Charlotte Maersk**, 109,650 dwt 9,612 teu Danish flag. Off Port Klang 7 July, 2010. Vessel had just left Port Klang when smoke noted forward. Ship's crew successfully fought fire until vessel able to return to port. Fire started in container of methyl ethyl peroxide and spread to Calcium Hypochlorite, a chemical frequently involved in shipboard fires. In total the vessel had 190 containers of dangerous goods on board.

**MSC Flaminia** 6,750 teu, German flag. Caught fire Mid-Atlantic 14 Jul, 2012. Explosion forward in No.4 hold, 1 Missing, 2 Died of Burns. Vessel suffered second explosion 18 July under tow to Europe. No European country would permit entry. Vessel anchored Lands End for inspection, Germany finally agreed to accept vessel to discharge. Cause of fire a container of a chemical, divinylbenzene which polymerized. Shipper Stolt and chemical company found wholly liable. New York court found MSC not liable for any loss.

Maersk Honam, 15,262 teu. 162,051 dwt Singapore flag 6th March, 2018. Fire in the forehold forward of accommodation, Arabian Sea, five Dead. Vessel towed to Oman where discharged, forepart cut off and main hull loaded onto heavy lift vessel towed to Korea for replacement bow and fore accommodation. Actual cause not specified but dangerous goods were stowed forward of accommodation.

Yantian Express, 7,510 teu German flag 3rd January, 2019. Fire in forepart of vessel, off coast of Newfoundland, salvage assistance provided by Smit, Crew abandoned ship, vessel under tow. Fire brought under control and enroute to Freeport, Bermuda. No information as to cause of fire.

#### WHAT HAPPENS

So what happens, if you have cargo aboard a ship which has suffered a fire or accident where loss or damage to ship or cargo has occurred?

Chances are the Shipowner will declare *General Average*. What's General Average? General Average is the principle that everyone involved in the 'venture', i.e. the voyage, must share the burden of the costs suffered by the Owner and the other Cargo Owners who have suffered loss and will be called upon to contribute financially.

In conjunction with declaring *general* average, the owners will appoint average adjusters, who will be responsible for coordinating the collection of general average securities and preparing all documentation required from parties with interest in cargo, containers, vessel, and fuel. Normally, everyone's interests will have been covered by insurance, your insurer, or in the unlikely event that you are not insured, you, will be required to provide a financial bond covering your contribution to General Average before your cargo will be released. ■

# THE CREATION AND ESTABLISHMENT OF THE JAPANESE NAVY 1976-2007, 2008-2018: JAPANESE NAVAL HISTORY, PART 3

By Masashi Kuratani

In October 1976, the proposed scope of the defensive strength of the Japanese Maritime Self-Defense Force was agreed. This directed that, from 1977 to 1979, the JMSDF was to achieve an 'enhanced defence capacity', specifically in the areas of enriched logistics and combat support, shore and integrated platform-support facilities and personnel. The outline directive stipulated delivery 'to be as soon as possible', and provided resources to this effect. This Paper examines the JMSDF between two pivotal periods, 1976 to 2007, and 2008 to 2018.



JS AYANAMI (DD 103).

# **STRATEGIC CONTEXT**

The strategic context in the early 1970s was assessed to be 'changing dramatically', as Japan's Economy continued its strong steady growth, while the U.S and Europe appeared beset by systemic economic issues (including stagflation and major industrial change (for example in the UK)); reducing military expenditure; decreasing international commitments (the 1971 withdrawal of the UK from East of Suez and the U.S. from Vietnam in 1973) – all occurring just as the Cold War entered, arguably, its most dangerous, penultimate phase (1977-1985). At the same time, the Military ability of neighbouring countries was assessed to be 'improving rapidly', notably in the areas of maritime development - posing an increasing emphasis on Japan's existential defensive capacity and capabilities. A specific need was identified to modernize Japan's warships, maritime patrol aircraft, maritime-air self-defense force, submarine, and anti-submarine warfare (ASW) capabilities, as new concepts and ideas emerged. At the time, the military-technological advantage was also seen to be swinging (pre the 1979 Soviet invasion of Afghanistan) away from the 'Global West'.

This was all occurring at the end of the Industrial Age, 1920-1965, which Japan had benefitted from in the pre-WW2 years, and more significantly during its post WW2 rebuild. A period when, with Germany, it enjoyed what became known as the 'Japanese Economic Miracle' (JEM), coincident with (and also as a result of) Cold War rearmament (1955-1972). The JEM can now be divided into four periods:

1. Recovery, 1946-1954;

2. Exponential and Rapid Growth, following Cold War Rearmament, 1955-1972;

- 3. Steady State Growth, 1973-1992, beginning with the 1973 oil crisis, and coincident with the formal end of the Cold War, the 1990-1991 Gulf War (the liberation of Kuwait), and the dissolution of the Soviet Union.
- 4. Stasism, Low Growth and Deflation, 1993-2018. There is some argument that the JEM ended with the Asian Financial Crisis of 1997.

The third JEM period of Steady State Growth (1973-1992) was also coincident with the start of the Information Age (1970-2015) – by some assessments now at its end. Japan – through its leading-edge digitalization, miniaturization and advanced computerization – was able to take advantage of this new scientific and technological age – introducing IT to society and industry during this period. Technologies also exploited by the JMSDF.

# JMSDF

In March 1981, JS KURAMA (DDH-144) was commissioned, and four DDHs were completed. A new division was organized about the newly commissioned ships JS HATSUYUKI (DD-122) and JS SHIRAYUKI (DD-123, from 2011 re-classified as TV 3517), as a future concept-composition, comprising eight escort flotilla ships, formalised about an 8-aircraft networked system.

By the end of the 1985 fiscal year, the JMSDF comprised:

- 52 anti-submarine (escort) ships.
- 14 submarines (with no increase or decrease).
- The first P3-C *Orion* Maritime Patrol Aircraft (MPA) (purchased originally from the U.S., and then built under licence in Japan), which commenced equipping in the 1978 fiscal year, after which P-3Cs 2 and 3 were received.
- The future acquisition of forty five P-3Cs was recognized by the Japanese National Security Council in December 1977, for delivery from 1978 onwards.
- Additionally, the JMSDF ordered a further twenty-five P-3Cs; to be supported by eighty fixed-wing anti-submarine aircraft and 55 Kawasaki P-2J MPA.

# 1987-1996

The end of the Cold War brought about a series of seismic changes in East Asia, although some of the regional dynamics were underpinned by different events marking the transformation. In Japan, the end



JSMDF Fleet Air Force P27-7 (circa 1955).

of the post-war era was marked by the death of Emperor Showa (Hirohito) on 7 January 1989 (r. 1926-1989).

Rather than the end of the Cold War*perse*, the despatch of the JMSDF mine sweeper flotilla to the Persian Gulf from June to September 1991 represented the beginning of a new era – distinguished by a progressive increase in JMSDF operational activities and reach. On June 15 1992, the Japanese Diet adopted the 'Law Concerning Cooperation in U.N. Peacekeeping and Other Operations' (the Peacekeeping Law). The Peacekeeping Law was the first, national legal framework to allow the deployment of Japanese forces overseas (since the end of WW2). Shortly afterwards, in September 1992, Japan deployed its first troops overseas in support of UN peacekeeping activities in Cambodia.

#### JMSDF

In March 1988, JS SHIMAKAZE (DDG-172) was commissioned, and a total of six of the class were assigned to the Escort Fleet. During this period (1991), the strength of escort ships increased to 61. The fast combat support ships (designated AOE – oiler, ammunition and supply ship) JS TOKIWA (AOE-423) and JS HAMANA (AOE-424) were also commissioned, and a total of four additional AOE ships were completed.

In March 1993, the first *Aegis-class* cruiser JS KONGO (DDG-173) – followed by JS KIRISHIMA (DDG-174), in March 1995 – were commissioned. In total, eight DDGs were built; providing two Aegis DDGs to each Escort Flotilla.

By the end of 1996, the JMSDF comprised:

- 60 Escort Ships;
- 16 Submarines, 2 submarines were reclassified as ATSS (from SS), so increasing the number of submarines to 16 by 1996.
- 98 Orion P-3Cs so completing the Air Patrol Squadron.
- Approximately forty-seven SH-60J helicopters were available by 1996.

The JMSDF also began purchasing and mass-producing helicopters from 1991:

- Twenty-three HSS-2B aircraft (equivalent to RAN Seaking helicopters) were de-commissioned, and new ones ordered to sustain 56 HSS-2Bs by 1996.
- During this period, the JMSDF also purchased three Rescue Airplanes US-1A, increasing the squadron to 6 aircraft.
- By 1996, the ageing Kawasaki P-2Js still actively involved in front-line patrolling were de-commissioned, commencing in May 1994.

## 1997-2007

The adoption of the 1996 'New National Defense Program (NNDP)' – outlined / drafted in 1995 – confirmed the trend and the transformation of Japanese self-defense capacity and capabilities. The transformation was affected by the 2007-2008 Global Financial

Crises and the subsequent economic recession (2008 on – now thought, by some economists, to be entering its third and potentially final cycle). The stasism and low growth (including deflationary pressures) impacting the Japanese economy from 1997 onwards, were exacerbated by the financial crisis (beginning in August 2007) and the subsequent global recession. This led Japanese Governments to aim for a reduction in Defence costs. The result was an attempt to make the Japanese military more 'compact' (networked and 'agile'), with an overall reduction of manpower and capacity, if not capability.

Unit / Equipment Type	Description	NNDP 1997 JMSD Force Outline Structure	Post 2007 JMSD Force Outline Structure
Major Units	Escort Ships	4 flotillas	4 flotillas
	(Mobile Units)	5 units	7 units
	Escort Ships (district units)	4 divisions	6 divisions
	Submarine Units	1 flotilla	1 flotilla
	Minesweeper Units	(Land-based)	
	Patrol Aircraft Units	13 Squadrons	9 squadrons
Major Equipment	Destroyers	approx. 47	approx. 50
	Submarines	16	16
	Combat Aircraft	approx. 150	approx. 170

Escort ships were also transferred and the number of destroyer reduced to 54 from 56. The new structure of rotary-wing antisubmarine aircraft (including 35 land-based aircraft and 48 shipborne helicopters) completed its transition during this period.

# **SEA CHANGES AND CONTEXT**

In July 1996, the JMSDF despatched warships to Russia for the commemoration of the 300th anniversary of the Russian Navy, and in June 1997 Russian warships visited Tokyo. Also in September 1996, the JMSDF training squadron visited the Republic of Korea for the first time. Since when, many reciprocal visits have been carried out between Japanese and ROK warships. Noting the challenges posed following the end of WW2, Search and Rescue training, carried out between Japan and the Republic of Korea has further enabled defence exchange and cooperation between both countries to develop greatly.

The JMSDF took its new outline of defence policy, and proceeded to develop new structures through its reorganization of Fleet units, following the 2007 budget. The core of the Escort Flotilla has changed drastically, and escort units are now under the direct command of Commander Fleet Escort Force (COMFEF). Regarding air units, Air Patrol Squadrons of fixed wings aircraft were to be reduced to four (from eight aircraft per squadron) and ASW Helicopter squadrons reduced to five aircraft, from nine. Air units of each district have also been re-assigned to the Fleet Air Wing which is now placed under the command of Commander Fleet Air Force (COMFAF).

# **FUTURE CONCEPT OF OPERATIONS**

Today the JMSDF needs to develop its New Maritime Defense Strategy, and plan to establish the 'unit operation concept' and 'network-systems programming concept' in accordance with the strategy. This will require paying attention to the following tasking:



JS OYASHIO (SSG 511) - The first Domestically Built SS.

- Both at home and abroad, acting as a main player; contributing to Maritime Security, and upholding UNCLOS;
- Maintenance of the safety of international sea-lanes;
- Defence of the country, and;
- International peace and cooperation activities.

Japan's main sea-line of control (SLOC) – also part of China's One Belt and One Road (OBOR) policy – requiring 'the maintenance of secure sea lanes', is the road passing from the Middle East through the Indian ocean, the Strait of Malacca, the South China Sea, the Taiwan Strait, and the East China Sea, to Japan. Cooperating with the US Navy and creating a framework for a Asian Maritime Coalition, including the Republic of Indian Navy (RIN) and Royal Australian Navy (RAN), contributes significantly to Japan's joint commitment and ability to positively ensure the stability and safety of these areas; so maintaining the security of all our common sea lanes.

Maritime responsibilities extend to Land and Amphibious Defence; including a wide range of missions such as:

- Warning and Surveillance patrols in the seas around Japan;
- Responding to terrorism and illegal acts on the high seas;
- Countermeasures to maritime encroachment;
- Special operations and boarding operations;
- Island Defence;
- Missile Defence.

To undertake this, Japan will need to ensure 'Maritime Domain Awareness' by collecting and accumulating ISR information from reconnaissance satellites, maritime patrol aircraft, military and commercial ships, and allied and friendly nations. This will require improved cooperative missile defence (with our key regional allies, India, Australia, South Korea, the U.S. and Singapore) and developing the present plan to strengthen Japan's early-defence stages; providing early threat analysis of hostile base operations, including and within cyberspace – which is also a key maritime domain.

At the same time, Japan will need to maintain international peace cooperation activities in the Indian Ocean, PK operations, largescale disaster rescue operations (Regional Disaster Relief – RDR), the transport of personnel and materials, and combat support to multiple own and Allied missions.

As the threat continues to evolve, it will be increasingly difficult for Japan to maintain the assigned military balance between primary duties, and international peace cooperation activities. It is in this area that regional alliances, such as between Japan, Australia, India, Singapore, and the U.S. will be critical. Already, Japanese escort ships operating on the high seas and off the coast, are obliged to adapt the 'high-low operational concept' – due to the decrease in the number of ships (caused by budget cuts) and the need to strengthen the JMSDF.



ISUZU (DE 211) - circa 1962.

By Editor: The RAN is facing a similar challenge – posed also by the need to concentrate on regional security, and bring forces back from – for example – the Middle East.

# **WORKING FOR A COMMON MARITIME FUTURE**

Following tensions building in the East China Sea – after the fishing boat collision 'incident' between the Japan Coast Guard, and Chinese fishing boats off the Senkaku Islands – in 2010, the 'New National Security Strategy' was drafted. Tensions are continuing to this day.

In March 2013, the National Security Strategy (NSS) was issued (the first strategy of its type in the history of Japan); providing an outline of the 'New Defense Program Guideline' and the 'Medium-Range Development of Defense Capacity Plan', based on the NSS. In particular, the National Security Strategy (2013) replaced the 'Policy of National Defense' (1957), and changed Japan's defence posture for the first time in 56 years.

In the future, JMSDF will also have responsibility for ballistic missile defence (BMD) against the very real and demonstrated threat posed by North Korea. This will include not only air defence of the Fleet, but also BMD mission capability development, expanded to include JMSDF Aegis-class cruisers. JMSDF will be expected (in the future) to be assigned other BMD missions – as is the case for RAN Air Warfare Destroyers (AWDs).

## **JMSDF NEW ORDER OF FLEET**

Looking to the future, the JMSDF is likely also to comprise:

• Three of the largest JMSDF ships all commissioned in 2015/16: 1 x *Izumo-class* (DDH-183) and 2 x *Hyuga-class* (DDH-181 and DDH-182. The second of the *Izumo-class*, JS KAGA (DDH-184), was commissioned in March 2016.

By supplementing the 2016 budget, additional funding was expended as a capability improvement of the *Aegis-class* cruisers to include BMD measures.

- Two new 8,200 ton type DDGs are under construction, and will be completed in 2020 and 2021. When these two ships go into commission, JMSDF's underway (Fleet) air defence and BMD capability will be further strengthened.
- Two new *Ashahi-class* DDs (optimized for underwater warfare) are being built and fitted out. The Second ship, JS SHIRANUI (DD-120), will be completed in March 2019

JMSDF has also advanced the construction of twenty two submarine systems, as directed by the National Security Strategy.

• Seventeen submarines are currently active in the front line, from a total of 19 operational submarines; including two training submarines.



JSMDF Fleet Air Force S2F-1 (circa 1959).

The Submarine rescue ship is currently 32 years old, and is being replaced by a 5,600 ton new submarine rescue vessel, which was approved for building in the 2014 budget.

• The new submarine rescue ship, JS CHIYODA (ASR-404) was commissioned on 20 March 2018, and has a suite of diving rescue equipment; including a new deep-submergence rescue vehicle (DSRV), and disaster-relief equipment with the facilities for advanced on-board medical support.

The National Security Strategy (2013) also decided upon a 170 strong Fleet Air Force, including:

- Substituting JMSDF P-C3 *Orions* with new Kawasaki P-1 Maritime Patrol Aircraft, considered to be a more advanced version of the Boeing P-8 *Poseidon* MPA.
- A new ShinMaywa US-2 short take off landing (STOL) amphibious aircraft (designed for air-sea rescue (SAR)) work transferred to the FAF increasing the total number of rescue flying boats to five. Eventually, there will be 7 aircraft in the squadron. The last US-1A STOL amphibious aircraft was retired in 2017, after completing 41 years of continuous service.
- Mine sweeping helicopter standardization of ten Agusta-Westland (*Merlin*) MCH-101, following the retirement of the Sikorsky MH-53E.

On 18 December 2018, the Japanese cabinet approved a plan to modify the JMSDF's two Izumo-class helicopter carriers to embark F-35B (Lightning II) stealth fighters. At the same time as the Japanese cabinet approved the ship modifications, it also endorsed the purchase of 42 F-35Bs from Lockheed Martin.

In a ceremony held near Sasebo on the southwest island of Kyushu in April 2018, 1,500 members of the newly formed Amphibious Rapid Deployment Brigade (ARDB) assembled as part of its activation ceremony. It is the first 'Japanese Marine Brigade' (currently under the Japanese Ground Self-Defence Force (Army)) to be formed since

JS AMATSUKAZE (DDG 163) - the first JMSDF Missile-Equipped Ship.

between Australia and Singapore, and Australia and the U.S.), further maritime alignment seems sensible, likely and desirable. In the area of Amphibious Readiness (for example the formation of a possible Japanese-Australian Amphibious Regional Readiness Group (JARRG) based on RAN LHDs (*Adelaide-class*) and JMSDF DDHs), and submarine force development, both the JMSDF and the RAN have much to gain. Such an alignment of both our Navies would build upon shared histories, traditions, and origins, with the potential to be a deployable joint stabilising regional force at a time of significant instability and change.

**Acknowledgments:** This paper could not have been written without the active, steadfast support and engagement of Captain Shinsuke Amano JMSDF, the Naval Attaché to the Embassy of Japan, in Canberra – for which The Navy League of Australia and The NAVY are most grateful.

About the Author: Masashi Kuratani is a retired JMSDF Commander; he previously served as the Instructor (Military History & Leadership Studies Office) at the JMSDF Command Staff College. He is widely written including: A consideration of Korean Water Force in 1592 (2008); The Battle of Tsushima: Decision Making of Heihachiro Togo (2011); Relief Operation for the 1923 Great Kanto Earthquake of the Imperial Japanese Navy and the United States Navy (2011) (referred to in Part 1); An amphibious operation in early-modern times: The invasion of Korea 1592 (2013); The historical changes of Korean water force and response to invasions by Japanese water force (2016); and Togo's Decision Making based on "Estimate of the Situation" procedure: (2017).

the end of WW2. The ARDB has courted some controversy, since amphibious units are seen also to have the capability to project military force, contrary to Japan's post World War Two constitution – which renounced Japan's right to wage war.

The JMSDF in scale, class, type and shape is emerging (alongside the Royal Australian Navy) as a major stabilising, regional maritime capability. Given also commitments (made by both the Japanese and Australian Governments in October 2018 to sign the 'Visiting Forces Agreement') to allow for greater military cooperation and national and joint training opportunities within each country's borders (as already exists



Japanese Helicopter and F-35B (Lightening II) Destroyers JS IZUMO (DDH 83) and JS KAGA (DDH 84).



# **SOLWARA WANTOK (SEA MATES)** The ran and the pngdf (maritime element)

By Greg Swindon

The relationship between Papua New Guinea and Australia stretches back to the 19th Century and is one that, in many respects, is closer than that between Australia and New Zealand. It is true that the Anzac's stood shoulder to shoulder, at Gallipoli in 1915, fighting the Turks in a far off foreign field but in 1942 the fight was much closer to home, much more was at stake and it was the people of Papua and New Guinea (as the area was then known) who stood alongside us in a war of national survival for both peoples.



HMAS AUSTRALIA Leads the Australian Fleet into Simpson Harbour, 1914.

# INTRODUCTION

The Australian-PNG relationship has grown haphazardly and sometimes poorly. While few in Papua New Guinea (PNG) closely follow the progress of its much larger neighbor the future of PNG is of constant interest to Australia. With a population exceeding 8 million, a struggling economy, poor living and education standards (compared to many modern states), burgeoning health issues and, at times, an indifferent and corrupt political administration the future of PNG is of vital interest to Australia.

Among the agencies with a long and keen interest in PNG is the Royal Australian Navy (RAN) which has been part of the story of both nations since 1914.

# PRIOR TO 1946

The RAN was first involved in the region in 1914 with the capture of German New Guinea. Australian warships deployed to Port Moresby (the administrative centre of the territory of Papua controlled by Australia since 1906 [1]) in August 1914 and conducted a reconnaissance of the port of Rabaul (then German territory) later that month. In September 1914 the RAN transported and supported the Australian Naval and Military Expeditionary Force that captured Rabaul and oversaw the surrender of the German colony of New Guinea on 17 September 1914. RAN ships and personnel were active in the region throughout the remainder of World War I.

At the end of the war Australia was assigned, by the League of Nations, the former German territories of German New Guinea, the

Bismarck Archipelago and Nauru as mandates to be administered and controlled as its native populations were not yet capable of doing so. In addition the Australian Prime Minister, William 'Billy' Hughes, prophetically stated "Strategically the northern islands (such as New Guinea) encompass Australia like fortresses. They are as necessary to Australia as water to a city." [2]

Throughout the inter-war period RAN warships conducted 'showing the flag' cruises to the region including visits to the Solomon Islands. Ultimately World War II brought the importance of the region into stark relief with the Japanese invasion of northern New Guinea, the Bismarck Archipelago and their subsequent attempts to capture Port Moresby. Australian and US sea, land and air forces conducted extensive operations to recover these territories during 1942-45. In 1946 the US left, but Australia stayed; partly due to its responsibilities under the former League of Nations mandated territories requirements but also for the vital strategic regions identified by Hughes in 1919 and proven by the Pacific Campaign.

# 1946-1975

At the end of World War II the RAN footprint in Papua and New Guinea was extensive with bases at Port Moresby (HMAS BASILISK), Milne Bay (HMAS LADAVA), Madang (HMAS MADANG), Dreger Harbour – near Finschhafen (HMAS TARANGAU) and Torokina, Bougainville (HMAS LUSAIR). By early 1946 all but TARANGAU and MADANG had been decommissioned, although MADANG was decommissioned later that year. A large base had been constructed at Manus Island (Seeadler Harbour) by the US Navy, but abandoned in 1947 [3]. The RAN used these facilities during the war and continued to do so afterwards.

Following the US departure the RAN took over portions of the base and in 1948 work began to make this the permanent RAN base in the region. In July 1949 the Naval Officer in Charge (NOIC) New Guinea and his staff transferred from Dreger Harbour to Manus Island. On 1 January 1950 the facilities at Manus Island were commissioned as HMAS SEEADLER. Despite this being the name of the harbour the German origin of the name (Sea Eagle) saw the base renamed *Tarangau* on 1 April 1950. Throughout the next 25 years *Tarangau* was an important forward base for the RAN providing fuel and stores for RAN vessels sailing to and from Asia – particularly ships deploying to Japan, as part of the British Commonwealth Occupation Force (1945-52), the Korean and Vietnam Wars, as well as for exercises in Southeast Asia.



HMAS AE1 Located in 2018 off Rabul 14 September 1914.

During World War II there were many instances of Melanesians from Papua and New Guinea being employed onboard various RAN vessels [4] and at bases as casual labour but it was not until late 1946 that thought was given to forming a PNG Division that would provide permanent logistics support to the RAN. In September 1946 Commander Claude Brooks, RAN (NOIC New Guinea) discussed the concept with the Administrator of Papua-New Guinea Colonel Jack Keith Murray (Administrator 1945-52) and advised the Naval Board of the matter. On 5 February 1947 the Naval Board requested Colonel Murray's opinion on the matter.

Murray was a strong advocate for reform and travelled widely throughout the country seeking the views of its people on their future. This brought him into conflict with the long established white residents who named him 'Kanaka Jack'. Murray was supportive of the Brooks plan and, following inter-departmental discussions, the RAN approved the creation of the first peacetime military unit in PNG on 3 June 1948. It consisted of approximately 60 Manus Island men who were employed full time to re-fuel ships, provide logistics support and were trained as seaman; these men would later be termed the 'old division'. Their employment would reduce the demand for Australian manpower in the region and also hopefully encourage, amongst the PNG people, more interest in national defence.

Thus the PNG Division of the RAN was formed. In August 1951 recruiting commenced of young Papua New Guinea men as recruits in what became known as the 'new division'. They received basic training at *Turangau* and sea training in a Motor Stores Lighter. Their pay scales were much lower than their Australian counterparts but commensurate with Papua New Guinean soldiers, in the Pacific Islands Regiment, and the Royal Papua New Guinea Constabulary [5]. By 1960 there were 99 men in the PNG Division and, despite a dip in numbers in 1964-65, the size of the PNG Division increased over the next decade to number 260 men (11 officers and 249 sailors) in 1974 [6].

Training was an issue as there were no dedicated RAN ships attached to the Division and training, in 1960, was done in the Motor Refrigeration Lighter 252. In March 1963 this changed when the General Purpose Vessel HMAS BANKS was attached to the PNG Division. She had a crew of 13 of which nine were Papua New Guineans; who were changed out regularly to allow other personnel to gain sea experience.

In January 1968 the first of five *Attack class* patrol boats to be attached the PNG Division, HMAS AITAPE, arrived at Lombrum. The bulk of her sailors were to be Papua New Guinean personnel.



PNG Naval Division March Past 2018.

Over the next 14 months her sister ships SAMARAI, LAE, LADAVA and MADANG joined the Patrol Boat Squadron and training accelerated. While specialist training was undertaken in Australia more fundamental training was conducted in PNG and gradually more PNG sailors assumed duties in the patrol boats as their training and skills allowed.

In 1967 the first PNG Midshipmen were recruited for training and the following year several PNG apprentices began training at the RAN Apprentice Training Establishment (HMAS NIRIMBA) in western Sydney. Five PNG gunnery sailors also undertook a six month training course at HMAS CERBERUS. In early 1971 two PNG midshipmen caused a minor issue while undergoing training in HMAS SYDNEY. In February – March 1971 the fast troop transport, known as the Vung Tau Ferry, deployed to Vietnam carrying troops and equipment and no one thought it an issue that the two midshipmen were on board until a newspaper article advised they had deployed to Vietnam. The PNG House of Assembly had previously forbidden PNG troops being committed to the war but had forgotten about personnel undergoing training in RAN ships. The mistake was not repeated. [7]

Planning had begun in the 1960s for PNG to be granted selfgovernment but with a prospective date well in the future. An elected House of Assembly was created in 1964 to assist the Australian administration and more Papua New Guineans began to take an active role in politics, the civil administration and the armed forces. The election, however, of the Whitlam Government on 5 December 1972 accelerated this process significantly and self-Government was granted on 1 December 1973.

The Papua New Guinea Defence Forces (PNGDF) Maritime Wing was formed on 14 November 1974 and the RAN transferred the five *Attack-class* patrol boats, two heavy landing craft (*Buna* and *Salamaua*) and a harbour tug to the fledgling force; all vessels retained their previous RAN names. The former RAN base Tarangau was also handed over to the PNGDF and became known as Lombrum Naval Base, with the patrol boats remaining there while the landing craft were based in Port Moresby. RAN officers and senior technical sailors remained, on loan to the PNGDF, to assist the new navy take over its new maritime responsibilities. Just over a year later PNG was granted full independence on 1 December 1975.

Much has been written over the last 50 years concerning PNG independence with a number of commentators stating that independence was given 'too early' and that PNG was not ready to take on the burden of statehood [8]. The main issue cited is that while Australia provided the new nation with a full political, civil



HMAS ATTACK (P 90) The Second RAN Attack-class will be the Future Submarine.

administration and military structure (much of it in line with Australian standards) it ignored PNG cultural issues and the basic fact that the new nation could not adequately fund the structure.

Others disagree stating that the Papua New Guinean political institutions had reached a point where independence was essential and that failure to acknowledge this, by granting independence, could lead to violence or a nation unable to learn to take responsibility for its own future [9]. Regardless of which side of the argument the reader agrees with the blunt fact remains that despite over 40 years of independence Papua New Guinea is a struggling third world nation reliant on external support, from various states and agencies, in order to continue to exist and its future is uncertain. The country is currently facing the reality of 'failed state status' and if not for foreign aid from various sources would have collapsed decades ago.

# **1975 TO THE CURRENT DAY**

The PNGDF (Maritime Element) continued to operate from Manus Island undertaking Exclusive Economic Zone (EEZ) patrols, search and rescue tasks and maintenance of navigational beacons. The landing craft supported military exercises and provided heavy logistic support for the army and civil society transport duties The RAN retained responsibility for hydrographic services [10] and the updating of charts for safe navigation in PNG waters and continues to do so to this day.

Gradually RAN personnel were replaced by PNGDF personnel, as their skills and ability increased, and by the end of the 1970s most of the vessels were entirely crewed by PNGDF personnel [11]. From 14 November 1974 the RAN retained a small administrative base (HMAS BASILISK) in Port Moresby to manage those RAN personnel on loan to the PNGDF but the need for the base gradually reduced and it was decommissioned on 31 January 1983.

The introduction of the UN Convention of the Law of Sea in 1982 confirmed the territorial sea of 12 nautical miles and the EEZ out to 200 nautical miles. This gives PNG over 2.5 million square kilometres of water to police and regulate - making the task of fisheries patrols an almost impossible activity for the PNGDF. Funding issues meant the vessels spent more time in port due to lack of fuel and maintenance then at sea; although in 1986 HMPNGS AITAPE transited from PNG to Sydney for the RAN's 75th Anniversary Fleet Review. In 1988 HMPNG Ships AITAPE and TARANGAU (later renamed RABAUL) conducted the same voyage south, via Cairns, Townsville and Gladstone to attend the Australian Bi-Centennial celebrations. HMPNGS DREGER made the same journey for the RAN Fleet Review

in 2013. These 'ceremonial' voyages are the longest ever conducted by PNGDF vessels.

The five aging *Attack-class* patrol boats were gradually replaced in the late 1980's by four *Pacific-class* patrol vessels built under the auspices of Australia's Pacific Patrol Boat Program [12]. The PNGDF received the first boat HMPNGS RABAUL (ex-TARANGAU) in 1987, with follow on vessels DREGER, SEEADLER and MORESBY (ex-BASILISK) handed over during 1987-89. The RAN also provided a maritime surveillance advisor (an officer of lieutenant commander or commander rank) and technical support advisors to assist the PNGDF maintain their vessels including arranging regular refits in Queensland shipyards.

In 2014 the decommissioned RAN landing craft heavy, HMAS LABUAN, was gifted to the PNGDF and re-named HMPNGS LAKEKAMU; thus bringing the landing craft fleet up to three vessels with the original *Buna* and *Salamaua*. Due to poor maintenance standards and a lackadaisical workforce it is rare for more than one landing craft and one patrol boat to be serviceable at any one time. [13]

On 28 May 2018 the first of the second generation of vessels under the Pacific Patrol Boat Program, the *Guardian-class*, was launched in Australia. The PNGDF will receive the first vessel (to be named HMPNGS TED DIRO [14]) in late in 2018 with three more to follow to replace the 1980s vintage *Pacific-class* patrol boats. Again support from Australia with the secondment of technical personnel and ongoing high level maintenance is part of the program. The RAN also provides personnel to serve in PNG's National Surveillance Coordination Centre as advisors.

A recent example of Australian support was in December 2016 when the Australian Border Force (ABF) and the PNGDF Maritime Element conducted a PNG Government led joint patrol to identify and intercept illegal fishing vessels operating in the vicinity of Milne Bay. An ABF Dash-8 surveillance aircraft conducted a targeted aerial surveillance flight locating three Vietnamese fishing vessels thus allowing HMPNGS SEEADLER to intercept and detain the illegal fishing vessels. [15] As part of Operation SOLANIA Australian and New Zealand aircraft conduct aerial patrols throughout the South West Pacific, including over PNG's Exclusive Economic Zone, to identify illegal fishing activities.

The training of Maritime Element personnel also continues to take place in Australia under the bilateral Defence Cooperation Plan with both officers and sailors undertaking a variety of training in Australia and occasionally embarking in RAN vessels for sea training. [16] The RAN and PNGDF also conduct a regular bilateral exercise, Exercise PARADISE, involving Australian and PNG patrol boats often undertake maritime surveillance, security and policing training activities to help improve the PNGDF ability to patrol its EEZ. The most recent exercise, in the waters off Darwin in 2017, involved the patrol boats HMA Ships ARARAT, LARRAKIA and MAITLAND with HMPNG Ships MORESBY and SEEADLER.

The gradual deterioration of PNGDF capability and professional standards since independence however has been manifest due to 'clan loyalties that undermined the chain of command and resulted in the collapse of logistics support functions'. [17] In 1997 the 'Sandline Affair' where PNG Prime Minister Chan attempted to use mercenaries to solve the Bougainville conflict saw the PNGDF commander (Brigadier General Singirok) denounce the secret government contract with 'military consultants' Sandline International.

Under Singirok's orders Sandline personnel were detained and subsequently deported and he called on the prime minister, deputy prime minister and defence minister to resign. Chan accused Singirok of 'gross insubordination bordering on treason', and dismissed him.



HMPNG Ships MORESBY and SEEADLER in company with HMA Ships ARARAT and MAITLAND during Exercises August 2017.

In the following national elections Chan lost his seat and there was a change of government. Additionally during the last 25 years the size of the PNGDF (mainly the Army) has been reduced leading at times to ill-discipline amongst the soldiers. While the maritime element has mainly avoided these actions the reliability and impartiality of the PNGDF is questionable.

# THE PNGDF ON OPERATIONS

As well as infrequent patrols of the EEZ the PNGDF (Maritime Element) deployed extensively to Bougainville during the lengthy fighting in that province. There is not the space in this article to fully analyse this 'campaign' which began with the 'first act of local rebellion' in October 1988. [18] The landing craft were used to move PNGDF troops to Bougainville and provided logistics re-supply while the patrol boats commenced a blockade of the island [19] to prevent the importation of weapons and ammunition. Australia continued to support PNG with defence aid and training while also helping to negotiate a peaceful solution to the growing crisis.

Eventually in 1997, after many false starts, Operation BELISI II was implemented which saw a multi-national Peace Monitoring Group (not including the PNGDF) deployed to the troubled island. The operation ceased in 2003 and Bougainville was granted Autonomous Region status with an election due in mid-2019 to decide if Bougainville remains part of PNG or claims full independence.

More recently there has been some support for PNGDF troops participating in UN peacekeeping operations; but it has not progressed beyond occasional parliamentary discussions. PNGDF infantry and engineers took part in the Regional Assistance Mission to the Solomon Islands (RAMSI) but there was no maritime presence.

The PNGDF has a small explosive ordnance disposal capability but the ADF has conducted Operation RENDER SAFE throughout the South West Pacific since 2009 and on two occasions this has taken place in PNG. In 2011 the clearance of WW II ordnance took place at Rabaul and on the Kokoda Track. In 2014 the clearance work took place at Torokina, Bougainville (at the request of the Autonomous Bougainville Government) and 16 tonnes of ordnance was recovered from 109 sites and disposed of. Australia has also made a strong commitment to support PNG's hosting of APEC in 2018, particularly to assist PNG prepare for the security arrangements. This will involve support from both the Australian Defence Force and the Australian Federal Police.

# THE FUTURE?

Australia provided \$541M of aid to PNG in 2017-18 and is expected to provide \$572M in 2018-19 [20]. Historically Australia has provided PNG with \$38.9M for defence in 2015-16, \$40.2M in 2016-17 and an estimated \$41.8 in 2017-18 [21] which basically equates to 13% of all aid provided to PNG. Noting the parlous state of the PNGDF (and not just the Maritime Element) are we spending enough to ensure that it can do its job or is it just a band aid on a festering wound? Is Australia caught in the dangerous middle ground where it can neither 'abandon or arrogate' PNG?

In May 2018 the Russian SMOLNYY class training ship Perekop made a historic visit to Port Moresby - why? In mid-July 2018 several hundred PNG civilians were treated on board the Chinese navy hospital ship DAISHAN DAO (ARK PEACE) while it was in Port Moresby for a week-long port visit - why? I think the answer is obvious!

In 1985 the incoming PNGDF commander Tony Huai called for a diversification of PNG's defence relations. Since then PNG has undertaken military interaction with the US, New Zealand Indonesia, Malaysia, Singapore, Israel, Spain, China and Fiji; but as our Foreign Minister Julie Bishop has recently stated Australia needs to remain 'the natural partner of choice'. [22]

Over 100 years ago Billy Hughes stated the relationship between PNG and Australia is vital – as water is to a city. If Australia does not play its part in 'fixing' PNG or at least continuing to prop it up then someone else will – and can we afford to let that happen!

#### **REFERENCES / NOTES**

- Papua began to be colonised during the 1800's and by the early 1880s was of concern to the colony [1] of Queensland due to its ungoverned nature and the occupation of the north coast of New Guinea by Germany. Requests to Great Britain to annexe the area were ignored. On 4 April 1883 the Premier of Queensland (Thomas McIlwraith) authorised the police magistrate at Thursday Island (Henry Chester) to take possession of Papua on behalf of Britain. This action was quickly disavowed by Britain but on 6 November 1884 Papua became a British Protectorate. The territory was formally annexed by Britain on 4 September 1888 and part of the agreement for Australian Federation, in 1901, was that Australia would take responsibility of the territory from Britain.
- Joseph V. Fuller (Ed.) Papers relating to the Foreign Relations of the US, The Paris Peace Conference [2] 1919, Volume III, US Government Printing Office, Washington D.C., 1943, Pages 720-722
- The US Government offered to share usage of the base with Australia in return for long term non -sovereign rights to Manus Island. The Chifley Labor Government refused and the US sold off their [3] assets and withdrew
- Thirteen members of the crew of the stores carrier, HMAS MATAFELE, were Melanesian when the vessel [4] was lost without trace in the Coral Sea in late June 1944
- Tristan Moss, Guarding the Periphery The Australian Army in Papua New Guinea 1951-75, Cambridge [5] University Press, Melbourne, 2017, page 34,
- James Sinclair, To Find a Path The Life and Times of the Royal Pacific Islands Regiment 1950 1975, [6] (Volume II), Boolarong Press, Brisbane, 1992, page 185.
- The two Midshipmen were Gapai Manoi and Richard Cherake who became PNG's only Vietnam Wat [7] Veterans. On 23 May 2018 Richard Cherake was finally awarded his Vietnam War medals by the Australian Government. Unfortunately Gapai Manoi died before medals could be awarded to him.
- Comment by former PNG Deputy Prime Minister Sam Abel on Dateline 15 September 2016. [9] https://garamut.wordpress.com/2010/06/15/png-independence-1975-were-we-ready. Comment made by John Greewell - Director of the PNG Office in 1974 and responsible for advising the Prime Minister and Cabinet of progress towards independence.

- [10] David Horner, Making the Australian Defence Force, The Australian Centenary History of Defence. Volume IV, Oxford University Press, South Melbourne, 2001, page 180. [11] Sinclair. Ibid.
- [12] The patrol boats were built by Tenix Defence, which was later acquired by BAE Systems Australia during 1987-1989 and each has a displacement of approximately 162 tonnes. A total of 22 vessels were built and gifted by Australia to 12 Pacific island nations as a goodwill gesture.
- [13] Advice received from RAN personnel who have recently served on loan to the PNGDF and who do not wished to be named.
- [14] Australian Warship, Issue 100 (2/2018) page 4-5
- [15] http://newsroom.border.gov.au/channels/International-engagement/releases/australia-and-papua-newguinea-fight-illegal-fishing-in-joint-patrol
- [16] In late 2017 three PNGDF Midshipmen were embarked in HMAS ADELAIDE for a training cruise which included a short visit to Port Moresby.
- [17] Bob Breen, The Good Neighbour Australian peace support operations in the Pacific Islands 1980-2006, Cambridge University Press, Melbourne, 2016, page 15.
- [18] Reuben Bowd, Doves over the Pacific In pursuit of peace and stability in Bougainville, Australian Military History Press, Loftus, NSW, 2007, page 25.
- [19] Ibid, page 60. [20] DFAT provided data
- [21] Defence Portfolio Budget Statement 2017-18, Budget Related Paper No. 1.4A, Commonwealth of Australia, 2017, Page 114
- [22] Statement by Foreign Minister Julie Bishop during visit to PNG on 22 March 2018 broadcast by AM (ABC Radio)

# **BOOK REVIEW** G



Progressives in Blue Maritime Strategy, American Empire, and the Transformation of U.S. Naval Identity Scott Mobley Naval Institute Press (May 15, 2018) ISBN-10: 1682471934 ISBN-13: 9781682471937 Hardcover \$50.00

Mobley provides an impressive examination of an instrumental period of U.S. Navy History, as it formed the culture, leaders and thinking that would transform Naval Warfare in the 20th Century. A Transformation that paved the way for the move from the American Empire (generally taken to have begun in 1898, with the outbreak of the Spanish-American War) to the American Century, 1917-2016. Many of the battles were fundamentally cultural in nature, where culture includes the (socio) human-technological and techno-socio drivers that form the bases of knowledge transfer. As Australia is determining in the 21st Century, culture forms and is formed through knowledge transfer as the bases of sovereign capability and knowledge sovereignty – at the individual, organisation, and state levels.

Many of the Naval protagonists were born into the *Gilded Generation* (b. 1829-1843), coincident with the early-Victorian generation, and the scientific *Locomotive Age*, 1820-1865 – that gave rise to the Turbine Age (1870-1915), and the *Great Generation* (b. 1915-1929). The *Gilded Generation* were 24-38 year olds during the American Civil War, 1861-1865. As youngsters, they encountered a U.S. confronting significant immigration, rampant commercialism, conspicuous consumerism, falling college enrolment and the rise of Labor and the union movements. This led to a fundamental distrust of idealism, institutions, and an emphasis upon pragmatic materialism – including the American-Indian Wars, the expansion westwards and, ultimately, the American Empire. In many regards the *Gilded Generation* were confronting many of the same issues we are facing today, with a distrust in politics and institutions, the Long Wars of Afghanistan, Iraq, Syria, and the beginning of a new (Cyber, Quantum-AI) scientific age.

Chapter 7 – *The Means to the End* (The Navy's Culture Wars, 1887-97) gets at the deep conflict with USN (and all Navies), between those advocating *mechanism* (and a scientific / techno-socio approach); those wishing to retain power and command focused on navigation and seamanship (and felt threatened by the rise of a technical 'class'); those who focussed upon *operational art* but rejected science; and those seeking to develop coherent *strategy* and *designs* (sociotechno and techno-socio) from the competing factions. All this saw both the formation of the Naval War College, and also its subordination as a *mechanistic* institution (with the banishment of Mahan). These factions persist in the USN, and indeed the Commonwealth Navies to this day. On the one hand they create healthy tensions. On the other the *primus inter pares* (Master Race) mentality of Control-Command (as opposed to Command & Control) persists to stymie debate and thinking to this day.

A great read and contribution – it would be interesting to write a book on the Progressives in Navy, today!



#### Bravo Zulu Vol. 1, 1900-1974; Bravo Zulu Vol. 2, 1975-2014 Honours and Awards to Australian Naval People

Ian Pfennigwerth

Barrallier Books Pty Ltd, trading as Echo Books, 2018. ISBN: 9780994577863 Hardcover edition of Bravo Zulu Volume 1 \$85; Volume 2 \$90.

Two-volume set \$170.

Naval History site: https://www.nautilushistory.com.au/

Before Federation, colonial naval officers were recognised for steadfastness and courage while serving in South Africa and China. This tradition was enhanced by the Royal Australian Navy (RAN) through its distinguished record during World War I. Navy men won Australia's first awards for gallantry in the face of the enemy in 1914, and they went on to consolidate this reputation for excellence and daring in European, Middle East and Asian theatres of war and throughout the uneasy peace that followed.

In 1939 RAN men - and later women - went to war again, cementing our Navy's reputation as a steadfast ally and determined enemy, and from 1946 the RAN fought in Korea, Malaya, Malaysia and Vietnam while developing its capabilities for sustainment, training and naval diplomacy in a Cold War world. Its Middle East engagement, from the 1991 Gulf War to this day, and in sensitive operations in the South Pacific and Southeast Asia demonstrated our Navy's capabilities and gained it international respect through the service of its men and women.

Now, in Bravo Zulu (navalese for 'Well Done'), Australians have a magnificent resume of the trials, tribulations and triumphs of their Navy in 115 years of service, illustrated by individual accounts of its men and women who received Imperial, Australian and foreign honours and awards for their service, gallantry or bravery. Volume 1 covering the period 1900-74 was released in 2016. Launched by Australia's Chief of Navy in November 2018, Volume 2, covering the period 1975-2014, concluded this nine-year research project.

The second book, with 882 pages, describes the development and activities of the RAN from 1975, with separate chapters devoted to the Navy's role in the 1991 Gulf War, in the 1999-2000 UN East Timor peacekeeping operation, enforcement of UN sanctions on Iraq, the 2003 Iraq War the continuing service of naval people in Iraq and Afghanistan, ashore and afloat and, of course, border security operations in Australia. Above all, Bravo Zulu Volume 2 is about people labouring mightily to ensure that Australia's Navy is acknowledged internationally for its organisational capability and operational reach. The book is illustrated with maps, diagrams and 160 photographs.



# THE NAVY LEAGUE OF AUSTRALIA ANNUAL MARITIME AFFAIRS ESSAY COMPETITION



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Emailed to: editorthenavy@hotmail.com Submissions should include the writer's name, address, telephone and email contacts, and the nominated entry category.

# **DEADLINE** Saturday 24 August 2019

Prize-winners announced in the January-March 2020 Issue of *THE NAVY*.



DESPATCH: USS PITTSBURGH (SSN 720) to Decommission after 34 Years Sea Service.