



**DEFENSE.info**

**Australian Update:  
August 2018**



**Dr. Robbin Laird,  
Research Fellow, Williams  
Foundation, Canberra**

<b><u>THE AUSTRALIAN NEW SUBMARINE PROGRAM: CLEARLY A WORK IN PROGRESS</u></b>	<b>3</b>
<b><u>AUSTRALIA BROADENS ITS MILITARY RELATIONSHIPS WITH SHIPBUILDING DEALS</u></b>	<b>7</b>
<b><u>THE COMMANDER OF THE RAAF AIR WARFARE CENTRE, AIR COMMODORE “JOE” IERVASI</u></b>	<b>10</b>
<b><u>THE AUSTRALIANS SHAPE THEIR WAY AHEAD ON ASW: THE KEY ROLE OF THE P-8</u></b>	<b>13</b>
<b><u>FLEET BASE EAST: A KEY ELEMENT IN THE AUSTRALIAN NAVY’S OPERATIONAL CAPABILITIES</u></b>	<b>16</b>
<b><u>THE AEGIS GLOBAL ENTERPRISE: THE AUSTRALIAN CASE</u></b>	<b>21</b>
APPENDIX: THE AIR WARFARE DESTROYER ALLIANCE	23
CHARACTERISTICS OF THE HOBART CLASS DESTROYERS	24
THE HOBART CLASS – DIFFERENCES FROM THE F100 CLASS	25
<b><u>DR. BEN GREENE, ELECTRICAL OPTICAL SYSTEMS</u></b>	<b>26</b>
APPENDIX	30
<b><u>PITCH BLACK 2018: RAAF PERSPECTIVES</u></b>	<b>31</b>
<b><u>THE AUSTRALIAN ARMY AND INTEGRATED AIR DEFENSE</u></b>	<b>34</b>
APPENDIX:	35
<b><u>LOOKING BACK AT RIMPAC 2018: THE PERSPECTIVE OF AIR COMMODORE CRAIG HEAP</u></b>	<b>36</b>
<b><u>SHAPING ENHANCED SOVEREIGN OPTIONS: LEVERAGING THE INTEGRATED FORCE BUILDING PROCESS</u></b>	<b>40</b>
<b><u>THE DEFENSE OF AUSTRALIA: LOOKING BACK AND LEANING FORWARD</u></b>	<b>43</b>

# The Australian New Submarine Program: Clearly A Work in Progress

8/19/18

Canberra, Australia

During my current visit to Australia, I have been able to follow up the discussions with the Chief of Navy over the past three years with regard to shipbuilding and shaping a way ahead for the Royal Australian Navy.

During this visit I had a chance to visit the Osborne shipyards and get an update on Collins class and enhanced availability as well as to get a briefing and discussion with senior Australian officials involved in shaping the new build submarine program.

Based on those discussions, I have continued pursuing discussions in Canberra with regard to the challenge of putting in place the new submarine program.

In this article, I will start with the expectations, which Australia is bringing to this new program and what they wish to see in the unique partnership they are forging with the US, France and themselves to build a new design diesel submarine.

The concern with Chinese submarines in the Pacific is real in Australia. And that concern has been reflected both in the decision to build new submarines and new frigates as well as buy P-8s and Tritons for anti-submarine capabilities as well.

The subsurface, surface and air elements are clearly to be blended into a longer reach capability to defend Australia and to work closely with allies seeking to constrain Chinese activities and to ensure freedom of navigation and defense of a rules based order.

Even though the announced decision to build a new class of submarines came before the more recent frigate decision, the agreements in place and in process with the Brits with regard to the frigate provide a clear statement of the kind of partnership, which Australia wishes to see in the shipbuilding domain.

It sets the standard against which the new submarine program will be measured and any final agreements on production and manufacturing, deals which are not yet signed with France as of yet.

The Australians are coming to the new build submarine with several key expectations.

The submarine is to be a large conventionally powered submarine with an American combat system on board allowing for integration with the US and Japanese fleets.

The Commonwealth has already signed the combat systems side of the agreement with Lockheed Martin and the LM/US Navy working relationship in the Virginia class submarine is the clear benchmark from which the Aussies expect their combat system to evolve as well.

The new submarine is not an off the shelf design; it will leverage the French Navy's barracuda class submarine, but the new design will differ in a number of fundamental ways.

The design contract is in place and the process is underway with Australian engineers now resident in Cherbourg working with French engineers on the design.

But design is one thing; setting up the new manufacturing facility, transferring technology, shaping a work culture where Aussie and French approaches can shape an effective two way partnership is a work in progress.

And agreeing a price for the new submarine, and the size of the workforce supporting the effort in France and Australia are clearly challenges yet to be met.

And with the build of new frigates and submarines focused on the Osborne shipyards, workforce will clearly be a challenge.

Shaping a more effective technical and educational infrastructure in the region to support the comprehensive shipbuilding effort is clearly one of the reasons that the yard was picked as a means for further development of South Australia.

The Aussies are coming at the new submarine program with what they consider to be the lessons of the Collins class experience.

This includes limited technology transfer, significant performance problems and a difficult and expensive remake of the program to get it to the point today where the submarine has a much more acceptable availability rate.

And clearly, the Aussies are looking to be able to have a fleet management approach to availability and one, which can be correlated with deployability, which is what they are working currently with the Collins class submarine.

*This is clearly one of the baseline expectations by the Australians – they simply do not want to build a submarine per se; they want to set up an enterprise which can deliver high availability rates, enhanced maintainability built in, modularity for upgradeability and an ability to better embed the performance metrics into a clear understanding of deployability.*

The partnership perspective is clearly provided by the agreement put in place with the British with regard to the frigates. Here the UK and Australia are looking to wide ranging set of agreements on working together as well as determining what Aussie assets might go onto the UK version as well.

There is a clear design and build strategy already agreed to and a key focus is upon the manufacturing process and facility to be set up at the Osborne shipyards.

The ship building process, which is part of the UK-Australian agreement, was identified in one article as follows:

*Digital shipyards use software to instantly transmit plans across the globe to enable construction with fewer errors, rework, and associated delays and cost increases than has been seen with traditional shipbuilding practices.*

*It also can involve digital technology to create a “paperless” ship from design and manufacturing to operations and service.*

*Mr. Phillips said a digital shipyard would ensure every aspect of the ship during the design and construction and throughout its service life was “live and accessible” to crew, maintenance staff and approved suppliers.*

*“Having a single point of truth in the design phase will mean that each of the nine ships will be replicated, which hasn’t been done in Australia previously, and which will benefit every stage of the program, including the upgrading and maintenance of the ships during service,” Mr Phillips said.*

*“It will also be the first time in Australia where a ship’s systems will have the intelligence to report on its own performance and maintenance needs and have the ability to order both the maintenance and parts required prior to docking.”*

*The move appears to fit with the federal government’s outlook, with Defence Industry Minister Christopher Pyne yesterday revealing investment priorities for the coming year, including \$640m to support the development of “innovative technologies”.*

<https://www.theaustralian.com.au/national-affairs/defence/bae-uses-digital-shipyard-in-35bn-shipbuilding-project/news-story/6736a04c40baa8ee409488e88227aced>

*In my discussions in Australia, there is a clear focus upon building a state of the art facility along these lines with regard to the submarine program as well.*

This means that the Aussies are not simply looking to see the French transfer current manufacturing technologies to build the new submarine, to co-innovate in shaping new and innovative approaches.

By looking at Asian innovations in shipbuilding, the Aussies would like to see some of those innovations built into their manufacturing processes in their new manufacturing facility.

Put simply, the Aussies do not want to repeat the Collins experience.

They want modern manufacturing processes, which they anticipate with the new frigate and have seen with regard to P-8, Triton and F-35, all programs in which they are a key stakeholder.

**The question is can the cultural dynamics of France working with Australia, an Australian with these expectations, be managed to deliver the kind of long term, cross-learning partnership which Australia seeks in this program?**

There are clearly key challenges of cross-culture learning and trust to be sorted out to be able to make this partnership work.

From my discussions in Australia, it is clear that on the Aussie side there is a fundamental desire to shape a long term partnership with France in what the Aussies are calling a “continuous build” process.

Here the question is not of a one off design, and then build with the Aussie workforce operating similarly to the Indian workforce in the process of a build as was done by DCNS with India.

If one looks at the frigate contract, at the core of that contract is BAE Systems not simply transferring technology to an existing company in Australia which would then take over the task and execute it, the model is quite different.

The process of the build will see a new entity being created within Australia capable at the end of this process becoming the kind of manufacturing center of excellence which can master maintainability and upgradeability of the new platform for the next phases of the life of that platform.

This process was described in part as follows by ABC News:

*ASC Shipbuilding, which is owned by the Australian Government, will become a subsidiary of BAE during the build. Its shipyard in the Adelaide suburb of Osborne will be the hub once production starts in 2020.*

*The Hunter class frigates are expected to enter service in the late 2020s and will eventually replace the current Anzac class frigates, which have been in service since 1996.*

*However, the UK Royal Navy is also buying the Type 26, the first two of which are currently under construction. That fleet is not expected to be operational until 2027, which has some questioning whether the Australian frigates will be delayed.*

*At the end of the building program Australia will resume complete ownership of ASC Shipbuilding, meaning intellectual property of the Australian type 26 will be retained by the Commonwealth.*

<http://www.abc.net.au/news/2018-06-29/hunter-frigate-build-bae-what-you-need-to-know/9923912>

**This agreement is now becoming the benchmark against any future agreement with France and Naval Group would be measured.**

The Aussies are not in a rush and as one Aussie put it to me: “We want the right kind of agreement; we are not interested in the wrong type of agreement.” And when we discussed what the right type of agreement looked like, it was clearly something akin to the UK agreement.

The challenge though is that the Commonwealth has a longstanding working relationship with BAE Systems and the UK. And the UK is part of five eyes, which provides a relatively straightforward way to deal with security arrangements.

According to an article by Jamie Smyth and Peggy Hollinger published by the *Financial Times* on June 28, 2018, the importance of the broader working relationship with the UK was highlighted.

*Michael Shoebridge, an analyst with the Australian Strategic Policy Institute, said the decision by Canberra to choose BAE probably reflected some emotional and strategic factors, which went beyond the technical criteria in the tender.*

*“The UK and Australian defence partnership is long and deep. There is also a lot of emotion around Brexit, which may have played a role given the potential for a deeper partnership with the UK into the future,” he said.*

*The UK has embarked on a diplomatic charm offensive over the past 12 months in Australia, including visits by Boris Johnson, foreign secretary, and Michael Fallon, a former defence secretary.*

*It has pledged to upgrade defence co-operation with Canberra and play a more prominent role in the Asia-Pacific, where China has begun to militarise islands in the contested waters of the South China Sea.*

*The choice of the Type 26 will ensure interoperability between the UK and Australian navies. Gavin Williamson, defence secretary, said the award was a “formidable success for Britain . . .*

*This is the dawn of a new era in the relationship between Australia and Great Britain, forging new ties in defence and industry in a major boost as we leave the European Union.”*

<https://www.ft.com/content/845e88e0-7ac7-11e8-8e67-1e1a0846c475>

Against this background, the Commonwealth has had a more limited working relationship with France and the defense industry within which France is a key player. It has had experience working with programs in which France is a key player like KC-30A, NH-90 and Tiger. The very good experience has clearly been working with Airbus Defence and Space on the KC-30A, but the NH-90 and Tiger experiences with Airbus Helicopters has not been as positive.

When the Collins Class experience is married to the air systems experience, then the Aussie tolerance for agreeing to anything that is not comprehensive and well thought out is very low.

The challenge for France and Naval Group will be to build a long term partnership which can clearly set in motion a new working relationship which is not framed by these past experiences, but can leverage the very positive KC-30A working relationship. The KC-30A is obviously different from the submarine because the plane was built abroad and the working relationship very good with Airbus Space and Defence where the Aussies are a cutting edge user pushing the way ahead with the company to shape future capabilities.

That is also the challenge: is Naval Group really a company like Lockheed or Airbus Defence and Space?

Or is the French government involvement so deep that the working processes with Naval Group not be transparent enough and credible enough to shape the kind of partnership the Aussies are looking for?

The change in status of Airbus, notably under the leadership of Tom Enders, has clearly underscored the independence of this key European company and Naval Group has more of a challenge demonstrating its independence to deliver not a product nor a build of an existing product on foreign soil, but an open-ended partnership able to shape and evolve a new build product where the digital processes of build and sustain are so significant.

President Macron put it this way with regard to the partnership: “As President of the republic, I will do everything to ensure we make the necessary arrangements to meet the requirements of this contract but more broadly, to accompany you in this strategic partnership.”

President Macron has clearly emphasized the Chinese challenge and has been very visible in working relationships in the region, notably with Australia and India.

**The political intent is clearly there.**



Yet it is to be remembered that Australia downselected the French team under the previous government and now they are dealing with a different government although the same DCNS/Naval Group.

But there is a new DGA team, and their engagement seems to have grown in the negotiations and complicated Aussie perceptions of the negotiating process.

The Aussies downselected the French option because it provides a good way ahead.

The French correctly understood the emphasis which Australia was placing on designing and building a larger submarine than either Germany or Japan was offering; and the desire to have a regionally superior submarine for the Aussies is not simply about the design and the initial build.

It is about having a regionally superior submarine enterprise which embraces design, upgradeability, modernization, production, sustainment and redesign as enabling what they refer to as a continuous shipbuilding process.

There is little doubt that the design part of the bid can be met; the challenge will be building the kind of enterprise and ongoing partnership, which Australia wants for it, is not simply a historical repeat; it is blazing new history and new industrial approaches.

It would be a shame if the right kind of partnership is not put in place to achieve what the Australians need – a new capable submarine which can deliver operational superiority in the region.

And for the French, the benefits of working with a key partner investing and working a way ahead in shaping a cutting edge approach can provide reverse technology transfer opportunities, notably with regard to manufacturing processes in the years ahead.

But this is a work in progress, or not.

## **Australia Broadens Its Military Relationships With Shipbuilding Deals**

08/23/2018

CANBERRA: As the Chinese challenge grows, Australia is clearly concerned about expanded Chinese influence within Australia and with regard to Chinese efforts to reshape the external environment to expand the influence and power of the Chinese authoritarian state. Clearly the United States remains Australia's core ally in dealing with the Chinese challenge, but as Australia modernizes its forces, it is broadening its working relationships with other key allies as well.

The case of dealing with the region's growing submarine threat provides a good case study of how the Aussies are working their alliance relationships. With the P-8 and F-35, the Aussies are working closely with the US to add new multi-domain warfighting capabilities to the force. The Aussies just stood up their own training facilities for the P-8, have eight P-8s already at RAAF Edinburgh and are moving ahead with this new capability. They are concurrently working to stand up their F-35 squadrons in rapid succession as well.

The Royal Australian Navy has worked hard to rebuild their once-flawed Collins class submarines and to generate higher availability rates as part of their response to the growing submarine threat in the Pacific. With the P-8 working with Collins, and with the F-35s working with P-8s as well, the RAAF and RAN will shape a new template with the United States to work anti-submarine warfare over the next few years, one in which their reach and capabilities are extended.

The next round of naval capability is being worked with the Brits and the French in terms of platforms, though the US is slated to play a continuing role in terms of force integration.

## **The UK and Australian Shipbuilding**

As Britain faces a post-Brexit world, working with the Aussies is seen as a key political objective, in addition to any technological relationship. Australia decided to buy the new UK Global Combat Ship frigate at the end of June 2018, a key touchstone of how London sees its new role. It also is a good indicator of the Aussie point of view on what it needs for a new approach to shipbuilding. The Australian anti-submarine frigates will be known as the Hunter Class and will be built by ASC Shipbuilding at the Osborne Naval Shipyard in Adelaide, South Australia. The Hunter class should enter service in the late 2020s. They replace eight Anzac frigates, which have been in service since 1996.

The ships will carry the Australian-developed CEA Phased-Array Radar and the US Navy's Aegis combat management system.

The UK and Australia are shaping a wide ranging set of agreements on working together as well as determining what Aussie assets might go onto the UK version as well. There is a clear design and build strategy already agreed to and a key focus is upon the manufacturing process and facility to be set up at the Osborne shipyards.

The priority is upon creating a digital build process. According to a top BAE Systems official involved in the process, the benefits will be significant.

“Having a single point of truth in the design phase will mean that each of the nine ships will be replicated, which hasn't been done in Australia previously, and which will benefit every stage of the program, including the upgrading and maintenance of the ships during service,” Glynn Phillips, CEO of BAE Systems Australia, said. “It will also be the first time in Australia where a ship's systems will have the intelligence to report on its own performance and maintenance needs and have the ability to order both the maintenance and parts required prior to docking.”

With the coming of the Queen Elizabeth class aircraft carriers and the new UK frigates, and with extensive collaboration to build the Aussie frigates, a key foundation is being laid for working the UK-Australian strategic relationship in the years ahead.

## **Australia Reaches Out To The French**

The Australians signed an agreement in 2016 to work with the French in building what the Australian government called “a regionally superior submarine.” That agreement has seen the first key enabling contract to establish the ship design process, but not yet the build agreement with a target price for the initial submarine. What has been signed in addition to the agreement on intent and the security agreements in 2016, is a mobilization contract for \$5 billion (AUD) which set up the working facilities to work the design process in Adelaide and in Cherbourg.

With the election of President Macron, the French have been forthcoming in focusing on the Chinese challenge and have highlighted the importance of the strategic relationship with India and Australia as well. Building a new submarine capability in Australia will allow France not only to enhance their partnership with Australia but could allow French forces as well as industry to play a greater role in the region as well.

But the challenge for France is to ensure that the two cultures can find ways to work together effectively in delivering what the Australians seek, which is a work in progress, and no easy task. And now the agreement with the UK with regard to the frigate is shaping a baseline expectation with regard to the build process for the submarine as well.

The Australians are coming to the new build submarine with several key expectations. The submarine is to be a large conventionally powered submarine with an American combat system on board allowing for integration with the US and Japanese fleets. The Commonwealth has already signed the combat systems side of the agreement with Lockheed Martin and the LM/US Navy working relationship in the Virginia class submarine is the clear benchmark from which the Aussies expect their combat system to evolve as well.

The new submarine is not an off-the-shelf design; it leverages the French Navy's Barracuda class submarine, but the new design will differ in a number of fundamental ways. The design contract is in place and the process is underway, with Australian engineers now resident in Cherbourg working with French engineers on the design.



But design is one thing; setting up the new manufacturing facility, transferring technology, shaping a work culture where Aussie and French approaches can shape an effective two-way partnership is a work in progress. And agreeing a price for the new submarine, and the size of the workforce supporting the effort in France and Australia are clearly challenges yet to be met.

And with the build of new frigates and submarines focused on the Osborne shipyards, workforce will clearly be a challenge. Shaping a more effective technical and educational infrastructure in the region to support the comprehensive shipbuilding effort is clearly one of the reasons that the yard was picked as a means for further development of South Australia.

The Aussies are coming at the new submarine program with what they consider to be the lessons from the Collins class. This includes limited technology transfer, significant performance problems and a difficult and expensive remake of the program to get it to the point where the submarine has a much more acceptable availability rate.

Clearly, the Aussies are looking to be able to have a fleet management approach to availability and one, which can be correlated with deployability, which is what they are working currently with the Collins class submarine. This is clearly one of the baseline expectations by the Australians – they simply do not want to build a submarine per se; they want to set up an enterprise which can deliver high availability rates, enhanced maintainability built in, modularity for upgradeability and an ability to better embed the performance metrics into a clear understanding of deployability – where does the Australian Navy need to go and how will it reshape its con-ops going forward and how do upgrades of the submarine fit into all of the above?

In my discussions in Australia, I've found a clear focus on building a state-of-the-art facility along these lines with regard to the submarine program as well. This means that the Aussies are not simply looking to see the French transfer current manufacturing technologies to build the new submarine, but to co-innovate in shaping new and innovative approaches. By looking at Asian innovations in shipbuilding, the Aussies would like to see some of those innovations built into their manufacturing processes in their new manufacturing facility.

Put simply, the Aussies do not want to repeat the Collins experience. They want modern manufacturing processes, which they anticipate with the new frigate and have seen with regard to P-8, Triton and F-35, all programs in which they are a key stakeholder.

The question is can the cultural dynamics of France working with Australia, an Australian with these expectations, be managed to deliver the kind of long term, cross-learning partnership which Australia seeks in this program?

There are clearly key challenges of cross-culture learning and trust to be sorted out to be able to make this partnership work. From my discussions in Australia, it is clear that on the Aussie side there is a fundamental desire to shape a long term partnership with France in what the Aussies are calling a “continuous build” process. Here the question is not of a one off design, and then build with the Aussie work force operating similarly to the Indian workforce in the process of a build as was done by DCNS with India.

The Aussies are not in a rush and as one Aussie put it to me: “We want the right kind of agreement; we are not interested in the wrong type of agreement.” And when we discussed what the right type of agreement looked like, it was clearly something akin to the UK agreement.

The challenge though is that the Commonwealth has a longstanding working relationship with BAE Systems and the UK. And the UK is part of Five Eyes, which provides a relatively straightforward way to deal with security arrangements.

The Commonwealth has had a more limited working relationship with France and the defense industry within which France is a key player. It has had experience working with programs in which France is a key player like KC-30A, NH-90 and Tiger. The very good experience has clearly been working with Airbus Defence and Space on the KC-30A, but the NH-90 and Tiger experiences with Airbus Helicopters has not been as positive.

When the Collins Class experience is married to the air systems experience, then the Aussie tolerance for agreeing to anything that is not comprehensive and well thought out is very low. The challenge for France and Naval Group will be to build a long term partnership which can clearly set in motion a new working relationship which is not framed by these past experiences, but can leverage the very positive KC-30A working relationship. The KC-30A is obviously different from the

submarine because the plane was built abroad and the working relationship very good with Airbus Space and Defence where the Aussies are a cutting edge user pushing the way ahead with the company to shape future capabilities.

That is also the challenge: is Naval Group really a company like Lockheed or Airbus Defence and Space? Or is the French government involvement so deep that the working processes with Naval Group not be transparent enough and credible enough to shape the kind of partnership the Aussies are looking for?

The migration of Airbus, notably under the leadership of Tom Enders, has clearly underscored the independence of this key European company and Naval Group has more of a challenge demonstrating its independence to deliver not a product nor a build of an existing product on foreign soil, but an open-ended partnership able to shape and evolve a new build product where the digital processes of build and sustain are so significant.

## Conclusion

All of this adds up to the Australians building out their force capabilities with the Americans over the next five years, and then start to see UK and French led efforts in shipbuilding then fielding new capabilities, which can be integrated into the evolving Australian force structure. And in tow then are the reshaping of their alliance relationships as well.

In effect, the Australians are in the throes of remaking their history. Their history has been to be part of a broader power defending their interests; first as part of the British Empire, and then during and after World War II as part of the American presence in the Pacific. What we are seeing now is a more sovereign and independent approach building on that American relationship and broadening their alliance in practical terms as well, And as Japan extends its perimeter defense and industrial investment to do this, almost certainly the relationship with Australia will become a key part of this evolving alliance mosaic for Australia as well.

Robbin Laird, a member of the Breaking Defense Board of Contributors, has been closely covering the Australian military for several years, making regular trips to the region and interviewing a broad range of senior officials. Laird, owner of the Second Line of Defense website, is a defense consultant.

First published by [Breaking Defense](#) on August 22, 2018.

# **The Commander of the RAAF Air Warfare Centre, Air Commodore “Joe” Iervasi**

08/26/2018

I have been coming to Australia for five years and working the seminar reports for the Williams Foundation in support of the Australian Defence Force Modernization.

This modernization process has been very much focused not simply on recapitalization of the force but shaping a new approach to force integration.

And force integration will yield a more capable and effective force able to better defend Australian sovereignty and contribute more effectively to overall deterrence in depth in the Pacific.

Yet there is an inherent challenge which faces the United States as it comes out of a long period of fighting the land wars and relying upon geographically defined command structures.

The geographical commands are organized to shape forces used in a particular geographical area and in the conditions of land warfare against a non-peer adversary many of the tasks are almost fed ex in nature in terms of logistical movement of force and force aggregation, and joint operations understand in terms of supporting ground operations, even if air enabled.

This becomes very different in the face of peer adversaries where the need is to have an effective integrated force postured to dominate rather than simply to collate force up against a relatively slow moving adversary without force on force capabilities that can compete with you.

The challenge of shifting from the geographical commands to an integrated targeted force capability was highlighted in the interview we did with the then head of NORTHCOM Admiral Gortney in 2016.

As Admiral Gortney put the challenge:

*We are a different combatant command than the other geographic combatant commands, and the reason is who's in charge in dealing with the threats to the homeland.*

*In contrast, NORAD is pretty clear-cut.*

*It is an air mission command, although the changes over time have been significant facing the command. NORAD was born in the Cold War when the air battle was going to occur above the Great Lakes and over the Seattle area.....*

*The rise of China and the new Russia are driving a reconsideration of the NORTHCOM mission, for we really do need a commander for the homeland in a more classic sense. But when we were stood up it was not done to deal with more traditional or classic defense threats.*

*But the challenge for us is to shape what we in the US Navy call the NIFC-CA or Naval Integrated Fire Control—Counter Air battle network solution for North American defense. Put in simple terms, we need to shape a more integrated air and maritime force that can operate to defend the maritime and air approaches to North America as well as North America itself.*

*It is a question of shaping in this case the US and allied integrated forces able to deal with a peer competitor threat rather than relying on geographical commands to administer military force against a relatively limited capability by adversaries directly against the force.*

In my visit to the Australian Air Warfare Centre located at RAAF Edinburgh on August 10, 2018, I had a chance to discuss the challenge of how force integration was shaping the need for new approaches to working with allies.

In my last interview with Air Commodore Joe “Vinny” Iervasi, he addressed the key challenge of how do we learn what we have not done before?”

In this interview, the focus was upon the challenge of both Australia pursuing a force integration strategy and at the same time working out ways to work effectively with allies.

Air Commodore Iervasi put it this way:

*We talk about two things, integration and interoperability.*

*Integration is about the internal mechanisms of putting your force together and operating it across multi-domains.*

*Interoperability is how your force interfaces with another force.*

*For the Australian Defence Force, we are driving to deliver military effects as an integrated Joint Task Force, as we believe that is the most effective fighting force, particular for multi-domain warfare. If we are leading a campaign, then we'd inherently design the campaign and associated command and control on the basis of a Joint Task Force.*

*However, if we are contributing to someone else's campaign, then our force 'fit' will be influenced by the design of that particular campaign. The main point in case is operations with the U.S.*

*Generally speaking, the U.S. conducts operations within their respective geographic combatant commands under a component framework, utilizing a supported/ supporting command and control arrangement. The consequence of this arrangement is that we have to disaggregate our Joint Task Force to be accommodated within the relevant component.*

*This inherently poses a dilemma for us; do we retain the integrity of our Joint Task Force and seek accommodation within that campaign to operate as such, or do we fallback to the component model? Either way, there are implications for the way we plan, organize, train and prepare for operations.*

**Put in other terms, if Australia enhances its warfighting capabilities through force integration and task forces, how does the United States work with such a force?**

One solution would be to task assign or geographical assign a task within a coalition operation but what might be other ways to deal with the opportunities opened up by the Australian approach to force integration?

But Air Commodore Iervasi sees the Aussie challenge as somewhat similar to the US Marine Corps working within the broader US force structure. The US Marine Corps has shaped an integrated force, which is designed to operate that way for a period of time or within an area of operation, but its integration does challenge the USAF and the US Navy in terms of how best to operate with such an integrated force.

**This challenge is reflected in the Aussies approach to working the F-35 within their force integration efforts.**

On the one hand, the Aussies are working closely with the US Navy in developing P-8, Triton and F-35 integration. However, the USAF mission is different to that of the USN, and therefore their mission integration priorities are also different.

According to Air Commodore Iervasi: “The differences in mission between the U.S. services is reflected within the components of a combatant command. Whilst the U.S. has sufficient mass to be able to segregate missions, a small-medium force like the ADF does not have that luxury. We are required to be interoperable across a broad mission set, and therefore we need to keep abreast of the different integration priorities of the U.S. services.

“There’s a segregation of responsibilities about what they do but we don’t fight that way.

“We’re trying to fight as an integrated force across all the warfighting domains.”

Another aspect of the force integration approach, which we discussed, is the impact which force integration might have on an adversary.

Air Commodore Iervasi: “Does the demonstration or the perception that your force is integrated essentially provide a deterrent effect?”

“That is “I can’t just now attack the land force because I know it’s so interconnected with other things, I don’t know where I’m being attacked from.”

“Or “my ability to dominate has now diminished.”

“Does that actually produce a deterrent effect?”

**One might conclude that perhaps the challenge which Aussie integration as well as USMC modernization pose for the broader US force structure could provide a critical lead in point for significant innovation in reshaping C2 able to leverage the kind of force integration which new technologies such as the F-35 pose to the US force structure, as currently operated.**

# The Australians Shape Their Way Ahead on ASW: The Key Role of the P-8

8/28/18

With the return of the key demand for theater ASW, meaning an ability to both find and kill enemy submarines, the Aussies are working their template for shaping a way ahead in this area.

With the rebuild of their Collins class submarines, and the addition of the Romeo helicopters and their new P-8s, they are shaping a template for their way ahead.

At the heart of this working relationship is how the RAAF and its land based air will support the Royal Navy in its operations.

It is as if the USAF and the US Navy were closely cross aligned on the same mission set in the ASW area.

This means as the F-35 comes into the inventory along with the Triton, the RAAF will be expanding the template being built around Collins-Romeo-P-8.

Next to be added will be the new Royal Australian Navy frigates and then the new class of submarines as the template is reshaped and the reach and range of Australian operations expanded.

During my visit to RAAF Edinburgh on August 10, 2018, I had a chance to get an update on the coming of the P-8 to the RAAF and to talk with Group Captain Darren Goldie, Officer Commanding 92 Wing.

92 Wing is described by the RAAF as follows:

*Headquartered at RAAF Base Edinburgh, No 92 Wing (92WG) has long been established as the first Maritime Wing of the Air Force.*

*The Wing is responsible for conducting long-range intelligence, surveillance and reconnaissance missions in support of Australia's national interests worldwide. 92WG is also responsible for search and survivor supply missions throughout Australia's region of responsibility.*

*92WG commands:*

- *Two operational flying squadrons: Nos 10 and 11 Squadrons;*
- *A training squadron: No 292 Squadron;*
- *An operational detachment: 92WG Detachment A at Butterworth, Malaysia; and*
- *A number of operational support and development elements.*

*Operating AP-3C Orion and P-8A Poseidon aircraft, 92WG's combat roles include anti-submarine and anti-surface surveillance and warfare for which the aircraft are equipped with torpedoes and Harpoon anti-ship missiles.*

*The AP-3C is being replaced by the P-8A Poseidon and MQ-4C Triton which will perform the vital functions of long-range maritime patrol.*

I first visited 92 Wing in March 2017.

Since that time, new buildings have been put up to support the P-8 operations as well as the main operating hangar and control center close to completion.

During that visit I had a chance to meet with Wing Commander Mick Durant, Officer Temporary Commanding 92 Wing, Wing Commander David Titheridge, Commanding Officer 11 Squadron and Wing Commander Gary Lewis, Deputy Director P-8 and Triton Transition.

In that meeting, the process of change was highlighted.

*We are P-3 operators but the operating concept of P-8 is very different and we are working the transition from the P-3 to the P-8 which is a networked asset both benefiting from other networks and contributing to them as well as a core operational capability and approach.*

*The changes that are coming are very exciting.*

*So we're moving from an aircraft, which we've pretty much maximized, to a new one which is called P-8, for a reason.*

*This is an A model aircraft. So with an A model aircraft comes to the ability to grow.*

*And we're going to a new world with a starting point, which allows us to grow.*

*The capacity to integrate, innovate, and talk to our allies and our own services is a quantum leap in what we've had in the past and it will allow us to be able to do our roles differently.*

*Shaping that change is one of the key missions that we've got.*

*We are going to innovate and think out of the box compared to P-3 tactics and concepts of operations.*

The current visit provided an opportunity to discuss progress and thoughts about the way ahead with the current 92 Wing Officer Commanding.

Group Captain Goldie comes from the C-130 community and he argued that when a new series of aircraft are introduced into a community, in this case a P-8 in what has been a P-3 community, the additional education required (through conversion onto the new aircraft type) is significant whether you have been doing MPA missions or flying very different aircraft. He argued that with a change in the aircraft type, "it's a great opportunity to move some people around the organization, to get a bit of cross-pollination in the force."

There are currently seven P-8s at RAAF Edinburgh.

And with the current training cycle, the RAAF will train their P-8 operators in Australia.

"The last pilots to be trained in the U.S. have just arrived. We're basically using the instructional workforce that has been embedded inside VP-30 for the last few years.

"They're all posted to 292 Squadron, which is located in the adjacent building to us at the moment using the various training simulators and devices we have purchased and set up for crew training."

After the interview, we walked around the maintenance training facility, which is very impressive. The training area includes computer-based virtual training, which is capable of providing very detailed instruction and computer replication on the various aspects of the aircraft.

The virtual maintenance training is complemented by the use of key aircraft components – training devices — to get hands on experience. This includes a 737 which has been modified to replicate a P-8A and painted in RAAF colors, on which crew can train for loading weapons, reconfiguring the aircraft or loading the search and rescue kit.

The Wing is in the process of crossing over from P-3s to P-8s.

“We’re right in that cross at the moment. We have roughly the same amount of crews flying each of the types, with four crews each on the Orion and Poseidon.

“But numbers five, six, seven, and eight are about to get going on the P-8, which means that we’re at the crossing point. So now it’s a case for every mission between now and the end of the year, we will work with the Air Operations Centre at Joint Operations Command to decide which aircraft type is better suited to the particular mission.”

Looking back at the process, Group Captain Goldie underscored that the planning has worked quite well.

“If you were to open the spreadsheet that someone drew up in 2012 or 2013 in terms of capability realization, we are on those timelines. So it’s a testament to buying an aircraft that another international partner, in this case the United States Navy, deployed a couple years ahead of us.

“But it would be remiss of me not to mention that of course there is challenges; it’s a new aircraft, it’s a spiral upgrade aircraft. That brings with it great opportunity in the future, but it brings challenges, as well.”

The Aussies are standing up their mobile operations center to use with the aircraft. They will receive three mobile tactical operations centers with one located at RAAF Edinburgh, with the other two ready to deploy forward to meet operational requirements.

“The Mobile Tactical Operations Centers will be operated from deployable shelters in the future, although at the moment, we are using tents.”

With both P-8 and now with Triton, Australia is in a co-operative program with the US Navy, which allows them to participate in co-development.

This essentially means Air Force is an equity partner in the aircraft, allowing influence and the sharing of resources for future upgrades.

“Through a co-development program we can participate in R and D for our aircraft through a partnership which leverages the size and technological capabilities of the US.

“For example, with regard to our search and rescue stores drops for the P-8, it was tested by the US Navy’s VX-1 squadron initially, before the conduct of OT&E within Australia.

“Our OT&E results were then fed back to the USN, with the procedures published in our shared document suite.

“Ultimately, the ballistics and checklists will be included in our training system as well.

“We have done the tests for Air to Air refuelling the P-8A with the (RAAF) KC-30A which is crucial for us but gives the US Navy a capability to leverage the global A330MRTT fleet as well.

“You can imagine the United States Navy would not place air-to-air refueling with the Australian KC-30 at the top of their list of priorities, but it’s close to the top of our list.

“Essentially, the US Navy gets a new capability by working with us.”

The P-8A uses jet propulsion jet and we discussed how using a jet versus a P-3 turboprop has changed maritime patrol.

“Firstly, an aircraft that can fly around at Mach 0.8, can get to an area of interest much more quickly.

“Given that it is designed to operate as a family of systems, the Triton will provide persistence, and the P-8 will become the response asset.



“If the Triton sees or senses something that is of value that needs closer investigation then of course the P-8 can respond, but I also see the P-8 as a strategic response asset.

“We are not easily going to be able to move the Triton around in the first few years; it will have a complicated basing structure, heavily reliant on its infrastructure for launch and recovery.

“In contrast, we can operate the P-8 on a variety of bases in the region. The P-8 can base in various locations through our partnership agreements within the region.

“An example of that might be operating with Seventh Fleet in Japan. So an endgame to me would involve taxiing our P-8 in on the ramp in Japan, downloading the aircraft media into the USN disk drives, which is then processed, exploited, disseminated into the intelligence enterprise.”

“The traditional model of a P-3 or similar maritime patrol aircraft, includes transiting to an area, and using its sensors to find something. It then needs to localize the threat of interest. The process relies on that aircraft being a self-contained gatherer and disseminator of all of that. It needs to find it, it needs to collect it, it needs to decide what to do with it.

“It comes back with the information onboard, and it lands at home base. Someone pulls a disk out and sends the information for processing.

“Whereas with the P-8 plugged into a global satellite-enabled network meaning the information is readily available.”

The core point is that the template being shaped by the Triton/P8 dyad is laying a foundation for further innovation, innovation clearly visible in the weapons, sensor and remote platform areas.

## **Fleet Base East: A Key Element in the Australian Navy’s Operational Capabilities**

8/24/18

During the current visit to Australia, I have had a chance to focus on several aspects of the Royal Navy’s modernization processes and efforts. A key element of these efforts is building out modern infrastructure and manufacturing facilities, and the focus on the first can be seen at Fleet Base East, and the second can be seen in Adelaide at the Osborne shipyards.

When in Sydney, which is a very dynamic city, one finds in the midst of the city, a major operational base, which is called Fleet Base East.

According to the Royal Australian Navy:

*Since European settlement, Port Jackson, Sydney, with its vast and well protected natural harbour, has served as a major naval base for British and Australian maritime forces. Ships of the Royal Navy’s Imperial Squadron were continuously based in Sydney throughout colonial times and it was for many years the premier naval facility of the Royal Australian Navy following the arrival of the Fleet Unit on 4 October 1913.*

*The naval precinct in Sydney has expanded greatly over the past 100 years, particularly during the war years of 1939-1945. Garden Island, the traditional centre of naval activity in Sydney Harbour, was connected to the mainland during the war when the Captain Cook graving dock was built. A number of shore establishments, such as HMAS Watson and Rushcutter, were also commissioned to support Sydney based naval forces. Several other establishments were commissioned in the post-war period.*

*In 1987 the Australian Government announced the 'Two-Ocean Basing Plan' which established a permanent RAN major fleet unit and submarine presence in Western Australia. Since then, the RAN has maintained a two-ocean navy (Pacific and Indian) capable of responding quickly to national tasking from either seaboard.*

*The two fleet bases are known as Fleet Base West (HMAS Stirling) and Fleet Base East (HMAS Kuttabul). Today Kuttabul serves as the administrative centre for FBE, a precinct that extends beyond the borders of Kuttabul and includes the Garden Island dockyard and adjacent wharf facilities at nearby Woolloomooloo.*

This establishment is home port for

- [NUSHIP Sydney \(V\)](#)
- [HMAS Adelaide \(III\)](#)
- [HMAS Canberra \(III\)](#)
- [HMAS Choules](#)
- [HMAS Success \(II\)](#)
- [HMAS Newcastle](#)
- [HMAS Warramunga \(II\)](#)
- [HMAS Parramatta \(IV\)](#)
- [HMAS Anzac \(III\)](#)
- [HMAS Melbourne \(III\)](#)
- [HMAS Darwin](#)

I have visited this base twice, once during this visit and secondly during a visit in 2016.

During this visit to Fleet Base East in Sydney, I had a chance to talk with Captain Leif Maxfield, Deputy Commodore Warfare in the Royal Australian Navy.

At Garden Island, two of the latest additions for the RAN can be seen, namely the new amphibious ships, and HMAS Adelaide was in port the day I was there along with HMAS Hobart, which I reported on during [my last article](#).

Captain Maxfield has a strong background in working in the amphibious warfare area and on the strategic shift worked by Vice Admiral Barrett while working on his staff. Currently, he works as the Deputy Commodore Warfare for the RAN, and among other things, the office is in charge of the Maritime Warfare Center.

The Royal Australian Navy is adding new ships, such as the amphibious ships, the air warfare destroyer, new frigates and new submarines. But at the heart of the rebuild of the RAN is a very clear focus on two key elements involving concepts of operations and working a manufacturing/sustainment “continuous shipbuilding dynamic.”

With regard to the first, the focus is upon air-sea integration and working multi-domain warfare within an integrated battlespace. As Captain Maxfield put it: “We are focused on integrated warfare approaches. Our maritime warfare center and the air warfare center have established a joint steering group to guide both centers down this path.”

At the heart of the focus is upon joint task forces and how to work the maritime and air components into effective task force operational capabilities. “We are bringing innovations on the air side and the maritime side into an evolving joint task force approach.”

The focus of the maritime warfare branch is upon force generation. “We are focused on shaping force training packages to be able to deliver the kind of joint warfighting capabilities we need.”

Another key element of the maritime warfare branch is engagement in multi-lateral training exercises, such as RIMPAC 2018, where they provide standing staffs to provide for the maritime warfare component for the Australian force engaged in the particular exercise.

With a close working relationship with the air warfare center, shaping a maritime joint warfare training approach and participation in key multi-lateral exercises, the focus is upon shaping a solid foundation or building blocks for the journey forward into a more effective joint warfare capability for the RAN and the ADF.

According to Captain Maxfield, “we are thereby laying the key stepping stones to how we take us to where we want to be in 10, 20 years’ time in shaping a truly joint, integrated force capable of seamlessly interacting and integrating with allies in the combined operational environment.”

The integrated warfare approach being pursued by the RAN is intended to be highly interactive with the shipbuilding approach being crafted to build out the new fleet for the RAN.

The Aussies refer to this as a “continuous shipbuilding approach” which Vice Admiral Barrett then the Chief of Navy described in an interview I did with him last year.

*We spoke last time about the Ship Zero concept.*

*This is how we are focusing upon shaping a 21st century support structure for the combat fleet.*

*I want the Systems Program Office, the Group that manages the ship, as well as the contracted services to work together on site.*

*I want the trainers there, as well, so that when we’re maintaining one part of the system at sea, it’s the same people in the same building maintaining those things that will allow us to make future decisions about obsolescence or training requirements, or to just manage today’s fleet.*

*I want these people sitting next to each other and learning together.*

*It’s a mindset.*

*It puts as much more effort into infrastructure design as it does into combat readiness, which is about numbers today.*

*You want to shape infrastructure that is all about availability of assets you need for mission success, and not just readiness in a numerical sense.*

*Getting the right infrastructure to generate fleet innovation on a sustained basis is what is crucial for mission success.*

*And when I speak of a continuous build process this is what I mean.*

*We will build new frigates in a new yard but it is not a fire and forget missile.*

*We need a sustained enterprise that will innovate through the life of those frigates operating in an integrated ADF force.*

*That is what I am looking for us to shape going forward.*

The importance of getting the manufacturing/sustainment approach was highlighted by Captain Maxfield as a key element of the strategic shift to an effective joint warfighting strategy. If you do not design your ships with flexibility and agility in mind for a long-term effective modernization approach which encompasses joint integration, the RAN will simply not be able to get where it wants to go.

As Captain Maxfield emphasized, “We need to make sure that the integrated design concept and approach is on the ground floor as we build our new ships. We have shaped a navy-government-industry working relationship that we envisage will deliver life-cycle innovation for the joint force, not simply a one off build of a new combat ship. We are building a consolidated industry and service approach to ensure that will give us the best possible chance of delivering integrated output.”

When I visited Portsmouth this Spring, a key focus for the planners working the roll out of the Queen Elizabeth was how to ensure the best ways to ensure that ship availability and aircraft availability would dovetail to deliver best deployed capability. For the RAN, fast jets and MPA capabilities are provided by the RAAF, which means that one challenge will be to work closely with the RAAF to ensure that aircraft availability dovetails effectively with ship deployments.

This clearly is a work in progress but does highlight how cross-cutting availability of separate service assets need to be coordinated if there is to be a maximum joint capability which can be deployed in a crisis.

Clearly, the coming of the new LHDs in the RAN has been providing a window into that challenge, as an amphibious task force is a very flexible force, which requires coordinated consideration of air and maritime assets appropriate to a specific configuration for an amphibious task force. And this learning process is a good lead into the evolving task force approach being built by the ADF.

As Captain Maxfield put it: “We are on a journey of discovery with regard to the focus on an integrated task force approach. With the new LHDs and the air warfare destroyer, we have two platforms that are key elements of shaping the approach and forging our way forward. But it is a journey of discovery for sure.”

Captain Maxfield underscored the importance of what Rear Admiral Mayer, previous Commander of the Australian Fleet, emphasized during his tenure in that position: “It is about the network.”

“To deliver deterrence in the evolving strategic context, we need to deliver an effective integrated force and that relies on secure and capable networks. In the last few years, we have shifted from being a single-ship Navy to becoming a task group-focused organization that is appreciating the imperatives of joint integrated war fighting and what the sustainability and availability of assets delivers to the force.”

Vice Admiral Barrett emphasized in the various interviews I have done with him as well as his book on the Navy and the nation, how critical a comprehensive effort from the workforce as well as the uniformed military was going to be to get the kind of Royal Australian Navy the nation needs to lay a solid foundation for a 21<sup>st</sup> century integrated forces.

As Captain Maxfield concluded: “The ability to deliver new platforms, to maintain those platforms, to sustain those platforms, to repair those platforms and keep ahead with cutting edge technology will rest on our ability to support the effort with our educational system, our industrial system and effective cross cutting learning from the fleet back to the yards as we move forward.”

And during my visit in 2016, I had a chance to take a good look at the base in process of change,

That assessment was published on September 19, 2016 and follows:

On the Friday after the Williams seminar on air-sea integration, I had the chance to tour the headquarters of the Australian Navy’s Fleet Base East on Garden Island, Sydney.

*Garden Island is the largest historic naval area on Sydney Harbour, with use going back to the founding of the colony in 1788.*

*Greatly expanded during World War II, it now comprises major dockyard facilities run by a civilian operator, the naval wharves used by major fleet units of the RAN, various training facilities under the control of HMAS Kuttabul and a heritage precinct, open to the public, that includes the official museum of the Royal Australian Navy.*

[https://en.wikipedia.org/wiki/Fleet\\_Base\\_East](https://en.wikipedia.org/wiki/Fleet_Base_East)

**Modern Australia was created as an outreach of the Royal Navy and Garden Island has the first graffiti from the British, namely, the name markings of sailors on the first fleet which arrived in Australia in 1788.**

*The First Fleet is the name given to the 11 ships that left Great Britain on 13 May 1787 to found the penal colony that became the first European settlement in Australia.*

*The Fleet consisted of two Royal Navy vessels, three store ships and six convict transports, carrying more than 1,000 convicts, marines and seamen, and a vast quantity of stores.*

*From England, the Fleet sailed southwest to Rio de Janeiro, then east to Cape Town and via the Great Southern Ocean to Botany Bay, arriving in mid-January 1788, taking 250 to 252 days from departure to final arrival.*

[https://en.wikipedia.org/wiki/First\\_Fleet](https://en.wikipedia.org/wiki/First_Fleet)

When touring the base, several buildings which served the Royal Navy in the 19<sup>TH</sup> century can be found which are now used by the Australian Navy.

**My interlocutor and guide during my visit was Captain Paul O’Grady, Deputy Commander of the Surface Force.**

We toured the base and afterward’s sat down in Rear Admiral Mayer’s office to conduct an interview.

**We discussed many issues, but one key issue is the challenge of shaping an infrastructure for a 21<sup>st</sup> century fleet.**

Chief of Navy, Vice Admiral Tim Barrett, and Commander of the Fleet, Rear Admiral Mayer, discussed at the seminar and in interviews with me, the evolution of the fleet and the challenges of shaping 21<sup>st</sup> century capabilities.

**But what is often overlooked is the salience of infrastructure in building, operating and shaping that fleet.**

Vice Admiral Barret discussed the one ship concept and the need to integrate the build, with the maintenance, with the modernization and with the operations of the fleet.

He was seeking a naval equivalent to what the RAAF is doing with Wedgetail in Williamstown where the squadron is co-located with the systems program office which is tasked with the software upgrades of the aircraft.

Earlier this year, at the Air Power Conference, the Australian Minister of Defence highlighted the crucial importance of building the infrastructure which could support a modernized Australian defense force.

*It is of course not just improved ICT networks and systems and capability that will underpin our future Air Force over the next two decades.*

*One of the defining features of the 2016 Defence White Paper and Integrated Investment Program is the renewed focus on enabling capabilities.*

*In fact, 25 per cent of the Integrated Investment Program is allocated to the enabling projects, which help to bind our capabilities – whether it’s our airfields, our bases, our wharves, our ordnance facilities or our logistics systems, just to name several.*

<http://sldinfo.com/australian-defence-minister-at-the-air-power-conference-2016-highlighting-priorities/>

As Captain O’Grady underscored: “We have ships with increasingly greater demands for power such as the Aegis ships.

And of course the requirements from an environmental perspective are quite different now to what they were when some of these facilities were originally built.

There’s been a dramatic shift from the facilities which worked in the 1970s and 1980s to what we need now, particularly, operating in an urban environment like Sydney as well.”

**During the visit, Captain O’Grady pointed out the new infrastructure being built to support the new LHD ships and the coming Air Warfare destroyers to support Fleet Base East.**

To decongest the area, most of the support facilities such are collocated on Garden Island but some are located nearby in the area, such as training facilities.

He emphasized the significance of the shift back from more individual operation of platforms to a 21<sup>st</sup> century task force concept in which ships deployed from Australia would marry up with other air and naval assets in areas of interest.

**This meant as well ensuring commonality of logistical support across the fleet to ensure proper force generation to ensure the performance of the given task force up against the tasks given to that task force.**

He highlighted the importance of shaping what he called “a logistical node system” to support the distributed fleet.

It was important to be able to support the fleet from a diversity of support points to support a distributed task force.

“How we support a task group requires a different set of support networks than supporting individual ships.

“We have to think about the broader task force and its wider support requirements on operations.”

During a visit of the modified Perry class Frigate at the base, the Captain highlighted the advantages of being able to leverage a global fleet of ships. Operating the Perry class has meant that the Australian Navy has been able to support it ships on operations by leveraging the global logistioocs supporting a fleet of such ships.

They have also modified the ship with new technology which allows it to have new weapons and C2 capabilities appropriate to evolving missions.

**This example highlighted the importance of building ships which are capable of regular upgrades of software or weapons.**

Also on base is a significant dry dock for ship repair, originally built to support Allied large deck naval carriers and battleships when built in 1945.

It is still in use and the cost of the facility is amortized in part by making it available for commercial purposes as well.

**In short, the leadership of the Royal Australian Navy is working the infrastructure side of the evolving fleet hard.**

But the challenge is a significant one and will require resources, and vision in shaping an appropriate infrastructure for the new classes of ships and the evolving concepts of operations.

## **The Aegis Global Enterprise: The Australian Case**

8/24/18

During my current trip to Australia, I started with the opportunity to visit the HMAS Hobart, the first Aegis Air Warfare destroyer for the Royal Australian Navy.

This was my second visit to Garden Island, and it is always exciting to see the city of Sydney in the backdrop to a major Australian naval base as the arrival of the First Fleet seems not so distant when you are not far from where they landed in 1788.

The HMAS Hobart is the first of the three Aegis Air Warfare destroyers to be operational with the Navy and the second ship will be commissioned later this year.

The ship introduces a new level of combat capability into the Royal Australian Navy in which the ship's reach is significantly greater than any previous ship operational in the Aussie fleet because of its Aegis Combat system.

It is a key building block in shaping an integrated air-sea task force navy in that the capabilities onboard the ship can contribute to an integrated C2, ISR and strike grid in which the evolving capabilities of the ADF can cover a wider area of operation in the waters surrounding Australia or in service of missions further abroad.

As Rear Admiral Mayer noted during an interview I conducted with him while he was Commander of the Australian fleet:

“We are joint by necessity.

“Unlike the US Navy, we do not have our own air force or our own army. Joint is not a theological choice, it's an operational necessity.”

What clearly this means is that the future of the Hobart class is working ways to operate in an integrated battlespace with land-based RAAF F-35s, Tritons and P-8s among other air assets.

Their future is not protecting the carrier battle group, as the Aussies have no carrier.

Rather, their future is “to provide air defence for accompanying ships in addition to land forces and infrastructure in coastal areas, and for self-protection against missiles and aircraft.”

The skill sets being learned to operate the ship, notably the workflow on board the ship, in terms of the use of data, ISR and C2 systems, working situational awareness throughout the work stations onboard the ship, are foundational for other ships coming to the fleet.

With the coming of the Brisbane, the HMAS Hobart will no longer be a single ship but the lead into a class of ships.

And with the Australian decision with regard to its new frigates which will leverage the Aegis combat system capability as well, the HMAS Hobart has become the lead into a whole new approach to how the Australian fleet will shape its combat networks as well.

This means that the training and support provided to HMAS Hobart is a foundation for a larger effort for the Navy as well.

And with the addition of F-35 as well as P-8s and Tritons as well as the evolution of the KC-30A tanker, the fleet looks to become a core element for an integrated air-maritime task force approach.

Indeed, when visiting HMAS Hobart one can already see crew from the Brisbane onboard getting ready for its initial deployments as well.

The Aegis combat system pioneered by the US Navy and Lockheed Martin has become a global capability as an Aegis Global Enterprise has emerged in which new types of ships have been built carrying variants of the Aegis combat system.

This started with the Japanese becoming the first foreign navy to buy Aegis and then in a critical breakthrough moment, Aegis was sold to the Spanish Navy which built a new type of ship on which to operate Aegis.

I was working for a consulting company supporting the Navy at the time, and was supporting what would become what I coined in the mid-1990s, the Aegis Global Enterprise.

There was opposition both within the US Navy and without to selling Aegis to the Spanish Navy but senior leaders at the time in the Clinton Administration, notably Secretary of Defense Perry, supported the effort.

Working on the issue at the time, I learned a great deal about how a good decision can navigate critics and challenges, and fortunately for the Navy the decision was taken to sell the Aegis combat system to the Spanish.



Much like the F-35 global enterprise, the benefits to allies and the US alike become obvious with the cross-learning and not just from the US to the allies, but among allies as well as from allies to the United States.

The HMAS Hobart is clearly a result of this process.

It is a variant of the Spanish ship and was sold via Spain to Australia.

The senior staff and crew operated on a Spanish frigate last year to get used to the form factor of the ship and could anticipate the workflow as well prior to getting their own ship.

According to an article published last year by the Royal Australian Navy, the time spent onboard the Spanish ship was highlighted.

*Captain Stavridis said he and some of his crew members were fortunate to have spent time at sea in their Spanish sister ship, Cristobal Colon (F105), earlier this year.*

*“The time spent in Cristobal Colon was extremely valuable as it provided a unique opportunity to better understand the platform and to work with a crew that have a detailed working knowledge of the ship,” Captain Stavridis said.*

*“Cristobal Colon’s crew were extremely generous in their time and ensured that we were given all opportunities to learn as much as we could.”*

*He said the layout of Cristobal Colon was very similar to the Hobart class.*

*“In fact the Hobart class was based on the F104 design with modifications taken from the F105.”*

(For a look at the Cristobal Colon, see the following:

<https://foronaval.com/2018/02/23/visitamos-la-fragata-cristobal-colon-f-105/>)

Of course, the US Navy has been working with HMAS Hobart and indeed the ship will leave soon for San Diego for further collaborative efforts.

And as one US Navy officer put it: “We expect to learn a great deal from you as you shape the operations of the Hobart as it is integrated into the Australian fleet.”

This is the key advantage of a global enterprise approach.

We projected that this would be the case if their was the sale to Spain of Aegis.

**Now one can walk onboard the reality, namely, the HMAS Hobart.**

## **Appendix: The Air Warfare Destroyer Alliance**

The Hobart class is being built by the Air Warfare Destroyer Alliance.

*The AWDs are being built for Australia’s specific defence needs and will provide a significant increase in Australia’s defence capabilities.*

*The AWDs will provide greater protection for ADF personnel by providing air defence for accompanying ships as well as land forces and infrastructure on nearby coastal areas. The AWDs will also provide self-protection against attacking missiles and aircraft.*

*The Aegis Weapon System incorporating the state-of-the-art phased array radar, AN/SPY 1D(V), in combination with the SM-2 missile, will provide an advanced air defence system capable of engaging enemy aircraft and missiles at ranges in excess of 150 kilometres.*

*The AWDs will also carry a MH-60R Seahawk 'Romeo' naval combat helicopter for surveillance and response to support key warfare areas. The surface warfare function will include long range anti-ship missiles and a naval gun capable of firing extended range munitions in support of land forces. The AWDs will also be able to conduct Undersea Warfare and will be equipped with modern sonar systems, decoys and surface-launched torpedoes.*

*Coupled with an array of close-in defensive weapons, all of these capabilities ensure the AWDs have the layered defensive and offensive resources required to win the battle against 21st century conventional and asymmetric threats.*

*The Defence team is led by the AWD Program Office in the Defence Materiel Organisation (DMO), which retains overall responsibility for the project management and delivery of the three Air Warfare Destroyers. The DMO, through the Minister for Defence, is responsible to the people of Australia to ensure that the future AWDs are delivered to the RAN on time, on budget and to the required capability.*

*In April 2005 the Australian Government selected Raytheon Australia Pty Ltd as the Combat System – Systems Engineer, and in May 2005 selected ASC AWD Shipbuilder Pty Ltd as the Shipbuilder. ASC and Raytheon Australia join the DMO in forming the AWD Alliance which is now working hard to deliver this cutting edge capability to the Navy.*

*On 20 June 2007, the Australian Government announced that the Navantia designed F100 had been selected as the basis for Australia's future Hobart Class AWDs. The F100 ensures tomorrow's Navy has the best equipment to defend Australia and its national interests.*

*Australia's new Air Warfare Destroyers will be named HMAS Hobart, HMAS Brisbane and HMAS Sydney ensuring the three ships reflect a rich history of service.*

*When the AWDs are delivered to the Royal Australian Navy they will be in service, defending and supporting Australian interests, for more than 30 years. To put this timeframe into perspective, some of the men and women who will serve on the AWDs are not yet born.*

<https://www.ausawd.com/content.aspx?p=62>

## **Characteristics of the Hobart Class Destroyers**

*The Hobart Class Air Warfare Destroyer (AWD) will be one of the world's most capable multi-purpose warships.*

*In selecting the Navantia-designed F100 as the baseline platform design and coupling it with the Aegis Weapon System, the Australian Government has ensured tomorrow's Navy has the best equipment to defend Australia and its national interests.*

*Since entering service with the Spanish Armada, F100s have worked alongside US forces in the Persian Gulf as the first foreign Aegis equipped ships to be fully integrated into a US Navy Carrier Strike Group and have successfully been deployed as the flagship of NATO's Maritime Group Standing Reaction Force.*

*The Hobart Class AWDs, which are under construction at three shipyards in Newcastle (NSW), Williamstown (Victoria) and Osborne (South Australia) will provide air defence for accompanying ships in addition to land forces and infrastructure in coastal areas, and for self-protection against missiles and aircraft.*

*They will be capable across the full spectrum of joint maritime operations, from area air defence and escort duties, right through to peacetime national tasking and diplomatic missions.*

*The AWDs' Hobart Class Combat System, built around the Aegis Weapon System incorporating the state-of-the-art phased array radar, AN/SPY 1D(V), will provide an advanced air defence system capable of engaging enemy aircraft and missiles at ranges in excess of 150 kilometres.*

*The AWDs will carry a helicopter for surveillance and response to support key warfare areas. The surface warfare function will include long range anti-ship missiles and a naval gun capable of firing extended range munitions in support of land forces.*

*They will also be able to conduct Undersea Warfare and will be equipped with modern sonar systems, decoys, surface-launched torpedoes and an array of effective close-in defensive weapons. These capabilities will ensure the AWDs have the layered defensive and offensive resources required to counter conventional and asymmetric threats.*

*The Hobart Class Combat System will be amongst the most advanced maritime warfare capabilities available and ensure the RAN has unprecedented levels of interoperability with Australia's allies.*

*When Australia's AWDs enter service in the next decade, they'll be part of a fleet of around 100 Aegis equipped ships operating across the globe and will spearhead a quantum leap in the RAN's air warfare capability.*

<https://www.ausawd.com/content.aspx?p=63>

## **The Hobart Class – Differences from the F100 Class**

Navantia's F104 ship design is the basis for the AWD. The F104 baseline is being updated for AWD to include;

Key F105 features, Australian Combat system modifications, and Selected platform upgrades that are unique to the Hobart Class.

These features are summarised as follows:

### **F105 Modifications**

- More efficient and powerful diesel engines coupled with improved fuel tank arrangements will provide increased range,
- The inclusion of a bow thruster will improve manoeuvrability in harbours;
- Improvements to underway replenishment arrangements for manpower efficiencies;
- Changes to funnel tops to improve the ship's air wake; and
- Bunk size increases to improve habitability.

### **AWD Combat System Modifications**

- The Hobart Class will use the Aegis Weapon System Baseline 7.1 and the AN/SPY-1D(V) Phased Array Radar.
- The Under Sea Warfare capability will be upgraded by:
- Enhanced Anti Submarine Warfare capabilities and the addition of a torpedo defence system;
- ASW decoys for torpedo defence;
- Enhanced undersea communications;
- Integration of the MU90 torpedo

### **Other changes include:**

- Modification of the MK45 gun and Gun Fire Control System, including provision for Extended Range Munitions (ERM);
- Addition of the Cooperative Engagement Capability (CEC);
- Modification of the IFF UPX-29 to the current tactical standard;
- Addition of an Horizon Search Radar (HSR) for improved anti-ship missile defence;

- Upgrades to the Surface-to-Surface Missile System to improve target selectivity in congested water, littoral and coastal operations;
- Upgrades to the Very Short Range Defence system to improve its integration and utility against asymmetric surface threats;
- Upgrades to the Electronic Warfare system, including the addition of electronic attack capabilities;
- Addition of X/Ka Satcom and INMARSAT Fleet Broadband and INMARSAT C capability;
- Improved Infrared Search and Track capabilities;
- Improved Electro-Optical Surveillance capability;
- Addition of Nulka Launchers for active missile decoys;

### **AWD-Unique Platform Modifications**

- The ship's displacement will be increased to 7,000 tonnes for an improved service life margin.
- Cold weather operation will be improved to allow for deployment into Australia's southern waters.
- The hangar will be modified to accommodate a range of helicopters.
- Other modifications include:
- Increased total cold room capacity for improved endurance;
- Incorporation of a fixed gas detection system to warn of the presence of harmful gases in compartments where personnel exposure risks exist;
- Modification of the 220V/50Hz network to 240V/50 Hz, incorporation of Residual Current Devices (RCD) and the Australian pin configuration for general purpose outlets, and
- Modification of existing stowage, and increases in the overall number of stowage facilities, for thermal protective suit and life raft containers.

<https://www.ausawd.com/content.aspx?p=97>

## **Dr. Ben Greene, Electrical Optical Systems**

08/23/2018

During my visit to Australia in August 2018, I had a chance to visit Electric Optical Systems (EOS) in Canberra and to meet with the founder and his senior team working on space systems.

EOS works closely with global customers, including the United States, and provides cutting edge lasers and sensors to provide for a variety of military solutions.

My colleague [Edward Timplerlake](#) has written about the central significance of what he calls the payload-utility function for 21<sup>st</sup> century forces, and the reversal between platforms and payload utility capabilities within the kill web, which various platforms in the combat force integrate to provide the desired, combat effect.

*To understand Payload/Utility with full honor to John Boyd, it can be noted that Observe/Orient (OO) is essentially target acquisition, and Decide/Act (DA) is target engagement. Thus there is a very simple formula, better and better TA and TE = more effective employment of all payloads available to the battle commander.*

And within this focus, the roles of classic platform providers and payload enablers are shifting. Increasingly, the platform is about being able to operate, empower and to operate upgradeable payloads.

Or put another way, payload/utility companies are becoming either the new prime contractors or the key systems houses enabling platforms.

EOS is a payload/utility provider.

They provide a range of systems from enablement of space-based capabilities to a variety of land capabilities as well.

*EOS operates in two sectors: Defence Systems and Space Systems.*

*EOS Defence Systems specialises in technology for weapon systems optimisation and integration, as well as ISR (Intelligence, Surveillance and Reconnaissance) for land warfare. Its key products are next-generation vehicle turrets and remote weapons systems.*

*EOS Space Systems specialises in applying EOS-developed optical sensors to detect, track, classify and characterise objects in space. This information has both military and commercial applications, including managing space assets to avoid collisions with space debris, missile defence and space control.*

<http://www.eos-aus.com/sites/default/files/Space%20Update%201%20August%202018.pdf>

During my visit to Canberra, I spent an evening at the Mt Stromlo Space Research Facility where EOS has a laser tracker for space systems.

The entire facility is robotized with only about 30 persons needed to service the operational facility.

The laser tracker at Canberra is connected with remote locations throughout Australia where similar robotized laser trackers create a significant capability to provide for space situational awareness.

Of course, such a laser capability provides a base line for growth in the laser-based engagement area with regard to space as well.

I met with the founder and well-known scientist/entrepreneur Dr. Ben Greene as well as the CEO of EOS Space Systems, Professor Craig Smith and the key software engineer, Dr. James Bennett. They provided an overview on the capabilities and the growth path for their systems directed to space-based SA and related capabilities.

At the end of the evening, I had a chance to interview Dr. Greene and to get his perspective on the way ahead.

**Question: Let us start by talking about your approach to land systems.**

**You are a payload company and how do you see the evolution of the platform/payload relationships going forward?**

Dr. Greene: In the land warfare sector, we would characterize our payloads as weapon systems.

They are modular and designed to be external to the vehicle.

We are optimized when the platform design approach focuses on modularity, which clearly is the way ahead for vehicles for ground forces.

We have a weapon system family that doesn't require changes to anything in the platform and we can change the payloads rapidly.

For example, one could have a payload which was the standard 12.7 millimeter machine gun, an M2, or you could have a 30 millimeter cannon firing fused rounds and equipped with a javelin missile.

The two payloads would be interchangeable within 30 minutes on top of that platform, and nothing in the vehicle would change.

The internal software in the vehicle that we supply would sense exactly what the new payload was and adapt to it and adapt the user interface accordingly.

**Question: How does this affect the classic relationship between the vehicle prime and the payload provider?**

Dr. Greene: There clearly is a change underway.

Our payloads typically cost more than the platforms that they would be fielded on.

And so in some cases we are invited by the customers to be the vehicle integrator or what you would call the prime.

Customers generally are becoming quite savvy about the fact that the payloads are the core value, and the mission is in the payload.

Yet the platform has got to be a viable platform to deliver that payload into combat, but at the same time, the customers are increasingly recognizing that the payload performs the mission.

**Question: Another aspect of the payload focus is an expectation that you're designing the payload with regard to ongoing modernization or put in other terms, you are building a more rapidly upgradable payload.**

**How should one view this dynamic?**

Dr. Greene: Our customers have moved from playing checkers to chess, because they're thinking six moves ahead.

As we build a capability with a blue team, we have a red team engaged throughout to anticipate obsolescence and needed upgrades.

We're now expected to deliver the technological architecture, which can deliver continuous upgrades, but ones which can anticipate changes which the reactive enemy might well make.

The opposing combatants are becoming more intelligent in the way that they deploy forces. And in particular, in asymmetric theater operations, you do find that the smaller irregular forces are incredibly innovative,

They're often supported by major powers, so they have very good intelligence capability. They have what we would call a back room that's supporting them with great intelligence on how to exploit weaknesses and what's just been fielded in the last six months against them.

This means that the sophistication of some of the asymmetric combat forces is quite remarkable today.

And so that's the environment that we are working in as a payload provider. We're delivering payloads that have had to be pre-mapped to at least to at least two levels of response to what we will field currently.

**Question: Let us turn now to the space side of your business. Could you describe the focus of your payload business in this domain?**

Dr. Greene: We have built core capabilities to enhance situational awareness in space. We irradiate certain areas of space with lasers, and we then analyze the reflected returns.

We can determine range from that. We can also determine other elements of the spacecraft from a light signal directed at that spacecraft.

We have been in this business area for 40 years.

**Question: How would you describe the complementarity of radars with lasers in terms of providing key ISR performance?**

Dr. Greene: They're very complimentary. Radars are exceptionally good at detecting anything that's moving in a large area of space. Lasers are very good at characterizing that object and that motion very accurately.

*For example, we can detect UAVs with radars and kill them with lasers.*

The same thing applies on a much larger scale in space.

So space is really consists of two domains. There's 2,000-kilometer zone around the Earth, which is the lower Earth orbit.

In the space domain above two or three thousand kilometers, only optics applies, and so the lasers can operate to two or three times the range that radars can operate, and beyond that we have passive optical techniques with extreme range, where both laser and radar techniques fail.

And so the entire space domain from 3,000 kilometers to 50,000 kilometers is managed optically with lasers and light.

**Question: Your work is rooted in a very strong working relationship between Australia and the United States.**

**How would you describe that relationship?**

Dr. Greene: I think that there's a very strong two-way relationship.

Australia can offer special aspects of territory in terms of where we sit in the world physically, in terms of our geography. In addition, our technology combined with operating within our specific climate, means that if we deploy optical technologies from Australia, they are of immense value in terms of the information captured from the platforms that we deploy here.

That information can complement and support the intelligence database that US would apply for space information. And we would like to contribute to space information superiority for the alliance in that sense.

We've had a very strong program here that has always been a joint program with the US from its inception.

There's always been significant US participation in our program.

**Question: But I would note that talking to you and to your staff and looking at your enterprise, as a whole is like a trip back into time for me in one key sense – you have a very lean operation and you are not afraid to test and fail.**

**It is like going back into time in the 1970s and 1980s in the United States.**

**How does it feel to be both a time capsule and a key driver for 21<sup>st</sup> century innovation?**

Dr. Greene: I would tend to agree with the sentiment, The processes that we operate here are a linear extension of the process that we developed jointly and in complete harmony with the US during the '60s and '70s and '80s.

*And those processes were very efficient.*

We're talking about a development process for advanced technology that was aggressive. It was well risk mitigated. It had woven into it an integrated operational concept.

The red team analysis was at the table through every design review, so the entire design process was red teamed continuously, not at the end.



The processes are not risk averse.

They are risk mitigated.

We have never been risk averse, but every time we fall over, we have to recover very quickly.

And so I think one thing that we still have, which I see missing in some parts of the world, is that tremendous technological aggression that the US had in the '70s and '80s.

And I'm not saying it's not there now.

It's just not as evident, and I think it's muted by a lot more administrative process now than it was previously.

And we haven't been encumbered by that here.

## Appendix

May 30, 2016

### Space conference at Mount Stromlo

***CLOSE to 100 of the world's top space environment researchers will this week congregate on Mount Stromlo to discuss ways to clean up the masses of space debris currently orbiting earth; the same debris that recently cracked a window of the International Space Station.***

*The Space Environment Research Centre's (SERC) International Research Colloquium, to be held from 31 May – 1 June, is the premier event of the year for the Canberra-based international research organisation.*

*SERC Chief Executive Officer, Dr Ben Greene, says the Research Colloquium will bring together researchers, industry and space agencies to collaborate, share resources and knowledge to enhance their research outcomes. The purpose of SERC's collaborative research programs is to develop methods to remove the estimated 170 million pieces of man-made space debris that currently orbit the earth endangering vital space infrastructure.*

*"More than AUD\$1 trillion worth of global space infrastructure is currently at risk from an ever increasing amount of space debris," Ben said.*

*"Globally, space infrastructure delivers essential and highly efficient services including communications, navigation, resource management and climate change monitoring. This infrastructure is at risk from space debris ranging in size from spent rocket stages as large as busses, to flakes of paint measuring millimetres. This debris can travel at speeds in excess of 20,000km/h, so even a single flake of paint can badly damage or destroy a vital piece of space infrastructure. The dangers of space debris were highlighted earlier this month when the International Space Station's Cupola window was badly damaged by a minuscule piece of debris thought to be a paint flake.*

*"Working at SERC's multi-million dollar research facility, SERC researchers are tackling the problem by enhancing capability in tracking, characterising and identifying objects in orbit, orbit determination and predicting behaviours of space objects.*

*"SERC is a joint public, private partnership between the Australian Government and organisations including Canberra based company EOS Space Systems, the ANU, RMIT University, Optus Satellite Systems, Lockheed Martin Space Systems and the Japanese National Institute of Information and Communications Technology (NICT).*

*"International collaboration is essential for a global problem such as space debris.*

*“There are estimates of more than 300,000 items of debris orbiting the earth greater than 10cm. There is so much debris that it is colliding with itself, and creating more debris. A catastrophic avalanche of collisions which could quickly destroy all orbiting satellites is now possible.*

*“Our initial aim is to reduce the rate of debris proliferation caused by new collisions, and then to remove debris using ground-based lasers. There have been strenuous efforts in many countries over the past decade to develop space debris mitigation technology. SERC brings together leading debris mitigation programs from around the world to create a team with the required critical mass of researchers, technology, funding and equipment. The resource commitments for SERC have come from every tier of space activity and are an indication of the international importance of this initiative.”*

Recently, the ADF has picked EOS to work a new capability for the Australian Army.

### EOS Wins Australian Defence Program

Canberra 24 August 2018

*Electro Optic Systems, (ASX: EOS), acting through its subsidiary EOS Defence Systems Pty Limited, is pleased to announce that it has been selected as the remote weapon system provider for Phase 2 (Combat Reconnaissance Vehicle) of the Australian Army’s LAND 400 program. EOS tendered the R400S Mark 2 D-HD remote weapon station for this acquisition. This latest R400 variant is commencing full rate production to meet existing contracts in early 2019. It is expected that approximately 80 remote weapon stations for Land 400 Phase 2 would enter an existing manufacturing process from 2021.*

*Additionally, the LAND 400 Phase 3 tender released today requires that all tenderers ‘include the integration / use of’ the EOS Remote Weapon Station in their responses for the next Phase of the program. Phase 3 seeks to deliver 450 Infantry Fighting Vehicles and 17 Manoeuvre Support Vehicles from 2024/25 onwards.*

*These two events represent a significant step forward for EOS Defence Systems as the primary RWS provider to the Australian Army. Combined with the existing in-service 230+ EOS remote weapon stations these additional systems will create a larger EOS RWS fleet across multiple vehicles and deliver significant improvements in operational effectiveness and cost of ownership for Australia’s combat forces.*

*The R400S Mark 2 Direct Drive-Heavy Duty (D-HD) remote weapon station is the latest high precision product from EOS Defence Systems and can mount different weapons up to and including the M230LF lightweight 30mm cannon and anti-tank guided missiles.*

*The LAND 400 program comprises four phases which are summarised below:*

- *LAND 400 Phase 1 – Project Definition Study (completed);*
- *LAND 400 Phase 2 –Combat Reconnaissance Vehicle Capability*
- *LAND 400 Phase 3 –Mounted Close Combat Capability; and*
- *LAND 400 Phase 4 – Integrated Training System.*

## **Pitch Black 2018: RAAF Perspectives**

During my visit to Australia in August 2018, I was in country as the Pitch Black 2018 exercise was wrapping up and will have more on this exercise later.

Very good coverage of Pitch Black 2018 was provided by Jaryd Stock on the website [Aviation Photography Digest](#) and readers are encouraged to read his various pieces to be found there.

From one his stories, he highlighted comments made by RAAF Air Commodore [Mike Kitcher](#) who is the Commander of the Air Combat Group with regard to what was identified as a “typical mission” from the second week of the exercise.

*“As you are aware Pitch Black has been running for a couple weeks now and so far the exercise has been really successful, and during the second week we have managed to launch (From RAAF Base Darwin and Tindal) some big packages and they are some of the biggest missions that ever been launched since I have been associated with Pitch Black.*

*To give you an insight in how that’s going and give a bit of an idea into the missions undertaken, yesterday (Thursday, August 9<sup>th</sup>) we flew a mission where we had RAAF Classic Hornets (77 Squadron), RAAF Super Hornets one of which I was flying (from 1 Squadron). We also had Indian Air Force Sukhoi Su-30s (102 Squadron), USAF F-16s (80<sup>th</sup> Fighter Squadron) also with Indonesian F-16s (3 Skuadran), Singaporean F-16s (143 Squadron) and Thai Gripens (701<sup>st</sup> Squadron) and a bunch of aircraft that were all designed to escort a couple of transport aircraft.”*

A skill set associated with the strategic shift, battlefield extraction, was exercised in this context as well.

*In the escort scenario that was played out on August 9<sup>th</sup> during the second week of Pitch Black 2018, a RAAF C-27J Spartan from No. 35 Squadron at an airfield strip in the Delamere weapons range was tasked to provide extraction for ground forces (35 Squadron were also partaking in humanitarian relief missions during the exercise but due to the complexity of this particular scenario it would suggest the C-27J Spartan and crew seems as though they were operating in the battlefield air-lifter role, with the squadron harnessing their skills to successfully extract ground forces from a conflict battle-space and return to home base safely).*

**Clearly, during the exercise the RAAF and the allies were playing through a number of key skill sets which are being highlighted by the strategic shift to higher tempo operations.**

Those skill sets were highlighted by the RAAF’s official Air Force newspaper.

One of those skill sets which was highlighted was the need to evolve greater capabilities to execute mobile basing.

During our visit with the Commander of the Combat Support Group, Air Commodore Robinson, earlier this year, this skill set was identified as follows:

*What mobile basing might mean in today’s world is a work in progress, but one which will need to deserve more attention going forward....*

*The RAAF works closely with the USAF as well both in terms of cross learning with the USAF’s Contingency Response Groups as well as the USAF sorting through the growing demand for supporting mobile basing in the Pacific, in terms of flexibly moving away from an over-reliance on fixed basing in the region in times of crisis.*

*But as the Air Commodore pointed out, the two Contingency Response Groups in the USAF can focus full time on contingency response whereas the RAAF has to include that capability within the overall force.*

*We discussed at some length the challenge of rethinking mobile basing in times of crisis, which is a work in progress.*

*“We are having to reacquaint ourselves with some tasks and challenges which we parked to the side a bit while we were in the Middle East for so long.*

*“We did not have to worry so much about mobile basing to counter the principal threats in that theatre.*

*“The mindset is in transition now.”*

*This clearly is an Army and Air Force challenge.*

*“We are good at supporting maneuver with our tactical transport aircraft and Australia’s Army aviation capability, including the Tiger Reconnaissance Helicopter, but what we need to do is move to the next level of support to maneuver the most lethal part of our air power capability across a range of airfield options.”*

In an article published August 23, 2018, the Air Force newspaper discussed the exercising of these skill sets as follows:

The article was entitled “Takeoff for Airbase”.

It was written by Leut Harley Slatter and focused on the creation of mobile basing.

*Constructing an austere airbase over two days at Bachelor in the Northern Territory was a great training platform for our combat support personnel*

*FLTLT Michael Fox, operations officer No. 382 Contingency Response Squadron, said the location and exercise were ideal to train and showcase Air Force’s ability to rapidly set up and steer airbase in Australia is remote north.*

*“Bachelor proved challenging, given the he significant proximity from infrastructure,” FLTLT Fox said.*

*“Pitch Black gave us the opportunity to verify our actions to deploy at short notice to an austere airfield activate it and receive aircraft.”*

*FLTLT Fox said the joint effort involved establishing the base as a hub for many complex missions and serials throughout the exercise.*

*“The Insertion into Bachelor airfield, was done by both road and air. Army assisted greatly by transporting cargo,” FLTLT Fox said.*

*“We also had security forces and a Contingency Response Group from the US Air Force and Army’s 9<sup>th</sup> Force Support Battalion working at Bachelor Airfield.”*

*Once construction was complete these groups, along with the No. 2 Security Forces Squadron, continued to support operations at bachelor during the exercise.*

*FLTLT Fox said the objective of 382 CRS during Pitch Black was to be capable of receiving C-27 J Spartan aircraft and turn them around in support of the wider operation.*

*“Our services included an air load team, refueling, a 24-hour-day operations cell and an integrated US Air Force contingent including air traffic controllers,” FLTLT Fox said.*

*The ability to train in this environment and test themselves was also a great practical benefit for the members of 382 CRS, as a squadron often has to move at short notice.*

A second article focused on the air traffic control skill sets which were performed by coalition forces during Pitch Black.

The story was entitled “Tracking Red and Blue in the Mix.

It was published on August 23, 2018 as well.

*Exercise Pitch Black’s busy airspace over the Northern Territory gives our air battle managers a chance to work with controllers from the other nations to target, track, and direct friendly and deal with enemy aircraft.*

*For the first time controllers from India, Germany and Canada joined our integrated fighter control teams.*

*CO No. 114 Mobile Control and Reporting Unit Wing Commander Brett Risstrom said the exercise provided new opportunities to develop skills with foreign air forces during simulated aerial combat.*

*“At Pitch Black we have been able to integrate fighter control teams, which helped blue force crews in the air find, track and destroy enemy red force,” WGCDR Risstrom said.*

*During the exercise air battle managers directed dozens of friendly aircraft from multiple nations at once*

*Sgt. Ryan McGee of No. 1 Remote Sensor Unit, was put through his paces while working foreign militaries.*

*He said success meant putting blue aircraft in the right place at the right time.*

*“We were looking at where the red aircraft were and where they were coming from to ensure we had a safe air picture, or able to dominate the skies,” Sgt. Mckee said*

*Meanwhile, 114 MCRU operated the Tactical Air Defense Radar System, AN/TPS 77, to provide tactical aerospace battle management and air traffic surveillance during the exercise.*

*114 MCRU senior engineering officer SQLDR Mark Wilson said the deployed air defense radar was used for safety of flight and direct aircraft on target during exercise.*

*“Positioned at Poll Hill, 300 km south of Darwin in the Northern Territory, the radar had 15 technicians supporting it during the exercise,” he said.*

*“Conditions was harsh but morale was high and the capability had proved itself as an asset to defense.”*

*Cpl. Martin Larocque, a technician with the Royal Canadian Air Force, visited the remote site to learn about the deployable radar and speak with our personnel about their experiences.*

*“We have a similar radar but it’s a bit older. It’s been great to see how the Aussies do their job with the radar and how they set up a remote camp.”*

## **The Australian Army and Integrated Air Defense**

It is obvious that the Australian Army needs to play a key role in providing longer range fires and active defense both on Australian territory as well as in operations not on Australian soil.

This subject was discussed at the recent Williams Foundation Seminar held in Canberra on August 23, 2018 when the focus was upon the need for Australia to develop independent strike capabilities.

This is clearly a work in progress.

With the introduction of the new NASAMS system, the topic has gained more prominence.

(More on NASAMS below).

An article published in the official Australian Army newspaper on August 9, 2018, provided an update as seen at the Integrated Air and missile Defence seminar held in Canberra on July 25, 2018.

*Through the lens of integrated battle space command, talk centered on new missile and detection technologies that afford new levels of protection for ground forces.*

*Maj-General Gus McLachlan said developing interoperability was key to Australia’s future defense capability.*

*“This is an incredibly important step for Army with genuine collaborative engagement with the Air Force and Navy.*

*“We are about to move into an incredible new era and we are intellectually preparing for it.”*

*“It is the first advanced machine assistance to help decision-making.*

*“We got plenty of thinking and learning to do about what this capability means for the ADF and Army has a real responsibility and opportunity to help design an integrated air and missile system.*

*“This is just the first part of what would truly be a joint system .....*

*“There’s a lot of work to do,” Army’s Director General Training and Doctrine Brig. Gen. Ben James closed the seminar saying that missile defence was integral to delivering a “one defence” approach to the battlespace.”*

*“This is not business as usual; this is breaking new ground for Army,” BG James said.*

*“It’s essential we start learning from our sister services, from our industry partners and from our coalition allies analysis of similar systems in service already.”*

## **Appendix:**

With regard to the Australians and NASSAMs, an October 4, 2017 press release from Kongsberg announced the purchase of the NASSAM by Australia.

*The Australian Government has announced that a National Advanced Surface to Air Missile System (NASAMS) solution will be developed for the Land 19 Phase 7B project – the Ground Based Air and Missile Defence capability for the Australian Army through a Single Supplier Limited Tender process to Raytheon Australia.*

*Raytheon Australia has been identified as the Prime System Integrator and KONGSBERG will be a major sub-contractor in the program. NASAMS is a proven and fielded mobile air defence system in service with seven nations today, including Norway and the United States.*

*“We are pleased to see that NASAMS is recognized as the preferred ground based air defence capability solution for the Australian Army and we are looking forward to the process leading to a contract”, says Eirik Lie, President of Kongsberg Defence Systems.*

*The inherent flexibility and modularity of NASAMS makes it a world leading solution with unique capabilities to combat modern airborne threats, as well as having the ability to integrate with networks and a variety of different sensors and weapons.*

*“NASAMS is one of the most successful KONGSBERG products internationally and we are proud to be part of the Raytheon Australia team for delivery of this capability to the Australian Army”, Lie said.*

And by participating in the F-35 global enterprise, Kongsberg is developing a very flexible joint strike missile which will be launched by the F-35 initially, but can operate off of ships and land as well.

And by being part of the F-35 program, the JSMs Kongsberg builds for the Norwegian planes are integrable from the ground up with other F-35 partners, two of which have shown advanced interest, namely Australia and Japan.

In a February 26, 2015 press release from the Norwegian Ministry of Defence, the partnership was announced between Australia and Kongsberg.

*The Norwegian Ministry of Defence and the Australian Department of Defence have agreed to cooperate on the development of the Joint Strike Missile (JSM), following talks between Norwegian State Secretary Mr. Øystein Bø and his Australian colleague Mr. Stuart Robert during the Norwegian State visit to Australia this week. The agreement seeks to support the introduction of an advanced maritime strike weapon on the F-35 in the early 2020’s time frame.*

*Although far apart geographically, Norway and Australia share many of the same challenges. We are both maritime nations on the periphery of our immediate regions, with a large land mass and even larger maritime territories, yet relatively limited populations. This means that we have to maximize the effects of the capabilities that we invest in to ensure that they cover as much of the spectrum of operations as possible, said Norwegian Minister of Defence, Ms. Ine Eriksen Søreide.*

*Norway and Australia have maintained a close dialogue for several years regarding the JSM within the framework of the multinational F-35-partnership. This agreement takes the process one step further, with Australia agreeing to provide expertise in missile control and guidance systems.*

*The cooperation between Norway and Australia on the JSM was announced at Avalon Air Show earlier today. From the left, Deputy Chief of the Royal Australian Air Force, Air Vice Marshal Leo Davies, Norwegian State Secretary of Defence Mr. Øystein Bø, and Executive Vice President of Kongsberg Defence Systems, Mr. Pål Bratlie*

*– The JSM is already a very capable missile, but with the support of Australia, we hope to make it even better. Though Australia is still a few years away from making any final decisions on its future maritime strike capability, we are encouraged by the interest they have shown for both the missile and for the capabilities of Norwegian industry. We should now continue talks between our two governments, and aim to formalize this agreement in the near future, said Norwegian Minister of Defence, Ms. Ine Eriksen Søreide.*

*The Joint Strike Missile is an advanced long range precision strike missile, tailor made to fit the internal weapons bay of the F-35. The F-35, combined with the JSM, provide the ability to both locate and defeat heavily defended targets, both on land and at sea, at extended ranges, significantly enhancing the strategic capabilities of the aircraft. The missile utilizes advanced navigation, a passive infrared seeker, low signature and superior manoeuvrability to ensure mission effectiveness, thereby providing user nations with significantly enhanced combat capabilities.*

*Norway intends to procure up to 52 F-35A aircraft to enhance the ability of its Armed Forces to meet future security challenges, with first delivery planned for late 2015. Norway's first four aircraft will be based at the F-35 International Pilot Training Centre at Luke Air Force Base Arizona, while the first F-35 will arrive in Norway in 2017. Australia has so far committed to procuring 72 F-35A, out of a planned 100, with the first two aircraft delivered in 2014.*

## **Looking Back at RIMPAC 2018: The Perspective of Air Commodore Craig Heap**

08/29/2018

During my five years of visits to Australia, I have had the opportunity to meet with and to talk with Air Commodore Heap several times.

As the Commander of the Air Force's Surveillance Response Group, Air Commodore Heap has had the challenge of leading one of the most diverse, but critical groups in Air Force as the ADF works toward maximizing the integration of its capabilities while transforming into a 5<sup>th</sup> Generation Air force.

During the last visit earlier this year, Murielle Delaporte and I had the chance to discuss a number of the innovations being worked by Air Force within the ADF and its Coalition partners. Notably, Air Force is bringing on the P-8A/Triton dyad. During the current visit I have had the chance to revisit RAAF Base Edinburgh and get an update on the P-8A program as well.

Obviously, bringing on the P-8/Triton dyad highlights the importance of the US Navy and its working relationships with Air Force, and the recent engagement in RIMPAC 2018 certainly added to that experience as well.

In RIMPAC 2018, Air Commodore Heap was the Combined Forces Air Component Commander, of an Australian-led CAOC within the exercise.

The Royal Australian Navy described RIMPAC 2018 as follows:

*Exercise Rim of the Pacific 2018 (RIMPAC 2018) is a major United States Pacific Fleet biennial combined exercise to strengthen international maritime partnerships, enhance interoperability and improve the readiness of participating forces for a wide range of potential operations.*

*The multinational activity, held from 27 June to 2 August 2018 in Hawaii and off the coast of California, is the world's largest maritime exercise and includes 47 surface ships, five submarines, more than 200 aircraft and 25,000 personnel from 25 countries; Australia, Brazil, Brunei, Canada, Chile, Colombia, France, Germany, India, Indonesia, Israel, Japan, Malaysia, Mexico, Netherlands, New Zealand, Peru, the Republic of Korea, the Republic of the Philippines, Singapore, Sri Lanka, Thailand, Tonga, the United Kingdom, the United States and Vietnam.*

*The Australian Defence Force has sent four surface ships, HMA Ships Adelaide, Success, Toowoomba, Melbourne, a submarine, HMAS Rankin, one P-8A Poseidon aircraft and more than 1,600 personnel including an amphibious landing force from 2nd Battalion, Royal Australian Regiment.*

*ADF personnel will exercise across a broad spectrum of scenarios from humanitarian assistance and disaster response to maritime security operations, sea control and complex war fighting. Participating personnel and assets will conduct gunnery, missile, anti-submarine, and air-defence exercises, as well as maritime interdiction and vessel boardings, explosive ordnance disposal, diving and salvage operations, mine clearance operations and an amphibious landing.*

**For Air Commodore Heap, this was the fifth RIMPAC exercise in which he has participated.**

“This is the 26<sup>th</sup> RIMPAC exercise which has been held to date, which continues to be the largest Maritime exercise conducted anywhere”.

“There were 25,000 people, 46 warships, 200 aircraft, from 25 nations, engaged over a period of six weeks, in a series of phases.

“The initial phase involved getting to meet each other at all levels, building relationships and discussing capabilities during the initial in port harbor phase.

“The Exercise then moved onto the Force Integration Training and Advanced Force Integration training, where a schedule of tactical events of increasing complexity, under the water, on the water, on land and in the air provided the basis for a four-day freeplay phase; all outstanding opportunities to improve tactical skills, individually as units and collectively as Task Groups, while building interoperability with all the multi-national participants.”

“And the Exercise operated across full the spectrum of operations – from Humanitarian Assistance and Disaster Relief (HADR), to Counter Piracy, Maritime Interdiction, Counter Insurgency and Multi Domain Advanced Warfighting.

“There was a HADR component lead by a Japanese Maritime Self Defense Force 2-Star, RADM Hideyuki Oban. This ran for two weeks and involved integrating a range of capabilities from the local civilian Hawaiian emergency services to some high end military capabilities.

“There was a counter-insurgency component to the exercise scenario, which was overlaid with the high-end maritime warfight at sea.

“The heart of the Exercise was is about building multi-national relationships, which improved understanding, leading to better cooperation and trust in a crisis, which will enable all participants to work together more effectively in the future on any operation.

**Question: What was your specific role in RIMPAC 2018?**

Air Commodore Heap: I was the Combined Forces Air Component Commander or CFACC.



“This meant that I led a multi-national team with the Combined Air Operations Centre (CAOC), to safely and efficiently command land based assets under my control, while coordinate safely and effectively, all air assets, including the significant ship-based Carrier Strike Group and land-based Maritime Patrol and Response capabilities.

” Overall we safely executed 3245 sorties over 23 days from 8<sup>th</sup> through to 31<sup>st</sup> July. Obviously that entailed a lot of liaison and coordination from both the safety and training effectiveness points of view.

“During the exercise, we had Marine Corps F-35s, USAF F-22s and F-15s involved as well as a significant multi-national P-8 and P-3 maritime patrol force. Airborne tankers of various sorts supported the air refuelable assets, in addition to rotary wing, MV-22 Ospreys and other unmanned aerial vehicles such as the Multi-Domain Task Forces Grey Eagles.”

“I would mention the US Army’s First Corps participation as the lead for the Multi-Domain Task Force, added another contemporary dimension to the capability options available to achieve effects at sea, in port or over land. Essentially, they were experimenting with concepts to potentially reshape their force to support the tactical maritime battle.

“Another highly beneficial component of RIMPAC was the live fire program which was conducted on the Pacific Missile Range Facility, (PMRF) north-west of Kauai. This included two days when specially prepared hulks were made available by the US as targets for a range of live firings by various participants.

“This included the successful first firing by an RAAF P-8A of a Harpoon anti-ship missile against a hulk, the Ex USS Racine.

**Question: Your P-8s were clearly at the Exercise, even though they were not under your command in your cAir Component Commander role.**

**How did they operate with the other P-8s, namely the USN and Indian Navy P-8s?**

Air Commodore Heap: Seamlessly.

“We demonstrated the clear capability for the US and Australian Mobile Tactical Operations Centres to work closely together, optimizing synergies.

“The Indian Navy P-8’s were operated from the same tarmac at Hickham, with their operations element collocated next to the USN and RAAF Mobile tactical Operations centre.

“All P-8 teams ended up working very well with each other in the tactical operations space.

“The Indian Navy aircrew and maintenance personnel were highly professional and clearly comfortable with advanced airborne ASW concepts as well.

“RIMPAC also provided a rare opportunity to exercise significant multi-national airborne MPRA assets, P-8s and P-3 from the US, Australia, India, Canada, New Zealand, Japan, and the Republic of Korea, in the conduct of Theatre ASW, (TASW).

“The P-8s in particular are a force multiplier in this piece, the overall objective of which is to deny or deter an adversary submarine force from affecting our friendly forces.

“The TASW element focused upon being able to get ahead of our sea-based task groups, in accordance with the plan or tactical scheme of manoeuvre, in order to search an area, and providing greater assurance that any submarine threat would be deterred or degraded from offensive operations against our friendly surface forces.

“This allowed the surface task force commanders to focus on the closer and immediate self defence of their own task forces.

“What Theater ASW provides is a centralised command construct, with assets to focus beyond the immediate and close defense of surface task forces; shaping the environment to provide decisive freedom of manoeuvre, to prosecute underwater threats at greater distance and range.

“And that is clearly where the P-8s and Tritons come in as major players in the Theater ASW concept.

“As the Australian National Commander as well for the Exercise, I was also extremely proud and impressed by HMAS Adelaide and the 2<sup>nd</sup> Royal Australian Regiments performance as part of the RAN led CTF176 Expeditionary Strike Group.

“Commodore Ivan Ingham, as CTF176, and the entire ADF team also demonstrated that the ADF’s amphibious capability continues to perform, and indeed grow, providing the Australian government with a broader range of options across the spectrum of operations, from HADR to classical warfighting.”

In closing, Air Commodore Heap reiterated the aims of RIMPAC: relationship building, leading to understanding, translating to cooperation and trust.

He stated, that, “... the USN Commander of 3<sup>rd</sup> Fleet and Commander Combined Task Force VADM Alexander insightfully stated in the early stages of RIMPAC planning that, ‘you cannot surge trust’.

“One of the truly great outcomes of RIMPAC 18 was that there was clearly a bunch of trust developed between RIMPAC partners which was allowed to begin surging due to their shared RIMPAC experience at every level; a key output from a great exercise.”

Appendix: Air Commodore Heap mentioned the US Army’s involvement in RIMPAC 2018 with their Multi-Doman task force.

The [article](#) below published by the US Army provides more detail of this engagement:

*KEKAHA, Hawaii — “Attention in the TAC! Target is Colorado.”*

*The U.S. Army’s Multi-Domain Task Force Tactical Command Post, or MDTF TAC, operating at the Pacific Missile Range Facility here is filled with energy and tension.*

*Sweat drips down the faces of the MDTF Soldiers as they process the fire mission, “Colorado,” to the 17th Field Artillery Brigade’s High Mobility Artillery Rocket System, or HIMARS, crews. Positioned quietly, the Soldiers eagerly await the loud, booming sound of the Japan Ground Self-Defense Force firing of a surface-to-ship missile alongside the HIMARS.*

*The long-range artillery systems fire ... then comes silence. Soldiers crowd around the television screen in the TAC as they watch the feed provided by the 25th Combat Aviation Brigade’s unmanned aerial system, an MQ-1C Gray Eagle, to see if the round will impact the target. The target is a decommissioned naval vessel also known as ex-USS Racine ... it’s a good hit!*

*The 17th Field Artillery Brigade, alongside the Japan Ground Self-Defense Force, conducted its first live-fire exercise here, July 12, during the biennial Rim of the Pacific, or RIMPAC, exercise.*

*The Naval Strike Missile was the first to launch as a land-based asset. Following the missile, Apache AH-64E helicopters, assigned to the 25th Combat Aviation Brigade and 16th Combat Aviation Brigade, fired upon the ex-USS Racine. Lastly, two surface-to-ship missiles from the Japan Ground Self-Defense Force launched missiles in conjunction with the 17th Field Artillery Brigade HIMARS system.*

*“People are wondering why are we participating in RIMPAC,” said U.S. Army Col. Chris Wendland, commander of the 17th Field Artillery Brigade and MDTF. “We are here to support the Navy and our other services, to show them what the U.S. Army’s MDTF can provide to the fight.”*

*RIMPAC is the world's largest international maritime exercise. It features 25 nations and is typically focused on naval operations. This year, however, U.S. Army ground forces had a role in the exercise for the first time as the MDTF.*

*"We are an asset the Navy and our joint services can utilize," said Wendland. "What our maritime adversaries conducting this exercise are looking for are other ships or submarines as threats. What they are not looking for is the Multi-Domain Task Force, our ground forces, who can acquire the target and fire upon it using land-based surface-to-ship missiles, then be able to move freely."*

*U.S. Army Pacific designated the 17th Field Artillery Brigade, a subordinate unit under America's I Corps at Joint Base Lewis-McChord near Tacoma, Washington, as the pilot program for the MDTF concept.*

*"We looked across the U.S. Army and selected the best assets and leaders to build an organization that can fight in all domains," said U.S. Army Gen. Robert Brown, commander of U.S. Army Pacific, during a brief to senior leaders before the live-fire event.*

*The concept of MDTF brings together various capabilities to address peer- or near-peer threats that could deny access to U.S. and coalition forces in maritime, land, air, and space domains. The MDTF integrates its assets to overcome adversary anti-access and air-denial through integration and synchronization of a variety of capabilities. These capabilities include unmanned surveillance assets, aviation, long-range artillery, air defense, electronic warfare, cyber, and space assets.*

*"We want to leverage and learn what our joint services utilize, as well as integrate our capabilities as a Multi-Domain Task Force into their planning efforts," explained Wendland. "Our goal is to create joint interoperability to be able to deter our adversaries across all domains."*

*RIMPAC has provided the MDTF and the U.S. Army with many "first" opportunities. This is the first time the 17th Field Artillery Brigade has worked under a naval commander instead of providing long-range artillery for I Corps during a military exercise; the first flight for 25th Combat Aviation Brigade's MQ-1C Gray Eagle in Hawaii as a capability of the MDTF; and the first time using a distributed line-of-sight battle management network, known as Link 16, with joint forces outside of the brigade.*

*The exercise is a tough, realistic training for joint and combined forces to deter and defeat aggression by major powers across all domains and levels of conflict in order to build multi domain concepts.*

*The 17th Field Artillery Brigade will continue to improve multi-domain concepts within the next year as it executes military exercises in Guam and Japan as the pilot program of the U.S. Army's MDTF.*

*Twenty-five nations, 46 ships, five submarines, and about 200 aircraft and 25,000 personnel are participating in RIMPAC from June 27 to Aug. 2 in and around the Hawaiian Islands and Southern California. The world's largest international maritime exercise, RIMPAC provides a unique training opportunity while fostering and sustaining cooperative relationships among participants critical to ensuring the safety of sea lanes and security of the world's oceans. RIMPAC 2018 is the 26th exercise in the series that began in 1971.*

The above article was written by Capt. Rachael Jeffcoat and published July 23, 2018.

## **Shaping Enhanced Sovereign Options: Leveraging the Integrated Force Building Process**

08/28/2018

The Williams Foundation has held a series of seminars over the past few years, which have progressively looked at the transformation of the Royal Australian Air Force and to the shaping of cross-modernizing Australian Defence Force. Referred to overall as building a fifth generation force, the focus has been upon how force integration can be enhanced in the process of Air Force, Army and Navy modernization.

The core point is that an integrated force can provide a more effective impact for what their force can achieve as well as to enhance its deterrent impacts.

But with the growing nature of the challenges in the region, notably from the North of longer range strike and systems able to operate against Australia, what needs to be woven into the force integration process to give the Australian government a wider range of sovereign options?

While the main thrust of Australian investments is upon force integration, the sovereignty focus is very clear but how best to bring a more decisive edge to the force and give it greater reach is not.

Sovereignty is clearly evident in the shipbuilding program where Australia is tapping the United States, Britain and France to shape a way ahead in building the new Australian Navy. With the United States, a key emphasis is commonality with regard to combat systems and a continuing recognition of the key role working with the United States military in the region really is for the operational approaches of the Australian forces themselves.

Both Britain and France present interesting cases of sovereign emphasis by the most significant military powers within Europe. For the Brits, the shipbuilding relationship is a key part of preparing for the post-Brexit process, which is rooted in the expression of sovereignty. For the French, de Gaulle invented the French approach to sovereignty in defense within NATO by building the French nuclear deterrent.

It is clear that the working relationship with the United States, Britain and France is a work in progress while Australia crafts its way forward in shaping its 21<sup>st</sup> century defense force and its approach to crisis management.

And in the background of this strategic reconfiguration is the future of Japanese security and defense policy in the region and how Japan will build its forces and invest in defense industry for the next two decades.

It is clear that United States remains the core partner for these states; but reconfiguration of those relationships is clearly under way.

The latest Williams Seminar focused on discussing the idea of building an independent strike capability Australia, one that builds upon or leverages the integrated force building process?

What should Australia do faced with nuclear threats in the region?

What should Australia do with the Chinese building out strike capabilities clearly capable of striking Australian operational forces and evolving capabilities for greater reach into the continent itself?

The seminar was held on August 23, 2018, and a report will follow. The main thrust of the seminar was to discuss the changing strategic environment and considerations for what Australia might do next.

It was less focused on the types of systems or capabilities Australia might acquire and more focused on cutting through the Australian strategic culture to put independent options onto the table.

After the seminar, I sat down with Air Marshal (Retired) Geoff Brown, Chairman of the Williams Foundation, to discuss the seminar and the way ahead for the ADF.

**Question: How do you view the way ahead with regard to the evolution of the ADF to provide a wider range of sovereign options?**

Air Marshal (Retired) Brown: The Defence White Paper of 2016 guides the current modernization effort. It provided a coherent framework for force modernization.

But a lot has changed since then and we need to rethink the strategic guidance and the shape some additional force modernization elements.

The future is much more unpredictable. With Trump, we have seen a honest statement of the priority of American interests. We need to take account of the priority, which America will place, on its interests when we go forward. And to be clear, this is not simply Trump, but the reality of what powers will do in an Alliance as well.

We need a much more sovereign approach to defense.

That's not saying we should walk away, or not contribute to or benefit from the American alliance. But, we've got to be much more prepared to be able to act on our own in certain circumstances.

And by being able to do so, we will be a better Alliance partner as well,

**Question: There clearly is the nature of the changing threat to Australia as well, notably in terms of North Korean nuclear weapons and the Chinese pushing their capabilities out into the Pacific and expanding their regional presence as well.**

**How do you view this part of the equation of the need for greater sovereignty?**

Air Marshal (Retired) Brown: We need to have a greater capability to hold competitors at risk at greater range and distance.

The North Korean case shows that nuclear weapons are not going away any time soon. The Chinese have clearly focused on significant investments in longer range strike.

This means as we do the next defense review, we need to focus on options which can allow us to deal directly with these challenges and to shape how we do so within the reworking of the relationship with our allies going forward.

We need a major reset building upon the force integration process which we have set in motion.

Do Japan or South Korea go nuclear?

We need to have a realistic discussion of the nuclear impact on our defense policy as well.

What makes sense to do?

And how to do it?

**Question: The question of the reach of Australian forces in a conventional sense also raises the question of the relationship between Australian territory, notably NW and Western Australia and the evolution of your defense forces?**

**How does the territorial dimension come back into play?**

Air Marshal (Retired) Brown: Clearly, we need to look at ways to enhance our force mobility and to build out both active defense and long range conventional strike in our territories closest to the areas of operational interest, both ours and the competitors.

The Australian Army is focusing in part in the evolution of fires both defensive and offensive, but we need a bigger commitment on this side of the force and with longer range, which could operate from our own territory as well as being projected forward outside of Australia.

**Question: How does the strategic shift in Australian industry fit into this calculus of enhanced sovereignty?**

Air Marshal (Retired) Brown: It is crucial.

As you noted, the shipbuilding side of industry is clearly about sovereignty and we need to look to expand sovereignty in the strike domain as well.

A key area going forward clearly should be in the missile development, build and sustainment area, where we can clearly build out our own capabilities in relationship with core allies also interested in this process.

And by flying the F-35 with a number of partner nations, there clearly is an opportunity to build out this capability as well.

**Question: I assume if you are interested in longer range strike you would be looking to something in the range of a 2,000 mile missile but given the focus on industry and working with allies, wouldn't a modular build process make the most sense, where you can build various ranges into your missile production based on modularity?**

Air Marshal (Retired) Brown: That would make sense.

But I think we need a serious look within our focus on shaping industry that both meets Australia's needs as well as those of key allies in the missile or strike areas.

We build ammunition and general purpose bombs in Australia but we have never taken that forward into a 21<sup>st</sup> century approach to missiles and related systems. We should rethink this aspect of our approach.

There are plenty examples of success in arms exports; there is no reason we can not do so in the weapons area, for example.

## **The Defense of Australia: Looking Back and Leaning Forward**

Sydney, Australia

During my August 2018 visit to Australia, I had a chance to meet with and discuss the question of the evolving approach to the defense of Australia with a member of the Australian National University, [Andrew Carr](#).

Dr. Carr is working towards the conclusion of his forthcoming book on the defense of Australia and has looked back to identify key themes and key points in the evolution of policy over the post World War II period.

And he has done so with an eye with regard to the next phase of the evolution of Australian defense policy, one which is very likely to feature greater emphasis on Australian sovereignty and continuing the modernization of the ADF with this in mind.

**Question: How would you describe the focus of your book?**

Dr. Carr: It's an effort to think through the question: "How do you actually defend a continent and land mass as large as the Australian continent?"

We have a very large landmass with a relatively small population.

"Throughout most of our history we have been part of a larger defense effort, first with regard to the British Empire, and then working with the Americans during and after World War 2.

Australians often see themselves as having to go overseas to achieve their security.

“This book addresses the importance for us to address seriously defense in our immediate region and to shape concrete ways that the continent can work strategically for us.

“In the book, I address how thinking about the continent and its role in defense has changed over time.

“With the Japanese in World War II, their primary interest in Australia was denying its use by the Americans. During the War Prime Minister Curtin started focusing on a strategy of holding the islands to our north in the post-War period. The British were on the way out, the Cold War was not evident, and the United States, although deeply engaged during World War II, was expected to go back to its post-World War I turtle strategy.

“Curtin’s focus was on preparing for Australia to play a key role with regional allies in taking responsibility for our part of the world around Australia and New Zealand and the South Pacific.

“There was a clear desire to carve out more capabilities for Australian sovereignty and independence as the post World War II period approached.

“But they like many later government’s did not want to pay for a force that could achieve the large task they had set.

“But it was not until the Menzies Government invested in the F-111, that we saw a commitment to resources to enhance sovereignty in the region.

“In the early 1960s, the Menzies Government invested in range of new strike capabilities. The F-111 is ordered at that point. They ordered the Oberon submarines. They make significant upgrades to the frigates. There is a significant increase in defense spending.”

**Question: I assume that it was the emergence of the Indonesian threat in the 1970s, which was the next impetus to thinking about Australian defense capabilities in support of Australian interests?**

Dr.. Carr: The Indonesian dynamic was a key trigger point, or to be specific Jakarta’s policy of Konfrontasi, including threats to Papua New Guinea.

“This meant that Australia had to defend against a direct threat to the then territory of Australia.

“Most of the history of the Australian military has been three independent services up to 1976. Each was very good at operating with their sister services overseas. That’s how they fought WWI and WWII, and that’s how they saw themselves.

“After 1976, you get this idea of an actual Australian defense force as a single, integrated force. Still keeps its three services, unlike Canada, but sees itself as having one larger mission, which is defending Australian interests.

“The new ADF still often wants to go back overseas, and do coalition operations, but much more as a larger unified national service, rather than being plug and play single service efforts within coalition operations.

“These efforts will lead eventually to the Defense of Australia doctrine. This process starts in the early 1970s but it is not until the mid-1980s, that greater clarity is achieved with regard to how to shape a more integrated force in service of the broader defense of Australia effort.

“But with the end of the Cold War, and the focus on global peacekeeping operations, and expeditionary engagement with coalition operations, the ADF as an integrated force for the sovereign defense of Australia does not really materialize.

“We clearly are focused upon shaping an integrated force which de facto clearly can serve sovereign purposes, but where do we take the force?

“With the kind of direct threats which a China or Indonesia can pose directly against the Australian continent, what should and could Australia do to defend the continent directly?

“This is the big question facing Australian defense in the period ahead.”

**Question: You have worked what you see as key elements of the past Australian approach, which are part of the fabric of Australian defense going forward as the focus on the defense of continental Australia proceeds in the new strategic situation.**

**What are these basic key elements, which you have identified?**

Dr. Carr: The first is that the threat emerges from the North; but our population lives in the East and South. This leads to a key challenge of geography, namely how to work the Australian geography to deal with a threat from the North?

“We are a country that doesn’t quite understand its geography in part because of where the people are clustered, and yet, Northern and Western Australia provide some of the most important geography in a defense sense.

“The second is that Australia is both a continent and an island. This reality goes to the fundamental division between the Army and Navy. A lot of Australian defense thinking actually came from the British, not just because of the kind of the cultural history, but as an island that is offshore from a heavily populated continent.

“The Australian Army thinks of itself in expeditionary terms and by that not operating on Australian soil but in expeditionary operations with allies. How might this change with a return to considerations of leveraging Australian geography to defend the continent from threats to the North?

“The third is that the defense of Australia can not begin with a narrow continental or fortress Australia focus. It doesn’t make sense to simply line up people and give them a rifle and tell them to stand on the beach and protect the continent at that point.

“Geography matters, but you have to have at least some understanding of what’s going on beyond your borders. The great fear has always been a hostile major power having control of an island base, or some significant piece of territory just off the Australian continent that can directly threaten the continent.

“The fourth is that Australia’s greatest security threat depends on how valuable it is to its allies. In WWII, the Japanese weren’t concerned by the Australian behavior. They saw us as too small, too irrelevant, not a significant security threat.

“But, because our continent was very valuable to the Americans, in trying to respond to their sphere of influence efforts, it then became attractive to the Japanese.

“I think this is something the Australians don’t always understand, when they think about alliance relationships.

“It’s not just about Australia and America as separate countries with distinct capabilities, but it’s also about the nature of the Australian continent and its significance within the region.

“I think this will probably play out again in the future.

“The Chinese won’t see Australians as a substantial direct threat, but they will see the Australian continent as substantial base for projecting power by Australia in an allied context.”