

The Arrival of a Maritime-Domain Awareness Strike Capability



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The Impact of the P-8/Triton Dyad

This report written by Robbin Laird and Ed Timperlake provides an update on the arrival of the P-8 and Triton “manned and unmanned” maritime domain awareness strike capability to the fleet and to the joint and coalition force. It is based on interviews conducted at USN Jacksonville in late May 2016.

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THE SOFTWARE-UPGRADEABLE COMBAT AIRCRAFT: THE CASE OF THE P-8

A new aspect of building, modernizing and evolving the combat capabilities of the new generation of combat aircraft is software upgradeability. Software upgradeability provides a key opportunity to evolve the capabilities of an air combat platform without having to change the hardware and correlated software configurations through a complicated upgrade process.

One such aircraft is the F-35. Many of the critics of the F-35 have simply missed the point about the F-35, namely that the evolving blocks of software make it an evolving capability aircraft throughout its lifetime. As Dan Osburn, Deputy Director, 461st Flight Test Squadron (FTS), Integrated Test Force / Director of Projects, put it during a visit earlier this year to Edwards AFB:

“Software blocks are about combat capabilities, or mission sets. They are additive.

It is not about whether we have an effective combat product. For example, Block 2B, the USMC aircraft, is an F-35 with clean wing and delivering three types of weapons.

Over time, and rapidly, now the envelope will be expanded, but this does not mean the Marines do not have the most lethal combat aircraft they have ever had.

Perhaps it would be better to describe our software approach as one of agile development, of taking a stable foundational software system and evolving its capabilities over time as the plane operates, and inputs come back with regard to what are the most desirable next steps.”



FIGURE 1 CNO ADMIRAL RICHARDSON IN COCKPIT OF AN F-35C AT NAVAL AIR STATION PAX RIVER, JANUARY 13, 2016.

As then Deputy Commandant of Aviation who then became MARFORPAC, Lt. General Robling put it in an interview at the Paris Air Show in 2011:

“Question: What is the next great airplane after the F-35 and the Osprey?

Robling’s answer was something like this: “Every few years the F-35B will be more capable and a different aircraft. The F-35B flying in 2030 will be significantly more capable than the initial F-35Bs. The problem is that will look the same at the airshows; but will be completely different inside. So you guys are going to have a tough time to describe the differences. It is no longer about adding new core platforms; it is about enabling our core multi-mission platforms. It is a very different approach.”

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To put it mildly, the critics simply do not get this; but although the F-35 is unique, the approach is not. The first large combat aircraft to be software upgradeable is the Wedgetail air battlespace management aircraft built around a 737 airframe. The Wedgetail version flown by the Australian Air Force has been battle tested in the Middle East and has proven itself to be the most advanced air battlespace management system operating today.

But to get there, required the Aussies to change their procurement mindset. Instead of setting a hierarchy of requirements, which the aircraft had to meet, they froze the software baseline and put it in the hand of the warfighters and then let them evolve the aircraft in dialogue with the software engineers.

When the 2nd Squadron was interviewed at Williamtown Airbase, the squadron operating Wedgetail, the Squadron Commander underscored the challenge of understanding software upgradeability:

“This is a software upgradeable aircraft with a defined launch point (IOC) but no fixed end point (FOC). The system will always be evolving and growing as the software code gets rewritten to reflect events and demands from the squadron.

The squadron works through its experience and shapes change orders, which get sent to the procurement authorities to sort out priorities for the next round of upgrading the aircraft.”

The difference between older and such a new system was outlined by one participant during the visit as follows:

“We have in the same time frame bought a CRC system full up which will look pretty much like it is in 20 years; with Wedgetail it will look nothing like it does now in 20 years.”

This process of upgrading means that the software engineers work closely with the operators in shaping the evolution of the aircraft. This is a very different approach from legacy systems.

As Paul Kalafos, Vice President of Surveillance Systems at Northrop Grumman has put it:

“We are getting significant feedback from the RAAF on deployment and requests to automate tasks where possible to enhanced the capability of the machine part of the man-machine relationship to shape a way ahead.

A lot of the input is through the ARCS working group, which is a collaborative study environment involving Boeing, Northrop Grumman, MIT/Lincoln Labs, Air Force Life Cycle Management Center (AFLCMC), CEA Technologies, Defence Science and Technology Organisation (DSTO), Royal Australian Air Force (RAAF), and the Commonwealth of Australia (CoA). Operational requirements come out of that process and shape the next increment of software development.

The ARCS is focused on problems and their resolutions. These are software updates.

We get a software refresh out about once a year.

Six months are spent doing the study to shape the plausible change; and the next six months are spent doing the integration and then getting it out the door.

We shed the specs in favor of resolving problems, which the operational community identified.

They can even write recommended change requests as well which provides part of the demand side process.”

The P-8/Triton replacement for the P-3 is following a similar process of change.

In our discussion with Captain Corapi, the Wing Commander of Patrol and Reconnaissance Wing 11, we focused on how the evolution of the P-8/Triton dyad was subsuming within it several of the earlier capabilities flown by the US Navy to do ASW but was doing so from the standpoint of creating a whole new digital capability, one which could be seamlessly integrated with the air and maritime forces.

It is not just a Navy asset; it is a joint and combined warfighting capability, both informed by and informing the entire force operating in the extended battlespace.

“This airplane is completely different from the P-3. It is much more automated, so much more. Everything is just set up so much different in the cockpit, just in particular. We’re finding that the aircrews are making that leap with really no issue.

Because there’s so many young aviators now that have never seen a P3 and they’re innovating from the ground up, they’re learning how to fight the airplane in a completely different way.”

The combat learning cycle undergone by the P-8 Wing and by the coming Triton squadrons is convergent with the software upgradeable nature of the new air systems.



FIGURE 2 CNO ADMIRAL RICHARDSON VISITING NAVAL AIR STATION PAX RIVER JANUARY 13, 2016 AND BEING BRIEFED ON THE TRITON.

“All of the squadrons in the Wing are the baseline P-8.

Soon these baseline aircraft will be upgraded to Increment 3. Increment 3 will enhance the networking and communications capability of the aircraft.

But the core point is that even the baseline aircraft is better than and different from the P-3 from the ground up and the crews are learning the skill sets for a P-8, rather than staying within the boundaries of what a P-3 can do and how it operates.”

The acquisition strategy was similar to the Wedgetail in terms of freezing a baseline.

“In 2005 we snapped a chalk line and we said, ‘Technology, as it exists today, is what goes in this airplane.’ We’ll do the spiral upgrades later. It was a brilliant move.”

And in a follow-up interview with Commander Miguel Martinez, CO of Patrol Squadron 16 and Commander Amanda Hawkins, the Executive Officer of the Squadron, the importance of software upgradeability was highlighted as well.

Second Line of Defense

The evolution of software aboard the software upgradeable aircraft was part of the ongoing transition which might be characterized as a “permanent revolution,” if what is being experienced to date is continued into the future.

“We have just completed our second deployment. A lot of the capability on that deployment did not exist during the first. And the main difference was because of software upgrades.”

And as they prepare for their next deployment, more software upgrades are under way. And the CO commented that the “operators are telling me that we will have capabilities through the software upgrades that would have been extremely useful during the last two deployments.”

And software applies as well to the weaponization of the aircraft. For now, the P-8 is flying traditional P-3 weapons; but with its software upgradeable weapons system there is no reason to continue such an approach.

In an interview during the Jax Navy visit with the Deputy Commander, Patrol and Reconnaissance Wing ELEVEN, Captain James Robinson, the point was driven home about the weaponization opportunity for the P-8.

“Because the P-8 operates with the common 1760 Bus which is a common weapons standard for smart weapons, the only limit is your imagination with regard to what weapons might be put on the P-8 in the future.

It is forward compatible with future smart weapons.”

At some point in the future, the P-8 could be in the battlespace armed with hypersonic cruise missiles to go with its capability to see deep into the battlespace. By building key capabilities for prevailing in the extended battlespace, the USN is building towards the future as it deploys in the present.

During a visit to RAF Lossiemouth earlier this year, there was chance to discuss the coming of the P-8 to the RAF. The key RAF officer had met with a Navy Captain who had deployed with the P-8 to the Joint Warrior exercise. During that meeting, the RAF officer highlighted that he was very impressed with the aircraft and very interested in the weapons hard points on the aircraft and their potential for operating in the North Atlantic.

It turns out that the USN Captain involved was none other than Captain Robinson who remembered the exchange well and in his train and equip role was talking with the Brits about future infrastructure for support to the P-8. RAF Lossiemouth is one of the candidate bases for operating UK P-8s as well.

Captain Robinson had worked earlier for Admiral Gortney who in our interview with him had highlighted the threats at the 10 and 2 O’Clock to North America, and when at Joint Warrior, Captain Robinson was operating in the 2’Oclock.

Norway is interested as well in the P-8 which then create a significant interlocking force. For Norway, because the P-8 is not a P-3, they would benefit from seeing much deeper into the maritime space to protect their interests. It is not just about flying to an area of interest and patrolling it. When you take off with the P-8 you link into the data network and are on station when you take off.

As Captain Robinson put it:

“With the P-3 we flew together and shaped a common operating picture largely by voice communication or the archaic link 11.

It was always a challenge.

With the P-8 we can share data electronically over hundreds of miles being able to link with other line of site contributors.

We will be able to have maritime domain awareness over huge square miles of ocean that can be covered by a single P8, even before we discuss what Triton brings to the effort.

You have a single sensor that from the time aircraft depart is operating miles and miles away, having domain awareness and feeding a common operational picture to the commander or a set of commanders.

That's incredible."

And the software will evolve with the evolution of the threat and the coming of additional opportunities to shape a "new" aircraft, which will look the same but not operate the same in the battlespace. That is the point about software upgradeability.

The working relationship between industry and the forces will be crucial as the technology needs to adapt to the evolving concepts of operations but at the same time, reshaping those concepts of operations will drive technological requirements and technologies as well.

Training in a complex joint combat force evolution becomes more not less important. It is about having a new training paradigm, where a mix of experts, and synthetic tools can work with warfighters to evolve warfighting doctrine in a forward leaning manner.

"If legacy training stovepipes are not overcome, we will not succeed. Live virtual technologies are part of the solution to shaping a new paradigm, and will be a key part of the rethink of airpower."

VISITING JACKSONVILLE NAVAL AIR STATION: THE "FAMILY OF SYSTEMS" AND NAVAL AIR TRANSFORMATION

On May 23 and 24, 2016, during a Jacksonville Naval Air Station visit, we spent time with the P-8 and Triton community which is shaping a common culture guiding the transformation of the ASW and ISR side of Naval Air. The acquisition term for the effort is a "family of systems" whereby the P-3 is being "replaced" by the P-8 and the Triton Remotely Piloted Aircraft.

But clearly the combined capability is a replacement of the P-3 in only one sense – executing the anti-submarine warfare function. But the additional ISR and C2 enterprise being put in place to operate the combined P-8 and Triton capability is a much broader capability than the classic P-3. Much like the Osprey transformed the USMC prior to flying the F-35, the P-8/Triton team is doing the same for the US Navy prior to incorporating the F-35 within the carrier air wing.

In addition to the Wing Commander and his Deputy Commander, who were very generous with their time and sharing of important insights, we had the opportunity to interviews with various members of the VP-16 P-8 squadron from CO and XO to Pilots, NFOs and Air Crew members, along with the wing weapons and training officer, the Triton FIT team, and key members of the Integrated Training Center. Those interviews will be published over the next few weeks.

The P-8/Triton capability is part of what we have described as 21st century air combat systems: software upgradeable, fleet deployed, currently with a multinational coalition emerging peer partnership. Already the Indians, the Aussies and the British are or will be flying the P-8s and all are in discussions to build commonality from the stand-up of the P-8 Forward.

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Software upgradeability provides for a lifetime of combat learning to be reflected in the rewriting of the software code and continually modernizing existing combat systems, while adding new capabilities over the operational life of the aircraft. Over time, fleet knowledge will allow the US Navy and its partners to understand how best to maintain and support the aircraft while operating the missions effectively in support of global operations.

Reflecting on the visit there are five key takeaways from our discussions with Navy Jax.

A key point is how the USN is approaching the P-8/Triton combat partnership, which is the integration of manned, and unmanned systems, or what are now commonly called “remotes”. The Navy looked at the USAF experience and intentionally decided to not build a the Triton “remote” operational combat team that is stovepiped away from their P-8 Squadrons.

The team at Navy Jax is building a common Maritime Domain Awareness and Maritime Combat Culture and treats the platforms as partner applications of the evolving combat theory. The partnership is both technology synergistic and also aircrew moving between the Triton and P-8

The P-8 pilot and mission crews, after deploying with the fleet globally can volunteer to do shore duty flying Tritons. The number of personnel to fly initially the Tritons is more than 500 navy personnel so this is hardly an unmanned aircraft. Hence, inside a technological family of systems there is also an interchangeable family of combat crews.

With the P-8 crews operating at different altitudes from the Triton, around 50K, and having operational experience with each platform, they will be able to gain mastery of both a wide scale ocean ISR and focused ASW in direct partnership with the surface navy from Carrier Strike Groups, ARG/MEUs to independent operations for both undersea and sea surface rather than simply mastering a single platform.

This is a visionary foundation for the evolution of the software upgradeable platforms they are flying as well as responding to technological advances to work the proper balance by manned crews and remotes.

The second key point is that the Commanders of both P-8 aviator and the soon to be operational Triton community understand that for transformation to occur the surface fleet has to understand what they can do. This dynamic “cross-deck” actually air to ship exchange can totally reshape surface fleet operations. To accelerate this process, officers from the P-8 community are right now being assigned to surface ships to rework their joint concepts of operations.

Exercises are now in demonstration and operational con-ops to explain and real world demonstrate what the capabilities this new and exciting aspect of Naval Air can bring to the fleet. One example was a recent exercise with an ARG-MEU where the P-8 recently exercised with the amphibious fleet off of the Virginia Capes.

The third key point is that the software upgradeability aspect of the airplane has driven a very strong partnership with industry to be able to have an open-ended approach to modernization. On the aircraft maintenance and supply elements of having successful mission ready aircraft it is an important and focused work in progress both inside the Navy (including Supply Corps) and continuing an important relationship with industry, especially at the Tech Rep Squadron/Wing level.

The fourth point is how important P-8 and Triton software upgradeability is, including concurrent modification to trainer/simulators and rigorous quality assurance for the fidelity of the information in shaping the future of the enterprise. The P-8s is part of a cluster of airplanes which have emerged defining the way ahead for combat airpower which are software upgradeable: the Australian Wedgetail, the global F-35, and the

Advanced Hawkeye, all have the same dynamic modernization potential to which will be involved in all combat challenges of maritime operations.

It is about shaping a combat learning cycle in which software can be upgraded as the user groups shape real time what core needs they see to rapidly deal with the reactive enemy. All military technology is relative to a reactive enemy. It is about the arsenal of democracy shifting from an industrial production line to a clean room and a computer lab as key shapers of competitive advantage.

The fifth point is about weaponization and its impact. We have focused for years on the need for a weapons revolution since the U.S. forces, and as core allies are building common platforms with the growth potential to operate new weapons as they come on line. The P-8 is flying with a weapon load out from the past, but as we move forward, the ability of the P-8 to manage off board weapons or organic weapons will be enabled.

For example, there is no reason a high speed cruise or hypersonic missile on the hard points of the P-8 could not be loaded and able to strike a significant enemy combat asset at great distance and speed. We can look forward to the day when P-8s crews will receive a Navy Cross for sinking a significant enemy surface combatant.

In short, the P-8/Triton is at the cutting edge of naval air transformation within the entire maritime combat enterprise. And the US Navy is not doing this alone, as core allies are part of the transformation from the ground up.

EVOLVING THE MARITIME DOMAIN AWARENESS STRIKE ENTERPRISE: AN INTERVIEW WITH THE COMMANDER OF PATROL AND RECONNAISSANCE WING 11

The U.S. and its core allies are transforming systems, which tend to operate separately but then networked to gain greater synergy to ones which are built from the ground up into a seamless offensive-defensive enterprise.

In [our book](#) on the rebuilding of American military power in the context of shaping a new Pacific strategy, we highlighted the significance of shaping a new template for the synergy between defense and offense.

With the new multi-mission systems – 5th generation aircraft and Aegis for example – the key is presence and integration able to support strike or defense in a single operational presence capability. Now the adversary cannot be certain that you are simply putting down a marker.

This is what former Air Force Secretary Michael Wynne calls the attack and defense enterprise.

The strategic thrust of integrating modern systems is to create a grid that can operate in an area as a seamless whole, able to strike or defend simultaneously. This is enabled by the evolution of C5ISR (Command, Control, Communications, Computers, Combat Systems, Intelligence, Surveillance, and Reconnaissance), and it is why Wynne has underscored for more than a decade that fifth generation aircraft are not merely replacements for existing tactical systems but a whole new approach to integrating defense and offense.....

By shaping a C5ISR system inextricably intertwined with platforms and assets, which can honeycomb an area of operation, an attack and defense enterprise can operate to deter aggressors and adversaries or to conduct successful military operations.

<http://www.sldinfo.com/crafting-an-attack-and-defense-enterprise-for-the-pacific/>

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(For Wynne's application of the approach to the transformation of the USAF, see the following:

<http://www.sldinfo.com/airpower-in-the-next-two-decades-of-the-21st-century-secretary-wynne-looks-ahead/>).

It is clear when you visit P-8/Triton Patrol and Reconnaissance Wing ELEVEN that the Navy is building their new maritime domain awareness capabilities from the ground up as a seamless module in a broader strike and defense enterprise.

When we visited Jax Navy recently, we started our two-day visit with a discussion with Captain Anthony Corapi, the Wing Commander (his bio is found at the end of the article).

He has six squadrons all of which have transitioned to P-8 and are in the process of integrating a Triton Squadron into the Wing. He is merging P-8 with Triton into a new approach to providing strike enabled Maritime Domain Awareness (MDA) or MDA enabled strike, whichever way the flow needs to go.

In our discussion with Captain Corapi, he discovered how the evolution of the P-8/Triton dyad was subsuming within it several of the earlier capabilities flown by the US Navy to do ASW but was doing so from the standpoint of creating a whole new digital capability, one which could be seamlessly integrated with the air and maritime forces.



FIGURE 3 CLARK AIR BASE, PHILIPPINES, APRIL 9, 2015. P-8 PARTICIPATING IN EXERCISE BALIKATAN 2015. CREDIT: USN

It is not just a Navy asset; it is a joint and combined warfighting capability, both informed by and informing the entire force operating in the extended battlespace.

It is also clear that the US Navy by deploying the P-8/Triton prior to the F-35 is coming at the redesign of airpower for the fleet from the perspective generated by the P-8/Triton “internationally” oriented approach as well.

The P-3 community is one of the most internationally oriented of any in the US Navy; it is clear that this tradition is crucial to the P-8/Triton rollout and operation as well.

We started by simply discussing the point that the P-8 really is not a P-3 replacement.

“As I transitioned and learned how to fly the P8, I was still using like a P3.

It's hard to break 3000 plus hours of flying in a P3 and looking at it as something radically different.

I've had to even teach myself that this is not a P3 replacement.

What struck me the most when I got on board the aircraft for the first couple of flights is how it is so integrated into a network. For years the P3 was alone and unafraid.

It was really good at doing it. It had some good sensors at the time, but it's ability to be networked was very, very minimal."

And change is coming rapidly as many of the crews of the P-8 have never operated on a P-3.

"This airplane is completely different. It is much more automated, so much more. Everything is just set up so much different in the cockpit, just in particular.

We're finding that the aircrews are making that leap with really no issue.



FIGURE 4 TRITON IN FLIGHT. CREDIT: NAVAIR

Because there's so many young aviators now that have never seen a P3 and they're innovating from the ground up, they're learning how to fight the airplane in a completely different way."

Much like the discussion of [Lt. General Davis](#) about the F-35 as a plane for the I-Pad generation, Captain Carapi talked about how innovation was operating in the Wing.

"In my opinion, if you want innovation to really happen you got to just let it go.

You can't hold onto it.

If you hold onto it and you try to mandate innovation, you will not innovate.

These young crews, do not know what they don't know.

They are not unlearning P-3 behavior; they are shaping new behavior appropriate to the digital age."

The combat learning cycle undergone by the P-8 Wing and by the coming Triton squadrons is convergent with the software upgradeable nature of the new air systems.

All of the squadrons in the Wing are the baseline P-8.

Soon these baseline aircraft will be upgraded to Increment 3.

Increment 3 will enhance the networking and communications capability of the aircraft.

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But the core point is that even the baseline aircraft is better than and different from the P-3 from the ground up and the crews are learning the skill sets for a P-8, rather than staying within the boundaries of what a P-3 can do and how it operates.

“From the beginning, the newbies are learning P-8. Now you have a generation of aviators that have never been inside of a P-3.

Actually, I try to make them go onboard every once in a while to give them some appreciation and say, ‘This is where you came from. This is your heritage.’”

But they’re learning to take this airplane in directions that wasn’t even really intended to go.

I think you guys understand the acquisition strategy of the P8.

In 2005 we snapped a chalk line and we said, ‘Technology, as it exists today, is what goes in this airplane.’

We’ll do the spiral upgrades later.

It was a brilliant move.”

He provided an example of how they operate differently.

When an operator on the P-8 sees anomalies but is not certain of what they are, the photo can be sent back at the speed of light for input.

“For example, on an ASW mission an acoustic operator looking at his displays as he’s tracking a submarine, and he sees a line and he’s not really sure what it is.

He wasn’t briefed on that frequency. He takes a snap picture of it on his screen,

He sends it back to operators tactical operations center. He says, “Hey, I need you to take a look at this line. I wasn’t briefed on it. I’m not sure if it’s contact or was it something else? What is it?”

Then they’re able to go do some more in-depth research because they’re on the beach, he’s flying. They figure out it’s non-contact. And they go back to the operator and say, “It’s non-contact. Disregard.”

We asked him to provide more detail with regard to the Increment 3 Upgrades.

“We will have access to wideband sat communications which will give us a bigger data pipe and over the horizon reach. We will have the ability to push or communications over the horizon.”

Even though the networking is getting better, they are training to operate in the electronic magnetic warfare maneuver space.

The crews are being trained to execute commanders or mission intent and not have to rely on networks to execute their missions.

In other words, they are training from the ground up to operate in denied communications space.

The dark side of being so networked is you get very used to it. You get very comfortable with the fact that I can talk to anybody, on any network, whenever I want.

You may not be able to.

Not just because it's denied, but also, too, for protection. In electronic maneuver warfare, you want to keep the enemy guessing as to exactly where you are.

We're starting to go back to the future and teach these kids what it's like to take commander's intent and go out and execute with very little guidance.

I'm getting my crews used to the fact where I'll give them commander's intent, I'll give them a pretty good brief, and then I'll turn everything off.

I'll say, "Go. Go and operate.

You have commander's intent."

I want to see them think.

What is also at stake is the ability to operate in a passive sensing environment which can operate as a key force multiplier as well.

<http://www.sldinfo.com/wp-content/uploads/2014/11/21st-Century-Approach-to-Tron-Warfare.pdf>

Clearly, the ability to network with space assets is a force multiplier, but what can be missed is that the P-8/Triton, F-35, Advanced Hawkeye airborne network can provide a powerful alternative in the case of disruption of space networks.

<http://spacenews.com/shaping-redundant-response-us-military-space-capabilities/>

The P-8s as a multinational aircraft also brings significant expanded MDA capabilities to the allied or coalition force.

"If we are truly in a networked environment with the same type model series, built on the same backbone, with these airplanes are all talking to each other, we can have incredible situational awareness.

It's better than it was back in the height of the Cold War where it was sector ASW. Then a submarine would come out over the North Atlantic, from the Kola Peninsula, and it was handed off from one sector to another to monitor.

Now we can integrate the common operational picture over extended range. It is the reach of the COP; Not simply the range of the individual P-3, flying alone and unafraid.

We can have a layered picture across from the North to the Central Atlantic."

The Wing is working with the surface fleet to expand the fleet's knowledge of what P-8/Triton can bring to the surface fleet.

Indeed, a key question is emerging as fifth generation capabilities come to the fleet along with the other key software enabled and networked assets: how does the air power transformation reshape what the surface fleet can do and can contribute to operations in the expanded battlespace?

And this is not just about ORGANIC carrier airpower; it is about airpower both joint and coalition as well.

A key development will be to reshape the shooter-sensor relationship.

Rather than focusing on what weapons are carried on the P-8, the focus can be upon sensing the target and distributing the strike function.

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“We will see this earliest in the ASW community as we task ASW helicopters to lay ordinance on targets. It will take time to get used to doing that with fast jets or surface assets. But we will get there.”

No platform fights alone.

With the P-8/Triton becoming a high value asset, fighter protection will be an important part of the operational experience of the evolving offensive-defensive enterprise as well.

“The P-8 is becoming an organic asset of the strike group. It is part of its combat reach and integrated into their networks as well.”

Because Captain Corapi is in the process of integrating the first Triton Squadron into a P-8 Air Wing, we discussed how he saw the process of integrating P-8 with Triton as well.

He highlighted two key points.

First, the Triton will be operated by crews with P-8 experience and would represent their shore duty. Even though they will be in Jax they will operate the aircraft in the battlespace.

He saw this as important to shaping the career paths of young crewmen and officers who would not like to be stovepiped into an “unmanned career.”

“It’s the Starbucks generation; right. They all like choices. Truly, you have to embrace that mentality. If you look them into one career path, they’ll fight it. They don’t want that. They want to know they have choice. So far, that’s the feedback we’ve been given is, hey, just let us choose.”

Second, with the two systems, the various aspects of electronic warfare deployed earlier via various aircraft can be subsumed and evolved from the two platforms, notably working with the Advanced Hawkeyes and the F-35s.

The first two operational birds will be baseline aircraft, largely radar birds. They will go operational rather than going through IOT&E. After the baseline, the following birds will have ELINT capabilities built in.

And he reminded us that the Triton was a Remotely Piloted Vehicle, not an unmanned one.

When VUP 19 is full up and running, the program of record for VUP 19 is three orbits, and an orbit is 24/7 365 in an orbit; when it’s up and running it will have fifth fleet, sixth fleet, and then the homeland defense East Coast orbit,

That’s three orbits. The command will approach over 500 people. That’s a pretty big manned command. It just means that there’s no one flying it in the actual cockpit. It’s just flown from a box, but it is very much a manned platform.

Captain Anthony Corapi

CAPT Anthony Corapi was born in Brooklyn, New York and graduated from The Citadel in 1992 with a Bachelor of Science degree in Civil Engineering. He received a Master of Science in Operations Management from the University of Arkansas in 2012. He was designated a Naval Flight officer after earning his Wings of Gold in 1993. After initial training in the P-3C “Orion” he reported to his first operational flying tour with the VP-10 “Red Lancers.”

His follow-on operational flying tours include a Fleet Replacement Squadron Instructor tour with the “Pro’s Nest” of VP-30, a Department Head tour with the “Screaming Eagles” of VP-1 and Command of the “War Eagles” of VP-16 and Command of Patrol and Reconnaissance Wing ELEVEN.

He also served aboard the USS CARL VINSON, CVN-70, as the Assistant Navigator.

His staff tours include J-3 Operations Directorate, Joint Chiefs of Staff; PERS-43 VP/VQ Assignments and CAPT Detailer, Navy Personnel Command; U.S. Navy Military Assistant to the DoD Executive Secretary, Office of the Secretary of Defense.

CAPT Corapi has been awarded the Defense Superior Service Medal, Defense Meritorious Service Medal, Meritorious Service Medal (2 awards) and numerous campaign and unit awards.

THE P-8 IN ADVANCE OF THE WEAPONS REVOLUTION

We have argued that the 21st century warfighting enterprise is in need of a weapons revolution. As the former Chief Scientist of the USAF, Dr. Mark Lewis put it: “Why are we putting 3rd and 4th generation weapons on 5th generation aircraft?”

<http://www.sldinfo.com/building-21st-century-weapons-for-21st-century-operations-key-attributes-of-the-new-weapons-enterprise/>

We have argued as well that the coming of a hypersonic cruise missile to the force will be a key game changer but that we saw that fitting into what we have called the S Cubed Revolution, namely Sensors, Speed and Stealth.

<http://www.sldinfo.com/shaping-an-s-cubed-combat-revolution-preparing-for-the-coming-hypersonic-cruise-missile-threat/>

When we visited Jax Navy, we discovered that the P-8 is a key plank holder in the S Cubed Revolution and a key candidate for new weapons, and is more than prepared to leverage a weapons revolution.

During the two days we spent at Jax Navy, virtually every member of the team mentioned that the P-8 was flying legacy weapons but was ready to do much more with new weapons.

This point was especially driven home by the Deputy Commander, Patrol and Reconnaissance Wing ELEVEN, Captain James Robinson (see bio below).

“Because the P-8 operates with the common 1760 Bus which is a common weapons standard for smart weapons, the only limit is your imagination with regard to what weapons might be put on the P-8 in the future.

It is forward compatible with future smart weapons.”

At some point in the future, the P-8 could be in the battlespace armed with hypersonic cruise missiles to go with its capability to see deep into the battlespace. By building key capabilities for prevailing in the extended battlespace, the USN is building towards the future as it deploys in the present.

During a visit to RAF Lossiemouth earlier this year, there was chance to discuss the coming of the P-8 to the RAF. The key RAF officer had met with a Navy Captain who had deployed with the P-8 to the Joint Warrior exercise. During that meeting, the RAF officer highlighted that he was very impressed with the aircraft and very interested in the weapons hard points on the aircraft and their potential for operating in the North Atlantic.

Second Line of Defense

The Arrival of a Maritime-Domain Awareness Strike Capability

It turns out that the USN Captain involved was none other than Captain Robinson who remembered the exchange well and in his train and equip role was talking with the Brits about future infrastructure for support to the P-8. RAF Lossiemouth is one of the candidate bases for operating UK P-8s as well.

Captain Robinson had worked earlier for Admiral Gortney who in our interview with him had highlighted the threats at the 10 and 2 O'Clock to North America, and when at Joint Warrior, Captain Robinson was operating in the 2'Oclock.

Norway is interested as well in the P-8 which then create a significant interlocking force. For Norway, because the P-8 is not a P-3, they would benefit from seeing much deeper into the maritime space to protect their interests. It is not just about flying to an area of interest and patrolling it. When you take off with the P-8 you link into the data network and are on station when you take off.



FIGURE 5 P-8 AT JOINT WARRIOR EXERCISE 2016 AND SEEN AT RAF LOSSIEMOUTH. CREDIT: RAF

As Captain Robinson put it:

“With the P-3 we flew together and shaped a common operating picture largely by voice communication or the archaic link 11.

It was always a challenge.

With the P-8 we can share data electronically over hundreds of miles being able to link with other line of site contributors.

We will be able to have maritime domain awareness over huge square miles of ocean that can be covered by a single P8, even before we discuss what Triton brings to the effort.

You have a single sensor that from the time aircraft depart is operating miles and miles away, having domain awareness and feeding a common operational picture to the commander or a set of commanders.

That’s incredible.”

The P-3 experience is important in terms of working collaboratively and that aspect of the P-3 is being carried forward with the P-8/Triton dyad.

“I had extensive experience with the P-3s and worked closely throughout with foreign military’s Air Forces or Navy’s.

This collaborative foundation will be carried forward with the P-8/Triton community.”

We discussed the advantages and challenges of software upgradeability but this is now a baseline going forward for operating 21st century air combat systems.

“The clear advantage is that you can input operational experience into the software development cycle.

We are in a continuous development cycle.”

The challenge is “configuration control and getting everyone on the same page operationally.”

We discussed as well how the P-8/Triton community was interfacing with the surface fleet from the round up.

“We are sending Liaison Officers to the fleet to share knowledge about our capabilities and to learn from the surface fleet about their evolving needs and capabilities as well.

We are building this from the ground up.”

He highlighted the key role, which exercises are playing as well in shaping the way ahead.

He mentioned a recent exercise off of the Virginia Capes working with the Amphibious Fleet to shape a more effective operational capabilities as well.

It is notable as well that the P-8s although a recent addition to the fleet has flown a round the world trip (the Great White Fleet 21st century style) and has engaged in several multinational exercises or visits already, such as with Australia, Canada, Malaysia, Japan, Red Flag, etc.

Robinson noted that “although the “P-8s core competence is ASW; but it has been bought and developed as a multi-mission aircraft as well.”

We would add multinational as well.

CAPT Robinson Biography

CAPT Robinson is a native of Modesto, California and enlisted in the United States Navy in September 1983. Following completion of the Nuclear Power program he served onboard the FLORIDA (SSBN 728 Gold) and Submarine NR-1, while earning Bachelor of Science degrees in Sociology and Nuclear Technologies. In September 1991, CAPT Robinson was initiated as a Chief Petty Officer (EMC SS/DV) and accepted to Aviation Officer Candidate School; he was commissioned in March 1992 and designated a Naval Flight Officer in April 1993.

CAPT Robinson’s aviation assignments include: VP-40 where he completed two Misawa, Japan deployments and one Diego Garcia deployment. VP-30 where he served as an NFO instructor, IUT Instructor, Lead NFO Fleet NATOPS evaluator and Weapons Tactics Unit subject matter expert for the Stand-off Attack Missile (SLAM), participating in SLAM strikes during air campaign in Kosovo and designated as a P-3C Weapons Tactics Instructor (WTI).

VP-40 as the first Maritime Patrol Aviation “Super JO” where he served as the Tactics Department Head and deployed to Diego Garcia and Misawa, Japan flying over 400 hours overland Afghanistan in the opening months of Operation Enduring Freedom.

Second Line of Defense

The Arrival of a Maritime-Domain Awareness Strike Capability

VP-46 where he served as Command Service Officer, Tactics Officer, Training Officer and Operations Officer and deployed to Misawa, Japan.

VP-10 as Executive Officer and the squadron's 73rd Commanding Officer where the RED LANCERS completed a tri-site deployment to CENTCOM, AFRICOM and PACOM and awarded the 2009 COMNAVAIRLANT Battle E, Golden Wrench for maintenance excellence and the CFFC Retention Excellence Award.

CAPT Robinson's shore assignments include: The Joint Staff, J-6 directorate where he served as an Action Officer within the Spectrum Division. NAVCENT HQ where he served as the Deputy Commander of Task Force FIVE SEVEN in support of combat operations for Operations Iraqi Freedom, Enduring Freedom and New Dawn. USCENTCOM HQ, J-5 directorate where he served as the Arabian Peninsula Branch Chief and Strategic Planner.

CAPT Robinson's education includes Master degrees from the Naval War College and Air War College as well as JPME I and II.

CAPT Robinson transitioned to the P-8 and assumed the duties as Deputy Commander, Patrol and Reconnaissance Wing ELEVEN in July 2015.

His personal declarations include: Bronze Star, Defense Meritorious Service (2), Meritorious Service (2), Air Medal (2nd strike), Navy Commendation (4), Navy Achievement (6) and the Good Conduct Medal.

THE MOST EXPERIENCED P-8 SQUADRON AND SHAPING THE WAY AHEAD

During our visit to Jax Navy, we had a chance to meet with and discuss the P-8/Triton with Commander Miguel Martinez, CO of Patrol Squadron 16 and Commander Amanda Hawkins, the Executive Officer of the Squadron.

The Command has just undergone a Change of Command on May 19th.

According to an article published by the [VP-16 PAO](#):

Cmdr. Mike Martinez relieved Cmdr. Dan Boman as the 62nd commanding officer of Patrol Squadron (VP) 16 during a May 19 ceremony in Hangar 117 at Naval Air Station Jacksonville.

VP-16 is the Navy's first operational Maritime Patrol and Reconnaissance Force (MPRF) squadron to deploy with the P-8A Poseidon – a modified Boeing 737 aircraft designed to supersede the war-fighting capabilities of its predecessor for 50 years, the P-3C Orion.

Poseidon's primary missions include anti-submarine warfare, anti-surface warfare, and intelligence, surveillance and reconnaissance.

Martinez assumed executive officer duties at VP-16 in May 2015, during the Inter-Deployment Readiness Cycle that followed the squadron's inaugural P-8A deployment to 7th Fleet. He commended the 'War Eagles' former commanding officer.

"I want to pass along my congratulations to Skipper Boman and his family for an amazingly successful command tour. It was my honor to serve under his command and the leadership that he provided to every Sailor in VP-16. That resulted in our outstanding recent deployment to 7th Fleet and set the stage for the squadron's future success."

During Boman's command of VP-16, the squadron completed its second deployment in the P-8A to Kadena Air Base in Okinawa, Japan in support of 7th Fleet operations. Over the deployment, 3,700 flight hours were safely executed without a single class "A" mishap.

Martinez graduated from Texas A&M University in 1998 with a bachelor's degree, and received his Naval Flight Officer (NFO) "Wings of Gold" in July of 1999. He reported to the "Skinny Dragons" of VP-4 in Kaneohe Bay, Hawaii, in May of 2000 for his first operational tour. He completed deployments to 7th Fleet and 5th Fleet immediately after 9/11 in support of Operation Enduring Freedom.

He reported to VP-30 in May 2003 for duty as a Fleet Replacement Squadron NFO Instructor. Additionally, he served on board the USS Theodore Roosevelt as a catapult and arresting gear officer. He also studied at the Naval War College in Newport, Rhode Island.

Martinez assumes command of VP-16 following the end of a seven month deployment to Kadena Air Base in Okinawa, Japan. As the new commanding officer, Martinez takes responsibility for nearly \$1 billion of naval aircraft and personnel. He will lead more than 250 Sailors during the next tour.

Martinez is joined by the squadron's new executive officer, Cmdr. Amanda Hawkins. Boman's next assignment will be in Washington D.C., as a staff member for the Office of Chief of Naval Operations.

In the perspective of the CO, VP-16 has completed its transition from a P-3 to the P-8A era.

The squadron has successfully completed its first two deployments at sea.

"VP-16 is at the tail end of its transition. It takes a while to transition philosophically in the squadron.

Now that we're on the tail end of our second deployment, we've really completed our transition because the operators that you're seeing in the squadron, especially the junior officers and some of our junior enlisted operators, only know the P-8A.

We are taking the ASW skill sets and melding them with the new technology and new sensors onboard the P-8A."

He emphasized as well that the evolution of software aboard the software upgradeable aircraft was part of the ongoing transition which might be characterized as a "permanent revolution," if what is being experienced to date is continued into the future.

"We have just completed our second deployment.

A lot of the capability on that deployment did not exist during the first.

And the main difference was because of software upgrades."

And as they prepare for their next deployment, more software upgrades are under way.

And the CO commented that the "operators are telling me that we will have capabilities through the software upgrades that would have been extremely useful during the last two deployments."

To date, the working relationship between the squadron and industry is working well in updating the aircraft through the software development process.

"I would tell you part of the reason that exists is because everyone's invested in the success of P-8A.

Second Line of Defense

Boeing and a lot of the companies that are involved in software upgrades, they want us to succeed.”

The CO expressed his concern that the success to date needed to be maintained throughout the course of the program to get the full value of what a software upgradeable aircraft could yield to the force.

“We have fleet support techs and fleet support reps that support us on deployment and here at home.

And it’s a direct tie-in back to the software developer as he’s pumping out new software updates and they’re getting ready software for our allied partners: UK and Australia.

It’s a very direct inject.”

He provided an example of how the process worked on deployment.

“We were on deployment at Kadena.

We were having difficulty with our media, and the P-8 is very media dependent; if the media is not working properly, the plane is not going to work properly.



FIGURE 6 VP-16 HOME FROM DEPLOYMENT, 2016. CREDIT: US NAVY

The software representative told us that he would look at the software logs. When we burn new media, it writes logs into the computer system. He suggested that he would send the logs back to the lab and they would modify the code and fix the problem.

And they did do so rapidly. We certainly did not have that on the P-3, but we have that now.

I hope that experience continues indefinitely into the future.”

The plane is different; the sensors and software is different; but so is the work style.

When you work onto the plane, it is obvious that the operators are working on a track system with several screens adjacent to one another.

During our hands on visit to the plane, we talked to the crew and began to understand that there was an interactive team approach to managing the aircraft during operations, whereby the mission commander was more like a quarterback than a hierarchical decision maker.

The CO discussed that approach and its challenges.

“There is a certain empowerment which goes to the crew.

The mission commander has to know what is going on and off the aircraft affecting the mission.

He is doing so by empowering his crew whereby, for example, an acoustic operator will be talking to folks on the ground to determine how to deal with the acoustic reads which he getting.”

We noted that the Wedgetail which has a similar workflow to the P-8A also had experienced a similar decision making dynamic. The 2nd Squadron commander in Australia noted that the mission leader on the plane had to lead not command.

The CO noted that “that is exactly it.

With the P-8 we have the opportunity to reach back for additional brainpower, for additional analysis of what we are seeing on station.

And you are collecting information from the moment you take off until the moment you land.”

We noted that when we visited the plane, the crew was very young, and very technologically competent.

The CO agreed. “When I took my family who were here for the change of command and we went onto the aircraft, they also noted that the 25-27 year old mission commanders are operating a combat aircrew in an area like the South China Sea, and making decisions and doing things that could potentially affect our national strategy.

We want them to have that knowledge, that ability to make mission command decisions on their own.”

This younger generation was very “net and information management” savvy. And the CO highlighted that their capability to navigate among information sources was very impressive but also intuitive for them.

“It is hard to overload the current generation with information.

They are just used to it.

For example, when we go on station they are looking for various ways to get into the network.

They are thinking two or three steps down the road concerning different sources and different links, which can be tapped into including coalition assets as well. There’s so many different ways to enter a network of information.

They are very savvy with regard to that task.

We discussed as well the cross learning which is starting from the P-8A to the surface fleet.

“The surface fleet is beginning to experience being on deployment with a P-8A and getting massive amounts of information from the plane in a way we never did in the past.

There is a cross-learning piece which will accelerate in the period ahead.”

Second Line of Defense

We discussed other cross-learning pieces as well.

The CO emphasized that as the software evolved in the P-8A/Triton world the mix of operators onboard the P-8A will evolve as well.

And as the cross-learning with Growlers and other combat assets such as the F-35 evolved as well the skill sets would evolve onboard the P-8A.

“We are the new kid on the block and advanced Hawkeye and Growler are already out there.

We are just now tapping into our EW capability and we will clearly cross-learn and cross-link with other capabilities in the fleet.

And I think if you took a look at how the P-8A operates now versus even five years from now it’s going to be significantly different.

The crew makeup is going to be a little bit different. I think you’re going to see a different mix of operators on the aircraft, perhaps more EW operators.”

The CO discussed as well the evolution of the maintenance team for the aircraft.

Obviously, with a new aircraft determining the actual maintenance requirements takes time and with it the need to adjust procedures and personnel.

In part, this is due simply to the fact that although the 737 is a commercial aircraft, as a military version of the aircraft, much of the commercial experience simply does not apply.

Another example is corrosion control.

Clearly, the way the P-8 operates will significantly enhance the corrosion challenge. The Navy is focused on ways to attenuate the corrosion challenge but this means paying significant attention from the outset to management of the airframe.

“I think that corrosion control will be a very important factor. It’s not negative. It’s simply something that we need to keep our eye on over the long term.”

The Executive Officer is new to the program but has significant relevant fleet experience, which will inform the evolution of the squadron as well.

She focused on the “family of systems” approach and how important that would be for the squadron and its evolution.

“By 2025 we will not have EP-3 and a VPU and P-3 squadrons; we are going to morph into P-8/Triton.

We need to understand what the EP-3 does as we move forward.

We are starting the cross-colonization now so that the family already has a healthy foundation when the EP-3 roles are subsumed as well.

(The EP-3 is the signals intelligence version of the P-3).

I view the Triton and the work that the weapons school is doing to integrate our family of systems as laying the foundation for the kill web.”

The CO discussed as well two of the allies flying the P-8A.

He noted with regard to the Australians that they had a tradition of keeping their P-3 crews intact for the long term.

When I was the instructor at VP30, I worked with the allied partners and their officers and enlisted operators are embedded in the squadron, and they bring a very unique and positive side in how to operate as a crew which works together regularly on station.

They man to keep their crews together; our manning is different in that we mix and match crews members over time and will do so even more as we rotate personnel among P-8A and Triton assignments.”

The CO has operated with the Indian P-8I community as well during the Malabar 2015 exercise.

The P-8I is different from the P-8A with a different sensor suite, one which provides more emphasis on coastal defense as well.

“We operated from their P-8I base at INS Rajali.

We found them to be very professional and we operated together from that base.

They are building the infrastructure there to support their P-8Is.

They see P-8I as critical to how they’re going to operate in the future.

They had a lot of questions about how we operated.

We had questions about how they operated.

And at the time they were the only other country operating P-8.”

In short, VP-16 has deployments under its belt and is getting ready for the transition with Triton and operating worldwide with other P-8 allies, the Indians, the Australians and the UK.

A solid foundation has been laid but the way forward is challenging and will see both the plane and the crews evolve their capabilities and skill sets.

TRITON JOINS POSEIDON IN FORGING A 21ST CENTURY MARITIME COMBAT CAPABILITY: OPERATING A DYAD, RATHER THAN A SINGLE PLATFORM

The USN is approaching the P-8/Triton combat partnership as a way to address the integration of manned, and unmanned systems, or what are now commonly called “remotes.”

The Navy looked at the USAF experience and intentionally decided to not build a Triton “remote” operational combat team that would be stovepiped away from their P-8 Squadrons.

The team at Navy Jax is building a common Maritime Domain Awareness and Maritime Combat Culture and treats the platforms as partner applications of the evolving combat theory.

The partnership is both technology synergistic and also aircrew moving between the Triton and P-8.

The Arrival of a Maritime-Domain Awareness Strike Capability

The P-8 pilot and mission crews, after deploying with the fleet globally can volunteer to do shore duty-flying Tritons. The number of personnel to fly initially the Tritons is more than 500 navy personnel so this is hardly an unmanned aircraft.

Hence, inside a technological family of systems there is also an interchangeable family of combat crews.

With the P-8 crews operating at different altitudes from the Triton, around 50K, and having operational experience with each platform, they will be able to gain mastery of both a wide scale ocean ISR and focused ASW in direct partnership with the surface navy from Carrier Strike Groups, ARG/MEUs to independent operations for both undersea and sea surface rather than simply mastering a single platform.

This is a visionary foundation for the evolution of the software upgradeable platforms they are flying as well as responding to technological advances to work the proper balance by manned crews and remotes.



FIGURE 7 TRITON AT PAX RIVER. CREDIT PHOTO: TODD MILLER

We were able to discuss this approach with Commander Opp, who led the P-8 transition and is now doing so for Triton and Rich Helmerle, a retired Navy Captain, who now works for SAIC and has worked with the “family of systems” acquisition from the beginning and is now tasked in leading the effort to shape the 2025 concepts of operations for the dual deployed capability which P-8 and Triton represent.

CDR Joseph Opp is the VP-30 Triton FRS who had a similar assignment with P-8 prior to coming to Triton. Given his engagement in the P-8 transition naturally he is focused on the integration of the overall “manned and unmanned” ISR/C2 effort.

The perspective conveyed by Opp and Helmerle was that a foundation of common domain knowledge was being shaped for Maritime Domain Awareness and that body of knowledge was being shaped and applied to the two platforms, rather than thinking in terms of two new platforms which needed to be integrated in some future combat space.

Indeed, the combined capability of providing continuous coverage from a “manned” and “unmanned” asset provides a significant capability able to work with the satellite network or to shape alternatives.

For the ground up, crews are training to work in satellite degraded environments as well as one which is satellite enabled. And with the Poseidon in the air, decision makers are deployed as well.

Decisions can be pushed to the leadership on the plane notably in a rapid action or degraded communications environment. It is not just about ISR or Maritime Domain Awareness; it is about putting information to the right persons at the right time.

According to the Triton team, the USN looked at the USAF experience with Predator and did not want to repeat it with Triton.

“We recognized that it would be better to have a broader range of experience to our Triton operators than simply operated a remote.

By being part of the combined Poseidon-Triton enterprise, they could operate seamlessly with the capabilities of each asset.”

Another key advantage is shaping domain knowledge of the key geographical areas where the dyad will operate.

“The Poseidon operates from 15-30,000 feet normally; the Triton will operate at 50,000 feet and take a broader view.”

The world looks differently at each altitude but by rotating crews, a unique perspective is gained by operating at the different altitudes and with different operational approaches to gain knowledge dominance.”



FIGURE 8 P-8 FLIES OVER THE GUIDED-MISSILE DESTROYER USS MOMSEN IN THE SOUTH CHINA SEA JUNE 29, 2016. CREDIT: USN

This is an approach for a new generation, which “wants choice in their careers, rather than being locked in to a single platform.”

Second Line of Defense

This is about crew resource management as well. It is about shaping, developing and deploying the right skill to the task.

But the capabilities of the dyad are so good in terms of richness and fidelity of information there is already a tug of war between the intelligence community and the operators.

In an era of distributed lethality or distributed operations in the extended battlespace, the decision makers in the fleet, need the information to inform time-constrained decisions.

The fleet commanders need to make timely decisions; the intelligence community wishes to collect information, first, and inform decision makers later. This structural division will simply not work in the era of distributed decision-making and distributed lethality.

The information-decision cycle has to change to adapt to the technology.

“We need an effective cross-domain solution.

The huge divide between intelligence and operations has to be closed.”

Their experience is suggestive that there is a broader need for a very robust discussion on real time actionable intelligence information.

US National Command Authority enforcement of Rules of Engagement (ROE) has had a “good and other” progression over time. The “good” is thoughtful ROEs can save lives from fratricide and friendly fire while still allowing direct and indirect fires to destroy the enemy.

The “other” is what we have quipped is the new OODA loop, an OO-L-DA loop in which L stands lag time in combat tempo for Legal review. But after Navy Jax we came away with concern for what yet again is a roles and mission discussion on the flow of strategic and tactical “Intelligence ROE”

If not addressed and debated early, a template of actionable intelligence information going directly into IC NRO/NSA/NGO and upper echelon commands to be analyzed and disseminated may inhibit combat effectiveness and the decisiveness need to prevail in the contested and extended battlespace.

Time sensitive intel is critical at lower level direct action combat commanders from the Squadron pilots, CAG and Strike Group Commanders. The ROE in the traditional IC formula of “up and out” may not be in harmony with ever evolving speed of light sensor shooter technological advances.

A very specific example highlights this challenge.

Captain Bill Buckey, a Marine F/A-18 fighter pilot flying combat in the Desert Storm Air Campaign described the issue of IC ROE. He was with VMFA-451 flying strike missions out of Shaikh Isa Airbase in Bahrain. Through the bad luck of timing, the Marines just prior to Desert Shield/Desert Storm had decommissioned VMFP-3, their RF-4 Photo Recce Squadron.

However, the Reno Air Guard F-4 photo recce squadron was stationed on the same base. The ANG mission flying with the great combat quote “unarmed and unafraid,” captured mission pictures that had both tactical and strategic significance. They were not given directly to the Marines but went up the chain-of-command to Riyadh—never to return. Fortunately in great ANG tradition the Squadron CO said “screw this” and handed their ever current pictures directly to the Marine Fighter Squadrons of Marine Aircraft Group-11. This combat reality, thankfully at the same base, was tactically significant in both aircrew survivability and Battle Damage Awareness.

But this is not how you want things to work.

We need a shift in how intelligence goes directly to the warfighter and they make decisions in a timely manner.

The CNO has recently decided to accelerate the Triton capabilities from the baseline radar enabled Triton to the multi-SIGINT version. So IC/Combat operators ROE needs attention.

“The first two Tritons will be the baseline birds (with radar for surface coverage) and the rest will roll out as SIGINT enabled birds the sorting out of appropriate Intel sharing is now evident.

Additionally, the Triton like the Poseidon is software enabled which means that it will undergo ongoing block upgrades, which will evolve its capability to the evolving threats as well.

With Northrop Grumman as the key designer and software enabler of the Triton, Northrop’s key role in the F-35 combat systems will be synergistic with the P-8/Triton dyad as well.

“The radar on the Triton is the grandson of the F-35 radar and benefits from the common radar enterprise.”

As a software enabled bird, and one operated from shore, “anything software touched enters the training system rapidly. We have to update the instructors but for the students they are just using the software and not focused on which block they are using.”

It is clearly a different age; with the technology designed for the younger generation to enable the fleet to fight in the 21st century extended battlespace.

Editor’s Note: Our colleague Todd Miller earlier this year visited the Triton Program at Pax River earlier this year and got an update on the program.

<http://www.sldinfo.com/us-navy-mq-4c-triton-makes-persistent-progress-towards-deployment/>

Born out of the Broad Area Maritime Surveillance (BAMS) program, the MQ-4C Triton is a derivative of the RQ-4 Global Hawk featuring significant modifications to the airframe, systems and sensors. It is an extremely capable platform, so capable that many debates have arisen about the possibilities of the Global Hawk replacing the venerable U-2 altogether.

Given the MQ-4C is more capable than the Global Hawk in a number of areas – flight parameters, sensors, and communication, it surely provides exceptional capability.

The US Navy’s duo of P-8A Poseidon & MQ-4C Triton are replacing the P-3C Orion’s and are integral to the Navy’s Maritime Patrol and Reconnaissance Force (MPRF) and broader Intelligence, Surveillance and Reconnaissance (ISR) strategy.

The Triton will provide a superior picture of what is happening above the surface, enabling the Poseidon to focus on what is below the surface.

While the Triton itself may be referenced as an unmanned aerial vehicle (UAV), the program is more accurately referenced as an unmanned aerial system (UAS), a combination of UAV, Flight control and payload operators stationed at a MOB.

The Triton will support a broad mission set including maritime ISR patrol, signals intelligence, search and rescue and communications relay.

Second Line of Defense

The Arrival of a Maritime-Domain Awareness Strike Capability

The US Navy currently intends to buy 68 aircraft to ensure adequate global coverage capability. And with the Triton as part of the “family of systems” ISR/C2 co-deployed capability with the P-8, the focus is the shaping of a common team and analytical capability to support the deployed warfighter.

Given the UAS altitude, endurance and sensors, Program Manager Burke sums up the capability as “persistent, real time coverage across the designated maritime environment. All assets (MOB, Carriers, P8A Poseidon’s, National Intelligence Center etc.) tied into the feed can see what is in that space, and where it is going in real time.”

Miller explained in his article how the US Navy was looking to the deployment of Triton beginning in 2018.

The US Navy has carefully considered the deployment of the UAS. Throughout the services the use of UAVs has often resulted in air vehicle operators (AVO) or pilots in one location, with payload operators and Intel personnel in another location.

Very focused on the tactical utility of the system with direct feed to Carriers, Expeditionary Strike Groups, P8A, the Watch Centers etc. the US Navy determined to pull all personnel into a single control station, where they would function as if they were on an aircraft themselves.

Within that context Program Manager Burke identified the 3 components of the UAS.

Aircraft with sensors (UAV)

Main Operating Base (MOB)

Forward Operating Base (FOB).

MQ-4C Triton Squadrons are based around 5 circles of global orbit and will be based at NAS Jacksonville and NAS Whidbey Island with the following structure:

MOB	FOB	Operational Orbit	Main Control Stations (MCS)	Potential Airborne UAVs (at any one time)
NAS Jacksonville	NA	US East Coast (2 nd & 3 rd Fleets)	2	3+ Support/Training
NAS Jacksonville	Gulf Region	US 5 th Fleet (Gulf)	2	3+ Support/Training
NAS Jacksonville	NAS Sigonella	US 6 th Fleet (Mediterranean)	2	3+ Support/Training
NAS Whidbey Island	NA	US West Coast (3 rd Fleet)	2	3+ Support/Training
NAS Whidbey Island	Guam	US 7 th Fleet (South Pacific)	2	3+ Support/Training

Each MOB contains 2 Main Control Stations (MCS) that function independently and simultaneously. The MCS is configured as if the crew were on an aircraft, with Tactical/Mission coordinators, AVOs (3 stations so inbound, outbound and on station UAVs can be operated) and payload operators clustered together.

CRAFTING TACTICS FOR THE EXTENDED BATTLESPACE: SHAPING A KILL WEB

During our visit to Jacksonville Naval Air Station, we had a chance to talk with Lt. Alan Tucker, the VP-16 Squadron Maritime Tactics Instructor (SMTI).

He has surface fleet experience and came to the P-8 four years ago and started as a weapons school instructor in VP-30. VP-30 is the squadron where initial training for P-8 crews occurs.

Lt. Tucker explained that the shift from the P-3 to P-8 was not just about a new aircraft, but training to operate very differently and to engage with the fleet and the joint force very differently as well.

He started by explaining that the P-3 in its later years required significant maintenance and crews had to focus significant time to bet ready to fly and then to operate the aircraft, which reduced the training and time to do the mission.

“Most of our training and our focus in the squadron was safety.

Tactics and execution was done with whatever bandwidth you had left, because you were always fighting problems and always training for degraded mission status because every airplane was degraded in some form or the other.”

With the P-8, the new aircraft highlights the opportunity to refocus on tactics and training and doing so as the US Navy and the joint and coalition force is focused on shaping effective tactics to prevail in the emerging “Kill Webs” in a global extended battlespace.

“What we were able to do is refocus our emphasis.

Instead of training on safety and NATOPS being the center focus of attention, we’re now able to focus on the tactics.”

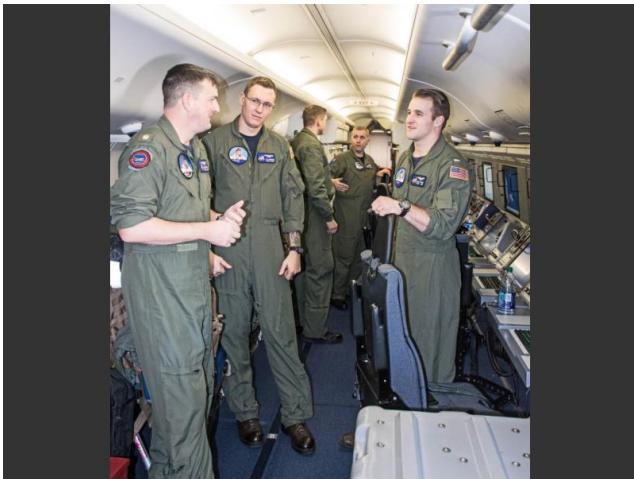


FIGURE 9 P-8 AT RED FLAG. CREDIT: US NAVY

The shift in tactics facilitated by the technology aboard the plane and the connectivity of the aircraft allows the P-8 to operate as an inorganic asset for the Carrier Strike Group that can be seamlessly integrated organically into its operations as needed.

“We’re an inorganic asset to the CSG that can quickly meld right into what they’re doing. We can provide significantly enhanced situational awareness for the fleet as they operate.”

And even though the current generation of weapons is more limited than desirable, the P-8 is capable of integrating new weapons of much greater reach and range to support the fleet as well.

And with the off-boarding capability of the aircraft to provide sensor data to deployed shooters, the P-8 can significantly contribute to the strike capability of a deployed force.

Second Line of Defense

Already, the P-8 is working with the USAF and is working ways to expand sharing of data and shaping an extended range common operating picture.

This clearly was not what the P-3 was designed to do; for it was operating “alone and unafraid” and doing its ASW mission within a particular sector.

With the P-8, the tactical envelope expands and it trains to operate as an organic asset, a connected asset, or a force multiplier for a distributed force, especially in synergistic partnership with the soon to be introduced Triton.

“We can cross-queue our airplane with another platform to triangulate, and/or send that information back to the intel shop, where you have folks sitting on the ground at zero knots.

They’ll get us an answer back for our immediate use on station.”

And the P-8 and its crew is working from the ground up with regard to a 21st century approach to prevail in the electronic or iron warfare maneuver space as well.

“We’re a key player in the kill web.

What do you need from us today?

What’s the task?

What do you want executed?

We can provide a wide variety of capabilities.”

The crew of the P-8 is shaping a new work culture with their combat crews to support the evolving tactics in support of flexible missions.

Rather than operating in separate cells on the aircraft, the crew seamlessly interacts from their screens and communications suites with each other with reach back to onshore or afloat assets.

“With the rail setup (the combat crew is lined up at a linear rails with interchangeable screens) we can access each other’s systems. We can load-share more effectively.

We are doing 21st century team building.

You have so much data coming onto the airplane that you have to now manage everything that’s coming in.

It requires all your operators to work together, filter out key pieces that you need to do your primary duty, and then with whatever bandwidth you have left, you can assist another operator to work the information.”

A key work shift is learning to manage the transition as well of information from one P-8 to another as the planes take off and land.

Because one is sortieing information not just airplanes, a key task is to manage the data transfer and mission management function as well.

As Lt. Tucker described it, each deployment was providing enhanced experience for shaping more effective tactics.

The first deployment simply required familiarization but with the second the squadron was pushing the boundaries of the aircraft and shaping new tactics.

“It is about continued combat learning and learning how to use the aircraft in a different way.

It is about opening up the envelope and shaping the combat capability of the aircraft, and shaping more effective tactics going forward.”

You learn as you deploy; you rewrite software code to build on those experiences.

It is about combat learning and shaping new ways to operate and prevail in combat with the maritime, joint and combined force.

And with projected weapons upgrades, the P-8 will become not only a state-of-the-art sub killer but a very sensor empowered standoff air/land strike platform.

With allies flying the P-8 as well there is the opportunity to expand situational awareness within the battlespace as well.

“We already integrate with Growler and the E2.

And with allies such as the RAF, the Australians and the Indians, we can shape a broader situational awareness picture as well.”

Lt. Tucker flew on the around the world flight of the squadron as well, the P-8 equivalent of the Great White Fleet, but done in the digital age.

Their P-8A Poseidon logged a total of 22,000 miles.

And while in Australia flew the Wedgetail simulator to learn how the Aussies were refueling their military 737, the Wedgetail.

According to an article by Lt. Christian Suszan, MPRWS EP-3E Weapons and Tactics Instructor published on August 12, 2015:

On July 6, aircraft 762 launched from Cecil Airport in Jacksonville, to travel around the world, making stops in Germany, Bahrain, and Australia, in order to increase P-8A Poseidon mission effectiveness for future global employment.

On board the Poseidon were 11 VP-30 and VP-5 maintenance personnel and 10 aircrew from VP-30, Maritime Patrol and Reconnaissance Weapons School (MPRWS), and VP-5.

Also on board were VP-30 Commanding Officer Capt. Curt Phillips, Officer in Charge of the P-8A Fleet Integration Team Cmdr. Andy Miller, and MPRWS Executive Officer Cmdr. Michael Puffer.

The primary intent of the mission was to prepare VP-5 “Mad Foxes” and 5th Fleet staff for the first P-8A deployment to the Middle East area of responsibility.

Another intent was to meet with the Royal Australian Air Force (RAAF) ahead of fleet implementation of the P-8A’s air-to-air refueling (AAR) capability.

The RAAF currently possesses and employs the in-flight refueling capability on its Boeing 737-700 based E-7A Wedgetail Command and Control aircraft.

Second Line of Defense

The Arrival of a Maritime-Domain Awareness Strike Capability

While enroute to Bahrain and Australia, the crew made an overnight stop at German Naval Airbase Nordholz, to attend German Maritime Patrol Symposium events and provide a static display for symposium attendees.

Among those attending the symposium was NATO's Commander, Maritime Air and Deputy Chief of Staff, Maritime Air for NATO Allied Maritime Command (MARCOM), Rear Adm. Thomas Ernst, German Navy, as well as maritime patrol aircrew from Canada, Norway, Spain and Germany.

While in Bahrain, the P-8A crew provided a static display for the U.S. Ambassador to the Kingdom of Bahrain, the Honorable William Roebuck, as well as executed a local demonstration flight with top Bahraini military officials on board.

The P-8A crew briefed Commander Task Force 57 on current and future capabilities, as well as limitations, and held meetings to discuss the roadmap ahead of VP-5's deployment.

The crew conducted a local demonstration mission flight with 5th Fleet personnel to showcase P-8A capabilities and identify any potential issues well ahead of VP-5's deployment.

"Our role as the Fleet Replacement Squadron is to help prepare VP-5 for its deployment to the region," said Phillips.

"This trip tests the P-8A platform within the environment of the 5th Fleet area of operations and provides us the opportunity to get hands-on experience so we can get VP-5 tactically prepared for a slightly different mission set compared to the mission in the Western Pacific."

The crew then visited RAAF Base Williamtown, headquarters to Australia's Air Combat Group, located approximately nine miles north of the coastal city Newcastle, New South Wales.

The P-8A aircrew held a static display for local aircrew and support personnel stationed at the base. During the visit, RAAF personnel provided briefings on E-7A operational employment and AAR best practices to better equip VP-30 as they implement their AAR training program in the near future.

The P-8A FRS and MPRWS crews were afforded the opportunity to fly an E-7A Wedgetail AAR simulator event to experience first-hand an AAR evolution.

Intermediate stops for fueling and crew rest during the around-the-world mission included Perth, Naval Support Facility Diego Garcia, Pago Pago, and Hickam AFB, Hawaii. Aircraft 762 and its crew arrived back at Cecil Airport on July 18.

"From Europe to the Pacific, this flight is about maintaining our critical, long-standing maritime patrol partnerships, while sustaining the momentum of P-8A Poseidon training and operational transition of the Fleet," Phillips stated.

"VP-30 and the weapons school are charged to prepare P-8A Fleet squadrons ahead of future deployments and capabilities – 5th Fleet's hot weather environment and forthcoming air-to-air refueling operations are just the next chapter in P-8A transition. We will be prepared."

<http://m.jacksonville.com/2015-08-12/story/vp-30-and-mprws-conduct-worldwide-p-8a-mission#showInfo=http://m.wap.jacksonville.com/2015-08-12/story/vp-30-and-mprws-conduct-worldwide-p-8a-mission?fmt=www>

PRESENT AT THE CREATION: SENIOR CHIEF BIDDINGER AND CRAFTING A NEW COMBAT CAPABILITY

The US Navy is building a new Maritime Domain Awareness strike capability with the P-8/Triton dyad.

To move from a program which exists on paper to one, which exists in practice, is a challenge.

And to do so, the role of a person like Senior Chief Patrick R. Biddinger (AWOCS) is crucial.

The challenge is to take experienced personnel and put them into positions to guide the newcomers to the enterprise, but to blend the old with the new in an innovative manner.

There is a lesson often learned at the Naval Academy that probably is not part of an official curriculum but often discussed at the First Class Capstone program for soon to be commissioned Navy Ensigns and USMC 2nd Lts .

A newly graduated Ensign arrives at the first command. The CO gives the Ensign and his sailors an order to physically accomplish a task. The Senior Chief asks the Ensign if he has ever done the task before. “No chief but I went to Annapolis and can read up on how to do it and then get it done.” The Chief Says with all due respect: “No Sir you do know how to do it.” “How?” asks the Ensign. “Simple you say “Chief you and the sailors do it”—“and sir that is how you will then learn.”

There is a clear challenge when moving from the P-3 to the P-8/Triton dyad.

It is a key step into the 21st Century fighting Navy digital age where software upgradeable and information rich platforms are built from the ground up to be integratable with the fleet and are replacing the P-3 which was much a single unit platform operating “fearless and alone” in executing the core ASW mission.

Although, it is noteworthy that the P-3 community served with distinction over land flying in combat missions during periods of the US and Allies ongoing Middle Eastern wars.

When we discussed the program, its origins and how far it has come, the pride of the Senior Chief (who is part of VP-16) in his colleagues was clearly evident.

As he put it: “I don’t have children, but if I did I could imagine this would be like having a child and raising it and watching it grow up and go off to college and be successful.”



FIGURE 10 MECHANICS WORKING ON P-8. CREDIT: US NAVY Second Line of Defense

We made the point that until an air system has operated for 10 years, one really does not have the full measure of the program.

He added: “Even if I make master chief next year, I’ve only got four more years before I’m retired at 30. When this platform hits its ten-year anniversary I won’t be in the Navy anymore. I’ll just have to reach back to some of my friends who are a little bit younger than me and get some good sea stories from them about the progress.”

He noted that he has been with the program prior to the first plane arriving in Jacksonville in March 2012 and that the “plane has been in the fleet only four years, and in five years it will be better and at 10 years its going to be phenomenal.”

His background is with both the P-3 community as well as the test community. He has significant combined fleet operational and test experience within the maritime patrol community. Senior Chief Biddinger career experiences have been crucial in shaping his leadership role with the team standing up the aircraft and doing its initial operations.

During his deployments to Iraq with the P-3, he worked with his squadron to get upgrades crucial to the performance of the aircraft in its overland mission. After his deployment in Southern Iraq, he then came to Jacksonville to work on the P-8 in October 2008.

In other words, he came prior to the airplane and was part of the effort of moving from briefing charts to operational capabilities.

“The P8 fleet integration team was a very, very small team in the beginning. It was literally a handful of officers and a handful of enlisted folks. And the leadership backed the team in terms of allowing the team to innovate and experiment in setting up the baseline squadron at Jax.”

He noted that from the beginning, the Navy recognized the importance of standing up the plane and the training systems, given how important simulators were going to be to the program.

“The idea at the outset was that 30% of your training was going to take place on the aircraft and 70% in the simulators. We were testing simulators and accepting simulators BEFORE we received our first aircraft.”

As with others we interviewed, Senior Chief Biddinger focused on the challenge of the new workflow with the operators on the rail as opposed to operating in separate or cubicle like workstations. “Every station is capable of doing the same thing. If you are on the rail, then you don’t have people just oddball placed throughout the airplane. You have a shared workflow.”

He praised the younger generation for their ability to absorb information.

“Today’s generation is more gadget-oriented, and technologically advanced than my generation.”

But he cautioned that a major task remained to be learned, namely applying information to the appropriate tactics of situations and here the mix of the experienced with the new operators was important.

“You might know how to run the gear, you need to be smart enough to understand how to tactically employ it. You need to understand what benefit you bring to the fight, and then how you can also be a hindrance providing the wrong information.”

He also noted that a key part of his time with the program has been working the relationship with industry.

The engineers have been great and responsive but their ideas are not always applicable to the tactical situations which the crew experiences.

“Navy personnel have been extensively involved in the reality check of matching experiences with the new systems and sorted out the best way to make everything work to the tactical situation.”

He highlighted the importance of exercises and engagements at Red Flag and Fallon Naval Air Station as a key part of the learning process as well as the squadron became operational.

“The CNO has emphasized that a key effort is to focus upon electronic magnetic maneuver warfare and this platform fits right into that mission.

We are learning how better to work with other platforms in working in that mission space.”

He noted that as the P-8s is operating with the surface navy, there is growing recognition of what the P-8 brings to the fleet.

“They are very open to what we can bring to the fight.”

The fleet is facing a major challenge however in ensuring that you “get the right information to the right people at the right time.

“We have so many different platforms with so many different capabilities, with some short-range, some long-range, that it will be a challenge to understand the capabilities of all the different platforms and employ them appropriately so that you’re maximizing the effectiveness of your force in the battlespace.

We’re not analog anymore. We’re digital. With the digital era comes a massive amount of information.

And when you have all of these platforms with all of these capabilities that can do all of this fancy stuff, trying to get that information out in a timely manner, safely, and to the appropriate folks, is a challenge.

But, you know what? Luckily, I think we have the best military in the world and we will sort this out to our advantage.”

VISITING THE INTEGRATED TRAINING CENTER AT NAVY JAX

The great historian Max Hastings in a seminal book about all the fighting forces of World War II said that after some very nasty set backs early in the war, the US and Royal Navies emerged as the most effective fighting forces in the war.

http://www.nytimes.com/2011/11/20/books/review/inferno-the-world-at-war-1939-1945-by-max-hastings-book-review.html?_r=0

We have often spoken of the US Navy’s combat operational goal in WW II of creating a Big Blue Blanket over the Pacific via a vast deployed fleet.

This now evolved into a “Big Blue ‘Tron’ Blanket.

<http://www.sldinfo.com/wp-content/uploads/2014/11/21st-Century-Approach-to-Tron-Warfare.pdf>

But what also can never be forgotten is the other war winning combat approach; the USN and RN Hunter-Killer teams of air and surface platforms working in harmony to win “The Battle of The Atlantic.”

Second Line of Defense

The Arrival of a Maritime-Domain Awareness Strike Capability

In today's 21st Century military world add in nuc attack subs, satellites and "remotes" and today's "Big Blue 'Tron' Blanket" and "Hunter-Killer Teams" now become global scalable "Kill Webs."

When we visited at the end of March this year Admiral Gortney, NORTHCOM Commander and a proven fighting Carrier Admiral, he focused on the challenge of dealing with the threats at the 10 and 2 O'clock to North America.

He highlighted as well the centrality of shaping integrated air and maritime capabilities to deal with the threat and suggested that NORAD migrate from a pure air to an integrated air and sea command to deal with the 21st century challenges facing his command.

<http://www.sldinfo.com/north-american-defense-and-the-evolving-strategic-environment-admiral-gortney-focuses-on-the-need-to-defend-north-america-at-the-ten-and-two-oclock-positions/>

<http://breakingdefense.com/2016/04/northcom-defending-north-america-at-ten-and-two-oclock/>

When we visited Navy Jax, we were able to talk with those creating an effective response to the challenges highlighted by Admiral Gortney, namely the P-8/Triton community.

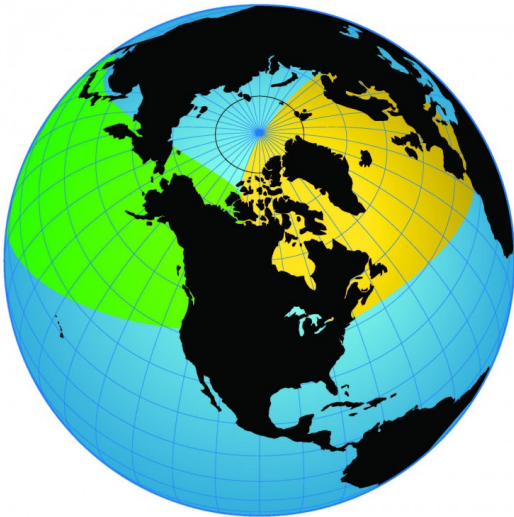


FIGURE 11 THIS IS A NOTIONAL RENDERING OF THE 10 AND 2 O'CLOCK CHALLENGE. IT IS CREDITED TO SECOND LINE OF DEFENSE AND NOT IN ANY WAY AN OFFICIAL RENDERING BY ANY AGENCY OF THE US GOVERNMENT. IT IS MEANT FOR ILLUSTRATION PURPOSES ONLY.

These maritime war fighting assets are key elements in the evolving approach to create effective "kill webs" to address a very real and growing threat to North America.

And an important asset in shaping this way ahead is provided by the Maritime Patrol and Reconnaissance Weapons School (MPRWS) located in the Integrated Training Center.

In effect, this is where the Weapons and Tactics Instructors are being trained and shaped to win the tron wars being fought at 10 and 2 O'clock.

The training and successful use of all technology is ongoing to ensure that air-maritime force has both timely information, appropriate weapon technology and the appropriate level of decision con-ops it needs to deal with evolving threats.

We had a chance to interview Lt. Commander “KC” Campbell, the Weapons and Tactics Department Head, during our visit to the ITC.

http://www.navy.mil/submit/display.asp?story_id=52596

http://www.navy.mil/submit/display.asp?story_id=77993

Obviously, the major challenge facing the ITC is implementing the transition from P-3 to P-8/Triton.

Half of the squadrons have transitioned but that leaves another half to go.

But Lt. Commander Campbell is not taking his eye off of the ball of shaping a transformation approach as the new capability comes into the fleet.

He emphasized that the capability was new and there was a need to shape new tactics for the new capability.

He fully recognized the dynamic iterative nature of his mission.

For example, the P-3 flew to an area of interest and then went on station.

“With the P-8 when we take off we are already in the area of interest.

We already have a tactical picture from the Mobile Tactical Operations Center and we are already working within and on the common operating picture.

This is a change in capability; and needs a change in approach.”

The new capability especially as the USN-USMC team works towards enhanced capabilities in the extended battlespace requires shaping new techniques, new tactics and changing the mental furniture of the entire warfighting community.

To do this, Navy Jax deploys personnel from Jax to the fleet to interactively reshape thinking.

“I have a team of about 25 junior officers who spread out from Jax to the fleet and shape training nodes.

They make sure common tactics are implemented and standardized across the fleet.”

And in the process, of course, the fleet interacts with the P-8/Triton community to reshape concepts of operations going forward.

“There are cross-functional teams throughout the fleet which are working the evolution of tactics.”

Fallon Air Station is one key piece of the training effort where Jax sends instructors.

“In effect, a university structure is emerging at Fallon to look to integrate the new technologies, platforms and approaches in the shaping and application of new tactics.”

P-8 has been to Red Flag and is starting its migration into the joint and combined world as well.

And twice a year there is a weapons and tactics course.

Of course, there is always feedback on the effectiveness of tactics, techniques, and Procedures (TTPs) from the Fleet and then assure that operational improvements are standardized and then go back out to the squadrons.

Second Line of Defense

In effect, the P-8/Triton team is shaping a common approach or “theory” of ISR and C2 applied to the extended battlespace; and the two platforms are the applications of the theory.

In short, the USN is positioning itself for an innovative way ahead that is neither “manned or unmanned” but synergistically working through how new systems can work with one another to deliver the desired outcome or effect in the battlespace, notably in the ISR, C2 and anti-submarine domains.

MAINTAINING THE P-8

The P-8 is a new plane unlike the P-3.

That brings clear advantages compared to the P-3 at the end of its service life.

In one of our discussions at Jax Navy, one of P-3 operators made the point that they were spending more time getting the P-3 out the door than focusing on the mission.

With a new aircraft, you start with a new slate.

But a rule of thumb is it takes 10 years until one really knows what the realistic and best maintenance rhythm is for an air combat platform.

The P-8 is a military version of the 737 but there is no simple transfer of commercial domain knowledge to operating the P-8. The P-8 is a combat asset and is operated very differently from a commercial airliner, and with its low flight envelope over the water up to higher altitudes faces a significant corrosion challenge as well as stress on its engines, of the sort no commercial airliner would have to deal with.

It is also a combat asset which means that the military needs to ensure it has parts and is not simply relying on a commercial just in time delivery system.

But there is a clear opportunity as allies buy the jet – India, Australia and the United Kingdom are already doing so – that a global approach to sustainment might well emerge which would enhance the operational temp of each service using the aircraft.

We had a chance to discuss some of these issues with three mechanics from VP-16, with VP-16 having the longest operational experience with the aircraft.

We discussed the experience to date and the way ahead with Master Chief Ragin who has been a VP mechanic for most of his 23 years in the US Navy and with three years with the P-8, with Senior Chief Tucker, an aviation electronics technician with 17 ½ years of experience and he came to VP-16 in November 2013 and supported the first deployment and, finally, and Lt. Junior Grad or LTG Speed with 20 years of experience and she came to the P-8 at the time of its first deployment as well.

We asked about any advantages on deployment to the aircraft being a 737.

“If you can access a trusted buyer it is possible to get commercial parts, but our own supply system only utilizes their process to get secure parts. If we could access the commercial sector when deployed it would save us time waiting for parts and enhance aircraft availability.”

Currently, this is difficult and “when we deploy around the world we currently take our own support equipment, our own tires and our own parts.”

Clearly, working with trusted vendors can shorten the supply chain problem when deployed.

“We had an issue on deployment where a lightning strike damage one of our aircraft.

A team from Boeing came out to survey the damage. We needed to replace a part and did not have that part in our inventory in Navy Supply.

The Navy went out into the commercial sector and bought part and it came in quickly when ordered and it had Made in Australia stamped on it.”

These experienced professionals touched on a significant issue. It has been said some of the best Generals in the American way of war are General Motors, General Electric and General Delivery among others.

The Navy Supply Corps is one of the most unheralded military specialties making it possible for the global combat operations of the US Navy/Marine team.

A specific point made about the evolving P-8 supply chain was amplified by a retired Navy Supply Officer James “Jim” Druso who supported both subs and aviation units and when he retired became the Security Officer for the Iraq Ministry of Transportation. He has seen both the Navy way and commercial supply operations into a nation at war.

Commander Druso touches on several points in the evolving partnership between Maintenance and Supply.

He understands the dynamic trade off between COTS (commercial off the shelf” and Mil_Spec (those necessary parts that must be designed to military specifications.) He has also had the experience of being part of a supply chain into a combat situation and all the insurance issues with commercial carriers.

Needless to say Navy supply is evolving parts in partnership with a global fleet of P-8s:

“As the P-8 is a militarized Boeing 737-800, a significant number if its parts are stocked worldwide in support of the commercial fleet of 737s.

This will allow the inventory managers to focus on building demand history and inventory for the Navy-unique items.

It will be all the more challenging as it will be done in a down budget environment.”



FIGURE 12 WORKING ON THE P-8. CREDIT: US NAVY

Second Line of Defense

Clearly, the P-3 is different from the P-8. With regard to engines, the maintainers noted that with a P-3 engine to do a repair you have to strip it down to get it repaired. You have to pull it apart, do all kinds of checks, before you can get it back into service.

With the P-8 you drop the whole engine, and put it back it back up in no time and you are back in engine.”

The P-3 is an analog aircraft; the P-8 is a digital one and much of the maintenance differences flow from that.

“The plane does a number of self diagnostics and we use that information to aid is in the maintenance cycle.”

Clearly, with the deployment cycle a work in progress, correctly determining the stockpiling and flow of parts is a work in progress.

“During our deployment to Japan, we had most of our supplies shipped from the States and had to wait for parts to shipped to us because we did not have them in stock. All parts ordering is done manually.”

The maintainers argued that from the first to the second deployment there were major improvements in terms of delivering supplies to repair the deployed aircraft.

And the mix of specialties to maintain the aircraft is a work in progress.

For example, the expectation was that the engines would need less repair than they are actually experiencing them. The maintenance department was sized with the expectation that engines would need less repair than they do; the Navy is having to adjust to the operational experience of the aircraft, and the engines are a case in point.

They pointed as well the need to deal with corrosion control from the outset, as the way the aircraft is operated will lead to corrosion in a way which would never be seen by a commercial variant.

They pointed out that with the learning curve, the Navy was learning which parts were the higher failure items and trying to stockpile those in Kadena to support the operations of the aircraft from Japan.

But for now there are few global stockpiles given the program is in its early stages.

One part of the maintenance process is doing the software upgrades. According to the mechanics, Boeing does these upgrades in the hangar. “The technicians come on site and do the software upgrades. Boeing tests everything. They just give us certificate of completions when they’re done.”

Editor’s Note: In a 2011 visit to San Diego, senior Navy personnel discussed both the coming of the P-8 and the supply challenges for a new aircraft such as the P-8.

As Captain Kelly then the Force Material Officer at Commander Naval Air Forces put the challenge:

We’re changing out 100-percent of our platforms. At the same time, we’re at one of our highest operational tempos. For instance, we’re getting P8s for P3s, we’re getting Growlers for Prowlers, and we’re getting Super Hornets for Legacy jets. We’re getting E2Ds for E2Cs and we’ll get F-35s thrown into the mix.

So, everything’s changing out, so from our perspective, we have to work with NAVAIR to make sure that the maintenance plans and the constructs for logistics and sustainment are well grounded for everything that’s coming, while we’re managing everything that is already here and deployed.

And then, we have to manage to do the swap outs of airplanes and the retraining of personnel in a fashion so that we don’t impact the operational schedule.

SLD: *And the problem is that when one swap outs, historically, whether it be a commercial fleet or military fleet, it is more expensive in the transition. You've got to manage the old as you bring in the new.*

Captain Kelly: *And that's why we're pressurized to do it kind of as quickly as we can, because we don't want to eat cost in two spots at once.*

<http://www.sldinfo.com/the-challenge-of-maintaining-a-global-fleet/>

<http://www.sldinfo.com/transitioning-from-the-p3-to-the-p8/>

Now the mechanics at Jax Navy are living the challenge and working the solutions.

VIGNETTES OF STANDING UP AND OPERATING THE P-8 AT JACKSONVILLE AIR STATION

The articles in this section first appeared in the Jax Air News and are linked throughout this article.

They give a flavor of the shaping of a global operational outreach for the aircraft from the outset of its operations.

Certification of Final P-8 Squadron at Jax Navy

In the following article, the focus is upon the last P-3C squadron operating at Jax Navy which has been certified as a P-8 squadron as of May 2016.

Here the VP-26 PAO, the VP-squadron "safe for flight" certification is discussed.

The "Tridents" of Patrol Squadron (VP) 26 received their P-8A Safe for Flight (SFF) certification from Commander, Patrol and Reconnaissance Group (CPRG) May 4, after a series of inspections that took place the week of April 25.

"This is huge," declared Lt. Cmdr. Michelle Higingbotham, the maintenance material control officer of VP-26. "Our fleet readiness cycle has commenced and now that we have been qualified safe for flight we can prepare for deployment."

Higingbotham stated that the SFF qualification marks the end of the transition of VP-26 from a P-3C Orion squadron to a P-8A Poseidon squadron. Although the Tridents accepted their first P-8A two months ago, they have been operating under the supervision of fleet replacement squadron VP-30. This safe for flight inspection marks the date when VP-26 is certified to operate independently.

The inspection certified the Tridents' ability to operate safely as a P-8A squadron, and according to VP-26 Commanding Officer Cmdr. Mark Burns, the squadron scored higher on their SFF inspection than any of the squadrons that previously have made the transition to the P-8A.

The Tridents' transition to the P-8A began in October of 2015 and marks the end of an era for active duty operational P-3C squadrons on the east coast. With the exception of two reserve squadrons and VP-30, the long reigning P-3C has officially been replaced by the P-8A at NAS Jacksonville. With the east coast transition complete, the last P-3C squadrons in Hawaii and Whidbey Island, Wash. are poised to begin their transitions later this year.

Earlier this year on March 16, Lt. Jared Stolle of VP-26 piloted the completion of the squadron's first acceptance check of a P-8A Poseidon, bureau number 168848, from VP-30. The acceptance involved two consecutive days

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of inspections beginning with an on-deck test of the engines called maintenance turns, followed by an in-flight check called a functional check flight or FCF. The FCF is a comprehensive six-hour evaluation of airworthiness. Each flight system is tested to ensure proper function. The squadron's first FCF was successful and the squadron was now ready to begin training for its first P-8A deployment slated for early 2017.

This summer, VP-26 will be participating in BALTOPS 2016, a multinational exercise hosted by Commander U.S. Naval Forces Europe. They will also be participating in exercises in Keflavik, Iceland and Lossiemouth, Scotland.

<http://jaxairnews.jacksonville.com/military-jax-air-news/2016-05-18/story/vp-26-certified-'safe-flight'#.V0diEFd5w7k>

The UK Defence Minister visits Jax Navy

That same month (May 2016), the UK Minister of Defence visited Jax Navy to see the progress the RAF is making with regard to their P-8 preparations.

According to an article published on May 18, 2016 by Jax Air News, the visit was discussed.

The Right Honourable Michael Fallon, MP, the British Secretary of Defense, visited NAS Jacksonville May 9 where he met with Royal Air Force (RAF) "Project Seedcorn" personnel who have been embedded within the VP-30 maritime patrol training program since 2012. He also announced the RAF's intent to sign its initial order for nine Boeing P-8A aircraft this summer. They expect to accept their first P-8A in mid-2019.

RAF Squadron Leader Mark Faulds said the purpose of the visit was for Fallon to experience the Boeing P-8A Poseidon first hand, inside and out, in order to gain a better understanding of the multi-mission aircraft's capabilities. VP-16 provided the P-8A static display.

The secretary was also briefed at the P-8A Integrated Training Center by VP-30 Commanding Officer Capt. Dave Whitehead, and Commander, Patroland Reconnaissance Wing 11 Capt. Anthony Corapi.

Faulds explained that Project Seedcorn consists of 11 RAF personnel (two pilots, four TACCOs and five EWOs) who have trained on U.S. Navy P-8A aircraft embedded with Fleet Replacement Squadron VP-30 personnel since 2012.



FIGURE 13 UK DEFENCE MINISTER VISITING P-8 SQUADRONS AT JAX NAVY. CREDIT: US NAVY

The program enables British servicemen to maintain skills that would otherwise have been lost due to the cancellation of the outdated British Nimrod program in 2010.

Project Seedcorn also counts nine personnel embedded with squadron VX-1 at NAS Patuxent River, Md. By 2013, all Seedcorn personnel were certified P-8A instructors.

The defense secretary said, "This new fleet of nine maritime patrol aircraft will help to protect our nuclear submarines and surface ships. We can make this investment because we are increasing defense spending every year of this decade. That enables us to meet the NATO two percent commitment and keep Britain safe."

<http://jaxairnews.jacksonville.com/military-jax-air-news/2016-05-18/story/uk-defense-secretary-checks-out-poseidon#.V1Vwpld5w7k>

During our visit, the key role of multinational and fleet exercises in rolling out of the P-8 and shaping its integration with the maritime, joint and coalition forces was highlighted.

There are a number of stories in the Jax Air News which highlight these exercises.

Truman Strike Group Exercise

In a piece written by the VP-5 PAO, an exercise with the Truman Strike Group was highlighted.

As September drew to a close; so did the Harry S. Truman Composite Training Unit Exercise (COMPTUEX). During the exercise, the "Mad Foxes" of VP-5 and "Fighting Tigers" of VP-8 provided real time support for anti-submarine warfare (ASW), anti-surface warfare (ASuW), and maritime Intelligence Surveillance and Reconnaissance (ISR) to the Carrier Strike Group (CSG) 8.



FIGURE 14 P-8 FLIES BY USS HARRY S. TRUMAN OFF OF THE EAST COAST OF THE UNITED STATES, JUNE 25, 2015. CREDIT: USN

Patrol Squadron (VP) 5 Commanding Officer Cmdr. Alan D'Jock, stated, "I could not be more proud of the VP-5, VP-8, and Mobile Tactical Operations Center (MTOC-3) "Mad Tiger" team. We look forward to deploying with the Fighting Tigers and continuing our relationship throughout the remainder of our home cycle and next year's deployment."

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The VP-5 and VP-8 Mad Tiger team was well prepared for the uncertainties of such a dynamic environment. A contributing factor to the success of the exercise was due to the VP liaison officers (LNOs) aboard Harry S. Truman.

These individuals were led by Cmdr. Alan Miller, executive officer of VP-10 and provided enhanced communication between CSG8 and the maritime patrol reconnaissance aircraft. Each crew was able to adapt to and overcome potential problems that may arise such as formidable weather or simulated hostile contacts.

“The experience that VP-5 and VP-8 garnered from COMPTUEX is invaluable. What our aircrews saw on station is very difficult to duplicate in a simulated training environment,” remarked D’Jock.

VP-5 and VP-8 provided 532.8 flight hours from 73 events to the exercise. The squadron’s participation was a valuable asset to both the surface forces, as well as to the aircrews in the aircraft.

AWO3 Dwyer, an electronics warfare officer with VP-5, said, “Being a part of the exercise was physically and mentally demanding but also taught some of the most senior crews lessons and tips for real world scenarios. It opened the eyes of many new sailors by showing the massive coordination required to accomplish many jobs.”

With this exercise complete, Oct. 2, VP-5 and VP-8 continued their training for a successful deployment next year. The Mad Foxes of VP-5 and Fighting Tigers of VP-8 will continue training, and participating in exercises abroad as well as at home.

<http://jaxairnews.jacksonville.com/2015-10-14/vp-5-vp-8-complete-truman-strike-group-exercise#.V1VxdVd5w7I>

Working with the Japanese

The “Fighting Tigers” worked the Japanese Maritime Self Defense Force earlier this year and introduced the P-8 to them.

According to the VP-8 PAO, in an article published on April 20, 2016:

The “Fighting Tigers” of Patrol Squadron (VP) 8 hosted 29 aircrew from the Japanese Maritime Self-Defense Force (JMSDF) Patrol Squadron (VP) 1 “Jupiter” at Kadena Air Base Okinawa, Japan on April 6.

The Fighting Tigers provided a static display of a P-8A Poseidon aircraft, briefed the JMSDF aircrew on the squadron’s history and primary missions – and discussed the typical operations and capabilities concerning the P-8A aircraft.

The visit concluded with a tour of Tactical Operations Center Kadena and lunch with the JMSDF visitors.

All personnel involved in the visit noted the benefit of interacting with their counterparts.

“I enjoyed discussing my job as tactical coordinator (TACCO) with a fellow TACCO from Japan,” said Lt. j.g. Erik Arstein, who organized the visit for VP-8.

“It’s fascinating how similar our responsibilities, as aircrew as well as naval officers provide such great common ground in our efforts as allies.”



FIGURE 15 WORKING WITH THE JAPANESE. CREDIT: US NAVY

Lt. j.g. Aaron Ingram assisted with the static display and found the JMSDF were very interested in the aircraft's flight station, especially how to operate the state-of-the-art displays for interface with mission systems and autopilot control.

VP-8 has interacted with their VP-1 counterparts on several occasions in previous deployments both in-flight and on deck to advance bilateral training and partnerships. As this current deployment kicks off in Okinawa, the coordination and cooperation with the JMSDF will continue to flourish.

The Fighting Tigers are based out of Naval Air Station Jacksonville, and are currently on a six-month deployment in support of U.S. 7th Fleet.

<http://jaxairnews.jacksonville.com/military-jax-air-news/2016-04-20/story/vp-8-introduces-p-8a-jmsdf#.V1Vx5Vd5w71>

Working with the Indonesians

Also, in the same month, the "Flying Tigers" went to Indonesia to participate in a multi-lateral naval exercise.

According to the VP-8 PAO, in an article published April 27, 2016:

The "Fighting Tigers" of Patrol Squadron (VP) 8 made their first ever visit to Padang, Indonesia on April 10 for the second annual Komodo exercise.

The "Fighting Tigers," led by VP-8 Commanding Officer Cmdr. Andrew Barlow, were received by Colonel Muhammad Tohir of Wing Udara Two of the Indonesian Navy.

The Komodo exercise is a multilateral naval exercise with the Association of Southeast Asian Nations to foster relations, strengthen worldwide naval brotherhood, and conduct operations independently for world peace.

On April 10, flight crews from Indonesia, India, Pakistan, and the United States conducted a "safety of flight brief" in preparation of the Komodo exercise.

On April 11, the opening ceremony officially kicked off. The Fighting Tigers demonstrated the P-8A in a fly-by for Indonesian President Joko Widodo, over the city of Padang.

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After landing, VP-8 aircrew welcomed aboard the American Ambassador, Robert O. Blake Jr., and Rear Adm. Charles Williams, commander, Logistics Group Western Pacific, and CTF-73,

Both were given a tour of the P--8A and expressed great interest in maritime patrol operations.

The next day the Fighting Tigers, Pakistani, Indonesian, and Indian aircrews came together for a photo to commemorate the occasion. Afterwards, VP-8 aircrew provided a static display of the P-8A Poseidon.

"It was a remarkable opportunity to work alongside the members of the Indonesian Armed Forces," said Lt. Andrew Kirchert, VP-8 Combat Air Crew 3 patrol plane commander. "Sharing this aircraft's capabilities with our allies only strengthens our bonds."

The final flight of Komodo exercise took place April 14 where the Fighting Tigers photographed the departing fleet of Southeast Asian Nations. Colonel Muhammad Tohir and his Indonesian aircrew joined VP-8 aircrew for a final meeting where they discussed the capabilities of the P-8A in the mission areas of maritime domain awareness, search and rescue, and humanitarian aid.

VP-8 is currently deployed to the 7th Fleet area of responsibility conducting Intelligence, Surveillance, and Reconnaissance missions and providing Maritime Domain Awareness to supported units throughout the Pacific theater.

<http://jaxairnews.jacksonville.com/military-jax-air-news/2016-04-27/story/vp-8-joins-multilateral-naval-exercise#.V1VyD1d5w7I>

Working with Malaysians

In an article by the VP-8 PAO published on May 4, 2016, the recent exercise to work with the Royal Malaysian Air Force was described.

Combat Aircrew Four (CAC) 4 of Patrol Squadron (VP) 8 recently participated in a Subject Matter Expert Exchange (SMEE) with the Royal Malaysian Air Force. U. S. Pacific Commanding Officer (PACOM), Adm. Harry Harris Jr. and Chief of Malaysian Armed Forces Gen. Zulkifeli bin Mohd Zin, were among the many distinguished visitors hosted by the VP-8 "Fighting Tigers" during one of many Maritime Domain Awareness (MDA) missions conducted in theater.

The exchange played a vital role in demonstrating interoperability between both nations' MDA forces and served as a continuation of a strong diplomatic relationship in Southeast Asia. The program consisted of two flights in the span of five days.

The first flight from Subang, Malaysia involved a combined crew of nine Fighting Tigers aircrew and eight locally based Malaysian aircrew, in order to display the operations and capabilities of the U.S. Navy's new P-8A Poseidon aircraft.

The second flight consisted of distinguished guests from both countries, including Adm. Harris, Gen. Zulkifeli, 1st Air Region Chief Staff Royal Malaysian Air Force Brigadier General Abdul Manaf bin Md Zaid, and Assistance Chief of Staff Operation and Exercise Rear Adm. Ahmad bin Abdullah.

"What an incredible opportunity," said Cmdr. Andrew Barlow, commanding officer of VP-8. "It's not very often that you get to not only meet, but host VIPs from two nations to promote a relationship that could last lifetime. These flights are bigger than we all realize."

This marks the beginning of a six-month deployment for the Fighting Tigers out of Kadena Air Base in Okinawa and the first after transitioning from the P-3C Orion to the Navy's new P-8A Poseidon. The P-8A brings the latest technology to the maritime patrol and intelligence, surveillance and reconnaissance mission, making it the most advanced anti-submarine and anti-surface warfare aircraft in the world."

"We are extremely grateful to the people of Malaysia for their hospitality and vital contributions to the alliance," said Lt. Cmdr. Graham Gill, the detachment officer in charge. "The exchange program couldn't have gone smoother thanks to the hard work of the Malaysian service men and women."

<http://jaxairnews.jacksonville.com/military-jax-air-news/2016-05-04/story/vp-8-builds-interopability-royal-malaysian-air-force#.V1abpVd5w7k>

Going to Red Flag

And earlier this year, the Pelicans participated in a Red Flag Exercise.

According to a story published by the VP-45 PAO, and published on March 30, 2016:

Members of Patrol Squadron (VP) 45 participated in Red Flag 16-1 at Nellis Air Force Base (AFB), Nev., Jan. 25 through Feb. 12, with the Navy's newest maritime patrol aircraft, the P-8A Poseidon.

As part of the squadron's Fleet Response Training Plan home cycle, Red Flag is an exercise held periodically at Nellis AFB since 1975. The exercise provides pilots, aircrews and support personnel from the U.S. and allied countries the opportunity to practice their skills in a simulated combat environment.

"These scenarios largely involved the P-8 performing advanced intelligence, surveillance and reconnaissance (ISR) missions and preparing the battlespace with timely and accurate information on threats to multiple platforms," said Lt. Cmdr. Annie Gilson, a naval flight officer with VP-45.

"These platforms were able to use this information to neutralize targets more efficiently and effectively in a highly dynamic environment."

Those in attendance of this year's Red Flag exercise were members from the U.S. Air Force, U.S. Navy, Royal Australian Air Force and United Kingdom Royal Air Force.

"Working with the foreign militaries provided a better understanding of what they do," said AWO2 Irma Sanchez, acoustic operator with VP-45. "Getting an opportunity to work with these militaries was a real eye opener into the bigger picture."

"As a squadron, I feel that we did really well," said Sanchez. "For our first Red Flag exercise as a P-8 squadron, I felt that we exceeded the standards that were set for us."

Participants said one of the reasons VP-45 had such a successful exercise was because of their ability to work as a team.

"During Red Flag, our communication and capability to work together was very important," said AWO2 Mathew Pereida, a VP-45 electronic warfare operator. "Working together as a team led to successful takeoff times, mission completeness, and overall coordinated operations effectiveness."

Overall, members of VP-45 felt Red Flag has prepared them for the future.

“Red Flag does a great job of detecting and resolving squadron and aircraft deficiencies and how we can improve,” said AWO2 Jason Foor, “It really showed us what level we are operating at and where we can be in the future.”

<http://jaxairnews.jacksonville.com/military-jax-air-news/2016-03-30/story/'pelicans'-participate-red-flag-exercise#.V1V0QVd5w7I>

Working with the Canadians

And in the Fall of 2015, the P-8 went to Canada for training with the Royal Canadian Navy.

According to a story written by the VP-5 PAO and published on October 28, 2015:

The “Mad Foxes” of Patrol Squadron (VP) 5 spent the past week on the road, completing allied maritime training with Canadian military forces.

The Mad Foxes participated in Frontier Sentinel 2015, a bilateral exercise with the Royal Canadian Navy, the Royal Canadian Air Force, the United States Coast Guard, and the Canada Border Services Agency.

During the exercise, VP-5 was tasked with identifying all targets within the operational area. The crew was able to employ the advanced sensors aboard their P-8A Poseidon to track and monitor these targets throughout the exercise.

The communications suite on the P-8A allowed the aircrew to provide the Canadian Operational Commander with near real-time information, vital intelligence needed to make tactical decisions. The coordination between the allied forces was an overwhelming success.

The Mad Foxes and their Canadian counterparts also had the opportunity to tour each country’s respective aircraft: the P-8A Poseidon and CP-140 Aurora. The CP-140 is a Canadian coastal patrol aircraft based on the P-3 Orion airframe.

AWO2 Tyler Johnson stated, “It was really interesting to see how other countries have taken their P-3s and retrofitted them to their needs, bringing enhanced capabilities to the table.”

The mission commander and detachment officer in charge, Lt. Cmdr. Adam Pace, stated, “As allies, we need to continue conducting bilateral exercises that involve any and every mission set. Whether it’s national defense or humanitarian assistance and disaster relief, when our nations call each other for help – we will be able to answer that call effectively and efficiently. With events like Frontier Sentinel, we are able to continue those personal and professional relationships that lead to success while conducting our respective nations’ tasking.”

VP-5 is currently halfway through its inter-deployment readiness cycle at NAS Jacksonville and Cecil Airport, and will soon start the Operational Readiness Evaluation (ORE) portion of their home cycle. The Mad Foxes will continue training to ready themselves for the ultimate goal of a successful deployment early next year.

<http://jaxairnews.jacksonville.com/2015-10-28/'mad-foxes'-complete-training-our-neighbors-north#.V1V0wld5w7I>

Standing up Triton Facilities

The Triton has had less news but is getting ready for its first deployment.

But in this story published on May 7, 2014, the laydown of the Triton facilities was discussed.

The Navy's first squadron designated to fly the MQ-4C Triton unmanned aerial vehicle (UAV) is taking shape at NAS Jacksonville.

Unmanned Patrol Squadron (VUP) 19 Officer in Charge Cmdr. Shannon Clark recently explained developments in the program since the squadron stood up Oct. 1, 2013.

"We're currently working to expand VUP-19 from an administrative entity to a more functional perspective," said Clark.

"We will start some training on the actual air vehicle this summer to assist with some upcoming testing. However, our primary focus right now is ensuring that the administrative and operational sides of the squadron are properly functioning for the arrival of VUP-19's first commanding officer (CO). This way, the CO can concentrate on assuming the duties of this command and focusing on the squadron's mission."

According to Clark, 21 officers and enlisted personnel will be assigned to VUP-19 at NAS Jacksonville by the end of this fiscal year. Approximately half of the Sailors will be aircrew/operators and the other half will be administrative support.

By the end of 2015, VUP-19, nicknamed "Big Red," will have approximately 100 Sailors at the squadron's detachment site located at Naval Base Ventura County/Point Mugu, Calif.

Currently, operators assigned to VUP-19 will receive training at NAS Patuxent River, Md. Flight training will eventually shift to VP-30 at NAS Jacksonville as soon as the Triton curriculum is validated and training equipment is installed.

"The initial teaching will be this summer at NAS Pax River under Northrop Grumman instruction. Training received is in preparation for our involvement in the Operational Assessment and Operational Evaluation testing periods for this platform," explained Clark.

Other facilities aboard NAS Jacksonville that will support the UAV's mission include the MQ-4C Triton Mission Control Center that is currently under construction, with a projected completion date of December 2014.

"This two-story structure, with an array of rooftop antennas, will house the squadron's mission control stations" said Clark.

"In this facility, UAV Operators will execute all phases of the mission, mission planning, mission control and data analysis."

"From here, the Triton will be operated around the globe by crews consisting of air vehicle operators, naval flight officers and aviation warfare operators."

The Triton is designed to provide long-range, long-endurance maritime patrol coverage for Naval Air Forces Atlantic; 5th, 6th and 7th fleets; Fleet Forces Command operations in Atlantic; Task Force 80; and support the U.S. Northern and Southern commands as required.

According to the Navy's Persistent Maritime Unmanned Aircraft Systems Program Office (PMA-262), as an adjunct to the P-8A, the MQ-4C Triton will provide combat information to operational and tactical users such as expeditionary strike groups, carrier strike groups and joint forces maritime component commanders.

<http://jaxairnews.jacksonville.com/2014-05-07/triton-uav-squadron-growing-facilities-personnel#.V1V1HFd5w7I>

Upgrading P-8 Hangars

And finally, this story focuses on the upgrading of the hangar bays for the P-8.

This story is by Clark Pierce, editor of the Jax Air News and was published on January 20, 2016.

VP-30, the Navy's fleet replacement squadron for the P-8A Poseidon maritime patrol aircraft, is upgrading its hangar at NAS Jacksonville to accommodate the new Navy patrol aircraft based on the Boeing 737-800 airliner.

"This project will convert the VP-30 hangar (originally built in 1996) so it will be able to accommodate P-8A aircraft. The new height of the hangar opening facing the flight line will increase by about five feet," said Project Management and Engineering Branch Head Thom Tryon P.E. of the NAS Jax Public Works Department, during an on-site interview Jan. 13.

"The work includes raising the hangar door entrance height to accommodate the taller P-8A vertical stabilizer height, install new hangar doors, replace parts of the existing hangar bay concrete deck, reconfigure the AFFF (Aqueous Film Forming Foam) fire suppression system for both discharge and capture of AFFF through a new grating system."

He added that the project will adjust the existing infrared heating and compressed air systems for the new P-8A parking layout inside the hangar.

Existing energy efficient LED lights and infrared heaters will be reused and relocated as necessary. The hangar maintenance crane will also be relocated.

"No changes will be made to the administrative spaces of VP-30 and those spaces will remain occupied during construction," said Tryon.

VP-30 Hangar Project Information

Award Date: 20 March 2015

Award Value: \$5,267,768

Funding Type: Military Construction (MILCON)

Anticipated Completion Date: September 2016

Contractor: HCR Construction Inc. of Norcross, Ga.

Designer: URS Corporation

http://jaxairnews.jacksonville.com/military-jax-air-news/2016-01-20/story/vp-30-upgrades-hangar-bay-p-8a-poseidon#.V1Xk_l5w7k

THE AUSTRALIAN CASE: AN INTERVIEW WITH THE COMMANDER, SURVEILLANCE RESPONSE GROUP, ROYAL AUSTRALIAN AIR FORCE

Last August, there was an opportunity to visit the SRG and discuss its mission, platforms and evolution with Air Commodore Westwood, and members of his team.

Air Commodore Westwood characterized SRG as a “pre-Jericho” force in the sense that the various ISR and C2 assets within the SRG were focused on collaborative ISR and C2 to provide both protection for Australia and to enable the expeditionary force to operate more effectively.

But the force was evolving with new platforms entering the force and with the evolution of the RAAF and Australian Defense Force overall in terms of shaping a more integrated force able to operate in the extended operational or battle space.

<http://www.sldinfo.com/shaping-21st-century-collaborative-isr-and-c2-the-perspective-of-the-raafs-surveillance-and-response-group/>

<http://www.sldinfo.com/the-raafs-surveillance-and-response-group-looks-at-the-way-ahead/>

The torch has been handed to the new Commander of the SRG, Air Commodore Craig Heap.

I had a chance to discuss his thinking about the way ahead for the Royal Australian Air Force’s SRG, including the coming into the force of the P-8 and Triton and their impact and roles within that further evolution of the SRG.

Air Commodore Heap became the Commander of the SRG as of December 2015.

He has a long history in working Maritime ISR and Response operations in a variety of operational settings, including an appointment as the Joint Task Force 633 Air Component Commander in the Middle East in 2010, and command of the multi-national Air Task Group during the search for the missing Malaysian airliner, MH370.

In our discussion, he argued that the aperture needed to be opened on what SRG is doing, including evolving the SRG contribution to ADF and coalition partners.

“When we talk traditionally about the SRG mission, we talk about surveillance, battle space management and maritime warfighting.

That is now too limited given the potential of the capabilities we have, and are acquiring.

We need to broaden the mission into wider intelligence, surveillance, reconnaissance, battlespace control and strike roles, across multiple domains, which is where we are evolving along with the parallel evolution of the RAAF and the ADF.

The mission statement needs to focus not only on classical air battlespace management, but control of the battlespace.”

This comment fits in well with several of the other interviewees I have had with the Australian forces which really are concerned with how the ground, air and maritime components can co-evolve and shape a 21st century concepts of operations.

The graph below captures the sense of how the ISR, strike and C2 elements are being recast as the RAAF pursues Plan Jericho.

Operating and Prevailing in the Extended Battlespace

The Offensive-Defensive Enterprise Operating As a Kill Web



This affects very much as well how the RAAF thinks about any new platforms it adds to the force as well.

As the COS of the RAAF Air Marshal Leo Davies put it:

"It is like a jig saw puzzle.

You have these really nice pieces to the puzzle sitting in the container, but until you begin to look at the picture your trying to create through the overall puzzle, you do not know which bit goes where.....

How would you operate the air warfare destroyer differently as you add a Wedgetail, a P-8, a Triton or an F-35 to its operational environment?

And conversely, how could the changes in how the destroyer would operate as you evolve systems on it, affect how you operate or modernize the other pieces of the evolving puzzle?"

It is in this manner which Air Commodore Heap discussed the P-8 and Triton coming to the force, rather than seeing them as simply a replacement for the P-3.

Obviously, the P-8 can be considered a replacement in terms of the core mission performed by the P-3, but with the evolving approach towards "integratability," to use Air Marshal Davies' term, Heap is focused on how the new platforms can drive further change in how the entire SRG operates and shapes the further evolution of the RAAF, and beyond that to the entire ADF.

Air Commodore Heap sees the P-8 as evolving in the integrated battlespace and underscored that how Australia was acquiring the platform was central to how it could co-evolve with other key assets.

"With FMS, you are buying a car off of the showroom floor.

We did not do that here; we are partners in the program, which allows us to become de facto shareholders in the program itself.

We are a cooperative development partner.

This puts the RAAF at the ongoing development table for the life of the program, to enable us to influence the capabilities of the platform as it evolves, ensuring that we can get an evolved platform that meets our needs.

For example, we needed the aircraft to perform a search and rescue function, something the USN did not have as a core role; they rely on the USCG.

But we needed a specialist payload to do this, and courtesy of the cooperative program, the USN has agreed to have an interim capability, followed by a fully developed deployable SAR payload built into the program as a priority. The USN as a our partner is also interested in using the kit on occasions when long distance maritime search is required.

The USN and your embedded RAAF instructors are currently flying Increment 1 but will Increment 2 will be the version that we will get with the first aircraft. We will initially get a mix of Increment 1 and 2 aircraft, but will be spirally upgraded to an all increment 2, then 3 fleet in lockstep with the USN.

We are deeply involved with the USN as well in designing and working Increment 3.

It is important to understand that what we are talking about is the actual evolution of the platform, and wider weapon system over time, which from our point of view needs to work with Wedgetail, F-35, Growler, Triton, the Air Warfare Destroyer, Special Forces and other core warfighting assets in the battlespace.”

He then went on to make a key point that with the USN is working very hard to integrate its core air assets, the Super Hornet, the F-35, the Growlers, the P-8s and the Triton UAVs, to work together that this would provide an important leg up on the kind of integration the ADF was looking for across the battlespace.

And of course, the SRG flies and operates systems which in the U.S. would be operated by either the USMC or USAF, so this drives the RAAF need to broaden the aperture on integration beyond what classically the USN would do, but there clearly are currently USN leaders who are thinking along the lines of the RAAF leadership, such as Air Commodore Heap articulated in the interview.

He clearly was looking forward to adding the [Triton](#) to the fleet whereby the Remotely Piloted Aircraft could do wide area surveillance as an asset which could allow for better use of manned assets, or to support the initial assessment of HADR scenarios, or low intensity operations.

“What that means for our highly capable Naval surface forces is that before, where they could have an effect based principally on their organic means, which was limited by the range of their sensors and weapon systems, they now can have an effect at much greater distance, courtesy of support from a suite of state of the art RAAF assets in terms of integrated ISR, strike and C2.

As the lead for the Jericho Maritime warfighting program, we will leverage off the key Jericho tenets of maximizing combat effectiveness, facilitating innovation at the lowest level and speeding up and simplifying acquisition.

And then the question will become where is the best place to do the operational C2 in the battlespace, which will vary by mission to be on the ground, at sea or in the air, critically with full, degraded or denied enabling space capabilities such as SATCOM and GPS.

That is where we want to go with the evolving SRG.”

Air Commodore Heap added: “My concept is to seek, acquire and potentially employ decisive, highly protected asymmetric effects across the spectrum of warfare through our people’s, and industry’s great ideas.
Second Line of Defense



FIGURE 16 THEN THE OFFICER COMMANDING NO. 92 WING, GROUP CAPTAIN CRAIG HEAP, STANDS BEFORE A USN P-8 ON THE FLIGHT LINE AT EDINBOURGH. CREDIT: AUSTRALIAN MOD 2012

We need to have open system architectures with the flexibility to spirally add capabilities at speed, not be hamstrung by a 5-year acquisition cycle. If ISIS has an acquisition cycle, and I believe it does, it certainly isn't as limited as our previous processes.

Our new FPR capability acquisition processes and Defence structure is designed to correct this issue.

The new Joint Air Battle Management system announced in the recent Defence White Paper will be sourced using this principle, so in 2025 when a developing technology becomes mature, it can swiftly be acquired almost immediately fielded on operations if required."

And shaping a more effective sovereign integrated force was important for Australia, for its own national defense and to become a more capable ally for its partners.

"We are small but we want to be capable of being a little Tasmanian Devil that you don't want to play with because if you come at us, were going to give you a seriously hard time that will probably not be worth the effort; deterrence in its purest form."

The Biography of Air Commodore Heap:

Air Commodore Heap joined the RAAF in 1984 as a direct entry pilot. On graduation from 132 Pilots Course in June 1985, Air Commodore Heap was posted to 34 SQN as a VIP copilot for 12 months. He then completed the Aircraft Systems Course at the School of Air Navigation before posting in 1987 to 5 SQN as an Iroquois helicopter pilot.

In 1989, with the demise of the RAAF helicopter fleet, Air Commodore Heap was attached to 292 SQN for P-3C conversion and subsequently served at 11 SQN until 1993. During this time he was selected as the 92WG display pilot for the RAAF 70th Anniversary.

In 1993 Air Commodore Heap was posted to 2FTS as a Qualified Flying Instructor, after completing the Central Flying School, Flying Instructors Course. Returning to 292 SQN in 1994 as a P-3C Qualified Flying Instructor, he instructed at 292 SQN for 18 months before returning to 11 SQN as the SQN Qualified Flying Instructor. Air Commodore Heap also resumed the role of 92 WG display pilot for the RAAF 75th Anniversary Airshow calendar.

On promotion to Squadron Leader in 1996, he served as the B Flight Commander and 11 SQN Qualified Flying Instructor for three years until the end of 1998. During this posting Air Commodore Heap acted as the Detachment Commander on numerous joint and combined exercises and operations, in Australia and overseas.

In late 1998 Air Commodore Heap was posted to the Central Flying School as the A Flight Commander, in charge of the RAAF Flying Instructors Course. In 2000, Air Commodore Heap was appointed as the Chief Flying Instructor, Central Flying School. As Chief Flying Instructor he was responsible for the conduct of all flying operations within the school including; Roulette training and operations; overseeing the pure flying and instructional standards of all ADF pilots; and Qualified Flying Instructors, in addition to facilitating the RAAF Flying Supervisors Course.

In 2001, Air Commodore Heap was selected to attend the Canadian Forces Command and Staff Course in Toronto, Canada. Departing for Canada in mid 2001, he was promoted to Wing Commander and on return to Australia in mid 2002 was posted to Weston Creek, Canberra as member of the Directing Staff of the new Australian Command and Staff College. For the majority of his tenure at the College Air Commodore Heap was the manager of the Joint Operations Module, instructing course members in the planning and conduct of large scale coalition operations. In 2005 he was awarded the Chief of Defence Force Commendation for his service to the Australian Command and Staff College.

Air Commodore Heap returned to 92WG for refresher on the AP-3C in January 2005 as the incumbent Commander of the AP-3C Task Group in the Middle East. For his command of this Task Group he was awarded the Vice Chief of Defence Force Commendation. On return from the Middle East in late 2005 until mid 2007 he served as the Commanding Officer of No 10 SQN.

In 2007 Air Commodore Heap was posted as the Director of Studies Air and Chief of Operations at the Australian Command and Staff College. In November 2008, Air Commodore Heap commenced duties as the Chief of Staff to the Chief of Defence Force, from which he was posted to the Centre for Defence and Strategic Studies in January 2010, completing a Master of Arts (Strategy) Degree with Deakin University. From November 2010, Air Commodore Heap returned to the Middle East as the Joint Task Force 633 Air Component Commander until June 2012, for which he was awarded the Commendation for Distinguished Service in the 2012 Queens Birthday Honours' list. In October 2011 Air Commodore Heap assumed the post of Officer Commanding 92WG.

During early 2014 Air Commodore Heap deployed to Perth as the Commander of the Multi-national Air Task Group searching for the missing Malaysian Airlines flight MH370 and was subsequently awarded the Conspicuous Service Cross (CSC).

In July 2014, Air Commodore Heap assumed the post of Director General Aerospace Development on promotion to Air Commodore.

On 02 December 2015 Air Commodore Heap assumed command of Surveillance and Response Group and was simultaneously appointed the Senior Australian Defence Force Officer (SADFO) at RAAF Williamtown.

THE INDIAN CASE

The P-8 is a new maritime surveillance platform built around an open architecture. It is also going into service in the Indian and American navies at roughly the same time.

This makes it a unique event for the two navies where a shared 21st century system is being incorporated into Indian and American naval operations at the same time, and as such can play a unique role in shaping a 21st century style of collaboration as well.

In other words, it is not just about technology but shaping shared understanding of concepts of operations for 21st century missions.

Facing 21st Century Challenges

Both the Indian and American navies face significant operational challenges in the Indian and Pacific Oceans. The upsurge of maritime traffic associated with globalization has significantly complicated the problem of keeping track of vessels and threat identification.

The core security problem is posed by the nature of the “conveyer belt of goods and services” which transits the sea and then move by land. Securing the “conveyer belt” is a major security challenge in and of itself, but also because maritime terrorism can be woven into the conveyer belt in ways of concern for defending core “homeland” security stakes as well.

The comprehensive maritime security system, which evolves over time, is about managing a far-flung but central flow of goods and commerce across of “conveyer belt” which provides for the prosperity of nations. Raw materials pass through the system, semi-finished goods, various elements for the “just in time production” process, and final goods for delivery. Asia is at the heart of all of these maritime developments: dynamic economic growth and development leading to greater reliance on shipping, containerization, mega-ports and crucial interdependencies with the United States and Europe.

Building an effective maritime security system must start with the challenge of security for the conveyer belt of goods and services. Maritime security is about security not just at sea, but in ports, inland waterways and in the transit of goods and services from ports inland via truck and train.

In addition, the rise of the PLA navy (PLAN) has brought the Chinese out into the Indian Ocean and enhances the threat from Chinese submarines.

And the growth of the numbers and quality of submarines by various players in the Indian and Pacific Oceans further complicates the challenge of protecting the fleet against underwater threats.

<http://www.sldinfo.com/the-recent-russian-chinese-naval-exercise-a-new-phase-for-the-partnership/>

<http://www.sldinfo.com/evolving-chinese-military-capabilities-the-pla-as-part-of-the-chinese-approach-to-globalization/>

<http://www.sldinfo.com/chinese-military-power-report-highlights-growing-chinese-naval-might/>

And with Chinese strategic submarines as part of the Chinese nuclear equation, there is concern by both India and the United States about the ability to track and deal with the Chinese underwater strategic threat as well.

The physical quality of the seas is not new, but the level of maritime traffic and the growth in naval forces by the PLAN and others is. In addition, the ability of terrorists to use the sea to mask their ability to strike targets on land was well highlighted by events in India. The 2008 Mumbai attacks demonstrated the utility of launching terrorist strikes from forces inserted from the sea.

According to a report by [Bill Roggio](#), the projection of force from the sea was a unique aspect of this military style terrorist attack.

One of the more intriguing aspects of the attack is how the teams entered Mumbai. Reports indicate at least two of the assault teams arrived from outside the city by sea around 9 p.m. local time. Indian officials believe most if not all of the attackers entered Mumbai via sea.



FIGURE 17 INDIAN P-8 DURING SEARCH FOR MALAYSIAN AIRLINES FLIGHT 370. CREDIT: INDIA STRATEGIC

Indian Coast Guard, Navy, Mumbai maritime police, and customs units have scoured the waters off Mumbai in search of a “mother ship” that transported one or more smaller Gemini inflatable boats used by the attackers. A witness saw one of the craft land in Colaba in southern Mumbai and disgorge eight to 10 fighters.

Two ships that have been boarded are strongly suspected of being involved in the attacks: the *Kuber*, an Indian fishing boat, and the *MV Alpha*, a Vietnamese cargo ship. Both ships appear to have been directly involved. The *Kuber* was hijacked on Nov. 13, and its captain was found murdered. Four crewmen are reported to be still missing.

In other words, a diversity of dynamics shape a challenging 21st century maritime environment for Indian and US forces.

The first is the simple growth in the numbers and size of commercial ships populating the “conveyor belt” creates a problem in determining which among the myriad of ships on the sea pose threats.

The second is the return of a significant ASW threat to the fleets and the expanded reach of the PLAN.

The Chinese are building out their infrastructure in the Pacific and Indian Oceans to support maritime operations, including those of the PLAN.

The third is the threat to the fleet from terrorists of various sorts. Usually referred to as the small boat threat, the attack on the *USS Cole* provides a significant reminder to both fleets of the wide-ranging threat from maritime traffic disguised as commercial shipping. Indeed, in the *Bold Alligator 2013* exercise, “terrorists” used a commercial ship as part of the assault on the USN-USMC team.

<http://www.sldinfo.com/bold-alligator-2013-shaping-a-21st-century-insertion-force/>

The fourth is the challenge of piracy. The presence of pirates in the South China Sea and the Indian Ocean is a continuing threat. The piracy threat is rooted in the upsurge of commercial shipping and the growth in the

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size of ships. The potential prizes at sea are going up and with it the desirability of grabbing a prize and negotiating with ship owners and insurance companies to gain wealth.

As Jonathan DeHart noted in a recent piece in [The Diplomat](#):

As noted by The Economist 14 years ago, global piracy doubled during the 1990s, to 200 attacks per year as of 1999, with the bulk taking place in Asia. In 1999, almost three-fourths of global piracy took place in Asia. Indonesia was host to the largest number of attacks then as well. In 2004, the global total number of incidents spiked to 329, of which attacks in Indonesian waters accounted for 93.

When assessing these numbers, it is important to distinguish between degrees of piracy. On the lighter end of the spectrum are the sea-faring hooligans who conduct sloppy attacks on heavily trafficked coastal waters. These hoods favor the kinds of lanes where thousands of ships cruise – and drop anchor – between Indonesia and Malaysia, or in the South China Sea. These pirates usually attack as thieves in the night while ships are anchored and most crew members asleep.

On the other end of the spectrum, there is the more sophisticated and more troubling brand of piracy perpetrated by large-scale, well-coordinated global crime organizations. In these kinds of attacks, cargo worth millions of dollars is routinely stolen, as in the case of the Petro Ranger, an oil tanker that was robbed of \$3 million worth of fuel en route from Singapore to Vietnam.

The need for cooperation between the Indian and US Navies is important as well as the ability to work with key allies in the region to deal with the full spectrum of threats.

As Professor Amal Jayawardane put it in his paper [“Terrorism at Sea: Maritime Security Challenges in South Asia:”](#)

In recent years piracy and maritime terrorism have become growing threats in the Indian Ocean, which is the locus of important international sea lines of communication. The Indian Ocean, the world's third largest ocean, is of great strategic importance for the supply of crucial energy resources. About 40% of the global trade transits through the Indian Ocean. It provides major sea routes connecting the Atlantic Ocean with the Pacific Ocean.

The Indian Ocean cannot be considered an “open” space as its access is controlled by several choke points such as the Bab el Mandeb, the Straits of Hormuz, the Straits of Malacca, the Sunda, and Lombok-Straits. In a world increasingly dependent on foreign trade, it is necessary to keep these choke points open at all times. The disruption of the Sea Lines of Communication (SLOCs) will have disastrous consequences to the global economy.

He then added that this required significant enhanced naval cooperation.

There is a strong naval presence of extra-regional countries as well as littoral countries in the Indian Ocean. While there is littoral resistance to extra-regional power presence, there is also intra-regional competition and rivalry among littoral powers. Competition among states for access and influence is unavoidable; however, it has become extremely important to develop cooperative maritime strategies to face common threats from asymmetric non-state actors.

The Physical Scope of the Challenge: The Key Role of ISR

The naval forces of India and the United States and their allies provide the physical presence assets, which can surge to a problem.

But determining where the problem exists or the nature of the problem requires first rate “domain awareness” or Intelligence, Surveillance and Reconnaissance overwatch.

The [impact of ISR](#) on a fleet was well articulated by Admiral Day of the USCG in discussing the impact of adding modern ISR to USCG operations.

Let's talk about just the Eastern Pacific drug mission. Let's just use that as an example. In the old days, we literally went down there and bored holes in the water, and if we came across a drug vessel, it was by sheer luck. It might be on a lookout list, and we might happen to see it.

Let's fast-forward now to the 2000s and what we've started being able to do. By being able to fuse actionable intelligence, and not only that, but intelligence communicated at light speed.

So now, we're to the point where we're telling a Cutter to go point A, pick up smuggler B with load C. And we're doing that in real time with delivery of a common operational picture, which has been fused with intelligence. That was unheard of 10 years ago.

The key is to be able to lay down an ISR grid over the area of interest using fixed wing, space-based or remotely piloted aircraft, or new robotic underwater or above water systems to generate the picture within which naval surface or subsurface assets can operate.

The challenge then is to tie the appropriate assets together with the identified threat or target and bring them together into a solid command and control system.

Collecting information is not the goal; the effort is to conduct more effective military and security operations against key targets of interest.

The challenge facing the Indian and US navies is rather simple: the geography to cover is vast, the traffic significant and the diversity of threats growing.

Put simply, the challenge of dealing with security in the Indian and Pacific Oceans is beyond the reach of any single naval power in the 21st century, and there is a crucial need for leading navies to work together to shape common ISR systems and to shape collaborative C2 for joint operations, as needed.

How the P-8 Plays Into This Picture

In [an earlier piece](#), we looked at the P-8 as a new maritime surveillance platform.

The key points from that piece which we will leverage here are the following:

The P-8 unlike the P-3 has much greater speed and range, which means it, can surge to an area of interest much more rapidly;

The P-8 is an open architecture system, which means that it can evolve over time to incorporate new technologies and can adapt to the evolution of the fleet itself;

P-8 is being built to be part of a family of systems, and not as a single point of performance or in other words, other elements, manned and unmanned, will play their part over time in shaping the role of the P-8 within an evolving ISR system.

Notably, this platform is being introduced at virtually the same time within the Indian and American navies, which can provide a lynchpin for collaboration on shared ISR and C2.

This is not to say that both navies will use the system to support their own national or sovereign missions. It clearly will be.

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But it puts in the hands of both navies at the same time a tool, which can evolve with the period ahead and shape new approaches to ISR and C2 necessary for the management of maritime security.

And because the P-8 is an open system and a part of a family of systems, the Indian Navy will certainly add new elements to its evolving ISR approach over time, and that some of those new capabilities clearly will be of interest to the US Navy as well.

In other words, by having a common baseline technology, the Indian Navy's evolution will have a direct impact on the US Navy as well.

We argued in [our forthcoming book](#) that the Japanese Navy was being reshaped to deal with the Arctic and Chinese challenges and that the Japanese were moving eventually to seek maritime reach from the Arctic to the Indian Oceans.

The Japanese understand they will not do this by themselves but as a partner of the US Navy as well.

It is clear that such an evolution will be part as well of the growing reach of the Indian Navy in both Oceans of significance to India.

In effect, the P-8 will be part of the evolving naval collaborative framework between the Indians and the U.S. as well as with other allies.

The graphic to the left captures a way to look at this evolving situation.



Enhanced collaboration among the US, Indian and allied navies is essential to secure 21st century maritime defense and security. Credit: SLD

What makes the P-8 an especially interesting platform is that it is a shared platform between India and the U.S. with others (such as Australia) likely to join in and this sharing of a platform can provide a tool for enhancing collaboration in the daunting task of shaping effective ISR for 21st century maritime missions.

The opportunity is inherent in the technology; the challenge will be to shape the collaborative approach and shared concepts of operations.

UK FINALIZES DEAL FOR P-8 POSEIDON

Earlier this year, during a visit to RAF Lossiemouth in Scotland where the new P-8s will be based, we focused on the evolution of Lossie as a 21st century airbase.

RAF Lossiemouth currently is a Typhoon and Tornado base, but with the Tornados to be phased out within the next few years, the Typhoons will be joined by the P-8, which will probably operate as well from Lossie.

This provides the opportunity to integrate the Typhoons with P-8s with the F-35s, which will operate off shore from the new carriers or, in other words, shaping a kill web to protect the homeland and to anchor the defense of the Northern NATO countries.

In effect, Lossie will train to support the formation and evolution of a 21st century combat force in which a multi-mission combat fleet of Typhoons will work with the maritime-focused but land-based capable maritime combat system which is the P-8....and which, in turn, will work with the multi-tasking flying combat system which is the F-35.

<http://www.sldinfo.com/visiting-raf-lossiemouth-building-out-a-21st-air-combat-base/>

Now the UK Ministry of Defence has formally committed to deployment at RAF Lossiemouth.

According to a press release on July 11, 2016:

The Ministry of Defence has confirmed the deal to purchase nine P-8A Poseidon Maritime Patrol Aircraft (MPA) for the Royal Air Force (RAF). The new aircraft, which will be based at RAF Lossiemouth in Scotland, will play a vital role in protecting the UK's nuclear deterrent and the UK's two new aircraft carriers. They will also be able to locate and track hostile submarines, and will enhance the UK's maritime Search and Rescue (SAR) capability. This capability will also bring economic benefits to Scotland and the wider UK, with an additional 400 personnel based at RAF Lossiemouth.

Defence Secretary Michael Fallon said:

Our new MPA aircraft will provide significant protection of the UK's nuclear deterrent and our £6 billion aircraft carriers.

They are part of our plan for stronger and better defence, backed by a budget that will rise each year of this decade. That means more ships, more aircraft, more troops available at readiness, better equipment for special forces, more being spent on cyber – to deal with the increased threats to our country.

The P-8A MPA, manufactured by Boeing, are being purchased from the US Government via a Foreign Military Sale. The cost of developing and delivering the UK's MPA capability, including paying for the people, their training, the infrastructure and necessary support at RAF Lossiemouth will be around £3 billion over the next decade. By tapping into the well-established US production line, the UK will get a tested and proven piece of equipment in the right timeline. In addition, the RAF will benefit from collaboration with some of the UK's key allies, including the US Navy and the Royal Australian Air Force.

The P-8A can operate at long range from its operating base without refuelling and has the endurance to carry out high and low-level airborne maritime and overland surveillance for extended periods. This cutting-edge aircraft will also be able to conduct wide-area search of open ocean to locate small boats and drop rescue life-rafts and equipment to vessels and people in distress.

Tony Douglas, Chief Executive Officer of the MOD's Defence Equipment and Support organisation, said:

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Already in service with other nations, the P-8A aircraft was the best solution to fill our Maritime Patrol Aircraft capability gap; it is tried, tested and can be delivered in the timeline we need. The fact that we have been able to commit the main investment decision on this key procurement less than nine months after the Government announced its intention to buy these aircraft is a great testament to the agility, professionalism, and drive of DE&S, working closely with colleagues across MOD and the US Navy.

The P-8A is based on the Boeing 737, which is already supplied by UK industry, supporting several hundred direct UK jobs. What is more, UK manufacturers also already provide specialist sub-systems for the P-8 itself. Companies include Marshall for the auxiliary fuel tanks, Martin Baker for the crew seats and General Electric for weapon pylons. The new order of P-8As is also set to create opportunities for the UK to bid for training and support contracts.

The announcement of this deal also marks the point at which responsibility for leadership of the MPA Programme transfers from Joint Forces Command to the RAF. With the first aircraft due to arrive in the UK in 2019/2020, the RAF has been committed to maintaining the skills needed to operate these MPAs through the 'seed-corn' programme, which has embedded former RAF MPA operators within the MPA squadrons of Australia, Canada, New Zealand and the USA.

Air Vice-Marshal Gerry Mayhew, who is responsible for the RAF's fast jets and Intelligence, Surveillance and Reconnaissance assets, said:

The seed-corn initiative has been vital in ensuring that our future MPA aircrew are prepared to regenerate the UK's MPA capability. By retaining those essential skills, our aircrew are already on the front foot when it comes to operating these new aircraft.

<https://www.gov.uk/government/news/mod-seals-the-deal-on-nine-new-maritime-patrol-aircraft-to-keep-uk-safe>

VISITING RAF LOSSIEMOUTH: BUILDING OUT A 21ST CENTURY AIR COMBAT BASE

It seemed a bit odd to be looking at the North Sea on April 24th, after looking at the Pacific over one's right while driving up from Sydney to Williamtown Air Base on March 23rd.

It was also considerably colder, and reminded one of why the Scots make scotch in the first place. They have great water, barley and a weather that requires drinking scotch.

In between, we had a chance to talk with the Northcom/NORAD Commander who lives roughly half way between these two airbases.

What [Admiral Gortney](#) highlighted when we visited him in Colorado Springs was the threat to North America from the 10 and 2 O'Clock positions.

When you are at Lossie you are clearly in the center of the 2 O' Clock threat envelope, which for the Brits is clearly about the defense of their homeland.

[RAF Lossiemouth](#) currently is a Typhoon and Tornado base, but with the Tornados to be phased out within the next few years, the Typhoons will be joined by the P-8, which will probably operate as well from Lossie.

This provides the opportunity to integrate the Typhoons with P-8s with the F-35s, which will operate off shore from the new carriers or, in other words, shaping a kill web to protect the homeland and to anchor the defense of the Northern NATO countries.

In effect, Lossie will train to support the formation and evolution of a 21st century combat force in which a multi-mission combat fleet of Typhoons will work with the maritime-focused but land-based capable maritime combat system which is the P-8 (which will operate in the area, regardless of the final decision concerning where to base the fleet), and which, in turn, will work with the multi-tasking flying combat system which is the F-35.

Recently, Lossie hosted aircraft and personnel participating in Joint Warrior 2016.

According to an April 8, 2016 story published by the [BBC](#):

Exercise Joint Warrior is held twice a year – in April and October – for thousands of army, navy and air force personnel.

The training will see increased military activity at Faslane on the Clyde, RAF Lossiemouth in Moray and ranges at Cape Wrath in Sutherland.

The exercise runs until 23 April and will involve submarines, surface ships and aircraft including RAF Typhoons.

Warships and aircraft have already started arriving in Scotland ahead of the start of the training.

This year's second staging of Joint Warrior, which will also take place in Scotland, will include what the Royal Navy has described as its first "robot wars".

Unmanned Warrior 2016 will involve drones, including unmanned aerial vehicles and machines that can operate underwater.

And according to the [UK MoD website](#) published April 11, 2016 prior to the exercise:

RAF Lossiemouth is set to host a small contingent of international Maritime Patrol Aircraft (MPA) and F-16 fast jets for Exercise Joint Warrior 16-1 which will take place from the 11th to the 22nd of April.

Exercise Joint Warrior is a tri-service and multinational exercise conducted in the UK during the spring and the autumn of each year. The exercise will involve more than 31 warships and submarines, 60 aircraft, and a total of around 6,500 personnel from the 14 participating nations.

This year RAF Lossiemouth will be hosting MPA aircraft such as the P3 Orion, Atlantique and the new P-8 Poseidon which is planned to be based in Moray. RAF Lossiemouth's Typhoons will also take part in the Exercise alongside a detachment of Turkish F-16s.

Flight Lieutenant Guy Radcliffe, the Exercise Operations Officer at RAF Lossiemouth, said:

"The hosting of these Exercise participants will involve every section at RAF Lossiemouth. In order to facilitate each visiting units' individual requirements for the Exercise, planning has been ongoing since last year to ensure that we are ready.

"It will be an extremely busy fortnight for the Station and the airfield itself. Particular challenges will involve working with different coalition countries, operating large aircraft from an airfield which is set up for much smaller, fast jets and fitting it all around RAF Lossiemouth's own ongoing high operational tempo, essential training and QRA."

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The aircraft from the Canada, Germany, France, Norway, Turkey and the US will begin arriving at RAF Lossiemouth in the weeks leading up to the Exercise.....

Normally RAF Lossiemouth operates its flying programme from 0800 to 2300, however during this Exercise some night flying may take place out with this period.

FROM DEPLOYMENTS TO THE BALTIC REGION TO EMPOWERING THE KILL WEB IN DEFENSE OF THE HOMELAND: UK EVOLUTION

In a recent UK MoD announcement concerning the UK role in Baltic defense, it was announced that RAF Typhoons will be deployed along with the HMS Iron Duke.

This is clearly designed to operate forward and to provide for NATO defense in the Baltic region.

As the F-35 comes to the force aboard the new HMS Queen Elizabeth, a future deployment to the Baltic region will actually provide for an integrated force which could form a key element for both homeland defense for the United Kingdom as well as providing core combat capabilities within an overall kill web.

<http://www.sldinfo.com/visiting-the-hms-queen-elizabeth-the-transformation-of-british-projection-forces/>

Such a kill web would be empowered by a force at sea which can reach back and forward to air assets deployed throughout the region.

With the Russians deploying tactical weapons – notably cruise missiles – with reach deep into what the UK would consider strategic space, the need to deter, and defeat such threats will be increasingly important.

With the Eurofighters flying both from the UK over the North Sea, and forward deployed, and with the F-35Bs deployed off of the Queen Elizabeth, such an integrated force can be built as part of both homeland defense and an extended kill web extending into Northern Europe.

And such integration can lay the foundation for the further modernization of the UK surface fleet, as the new destroyers can deploy combat systems, which can co-evolve with those of the F-35.

Rather than thinking of the kill chain, the kill web is about engagement forces in an area of interest which can operate throughout the distributed battlespace and defeat an adversary throughout the kill area.

The sensor-shooter relationship is within the distributed battlespace and not attributed to the strike platform itself.

The idea of shift from a linear kill chain and hub-and-spoke operations to one of an distributed force contributing to capabilities across the integrated battlespace was highlighted by a key Australian RAAF leader:

According to Air Commodore Robertson, the CO of the Air Combat Group, the RAAF is going through a three-phase process and “we are only at the first step.

“We need to be in the position where our maritime surface combatants are able to receive the information that we’ve got airborne in the RAAF assets. Once they’ve got that, they’re going to actually be trying to be able to do something with it.

That is the second level, namely where they can integrate with the C2 and ISR flowing from our air fleet.

But we need to get to the third level, where they too can provide information and weapons for us in the air domain.

That is how you will turn a kill chain into a kill web. That's something that we want in our fifth generation integrated force.

And in a fifth generation world, it's less about who is the trigger shooter but actually making sure that everybody's contributing effectively to the right decisions made as soon as possible at the lowest possible level.

And that is why I see the F-35 as an information age aircraft.

I'm less concerned about the load outs on the F-35. You can give it another ten weapon stations and you would miss the core point.

What's actually important is how the F-35 makes other weapon providers or effect providers out there far better and shape faster reaction times.

A lot of people seem stuck in the old mindset of how many weapons we are going to stack on each aircraft.

That's almost two generations ago."

<http://www.sldinfo.com/shaping-the-airpower-transition-the-perspective-of-zed-roberton-commander-air-combat-group-raaf/>

And in an interview last year with the Royal Navy officer leading the Queen Elizabeth effort, the potential for re-shaping the approach to building out the new destroyers from the evolution of a more integrated force was highlighted.

Question: We argue that no platform fights alone; this is obviously true in terms of the carrier, which is both an enabled and enabling platform, notably with regard to its carrier air wing.

What is some of the thinking in the RN about the potential evolutions?

Alcock: As I said earlier, we have not been defined by the carrier in our Navy and some of the newer assets will be rethought with the introduction of the carrier.

With the advent of the carrier we will need to re think doctrine, tactics and training.

There will be much work between elements of the CAG specifically interaction with Merlin Crows Nest and F35B but also our T45 destroyers will work extremely closely with F35B and be a great enabler in tactical development.

We need to explore the boundaries of what we can do as we leverage the carrier with regard to our other force assets, Navy, Army and Air Force.

The good thing is that a lot of people involved in the process have open minds about thinking through the process of change.

<http://www.sldinfo.com/the-new-uk-aircraft-carrier-reshaping-the-royal-navy-and-the-royal-air-force/>

Weaponizing the kill web in which fifth generation leverages of weapons on surface and subsurface ships as well as managing hand-offs to fourth generation platforms is a key element of the way ahead.

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MBDA the key weapons designer for the RAF is already developing and in the process of completing the first weapons with the kind of two way data links enabling such a handover, namely the Meteor and Spear 3 weapons.

Put in clear terms, although the UK carriers can be used for expeditionary purposes, they will provide key centerpieces for any extended defense of the homeland via modular integration with other allied forces.

These forces would be deployed as a scalable kill web, where the sensor-shooter relationship among missile defense, and strike assets can operate in a distributed defense structure.

For the recent UK MoD announcement about Baltic operations, see the following:

<https://www.gov.uk/government/news/uk-jets-and-warship-to-bolster-baltic-security>

Royal Air Force Typhoon jets and the Royal Navy warship HMS Iron Duke will deploy to the Baltic this month as part of the UK's commitment to eastern European allies.

Four Typhoons will take a leading role in the Baltic Air Policing mission which aims to safeguard the safety of NATO partners and wider Europe.

Based at Amari air base in Estonia, the crews will operate in a Quick Reaction Alert (QRA) role.

As part of standing arrangements within NATO, members of the alliance without their own air policing assets are assisted by others which contribute on a four-month cycle.

The UK deployed Typhoon aircraft to Lithuania in spring 2014 and to Estonia between May and August 2015. They will operate alongside the Portuguese air force around the airspace of Lithuania, Latvia and Estonia.

At sea, HMS Iron Duke is due to return to the Baltic region after participating in the bi-annual, multinational Exercise Joint Warrior off the coast of Scotland. The Type 23 frigate is half way through a six-month deployment to northern Europe as part of a multinational NATO task group where she has taken part in exercises and operations. She is available to NATO for a range of tasks including diplomatic visits to countries in the region.

Later this year Iron Duke is due to operate in the Baltic region with up to four other Royal Navy ships, including HMS Ocean and HMS Pembroke, in the maritime exercise Baltops 16.

Defence Secretary Michael Fallon said:

British planes protecting Baltic skies alongside our warship patrols and troops exercising, show how serious we are about the security of our eastern European partners.

With a defence budget that is increasing for the first time in six years, we can use our forces to keep Britain and our allies safe.

The kill web would be the result of the evolving offensive-defensive enterprise.

The evolution of 21st century weapon technology is breaking down the barriers between offensive and defensive systems. Is missile defense about providing defense or is it about enabling global reach, for offense or defense?

Likewise, the new 5th generation aircraft have been largely not understood because they are inherently multi-mission systems, which can be used for forward defense or forward offensive operations.

Indeed, an inherent characteristic of many new systems is that they are really about presence and putting a grid over an operational area, and therefore they can be used to support strike or defense within an integrated approach. In the 20th Century, surge was built upon the notion of signaling.

One would put in a particular combat capability – a Carrier Battle Group, Amphibious Ready Group, or Air Expeditionary Wing – to put down your marker and to warn a potential adversary that you were there and ready to be taken seriously. If one needed to, additional forces would be sent in to escalate and build up force.

With the new multi-mission systems – 5th generation aircraft and Aegis for example – the key is presence and integration able to support strike or defense in a single operational presence capability. Now the adversary can not be certain that you are simply putting down a marker.

This is what former Air Force Secretary Michael Wynne calls the attack and defense enterprise.

The strategic thrust of integrating modern systems is to create an a grid that can operate in an area as a seamless whole, able to strike or defend simultaneously.

This is enabled by the evolution of C5ISR (Command, Control, Communications, Computers, Combat Systems, Intelligence, Surveillance, and Reconnaissance), and it is why Wynne has underscored for more than a decade that fifth generation aircraft are not merely replacements for existing tactical systems but a whole new approach to integrating defense and offense.

When one can add the strike and defensive systems of other players, notably missiles and sensors aboard surface ships like Aegis, then one can create the reality of what Ed Timperlake, a former fighter pilot, has described as the F-35 being able to consider Aegis as his wingman.

By shaping a C5ISR system inextricably intertwined with platforms and assets, which can honeycomb an area of operation, an attack and defense enterprise can operate to deter aggressors and adversaries or to conduct successful military operations.

We have highlighted the shift as either “the long reach of Aegis” or “Aegis is my wingman.”

One should note that the kill web is a play on the kill chain concept and suggests a significantly different way ahead from a hub spoke sequential approach.

But if some publics are more comfortable with a “softer” language then perhaps one could speak of a “resilient defense web,” or an “active defense web,” or “extended defense web” might work.