

The Warlords and the F-35



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Visiting the Warlords: An April 2019 Update from the CO of VMFAT-501

04/29/2019

By Robbin Laird

During my most recent visit to 2nd Marine Air Wing, I had a chance to visit MCAS Beaufort and meet with Lt. Col. Adam Levine, the CO of VMFAT-501, otherwise known as the Warlords.

As the base was busy for the airshow being held the weekend of the 26th of April, the CO graciously provided some time for an update on the USMC training efforts and shaping the pipeline for the training aspect of the fast jet transition in the Marine Corps.

I first dealt with the Marines getting ready for F-35 as Eglin stood up the first training efforts.

My guide to those efforts was [Col. "Turbo" Tomasetti](#).

Then when the Warlords were first set up at Eglin, the CO was a Marine whom I knew from his F-22 flying days, [Lt. Col. Berke](#). The Marines have had a very significant impact on the global standup of the F-35, both because they were the first to IOC the aircraft, and because the kind of integration which the Marines embody is very similar to what the smaller Air Forces of partners and allies seek from their F-35s.

My visit to Lt. Col Berke occurred during a visit of Secretary Wynne to Eglin in 2013.

And Lt. Col. Berke has embodied the impact of the Marines on the partners for he appeared at the [Williams Seminar in 2014](#) in Canberra, Australia which highlighted fifth generation aircraft in the context of Australian defense transformation and then in the [2015 Williams Foundation Seminar in Denmark](#) where the same opportunity to speak and to shape understanding of the fifth gen revolution for allies was highlighted.

Then in 2015, Murielle Delaporte and visited Beaufort shortly after the warlords had [transitioned to Beaufort](#) from Eglin.

I later met members of the Warlords onboard the USS Wasp during sea trials.

But I have not been back to Beaufort for four years, and the Marines have been busy ramping up their training efforts during that period.

Lt. Col. Levine provided a comprehensive update on those efforts.

It was obvious from the flight line that more planes, pilots and maintainers were populating the base since I was last there.



U.S. Marine Corps Lt. Col. Gregory Summa, right, relinquishes the colors to Lt. Col. Adam Levine, left, during the Marine Fighter Attack Training Squadron (VMFAT) 501 change of command ceremony aboard Marine Corps Air Station Beaufort, S.C., June 23, 2017. The transfer of the colors from the outgoing commanding officer to the incoming commanding officer upholds Marine Corps traditions and formally transfers all authority and responsibilities. (U.S. Marine Corps photo by Lance Cpl. Kayla L. Rainbolt/Released)

It is also clear from discussions with the CO that Ed Timperlake's forecast that the [squadron pilots](#) and the squadrons using the F-35s would drive the process of innovation, not the inside the beltway cubical commandos.

And that innovation is being driven in part by a learning cycle from the operational squadrons back to the training command.

The CO highlighted that as the operational squadrons gained experience in executing the various missions in which the aircraft is involved that operational learning was being brought back to the training effort and providing greater accuracy with regard to the demand side but also the training effort was able to work better training for preparing for operational missions.

The command has obviously scaled up since the last time I was there with more than 100 pilots trained and with the standing up of the second training squadron at Beaufort over the next few months, that scaling up would be accelerated as well.

The challenge is a significant one as the USMC will transition from their legacy force to an all F-35 one within the next two decades and the task of the training squadrons will be to train the "newbies" and the experienced pilots from legacy aircraft to fly and operate the F-35.

The training cycle is eight months during which the pilots learn to fly the new jet and then to take the jet through its paces with regard to variety of missions for which the Marines use their fast jets.

When I was last there, no "newbies" were present; only experienced pilots.

Now the "newbies" are the majority of pilot trainees.

I asked the CO who is an experienced Hornet pilot how the two cohorts experience was different. It must be remembered that heart of fifth gen aviation is a man-machine revolution, where the pilot is getting comfortable with the performance of his aircraft generating data providing situational awareness and the pilot interacting with his screens while operating the aircraft.

He made the point that the "newbies" had never experienced the much more pilot intensive processing of data which legacy pilots do, expected their machines to work in ways that could facilitate what they wanted to do, but to do them faster.

In other words, they already assumed the new baseline of man-machine interaction and wanted that interaction to speed up.

The pilots of legacy pilots had much more appreciation of the fact that the F-35 was working from a very different baseline than their legacy jets did.

The training of the two cohorts was handled a bit differently as the more experienced combat pilots could do more training in the simulators with the “newbies” doing more time in the cockpit.

I wanted to discuss with the CO the challenge of training with regard to a software upgradeable aircraft.

I have discussed this challenge with regard to other software upgradeable aircraft, in Williamtown Airbase with the RAAF and the P-8 with Jax Navy.

Put simply, the advantage of the software upgradeable aircraft is that the historical type/model/series understanding of an aircraft now transitions the type by the software enabled combat systems on board and which variant is onboard the particular aircraft or squadron of aircraft.

This is the concurrency issue, which is built into a software upgrade process, although the defense press has incorrectly only identified this challenge with that of the F-35.

Not a surprise because they IOC'd first and to the operational impacts from operating these aircraft in the Pacific and are transitioning their initial 2B software jets to 3F and this transition requires both a hardware and software upgrade.

What this means that the training command will certainly operate the early software versions of the aircraft as the Marines are pushing the 3F version to the operational squadrons.

But what this means is that pilots in the training process need to become familiar with both variants of the aircraft and understand the interaction of the two.

This is not a bad thing because in the operational world they will need to work with aircraft operating globally which are at various software levels, both with regard to services and partners.

Lt Col Levine has been flying the F-35 for more than seven years and has witnessed first-hand the software roadmap taking shape from block 1A through 3F.

He underscored that the evolution onboard the Hornets flown by the Marines compared to flying the early variants of the F-35 did not demonstrate the generational differences which now are evident with the 3F.

“There is simply no comparison between a 3F F-35 and a legacy aircraft.

“They are in different worlds”

The Marines at Beaufort have and are working closely with allies.

The Brits stood up their training at Beaufort and have jets, pilots and maintainers working with the squadron until this summer.

Now the training squadron is being stood up at RAF Marham, and the RAF and Royal Navy will train there.

But with the departure of the Brits, the Italians are coming next and will train for the next couple of years before their carrier comes to the US for final certifications in a couple of years.

And with the Japanese and Singaporeans likely to become F-35B users one might assume that they will learn of the charm of this lovely Southern city as well.

If you are in the F-35 program, you can decide to change the mix of variants, and I would not be surprised to see partners starting to add Bs to the mix, given its inherent basing advantage in a world where mobile basing is clearly becoming a strategic requirement.

The 2019 Beaufort MCAS Airshow: The Warlords and the Latest F-35 on Display

04/28/2019

We had a chance to attend the 2019 [Beaufort MCAS Airshow](#) on Friday, April 26, 2019.

The airshow goes through today, April 28, 2019.

A visit the day before with the CO of the Warlords provided the framework for viewing the airshow and its star, the F-35 with its 3F software capabilities. The upgrade from the earlier version for the Marines, the 2B, requires a hardware and software upgrade, which included an expanded flight envelope which is very clear to the naked eye when you witness a flight demo of this new variant of the aircraft.

Marine Fighter Attack Training Squadron 501 (VMFAT-501), known as the “Warlords,” stood up in 2010 at Eglin Air Force Base, Florida, and trained the initial group of Marine Corps F-35B pilots there.

In late 2014, the Pilot Training Center and Marine Fighter Attack Training Squadron 501 [began the first F-35 pilot training course](#).

Editor’s Note: From the outset of the F-35 program, the approach was to develop [six key software releases](#) known as blocks:

Block 1A/1B – Block 1 comprises 78 percent of the more than 8.3 million source lines of code required for the F-35’s full warfighting capability. Block 1A was the ready for training configuration while Block 1B provided initial multi-level security.

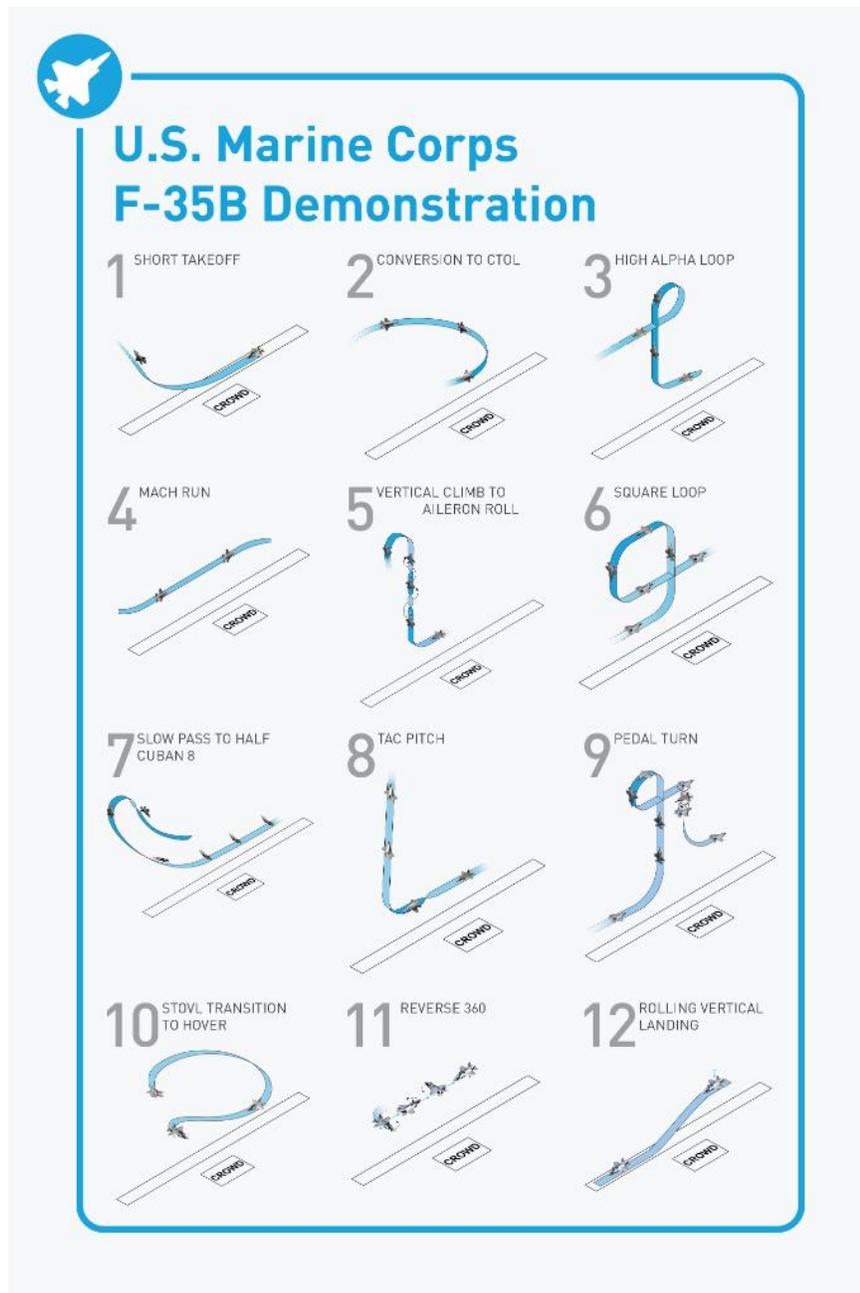
Block 2A – Block 2A is currently released to the F-35 fleet. It provides enhanced training including functionality for off-board fusion, initial data links, electronic attack and mission debrief. With Block 2A, nearly 86 percent of the required code for full warfighting capability is flying.

Block 2B – Block 2B provides initial warfighting capabilities, including but not limited to expanded data links, multi-ship fusion and initial live weapons. The U.S. Marines declared IOC in July 2015 with Block 2B. With Block 2B, more than 87 percent of the required code for full warfighting capability is flying.

Block 3i – Block 3i provides the same tactical capabilities as Block 2B. The principal difference between 2B and 3i is the implementation of new hardware, specifically the updated Integrated Core Processor. The Air Force declared IOC with Block 3i in August 2016. With Block 3i, 89 percent of code required for full warfighting capability is flying.

Block 3F – Block 3F provides 100 percent of the software required for full warfighting capability, including but not limited to data link imagery, full weapons and embedded training.

With regard to the flight demo itself, the following graphic highlights, the paces through which the F-35B pilot took his aircraft.



Warlords Series 1: Turbo Tomassetti Looks Back at His Career and the Way Ahead for the F-35

04/29/2019

By Robbin Laird

Second Line of Defense recently visited 2nd Marine Wing, including MCAS Beaufort.

We visited the 2019 airshow as well as interviewing the current CO of VFMA-501, Lt. Col. Adam Levine.

On the occasion of that visit and the opportunity to get an update from the CO, we are going to look back at our various visits to the squadron and the standup of the F-35.

We started by visits at Eglin AFB where the squadron was first stood up prior to its move in 2015.

It is most appropriate to start with the “godfather” of the effort, Colonel Tomassetti and the articles we published June 2013.

This is the first article in the series of retrospective look backs.

“Turbo” Tomassetti Exit Interview

2015-03-13 By Robbin Laird

I have had the opportunity to track the evolution of the Osprey from seeing a small number of planes on the tarmac at New River to watching it mature and revolutionize the assault force.

It is clear that the F-35B will have a similar trajectory with the USMC.

Watching that growth and development path has been facilitated over the years by meeting with, and talking with Art “Turbo” Tomassetti when he first came to Eglin AFB and now after the end of his distinguished Marine Corps career he is working the F-35B issues from the Lockheed Martin side of the fence.

When I first met “Turbo” in 2010 there were very few buildings at Eglin to support the F-35 program.

Now planes are coming out of the production chute and the services and the partners are working with the planes and preparing for their entry into service.

In this interview, “Turbo” provides an update on the F-35B preparing for entry into service and provides some perspectives on the way ahead, as he always done in our interviews.

Question: When I was at Fort Worth recently, you were traveling. I assume that with the Marines focused on the entry into service of the F-35B this year, you are making the tours at the key spots where the plane is coming to life and getting ready for IOC?

Tomassetti: That indeed is what I am doing.

My typical flow is I try to get to the places where we have the airplanes operating every month and each is for a different reason.

I visit to see how they're doing on progressing to close out SDD at Pax River to Beaufort to check on Pilot training and to Yuma to see how they're progressing on preparation for IOC and OT-1 as they will be the predominant entity conducting that event on the USS Wasp in May.

OT-1 will be a team event with personnel from OT in Edwards and from VMFAT-501 from Beaufort supporting as well.

The key focus of OT-1 is verifying that we can take the airplanes, move in from a land home base, put them out at sea, operate them at sea, and bring them home, which is what the Marine Corps would do in most cases, should they be called upon to go support an activity somewhere on the globe.

I will be at Yuma next week and looking to find ways we can support them most effectively.

Question: There is a story out there which highlights that the Marines are drawing upon USAF maintainers in getting ready for USMC IOC.

To the unvarnished eye this is a negative comment, but does this not highlight one of the goals of the programs, namely cross service and cross partner maintenance approaches?

Tomassetti: It does.

As we talked about when I was at Eglin, a clear opportunity with a joint aircraft it is to have joint maintenance.

Commonality allows you to do things that you can't do if you don't have common airplanes.

The notion that every base is an isolated entity unto itself and that people will only have expertise to do their own thing is something we need to get past.

I think the world in the future is going to demand a lot more integration and cooperation than we've seen in the past in order to be successful.

That provides options as well. If you look at F-35 as a common global system, that's much different than looking at it as an isolated system or one-off thing that has unique support requirements.

I think back to the days of Desert Storm where everybody came to play, but not everybody could play together because we didn't have the interoperability that is built into this system from the ground up.

Question: A challenge of building a software upgradeable program is to understand how capable the initial planes actually are. They will progress over time, and in a real sense never be finished.

How capable do you see the initial F-35B to be deployed by the Marines for combat?

Tomassetti: I hear the same things and people say, "How can you go initial operational capability before you're done developing the airplane?"

I agree with you we should really never be done developing airplane.

We should always be looking to improve it and that is the plan going forward.

We already talk about follow-on developments because we know technology's going to change, tactics are going to change, the threat's going to change.

We have to keep up with that.

The airplane never becomes static in terms of its growth.

Why would the Marine Corps declare IOC with something at this stage of the game?

I think you have to look at, if called upon to go someplace and do something. You are the person in charge. You would like to send your best assets forward.

Your best assets are those that can accomplish the mission and the ones that can keep your people safe doing the mission.

Look at what the Marine Corps has in its inventory as an example look at the airplane I grew up in, the Harrier. I went to Desert Storm in a Harrier that was a day-attack airplane.

It did not have systems to conduct night operations yet we conducted operations at night.

It is a subsonic airplane with a limited weapons envelope, but it got the job done because the people were well-trained.

The airplane was the best it could be at the time, and that's what the Marine Corps had in its arsenal to do the job with.

Now the F-35B is in the Marine Corps' arsenal and they look at the best platform to go do whatever the mission is.

I think today, the F35B has all of the attributes to excel in a number of mission areas and why would you not choose to send your best system out to accomplish the mission?

I think that's where the Marine Corps is and that they realize that the airplane today is already getting to the point where it's meeting or exceeding the capabilities of legacy airplanes.

In addition to that, knowing that you're probably going to send the F35s with a mix of what you already have. Having the F35 out there with the legacy airplanes only makes the legacy airplanes better.

From the outset, the F-35 will have an additive effect in the battlespace and will enhance the lethality and survivability of the other air assets and of the ground force as well.

Question: Another aspect, which is confusing, is the notion of IOC itself. IOC is a beginning point; not a statement of full maturity.

How should one interpret IOC?

Tomassetti: I try to tell people that if you go to Yuma on the day before that declaration and look around the squadron and look around the Flightline and go the day after the declaration, and look around the squadron and look around Flightline, I don't think you'll see anything different.

But what does change is the status of the squadron.

That squadron knows that they can be called upon to go somewhere.

That squadron commander knows his squadron is conducting their training when they're evaluating their readiness, when they're doing their inspections, when they're participating at exercises, whatever the case may be. He's looking at it through the lens of my folks need to be able to, if called upon, go someplace, and be effective and to meet the mission objectives.

That puts your mindset and how you approach what you do day-to-day in a little different prospect than, "Hey, I'm still just in this developing, maturing, on-my-way to something phase where my flying is mostly just focused on expanding my knowledge on the airplane."

Now the squadron commander and his team are focused on going somewhere and doing something effective in support of the deployed force.

It is not about tests; it is about mission success.

Question: I want to return to the challenge of understanding software upgradeability. There is a constant problem of understanding that blocks of software are simply bundles of added capabilities; they are not the definer, a level of maturity necessary to use the airplane.

How do you view the growth process after IOC?

Tomassetti: When you have the airplane in hand and actually start using it, you're going to do what you do with every other system, once you have it; you learn how to maximize what it can do.

It may or may not be what you envisioned in the initial proposition. It may or not be what you envisioned during development, but when you get the airplane and you're operating it, you will find the way to get the most out of what that airplane can do.

The other key is that now as we put to the airplane and the ALIS 2.0 version of maintenance in the hands of the squadron in Yuma, they now become part of the process. I'm not saying that they haven't been, but they're now in the realm of we're also now being able to contribute to the next iteration of the airplane.

They will find things out.

They will be part of the solution to make the airplane better as we move forward.

That's a good thing, because while the Developmental Test team does their piece and a lot of what I just talked about is the things we would normally expect, the Operational Test team to do, because of where we are and how the program's been set up, you now also have fleet squadrons that can contribute to that knowledge base and maturation process as well.

We just need to be able to collect all that information, make sense of it, and then figure out how to make the airplane better based on all that experience.

If you looked at the mission of the airplane and whether you talk about it in air-to-air or in an air-to-ground sense, it has to be able to locate, identify and prosecute targets. Today, that's not necessarily achieved by making the wings bigger or making the tail different or changing the configuration or the look of the airplane.

It's done by changing the systems, the inside of the airplane, making the processors faster so that they can go through that cycle faster, which makes enables it to find and execute against targets more rapidly and more effectively.

And this true not just for the F-35, but for the information it can deliver to the other aircraft it operates with to make them more effective.

Identifying the target is probably the real key here, is not only tell me that what's out in front of me: is it a tank , is it a truck , an airplane or a ship but tell me what kind of tank it is. Tell me how fast it's moving or how long it's been parked where it is or if it's getting ready to fire. That kind of information processing is going to be done pretty much through software, not through bolting something on the airplane or changing the shape of something on the airplane.

What you're going to do now is use and control the electromagnetic spectrum by changing boxes and software inside the airplane that no one will ever see from the outside.

You're right. It's a little bit different because folks in the past when you change airplanes, they're used to seeing that change.

They see that new pod or new bump or that new antenna or it got bigger. It has more pylons or those kinds of things.

I don't think you're going to see the same thing in the lifecycle of F-35.

It's going to keep getting better but as you described, it's likely going to look the same from the outside.

Question: We put in our latest Defense News commentary the simple proposition that the F-35 is coming at a point for the services and the partners where they are looking at its contribution to the transformation of their forces, not simply adding a silver bullet to the holster.

How do you view the transformation process?

Tomassetti: It is twofold.

On the one hand, it is about operating legacy aircraft with the F-35 and learning how to make these legacy aircraft better and to use them differently as the services learn what the F-35 does and how it does it.

For the Marines, this means that the Av-8Bs and F/A-18s, which remain in the force, will not be used the same way they have been used before. You have to figure out how to integrate them. Understanding how do they operate differently and more effectively with the F-35s, and how do the F-35s draw upon the legacy aircraft to gain more significant effects from operating together.

On the other hand, the F-35 is simply not like a legacy aircraft. We need to learn how to operate them together to learn their special effects when so doing for joint F-35 operations, or anticipating the day when we have an all F-35 fleet.

The pilot and maintainer evolution will be critical to this as new pilots and maintainers enter the force now with no history/habits from legacy aircraft.

All of us old folks carry a lot of baggage from wherever we came from. It's not a good thing or a bad thing. It's just reality.

We've carried that with us. It shapes how we think about things. We're going to bring a breed of folks into the airplane shortly that is going to have a fresh perspective, that is a different generation which grew up with X-Box 1 and Play Station not Pong and Space Invaders. They're used to processing a lot of information.

They're used to speed in information.

They are going to find out ways to do things with this airplane that we haven't even thought of.

We have these big milestones we've got to track through to be successful in that but what those youngsters are going to bring to the table when they get their hands on this airplane and start putting their new perspective on it I think is going to be dramatically different over time.

“Turbo” and “Easy” Focus on the Role of Squadron Pilots Driving Innovation

6/26/13 During a visit to the 33rd Fighter Wing, an exit interview with Col. “Turbo” Tomassetti provided a unique opportunity to look back on the career of “Turbo” and the way ahead for the F-35B within USMC aviation.

A key part of the interview was provided by an exchange between “Turbo” and “Easy” Ed Timperlake, a former USMC aviator and reserve squadron commanding officer.

The exchange provided a good chance for non-pilots to understand the key role which the exchanges in the ready room play in shaping the evolution of combat training, approaches and capabilities for an air combat force.

“Easy”: The “right stuff” is the best way to understand how it feels when you start in the ready room and then move forward in your aviation career. Could you take us back to your experience when you started? What did it feel like to enter your first ready room and begin your career?

“Turbo: I’ve had a lot of time to reflect here in the past few weeks on things.

I remember when I got to Harrier training. What they would try to do is to get everybody in the backseat of one of the two-seat Harriers just for an exposure ride or two before starting the class.

And I remember getting the opportunity to get in the back of the Harrier on a flight, and it was a four-ship training flight, and I don’t remember specifically the mission of the day. But just sitting in the cockpit, coming out of the TA4 as my sort of last airplane experience a few months prior, sitting in the cockpit and seeing an electronic display screen, and a heads up display (HUD) in there. I thought I was in the most high-tech thing I had ever seen in my life.

And when I had that first sensation of getting pressed back in the seat on a short takeoff, it was like wow, this is incredible. I’ve seen these airplanes at air shows as a kid, and that’s sort of why I put it down as my choice to go fly.

But an interesting anecdote, the RF4 was my first choice But the class before me was the last class they assigned anybody to the RF4 in because they knew it was timing out. Harrier was my second choice, so I ended up heading to Cherry Point.

The ready rooms were big because there were lots of different folks in lots of different phases. But there at Harrier training, there were only about three classes in session at any given time, given the length of the course.

And you were in with a small group of folks. And chances are, you were going to end up in the same squadron as at least one of those other folks.

I was fortunate that three guys out of my Harrier training class went to the same squadron because that was where the need was.

You started to get a sense of that camaraderie and a sense of what it meant to sit there on a Friday afternoon before going over to the officer’s club or whatever the deal of the day was and talk airplane stuff with bubbas who had the sort of same goals and mindset that you have. That is where it started and I vividly remember those moments.

“Easy”: “With the second tour, sitting in the ready room, and discussing flying the airplane, you understand the airplane better, and you’re learning from squadron mates who may have been exposed to a different set of experiences in his or her career path — at the ’03, ’04 level— You guys must have seen that a lot in the Harrier community.

“Turbo”: I got about six months extra time with the squadron than most people normally got just because I was waiting on a school seat for the summer. . I got 1,000 hours in that first tour, which was virtually unheard of in the Harrier community.

With the squadron I went to a six-month deployment to West Pac, three months to Canada in Cold Lake, nine months to Desert Shield, Desert Storm. And for that whole three and a half years I was with the same guys. Our squadron came back from West Pac, turned right around and went to Desert Shield.

In other words, in the summer that we should’ve been doing the big turnover of people, it never happened because we preserved everybody in the squadron to go to war.

So I remained in the junior group of pilots in that squadron for my entire tour because nobody new came in until the very end there when we got back from Desert Storm.

But I remember very well being challenged and starting to get a sense of where I stood in the realms of aviators in that first tour. It was mostly all about me. And again, I was finding out how good I was or wasn’t; I was finding out what my limits were with what I could do with that particular airplane. And so largely, I was finding out what the limits of that airplane were and what my limits were.

We were a band of brothers, we did all this stuff together, and we had an incredible level of team that you don't come across very often.

The second tour, I think, because you feel you come back in now as a trainer, a leader, and there are folks younger than you, you start to get a glimpse of the bigger picture.

You start to have more responsibilities outside you and your airplane.

And you start to figure out what where you fit in the grand scheme of this thing called the MAGTF.

With my second tour is where that sort of ah-ha moment occurred that I realized that it wasn't just about me and what I could do in my airplane, there was something bigger out there within which I fit.

“Easy”: Col. could you look back from that experience to your latest one as preparing the pilots for the F-35? Could you compare and contrast your experience with what you are seeing with the new F-35 pilots?

“Turbo”: I think one of the interesting things right now that is a little bit different than anything else that I encountered along the way is the mix of pilots in the ready room here at 501.

When I entered the Harrier community, we were still merging the A4 community into the Harrier community, so in my training class for Harriers, there were three transition A4 pilots, and three new guys.

There was a blend going on of older transition pilots and new pilots being injected into the system. But they were all basically attack pilots coming from very similar backgrounds.

For new guys like me, we didn't have a philosophy yet, but we understood the difference between fighter and attack, since you had to make a distinction back then.

But now I sit in the ready room at 501 and simple things stand out.

Everybody's left shoulder has either a MAWTS patch or a Test Pilot School patch or both. There isn't a squadron in the Marine Corps, outside of MAWTS itself where everybody's wearing a MAWTS patch.

The next observation I would make is that you've got an even blend of Harrier pilots and F-18 pilots. And you've got the different sort of nuances of F-18 pilots. You got single-seat and two-seat pilots, and you've got boat deck pilots and shore-based pilots.

We have a confluence of all of these different ways of thinking about an airplane and what it means to fly that airplane and be part of operations.

This means that there are a lot of good ideas out there, and there is a lot of baggage out there; and that all comes together in the ready room.

It's interesting to watch when something not clear-cut. They have a standardization board and they want to discuss some particular way to train and maneuver or a particular way we should be doing something with the airplane. And there's no clear-cut answer. It didn't come handed to us in a flight manual; the test guys didn't already develop the way to do it. It's up to the squadron to decide what to do.

And I'll tell you, there are some interesting and heated discussions between all of the different types of pilots that are sitting in the ready room. And that is a good thing.

I think that uniqueness is going to set us off on a footing with this airplane that perhaps the V22 had a similar sort of start. The fact that we started flying here over a year now at Eglin, we are introducing the operational F-35. And the fact that the pilots in the 501 ready room are putting their fingerprints on everybody who is going to fly it, at least for the next several years, They own the training for F-35., They are going to set the foundation.

Obviously, at some point in the future, things will normalize and you won't see all those patches sitting in the flight ready room together.

I don't know that we could've done the beginning of this airplane any better in terms of the people and how it is getting introduced and how the airplane is meeting the pilots.

"Easy": I couldn't agree with you more. I lost a very close Academy Classmate to the AV-8, Tom Tyler. Obviously, the F-35B flies much easier than the Harrier, which is a major step forward. With a serious improvement in the ability to fly the aircraft, and that will allow the pilots to deal with the other capabilities of the aircraft more effectively. What is your take on this evolution?

"Turbo": I think there's sort of three distinct phases we're going to go through, the way the program's set up in the beginning. You're going to have the phase where we have all these transition pilots coming from other platforms who come with baggage. And we got to convince them to let go of that.

And then, in the next phase you will have to expose to them and explain to them the new thing, then new capability. And finally, you have to give them time to embrace the new thing. So, I think that's what's going to happen.

And right now, we're sort of in between phase one and two. We're sort of getting people to let go of whatever they came with. Not let go of everything because there's a lot of best practices out there we do want to harvest, but you have to reopen your mind to new possibilities when you come to this airplane.

And we'll do a good job here of doing that with the systems we have and the training system that's in place. We will be able to explain what the new thing is. That's in the classroom, that's in the simulator, that's in the sidebar discussions in the ready room, all of that.

The fact that I have been successful in convincing the Marine Corps to inject a few developmental test pilots in here, who had finished their DT tour, so that we didn't sort of lose all that experience and expertise. So that now you've got folks in the ready room who can give you the sort of background on things and why they are the way they are, and how they're going to get better.

We're going to start with what we left off with in our other airplanes. We're going to start with training a person with a number of flights and in the way we did it in the Harrier and Hornet because people need to press the I believe button on this new system, and you have to give them time to get there. You have to let the airplane sell itself

And it will. I mean, the V22 sold itself out of all of its demons of the past. It wasn't because somebody said something in some newsprint article, it wasn't because somebody said something in a meeting. The airplane sold itself based on its performance.

And the F-35 is going to do the same thing. It just needs to have the opportunity to do that.

I think we're going to find that pilots are going to get out there and they're going to see that hey, this syllabus says you got to do 20 landings in the first three weeks in order to get your mastery of this. And by the third landing, guys are going to go okay, that was a perfect landing. I don't know really why we're going to continue to practice this for 17 more tries.

I think we're going to have to let it evolve over time, but I do believe that we are going to get to that point where we're going to look at this airplane as its own unique entity, and start training to what it allows us to do.

The goal — I know why the Marine Corps wanted an expeditionary airplane, I get it because I grew up in that environment, but I will tell you, the sort of personal stamp that I have tried to put on this thing since I joined the program in 1998 is I wanted a STOVL airplane that could do all the things that the Marine Corps needed, but was easy to fly.

Because like you said, I went to three memorial services in my first year in the fleet. And that was painful, and that hurt because I knew those guys and I lived with those guys.

There were some shortfalls of the airplane, there were some shortfalls in our training, and again, it was airplane that really demanded that you were on your toes every single minute you were in the cockpit.

And we're smarter than that now; we're better than that now. A little bit because computers are better than they used to be and what we can do with computers and airplanes are better.

But the whole point of building this particular STOVL airplane, From my view and the other Harrier pilots in the developmental phase was to make it easy to fly. We knew what the price that the people who flew that airplane paid, and we didn't want to see that repeated.

Simple things like hey, the airplane won't let you decel to the hover if you're too heavy. A simple safety feature like that, might have saved people in the Harrier

And the fact that we're smart enough now to figure out how to incorporate that into an airplane and make it work and the fact that I have a STOVL airplane that I don't need three hands to fly like I did in the Harrier.

I got an airplane that you tell I want to go up; I want to go down, I want to go forward, I want to go back, and it says I got it. I'll figure out what to do with all of those things that can maneuver and wiggle. And you just tell it what you want it to do.

I think we need to give the airplane time to sell itself, and we need to give the folks a chance to digest what that means, and then go back and take another look at how we train people to fly it and realize that we're going to spend 90 percent of our time talking about tactical capability of the airplane and about 10 percent talking about takeoff and landing.

Editor's Note: The subtitle of this article could be "Cubical Commandos Need Not Apply to Become USMC Aviators"

"Turbo" Assess the Past and Looks Forward to the Future of Marine Corps Aviation and Its Contribution

2013-06-27

"Turbo" has been on the builders of the F-35 in the USMC in every sense of the word.

From being an X plane test pilot to one of the key officers involved in the build out of the Eglin training facility, "Turbo" has clearly left his imprint on the program and on the future of U.S. airpower.

In this interview, we provide an overview of his assessments of the past and the prospects for the future.

SLD: How does the F-35 impact on the expeditionary capabilities of the USMC?

Turbo: I think when you look at the F-35 airplane, you have to look at it in terms of what does that airplane bring to the battle space.

People want to measure airplanes with the standard sort of metrics of how fast does it go? How well does it turn? How many of this or that can it carry?

The F-35 goes beyond that.

And when we talk about what it brings to the Marine air-ground taskforce, you have to look at what does that airplane in the battle space mean to that Marine on the ground with the rifle and the radio? What does that airplane in the battle space mean to that Marine in the tank or in the armored vehicle?

It means that he or she has access to information they might not otherwise have because that F-35 is there.

It means they will have visibility into target sets and spheres of influence beyond the range of what they would normally have access to before.

And when we talk about the F-35B, we're bringing that airplane up close to where the troops are because of its expeditionary nature. Because it can go from amphibious ships, it can go from expeditionary airfields, troops will have access to that airplane, they have access to what that information that airplane brings to the table.

It will open up a whole new world of possibilities in the battle space.

What that brings to the Marine air-ground taskforce is a degree of insight into the battle space and ability to affect the battle space that we have not had before.

SLD: How would you contrast the options and capabilities you had at that time you started as an aviator with what a young Marine Corps aviator will have when he or she goes with the first F-35B squadron to Japan?

Turbo: When I started in Marine aviation, my first airplane was the Harrier. And I thought that airplane was the most high tech incredible airplane I had ever seen. It had a single screen in the cockpit; it was basically an analog airplane with a few digital enhancements. It had a heads up display; it had some interesting ways that you could designate a target on the ground and some automatic sort of weapons engagements things. It wasn't purely manual aimed and manual deliver weapons as some other airplanes of the past were. It had a little bit of digital enhancement.

And there was information available to me as a pilot. I could get some information about what was going on inside my airplane. I had a limited bit of information of what was going on in the world around me.

And when I look now at what the F-35 brings to the table, it's a completely digital airplane. The analog world is in the past.

And the amount of information that's available to the pilot and the cockpit, it's almost mind-boggling. From the touch screen display that sits in front of you with the ability to open 14 windows of information you get about the aircraft, or about what's going on in the battle space around you.

And the pilots have access to all of that. They have access to whatever their airplane is seeing and sensing around it. They have access to the other F-35s they're flying with, the information that they're seeing and sensing. And all that information is available to the pilot.

I couldn't even envision that amount of information, that amount of situational awareness of the battle space back in the days when I was flying the Harrier.

Everything was small then. The airplanes were close together. The area that we could see and sense and understand was small circle around the airplane.

Now, the airplanes are far apart. Now that area that they can see and sense is almost limitless considering that they can get information from off board platforms and beyond the horizon.

It's a whole new world of having situational awareness when you're flying the airplane.

SLD: From the time you flew the X plane, which is now in the Smithsonian, to the reality of an F-35B, what's the biggest difference concerning what you imagined and what you actually see on the flight line?

Turbo: We wanted to build an airplane that was easy to fly and an airplane that was easy to maintain. If you build an airplane that's easy to fly, your accident rate comes down. Your requirements for training come down. And in the long-term life of an airplane, if you can reduce those two things, the cost of everything comes down.

And what we can do today with fly-by-wire technology digital flight controls is, again, it's leaps and bounds over where we were 20 years ago when we first started with fly-by-wire airplanes.

Right now, we have an airplane that the pilot says I want to go here, I want to do this, and the computers make all that happen. And the airplane goes where you want it to go.

And I think as much as we hoped for that, we all knew that that's a hard thing to make happen. It sounds like a very simple concept; build an airplane that's easy to fly, why don't we do that all the time? Well, in practice, it's very complicated because airplanes today are complicated machines.

And we demand a lot out of them in today's environment. The fact that we've achieved that is great.

I had no concept of what this thing called sensor fusion was really going to mean when you sat in the cockpit. It's a combination of what the sensors tell you, it's a combination of how the information's presented on the flat panel display in front of you, and a combination of what you see in your helmet mounted display.

It is all those systems working together. What you know as the pilot, now, compared to what I knew as a pilot in the prototype or what I knew as a pilot in any other airplane I've ever flown, again, it's in a league all by itself.

And I will tell you, I think we have got the airplane to the point where you can start to really see how all those systems will come together.

SLD: How hard has it been to change the mindset of the pilots now learning to fly and use the F-35?

Turbo: I think one of the interesting things in the beginning, with any new program, is that you start with pilots who have flown other airplanes. You transition experienced pilots into your new system.

And they all bring baggage with them, for lack of a better term. Everybody brings what they know from their legacy airplane. They've grown comfortable with whatever that is.

When you give them new capability and new technology, first you've got to figure out how to convince them to let go of the old, so that's one step. Then you've got to explain the new to them and what it means and what it can do for them. Then you have to give them time to embrace that.

I think today we're between that stage of letting go of the old and explaining the new. And we need to give it a little bit more time for folks to see all that in practice and then come to embrace that new technology and what it means and the capabilities that it gives them.

But they're also the generation that grew up with smart phones. They're the generation that grew up with all the advanced video game technology that we have today. They grew up having the ability to assimilate lots of different information in graphic format in front of them and manipulate that information and be comfortable with it.

I think they're going to be the first real indication of folks who can step right into embracing the new technologies and those new capabilities and what it can do for them. I'm excited to see those first youngsters get into the airplane that don't have any preconceived notions, that don't have any of that undoing of the old way of doing things that has to occur and see what they can do with the airplane.

I think we're going to learn a lot more about what you can do with an F-35 when that generation of pilots hits the flight line.

SLD: Do you think a fleet concept is perhaps a good way to kind of capture to sharing your data aspect of the aircraft?

Turbo: I do. It's too easy to just fall back to what you know when you want to talk about an airplane. You want to talk about, again, the basic performance parameters of speed and turn rate and those kinds of things.

With the F-35, you have to get to the next step. You can't look at it as just a single airplane.

And even if lots of different people are buying that same single airplane, they need to get past just the fact that hey, we can go the same speed and we can turn at the same rate.

And we may develop some similar tactics because of that. We now have to look at the fact that the airplanes can gather, collect and share information.

And they can share that information with any other F-35 out there and to some extent with just about anybody else out there. And you have that capability because you have the same platform, because you have that commonality.

That's something we're not used to having. It's not just the fact that we can talk on the same radio frequency. We're sharing information over data links. We're sharing information collected from a variety of sensors that's been processed already before it's sent over to the rest of the people who are going to view it. The F-35 has that capability.

We will need to learn how to use that capability of a group of airplanes, regardless of where they launch from, regardless of whose insignia is painted on the outside. You need to harness the energy that that group of airplanes brings to the battle space.

SLD: A Navy pilot as deputy commander is replacing you. Doesn't that represent the next phase in the program with the inclusion of the F-35C within the overall F-35 program?

Turbo: I represent the last of the initial folks who came to Eglin to get it started. The services did a great job of sending people here who were builders. Perhaps we were not the best at streamlining and making things efficient, so that's what the new crowd's going to do.

You need to take the place to the next level. And again, we've talked about and you need to stop talking about maturing and developing, and the initial stages and start talking about you're a training organization responsible for making a quota of trained pilots and trained maintainers every year.

And you need to start thinking about this place in those terms.

My successor brings a wealth of experience as an initial F-14 guy, and then later, F-18 guy as a CAG. He comes understanding what Naval aviation means. And I think his perspective here along with the new Air Force wing commander; I think that's going to continue to help give the airplane the opportunity to sell itself.

SLD: As the plane progresses it will be increasingly capable of EW functions. We would assume that you would add pilots with that sort of background to the program as well.

Turbo: As you know they are already doing that at MAWTS, and we will do that here as well. And I don't think it's too early to start because what you want is those folks who understand that mission, the electronic attack mission from a completely different perspective than any Harrier or F-18 person might. We need to be there at the ground floor as well because you want the initial foundation to be laid by people who know what they're talking about.

I think we're getting to that point with the block 2 airplanes where some of those capabilities are available. Even if it's just available in the simulator for a few months before it's out there on the flight line, those folks are starting to figure out how are we going to teach somebody electronic attack type capabilities in the simulator because it works in there in the beginning.

Who better to have than the folks who do that for a living doing the teaching?

SLD: As you look back, what are some of the lessons learned that you would pass on to your successors?

Turbo: I ended my retirement speech to the Marines in 501 with the analogy I've used to describe this place and the effort here at Eglin.

I use the rock climbing analogy. For a long time, you can stand there and look at this big mountain peak in the distance. And that's what was going on in an F-35 five, six, seven years ago. People were just sort of staring at this enormous thing in front of us.

At some point though, you got to put your hand on the mountain and start climbing. And you got to have the confidence and the skill to continue to move up. You got to have the cleverness to move sideways from time to time because that's what it takes. And you got to have the courage to move backwards on occasion because that's what it takes to find the way to the top.

But the one thing you cannot do once you have started to climb, is you've got to have the commitment never to let go.

I left everybody with that message on numerous occasions and that's how I close out my retirement speech. And I believe that describes where we are at today.

We're on this mountain, we still got a ways to go to get to the top, anybody who has decided to climb just needs to hang on and use those skills to keep moving forward.

Colonel Arthur Tomassetti retired for his last position which was the vice commander of the 33rd Fighter Wing, Air Education and Training Command, Eglin Air Force Base, Fla. The 33rd Fighter Wing serves as the home to the Joint Strike Fighter Integrated Training Center, providing pilot and maintenance training for nine international partners.

Colonel Tomassetti earned his commission from the United States Navy Reserve Officer Training Corp in 1986. He completed flight training in Beeville, Texas and Pensacola, Fla. He became a pilot and trained in the AV-8B Harrier in Cherry Point, N. C. He's served with two Fleet Harrier Squadrons VMA-542 and VMA-513.

Colonel Tomassetti served as a member of the Joint Strike Fighter Test Force and became the lead government pilot for the X-35 Test Team. He was the only U.S. Government pilot to fly all three variants of the X-35 aircraft and flew the first ever Short Take-Off, level supersonic dash and vertical landing accomplished on a single flight.

Colonel Tomassetti was a designated USMC Acquisition Professional Officer holding Defense Acquisition Workforce Improvement Act (DAWIA) level 3 certifications in Test and Evaluation and Program Management

He was a command pilot with more than 3,200 hours in 35 different aircraft.

EDUCATION

- 1986 Bachelor of Science degree in Mechanical Engineering, Northwestern University, Ill.
- 1986 USMC Officers Basic School, Va.
- 1988 USMC AV-8B Flight Training, Cherry Point, N.C.
- 1992 USMC Weapons and Tactics Instructor Course, MAWTS-1, Ariz.
- 1993 USMC Expeditionary Warfare School, Marine Corps University, Va.
- 1997 United States Naval Test Pilot School, Patuxent River, Md.
- 2001 Master of Science degree in Aviation System, University of Tennessee, Tenn.
- 2002 USMC Command and Staff College, Marine Corps University, Va

ASSIGNMENTS

1. Jan 1987-Aug 1989 Flight Training Student Fla., Texas, N.C.
2. Sept 1989 – June 1991 Flight Officer VMA-542, Cherry Point. N.C.
3. June 1991- Jan 1992 Director Safety and Standardization VMA-542, Cherry Point., N.C.
4. July 1992-June 1993 Weapons and Tactics Instructor, VMA-542, Cherry Point, N.C.

5. July 1993- June 1994 Student Expeditionary Warfare School, Quantico, Va.
6. June 1994- Oct 1994 Asst Operations Officer, USMC Officers Candidate School, Quantico, Va.
7. Oct 1994 – Dec 1995 Weapons and Tactics Instructor, VMA-513 Yuma, Ariz.
8. Dec 1995- Dec 1996 Operations Officer VMA-513, Yuma, Ariz.
9. Dec 1997- Dec 1997 Test Pilot under instruction, Patuxent River, Md.
10. Jan 1998-Aug 2001 Test Pilot Joint Strike Fighter Program, VX-23, Md.
11. June 2002 – June 2004, USMC JSF Program Integrator, Lockheed Martin, Fort Worth, Texas.
12. June 2004 – Dec 2005, Chief Test Pilot, VX-23, Patuxent River, Md.
13. Dec 2005 – June 2007, Commanding Officer, VX-23, Patuxent River, Md.
14. Jun 2007- July 2009, Commanding Officer, Marine Aviation Detachment, Patuxent River, Md.
15. October 2009 – present, Vice Commander, 33rd Fighter Wing, Eglin AFB, Fla.

FLIGHT INFORMATION

- Rating: Command Pilot Flight Hours: More than 3,200
- Aircraft Flown: T-34C, T-2C, TA-4, AV-8B, T-38, F-16, F/A-18A-F, VAAC Harrier, EA-6B, Lear 24, T-45, X-35A/B/C, Tornado GR1, F-4G, F-15, T-7, MIG-21, U-21F, P-3C, NU-1B, U-6A, AT-6, C-12A, DHC2, KC-130J, B-25, TH-6B, OH-58, Gazelle

AWARDS AND DECORATION

- Legion of Merit Defense Meritorious Service Medal with one oak leaf cluster Air Medal with numeral 3 and “V” device Meritorious Service Medal
- Navy Commendation Medal with Gold Star
- Navy Achievement Medal

EFFECTIVE DATES OF PROMOTION

- Second Lieutenant 13 June 1986
- First Lieutenant 7 April 1988 Captain 1 November 1990 Major 1 August 1996 Lieutenant Colonel 1 April 2002 Colonel 1 August 2007

Warlords Series 2: The Transition from Eglin to Beaufort

04/29/2019

By Robbin Laird

In a story, which we first published on July 12, 2014, we highlighted the transition of the Warlords from Eglin AFB to Beaufort MCAS.

2014-07-12 While the press focuses on the F-35B landing vertically (amazing press out there!), Lt. Col. “OD” Bachman and the squadron is moving from Eglin to MCAS Beaufort where the F-35B partners will train as well in the future.

Italians, British and other nations who acquire the B will come to Beaufort to train.

We visited the Warlords last September with Secretary Wynne, and talked on a earlier visit with “OD” as well.

Progress is evident throughout the F-35B program.

We noted earlier based on discussions with MAWTS:

The squadron is being shaped for its inclusion into the Marine Corps air role via its working relationship with MAWTS. According to one MAWTS officer and F-35 pilot, the advantage of MAWTS and VMFA 121 working together is crucial for the evolution of the way ahead.

We have developed the infrastructure and process for the standardization of the F-35B within the USMC. We can do this by working directly with the only operational fleet squadron. We can take that forward to future squadrons as they are stood up. We build out a standardized approach.

And we can introduce the rest of the USMC who participates in the exercises at MAWTS about the capabilities of the F-35 and how those capabilities can change how the MAGTF can operate. We can show battalion Marines on the ground how this aircraft is going to enhance their operational capabilities.

The current planes are operating with Block 2A software and the Block 2B software arrives later this year for the preparation for the IOC in 2015. What this means is that the plane operating today with MAWTS is more limited than what will come later in the year. While Block 2B is largely a software upgrade, there are some planned hardware mods as well.



OD Bachmann after 200th F-35 Sortie in August 2012. Credit Photo: Second Line of Defense

According to a story in the local TV station WTOC:

About 180 Marines will make the transition from Eglin Air Force Base down in the Florida panhandle back to Beaufort to be part of the F35B program.

The VMFAT-501 Warlords were previously stationed at MCAS Beaufort from 1963 to 1997 under its former title as "Marine Fighter Squadron 451."

"A humbling experience to be so welcomed here in Beaufort and being the first chapter of the F35 in the state of South Carolina in Beaufort...a lot of pressure to succeed! We're really planning on making sure the F35 is successful for the Marine Corps and successful in our hometown of Beaufort, South Carolina," Lieutenant Colonel Ty Bachmann said.

The F35B is the world's first Supersonic aircraft with the capability of short take off vertical landing, or STOVL.

"So not only can we cruise at supersonic speed, our stealth encoding allows us to get closer to the enemy without him knowing and then recovery back aboard ship for the Marine Corps or at austere landing sights," Bachmann said.

It's been years of hard work from campaigning for the fighter jet to building this hangar. That amounts to more jobs and money poured into the local economy.

"To take care of parking the aircraft, working on the aircraft, that all requires a huge amount of labor, given the longevity of this program, it's going to be here for a long time," Major General Robert Hedelund, 2nd Marine Aircraft Wing said.

Beaufort is slated to receive at least two training squadrons and two operational ones. VM-FAT 501 will eventually receive 25 F35B jets with a total of 300 Marines dedicated to the program.

Beaufort will be the only training ground for the F35B which won't just be used for America's national defense.

"This has been developed for an international community, the joint part of this aircraft is allowing it to do surveillance as well as sort of air to air attack and ground attack as well so it's a multi-purpose aircraft which makes it the most useful aircraft that we as the UK can look to purchase," Beth Kitchen, Senior Engineering Officer, VMFAT-501 UK Detachment said.

The first F35B is scheduled to arrive in Beaufort within the next two weeks.

And in a piece by Matt McNab published in The Beaufort Gazette on July 11, 2014:

After 17 years away from Marine Corps Air Station Beaufort, the Warlords have come home.

In a ceremony Friday, officials from the air station and Beaufort County welcomed personnel from VMFAT-501, the F-35B training squadron that will begin flying at the air station in October.

Known as the Warlords, VMFAT-501 is a reactivated version of VMFA-451, an attack squadron stationed at MCAS Beaufort from 1963 until its deactivation in 1997.

The squadron was reactivated under the VMFAT-501 name in 2010 to begin F-35B training at Eglin Air Force Base in Florida.

Beaufort County Council Chairman Paul Sommerville said Friday's ceremony was "welcoming back an old friend." A Beaufort County native, Sommerville reminisced in his remarks to the audience about the squadron flying F-4 Phantoms over Beaufort.

"The old joke was that you could never hang anything on the wall," he said. "The pilots liked to hit the afterburner flying over town."

The celebration drew between 2,500 and 3,000 people, said Jaime Dailey-Vergara, spokeswoman for the Beaufort Chamber of Commerce.

"The crowd was a great testament to the support our community has for our military families," she said.

About half of the 300 Marines in the unit were on hand for the welcoming ceremony, while the other half will maintain operations in Florida, said Lt. Col. Joseph Bachmann, the squadron's commanding officer.....

While many members of the new squadron were present, the F-35Bs haven't yet arrived. Bachmann said the first Joint Strike Fighter is expected to be delivered sometime next week.

The ceremony was in a hangar that VMFAT-501 will use for F-35B maintenance.

Maj. Gen. Robert Hedelund, commander of the 2nd Marine Aircraft Wing, of which the air station is a part, presented Bachmann with an artist's rendering of the hangar as the ceremony ended.

Bachmann said after the ceremony that he and his squadron were excited to be back on a Marine base after spending the last four years at an Air Force installation. Asked about noise from the new jets, Bachmann said it would be comparable to the F-18s that now fly at MCAS Beaufort.

“It’s no different than the noise from the current jets,” he said. “It might be a different sound, but it’s not a higher decibel. We plan on being good stewards of the community.”

Sommerville said he didn’t expect complaints about jet noise to rise after the F-35Bs begin flying.

“There’s always going to be some noise, but there’s no reason to think noise complaints will go up,” he said. “We’ll always deal with it, whatever it is.”

Bachmann said he expects the squadron to have 25 jets at full strength. Two attack squadrons and one other training squadron will also call the air station home alongside VMFAT-501

Warlords Series 3: Secretary Wynne Discuss the New Pilot Culture with Lt. Col. Berke, CO VMFAT-501, 2013

04/29/2019

By Robbin Laird and Ed Timperlake

This interview with Lt. Col. “Chip” Berke, then CO of the Warlords and Secretary Wynne was first published on September 18, 2013.

In a meeting at the 33rd Fighter Wing in early September 2013, Secretary Wynne and Lt. Col. Berke discussed the evolving impact of 5th generation aircraft on combat operations.

Wynne as Secretary of the USAF together with the Chief of Staff of the Air Force led an effort to put non-USAF pilots into an F-22 to jump start USAF thinking and to gain better joint force understanding the transition.

Lt. Col. Berke was a key player in the effort, as a USMC pilot, he went to Nellis to train on the F-22.

Lt. Col. Berke is now the F-35B squadron commander for the USMC at the 33rd FW, and is the only F-22 and F-35 pilot in existence.

His background is truly unique (and can be found at the end of the article).

Suffice it to note that he has accumulated over 2800 flight hours in the F/A-18, F-16, and F-22, and F-35.

The meeting at Eglin was the first time that the formulator of the 5th generation aircraft concept had met Lt. Col. Berke and provided them with an historic opportunity to look backwards, and more importantly forward to the evolving impact of the new aircraft on combat.

The discussion began with Wynne explaining his thinking about the necessity for the cross-assignment.

“It boiled down to the fact that I believed the USAF needed to better understand and explain that 5th generation aircraft are not simply replacement aircraft for the 4th generation. I believed that bringing in pilots from other services and Air Forces might well jump start USAF thinking as well as spread the word to others.”

Berke then underscored that he had come to Nellis at a good time, because the USAF was beginning to understand that the F-22 was not simply the next iteration of the Eagle and that they would have to focus more than they had on how the 5th generation would work with legacy aircraft to shape more effective combat capability overall.

Secretary Wynne had considered early on that there was an inherent advantage to leveraging legacy aircraft as the first shooters in any serious engagement to better use the stealth characteristics of the fifth generation. This means the relearning of basic pilot instinct to shoot first to protect those following. Here it is shoot from follow platforms, and save ordnance for the final fight.

Berke saw this as well. “I got to Nellis at the time when the F-22 community was beginning to really understand the necessity to better integrate the F-22 within the overall air force. When I was there, the most significant tests we were doing were integration tests.”

Berke underscored that “a strike force of Raptors working with Hornets, or Eagles or Vipers are going to do better in an overall air combat effort than simply training to operate by themselves.”

He also highlighted that this experience was central to his work at Eglin in shaping an approach for the roll out of the F-35B to the USMC.

When asked about the evolution of the F-22 into the most lethal SEAD (Suppression of Enemy Air Defense) aircraft ever built, Berke underscored that F-16 pilots were key players in shaping thinking about this evolution for the F-22 and its contribution to the overall air combat effort.

In other words, already the cross-fertilization of legacy with 5th generation aircraft have shaped a new approach to the crucial SEAD mission, one highlighted by recent Syrian events as well.

Wynne emphasized that the Berke approach was central to the “renorming of airpower” and that a key aspect of the transition is leveraging 5th generation aircraft is reshaping the sensor-shooter relationship.

“The fifth generation pilots are going to have to be trained that firing first is not their core con-ops. Giving validated targets to other shooters is the ‘to be’ condition. This is reversing decades of training and experience where the instinct is to fire first and ask questions later.

With 5th generation aircraft you are setting up the air space for air dominance, and weapons are delivered from assets throughout the managed airspace. Without the 5th generation aircraft you have to fight your way in and expend significant effort just trying to survive. With the 5th generation aircraft you are setting up the grid to shape the offensive and defensive force to achieve the results which you seek.”

Lt. Col. Berke also emphasized the core challenge of re-shaping the pilot’s instincts as evident in legacy aircraft.

“I am often asked to compare legacy to 5th generation aircraft and this is really difficult to do if you have not flown the aircraft. I love my F-18 and it will always be my aircraft. But it can never be a 5th generation aircraft.

The basic way to understand the 5th generation aircraft is that it allows you to determine where in the battlespace you will fly, without the adversary setting up force barriers which need to be destroyed before I can operate a legacy fleet.

In my F-22 or F-35 I can operate in the full spectrum of combat – RF, EO, IR, etc. – and can do so with width and depth of operational reach. The fleet is core to understanding this reality.”

He emphasized that the F-35 has more depth than does the F-22 in operating in a full spectrum environment.

“The F-35 adds layers of depth on top of what the F-22 has because there are so many different sensors looking at any field — anything in the spectrum deep, not just the radar.

It’s not just the array, it’s not just the EOTS, it’s not just the DAS.

It’s all those things overlaid.

And so you don’t just have breadth, you have huge depth in whatever part of the spectrum you want.”



By flying 5th generation aircraft, Berke underscored the challenge of shifting the pilot’s instincts.

“As a combat pilot in legacy aircraft you are working with data to execute a mission; and you fly with wing men. In the fifth generation world, you do not have wingmen and you do not have data. You have information. The data is behind the glass and the screen provides the information.

In effect you are shifting from being a tactical asset doing tactical aircraft missions to a more strategic engagement.”

And this clearly affects the direction pilot training and combat thinking must now be ingrained as a part of the 5th generation driven revolution. This must be understood in the theater command structures designing are war-winning strategy.

“There’s a burden now that the Raptor community is feeling, and that the F-35 community will begin to feel. The tactical aircraft is no longer just a tactical platform with strategic implications.

It is a tactical, operational, and strategic platform when it needs to be. There is an obligation now because the burden on the pilot has been lifted because the information is so high fidelity, it’s so accurate, and real time, and so plentiful, that the pilot now has to see himself and view himself in a larger context than we had in the past.”

In a context like Syria, the 5th generation assignment might be to retarget incoming cruise missiles to target mobile launchers as they move.

5th Generation warfare is all about movement and situation awareness.

And Lt. Col. Berke hammered home again and again that his experience with legacy and then with the F-22 and F-35 simply underscored that one was describing different historical epochs in air combat capabilities and approaches, and not simply iterative changes.

“How could I possibly compare the F-35 to a F-18? I have zero criticism of the Hornet. I love that jet. The Eagle is a fantastic airplane. Those are fantastic airplanes that I know and love and will miss not flying when I retire, but it’s just a disservice to both airplanes.

Such a comparison dilutes the real capability that we're getting with 5th generation and incorrectly assigns capability to an airplane that was never designed, has no capacity to do tasks that have been designed into the new generation of aircraft.

The legacy aircraft operated in a different time with a different environment, and a different world where we didn't have the expectations or climate for a tactical platform to do the things that a 5th generation aircraft is built from the ground up to do."

Wynne observed that engaging operators from other Air Forces did expose all of the Air Forces engaged in the F-35 enterprise in the dimensional change being developed right before their eyes.

As Col Berke noted, further integration of 4th gen pilots led to exponential exploitation of the 5th gen capabilities.

Wynne added: "Sadly this is not soon enough for the F-22; but it appears that the concept of an international and joint fleet of F-35's has jumped the gap in thinking. Much like repeating rifles had to overcome years of training for sharpshooting; now the task is clear— get this new generation in to the hands of operators as quickly as possible. This transformation needs the speed of the Internet and the speed of mobile that underscores the future fight."

Having witnessed the discussion and participating from time to time in the dialogue with the architect of 5th generation airpower and a key shaper of its reality, what would we conclude?

It is clear that we are at an historical turning point in the development of airpower.

If we go back in history we might note that the lesson for the air power rivalry between the U.S. and competitive air forces is rather straightforward: the technology had to be available but it also had to be successfully understood and employed; not just by the operators or Pilots but by the command authorities, sometimes extending to national leadership.

The lesson on the rivalries to date is that theater and air combat leaders must adjust during the course of an air battle or war by changing strategy and tactics, be able to exploit the enemy's mistakes or weakness. The best is to have the advantage of leveraging early the introduction of technology such as the supersonic German Jet or and early stealth designs. Aircrews must be adaptable enough to follow changing commands from leadership and also, on their own initiative, to change tactics to achieve local surprise and exploitation of a combat advantage.

A key conclusion is always to assume a reactive enemy will in time develop the necessary technology to try and mitigate any advantages. With the worldwide proliferation of weapons even a second or third world nation might have state-of-the-art systems.

As the history of war in the air shows it was a constantly evolving process of human factors integrated into technology. The Cold War ended well for humanity and a lot of courageous pilots, bold leaders, and smart technologists deserve a lot of credit for this great victory.

The U.S. would be wise to remember the lessons learned and along the way the loss of very good men in the air who paid in their blood for America today to have the best technology available flown by best Air Force, Navy, and Marine aviators this country can produce.

Wynne underscored:

"The challenge now is to comprehend that America and the F-35 integrated international fleet has in its arsenal the wherewithal to create conditions for peace for another generation or two. Our burden is to get on with the tasks of shaping concepts of operations to take advantage of the 5th generation aircraft and the associated new tools of combat."

For historical context see US-USSR TACAIR lessons learned from a hot cold war:

<http://sldinfo.com/the-us-vs-ussr-in-tacair-lessons-learned-from-a-hot-cold-war/>

Lieutenant Colonel Berke is a 1994 graduate of California State University at Fullerton, where he earned a Bachelor of Arts degree in Political Science and his commission in the Marine Corps as a Second Lieutenant. His military education includes The Basic School, Naval Flight Training, Tactical Air Control Party School, F-16 Transition Training, F-22 Transition Training, and Naval Fighter Weapons School.

In June 1994, Second Lieutenant Berke reported to MATSG Pensacola for Naval Flight Training in Pensacola, FL, Meridian, MS, and Kingsville, TX. In June 1997, he was designated a Naval Aviator and reported to VMFAT-101 MCAS El Toro, CA for Replacement Aircrew Training as an F/A-18 Pilot. Captain Berke reported to VMFA-314, Marine Aircraft Group-11, MCAS Miramar in October 1998 and served as Scheduling Officer, Powerline Officer, Quality Assurance Officer, and Logistics Officer. During this tour, Captain Berke deployed aboard the USS John C Stennis to the Persian Gulf in support of Operation Southern Watch in 2000, and to the North Arabian Sea in support of Operation Enduring Freedom in 2001.

Captain Berke reported to the Naval Strike and Air Warfare Center, Fallon, NV in September 2002 for duty as a TOPGUN Instructor. During his tour, he served as an F-16 Instructor Pilot, Adversary Officer, Assistant Training Officer, and Training Officer.

In September 2005, Major Berke reported to 5th ANGLICO in Okinawa, JA. While at 5th ANGLICO, he served as Supporting Arms Liaison Team Leader and Forward Air Controller. During this tour, Major Berke deployed to Ramadi, Iraq, in support of Operation Iraqi Freedom.

In September 2006 Major Berke returned to MAG-11 MCAS Miramar, CA. After completing refresher training at VMFAT-101, Major Berke reported to VMFA-314 in December of 2006. He deployed to MCAS Iwakuni as part of the Unit Deployment Program serving as the Operations Officer and Executive Officer.

Major Berke reported to Tyndall AFB, FL in February 2008, for transition training in the F-22 Raptor. Upon completion he was assigned to the 422nd Test and Evaluation Squadron at Nellis AFB, NV as an Operational Test Pilot. He served as the Commander of the F-22 Division.

In July 2011, Lieutenant Colonel Berke reported to Eglin AFB, FL where he is currently serving as Commanding Officer, VMFAT-501. He has accumulated over 2800 flight hours in the F/A-18, F-16, and F-22, and F-35.

<http://www.mag31.marines.mil/Leaders/tabid/1001/Article/45903/lieutenant-colonelbrdavid-berke.aspx>

For the Breaking Defense version of this article see the following:

<http://breakingdefense.com/2013/09/16/shaping-new-combat-instincts-prepping-for-5th-generation-warfare/>

Warlords Series 4: Visiting the Ready Room of VMFAT-501, 2013

04/30/2019

By Robbin Laird and Ed Timperlake

This article highlights discussions with USMC leaders involved in the F-35 transition for the USMC during our visit in 2013 to the 33rd Fighter Wing at Eglin AFB.

That article published on September 26, 2013 follows:

During the visit of Secretary Wynne to the 33rd Fighter Wing, we accompanied him on the visit and added some meetings of our own.

Among the most notable of those additional meetings was an opportunity to sit down with two USMC leaders in the process of the roll out of the F-35B, namely with Lt. Col. Steve Gillette and Major Michael Rountree of VMFAT501.

Lt. Col. Gillette is currently the XO of the Squadron and in transition with the jet to Yuma as the CO of Marine Fighter Attack Squadron 121 and then on to Japan with the squadron.

Major Rountree is in charge of maintenance with the squadron and an experienced Harrier operator.

We discussed the roll out of the aircraft from Eglin, to Yuma and then to Japan.

he focus was upon defining what is an initial operational capability squadron and what one can expect from that IOC squadron in Japan and its impact.

We have broken the interview into segments to highlight key elements of the discussion and will then circle back to integrate the parts into a comprehensive piece.

We started with a key point: namely the importance of combat experience to shaping the approach, which the jet will follow as it, is integrated into USMC operations.

The USMC with its experiences in Libya, Iraq and Afghanistan certainly has logged significant understanding of how combat jets are used to support the MAGTF and ground forces overall.

This experience of the past decade is being taken forward into the next and will be an important part of shaping the operational approach for the first decade of the F-35B and its experience with the USMC.

It is also clear that the Osprey and its introduction is part of the legacy being incorporated in the F-35B roll out as well.

Question: We would like to start with an important but basic observation. The warriors are bringing the war to the airplane. The airplane is not going to war for the USMC by itself.

In other words, operational experience precedes the F-35 B and it is being melded into this new piece of equipment.

How do you see it?

Lt. Col. Gillette: That is the right perspective from my point of view. I would say regardless of the airframe, the passion that Marine aviators have in terms of the mission of supporting the infantry is independent of the airframe.

The goal will be is how do you take that desire and passion and then eventually, turn that into the implementation of a new airframe in that role.

Once you move the new airframe piece, and how that fits into the scenario of supporting the infantry will be an evolving process over the next few years.

What I will say is your ability from the air to understand what is going on the ground, only enhances your ability to then make the mission of the Marines on the ground easier.

And with the F-35, the sensors that are onboard and the awareness that we will have as aviators in the cockpit will just continue to be exponentially higher than what is available in current legacy platforms.

Question: What are the key capabilities the aircraft will bring to the mission from the get go?

Lt. Col. Gillette: I would identify two off the bat.

First is what one might call visual acuity. The team will share video across the F-35B operational squadron so that any misunderstanding that comes now from verbal transmissions as a key mode will be reduced significantly.

A second near term benefit is to enhance the ability of every member of the squadron.

The ability of the airplane to ingest information from all different sources, fuse it, will now level the playing field to some extent between the seasoned flight lead, who is doing the communication with the guy on the ground, and the rest of the squadron.

The plane will immediately transmit all the situational awareness built into the plane and provide it to the least experienced member of the flight squadron. And that will happen just like that.

Major Rountree: I have been involved with Harrier and combat operations with the plane for some time.

I would add that the plane we fly now and the plane that was flying with your generation is not the same plane. We have excellent sensors on the plane but they are on the plane and it is up to the pilot to communicate what he sees as a priority.

The pilots are individually managing the data to an outcome, which we set pre-flight and then is executed during the mission. The data remains within the cockpit and is just not being shared.

The pilot is doing all the management, and oh by the way, flying the airplane and as we know the Harrier is not the easiest plane to fly.

Fast-forward to the F-35 B and with the fusion of the data or as the CO Lt. Col. Berke has said the provision of information rather than data, the pilots can re-shape their mission in flight and shift the tasks during the operation.

This is a major change in what a fixed wing aircraft can provide to the MAGTF.

Warlords Series 5: Lt. Col. Gillette Discussed IOC Process for the F-35, 2013

04/30/2019

By Robbin Laird and Ed Timperlake

We discussed with the XO of the Warlords the way ahead as seen from 2013 with regard to the IOC of the F-35 and its impact on the USMC.

We first published this article on September 29, 2013 and that article follows:

During the visit of Secretary Wynne to the 33rd Fighter Wing, we accompanied him on the visit and add some meetings of our own.

Among the most notable of those additional meetings was an opportunity to sit down with two USMC leaders in the process of the roll out of the F-35B, namely with Lt. Col. Steve Gillette and Major Michael Rountree of VMFAT501.

Lt. Col. Gillette is currently the XO of the Squadron and in transition with the jet to Yuma as the CO of Marine Fighter Attack Squadron 121 and then on to Japan with the squadron.

Major Rountree is in charge of maintenance with the squadron and an experienced Harrier pilot.

Here we discuss the roll out of the aircraft from Eglin, to Yuma and then to Japan.

The focus was upon defining what is an initial operational capability squadron and what one can expect from that IOC squadron in Japan and its impact.

SLD: How do you see the IOC of VFA-121 coming to fruition?

Lt. Col. Gillette: The Commandant has set the target as a six month window from mid 2015 to the end of 2015.

There are certain requirements that need to be met in order to successfully declare that milestone in the F-35 program.

Specifically, it will require a certain number of jets, a certain number of air group training, maintenance to support that. In addition, that the air vehicle still needs to make some more progress in terms of its developmental tests, specifically, you have aerodynamic limitations that will be lifted, you have software limitations that will be lifted that will support core competency missions.

And then lastly, weapon certification. So those three things, air vehicle, the weapon certification, and then the people piece of being trained all have to come together. Those are all projected to merge, if you will, and come to fruition mid to the end of 15.

SLD: You are doing the IOC process at Yuma and working closely with MAWTS and VMX-22. Could you talk about that dynamic?

Lt. Col. Gillette: **There is no better place to IOC the F-35 than Yuma.**

You have the range to support it, you have all the forward thinking It's all right there. You're going to have close proximity to China Lake, the Nellis ranges, which is where operational tests will be taking place. It is the perfect location to initially introduce an operational capability.

(On the Yuma triangle see the following:

<http://sldinfo.com/the-way-ahead-with-the-f-35b-a-discussion-with-the-deputy-commandant-for-aviation/>

<http://sldinfo.com/a-new-special-report-the-ace-of-the-future-yuma-and-beyond/>).

SLD: Clearly, the deployment to Japan and your first experiences with the squadron will feed back in a major way to the further development of the aircraft as well going forward. Could you discuss that process?

Lt. Col. Gillette: We're all creatures of our experience, and so this process the initial operational squadron will go through will shape what comes next.

We will come away from the deployment with a real appreciation of exactly how we will employ this airplane across all the mission sets.

And you can speculate and draw on a board and say I think the airplane's going to do this, and wouldn't it be great if it could do this?

But until you actually really go out and do it, you don't know in reality.

That's truly where I think the light bulb — not only for the F-35 guy, but for the Marine air/ground taskforce will come on.

SLD: And the point of the deployment to Japan clearly is not just about the next iteration of the airplane. Is it not really is about the evolution of the MAGTF?

Lt. Col. Gillette: That really is the point.

Much like the unfolding of the Osprey has significantly impacted on Marine Corps thinking about the future of air assault and related missions, the roll out of the F-35B will reshape overall USMC thinking about MAGTF operations.

The airplane we will take to Japan will be an extremely capable airplane, but it's not the end state of the airplane.

There's no doubt in my mind that the F-35B will be more efficient and more effective than what we have know in doing the spectrum of missions which the MAGTF is configured to perform.

And the first F-35B squadron is an opening of a new era.

It is not just a new airplane; it is the beginning of a new way to integrate aircraft into USMC and joint operations.

In our DNA as Marine Corps aviators, we serve the MEU or the MAGTF commander.

When we get the F-35B squadron out into the Pacific, the further development of the aircraft will driven by the requirements set by the MEU and MAGTF commanders. We will be focusing on the development of the capabilities for the things they need needed to better support them.

SLD: In other words, engineering driven block upgrades through Block 4 are important. But after that the user groups – Marines, Navy, USAF and coalition – will be key shapers of the evolution of the aircraft?

Lt. Col. Gillette: Users will be key drivers of what comes next and our experience will be a key shaper of the future of the aircraft and its systems as well.

Warlords Series 6: Moving Beyond the Harrier

04/30/2019

By Robbin Laird and Ed Timperlake

During our 2013 visit to the Warlords, we had a chance to discuss with an experienced Harrier pilot what the transition to the F-35 B meant for the USMC.

That interview was first published on September 21, 2013 and that article follows:

In our discussion in the ready room of VMFAT501 with Lt. Col. Steve Gillette and Major Michael Rountree, Major Rountree discussed how the Harrier has been used the flexibility which the jet brings to MAGTF operations.

SLD: The V of STOVL is really the important point.

The flexibility of the aircraft to operate with a short field take off and as necessary return with a vertical landing can make much better combat use of runways and landing zones. This is an important contributor by the Harrier, which is not widely realized outside USMC and UK.

Could you describe your experience with the jet from this point of view?

Major Rountree: You are right.

The plane needs to be supported so you could land it in the middle of an austere location, but you still need to support it.

The reality is that we have operated from relatively static facilities because of the need for support.

But the vertical liftoff capabilities mean that I can use much more of an airfield than a classic airplane.

For example, at Al Asad Airbase in Iraq we did not have to wait for the cue or the optimal wind conditions. We could operate with much greater flexibility than that.

We could land on either of the two main runways in a much shorter operational distance.



The photo shows a Harrier involved in the 2019 MCAS Beaufort Air Show and is credited to Second Line of Defense.

We could then turn the jet, we could launch it and we could recover in much shorter distance using the full range of the airfields available.

We could use the airbase with much greater flexibility and of course could land at sea as well.

And that translated into more capacity to fly; more sortie generation rates.

Whether operating off the ship or off of airfields you still need tankers. In Iraq we had significant purple tanking capabilities. We could be supported by one of the purple tankers available 24/7 and land on the ship as well.

With regard to our typical ship operation, we have six on board which means that basically four are operational to support MEU operations.

We were using it primarily as an ISR asset and from time to time in a strike role in Iraq.

My experience in Iraq with the Harrier was flexibility in a static fight.

As I think about the future fight, I need to think about how that same capability is going to aid me in doing whatever it is that I want or need to do.

SLD: In other words, you are looking not to be constrained by the box or the traditional aircraft-operating mode?

Major Rountree: That is right.

I now have the ability to use my imagination and figure out how I'm going to support the ground combat element, or whatever the mission is that this airplane which has more flexibility airborne than the Harrier does, will be asked to do.

We can leverage our Harrier experience but think much more effectively about a plane that is radically different from the Harrier.

The only limit to your imagination is the need to support operational aircraft as they deploy and operate.

Warlords Series 7: Secretary Wynne Visits the 33rd Fighter Wing and Looks Ahead for the F-35 Program, 2013

05/01/2019

By Michael Wynne, 21st Secretary of the USAF

This article was first published on September 10, 2013 and that original article follows:

Recently, I was able to travel to see the 33rd Fighter Wing, and the Team F-35 consisting of all three flying elements from the Air Force, Navy and Marines.

Col. Todd Canterbury was a gracious host, and granted access to his entire schoolhouse. As well I was able to connect with Lt. Col Chip Berke, USMC, who turns out to be the sole fighter pilot to become proficient in both the F-22 and the F-35; using a slot that was diverted from AF training sometime ago to diversify the knowledge base for Fifth Generation Fighters.

Many things were illustrated during the visit, which provided an update on the F-35 program as being translated into practice.

I offer some observations below with regard to the F-35 program roll out as seen through the training process.

The Training has Reached Critical Mass

This schoolhouse is in full swing; and ready to expand its throughput to match the needs of the services.

The F-35 pilots realize that the old fighter culture must change due to the battle management capabilities of the F-35.

In teaching fighter characteristics, this must be softly delivered, as the capability for first look, first kill is expected. But the need to be first in and last out of the battlespace will be key to the future fight. All agreed that setting expectations is a leader's role, and needs to start in proficiency training, and be re-emphasized along the way to a Joint Fighter Exercise.

All is Not Perfect

There is elegance to the planned logistics system; but the set up and continued internal maintenance of the Autonomic Logistics Information System (ALIS) can be frustrating at times.

The new maintenance regime is a work in progress.

The 33rd has maintained a great discipline; but desires to see faster response times with regard to corrective actions. That said; the maintainers response was generally positive, but like the internet was put in place slowdowns or downtime is highlighted more than the basic nature of the shift from a pre-internet to a post internet world.



Overperformance and Underperformance

How much is enough to create an IOC squadron?

Clearly the current state of sensor fusion is far superior to that conceived in the fourth generation fighters; and the flight characteristics are easy to learn for an experienced pilot, and sufficient to allow synergistic performance well above a fourth generation battle group.

No doubt all have heard the CSAF call for accelerating the IOC; but it will take Top Leadership to alter the requirements for it matters not that the 33rd believes; they remain a part of the AF system; and have the discipline to try to improve same from the inside.

Top Leadership must alter their system; and then accelerated IOC will be available.

The Marines are Believers

The Marines are moving their F-35 training facility from Eglin to Beaufort, South Carolina. The combined test and operational squadron has been able to feedback to the leadership the state of play for the F-35; and is eager to now interact with active duty F-18's. They see this as a step stone to IOC; and had the following comment.

The capability of the Fifth Gen Fighter is enhanced by other available platforms in its battlespace; because it is a natural battle manager.

The essence of IOC is not the same anymore. The Marines are about reinventing airborne warfare. The Air Force and Navy are using old processes to replace platforms; and need to rethink the problem. As a service, the previous time for this was the Introduction of Mach Plus Air Frames totally redefining airborne combat. The enemy led the way; but not this time.

The Internationals Are Coming

No they are already here.

Much like Lt. Col Berke, there were slots made available for the Brits in the F-22 test squadron; and they do understand the impact of the fifth generation fighters.

But at Eglin, it is the British, and Dutch that are pressing for instruction; and the 33rd is doing this well. Much like Nato interacting with the WEU, and the EU, the 33rd finds itself teaming with everyone. As said by the secretary general, this can never work in theory; but through good people; it is working in practice.

The Naval Aviators and Maintenance folks assigned are well aware that they are benefiting from the Marines and Air Force encountering problems and then solving them; as they indicated, their own 'at sea' facilities were going to be a challenge, and the ALIS system is seen as part of the solution set.

Where are the Dual Qualified?

I was very gratified to see the embedded EOTS (Electro Optical Targeting) system, installed and still stealthy. This will continue the partnership with ground commanders on the Rover system; and was pushed hard by the Air to Ground transition team coming from both F-15 and F-16 fighters.

As mentioned, Lt. Col Berke is the sole F-22 and F-35 proficient pilot in the world.

Where is the USAF?

Cross learning is a must; as all the indicators are positive.

I was pleased to hear that the ACC Commander checked out in fifth gen; but he needs planners to see the impact. Random success is not the way forward; but it will come; as it did in Northern Edge, when the Blue force commander told a Winchester F-22, 'stay in the fight' for your contribution is just beginning but now as a battle manager

Take Advantage of the Integrated Simulators

The Air Force and now the Navy and Marines will have simulators all over the place; combining them into a fully integrated fighting force will allow integration between fifth and fourth generation, among the US and coalition partners and between the two fifth gen available fighters.

This is the future fight. It also both real and virtual; properly used can really make an impact; yet save money.

Security 'Uber Alles'

Fighter Pilots and their Commanders need cross ticketing; compartments in the sky is not the reality of an integrated force. This is a tough knot; and must be addressed, to allow for full exploitation of the capabilities in the integrated fight.

Whether Fifth or Fourth, the concept of cross targeting, even to RPV Mules, or ground or maritime platforms has been the holy grail of interoperable forces.

Security is good, but not 'uber alles' where it inhibits the 'Unfair Fight' we have planned.

Salute to the Maintainers

Thanks for the opportunity to interact with both instructors and participants in the maintainer training. They are patriots and smart as can be.

Where the Chief of the USAF says it is about our people, he is right; and this interaction confirmed my beliefs.

Maintenance, both for us and the Joint and international force is key; the interoperability and cross match between models of F-35 means that we return to the origins in WW1 where you can land at any base; and in any language; get repaired and fly on.

For us, the future fight is about fleet, and extracting the most from every fighting position.

The F-35 provides a solid foundation for such an approach.

Warlords Series 8: Visiting MCAS Beaufort, 2015

05/01/2019

By Robbin Laird and Murielle Delaporte

The Second Line of Defense team visited the Warlords in 2015 at MCAS Beaufort.

The article below was first published on June 12, 2015 and follows:

Marine Air Group 31 is located at MCAS Beaufort, South Carolina.

It is the home of six F-18 squadrons and one F-35 squadron.

The F-35 Squadron – VMFAT-501 – is training coalition and USMC F-35B pilots to operate the F-35B.

When Second Line of Defense last saw the Warlords, they were located at Eglin AFB, but moved to Beaufort last year.

When we last met with the Warlords in Eglin, Lt. Col. Berke was the CO and now Lt. Col. Bachmann, whom I interviewed after he did the 200th sortie of the F-35B in 2012.

At the time, the F-35B had about 800 flight hours; now it has more than 12,300 mishap free flight hours as of June 2015.

The visit at Beaufort was a week prior to going to the USS WASP to view F-35B ship integration operational testing as well and of the six planes aboard the WASP, two came from Beaufort and four from Yuma.

The Yuma planes had come first to Beaufort and then flew onboard the WASP with the Beaufort squadron planes.

The visit highlighted that the Marines are already working integration with the legacy fleet; the Beaufort squadron flies regularly with the F-18 pilots; and also with the USAF, notably with regard to the Georgia Air National Guard in the Savannah Sentry exercise.

The interviews at MAG-31 started with the CO of the squadron, Col. William Lieblein, who assumed command of MAG-31 on 20 May 2013.

He is an F-18 pilot by trade and learned to fly the F-35 earlier this year.

“My most recent training was to learn to fly the F-35. That was exciting and really allowed me to understand how complex the aircraft is and the capabilities of the aircraft and the future potential of the aircraft within the MAGTF.

We have six F-18 squadrons here. We’ll start transitioning those squadrons somewhere around 2018, but the Marine corps is going to fly the F-18 through 2030 and so the integration of that fourth generation platform and the continued

development of the F-18 to be a relevant platform through our final transition to sundown in the aircraft at 2030 is significant.

How we integrate that platform as it evolves with the F-35, our fifth generation, for MAGTF aviation is significant.

We've already started that right now as they are participating in local training.

We send out F-18 squadrons to fly with our F-35s.

They are training with us on a daily basis."

Col. Lieblein highlighted the fact that the work on integrating the 4th with 5th generation aircraft was part of the transition and part of what was becoming the normal routine at MAG-31.

"I see one of our primary tasks here at MAG31 because we have the F-35 squadron here with F-18 squadrons is to develop the integration between the fourth and fifth gen and how we are going to do that.

MAWTS-1 is currently working that right now with that WTI course.

They're already doing that with F-22's and they will do it with F-35's in this next course.

We're already doing it here with F-35's."

The Colonel then noted that they are working with the South Carolina and Georgia National Air Guards as well on fourth and fifth generation exercises.

He added that other efforts were being made, for example, flying with F-22s as well as Tornados (which came from the UK), which were operating from Shaw Air Force Base in South Carolina as well.

The conversation was joined with Major Brian Bann who is with the F-35 Squadron and was previously with the squadron when it was located at Eglin.

He has been with the Warlords for almost three years. Maj. Brian Bann became the eighty-first pilot to fly the F-35 when he took off for his first flight in the Lightning II from Eglin AFB, Florida, on 8 April 2013.

"We flew our F-35s with F-22's, F-15C's, F-15E's, F-16CJ's, T-38's, F-5's, and F18s during the Savannah Sentry exercise."

Col. Lieblein underscored that: "When you go from the F-18 to the F-35 it is a very different experience.

The problem is that if you bring your F-18 tactics with you will miss the point.

That will not optimize the platform.

Through our operational testing we will optimize specific tactics with regard to the aircraft. It is being worked through operational experimentation."

Of course, for the Marines, the point of fighter integration is to support the MAGTF and the Marines on the ground.

Col. Lieblein hammered home the point that "it is not just fighter to fighter but support to the Marine on the ground and integration with the MAGTF.

We are working on close air support and figuring how best to do that with the F-35 and we are working with MARSOC as well to look at how best to support their operations."

The CAS question naturally raises the question about the future of planes like the A-10 compared to an F-35.

For Col. Lieblein: The A-10 was great for yesterday's war and some of the situations today, but the F-35 is good for yesterday's, today's, and tomorrow's war.

It doesn't matter where that ground guy is and what type of threat he's facing, the F-35 will support him."

And with the evolution of warfare, the Marines have to be prepared for things like cyber threats as well.

And the Colonel added that "When we go to war, we need integrated capabilities, and the F-35 provides a substantial way forward with regard to integration of capabilities within a platform."

Major Bann added: "the airplane's absolutely an information gatherer.

It sees everything out in the battlefield, IADS, lay-downs, air pictures.

It's like an AWACS/river joint almost combined.

The great thing is now it transmits it all over Link 16, so it's pushing all that information to not only US folks, but also our coalition partners and to ground partners as well.

There is an incredible amount of situational awareness with that airplane when you fly.

The cockpit fusion paints a pretty good picture for you in the airplane.

You don't have to do a lot of thinking about what's going on.

It describes it for you there.

There's complete sharing of information between us (F-35s) as we are flying together, but how do we optimize that with other aircraft to shape the most effective operations."

When asked how he would describe the transition from when he first joined the Warlords until now, Major Bann made it clear that progress has been significant.

"It's been a great transformation.

We started out with 1B airplanes with very limited software capabilities, but every month, basically, we get more enhanced capabilities of software with radar, EW, flight characteristics, so now we're doing solo all the time.

We just sent six airplanes to the USS WASP yesterday, which will be at sea.

It's been an amazing transformation from flying basically solo down to Eglin about three years ago and just doing basic task sets to now flying large force exercises here with F-22s, F-16s, F-18s, and full integrations with our F-35s here.

We're getting a new one basically every month; the newest airplanes off the ramp at Lockheed-Martin and it is an absolute pleasure to watch the airplane go from where it has been to where it is now.

We're learning things every day.

We're finding that this airplane is incredibly easy to fly compared to the Harrier. We are not going to have a massive training time to fly aboard the LHAs and LHDs, and we will not have to focus on the challenges of taking off and landing but focus on the mission as our primary task."

The final subject was with regard to mission flexibility and the impact of the F-35.

Does the flexibility of the aircraft affect the way you would plan a mission with this flexibility in mind?

Col. Lieblein answered that, “That is a good question.

I think it is definitely going to change the way we plan a mission because the aircraft is so much more complex and so much more capable, we have to be prepared to do anything within its capability.

Because of the fusion of the sensors, it’s going to be easier to switch from mission to mission.

It will take a lot more work up front to plan for it, but you will be able to switch between missions more easily in the aircraft because of the fusion of the sensors and the weapons systems aboard the aircraft.”

After the discussion with Col. Lieblein and Major Bann we moved to a meeting with **Lt. Col. Bachmann, the CO of the Warlords.**

In an article by [Jeff Rhodes](#) published on May 23, 2015, the view of Bachmann with regard to the transition was highlighted:

“We opened here on 7 July 2014,” said Bachmann, who served as an F-35 test pilot early in the program’s history. “It was an interesting transition.”

Normally when a squadron moves, it shuts down operations at the old base and sets up shop at the new base. “But we didn’t do that,” said Bachmann. “We were flying twice a day at Eglin. We were training pilots. We had to keep the flying schedule up, at least at first. The Marine Corps told me what I had to do, but not how to do it.”

Squadron personnel started moving to Beaufort in June 2014. All the squadron maintenance moved together, and the aircraft stayed at Eglin. Operations ramped down in Florida and nearly simultaneously started ramping up in South Carolina.

There were issues, but overall, the transition went well. Bachmann flew the first F-35B to Beaufort on 18 July 2014. The first flight supported entirely by Marine maintenance came on 4 September. The first F-35B belonging to the United Kingdom, which was also the last aircraft to be transferred from Eglin, arrived on 6 February 2015. An instructor pilot made the first night flight from Beaufort on 6 March.

“My job is to produce the amount of pilots the Marine Corps tells me and to produce the kind of pilots the Marine Corps wants,” said Bachmann. “The communications between us and the operational community is fantastic. I trained the IPs at the other bases and we talk almost every day. My tactics instructors are talking to their tactics guys to make sure we are all on the same page.”



The photo shows Lt. Col. Bachmann with Major Bann and Murielle Delaporte after the visit to MCAS Beaufort.

A natural question to start with the CO was simply to go back to the last meeting and talk about the progress since that 200th sortie flight.

After the flight, Bachmann provided the following perspective on the plane and the progress as of the Fall of 2012:

Question: You have been with the program for a while.

Bachmann: Yes I have. I have been with the program since 2006. And I have been here at Eglin for two and half years. Prior to that I have been a Harrier pilot and have done a stint as a forward air controller.

Question: How would describe the current learning process at Eglin with regard to the plane? Bachmann: I would emphasize the role of the maintenance officers. These guys are on the cusp of getting their MOSs or Military Occupational Skills. Their jobs as avionics, or engine or power line maintainers mean's they have gone to skill and are getting certified.

They have got airplanes to work on, and are getting ready to go to Yuma and stand up the first squadron there. Their ability to go to school, work on the airplanes, fix them when they come back from flights, and then we fly them again is absolutely fantastic for the program.

The maintainer cadre is what will cause the F-35B to succeed in the USMC. It is wickedly important.

The new Yuma squadron cannot survive without its core maintainers and it is really important that we get the training right.

Question: What about the stability of the aircraft?

Bachmann: The plane is a very stable platform to fly. And over time is becoming more and more predictable; the software from this point of view is mature.

And the other combat systems are already impressive. The pilots are already commenting that the combat systems are light years ahead of what legacy does.

Question: "Dog" Davis made the comment that one of his pilots was flying from Fort Worth to Eglin and was accompanied by two F-18s. He told me that the pilot asked the F-18s could see the "clean" F-16 meeting them from Eglin a significant distance ahead. Does that square with your experience?

Bachmann: Actually I was the pilot that General Davis was talking about.

Even in its relatively immature state, the combat systems are superior to legacy systems.

Fast-forward to May 2015, and "OD" Bachmann highlighted the progress in the following way:

Coming to Beaufort has been crucial to moving the ball forward with regard to IOC.

We have been able to operate the aircraft with Marine Corps maintainers and to integrate the plane into our approach to maintenance and operations.

The readiness of our airplanes to fly on the ramp increased by almost 30% the day we fully go here at Beaufort.

Being on an all-Marine base has increased our readiness."

Clearly, as the plane is maturing and so are the pilots flying the aircraft.

Literally, we have produced twice as capable of an F-35 pilot as we used to because of the capabilities of the airplane have increased.

Before, we were just teaching simple takeoff and land, navigate, a flight formation, maybe some small tactical pieces, or slices of the airplane because of what it can perform to a much higher capable pilot.

And the fact that not only can he fly day and night, he can fly in the clouds, and he can do tactical missions to include close-air support, armed reekie tactical intercepts with multiple airplanes, and operate multiple airplanes in the same data link.

That, to me, is obviously where the airplane needs to be, but now we're teaching that here at the school.

With regard to the transition it is a challenge because pilots from the various legacy backgrounds are being trained and then the newbies are coming next.

We have to prepare for the future, but we also still have to execute today.

I've got three classes on board, and each class is doing something slightly different.

And that's my workflow, it's not only is it right now,

it's the next four months, and next year that we're planning for.

We will have our first Prowler pilots training here in August and next year we will teach pilots who come out of training and this will be their first fighter ever.

The pilots will be coming straight from T-45s to the F-35.

Warlords Series 9: Visiting the USS Wasp, 2015

05/01/2019

By Robbin Laird

A week after our visit to the Warlords, we had a chance to fly to the USS WASP and discuss with Marines and the RAF/Royal Navy team, their experience onboard the ship.

The Warlords were key players in the effort, but Marines from throughout the aviation enterprise were engaged.

In an article first published on May 29, 2015, the results seen onboard the USS WASP were discussed.

That article follows:

The continuous sorties of F-35Bs aboard on the USS Wasp on May 26, 2015 witnessed by visitors from the foreign and the U.S. press was almost numbing.

There are six planes aboard the ship, 4 from the Green Knights squadron at Yuma and 2 from the Warlords at Beaufort. We saw several sorties of F-35Bs aboard the ship conducted by pilots from both squadrons.

Although the planes was a clear focus of attention, the role of many key organizations culminated in what we saw that day.

As Lt. General Davis, Deputy Commandant of Aviation for the USMC, stated in response to a question about the date for the initial operating capability of the aircraft:

It will be this summer.

We are clearly focused on July.

But it is in the hands of the professionals and they are making it happen.

The professionals he had in mind were both aboard the ship and linked to their home bases or organizations.

We saw aboard the ship maintainers from three squadrons, the Green Knights (Yuma), the Warlords (Beaufort) and VMX-22 (New River), the squadron that prepared the Osprey for its IOC in 2007 and is continuing its work with F-35B integration.

In addition to the USMC squadrons, the USN has worked hard on modifying the ship to operate the new USMC aviation assets.

The XO of the ship, Captain Andrew “Mongo” Smith, highlighted that the ability of a 25 year old ship to become part of “fifth generation warfare” and its ability to operate the F-35 showed the flexibility of the ship and the USN-USMC team.

And as one of the USMC pilots involved with the ship integration-testing put with regard to what the plane brought to the ship:

No one in the world has ever sent an airplane off of an amphibious ship with this level of situational awareness and fusion between aircraft to aircraft and aircraft to ship.

The fusion of the data aboard the airplanes and your ability to see what other planes are seeing a number of miles away from you as well as what the ship is seeing and then to be able to communicate with them without using the radio is a tactical and strategic advantage that can not really be over stated.

Together, the USN-USMC team is transforming a Gator Navy, which historically has operated amphibious ships for assault by helos, amphibious vehicles, and infantry to one capable of amphibious assault at great distance.

It is turning what was a Greyhound Bus role to shaping an entirely new strike capability appropriate for 21st century operations.



An F-35B Lightning II awaits refueling before a night operations exercise during F-35B Operational Testing (OT-1) aboard USS Wasp (LHD-1) May 20, 2015. Over the course of about two weeks, U.S. Marines, U.K. military and industry partners will evaluate the full spectrum of F-35B measures of suitability and effectiveness, as well as assessing the integration of the aircraft into the spectrum of amphibious-based flight operations. (Marine Corps photo by Cpl. Anne K. Henry/RELEASED)

It began with the introduction of the Osprey and is being empowered by the integration of the F-35B with the Marine Corps force.

The nature of this change has already been presaged in a Marine Corps exercise involving San Clemente Island, which was conducted in the first part of 2014.

For the Marines, airpower is part of the Marine Air-Ground Task Force (MAGTF), or put in simple terms, a key force allowing force insertion – built around the ground combat element – to occur in a diversity of settings and situations.

The Marines, operating from the training base in Twentynine Palms and landing on San Clemente Island off of California, approximately 100 students from the Infantry Officer Course in Quantico flew aboard Ospreys the simulated test area to eliminate cruise missile threats and take back an airfield from enemy forces.

The Infantry Officer Course at Quantico paired with VMX-22 conducted the exercise and the Ospreys were accompanied by specially configured Ospreys with an airborne communication gateway with a Wi-Fi network that linked the tables carried by the squads riding in the Ospreys.

The Cat Bird, the F-35 surrogate sensor aircraft, which operated its sensor sent real time information about the objective area to the Marines in route to the objective area.

The information shared was maps and images as well as text messaging among the ground force element aboard the Ospreys.

In effect, the F-35s went in and provided the capability to eliminate the ground missile threats and allowed a distributed company to be inserted to do their job.

In other words, the Osprey carried the force; the F-35 surrogate providing the cover which could insert the force more effectively.

This is how the Marines are looking at a key aspect of the F-35 approach to providing close air support for a 21st century ground insertion force.

Thus, it was not surprising to find VMX-22 aboard the USS Wasp for the operational tests.

The CO of VMX-22, Col. “Horse” Rauenhorst highlighted that their work as a squadron was focusing on the integration of the Osprey, the F-35 and the new CH53K as key elements enabling a more lethal and survivable MAGTF.

The infantry Marines will be inserted at greater distance, with greater flexibility to enhance their effectiveness and survivability.

That is the whole point of the innovation being tested aboard the USS WASP.

A very evident aspect of the effort for ship integration of the F-35B aboard the ship was maintenance at sea for the F-35B.

Maintainers from the three squadrons – the Green Knights from Yuma, the Warlords from Beaufort, and those from VMX-22 – came together for the first time to work the maintenance effort aboard the ship. And according to the maintainers their approach worked very well.

But this would not have happened if the USMC had not established what they call organic maintenance of the aircraft, meaning that the Marines did their own maintenance, and shaped their own way ahead.

Often forgotten is that the new generation of maintainers is creating the policies and procedures whereby those who follow will learn how to maintain the plane.

Or put simply, standing up the plane at sea is a first, and the maintainers see their role as pioneers in process of innovation for 21st century capabilities.

And the report from the team aboard the ship was straightforward: “we could maintain the plane on ship very well and saw no loss of capability compared to maintaining the plane ashore.”

The Brits were aboard the ship as well and are training with the Marines at Beaufort, South Carolina, the base where all foreign F-35B pilots will be trained and of course maintainers as well.

The Italians will be coming next, and both the Italian Navy and Air Force will operate F-35Bs. In an interview with the Italian Chief of Staff of the Air Force, Lt. General Preziosa put it with regard to the B:

“We studied the issue carefully (of the decision for the IAF to buy F-35Bs) and for the kind of missions we face we needed the flexibility which the B can add to the fleet.

We need to go to the mission — not the airfield. We will operate in many areas where there are only short runways; the B allows us to operate in those conditions.

I have now had a chance to visit all three new large deck ships where the F-35 will play a key role: the HMS Queen Elizabeth on March 31, 2015 in Scotland earlier aboard the USS America, and the CVN-78 (Gerald Ford).

The British carrier is an F-35B enabled strike carrier and the engagement of the UK Royal Navy and Royal Air Force with the USMC and the USN is very significant, and personnel onboard clearly were looking for lessons learned aboard the ship to integrate with the standing up of the new class of the UK’s very innovative carriers which the United Kingdom is building.

During a panel discussion with team members aboard the ship with reporters, there were two members of the Royal Navy who participated. Lt. Cdr. Neil Mathieson and Lt. Cdr. Beth Kitchen, represented different roles within the process. Mathieson was visiting the ship and returning to the UK with lessons learned; Kitchen was based at Beaufort and is an integral part of the USMC team, notably with regard to rolling out the maintenance process and effort.

Lt. Cdr. Kitchen put it nicely in resonating with the theme which Lt. General Davis was later to tell reporters: “it is in the hands of the professionals.” Kitchen underscored:

The F-35 can be surrounded by myth and legend.

But it is a real testimony to the capabilities of the maintainers of the Royal Navy, the Royal Air Force and the USMC to adapt to the new technological challenges.

Their knowledge of aircraft systems is now being applied to a new air system and taking steps forward into the unknown.

It is a testament to the professionalism of these maintainers that they are just getting on with the job of making this aircraft work.

Every single person involved in this detachment are passionate about this aircraft and not just because it is a sexy looking aircraft but want to see it working in every operational environment.

A version of this piece originally appeared on **Breaking Defense**:

<http://breakingdefense.com/2015/05/its-in-hands-of-the-professionals-f-35bs-on-the-uss-wasp/>

Warlords Series 10: The UK Working with the Marines at VFMAT-501, 2015

05/02/2019

By Robbin Laird and Murielle Delaporte

During our visit to MCAS Beaufort, we had a chance to discuss UK engagement and participation in VFMAT-501.

This article was first published on June 10, 2015 and that article follows:

During a visit to the 31st Marine Air Group, we visited VFMAT-501, the Warlords and met with the CO of the Squadron “OD” Bachman, Major Brian Bann and Squadron Leader Hugh Nichols from the Royal Air Force.

The visit to the training squadron as well as to the USS WASP the following week drove home a core point – the Brits and Marines are working closely together to stand up their separate but coordinated capabilities associated with an F-35 enabled 21st century combat force.

The F-35 global enterprise is a key enabler of the use of collaborative resources.

The Brits are training at Beaufort on F-35 equipment at the base – including the simulators – as their own facilities are stood up in the UK and the squadron grows before returning to the UK to get ready to work with the HMS Queen Elizabeth.

The Brits are integrated members of the squadron and the Marine Corps and British maintainers are learning together how to adapt their specific maintenance protocols – which are different – to a common airplane.

Obviously, this will play real dividends down the road in terms of being able to cross deploy at sea.

And the Brits recognized that a software upgradeable airplane requires continuous upgrade in order to stay at the leading edge.

They are keeping a permanent detachment at Edwards AFB to remain engaged in the lifetime modernization envisaged for the F-35 global fleet.

Question: What is your function here at the squadron?

Sqn Ldr Hugh Nichols: I have two roles. I am an instructor pilot within the Warlords and in that role, I am an integrated member of the team.

My other role is as the Senior National Representative for the UK on the base here.

Question: At Luke the Aussies and USAF pilots are flying each other’s planes.

Is that happening here?

Sqn Ldr Hugh Nichols: It is. In effect, we have a pooling agreement here.

Our aircraft are pooled with those of the Marines, and we fly aircraft in the pool not just the UK jet.

Question: When you return to the UK with the planes, obviously a wider F-35 community is being established with which you will operate.

How do you see that?

Sqn Ldr Hugh Nichols: The majority of the operating areas big enough to fully utilize this aircraft will be out over the North Sea, so I can see us using this to our advantage by operating with our Northern European allies.

I would anticipate that there will be a lot of cooperation with Norwegians, Danes or the Dutch as we bring this exciting aircraft into service on European soil.

Question: And because the B and the A have common combat systems, your collaboration will not depend on which airframe you fly?

Sqn Ldr Hugh Nichols: That is correct.

At the end of the day, it doesn't matter if you in an A, a B or C, once airborne, the mission systems are the same.

Question: What is the advantage of being here working with the Marines?

Sqn Ldr Hugh Nichols: There are many, but let us start with their sense of urgency in getting the aircraft to Initial Operating Capability.

The Marines have done a fantastic job working through previous program difficulties and have blazed a trail towards bringing this next generation capability into service..

They are Marines, and if anything gets in the way, they deal with it.

Working with them will clearly ensure that we are ready for the Queen Elizabeth.

And the pooling agreement is important in terms of cross learning.

Our young maintainers are working with Marine Corps maintainers and they are learning to work through different procedures and protocols to learn how to maintain a common airplane.

Question: Obviously, this will yield operational advantages later as Marines fly onto your ships and vice versa.

How do you see this?

Sqn Ldr Hugh Nichols: Obviously, deciding to do that is above my pay grade, but clearly you are right, we have cross-decked in the past and shaping commonalities from the outset will help us to so in the future.

The Marines could fly jets off of the Queen Elizabeth and we off the Wasp or other ships the USMC enable for F-35B use in the future.

Question: The RAF is in the throes of a modernization effort and necking down to a smaller type model series of aircraft across the board.

How are you working the Typhoon-F-35 integration?

Sqn Ldr Hugh Nichols: We have already started Typhoon-F-35 integration at Edwards, with the Test and Evaluation Sqns, and it shouldn't be too long before we are involved in training exercises on the East Coast.

Question: Secretary Wynne made the point that modernization of legacy aircraft should be taken going forward from the perspective of working with the F-35.

How do you view that approach?

Sqn Ldr Hugh Nichols: It makes sense.

Each aircraft brings different strengths to the fight and we will fly them both, with the tactics will evolving over time.

Software modifications will undoubtedly be required in order to get the most out of each aircraft and ensure full interoperability; take Link 16 for example, where the F-35 could put out a huge amount of information.

We need to ensure that Typhoon is able to receive and display the information without overloading the pilot.

Question: Typhoons have flown for some time with F-22s and now with F-35s.

What is the impact on the Typhoon?

Sqn Ldr Hugh Nichols: It makes the Typhoon more lethal and survivable.

Today, every legacy aircraft that can fly with a Raptor clearly wishes to do so.

But there is going to come a point where they will prefer to fly with the F-35 due to the data linking capability of the F-35 and how that capability enhances the situational awareness of all aircraft in that fight.

For example, we can push information out to the legacy fleet so they know where the threats from integrated air defense platforms are and therefore they have a better understanding of where they are safe from those systems.

Question: What is the way ahead for the British presence at Beaufort?

Sqn. LDF Hugh Nichols: By 2018, we will have around 250 people here.

Then in 2018 we will move the squadron to the UK.

617 Sqn will fly home in mid 2018.

17(R) Squadron will remain at Edwards.

It is tasked to be involved in the ongoing operational tests as new software and new capabilities come online for the F-35 throughout its service life.

And in a story by Cpl. Benjamin McDonald, published on June 7, 2018, the transition from Beaufort to RAF Marham was described:

The United Kingdom's 617 Squadron "Dambusters" began transitioning their F-35B Lightning II from Marine Corps Air Station Beaufort to Royal Air Force Base Marham, England June 6.

The transition of their F-35Bs signifies the shift from current to next generation air combat power for the Dambusters. Royal Air Force and Royal Navy personnel were incorporated in Marine Fighter Attack Training Squadron 501 even before the F-35s arrived to MCAS Beaufort in July of 2014. The beginning of the UK's departure is another major landmark for VMFAT-501, 617 Squadron, and the F-35 program.



The featured photo shows a UK F-35B Lightning II preparing to take off from Marine Corps Air Station Beaufort June 6, 2018. Multiple F-35Bs with the Royal Air Force's 617 Squadron "Dambusters" departed MCAS Beaufort headed for their new home at Royal Air Force Base Marham, England. The aircraft returning to the UK represents the transition from current to next generation air combat power for 617 Squadron. Credit: USMC

"Today's flight represents a tremendous milestone in the strategic partnership between the USMC, Royal Navy, and Royal Air Force in the context of the 617 squadron's preparation towards F-35B full transition in the latter half of 2018. From the tactical perspective, the launch of four aircraft on a June morning could simply be viewed as normal operations here at MCAS Beaufort. What makes this day unique is it reflects the culmination of six years of detailed integration between the Marines and Sailors of VMFAT-501 and our UK partners that began in 2012 with the arrival of the first UK maintenance personnel, pilots, and aircraft."

As the syllabus evolved and more UK personnel arrived, the American and British members of VMFAT-501 worked in unison so everyone could efficiently operate and maintain the F-35B. The UK's goal is to achieve initial operating capability in a land-based role for the F-35B in 2018 and aboard the HMS Queen Elizabeth aircraft carrier in 2020.

"617 Squadron has worked tirelessly for the past few weeks and months to prepare the aircraft to bring them to their final home of RAF Marham," said Ground Capt. Cab Townsend, RAF Marham Station Commander. "It is a brilliant time for 617 Squadron to return to RAF Marham as the RAF enters its 100th year representing a transition from current to next generation combat air power."

While the departure of 617 Squadron is a major accomplishment for the F-35B program, their expertise and professionalism will be missed throughout VMFAT-501.

"Professionally speaking, the collaborative approach between our services in the conduct of daily organizational level maintenance and flight training has set the tone for future combined operations," Said Levine. "On a personal level, I had the opportunity to once again work and fly with Officer Commanding 617 Squadron, Wing Commander John Butcher. Butch had served as an exchange officer at Marine Fighter Attack Training Squadron 101 flying the F/A-18 Hornet while I was the Training Officer. At the time, we worked closely together training the Marine Corp's newest strike fighter pilots.

"Fast forward to 2018, the [VMFAT-501] Warlords, and the F-35B, Butch and I once again have the privilege of sharpening the blade for the next generation of Royal Air Force, Royal Navy, and Marine Corps Fighter pilots. I wish him and the Dambusters of 617 Squadron the best of luck as they begin to stand up in the UK. Simply put, the command is more effective in all aspects because of our UK partners."

We have visited RAF Marham and RAF Lakenheath, and clearly both with the ability of the Marines to work off of the Queen Elizabeth and the USAF from RAF Lakenheath, the F-35 is opening a new era of UK and US airpower collaboration. And with the Nordics also as F-35 partners, the role of the F-35 in Northern Flank defense will be significant.

<http://www.sldforum.com/2016/05/leveraging-the-raf-marham-and-raf-lakenheath-strategic-opportunity/>

Warlords Series 11: The B as a Strategic Asset

05/02/2019

By Robbin Laird

Following our visit to MCAS Beaufort and to the USS Wasp, it was time to reflect back on what the coming of the F-35B meant for the evolution of USMC operations.

In this article first published on August 22, 2015, I drew together material from other visits and the work of Ed Timperlake to discuss the B as a strategic asset.

That article follows:

The mission of Marine Fighter Attack Training Squadron 501 is to conduct effective training and operations in the F-35B in coordination with joint and coalition partners in order to successfully attain the annual pilot training requirement. VMFAT-501 is based at Marine Corps Air Station Beaufort, South Carolina.

The British are already training there and are an integral part of the USMC effort, including the key mission of ship integration.

The Italians will be coming next.

And Lt. General Preziosa, the head of the Italian Air Force, understands why getting Bs is a smart strategic choice.

For the kind of missions we face we needed the flexibility which the B can add to the fleet.

We need to go to the mission not the airfield.

We will operate in many areas where there are only short runways; the B allows us to operate in those conditions.

We can mix the fleet and operate at sea on land, on our own ships or own others.

It is the kind of flexibility, which we see as crucial to a 21st century setting.

I will give you an example of what we don't want.

We planned to operate with the USMC in Afghanistan.

But we were three months later in the deployment than we intended because our Tornados could not operate in the same conditions as the USMC.

We had to take three months to build out the air base from which we would operate with them.

Time is crucial to many of the missions in which we will be engaged.

The Bs give me a more rapid insertion aircraft.

The B provides significant strategic advantages to having to rely on fixed airfields, as is being discovered by the USAF operating off of Turkish airfields.



The photo shows an F-35B flying at the Beaufort Air Show, 2019 and is credited to Second Line of Defense.

The B will provide an option to operate in Kurdistan for a period of time, and LEAVING rather than working with the Turks whose agenda is clearly not the same as that of the United States.

And the ability to operate off of ships or expeditionary bases provides a significant augmentation capability and flexibility as well.

The F-35 is part of enabling a coalition of like-minded states and of shaping a global fleet capability.

Notably, allies worldwide are building ships upon which the F-35B could land and operate.

Coalition partnerships need to be shaped by who really contributes and who you really wish to work with, rather than needing someone's airfield.

Ed Timperlake in a 2012 piece identified a number of key contributions, which the F-35B brings to the strategic calculus:

Now something entirely new and revolutionary can be added to an Air Force, the VSTOL F-35B.

Traditionally the VSTOL concept, as personified by the remarkable AV-8, Harrier was only for ground attack. To be fair the RAF needed to use the AV-8 in their successful Falklands campaign as an air defense fighter because it was all they had.

The Harrier is not up to a fight against any advanced 4th gen. aircraft—let alone F-22 5th Gen. Fighters that have been designed for winning the air combat maneuvering fight (ACM) with advanced radar's and missiles.

Now though, for the first time in history the same aircraft the F-35 can be successful in a multi-role.

The F-35, A, B & C type, model, series, all have the same revolutionary cockpit—the C4ISD-D "Fusion combat system" which also includes fleet wide "iron" warfare capabilities.

There has been a lot written about the F-35B not being as capable as the other non-VSTOL versions such as the land based F-35A and the Large carrier Battle Group (CBG) F-35, the USN F-35C.

The principle criticism is about the more limited range of the F-35B. In fact, the combat history of the VSTOL AV-8 shows that if properly deployed on land or sea the VSTOL capability is actually a significant range bonus. The Falklands war, and recent USN/USMC rescue of a Air Force pilot in the Libyan campaign proved that.

The other key point is limited payload in the vertical mode. Here again is where the F-35 T/M/S series have parity if the F-35B can make a long field take off or a rolling take off from a smaller aircraft carrier-with no traps nor cats needed it can carry it's full weapons load-out.

The Royal Navy just validated this point by reversing back to the F-35B.

<http://sldinfo.com/the-uk-rethinks-the-f-35c-decision-shaping-a-british-led-expeditionary-strike-group/>

<http://sldinfo.com/the-uk-allies-and-re-thinking-the-f-35c/>

Give all aircraft commanders the same set of strategic warning indicators of an attack because it would be a very weak air staff that would let their aircraft be killed on the ground or flight deck by a strategic surprise.

Consequently, the longer take off of the F-35 A, B or C with a full weapons complement makes no difference. Although history does show that tragically being surprised on the ground has happened.

Pearl Harbor being the very nasty example. Of course, USN Carrier pilots during the "miracle at Midway" caught the Japanese Naval aircraft being serviced on their flight deck and returned the favor to turn the tide of the war in the pacific.

In addition to relying intelligence, and other early warning systems to alert an air force that an attack is coming so "do not get caught on the ground!" dispersal, revetments and bunkers can be designed to mitigate against a surprise attack.

Aircraft survivability on the ground is critical and a lot of effort has also gone into rapid runway repair skills and equipment to recover a strike package. All F-35 TMS have the same advantages with these types of precautions.

The strategic deterrence, with tactical flexibility, of the F-35B is in the recovery part of an air campaign when they return from a combat mission, especially if the enemy successfully attacks airfields.

<https://sldinfo.com/2012/05/the-impact-of-the-f-35b-strategic-deterrence-with-tactical-flexibility/>

Warlords Series 12: The Coming of the "Newbies" to MCAS Beaufort

05/02/2019

By Robbin Laird

In a 2015 piece, we highlighted the coming of the first F-35B student pilot or "newbie" to Beaufort.

What follows is that article first published on October 31, 2015.

2015-10-31 Until now, Marine Corps pilots flying the F-35B have been second tour pilots.

That is, they are pilots with flying backgrounds and with combat experience.

Now the Warlords at Beaufort Air Station have their first tour pilot coming to fly the F-35B.

We will now see what Lt. General "Dog" Davis, Deputy Commandant of Aviation, once called the I Pad generation pilots coming into the force.

“I think it’s going to be the new generation, the newbies that are in the training command right now that are getting ready to go fly the F-35, who are going to unleash the capabilities of this jet,” Davis said.

“They will say, ‘Hey, this is what the system will give me. Don’t cap me; don’t box me in.’ ”

<http://sldinfo.com/the-future-is-now/>

Interviews with fifth generation pilots highlight how different the mental approach of flying fifth generation from legacy aircraft actually is; but the limited numbers of F-22s has meant that there is a small number of fifth generation pilots with that operational experience built in.

Although now over the skies of the Middle East, operationally the US and allied combat forces are seeing the flexibility of a multi-tasking aircraft — the F-22 —which can shift from battle management for a strike fleet, to dropping weapons, to providing air escort, to dealing with air to surface ground threats and so on within a multi-tasking rather than multi-mission approach.

Over the next decade, there will be many fifth generation pilots and these warriors are key to the transformation process.

According to Richard Stewart, Chief of Naval Air Training public affairs:

KINGSVILLE, Texas – Marine Corps 1st Lt. Taylor Zehrung, from Seattle, a Student Naval Aviator with Training Squadron (VT) 22 located at Naval Air Station Kingsville, Texas, earned his Wings of Gold October 23, 2015, becoming the first jet pipeline aviator to be selected to train and fly the new F-35B Lightning II.

Lt. Col. Robert George, Commanding Officer of VT 22 said, “1st Lt. Zehrung will be the first CAT I pilot selected to fly the F-35B. This is a big step towards the transition of sustaining a long term F-35B fleet.”

In 2008, the first six pilots to fly the F-35B operationally were chosen by the Marine Corps. All six were former weapons school graduates and most were weapons school instructors at Weapons and Tactics Instructor course or at Top Gun. In the last few years, the Marine Corps selected more junior pilots to transition to the F-35B to balance out the experience in the F-35B ready rooms. Until today, all current F-35 pilots are experienced Marines selected from operational units flying other fleet aircraft (F/A18, AV-8B, EA-6B).



The photo shows 1st Lt. Taylor Zehrung having his Wings of Gold put on by his father Steve while his sister Aimee looks on during Training Air Wing Two’s winging ceremony and becomes the first naval aviation student selected to fly the F-35 Lightning II.

“1st Lt. Zehrung will be the first to go directly from flight school to the F-35B Fleet Replacement Squadron,” said George “His training will start at MCAS Beaufort, SC flying with the “War Lords” of Marine Fighter Attack Training Squadron 501 (VMFAT-501). He was chosen from a very competitive group of peers in large part due to his impeccable officer-like qualities to include professionalism, integrity, and sound judgment. He did a phenomenal job as a student aviator and his

grades were exceptionally high earning him the distinction of being on the Commodore's list. We're very proud of him and are excited to be a part of this significant milestone for 1st Lt. Zehrung and the Marine Corps."

When 1st Lt. Zehrung was asked how he felt being the first student selected to fly the F-35B, he said, "I feel very honored and proud. It is very exciting and exhilarating, and I truly am looking forward to the future. I know that the program is going to require a lot from me, but I am ready to give 100 percent and set the bar for future student naval aviators."

The featured photo shows 1st Lt. Taylor Zehrung having his Wings of Gold put on by his father Steve while his sister Aimee looks on during Training Air Wing Two's winging ceremony and becomes the first naval aviation student selected to fly the F-35 Lightning II.

Warlords Series 13: The CO of the Warlords as the XO of the Green Knights, 2014

05/03/2019

By Robbin Laird

During our visit to VMF-121 in Yuma as the Green Knights were preparing to work towards their operational deployment to Japan, we had a chance to talk with then Major Summa who become the CO of the Warlords in 2015 and served in that capacity through June 2017.

During that visit, Major Summa provided a very clear overview on the F-35 and its role for the USMC.

That interview was first published on August 6, 2014 and that article follows:

Question: How would you describe the current role of the squadron?

Major Summa:

The Marines focus on a process of giving the airplane to the operators and let the operators figure out how best to operate and then use the aircraft.

Our leadership has prepared the way for the coming of the F-35 to the USMC and has worked hard to ensure that the infrastructure is in place to allow us to train and use the aircraft.

For example, when Lt. General Trautman was Deputy Commandant of Aviation he focused on preparing Yuma to be the home for the first F-35 squadron.

Clearly, being here with MAWTS-1 gives us a good advantage to get a good start on operating, training and shaping the tactics of the new aircraft for the MAGTF.

After creating the infrastructure, the next step was to get the airplane in the hands of Marines to work with the aircraft and to work with the aircraft within the limits of what it is cleared to do, because we do not have clearance for the full flight envelope we will have by the time the aircraft attains Initial Operational Capability.

Question: Putting the plane in the hands of the operators is a key part of developing the aircraft as well isn't it?

Major Summa:

It is. Every time we fly, we are learning something.

While trained Test Pilots are operating instrumented aircraft on a detailed test plan, in Yuma you have operational pilots flying the jet everyday gaining data points that may not have been discovered by Developmental Test.

By data points I do not mean safety of flight related items, I am referring to operational data points.

More along the lines of how to optimize and use the multiple sensors to accomplish a task or execute a mission set.

Since we have such a good working relationship with the Developmental Test entities, the Joint Operational Test community, and the individuals from industry who are SMEs on the systems, we can get immediate feedback when questions arise and then promulgate that back out to the community.

For example, last week we spent several hours in the vault with pilot training officers and with pilots who have been either MAWTS or Top Gun graduates or instructors.

We compared our operational experience with what has been developed so far with regard to our joint tactics manual which was written more than year ago, based on expectations developed from flying in the simulator.

Now we are seeing things in the operational airplane.

So how do we change?

How do we improve, update and morph the manual to where we see the plane operationally performing?

Where do we think we are going with the next drop of software in the plane?

Question: How do you externalize your learning outside of the squadron?

Major Summa:

One way is working with the USAF at the 422 Test and Evaluation squadron at Nellis.

We tend to busy here, so we send operators from the training department or former patch wearers (MAWTS-1 and TOPGUN) to work with SMEs from the Navy and USAF at conferences or simulator events.

The young senior company grade who are coming off of a tour with a Hornet or a Harrier and now wearing a Green Knights patch go into the room with the aviators at Nellis with F-16 and F-15 pilots and work through the process.

In effect, an F-35 enterprise is emerging built around a group of individuals in the profession of arms who want to make this airplane as lethal as possible.

People come in from different backgrounds – Raptor, Eagle, Viper, Hornet or Harrier – and are focusing on the common airplane and ways to make it work more effectively in a tactical setting.

And talking to the experience of a common plane is a crucial piece of the effort.

When an F-35 pilot sits down regardless of what service he is in, he's talking with an individual from another service on the same data point.

Let me explain what I mean.

If I sat down as an F-18 pilot, and I wanted to talk about AMRAAM performance, I was talking about it relative to how it integrated with an F-18.

The F-18 is a Boeing product, a McDonald Douglas product, totally different than F-16, which is a Lockheed product.

When I talk AMRAAM with an F-35 pilot from the Air Force, maybe one of the squadrons at Luke.

I am talking about the same exact radar, I'm talking about the same exact software — everything's the same.

If we differ in training, it doesn't have to do with hardware, it doesn't have to do with software; it has to do with service approaches or carry-over from previous doctrinal employment.

When an F-35A pilot talks with an F-35B pilot and they discuss what they would to see with the evolution of the aircraft they are discussing essentially the same airplane and its evolution.

It is two operators of the same airplane focused on what they want to see evolve even though they are in different services.

And the commonality point is really lost in the broader discussion of the F-35.

And when it comes to strategic impact it is the commonality associated with logistics, which will have a really significant operational impact.

The interoperability at the supply level, the logistics level, the procurement level or the maintenance training level is a key foundation for joint and coalition airpower going forward leveraging the F-35.

Question: Let us focus on the squadron and its composition and work schedule, so to speak. What is the current situation?

Major Summa:

We have 16 airplanes in the squadron. We have 15 pilots who have gone through VMFAT-501 at Eglin.

Nine of those pilots have gone through S/TOVL training and are qualified completely to operate the plane that way.

The others will complete the syllabus shortly.

Question: Are these primarily Hornet or Harrier pilots?

Major Summa:

We only have F-35 pilots. Our flight temp is Tuesday through Friday.

We have the only organic maintenance department in DOD.

When I say organic I means that we do not have contractors fixing our airplanes, we have Marines fixing our airplanes.

We have the normal technical representative support from contractors as one would expect with an organic squadron.

We are 260 strong in the squadron and we run two shifts, ~~six~~ five days and ~~six~~ five nights a week. Our pilots fly around 15 hours per month.



The photo shows U.S. Marine Corps Lt. Col. Greg J. Summa, commanding officer, Marine Fighter Attack Training Squadron (VMFAT) 501, escorting Mike Rounds, U.S. Senator for South Dakota, around the F-35B Lightning II hangar aboard Marine Corps Air Station Beaufort, S.C., Feb. 6, 2017 (U.S. Marine Corps photo by Lance Cpl. Kayla L. Rainbolt/Released)

Question: When you fly the plane how do you balance the air-to-air and close air support missions?

Major Summa:

That is a good question.

The plane and its combat systems and the way the cockpit is designed allows the pilot to handle the missions in a very effective an integrated manner.

To be able to do CAS, you have to make certain that you can suppress threats that would make it prohibited.

With this plane, you can affect the environment to make CAS more readily available and more quickly.

Question: The F-35 is a multi-tasking aircraft and as such how do you approach doing air-to-air and air-to-ground missions?

Major Summa:

You can flip between the two without ever forgetting where you were on the last one.

And let me explain that a little bit better. In the F-18, when we were going to air-to-ground mode specifically on the strike, and we are using the radar, and if we want to the targeting pod, we would get to a certain point in time in the mission, where we have to use some sort of a planning tool.

The pilot would have to sort out when he would be able to go all heads down to try to find the target and employ on the target.

And I need to have a certain amount of distance between me and a threat so that when I come heads back up and start looking for possibly an air breathing threat or a surface-to-air missile, would need to suspend the task of employing that piece of ordinance or that weapon for the CAS mission.

This airplane's different because with the data being fused, I'm not using multiple different displays with each.

The main difference that I see between federated and fused systems is in the F-18, not only was it all in different displays, but each sensor had its own uncertainty volumes and algorithms associated with it.

It was up to me as an aviator knowing the capabilities and limitations in my system to decipher and draw the line between the mission sets.

In the F-35, the fusion engine does a lot of that in the background, while simultaneously, I can be executing an air-to-air mission or an air-to-ground mission, and have an air-to-air track file up, or multiple air-to-air track files, and determine how to flip missions.

Because the fidelity of the data is there right now, which allows me to determine if I need to go back into an air-to-air mindset because I have to deal with this right now as opposed to continuing the CAS mission.

And I have a much broader set of integrated tool sets to draw upon.

For example, if I need an electronic warfare tool set, with the F-18 I have to call in a separate aircraft to provide for that capability.

With the F-35 I have organic EW capability. The EW capability works well in the aircraft. From the time it is recognized that such a capability is needed to the time that it is used requires a push of a button.

It does not require that a supporting asset be deployed.

Question: Obviously your pilots need to be trained to combine the air-to-air and CAS capabilities and to use the new organic tools sets as well?

Major Summa:

It does.

Now we're going to have a pilot that's versed in doing CAS, if he needs to use the electromagnetic spectrum or exploit it to accomplish his mission, he'll be educated and have the equipment to do so.

If he needs to use it in the air-to-air arena to exploit it, to accomplish his mission, he'll have the training and the equipment needed to use it as well.

In the current situation, I would deploy a Prowler to work with my legacy fighters.

The Prowler would have to be sortied and would operate only for a period of time and in a specific operational area.

With the low observability of the F-35 combined with the organic EW capability of the aircraft, the aircraft expands my capabilities for both air-to-air and CAS.

Warlords Series 14: The Warlords in Canberra, 2014

05/03/2019

By Robbin Laird

I have attended the Williams Foundation seminars in Canberra, Australia since 2014.

The RAAF and the ADF has laid out over that time, their approach to building a fifth generation force, not simply a fifth generation air force.

In this sense, their closest allies in the US services has been the USMC, which is transitioning from three legacy platforms to the F-35.

Not surprisingly then the engagement of the Marines in exercises in the Northern Territories has been joined with engagement with regard to the F-35 and its coming to the force.

The Marines have come to the Pacific both in terms of deployment to Japan as well as onboard amphibious ships.

Now the Aussies are standing up their initial F-35 capabilities at Williamtown Airbase to be followed by Tyndall AFB.

In this story first published on March 12, 2014, I described the role of the Warlords far from Eglin and not yet flying their new aircraft in the Pacific on the the Australian discussion about transformation.

That story follows:

I attended a seminar held by The Williams Foundation yesterday in Canberra, Australia.

The focus of the seminar was on Air Combat Operations: 2025 and Beyond.

The core emphasis was on the impact of the F-35 on reshaping the Australian combat approach appropriate to the challenges, which Australia faced in the region and beyond.

The emphasis was on how to leverage fifth generation technology to generate ongoing air combat development in the decades ahead.

AVM John Blackburn AO (Retd) laid on the intention of the conference in the slide seen below:

In other words, the effort put in front of a large audience of attendees, many of them from the Royal Australian Air Force (RAAF), was how to get on with it.

The RAAF started its current transformation with the coming of the C-17 which gave them a lift range, speed and capability injection.

Then the introduction of the KC-30A which will be fully operational next year which introduced sustainability, reach and range, The most relevant transformational capability to the coming of the F-35 is the Wedgetail.

The Wedgetail is an air battle management aircraft, which is software upgradeable.

This new aircraft will be able to manage the battlespace with 360 degree extended reach.

The Australian F-35 will enter into an environment of change and the question is how to accelerate the kind of change necessary to deal with the threats and challenges in the neighborhood and beyond in the years ahead.

This was the central question addressed by the seminar.

I will be providing further inputs about presentations at the seminar in the weeks ahead, but would like to highlight a unique contribution of the seminar to furthering an informed discussion of the impact of the fifth generation aircraft on the evolution of airpower.



Lt. Col. "Chip" Berke discussing his F-22 and F-35 experiences with the Australian audience at the Williams Foundation Conference, March 11, 2014. Credit Photo: SLD

At the heart of the program were three speakers: SQNLDR Matthew Harper, No. 1 Squadron, Royal Australian Air Force, Lt. Col. Chip Berke and the VMX-22 Commander Mike Orr.

These three operators addressed the question of what the fifth generation experience was all about and how that experience would affect the evolution of the force in the decade ahead.

The USMC is starting its rotational engagement in Australia at the end of the month and it is clear that there is a potential opportunity inherent in the RAAF and the Aussie evolution of combat approaches with that of the modernization of the USMC approach both in the Pacific and in the MAGTF itself.

In other words, the opportunity is not just for training but shaping relevant capabilities for 21st century operations.

Both Harps and Chip had something in common: the former COS of the USAF "Buzz" Mosely and Secretary Mike Wynne created the billets for the two non-USAF pilots to fly and work with the F-22.

The benefits of that decision were evident in the seminar as these two experienced pilots could relay to the rest of us what the impact is and can be. In Chip's case, he is the only currently operational F-22 and F-35 pilot in the world.

Mike Orr's task was different: it was to look at how the USMC is building out the combat capabilities of the MAGTF with the F-35 and how the USMC is preparing for the F-35.

To give a sense of the sense of enthusiasm conveyed to the audience by the three speakers, I have included some video inserts from their presentations.

The videos below are of Lt. Col. Berke and Col. Orr.

These inserts are not the highest quality video but will convey the sense of what these three speakers conveyed to the audience.

<https://vimeo.com/88810233>

<https://vimeo.com/88814983>

fter the seminar, I sat down briefly with Chip and Mike to discuss what they thought about their experience of the day.

It was an unusual experience, in that they were being asked by their hosts to think through the future based on their experience in dealing with the new combat systems, something, frankly, I have never experienced in an Inside the Beltway setting.

According to Orr:

I was impressed that the RAAF is engaging in a process of examining the impact of the aircraft well before we are turning wrenches and flying the aircraft. As an air force they are thinking about the strategic impact of the F-35 on their operations, and how they are going to use it as a joint and coalition enabler. There is a clear recognition of what they are getting into. They are not buying it as a one for one enabler but as a tool to do things they simply cannot do today.

Berke underscored

What I enjoyed the most about the interaction was the enthusiasm and embracing the future. This was in distinct from my experience at home where skepticism and resistance to change is so constant. The RAAF clearly is embracing the future and are enthusiastic about the coming of the F-35 as a key enabler of the future. There is no question of should we: it is how do we. There is a full embracement of the necessity for the aircraft and how to get on with its transformational role and impact.

Editor's Note: Berke's and Orr's Presentations Can Be Viewed Below:

<https://www.slideshare.net/robbinlaird/chip-berke-on-the-5th-generation-experience>

<https://www.slideshare.net/robbinlaird/col-orr-on-the-coming-of-the-f35-to-the-usmc>

Warlords Series 15: The Warlords in Copenhagen, 2015

05/03/2019

By Robbin Laird

Not only are the Marines key players in the Pacific, but clearly, they are as well in the Northern Flank of NATO.

Fortunately for the Marines, the Nordics are rebuilding their defense capabilities to deal with the Russian challenge and as part of that effort, Norway and Denmark along with the UK are leveraging the F-35 as part of their force transformation strategies.

The Marines have been key influencers in that process.

A visible example of that was the engagement of the CO of the Warlords in a high profile seminar in Copenhagen as the Danes were considering their replacement aircraft.

The article below was first published on April 30, 2015 and discusses the Copenhagen Airpower seminar held that year.

That article follows:

2015-04-30 Lt. Col. “Chip” Berke first met John Blackburn as a guest at the Williams Foundation Seminar in March 2014 on airpower.

When Blackburn was putting together a follow-on event with the Centre for Military Studies in Denmark, he requested early on that Berke provide his insights into what the fifth generation experience is really all about.

There is virtually no one better qualified to do so — which the audience attending the Copenhagen airpower symposium soon learned.

His background is unique in that he has moved from more than 2,000 hours in the Hornet to the F-22 and then the F-35. He then became the first F-35 squadron commander in the USMC. He also had time as a ground air controller with both the Marines and the US Army as well.

For Berke, the F-35 represents a rupture in airpower, not a steady state evolution.

It is not a replacement aircraft, and is no more a chronological replacement for the Hornet or the Super Hornet than is the Osprey a replacement for the CH-46.

It is very different type of airplane and rooted in doing things very differently, and that difference is crucial to mission success dealing with 21st century strategic challenges.

It is more about rupture than continuity and is a key part of the air combat revolution underway.

Berke described the challenge he faced going from being a very successful pilot in 4th generation aircraft to confronting the disruptive change associated with fifth generation.

He faced a situation where pilots with much, much, much less experience than he had were able to excel against him as he brought fourth generation mindsets to the F-22.

I showed up with guys about half my experience, who were just annihilating me in the airplane.

They just understood things way better than I did.

It was a very difficult transition for me.

So much of what you knew as a pilot didn't apply.

It was very frustrating to make fourth generation decisions – my Hornet brain – inside an F-22.

A lot of those times, if not most of the times, those decisions proved to be wrong.



Lt. Col. Berke responds to a question from the audience at the Copenhagen Airpower Symposium. Berke is flanked by Group Captain Paul, Godfrey, RAF, and John Blackburn, Williams Foundation. Credit Photo: Second Line of Defense

A Note With Regard to the Photo: Group Captain Godfrey is now Air Commodore Godfrey who is the Head of Carrier Enabled Power Projection in the UK Ministry of Defence

One might note, given the high cost of pilot training and the key role of the combat pilots in the air combat force that learning to fly yesterday's airplanes creates a mind set that actually can undercut the capabilities to use 5th generation aircraft such as the F-35 effectively.

It is not just about wasting time, effort and resources; it is about undercutting the speed with which the F-35 can have an impact upon the combat force.

When he was able to grasp how to think differently as a combat pilot in the F-22, he recovered his ability to perform combat dominance.

You have so much more to offer the three-dimensional world than you did prior to really figuring it out.

When you realize that your contribution to air warfare is about that, and you're doing it much better than you can in any other platform, you start to recognize your contribution on war fighting as a Fifth Gen aviator.

And what made the F-22 different suggests how the F-35 is different.

The F-22 is a very fast and maneuverable aircraft, but that is not where it excels.

It is an information dominant aircraft, a characteristic that the F-35 takes to another level.

“The F-22 is the fastest, the most powerful fighter ever built.

The least impressive thing about the Raptor is how fast it is, and it is really fast.

The least impressive thing about the Raptor is its speed and maneuverability.

It is its ability to master the battlespace is where it is most impressive.”

Rather than focus on speed is life and more is better, the Raptor has started the rupture in air combat whereby information dominance in the battlespace is the key discriminator.

Berke believes that the replacement mentality really gets in the way of understanding the air combat revolution that fifth generation capabilities have introduced and that will accelerate with the F-35 global fleet.

He argues for the need really to accelerate the leap into fifth generation-enabled combat forces for the US and its allies.

“When you look back a decade from now, what will the F-16 be in 2025? Or the F-18 in 2025?”

The disparity which is already significant now will be even greater a decade out with comparison to the F-35.”

It is about the plane in an important sense.

We don't want to find ourselves freaking out in 10 years that we wasted the last 10 years wondering, “Should we?” We should have spent all that time asking ourselves, “How do we?”

The “should we” question is yesterday's news.

If you're asking if we should fly Fifth Generation airplanes – if you're asking if a Fifth Gen fleet is necessary, you are old.

You are behind.

You are late.

And you're going to lose.

In another sense it is really about the synergy between the plane and the emerging fleet and the fifth-generation enabled combat ecosystem.

Berke used the iPhone analogy to describe the dynamics of change.

When Steve Jobs introduced the iPhone he said it was revolutionary for it combined a computer, with a music player with a phone.

And he repeated this several times in the roll out presentation.

I doubt that anyone in the audience today would describe their iPhone that way.

The ecosystem, which grew up around the phone and with which the phone itself has matured, is what is revolutionary, not simply the phone.

The same is true of the F-35; it is revolutionary; but the ecosystem which will change and which will inform the further development of the aircraft is even more so.

When we fast forward to 2025, what will be the threats with which we will be dealing?

Berke underscored that we could debate that point from the perspective of 2015 but it would be a debate.

Come 2025, and the threats will be much clearer and need to be dealt with.

We need a platform which can be responsive to those threats and evolve over time.

That is precisely what the F-35 is all about.

The F-35 is designed to evolve.....

Plasticity is about the idea that is inherent in the design, inherent in the DNA of the equipment you buy, is the ability to substitute for other elements as needed.

I understand that the F-35 is built as a tactical aircraft; I get that. The fact that it's designed as well to be flexible to other mission sets and live in other regimes that you'd never ask a tactical platform to do is what give is it that inherent flexibility, that inherent plasticity.

Do we have a platform that's flexible enough to adapt to that changing environment? Fourth generation airplanes simply can't do that.

And in a theme that he introduced in the Canberra conference last year, Berke underscored that the notion of a tactical fighter was undergoing change as the pilot's ability to operate in the battlespace with information capabilities, expands as well.

The burden that the F-35 places on a pilot is much greater, and I understand the information processing is better.

I understand that the pilot interface with the aircraft is a lot better, but the skill set is much broader now because that pilot and that aircraft interact on a much broader capability, and it's much more operational, much more strategic, than any tactical platform that's ever been built because it's resident in the design of the airplane because of the things that it can do.

I can provide information to a general officer sitting in a CAOC.

At the exact same time, I can send information to an aircraft flying ten miles away from me.

That information is relevant to both at the same exact time in two totally different ways.

No other airplane has ever been asked to do that before, let alone have it be natural in its DNA or expect to be able to do that by design.

And to highlight the significant difference between the 4th and 5th generation, one simply can compare what was asked of each when they were launched into operation.

What makes a sensor-collaborator-shooter platform relevant?

That is not the question we asked about a fighter 10 years ago, 25 years ago.

That was not the question we asked in 1975 when we wanted to buy the F-16.

That's not the question that was asked 10 years ago with the Typhoon.

Information development, access sharing, and the ability to integrate security – that's how you measure the F-35.

That's how you measure the fifth generation fleet.

How well does it do that?

You can build and design an airplane, and we have a designed and built airplane, to be able to answer those questions, to be relevant as a shooter, to be relevant as a collaborator.

You have this information.

I have this information.

Let's view that information together, provide each other a much more enhanced picture to make a more intelligent decision while, at the same time, funnel information to other users that can parse out the data that's valuable and relevant to them.

And it is the ability to operate throughout the combat spectrum that is essential as well, and is a core competence of the F-35.

Air warfare is about spectrum dominance.

It's not just enough to say, "My radar is better than your radar," or "My sensor is better than your sensor," or "My capability in this spectrum is better than yours."

I have to be able to move back and forth between spectrums.

I need to figure out where within the spectrum the fight's going to take place, and then layer on top of it as much depth.

That's what Sensor Fusion is by the way....

It isn't just enough for that one airplane to get that information, it's the data link and the multi-functioning capability that all these different airplanes are fusing information together behind the scenes, and handing it to you, so you can now make decisions based on information that another airplane 10 miles or 100 miles away have given you, that you didn't even realize because you don't even have to ask him for information because it's just there.

And then Berke addressed the question of stealth and focused on its important contribution to the plane and its ability to operate and not providing a mystical capability.

Stealth facilitates access.

It doesn't make you invisible; you don't fly around with impunity.

It just allows you to operate in an environment that you could be restricted from or excluded from without it.

You take that with all the other capabilities of the platform, aggregate them together, and you now have a survivable platform that can operate in certain environments that no other platform can.

And clearly, the F-35 is designed to work with core assets throughout the battlespace.

With regard to other aircraft, the F-35 makes other aircraft more lethal and more survivable—and legacy airplanes provide ordnance and battlespace presence which complements the F-35 as well.

“Don't just think that the presence of a fifth gen platform is good to the legacy airplanes.

It's a two-way street, and it's very functional for everybody.”

And he warned that if you do not make the jump into the F-35 world, you will have a core challenge of working with everyone else who has.

If you're on the outside saying, "I have this asset that I'd like to contribute to your fight," you put the onus on the recipient and go, "Well, we can use that on this side. Maybe it will fit here.

Can we communicate?

Can we make this work?

Can we make this relevant?

Let me see how you fit in.

For the USMC, the F-35 delivers essential capabilities to enhance the survivability and lethality of the MAGTF.

At the same time, it also allows the Marine Corps to link up more effectively with other forces as well.

Be brilliant for the Marines on the ground, keep Marines alive, support Marines in contact, and support Marine Corp objectives. We can operate any time, any place, anywhere, for any reason, with any other user.

Now you have a force that is relevant well beyond what its mission statement looks like on paper.

That's what the F-35 provides for everybody.

It's a great question to ask, what is it like to be part of that larger ecosystem?

In the Q and A, one audience member asked about the A-10 discussion in the US and Berke had a straightforward response:

As a JTAC the key requirement is that the airplane show up.

The A-10 pilots are amazing; the plane will not always be able to show up in the environment in which we operate; the F-35 will.

That is the difference for a Marine on the ground.

Major General Anders Rex

And if you fast forward to the Royal Danish Air Force currently, there clearly is a key focus on the Danish Forces being becoming a fifth generation force.

In a visit to Denmark last year, I had a chance to meet with the new head of the Royal Danish Air Force, Major General Anders Rex and this is what he had to say about the transition process.

This interview was published on October 25, 2018 and that interview follows:

During my most recent visit to Denmark, I had a chance to visit Royal Danish Air Force bases in the Jutland area.

This provided an opportunity to discuss the transition from an F-16 to an F-35 force as well as other changes involving connectivity and decision-making systems and approaches.

But prior to those visits, I had a chance to visit with the head of the Royal Danish Air Force, Major General Anders Rex. In past discussions, we focused on coalition issues as well as fifth generation transition issues.

And in our most recent discussion, both came together in terms of the kinds of innovations which an all fifth-generation force like Denmark will need to make in terms of building its own capability and working those capabilities with Air Forces flying older aircraft as well.

Denmark, Norway, the Netherlands, and Australia will become all fifth-generation fighter forces; which provides opportunities as well as challenges in working with older generation fighter aircraft and more generally working connectivity with other air, ground and sea assets to deliver what might be called a fifth generation enabled force.

The Australians have been more forward leaning than most in terms of trying to think through the impact of building a fifth-generation force understood not simply in terms of adding the F-35 but transforming the force to become a lethal and effective integrated multi-domain force.

In fact, I last met Major General Rex in Australia last March where he attended the Airpower Conference and he clearly has worked with and has high regards for the RAAF and its Plan Jericho approach. One aspect of the F-35 global enterprise is precisely coalition partners cross learning from one another as they stand up their F-35 squadrons.

According to Major General Rex: “The goal for our coalition and our alliance is to get the best out of what we have as a coalition force. During Red Flag, the experiences we have been briefed on, fifth-generation aircraft make fourth-generation more lethal and survivable, and more effective.

“We could focus on the significant kill ratios which a fifth-generation aircraft can deliver. But that is not the sole focus. It is about how fifth generation aircraft lift the whole force so that the kill ratio for the entire force goes up exponentially.”

He emphasized the importance of combat learning associated with the new aircraft.

“When we were running our competition for a new fighter aircraft, I witnessed the operation of a Super Hornet F-squadron on the USS Nimitz carrier off the coast of San Diego.

“This was the latest variant of the Super Hornet which had just received a new AESA radar on it.

“And when we talked to the pilots, they made the point that there was no way they could have thought up or analyzed what they can use this radar for. Every single day they learned new things.

“That is how I see the kind of learning we are going to have operating the F-35 and more broadly the kind of co-learning which other platforms in the air, ground and naval forces will need to have as well to leverage what a fifth generation enabled force can bring to the fight.”

In effect, what Major General Rex was discussing was the opening of a significant aperture of co-learning, for example, in Danish terms, how the frigates can use their future SM-2s and SM-6s in conjunction with the SA and targeting capabilities which the F-35 would bring to the Danish force.

“Co-learning across the forces and the F-35 to the legacy platforms is a major challenge but a task which we need to master to get where we need to go as a Danish force, but even more significantly at the coalition level.”

And working with coalition partners who are not going to buy the F-35, Major General Rex underscored that the challenge was then “how do we elevate the effectiveness of those coalition partners?”

“We need to focus on the broad co-learning challenge and how to elevate the combat force as a whole as the F-35 becomes a key force for change.”

Major General Rex underscored that this needed to become a core focus of exercises and training objectives within exercises, namely, co-learning between the F-35 and ground, air and naval elements both within F-35 nations as well as working with forces which do not have F-35.

A key example is the cross-border training the Norwegians do with the Finns and the Swedes.

The point of the cross training currently is that Norwegian F-16s work with Finnish F-18s and Swedish Gripens.

The Norwegians are shifting to F-35 and perhaps the Finns will as well. The challenge then is to make sure that the Gripens can work more effectively as a result of the upswing in multi-domain capabilities which the F-35 brings to a force.

In short, it is less about fourth-fifth generation aircraft integration and much more driving an air force forward in terms of the capabilities which F-35 multi-domain aircraft can provide and as that is done shape co-learning with legacy aircraft as well as with key ground and naval systems.

It is about innovations in concepts of operation and the co-learning process unleashed by a fifth generation enabled force.