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Visiting Second  
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# The View from 2nd Marine Air Wing: The Perspective of Major General Cederholm

12/15/2020

I first visited 2<sup>nd</sup> MAW in 2007, at the beginning of the Osprey era. There I saw a small number of the aircraft on the tarmac and met with pilots and maintainers at the beginning of a long period of disruptive change, a period of change which delivered new capabilities, and new approaches for the USMC in global operations.

With this visit, I had a chance to follow up on discussions earlier this year with MAWTS-1 and with NAWDC about the dynamics of change with regard to the Marine Corps role in naval operations.

This changing role is being shaped at a time when the U.S. Navy is focused on blue water maneuver warfare, and the Marine Corps part of this might be referred to as a naval expeditionary force-in-readiness in support of fleet operations.

**But whatever the long-term vision, the future is now.**

With the world as it is, and with the rise of 21<sup>st</sup> century authoritarian powers working skill sets for full spectrum warfare, for 2<sup>nd</sup> MAW it is about the challenge of being able to fight now and prepare for the future by leveraging current operations and shaping new approaches.

My host for the visit was Major General Cederholm, the CG of 2<sup>nd</sup> MAW. The CG has flown almost every aircraft in the 2<sup>nd</sup> MAW inventory, most recently being the F-35. At the end of my visit, we sat down and discussed how he viewed the challenges facing his command and key priorities moving forward.

Without a doubt, the key theme for the CG was readiness to be able to fight with the force he has and to do it on demand.

The readiness theme is one that strategists far from the force can readily forget, but for the operational commanders, and those responsible for the train and equip functions, it is the baseline from which operational realities start.

When I interviewed the [U.S. Navy Air Boss](#) earlier this Fall, he underscored how important the challenge of readiness, understood in terms of available fully mission capable aircraft was to the Navy.

*Question: What are the biggest challenges you faced when you became the Air Boss?*

*Vice Admiral Miller: "There were three main things when I came in, and most of them were near term focused.*

*"Readiness was unacceptable.*

*“For example, 50% of our FA-18s weren’t flyable. Readiness was clearly the first and the highest priority.*

*“The second one was to shift our training from counter-terrorism to what we need to fight and win a great power competition.*

*“The third involved manning challenges. We had gotten ourselves to where we had no bench.*

*“:We were putting our combat teams together right at the end game and sending them out the door on deployment, and we really weren’t cultivating the expertise we need for the high-end fight.*

*“We knew that meeting these challenges was not an overnight challenge, but required a sustained effort.”*

Major General Cederholm underscored very similar themes.

He started by underscoring that in his view 2nd MAW was “America’s Air Wing.”

“We operate all over the globe. Right now, we have forces all the way from Europe into the Far East, and everywhere in between.

“The sun never sets on 2nd Marine Aircraft Wing. We have to have a ready force and generate combat power today as we face the challenges of transformation tomorrow.

**“We can never lose our readiness trait, or our ability to respond immediately when called upon.**

“We’re looking at efforts right now to increase our readiness and our availability across fully mission capable aircraft, which is basically our no-go criteria when it comes to combat operations. The metric that matters to me is the availability of fully mission capable aircraft, not simply availability of an aircraft.

“When we send aircraft into harm’s way, we owe the aircrew and the Marine Riflemen, a fully mission capable aircraft.

“In this context, we are focused on increased reliability of parts and weapons systems. I have been focused significantly in my career on training; now I am laser focused on the logistics side as well.

“We are examining reliability across the parts for every type, model, and series of aircraft at 2<sup>nd</sup> MAW, and working with various institutions to improve reliability.

“Even if there are higher upfront costs to get reliability enhanced, it will be cheaper in the long run for the operation of a more resilient force, which is clearly what one needs when the demand is to fight right now, when the phone rings.”

**With regard to the training side, the focus is upon transformation as well.**

The shift on the demand side to deal with the pacing threat means that the force needs to be more capable of operating as a distributed but integrated force.

This means as well that the Marines operating the various units in 2<sup>nd</sup> MAW need to be prepared to work the shift between being a force supporting a command or becoming the lead element in an operation.

This kind of problem-solving flexibility is a key theme at NAWDC and MAWTS-1 and, it is not surprising, to find the same focus upon training for flexibility at 2<sup>nd</sup> MAW as well.

**This is especially true of assault support innovations.**

The MV-22B was birthed at 2<sup>nd</sup> MAW and the disruptive change which Osprey introduced is still driving changes with the force.

The CH-53K is now at VMX-1 as the Marines prepare for it to generate similar processes of change.

“Changes, great changes, in Marine Corps assault support have always originated in 2<sup>nd</sup> MAW – today is no different.”

The Marines are reworking the maintaining side of the business. “We are revising our table of organization and manpower for logistics.

“We are looking for new balances of working relationships as well between contracted maintenance and uniformed maintainers to free up capability for front line squadrons.

“Our biggest project associated with transformation is in this manpower area.”

With regard to transformation, 2<sup>nd</sup> MAW as a ready to fight now force works with what they have but are opening the aperture to rethinking about how to use the force elements they have but to operate them in new ways.

I saw a lot of evidence of this point during my stay and will write about them in forthcoming articles.

These changes include new ways to operate the AH-1Zs and UH-1Y with the Ground Combat Element. New training approaches are underway to provide new engagement approaches by operating 2<sup>nd</sup> MAW with 2<sup>nd</sup> MEF to deliver new combat approaches to deploying the force.

A recent Deepwater exercise highlighted new ways to leverage assault support and to operate in an extended battlespace. Romeos are starting to train with Vipers to give the fleet better self-defense capabilities. There is a new focus on how Marine Air works with the fleet to contribute to surface and sub surface missions as well.

“We don’t need to wait for force design initiatives to come to fruition to increase our lethality and transform our operating concept.

“We’re doing that through training inside our own formations, our own platforms and focusing on better ways to deal with the pacing threat.”

The CG highlighted a key way the Marines working with the Navy can enhance combat flexibility within the fleet.

I have argued that the shift from the ARG-MEU to the amphibious task force if appropriately understood can allow that task force to provide significant contributions to sea control and sea denial.

The way the CG put it was as follows: “We are changing our mindset.

“We can swap out the composition on an amphibious deck within two hours to tailor the force to the mission or the threat.

We can configure for HADR operations and swap out with a ship like the USS America into a full up lethal strike asset with F-35s and Ospreys onboard. Mix and match and swapping out assets is a part of working the chess board for 21<sup>st</sup> century combat operations.”

Another example of the mindset change being worked on the training side can be seen in 2<sup>nd</sup> MEF/2<sup>nd</sup> MAW cooperation.

“With the pacing threat, we may not conduct mass regimental lifts.

“I am excited to be working with Second Marine Division with regard to battlefield planning and training on the correlation of what forces they will insert and what assault support is most appropriate to that effort.

“You are taking a smaller element of the GCE, combining it with a smaller element of the ACE, and operating in a chain saw like fashion.

“This means that every seat on the assault aircraft, every pallet being lifted, has to have a design purpose for force inserts. We are changing the way that we think about resupply for the insertion force.”

In short, the challenge is to operate now, but generate change.

**As Major General Cederholm put it: “We are generating combat power and transitioning at the same time.”**

## **Exercise Deep Water: Working the Integrated Distributed Insertion Force**

**12/31/2020**

Last July, North Carolina-based Marines organized an exercise in which they called Deep Water.

In a press release from [November 5, 2020](#), this is how II Marine Expeditionary Force described the exercise: “Marines with 2nd Marine Division, 2nd Marine Logistics Group, and 2nd Marine Aircraft Wing are conducting Exercise Deep Water at Marine Corps Base Camp Lejeune, N.C., 29 July 2020.

“II MEF conducts these training events on a consistent basis. This year, Exercise Deep Water will see two battalions conduct an air assault in order to command and control many of the various capabilities organic to II MEF in preparation for major combat operations.

“Exercise Deep Water 20 is a great opportunity for the Division to work with aviation units from Marine Corps Air Station New River and the Logistics Combat Element, as well. 2nd Marine Regiment will be the provide command and control over the 2nd battalion, 2nd regiment, and 3rd battalion, 6th regiment, the logistics and aviation units.”

Additionally, 2nd Marine Division provided further details about the exercise in a press release dated [November 5, 2020](#):

“A Regimental Combat Team (RCT) commanded by 2d Marine Division’s 2d Marine Regiment undertook a two-battalion air assault to commence Exercise Deep Water today on Camp Lejeune (CLNC). At nearly double the size of last year’s Exercise Steel Pike, Exercise Deep Water is the largest exercise of its type conducted on Camp Lejeune in decades.

“Exercise Deep Water is a 2d Marine Regiment-planned and led event that incorporates elements from across the II Marine Expeditionary Force Marine Air Ground Task Force (MAGTF). The participating Marines and Sailors will be engaged in a dynamic force-on-force scenario against a “peer-level adversary,” as simulated by 2d Marine Division’s Adversary Force Company.

“Exercise Deep Water, a regimental air assault that utilizes the whole of CLNC and the outlying training areas, will allow us to sharpen our spear and help make us more lethal,” said Col. Brian P. Coyne, commanding officer, 2d Marine Regiment.

“With Marine air (2d Marine Aircraft Wing) serving as part of a robust team that incorporates every element of the MAGTF, this exercise provides an opportunity to display the unparalleled lethality of a well-orchestrated Marine fighting force. As ‘RCT-2’ takes on an independent-thinking adversary, the ability of our squads to shoot, move, communicate, evacuate and employ effective combined arms with excellence will be put to the test.”

“In addition to the air assault, 2d Marine Regiment will be conducting offensive, defensive, and stability operations in multiple urban training settings where both conventional and hybrid adversary forces will be acting against them.

“Exercise Deep Water continues to build upon 2d Marine Division’s priority to build readiness against peer threats, in accordance with both the National Defense Strategy and the Commandant’s Planning Guidance.

“Accepting and embracing the challenge of such a highly-complex event in these trying times is a reflection of our unit’s commitment to remaining prepared for major combat operations or unexpected contingency operations, Coyne said, adding, “Along with the rest of the world, our adversaries are watching to see if we drop our guard; the visible enhancement of 2d Regiment’s combat readiness during Deep Water will help assure our enemies that they should not test our Corps.

“This training event will improve our warfighting proficiency and prepare us for tomorrow’s battles. ‘Tarawa’ (2d Marines call sign) Marines will fight and win if called,” he concluded.”

**During my visit to 2nd MAW in the first week of December 2020, I had a chance to discuss the exercise and its focus and importance with Major Rew, the exercise’s air mission commander.**

I learned from Major Rew that this exercise combined forces from pickup zones in North Carolina and Virginia.

The exercise consisted of a force insertion into a contested environment, meaning they used air assets to clear areas for the Assault Force, which included both USMC (AH-1Z, UH-1Y, F/A-18A/C/D, and AV-8B) and USAF aircraft (F-15E and JSTARS). Once air superiority was established, the assault force was inserted by USMC MV-22Bs and CH-53Es.

The exercise also included support aircraft such as the KC-130J and RQ-21.

The planning and execution focused on bringing a disaggregated force into an objective area that required integrated C2 with Ground, Aviation, and Logistics Combat Elements.

This C2 functionality was delivered in part by an Osprey operating as an airborne command post with a capability delivered by a “roll-on/roll-off” C2 suite, which provided a chat capability and can be found at a mobile or static command post or even in an airborne C2 aircraft.

The use of MAGTF Tablets (MAGTAB) provided a key means of digital interoperability that allowed for real time information sharing to ground elements and aviators. The MAGTAB provided the visual representation of the integrated effects and outcomes to the command element.

ISR was provided by USMC assets and by a USAF JSTARS aircraft. They used their Network-On-The-Move Airborne (NOTM-A) system to provide interoperability for the commander and assault force.

As Major Rew put it, “I think having the NOTM-A kit on the Osprey is a big win because it provides so much situational awareness. With the Osprey as a C2 aircraft, there is added flexibility to land the aircraft close to whatever operational area the commander requires. There are many capable C2 platforms across the DoD but not all of them also have the ability to immediately land adjacent to the battlefield like the Osprey does.”

**One aspect of mission rehearsals the Marines are developing is to leverage Joint assets in support of an assault mission and be able to provide information to that mission force as well.**



To be clear, the Marines did not march to the objective area; they flew to their objectives in various USMC lift assets accompanied by USMC rotary wing and fixed wing combat aircraft.

**They were moving a significant number of Marines from two different locations, hundreds of miles apart, to nine different landing zones.**

As Major Rew explained it, “We were working with a lot of different types of aircraft, and one of the challenges is trying to successfully integrate them to meet mission requirements.”

He added, “As the air mission commander, I was co-located with an infantry colonel who was the overall mission commander. We were in an Osprey for a significant period of time leading the operation from a C2 perspective.”

“In the exercise we sometimes had to solve problems during execution that required rapidly sending information to an asset so that they could complete a crucial battlefield task. We work with commander’s intent from the outset of an operation and this is especially critical during distributed operations.”

**The coming of the F-35 to both Air Assaults and Distributed Operations is crucial as well.**

According to Major Rew, “They’re an incredible sensor and they have the capability to be able to see what’s happening on the battlefield, assess things real time, and then send that information to the individual who needs to make a decision. Incorporating them into future exercises of this magnitude will be value-added to the entire Marine Corps.”

**In effect, the Marines are working on an ecosystem for integrated and distributed force insertion.**

As they build out that ecosystem, new ISR, C2 and, strike capabilities that enter the force can be plugged into the ecosystem that will allow for a continued evolution of that system. In that sense, the future is now.

## **MCSC: NETWORKING ON THE MOVE (NOTM) FAMILY OF SYSTEMS (FOS)**

By Concepts and Programs | Marine Corps Systems Command | [December 13, 2018](#)

### *DESCRIPTION*

NOTM FoS is a Satellite Communications (SATCOM)-based on-the-move command and control (C2) combat capability for all elements of the Marine Air-Ground Task Force (MAGTF).

*Initially fielded in 2013 in response to urgent Marine Corps Forces Central Command (CENTCOM) requirements, NOTM is an Acquisition Category (ACAT) IV(M) program with a budget of \$509 million across the Future Years Defense Plan (FYDP) and a total life cycle cost of \$1.7 billion.*

*NOTM provides robust C2 wideband SATCOM capability, three external network enclaves (Secret Internet Protocol Router (SIPR), Non-secure Internet Protocol Router (NIPR) and Coalition) with access to the Global Information Grid (GIG), Next Generation Enterprise Network (NGEN), full motion video, Voice over Internet Protocol (VoIP), and Voice over Secure Internet Protocol (VoSIP) integrated onto United States Marine Corps (USMC) tactical vehicles.*

*Ruggedized laptops with a full suite of Combat Operations Center (COC) tactical software (Joint Tactical Common Operational Picture (COP) Workstation (JTCW)/Command and Control Personal Computer (C2PC), Advanced Field Artillery Tactical Data System (AFATDS) Effects Management Tool (EMT)) and chat are connected between NOTM Point of Presence (PoP) vehicles to Staff Vehicles via Type 1 encrypted wireless local area networks.*

*A force multiplier on the battlefield, NOTM provides forward and main integrated C2 capabilities for bounding assaults to the edge of the battlespace; commanders are no longer geographically tethered to the COC. The NOTM capability is currently employed both in ground and air platforms.*

## **OPERATIONAL IMPACT**

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# **Visiting MAG-29 at 2nd Marine Air Wing: The Perspective of Col. Finneran**

**12/23/2020**

During my visit to 2<sup>nd</sup> MAW during the first week of December, I had a chance to visit MAG-29, with regard to both the CH-53 and H-1 units. Then I had a chance to discuss the way ahead for the assault force with the Commanding Officer of MAG-29, Col. Robert Finneran.

It would hardly surprise you to learn that the CO was a very experienced combat aviator who had worked on assault operations for a significant period of time, including tours in Iraq and Afghanistan and at MAWTS-1. He also served at SOCOM where he broadened his experience as well.

His own operational experience is associated with the AH-1W and AH-1Z, but as the CO of MAG-29, he serves as the Naval Aviation Enterprise's fleet lead for the CH-53. This role includes the transition to the CH-53K. Later in my visit I would have a chance to "fly" the [CH-53K](#) in the simulator at New River.

We discussed three major issues: the CH-53K, the H-1 transition with digital interoperability, and the key role which Marine Corps aircraft play in mobile or expeditionary basing, or as he put it: "They are key elements ensuring that a distributed force is integrable, rather than being dispersed and isolated."

We started by discussing the CH-53K and I asked him a direct question: Why is it so hard to explain how different the K is from the E? It is indeed so different that I recently wrote an article suggesting if they had named the aircraft the [CH-55](#), people might get the point of how different it is.

Col. Finneran: "It starts with the silhouette of the two aircraft. They are very similar, but that is about it. The Kilo [CH-53K] is a generational leap in technology. It is a completely different airplane as far as capabilities and technology. But because it is for now a Marine Corps-only aircraft, there is no widespread recognition in the joint force of how different the aircraft is and what its impact will be."

The digital capabilities of the aircraft certainly will enhance the situational awareness of the combat team, and its speed and range provide a significant advantage for force insertion.

"Anything we can do to enhance the situational awareness for the pilots, and take the workload off of them, allows them to focus on their mission. And mastering the aircraft in terms of flying will be fairly easy for the converting CH-53E pilots, but for the CH-53K generation, they will need learn how to manage all of the information that can be worked in that aircraft to enhance situational awareness and maximize its utility for the mission."

He also argued that the CH-53K will affect risk calculus for force insertion as well. "With the aerial refueling capability of the CH-53, we can extend range and move a force and needed sustainment quickly and across great distances. This provides both the Marine Corps and the Joint Force Commander flexibility and complicates the problem for any adversary."

We also discussed the coming of digital interoperability to the H-1 family and how significant he saw that, notably as the Marines focused on integration with the US Navy.

"We're in the early stages of talking to the Seahawk Weapons Schools, both the MH-60S and MH-60R, to figure out how we can find complementary ways to employ our airframes.

"We bring a lot to the table for maritime operations, notably in terms of the weapons we carry on the Viper, and we need to figure how best to integrate that capability with the maritime force."

"Once we're networked and we can become part of the maritime kill chain, there's a lot that this airframe can bring to bear in the role of both sea control and sea denial. I just don't think we've explored it enough, and we're in the early stages of taking a look at that.

"Because it is significant, what we bring from a weapons standpoint to the maritime domain, I think it's really on us to explore how we can expand our operational reach in that domain."

But as the Marine Corps focuses its attention on naval integration, a key part of that effort is upon working mobile, multiple and expeditionary basing, and how to do that with the current force as the force transforms as well. Obviously, a key challenge is having effective logistical connectors.

As Col. Finneran put it: "Logistical connectors are key to expeditionary basing. For example, the CH-53E and then the CH-53K can provide crucial support as they can bring fuel to an expeditionary base directly, rather than having to work through a series of basing locations.

“Fuel is certainly critical to distributed operations and our heavy lift helicopter is a key enabler, and frankly, I only see it increasing in importance to such operations. I don’t see how the force goes and does any of the new operational concepts without that capability.”

With regard to risk mitigation or being “risk worthy” as it pertains to distributed operations, Col. Finneran argued that the force under his command is clearly suited to that mission challenge or requirement.

With the attack utility team which the Viper and Venom create and with the heavy lift capability of the CH-53 family, the time to maneuver to get the desired combat effect is low compared to slower paced basing enablement methods. And it is sustainable as well with regard to bringing what is need to the mission, rather than depending upon ship-based support in an expeditionary basing maritime environment.

He added, the CH-53K versus the CH-53E provides “a lot more options” for this kind of scenario based on performance improvements in terms of range and payload.

MAG-29, along with MAWTS-1, are working on new Tactics Techniques and Procedures (TTPs) to maximize their capability to deliver the evolving basing capability and the kind of combat effect desired for sea control and sea denial. My visits to MAWTS-1 and to NAWDC this year certainly underscore this shift as well.

Col. Finneran concluded: “If we really want to be risk worthy, and we really want to challenge the risk calculus for our adversary, we’ve got to outmaneuver them in both time and space, and that is what my command is focused on delivering to the fight.”

## **Visiting HMLA-269 and 167: Shaping a Way Ahead for Marine Corps Light Attack Helicopters**

**12/30/2020**

Marine Light Attack Helicopter Squadron 269 (HMLA-269) is currently commanded by Lt. Col. Short and is a squadron consisting of the AH-1Z Viper attack helicopter and the UH-1Y Venom utility helicopter. They are known as the Gunrunners, and next door within the same hangar are the Warriors of Marine Light Attack Helicopter Squadron 167 (HMLA-167), commanded by Lt. Col. Hemming.

They are part of Marine Aircraft Group 29 within the 2nd Marine Aircraft Wing.

The “Gunrunners” operate what they refer to as “attack utility teams.”

What that means is that they operate the Viper (AH-1Z) and the Venom (UH-1Y) as an insertion and support package. They share 80% commonality of parts, operate from a small logistical footprint and are extremely maintainable in the field which make them a significant expeditionary warfare asset.

Recently, both squadrons retired their last AH-1W Super Cobra attack helicopter in favor of the AH-1Z Viper.

Lt. Col. Hemming noted in the interview, “The hydraulics, the engines, and some of the systems on the aircraft and the air frame, are significantly more durable and reliable than the old AH-1 Whiskey in terms of the number of hours you can put on before you have to conduct maintenance on it. These significant upgrades result in your ability to operate the aircraft for an extended period of time compared to the legacy Cobra and Huey.”

**The Viper brings significant firepower to an expeditionary unit with the Venom providing lift and support to that unit as well.**

The helicopters have evolved from their legacy ancestors to be more capable as well.

As Lt. Col. Short put it, “We are the most expeditionary and resilient attack helicopter platform there is in terms of the scale and the ability to survive in the field or operate forward.

“Our hydraulics, our control systems, our powertrain systems are the most expeditionary maintainable as an attack utility team in operation today.”

Lt. Col. Short added, “we are the, as somebody described it, “The punchy little friend in the overhead that’s there when no one else is.”

In the counter-insurgency environment, the attack utility team could operate in a distributed environment to support Marines fighting toe-to-toe against insurgents.

Lt. Col. Short argued that their attack utility team was very “risk worthy” in terms of the “logistical, the manpower, the cost investment for the capability gain, you would give a ground force, or you would give a supported force by putting them forward, putting them into a position to offer support.”

**The Viper is adding Link-16 and full motion video so that it can be even more supportable for or supported by an integratable insertion force.**

It is also very capable because of its relatively small footprint able to land in a variety of ground or ship settings and get refueled. If one focuses on the ability to operate virtually in any expeditionary setting, at sea or on land, the Viper is extremely capable of refuelability for an insertion force. They can do this onboard virtually any fleet asset at sea or at a Forward Air Refueling Point or FARP.

From a concept of operations perspective, notably with regard to an ability to operate from multiple bases, the attack utility package certainly can keep pace with the “pacing threats” facing the Marines.

The Commandant has asked the Marines to rethink how to do expeditionary operations, and to promote tactical innovations to do so.

**HMLA-269 has been focused on this effort.**

Notably, they have been exercising with the Ground Combat Element (GCE) at Camp Lejeune to work small packages of force able to be inserted into the combat space and able to operate in austere locations for a few days to get the desired combat effect and then move with the GCE to new locations rapidly.

HMLA-269 has been working closely with 3rd Battalion, 6th Marines to shape innovative ways to deploy expeditionary force packages.

“We are working ways to work distributed force operations with the battalion.” They have a security mission currently with regard to II MEF in reinforcing Norway. The question being worked is: how, in a multi-basing environment, can one provide the kind of firepower that the maneuver force would need?

The Gunrunners took a section of aircraft to work with a ground combat unit and to live together in the field for a period of time and sort out how best to operate as an integrated force package. They operated in the field without a prepared operating base and worked through the challenges of doing so. They worked with an unmanned aircraft ISR feed as part of the approach.

**Obviously, this is a work in progress, but the strategic direction is clear.**

And there are various ways to enhance the capability of the force to be masked as well. Movement of small force packages, operating for a limited period of time, moving and using various masking technologies can allow the attack utility team which is operational now to be a key player in shaping a way ahead for Marine Corps expeditionary operations.

In short, the attack/utility team of 2nd MAW are taking the force they have, and their significant operational experience and adapting to the new way ahead with the next phase of change for expeditionary warfare.

## **An Update on the CH-53K from VMX-1: The Perspective of Lt. Col. Frank**

**01/05/2021**

During my visit to 2<sup>nd</sup> Marine Air Wing during the first week of December 2020, I had a chance to visit New River Marine Corps Air Station and meet with Lt. Col. Frank, VMX-1, to get an update on the coming of the CH-53K. Lt. Col. Frank showed me the simulator as well giving me a chance to experience the flying qualities and, notably, the ability to hover via using the automated systems to operate in difficult visual and operating conditions.

He joined the USMC in 2002 and has flown a wide variety of rotorcraft during his career and served as a pilot for the U.S. President under President Obama. He came to VMX-1 in 2018. He has stayed in large part to follow through the CH-53K to fruition, that is into operations.

As he put it: "It is crucial to have a CH-53 fleet that works effectively as it is a unique capability in the USMC crucial for our way ahead operationally. It is the only aircraft we have that can move an expeditionary brigade off of our amphibious ships."

"We have about a hundred Marines here at the test detachment. We've been training our maintainers and our air crew on the 53K for two years now. The maintainers have been working on it since 2018, when we started the logistics demonstration, which is essentially the validation of maintenance procedures on the 53K. I have 10 pilots in the det including myself and I'm responsible for ensuring that everyone goes through the proper training syllabus."

"All 10 of our pilots in addition to our crew chiefs and our maintainers will be the first unit to be allowed to operate a "safe aircraft for flight," which is a term we use for the maintainers.

"Our job is to conduct initial operational test and evaluation training for six months, beginning this month and ending in May or June of 2021, where we will establish five aircraft commanders, myself being one of them, five co-pilots, that'll be our 10 pilots.

"We'll qualify 10 crew chiefs, and our maintainers will continue to advance in their maintenance quals. In June of 2021 is when we enter into IOC evaluations."

"We're going to evaluate the reliability and maintainability of the aircraft. We're going to collect all our maintenance data, determine how long it takes to fix, how long it's down before it's fixed and how many flight hours it accomplishes per maintenance man hour to evaluate it.

"We will evaluate its shipboard compatibility in June and July 2021. We are to evaluate its desert mountainous capabilities in Twentynine Palms, beginning of August and September 2021. And we also have a sorties generation rate demonstration where we will execute a surge capability of sorties from a ship in November 2021; we'll do that for a period of about 72 hours straight, where we will fly every aircraft every day and see what they deliver."

We discussed the importance of the fly by wire system in the aircraft, which he considers "very mature." He did note that the USMC subjects its aircraft to some of the harshest environments in the DoD, "salt spray, open ocean, desert heat and freezing cold." Robustness is a crucial aspect of determining reliability. "We do not operate runway to runway. We do not store them inside; we use them in challenging conditions."

He referred to his team as "the learning curve for the CH-53K," similar to what happened with the Osprey or the F-35B.

He underscored that the aircraft is well along the path to IOC.

“We’ve had a lot of time with the aircraft. Our Marines have been working on it for two years now. During logistics demonstration, we took the publications, which were in their infancy, and we went through every work package.

“The bulk of the Marine Corps’ CH-53K personnel, equipment, aircraft, and support will be located at VMX-1 when the Marine Corps declares the CH-53K program is IOC.”

Lt. Col. Frank described the innovation cycle as follows: “When problems come up with the aircraft, we bring up to the program office, the program office sends it out to engineering and industry. They implement changes. They implement engineering fixes, and they incorporate them.”

While at New River, we visited the first of the CH-53Ks delivered to VMX-1, which I had seen earlier in the log demo program but now was on the tarmac.

LtCol. Frank indicated that VMX-1 is to receive six aircraft overall.

“We are to receive our next aircraft on January, February, June and September of 2021, and the last one on January of 2022. By January 22, when the sixth aircraft is delivered, we should be done with IOT and E and we should carve out a detachment size group of maintainers, pilots, and aircraft from VMX-1 to form the initial cadre of HMM-461.”

### **How does he compare the Es to the Ks?**

“I’ve started in the Ch-53D in 2004, they’re my first love. I’ll always love them.

“They were much harder to fly. And the ease of flying this, the flight control system is probably the biggest game changer for the 53 community.

“We’re not used to anything like this. It’s very intuitive. It can be as hands off as you know, a brand-new Tesla, you can close your eyes, set the autopilot and fly across country.

“Obviously, you wouldn’t do that in a tactical environment, but it does reduce your workload, reduces your stress.

“And in precision hover areas, whether it’s night under low light conditions, under NVGs, in the confines of a tight landing zone, we have the ability to hit position hold in the 53 K and have the aircraft maintain pretty much within one foot of its intended hover point, one foot forward, lateral and AFT, and then one foot of vertical elevation change.

“It will maintain that hover until the end of the time if required. that’s very, very stress relieving for us when landing in degraded visual environments. Our goal at VMX-1 is to create tactics that employ that system effectively.

“Some communities struggle with how they use the automation, do they let the automation do everything? Do they let the pilots do everything? How to work the balance?



“We’re working on a hybrid where the pilots can most effectively leverage automation.

“If you know you’re coming into a brownout situation or degraded visual environment, you engage the automation at a point right before the dust envelops you. And then in the 53-K, you can continue flying with the automation engaged.

“You continue flying with the automation engaged, and you can override it, but as soon as you stop moving the controls, it will take your inputs, estimate what you wanted and keep the aircraft in its position.

“It’s a very intuitive flight control system, and it blends very well with the pilot and the computers. It allows you to override the computer.

“And then the second that you stop overriding it, the computer takes back over without any further pilot input.

“That’s probably the biggest game changer for our community.”

## Visiting MAG-26: The Perspective of Col. Spaid

**01/04/2021**

During my visit to 2nd Marine Aircraft Wing, and to New River Marine Corps Air Station, I had a chance to visit Marine Aircraft Group 26. Over the years, I have had a chance to come often to MAG-26 and to discuss the MV-22B Osprey, its introduction, its evolution and its progress. Each time I have come, I have had a chance to meet with the MAG and its commanding officer, who have been without exception, experienced, very competent leaders.

**This visit proved no exception.**

Col. John Spaid’s biography can be read below, but he has been with the Osprey since 2005. Indeed, he was part of the first Osprey deployment to Iraq in 2007, under Lt. Col. Rock (now Maj. Gen. Rock) and then with the first MEU deployment in 2009.

**And we went back in history to discuss his initial experiences with the introduction and initial maturation of the Osprey.**

Indeed, my first exposure to the Osprey was in a 2007 visit to MAG-26. In that discussion, we focused on how what was referred to me early on, as the Osprey Nation, was stood up and shaped a core group of combat warriors who brought such an innovative plane into combat and reshaped really how the Marines have operated since then.

In a discussion earlier this year with Lt. Gen. (Retired) George Trautman, the Deputy Commandant of Aviation when the Osprey was introduced into combat, he underscored that the approach was to introduce the Osprey into Iraq through an 18-month period with three groups of Marines each

operating in Iraq for a six-month period. The first was head by now Maj. Gen. Rock, the second was by the current head of I MEF, and by Col. (Retired) “Mongo” Seymour.

Col. Spaid was part of that first squadron and indeed, with his co-pilot were the first to enter Iraq flying from the Middle East. His CH-46 squadron transitioned to Ospreys and he flew with that squadron to Iraq. He had flown with the HMM-263 in Iraq and was aware of its limitations and vulnerabilities, and saw the Osprey as providing capabilities for a different operational approach in Iraq.

“We could now operate at altitude with speed and range and able to circumnavigate the battlespace and then insert in a favorable point into that battlespace. We also had a more survivable aircraft with the new materials used for the air frame as well.”

The airplane was so different from legacy aircraft, that he jokingly compared his transition to the Osprey as equivalent for him of being inconceivably selected for the space program, with new technologies, new capabilities, and very different operational possibilities.

The tiltrotor capabilities were certainly and still are revolutionary, but the maneuverability side of the aircraft was also a challenging part of the Osprey revolution.

“The fly by wire capability and unique flight control system of the aircraft was new for the legacy rotary-wing community. And learning to fly it and get used to what it could do was exciting and a challenge to transition from the old ways of doing things. When I started working precision landings, it took a couple of days to adjust. It was not a normal aircraft and doing precision landings was different as well.

“Indeed, when I was first learning how to fly the aircraft in the simulator and even first flights in the aircraft, I believed that it was going to be an area weapon. There’s no way I’d be able to land precisely where I wanted to, but soon learned to do so with ease.

Then there was the tactical adjustment.

“Being able to operate high and fast while minimizing our time in the climb and dive then coming in unexpected, that was a tactical advantage that no one else had or seen.”

As the Marines were learning to use the aircraft in combat, my own observation was that Inside the Beltway, the aircraft started to get support from top leaders because it could take them around all of Iraq for inspections in a day, rather than having to operate over longer time within the limitations of how far a helicopter could fly.

Col. Spaid noted that indeed he had that experience of flying senior military around Iraq and doing so as I described it. For example, “On Christmas Day in 2007, we flew General Petraeus around to three or four different FOBs in a single day, and he loved the plane.”

Col. Spaid described the operational difference from a CH-46 in these terms: “A year and half earlier, I would fly a CH-46 from al-Assad out to al-Qa’im once a week. For rotary wing assets, you are going

out West and the weather could be bad, and it was just a long-legged journey. With the Osprey, we did it daily.”

The Osprey started small in terms of deployment numbers for sure, but there was an esprit de corps to the team that would lead them to call themselves the Osprey Nation. It started by bringing back lessons learned from operations to then shape the TTPs for the follow-on squadrons.

As Col. Spaid put it: “In Iraq we spent a lot of time in the dust doing reduced visibility landings. We worked some initial tactics and procedures and brought those back to the squadrons. And that started an earnest process of refining tactics.

“We were a small community, but we came from a variety of aviation settings and platforms. And that mix of different experiences informed our approach on how best to operate the Osprey. We had a very good mix of healthy work ethics which drove innovative thinking.

“It was a melting pot of Marine Corps aviation. We all brought our best professional military aviator qualities into this effort, which means we had a unique opportunity to filter out bad habits that may have been lingering in our previous communities. We were working objective area mechanics and tactics for the aircraft and learning to fly the aircraft in those settings.”

But as the community grew, standardization needed to be shaped. “In the period from 2010-2012, we focused heavily on standardization as West Coast squadrons were standing up.”

Then in 2009, he deployed with the first MEU for the Osprey. Col. Paul “Pup” Ryan was their squadron commander. They operated in the CENTCOM area with Fifth Fleet. They were in Bahrain, Kuwait and Iraq during the first MEU tour for the Osprey. This was the first time the aircraft operated from the sea base to project power from the sea.

Col. Spaid served as the Aviation Maintenance Officer for that deployment. Among the 29 aircraft assigned to the composite squadron, 12 Ospreys were deployed with eight on the LHD and four on the LPD.

This was a learning challenge for the Navy as they had to adjust to Osprey operations and learn how it could operate from the ship, just as the Marines were learning how to maintain the new aircraft afloat. Eventually, the Navy officers onboard learned, in Spaid’s words, that “we could fix it faster, we could launch it faster, we could fold it faster than originally expected. In the end, the confidence of the Navy officers and crew grew.”

This experience clearly impacted CENTCOM leadership for it set in motion what would become known as Special Purpose MAGTFs, and in EUCOM and AFRICOM is now called the North Africa Response Force, the NARF. Combatant Commanders learned, in Spaid’s words: “that we could offload in Kuwait but operate all throughout Iraq. That was an eye opener for them.”

**In effect, with the Osprey the Marines were finally demonstrating what a long range shipboard assault support asset could do while the entire concept of an ARG-MEU was transforming.**

Then in 2010, the squadron took the Osprey to Afghanistan, where Lt. Col. “Buddy” Bianca was the commander, and I interviewed him prior to Afghanistan and after the first operations of the Osprey in Afghanistan as well.

**This initial experience clearly has made Col. Spaid a plank holder in Osprey nation.**

As Spaid put it: “Being a plank owner and setting up a squadron is one thing but taking that aircraft with the first squadron and doing the first MEU, doing the first combat deployment in Iraq, you’re not just the plank owner, you’re driving the ship that you built the plank on. It is liking being a plank owner for a revolutionary military advantage.”

But he noted that at the time you really did not focus on that.

“We were just doing our jobs. You focus on mission accomplishment; you don’t really understand the historical significance of the event at the time. There were some really significant contributions there from the whole team, but I don’t think you really appreciate it until later.”

When I first visited the flight line at New River in 2007, there were four aircraft on the tarmac. When looking at the tarmac, now there are a large number of Ospreys at rest, at least for a brief period of time between flights and operations. 13 years has brought significant change both to the Marine Corps and to the airplane and now will do so for the Navy as they introduce their variant of the Osprey.

As Col. Spaid put it: “All our Marines are smarter. You still have hard working maintainers fixing the planes, but they are better armed with experience. Baseline pilot intellect is now through the roof. We’ve normalized what we thought was creative thinking and training.

“And now we’re asking them to be even more creative and train for the next strategic challenge.”

**I asked him, what was a primary focus during his time as CO of MAG-26 with regard to the aircraft itself?**

For Col. Spaid the answer to that question is sustainment, sustainment, sustainment. “a good number of the software upgrades we are making are with regard to reliability and benefit the maintainer and the maintenance process. We are working hand in hand with the program office and with industry to find the best way to keep this aircraft reliable.”

**We then discussed the decision by the Navy to buy the Osprey for its resupply role.**

Col. Spaid highlighted several advantages.

First, there was enhanced prioritization to sustainment of the aircraft throughout the entire Naval Aviation Enterprise.

Second, was the benefit of training, as the Navy pilots are trained at New River and as the West Coast squadrons are stood up, there will be refresher training opportunities for Marines on the West Coast as well.

Third, with the Osprey deployed to both the carrier and amphibious fleets, there will be greater opportunity for parts availability across the fleet.

Fourth, there will be shared opportunities for upgrading the aircraft as well.

One area where I think this is clearly the case will be with regard to passive sensing on the aircraft and having the new MISR officers involved will bring benefits to both Marine Corps and Naval operators.

The initial training for USAF Osprey pilots and maintainers is at New River as well, but because the specialized mission and equipment on the USAF variant, there is less impact from commonality than will occur with regard to the Marines and the U.S. Navy working together, notably with the new emphasis on ways to shape enhanced Navy-Marine Corps integration as well.

But one area of partner training has occurred as the Japanese have acquired the Osprey and their pilots and maintainers trained at New River.

For Col. Spaid, the Japanese maturation at New River has been very significant and prepares the future for new FMS partners.

“As new FMS opportunities arise, we’ll be able to leverage off the great success we have had with our Japanese allies. We’ll change some things up a little bit, but it was a really good experience.”

In short, Col. Spaid was on the ground floor with the birth of Osprey nation.

*And he is driving change as the next phases of Osprey operations unfold.*

## **Multiple Basing, Kill Webs and C2: Shaping a Way Ahead**

**01/07/2021**

As the United States and core allies build out the way ahead for an integrated distributed force, a key challenge is shaping C2 systems which fully enable such a force.

C2 and ISR have been historically treated as separate terms but increasingly the sensor networks are integrable with C2 systems, and with the focus on a distributed force, how best to connect the distributed force with joint or allied forces which provide the critical combat mass to prevail in a crisis?

In my view, the kill web approach recognizes the reality of current C2 systems, which are that a combat cluster needs to take its C2 capabilities with it for that force to integrate in operations. The reach back to a larger force depends on networks – both ISR and C2 – which it does not directly control and may be denied in a crisis.

The force package needs to have its own integratability built in; the broader reach to other force elements will shape how a particular force package can affect the wider battlespace.

With the challenges facing U.S. and allied force with the forces being built by core adversaries, the importance of flexible basing is being highlighted. Sea basing is a core advantage along with an ability to operate multi-domain forces from a variety of bases which can intersect and operate with the sea bases.

**For the Marines, this means that the reworking of the amphibious forces along with new approaches to basing are key elements of the force mix being worked.**

At the heart of the challenge for force effectiveness is how C2 can be shaped to enable more effective force capabilities to be built and operate in a contested combat environment.

During my visit to 2<sup>nd</sup> Marine Aircraft Wing in early December 2020, I had a chance to discuss these challenges with the C2 professionals in Marine Air Control Group 28. We had a wide-ranging conversation on the intersection between the evolving tactical environment and C2 and will highlight a number of takeaways from that conversation. To be clear, these are my conclusions shaped by the discussion, but I am not attributing these conclusions to the group.

The first point draws upon my discussions with Col. Gillette at Marine Aviation Weapons and Tactics Squadron 1.

We discussed during my visit in September, and in earlier conversations, the challenge of shaping more effective Marine Corps integration with the Navy, and he highlighted the key questions: how can the Marines most effectively assist in sea denial and sea control missions, and how can the Marines help in controlling sea lines of communication?

**These questions highlighted the key challenge of defining the tactical missions of the Marines in providing support for a strategic maritime campaign.**

What they highlighted was that the focus was operations short of total war, and the importance of escalation management and control.

We discussed this during our session and the importance of shaping C2 approaches which would allow for the command of such missions posed as a key challenge.

How will different types of crisis situations be managed in which the force is distributed?

How best to ensure that the force can be integrated to the extent necessary to deliver the right kind of crisis management effect or deterrence?

The second challenge is simply moving from where we are to where the force needs to be.

This certainly can be seen with regard to the amphibious force. The amphibious force has not been built with the most advanced C2 available to the U.S. Navy, and the insertion of force from amphibious ships ashore has not been built around the construct of the sea-base managing the force ashore.

This means that two immediate challenges in the shift to flexible basing is the need to have more robust and flexible, from an expeditionary point of view, C2 onboard the ships making up an amphibious task force and new capabilities to connect the expeditionary force ashore with the expeditionary force afloat.

The third challenge is associated with forces inserted into expeditionary bases is ensuring they have the C2 capabilities needed to achieve their missions with the integrated force, and that they do not become combat orphans.

This challenge was highlighted with regard to building a web of C2 nodes or node basing, in the words of one participant in the conversation.

To be blunt, distributed C2 is hard to do in the first place. There clearly is growing effort to find ways to have rapidly stood up distributed C2 in an expeditionary basing sense which can reach to wider networks, but this is an aspiration more than a reality.

That is why in my view, working ways to integrate the amphibious task force is the preliminary challenge to be met, prior to being able to push small combat teams ashore and expect them with the current technologies to be able to manage C2 complexities putting them in the broader fleet wide firing solution sets.

The fourth challenge is the question of the decision-making authorities.

If the focus is upon operating from a variety of bases, who makes the decisions at the tactical edge? And how to do so, notably with regard to fires solutions?

Mission command is clearly involved but that will not be enough when it comes to shaping integrated fires solutions with a mixture of launch points, including from expeditionary bases involved.

The fifth challenge is the reset of C2 and ISR acquisition itself.

With the historical focus on platform dominance over “seamless” C2 and ISR data flows, how indeed will the kind of C2 be built into the force that allows a distributed force to achieve the levels of integratability needed?

One question posed by one of the participants raised a key question about the combat geography and force structuring.

**The question: how do you visualize taking expeditionary basing and applying it to across the Atlantic as opposed to the Pacific?**

This is a great question on many grounds.

The first is that the Russians, in my view, pose the most direct threat to the United States, given Putin's actions, his nuclear build up, and the key role which the forces projected from the Kola Peninsula play in directly threatening U.S. forces and territory.

There is nothing abstract here; this is a direct and current challenge.

This is why the 2<sup>nd</sup> Fleet was re-established in 2015; and it is why the U.S. NATO relationship is deepening with what I called the UK-Nordic-Polish arc of defense in my recently published co-authored book, *The Return of Direct Defense in Europe*.

It also poses a very practical question of the relationship of 2<sup>nd</sup> MAW to 2<sup>nd</sup> Fleet going forward. In my own view, there are significant opportunities to re-shape that relationship and adopt some of the force re-structuring options on the table for the USMC.

Again, I would underscore that in my view the Russians are the most pressing direct threat, so ramping up capabilities for greater integration of 2<sup>nd</sup> MAW with 2<sup>nd</sup> Fleet make a great deal of sense to me.

**The way I will conceptualize it is if one shapes an arc from North Carolina, to Norfolk, to Halifax and Newfoundland, to Iceland, to Greenland, to Norway and the Nordics, how best to deploy Marines in support of the naval integration missions being highlighted?**

That is the question and the answers clearly could be multifold. Force packages of Marines highlighting strike, ASW and anti-surface warfare missions, C2 and ISR support missions, could be shaped and deployed across the territory of the arc from Canada to the Nordics.

How best to use the air capabilities of the Marines centered on 2<sup>nd</sup> MAW would be a key part of a reshaping function as well.

The lessons learned from this effort could be applied to the Pacific as well, and would indeed be different from island hopping approaches, but perhaps even more significant as well.

And the C2 side of this is crucial to shaping an effective integrable force.

And the way ahead would be paved by training, training, training as Admiral Nimitz ordered in the 2<sup>nd</sup> World War.

Or, to put in the terms discussed with the Marine Corps C2 experts, exercises, exercises, exercises, to determine how best to shape a more effective distributed force which could be survivable, sustainable and effective to an overall maritime campaign.



As one participant put it: “We need to increase our C2 communication dynamics in our exercises. We need to exercise our vulnerabilities and to find ways to enhance our strengths.”

It is hard to argue with that conclusion and one very much which fits into the core focus of my work for 2020, which has been upon training for the high-end fight.