

# SHARPENING THE TIP

Patrick Roegies, Paul Gross and Paul van der Linden report on the developments of naval aviation in 2024

VFA-122 'Flying Eagles' is the West Coast Fleet Replacement Squadron for the F/A-18E/F Super Hornet, operating all the different versions of it  
Christopher Lohff

**T**HE UNITED States Naval Aviation service is the second largest air force in the world, and the roles of its frontline operational units make it ready to deploy when called on. Whether that is for expeditionary or amphibious warfare, nuclear-powered aircraft carriers, and air wings, or in the shape of manned and unmanned platforms, rotary and fixed-wing aircraft, no other service or community can deliver the capabilities US Naval Aviation offers.

Naval manned and unmanned assets represent the most widely distributed aviation service in the world. The Carrier Strike Groups (CSGs) are based on large-deck, nuclear-powered aircraft carriers (CVNs) and their embarked Carrier Air Wings (CVW). The remainder of United States Naval Aviation operates primarily in support of the CSGs and Expeditionary Strike Groups (ESGs). The latter will in future co-operate with surface ships, to provide a broad range of mission capabilities.



## US MARINE CORPS AVIATION

For more than a century, US Marine Corps aviation has been at the forefront of military innovation, transforming the way the Marine Corps operates in the air and supporting Marines on the ground. In 2024, Marine Corps aviation stood at a critical juncture, integrating advanced technologies, adopting new

operational strategies, and starting to wave off legacy platforms like the AV-8B Harrier II and F/A-18 legacy Hornet. As the Corps pivots towards the Indo-Pacific region, its aviation arm is evolving to meet the demands of modern warfare, reshaping its fleet and logistics while refining distributed

operational capabilities that will define its role in the 21st century.

### AV-8B swansong

The Boeing AV-8B Harrier II has been a stalwart of Marine Corps Aviation for more than three decades. Its unique vertical/short take-off and landing (V/

STOL) capability enabled it to support Marine operations from forward bases and amphibious ships, offering a distinctive advantage in close air support (CAS). Yet in 2024, the Harrier's journey was coming to an end. Despite its indispensable role in the Corps, the aging airframes, outdated avionics, and a growing maintenance burden have pushed the platform to the limits of its operational viability.

In its final full active year, the Harrier continued to make a significant impact. Exercises like Talisman Sabre 2024 in Australia allowed the Harrier to show its rugged CAS capabilities in challenging environments, while during Northern Edge 2024 in Alaska, the Harrier showcased its precision strike against

simulated high-value targets, proving its value even as it neared retirement. The lessons learned from the Harrier's pioneering V/STOL operations are now embedded in the Corps' approach to aviation, particularly influencing the development of the Lockheed Martin F-35B Lightning II.

The Harrier's contributions have helped shape the Corps' aviation philosophy, reinforcing the importance of versatile and adaptable air support in expeditionary missions.

### Last leap of the Hornet

Marine Fighter Attack Training Squadron (VMFAT) -101 'Sharpshooters' was decommissioned on September 29, 2023. The unit was the Marines fleet

replacement squadron (training squadron) for the USMC Boeing F/A-18C/D Hornet and the decommissioning has seen the operational training assigned to the remaining two Hornet squadrons based at MCAS Miramar, California, on a much smaller scale. Currently, Marine Fighter Attack Squadron (VMFA)-232 'Red Devils' and VMFA-323 'Death Rattlers' remain equipped with the legacy Hornet at the California base, and VMFA-224 'Bengals' and VMFA-312 'Checkerboards' remain at MCAS Beaufort, South Carolina, where



## ► US MARINE CORPS/US NAVY AVIATION

VMFA-115 'Silver Eagles' is currently in transition to the F-35B Lightning II. The fifth squadron still operating the legacy Hornet is VMFA-112 'Cowboys' based at NAS Joint Reserve Base (JRB) Fort Worth, Texas, with some very old F/A-18A++s

On November 24, 2024, the Fleet Readiness Center Southwest (FRCSW), at NAS North Island, California, completed the last overhaul of a legacy Hornet. Expanding the lifespan of these aircraft has been a remarkable feat by the FRCSW, managing to push the F/A-18's service life well beyond its original 6,000-flight-hour expectation, with some even exceeding 9,000 hours.

### Modern Marine Aviation

Pushing F-35B Lightning IIs into operational squadron service has brought a new era for Marine Corps aviation. Not just a replacement for the Harrier, the F-35B brings unprecedented capabilities by combining stealth, advanced sensors, and integrated networking. As the world's first operational stealth V/STOL fighter, the F-35B serves as a force multiplier in any theater, especially in the Indo-Pacific where the USMC faces increasingly complex and contested environments.

In 2024, the F-35B took center stage in key multinational exercises like Cobra Warrior 24-2 in Europe and Valiant Shield in the Indo-Pacific regions. With its stealth capabilities, the F-35B was able to penetrate contested airspace and avoid radar detection, delivering actionable intelligence to joint forces on the ground. In Valiant Shield, the aircraft's data-sharing capabilities with allied assets proved the F-35B's potential as an intelligence and command hub, supporting a networked multi-domain

**Top Right:** The AV-8B Harrier II has been gradually withdrawn from use. The final curtain will fall for the Harrier in 2025 **Theo van Vliet**



**Right:** VMA-214 'Black Sheep' was operating the AV-8 Harrier II. On March 25, 2022, the squadron was redesignated as Marine Fighter Attack Squadron 214 (VMFA-214) as it began accepting new F-35Bs **Massimo Oliana**

**Bottom:** The aircraft assigned to Carrier Air Wing 3 were positioned on the flight deck armed and ready for launch as soon as possible to cope with the dynamic environment in the Red Sea **All images Patrick Roegies unless stated otherwise**

battlefield.

The F-35B's ability to operate from remote, austere locations and amphibious ships makes it the ideal platform for such missions, bridging the gap between ground-based assets and larger aircraft carriers.

All the squadrons previously equipped with the AV-8B II Harrier at MCAS Yuma have now completed their transition to the F-35B Lightning II. An additional unit at the Arizona base is Marine Fighter Attack Squadron (VMFA)-314, which was a Miramar based F/A-18 squadron until converting to the F-35C Lightning II. In

2024, MCAS Beaufort, South Carolina, witnessed VMFA-533 become the first operational squadron to complete transition to the F-35B Lightning II.

### Project Eagle

For the F-35B's complex systems to operate effectively, a robust logistics infrastructure is essential. Project Eagle, launched in 2023 and gaining momentum in 2024, addresses this need by overhauling aviation logistics and maintenance through advanced data analytics and artificial intelligence. By leveraging real-time flight data, Project Eagle enables predictive maintenance, identifying potential issues before they result in downtime and streamlining the supply chain to ensure critical parts are available when needed.

The early successes of Project Eagle are already noticeable, with a reduction in unscheduled maintenance events and quicker turnaround times for essential repairs. This increased operational readiness is crucial for the F-35B, because of the meticulous maintenance of the advanced avionics and its stealth features.

### Unmanned Systems

In tandem with the F-35B, unmanned systems have become an essential

component of Marine Corps aviation. Platforms like the General Atomics MQ-9 Reaper and the Kratos XQ-58A Valkyrie provide the Corps with additional ISR (intelligence, surveillance, and reconnaissance) capabilities, electronic warfare options, and precision strike capabilities, especially in the vast expanse of the Indo-Pacific.

In 2024, the MQ-9 Reaper proved itself as a versatile asset in exercises like Marine Rotational Force-Darwin in Australia. The Reaper's long endurance and modular payloads enable it to offer constant ISR coverage across broad areas, giving commanders a picture of the battlespace. Additionally, the MQ-9 can carry precision-guided munitions, offering a strike capability that complements manned platforms, enhancing the Marine Corps' ability to engage targets quickly and effectively.

The experimental XQ-58A Valkyrie, deployed during exercises such as Emerald Flag 2024 in and around Eglin Air Force Base, Florida, represents the future of manned-unmanned teaming. In this exercise, Valkyries operated alongside F-35Bs, linked via tactical data systems, enabling real-time data sharing to extend the F-35B's sensor and strike range. This integration of manned and unmanned systems allows the Corps to project force into contested areas without endangering manned assets, laying the groundwork for future combat scenarios where swarm tactics and autonomous drones will play pivotal roles.

### Focus on the Indo-Pacific theater

The Marine Corps' strategic pivot to the Indo-Pacific has been one of the primary drivers behind the transformation of its aviation branch. The region presents unique operational challenges, with vast distances, maritime domains, and increasingly sophisticated adversaries requiring a flexible, distributed approach to air operations.

**Top Right:** VMFA-211, known as the 'Wake Island Avengers' and the 'Bastion Defenders', used to operate the AV-8B II Harrier. It conducted its last AV-8B Harrier flight on May 6, 2016 and received its first two F-35B Lightning IIs three days later. On June 30 that year, VMA-211 was redesignated as VMFA-211, becoming the second fleet squadron in the Marine Corps to operate the F-35B Lightning II as its primary aircraft **Theo van Vliet**



**Middle Right:** The mission of Marine Fighter Attack Training Squadron 502 (VMFAT-502) is to conduct effective training and operations for the F-35B Lightning II and is currently based at MCAS Miramar **Theo van Vliet**



**Right:** VMFT 401 used to be the sole adversary squadron in the United States Marine Corps inventory. With the addition of VMFT-402, capacity has been expanded and more equally divided over the East and West Coasts **Theo van Vliet**



A cornerstone of the Corps' Indo-Pacific strategy is distributed operations – a concept that involves dispersing forces across a broad area, complicating adversary targeting efforts and improving force resilience. Exercises such as Talisman Sabre and Northern Edge in 2024 have underscored the importance of this approach. During these exercises, Marine aviation assets, including F-35Bs and MQ-9 Reapers, operated effectively from austere and dispersed locations, to support ground forces and secure strategic points across vast distances, enhancing both deterrence and combat readiness.

### Joint exercises

In 2024, the US Marine Corps participated in several critical exercises designed to enhance combat readiness,

improve interoperability with allies, and prepare for a range of strategic challenges. These exercises were focused primarily on the Indo-Pacific and Europe, highlighting the Corps' flexibility and the importance of its forward-deployed forces.

One of the key exercises was Cobra Gold 2024, an annual event held in Thailand that involved large-scale amphibious operations. Marines collaborated with the Royal Thai and Republic of Korea forces, engaging in joint landings, live-fire drills, and urban combat training. The exercise emphasized the ability to rapidly deploy and respond to regional threats, showcasing the Marines' adaptability to diverse operational environments in Southeast Asia.

Iron Fist 24 in Japan was another significant exercise, bringing US Marines







**Top Left:** The final shutdown of the C-2A Greyhound is approaching with VRC-40 'Rawhides' remaining the sole squadron operating the aircraft. After 50 years of operational service, the Greyhound is being replaced by the CMV-22B Osprey in 2025

**Top Right:** The first CMV-22B for VRM-40 'Mighty Bison' was presented during a ceremony in 2023. For this purpose, one aircraft was already fully painted in VRM-40 markings

**Middle:** VRM-30 'Titans' has fully adopted the carrier on board delivery service from VRC-30 'Providers'. Due to technical inspections, the squadron was grounded for approximately three months in 2024, but has regained operational status

**Below:** USS Carl Vinson (CVN-70) recently began its deployment to the Pacific with Carrier Air Wing 2 (CWW-2) embarked. VFA-192 'Golden Dragons' is one of the F/A-18E squadrons assigned to CWW-2

of the 31st Marine Expeditionary Unit (MEU) together with the Japan Ground Self-Defense Force (JGSDF) for integrated amphibious operations. This exercise, focused on security in the East China Sea, allowed the Marines to refine their ability to quickly respond to potential threats in contested areas, including the strategic waters around Okinawa.

In Europe, the Nordic Response 2024 exercise demonstrated the Marine Corps' ability to operate in cold-weather environments. US Marines from the II Marine Expeditionary Force (MEF) deployed to Norway, where they participated in joint operations with NATO allies. By simulating rapid-response operations in the Arctic, the Corps is prepared for operations in extreme conditions while strengthening NATO's defense posture against the likes of the Russian military.

Lastly, Freedom Shield 24 in South Korea evaluated the combined defense capabilities of US and South Korean forces. The exercise included joint live-fire drills and command-and-control operations and served as a critical training ground for addressing potential threats in the Korean peninsula.



operating F-5N Tiger IIs based at USMC Yuma. That changed in 2024, when VMFT-402 was activated and the first F-5Ns arrived at USMC Beaufort in early June 2024. Having a local adversary squadron allows for more training opportunities, an easier planning process and means VMFT-402 personnel can be part of in-person debriefs. The USMC has a rapidly growing F-35 fleet particularly

on the East Coast now and Marine Corps aviation has an insatiable need for adversary support and training to prepare for the next fight. Due to available space to house and support the squadron, the proximity to Marine Fighter Attack Training Squadron (VMFAT)-501, the USMC F-35B Fleet Replacement Squadron and the closest training ranges, MCAS Beaufort was selected to be the home of VMFT-402.

## UNITED STATES NAVAL AVIATION

The ambitious Navy Aviation Vision defines a Naval Aviation Force that is globally represented by a clear roadmap, currently being developed to align with and support this overarching strategy.

### Greyhound to Osprey

Several modernization programs continued throughout 2024. The Airborne Command & Control and Logistics Wing (COMACCLOG) continued the replacement of the Grumman C-2A Greyhound with the Boeing CMV-22B Osprey for the carrier on board delivery (COD) service.

One of the two COD squadrons, Fleet Logistics Support Squadron (VRC)-30 'Providers' flew the C-2A Greyhound's final sortie on September 20, 2023, and the squadron was deactivated on December 8, 2023. This led the

Boeing CMV-22B Ospreys assigned to Fleet Logistics Multi-Mission Squadron (VRM)-30 'Titans' to adopt the COD role from January 2024, while VRM-50 'Sun Hawks' is the fleet replacement squadron assigned with operational training tasks. The first CMV-22s were delivered to VRM-40 'Mighty Bisons' on April 5, 2024 with transition completed in 2025. However, the fleet was grounded temporarily in 2024 for three months after the loss of an Air Force CV-22B in Japan on November 29, 2023. This saw the entire V-22 fleet being grounded on December 6, 2023. The Navy CMV-22s have gradually returned to flight through maintenance checks followed by functional flight checks performed by the most experienced crews prior to being returned to service. During the grounding, the US Navy reverted back to the C-2A Greyhound.

### Super Hornet Block III

Boeing had originally scheduled to close the F/A-18 Super Hornet and EA-18G Growler production lines in 2025, following the last deliveries. The Navy initiated a service life modernization (SLM) plan to extend the F/A-18E/F Super Hornet's operational lifetime, thus intending to mitigate any strike fighter shortfall in the fleet.

The SLM is designed to increase the service life of Block II F/A-18E/F Super Hornets, initially from 6,000 to 7,000 flight hours, but in 2023, a program was inducted to extend it to 10,000 flight hours. Meanwhile, Block II aircraft are being upgraded to Block III configuration, leading to the first F/A-18 Super Hornet Block III delivered back to the Navy in 2024. On March 19, 2024, Boeing was contracted to build 17 new Block III Super Hornets with deliveries to take place in 2026-2027.

### Naval Aviation training modernization

Naval Aviation Training Command continued the development of a new undergraduate jet trainer in 2024. While the development of the T-7A was initially under consideration to replace the Boeing T-45C Goshawk, several alternatives are now on the table. Boeing has presented a version of its T-7A Red Hawk trainer, originally developed for the US Air Force. Lockheed Martin, in co-operation with Korea Aerospace Industries (KAI), has put forward the TF-50N, based on KAI's T-50, which initially lost out to the T-7A. Textron, together with Italy's Leonardo, has been pitching the M-346N, a naval variant of the Leonardo M-346 jet trainer. Sierra Nevada Corporation has previously issued a rendering of a version of its Hürjet Freedom jet trainer, developed in partnership with Turkish Aerospace

**Bottom:** The T-45C is the main undergraduate jet training aircraft and the search for a future successor has been started

### Gaining adversary capacity

The United States Marine Corps Aviation had only one adversary squadron, Marine Fighter Training Squadron (VMFT)-401 'Snipers',







**Top:** VFA-147 'Argonauts' also fulfilled the operational training task during 2024. For this purpose, the NJ modex was applied to the aircraft

**Top Right:** VAW-123 'Screwtops' assigned to Carrier Air Wing 3 'Battle Axe' started conversion to the E-2D Advanced Hawkeye after its 2023-2024 deployment. The squadron aims to complete the transition in 2025

**Bottom:** VFA-147 An F/A-18E Super Hornet assigned to VFA-83 'Rampagers' embarked on USS *Dwight D Eisenhower*. The Hornet was fitted with a range of armaments to offer as much flexibility as possible for its mission



Industries, with a model seen in the same colors the Navy's T-45 wears. No final decision for a next-generation jet trainer was made in 2024.

Elsewhere, the King Air T-54A will replace the aging Beechcraft T-44C Pegasus aircraft, a derivative of the King Air 90 turboprop that has been in service since 1977. Initial deliveries of the T-54A commenced in April 2024, starting the phased retirement of the Beechcraft King Air T-44C fleet.

### Strike Fighter Wing developments

The Commander Strike Fighter Wing Pacific (COMSTRKFIGHTWINGPAC) continued the delivery of F-35C

Lightnings to new squadrons, with personnel completing their fleet replacement conversion training with Strike Fighter Squadron (VFA)-125 'Rough Riders' stationed at NAS Lemoore, California. In 2024, VFA-86 'Sidewinders' completed their conversion to the F-35C Lightning II and VFA-115 'Eagles' moved from MCAS Iwakuni, Japan, to NAS Lemoore in California to start their conversion to the F-35C Lightning II. VFA-147 'Argonauts' has been assigned to Carrier Air Wing (CVW)-5 with its aircraft receiving the 'NF' tail-code and recently relocated to MCAS Iwakuni. Earlier in the year, VFA-147 F-35Cs were briefly assigned to CVW-7 when they wore the 'AG' tail code.

### Carrier Air Wing deployments

In 2024, four carriers went to sea to conduct deployments. Carrier Air Wing 3 (CVW-3) embarked on USS *Dwight D Eisenhower* (CVN-69) to conduct operations in the Red Sea, in a bid to de-escalate the situation in the Middle East. During this nine-month deployment, with only one port call, the Boeing EA-18G Growlers of Electronic Attack Squadron (VAQ)-130 'Zappers' achieved their first air-air victories, shooting down ballistic missiles and unmanned aerial vehicles.

Two West Coast-based carrier strike groups (CSGs) operating in the Middle East rather than the Pacific provide an example of the Navy surging its forces to meet current needs. Generally, the Navy has maintained a presence in the eastern Mediterranean with East Coast carriers since December 2021, ahead of Russia's invasion of Ukraine in early 2022. When Hamas attacked Israel on October 7, 2023, and the Houthis began their attacks on Red Sea shipping a month later, the Navy shifted its ships around to provide support to Israel and commercial shipping.

USS *Theodore Roosevelt* (CVN-71) initially deployed to the Pacific region on January 11, 2024, but was then directed to relieve the USS *Dwight D Eisenhower*, 'Ike,' as it is known, left the Middle East in June and entered the Mediterranean, as the USS *Theodore Roosevelt* with CVW-11 embarked, made its way to the CENTCOM area of operations in the Middle East. The USS *Abraham Lincoln* (CVN-72) CSG with CVW-9 on board, arrived in there in August, joining the USS *Theodore Roosevelt* before the latter left in September, arriving back in San Diego on October 16, 2024.

USS *Abraham Lincoln* is now in the Pacific, leaving the Middle East without a carrier for just the second time in more than a year. On November 18, USS *Carl Vinson* (CVN-70) with CVW-2 embarked, deployed from San Diego for a Pacific deployment. This came as the Navy was nearing the completion of transferring the USS *George Washington* (CVN-73) from the East Coast to its new homeport in Yokosuka, Japan. Most squadrons of CVW-5 flew off the carrier on November 17 to their home bases in Japan, after the Carrier Air Wing was temporarily deployed in the United States.

The Nimitz-class aircraft carrier USS *Harry S Truman* (CVN-75) with CVW-1 embarked, departed Naval Station Norfolk, Virginia, for a regularly scheduled deployment on September 23, 2024, to the US 6th Fleet Area of Operations, working together with their NATO allies.



### Advanced Hawkeyes

The Grumman E-2 Hawkeye initially designed for airborne early warning (AEW) and the defense of the carrier battle groups, has evolved into a versatile platform courtesy of the latest E-2D Advanced Hawkeye that provides airborne command and control (C2). The Navy has invested significantly in a technology roadmap to modernize and sustain this aircraft, positioning it as a critical node for joint C2. The conversion from the E-2C and E-2C-2000 aircraft continued throughout 2024. When Airborne Command and Control Squadron VAW-123 'Screwtops' returned from deployment it was the last East Coast-based squadron to begin the conversion. With deliveries of E-2D aircraft already in full swing, the air-air refueling probe was introduced for the Hawkeye fleet allowing the aircraft to remain on station for an extended time.

On the West Coast, most squadrons have completed their transition to the E-2D Hawkeye. Just Airborne Command and Control Squadron VAW-116 'Sun Kings' remains equipped with the E-2C-2000, but will begin conversion in 2025.

### Growler upgrades

The EA-18G Growler Block II is currently in development, but will come equipped with Advanced Cockpit System (ACS), as well as other internal improvements in common with the F/A-18E/F Block III. The enhancements to the Airborne Electronic Attack Suite will enable the EA-18G to outpace current threats and maintain the lead throughout its planned lifecycle.

The Navy has been developing a next-generation jammer pod and this has been released for operational deployment to the fleet squadrons. The Next-Generation Jammer Mid-Band (NGJ-MB) is specifically designed for the EA-18G Growler, and tested at Naval Air Station Patuxent River, Maryland. The NGJ-MB forward pod is located under the right wing of the aircraft, and is a jamming technology that provides enhanced airborne electronic attack capabilities to the EA-18G Growler platform. It replaces the existing jamming pod that has been in operational use since the Grumman EA-6B Prowler period.

**Top Right:** Paint applied to F-35C Lightning II aircraft has been suffering under sea conditions; early models showed some signs of corrosion. This was resolved after analyzing the causes following the first operational deployment of the F-35C at sea **Bert van Leeuwen**

**Middle:** VAW-120 'Greyhawks' is the Fleet Replacement Squadron responsible for training crews on the E-2 Hawkeye. The East Coast-based squadron is responsible for the conversion training to the E-2D Advanced Hawkeye **Bert Wiggerts**

**Left:** The United States Navy also operates expeditionary EA-18G Growler squadrons not assigned to a carrier air wing. These squadrons have modex NL-5xx assigned. VAQ-144 'Garudas' based at NAS Whidbey Island is one of these expeditionary squadrons





**Top Left:** The EA-18G Growler is considered a high-value asset able to operate from the front. The new jamming pods will increase capability to reduce risk for the carrier air wing and coalition aircraft

**Top Right:** Besides a number of EP-3E Aries IIs, VQ-1 also operates P-3CBMUP+ and P-3 AIP+ aircraft. Seen here landing on NAS Whidbey Island is bureau number 161414 Bert Wiggerts

**Middle:** The MH-60R Seahawks will begin to reach the end of their service lives in the late 2030s, following their service life extensions

### Orion retirement

The Lockheed P-3C Orion is gradually being withdrawn from use by the operational fleet as its official final retirement has been anticipated for 2025. In October 2024, the final Fleet Air Reconnaissance Squadron VQ-1 was set to disband. It came after an earlier directive that VQ-1 was to cease operations by September 30, 2024, with final deactivation initially scheduled for March 31, 2025. But due to the increasing conflicts on a global scale the decision to decommission VQ-1 has been postponed until further notice.

The Lockheed EP-3E Aries will be phased out and gradually replaced by the Northrop

operations. The P-8A Poseidon is the P-3 Orion's successor.

The Navy delivered the first example to Boeing on March 27, 2024, for upgrade to the Increment 3 Block 2 standard. This will include newer avionics systems, and in addition to new airframe racks, radomes, antennas, sensors, and wiring, there will be a higher security architecture, a wide band satellite communication system, an ASW signals intelligence capability, a track management system, and additional communications and acoustics systems to enhance search, detection and targeting capabilities.

This means the Boeing P-8A Poseidon fleet will be fitted out with the full anti-submarine warfare (ASW), anti-surface warfare (ASuW), and intelligence, surveillance and reconnaissance kits outlined in the P-8A program evolutionary acquisition strategy. The P-8A is the only long-range full-spectrum ASW platform, with a substantial armed ASuW and networked ISR capability.

The first fleet aircraft modification was expected to be completed in January 2025. However, it is unclear if that ambition will be reached, due to a strike at the Boeing factory, which has been seriously affecting production plans.

The US Navy fleet

### Seahawk developments

The operational fleet of MH-60R Seahawk and MH-60S Knighthawk helicopters will begin to reach the end of their service lives in the late 2030s following service life extensions for both aircraft. The US Navy developed the Vertical Lift – Maritime Strike (FVL-MS) program in an effort to replace the MH-60 Seahawk and Knighthawk helicopters. The program has been given the go-ahead to proceed to the next stage, which is the development of a Capabilities Development Document (CDD) and a Concept of Operations (CONOPs), a step towards producing a requirement. The Navy is planning for a materiel solution and an initial operational capability in the early 2040s.

### Next-generation fighter

More than a decade ago, the Navy first outlined its intention to find a replacement carrier-launched fighter jet to replace the F/A-18E/F Super Hornet and Growler airframes. The new jet was originally intended to fly alongside the F-35C Lightning II and UCLASS unmanned aircraft. Perhaps most significantly, the F/A-XX will be designed to operate in anti-access/area denial environments to more effectively thwart China's growing arsenal of advanced weapons systems.

Equal to the Air Force, the Navy

F/A-XX. While the Air Force previously said the two programs are interconnected and is sharing its developments, the Navy has now reported it will develop its aircraft independently. The F/A-XX will replace the F/A-18E/F Super Hornet and EA-18G Growler and feature – as you might expect – advanced sensors, extended range, and stealth capabilities, while integrating with unmanned platforms like collaborative combat aircraft (CCA).

Budgetary challenges may pose a threat just as the Air Force project, the Next-Generation Air Defense fighter (NGAD), has been affected – paused as a result of severe budget overruns. With rising geopolitical tensions, the development of the F/A-XX is deemed critical to maintain the future vision and mission of US Naval Aviation.

To fulfil this, the developed airframe is expected to be equipped with all the latest stealth features, including the networking adaptability displayed by the F-35 platform. The big-name manufacturers – Boeing, Lockheed Martin, and Northrop Grumman – all announced they were competing for the aircraft's design contract. Additionally, Pratt & Whitney and GE Aerospace are both believed to be competing to secure the F/A-XX's engine contract.

The F/A-XX program is on track for the next milestone referred to as the Milestone B decision to proceed to the engineering and manufacturing development phase by the end of fiscal year 2025. The Navy leadership appears to be happy with the current performance requirements it has put out for the next-generation fighter.

### Enter Stingray

After years of development, the Boeing MQ-25 Stingray

paired with the F/A-18E/F Super Hornet. The primary mission is air-to-air refueling to extend the operational range of all strike fighter squadrons.

The MQ-25 fits into the vision of naval aviation's future, demonstrating the potential advanced uncrewed systems will play in the carrier air wing.

Additionally, the Stingray will augment the unmanned inventory of US Naval Aviation, that includes the General Atomics MQ-9A Reaper and Northrop Grumman MQ-4C Triton as well as the Northrop Grumman MQ-8 Fire Scout, the unmanned autonomous helicopter. Northrop Grumman is also continuing development and testing of its two Northrop Grumman XB-47 unmanned aircraft.

### Adding adversary capacity

There is a real need for more adversary capacity by the Naval Aviation leadership. With three operational squadrons, adversary capacity has had to be well managed. In the past few years it has grown because of civil contractors providing 'Red Air' capacity, but alternatives are being looked at to increase the adversary capacity within the Navy's own ranks. The Navy acquired a number of ex-USAF F-16Cs to be assigned to

Squadron Composite VFC-204 based at Naval Air Station Joint Reserve Base (NAS JRB) New Orleans, and would in turn receive the F-16C. As the aircraft were flown in directly from the Air Force, their livery was not changed immediately and they have flown for a while in Air Force schemes. With the addition of the ex-USAF F-16s, the 'Red Air' projection during carrier air wing training at NAS Fallon in Nevada is guaranteed, while the capacity on the East Coast is sufficiently replenished.

### Keeping up

With the continuous improvement process in full development, objectives for the operational strike fighter wings in the longer term is to operate more efficiently and effectively.

The reduction of operational carrier air wings made it clear there would be a gap in available capacity, coming at a time when there is an increase in global conflicts. The introduction of the new Ford-class carriers could supplement available capacity, but

demands on the crews and aircraft will not go away. Carriers and their embarked carrier air wings will be asked to extend their time at sea, leaving Naval Aviation leadership to find a way to deploy their capacity more flexibly. **CAJ**

**Top Left:** The MH-60S Knighthawk fulfills the SAR tasks during operations at sea – it is the first aircraft to take off prior to each mission and the last to return to deck once all aircraft have been recovered

**Below:** As of March 2024, US Navy fleet squadrons have taken delivery of 119 P-8A aircraft. P-8A active duty and reserve squadron transition training is complete for all 14 fleet squadrons and one fleet replacement squadron



**Grumman MQ-4C Triton.** This is a high-altitude long-endurance unmanned aerial vehicle that offers more modern systems for intelligence collection, surveillance, and reconnaissance

squadrons have taken delivery of 119 P-8A aircraft and squadron transition training is complete for all 14 fleet squadrons and one fleet replacement squadron.

has started development of a sixth-generation fighter jet, referred to as the

will finally reach the fleet in 2025. The MQ-25 is an unmanned aerial vehicle capable of operating from carriers and is considered a force multiplier when

Composite VFC-13 and Naval Aviation Warfighting Development Center (NAWDC) that will see VFC-13 'Saints' transfer their Northrop F-5Ns to Fighter