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THE HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON TACTICAL AVIATION AND LAND FORCES

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BEFORE THE

TACTICAL AIR AND LAND FORCES SUBCOMMITTEE OF THE

HOUSE ARMED SERVICES COMMITTEE

ON

DEPARTMENT OF THE NAVY FISCAL YEAR 2022 BUDGET REQUEST FOR TACTICAL AVIATION

JULY 13, 2021

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SUBCOMMITTEE ON TACTICAL AVIATION AND LAND FORCES

Chairman Norcross, Ranking Member Hartzler and distinguished members of the Subcommittee, thank you for the opportunity to appear before you today to address the Department of Navy's (DON) Fiscal Year (FY) 2022 budget request for Tactical Aviation (TACAIR) programs. TACAIR proficiency is critical to winning the high-end fight, and we thank Congress and this Committee for your support of these programs in the FY 2021 Authorization and Appropriation Acts.

In an increasingly interconnected and interdependent world, a dominant naval force and a strong maritime strategy are critical to the security of the Nation. The global security environment is increasingly influenced by our competitors, requiring the Navy and Marine Corps team to operate continually to provide credible combat power forward and a ready response force to global crises and disasters. As our national security posture evolves to confront new challenges, the DON continues to invest in key capabilities that maximize our naval power contribution to the Joint Force and ensure a proper balance of readiness, capability, and capacity within the limits of available resources.

To address growing demands placed on our warfighters, the DON is making necessary investments in lethal capabilities, maintenance and flying hours across a broad spectrum of platforms and programs. We will deliver 54 new manned aircraft and four unmanned aircraft to Navy and Marine Corps units in FY 2021, improving capability and enabling the divestiture of less affordable and less capable legacy systems. The Department achieved over 80 percent Mission Capable rates for the F/A-18E/F and EA-18G fleet in FY 2020 and continues that positive trend in FY 2021. With higher numbers of aircraft available, our aircrew are more ready to fly and fight than at any point over the last 10 years. An important element of sustaining this momentum is consistent funding for our aviation depots and an increase in flight hour funding to translate gains in aircraft readiness into improved aircrew proficiency.

In order to increase capabilities of our 4th and 5th generation aircraft, we have invested in research and development of advanced sensor and electronic warfare (EW) capabilities, such as Next Generation Jammer (NGJ), that will provide an increase in capability against radar, communications and non-traditional EW targets. Additionally, we have been working to increase the internal weapons bay capability onboard F-35s to allow integration of new 5th generation compatible weapons such as Advanced Anti-Radiation Guided Missile – Extended

Range (AARGM-ER), enabling power projection and suppression of enemy air defenses.

The Department continues maturation of critical warfighting investments. In March 2021, VFA-147, the first operational F-35C squadron, completed the longest at-sea period (approximately five weeks) by F-35Cs onboard USS Carl Vinson (CVN 70). VFA-147 completed missions in all warfare areas while reporting a 97.6 percent sortie completion and 80 percent Mission Capable rates. During the same timeframe, the Marine Corps successfully completed its sixth F-35B deployment with VMFA-122, achieving an average readiness rate across all Marine Expeditionary Units (MEUs) of 75.6 percent. Currently, VMFA-211 is executing the seventh F-35B deployment jointly with U.K. forces aboard the HMS QUEEN ELIZABETH and with an average readiness rate of 85.3 percent. Additionally, FY 2021 funds supported Engineering and Manufacturing Development (EMD) for the ALQ-249 NGJ Mid-Band (NGJ-MB), which received Milestone C approval to enter the Production and Deployment phase and proceed with Low Rate Initial Production last month. NGJ Low-Band (NGJ-LB) had a successful Milestone B event and awarded an EMD contract in December 2020, which included eight operational prototypes to begin delivery in FY 2026. These crucial investments will continue to advance our warfighting edge against strategic competitors.

The Fiscal Year 2022 President's Budget Request

The President's FY 2022 budget advances key DON priorities to defend the nation, innovate and modernize the Department, increase resilience and readiness, and build a workforce to compete and win. It balances the urgent readiness needs of our force today with investments that maximize our naval contribution to the Joint Force, and reflects hard decisions to divest of less capable platforms and systems, freeing resources to invest in a future force that can deliver greater efficiency and effectiveness.

While the Aircraft Procurement account is decreasing overall in FY 2022 as several platforms reach end-of-purchase, including F/A-18E/F Super Hornet, P-8A Poseidon, and VH-92 Presidential Helicopter, this request does increase the lethality and capability of the aviation portfolio by funding leading edge technology development and platform modernization. The budget requests funding for 48 fixed wing aircraft including 20 F-35C carrier variants, 17 F-35B Short Takeoff and Vertical Landing variants, five E-2Ds and six KC-130J aircraft. The budget maximizes carrier air wing (CVW) lethality with capability improvements to 4th and 5th generation

fighters, funding F-35C procurement and modernization that will field six F-35C CVWs by FY 2026. Delivering 4th and 5th generation transformational capabilities to front-line forces as soon as possible remains a top priority.

The FY 2022 budget continues investment in aviation research and development programs. Research, Development, Test and Evaluation (RDT&E) funding will be used to continue development of F-35 Block 4 capabilities to support initial fleet availability of Block 4 upgrades and Infrared Search and Track (IRST) improvements for F/A-18 E/F. The budget also requests RDT&E funding for NGJ Mid and Low Band to continue development and test of this multi-generational leap in Advanced Electronic Attack (AEA) capability.

The budget carefully balances resources and requirements to weigh the effects of program decisions on the industrial base. It ensures our nation maintains the skills, capabilities, and capacities critical to our national defense, maximizing efforts in support of the President's Build Back Better initiatives. The budget shows a realistic and forward-thinking approach to future force planning, while providing future capability requirements within projected budgets, and helps keep America's industrial base loaded at an executable level.

Summary

The Department of the Navy continues to deliver aviation platforms with the capability we need to address today's maritime challenges while looking ahead to tomorrow's evolving security environment. With Congress' continued support, we will provide the Nation with the Integrated All-Domain Naval Power required for the Joint Force to win today and tomorrow.

Programmatic details regarding Navy and Marine Corps capabilities are summarized in the following section.

U.S. NAVY AND MARINE CORPS TACTICAL AVIATION CAPABILITIES

TACTICAL AVIATION

Carrier Air Wing (CVW)

The striking power of the CVW remains the cornerstone of power projection capability from 11 of the world's most survivable airfields, our aircraft carriers (CVNs). The current CVW is transitioning to an optimal mix of 4th and 5th generation strike fighter aircraft necessary to compete with potential adversaries in the 2020's. The Navy is managing 4th generation F/A-18 inventory

requirements through Service Life Modification (SLM) and 5th generation requirements through F-35C procurement. SLM extends the existing 4th generation capacity while adding advanced Block III capability at one-third the cost of new procurement F/A-18 aircraft. The active F-35C production line and the F/A-18E/F SLM effort are the critical levers for the Navy to manage strike-fighter inventory into the 2030s, ensuring the service maintains the capacity required to meet Global Force Management (GFM) demand while investing in the new technologies required to win against the pacing threat.

Next Generation Air Dominance (NGAD)

The Navy remains committed to the accelerated development of the Next Generation Air Dominance (NGAD) Family of Systems (FoS) and other key aviation wholeness investments. This decision ensures the CVW will maintain capable strike fighter capacity to pace the most stressing threat through the 2030s. NGAD FoS will leverage manned and unmanned teaming to deliver increased lethality and survivability. F/A-XX is the strike fighter component that will replace F/A-18E/F in the NGAD FoS.

F/A-XX will provide advanced carrier-based power projection within the CVW and maintain CVN relevance in contested threat environments. F/A-XX is currently undergoing concept refinement to assess potential capabilities and technologies. During this phase, iterative collaboration between Government and industry teams will lead to the development of vendor concepts that balance advanced air dominance capabilities and long-term affordability.

Strike Fighter Inventory Management

The DON is carefully managing strike fighter capacity to reduce readiness gaps and future inventory shortfalls. Strike Fighter Inventory Management (SFIM) tracks three critical and independent factors: depot maintenance ability to sustain the fleet; new procurement to replace end-of-service life aircraft; and utilization rates required for force generation. Currently, there are sufficiently funded resources and levers to drive execution-year Strike Fighter Shortfall (SFSF) to zero for all deploying squadrons and overall SFSF to zero by FY 2025. These levers include ongoing F-35C production, 78 remaining F/A-18E/F deliveries, 28 aircraft returning from long-term down status, and F/A-18E/F SLM and capability improvements. Additionally, in the last year,

F/A-18E/F Primary Aircraft Authorized forecast for FY 2025 was reduced by 20 aircraft due to changes in the adversary recapitalization plan.

In FY 2021, the DON's near-to-mid-term capacity and readiness risk was reduced from high to medium due to reform efforts. The Department invested in industrial equipment assets for the Fleet Readiness Centers, and Naval Aviation Maintenance Centers of Excellence returned long-term down aircraft to the fleet.

In FY 2020 F/A-18 SLM delivered three mission capable aircraft with a service life of 7,500 hours, adding approximately seven additional years to the life of the aircraft. In FY 2021 there have been five SLM aircraft delivered to date, with an additional four SLM deliveries expected this fiscal year. FY 2022 inductions will include 15 aircraft. The SLM program continues to mature, decreasing cost and schedule while extending the service life and capability of existing F/A-18E/F inventory. The Department is actively managing SLM performance through a Perform to Plan (P2P) approach.

Tactical Aircraft Force Mix

The Carrier Air Wing of the future focuses on coupling the 5th generation combat capabilities resident aboard the F-35C with the weapons capacity aboard the 4th generation F/A-18 E/F. Continued investment in the survivability and lethality in our Lightning II, Super Hornets, and future weapons will ensure Department investments directly counter and defeat our adversaries' combat advancements. The F-35C also brings other unique warfighting capabilities to the USMC and the Marine Air-Ground Task Force. Combined with the TACAIR Integration commitment, the F-35C will integrate and deploy for all USMC global force commitments except MEU deployments, which require vertical landing capability aboard L-Class ships.

In 2020, the Marine Corps contracted a third party to study the TACAIR transition plan and force posture. That study was released in March of this year. The Marine Corps is currently conducting a force analysis of manpower posture to redesign the force for maximum efficiency and to align with the Commandant's Force Design planning guidance. This analysis includes training models, pilot and maintainer qualification requirements, and unit end-strength models. The Marine Corps continuously evaluates the number of TACAIR squadrons in order to ensure support to the Combatant Commanders, while effectively managing the deployment tempo our personnel and equipment.

The Navy has divested from legacy Hornets at the operational edge, with the Reserve component and Naval Aviation Warfighting Development Center following in 2022. This also affords the Marine Corps the opportunity to select the remaining "best of breed" legacy Hornets to maximize the overall readiness, capacity, and capability to round out the Department's inventory.

Pilot and Aircrew Shortfalls and Mitigation Strategies

Naval Aviation continues to meet all fleet requirements. The Department is continually evaluating and analyzing diversity, equity, and inclusion (DE&I) within Naval Aviation. This analysis has informed our lines of effort for broadening recruitment and outreach efforts to attract underrepresented talent, as well as focusing on retention efforts to ensure the Department retains those with the qualifications needed. Retention and merit-based bonuses and incentive pay are showing some success in retaining Post-Command Commanders, though Aviation Department Head acceptances are still short in some type model series. The Department expects competition for talent with industry will continue, requiring a robust and competitive compensation program to recruit, retain, and distribute the force. The Department remains committed to attracting and retaining a diverse talent pool of highly qualified Naval aviators.

F-35 Joint Strike Fighter

The F-35 Joint Strike Fighter will develop and field an affordable, highly common family of next generation strike aircraft for the DON, the Air Force, and international partner countries. F-35 has unique capabilities that cannot be matched by modernizing 4th generation aircraft – enabling shortened engagement times, and less exposure to threats, while retaining the element of surprise. Both the F-35B and F-35C are vital to our future as they become the lethal cornerstone of our naval air forces. During the next 10 years, the Navy and Marine Corps will transition 21 squadrons to the F-35 as we replace our aging legacy fleet.

The Marine Corps has already established two Fleet Replacement Training Squadrons, one operational test squadron, and six operational line squadrons. USMC F-35Bs are currently deployed with the 31st MEU / USS AMERICA (LHA-6) Amphibious Readiness Group in the INDO-PACOM area of responsibility. The MEU's composite Air Combat Element included six F-35Bs. Additionally, 10 F-35Bs from VMFA-211, the "Wake Island Avengers", are deployed

with eight F-35Bs from the UK's 617 Squadron aboard HMS QUEEN ELIZABETH (R08) as part of the Carrier Strike Group 21 joint deployment with ships and a submarine from the UK, US, and the Netherlands. Three F-35B squadrons have operated in combat.

The Navy has established one Fleet Replacement Training Squadron, one operational squadron, and has completed the transition of the first USMC F-35C squadron. This summer, the first operational squadron will embark aboard the USS Carl Vinson for the maiden F-35C deployment. The second Navy operational squadron is in transition and is scheduled to complete in February 2022. TOPGUN is operating two F-35Cs and has incorporated the F-35C into the 4th / 5th generation Fighter integration events in TOPGUN classes.

The Department remains committed to reducing F-35 costs, successfully reducing the recurring flyaway costs. The F-35 Program identified seven levers to meet Service cost per flying hour (CPFH) / cost per tail per year (CPTPY) affordability targets. In June the Program Office reached a handshake agreement on a CY 2021-2023 air vehicle sustainment contract, a key step towards achieving the DON's cost targets. Based on the current contract structure, CPFH of approximately $30,000 could be achievable by 2025. We are also working to decrease operation and sustainment costs targeting steady state CPTPY of $6.8 million for the F-35B by 2033, and $7.5 million CPTPY for the F-35C by 2036.

The F-35 enterprise is addressing the F-135 Engine Power Module (PM) shortfall issue through three lines of effort: increasing Heavy Maintenance Center (HMC) Tinker throughput; increasing and accelerating other enterprise depot capacity; and reducing fleet demand by increasing time on wing. The latest analysis of these areas indicates that enterprise depot PM repair capacity will meet demand by 2024, and the backlog of non ready for issue PMs will be eliminated by 2029. This progress was enabled by reductions in repair turnaround time at HMC Tinker from 240 to 183 days, trending on glideslope to the target of 122 days. HMC Tinker has produced more PMs in the first have of 2021 than all of last year. As the Service Acquisition Executive, the DON is working with the USAF and the F-35 Joint Program Office to assess F-135 and PM sparing posture, which will inform future requirements and budgets.

The FY 2022 President's budget requests $5.3 billion in Aircraft Procurement (APN) funds for 17 F-35B and 20 F-35C aircraft, modifications and spares.

F-35 Continuous Capabilities Development and Delivery (C2D2)

The F-35 program has closed the Block 3F System Development and Demonstration phase and has shifted to an aircraft modernization program in order to maintain the advantage over advancing adversary fighters and ground-based radar threats.

Towards that end, the Department restructured the original Block 4 Follow-on Modernization acquisition strategy into a more agile Continuous Capabilities Development and Delivery (C2D2) model. The C2D2 approach develops capability in smaller, more easily managed increments, and advances departmental goals of reducing C2D2 risk and lowering cost. To continue the delivery of capability to the warfighter in FY 2022, the DON requests $998 million in RDT&E.

F/A-18 A/B/C/D Hornet

Service Life Modification, High flight hour (HFH) and Center Barrel Replacement (CBR+) efforts extend the F/A-18 A-D beyond its original service life of 6,000 hours to 9,000 hours, and in select aircraft, up to 10,000 flight hours. Twenty-three aircraft were inducted for HFH and/or CBR+ and included SLM modifications in FY 2020 with 17 aircraft planned for delivery in FY 2021. Along with flight hour extensions, these aircraft require capability upgrades to their radars, electronic warfare suites, and avionics systems to maintain lethality, survivability, availability, and interoperability with 5th generation strike fighters. These capability requirements enable the Marine Corps to operate the F/A-18 A-D through FY 2030, supporting the TACAIR transition to F-35B/C. Overall Readiness and Sustainment of the F/A-18A-D platform provided an average mission capable rate of 64 percent in calendar year 2020 and 67 percent in calendar year 2021 to date.

The FY 2022 President's Budget requests $172.8 million in APN for F/A-18 A-D. This includes $140.2 million to implement aircraft commonality programs, enhance capability, improve reliability, and ensure structural safety of the F/A-18 A-D inventory and $32.6 million for the continuation of the Hornet SLM.

F/A-18E/F Super Hornet

The F/A-18E/F Super Hornet will be the numerically predominant aircraft in the CVW into the 2030s. Continued delivery of new aircraft, capability enhancements and SLM

significantly improves CVW lethality. There are 78 remaining new production Block III aircraft that commenced delivery in FY 2021 and complete in FY 2025. In tandem with these Block III deliveries, SLM initiatives and capability upgrades enhance our inventory by maintaining the tactical relevance of the F/A-18 E/F. Under a separate acquisition program, the F/A18E/F enhanced Block I IRST completed a highly successful combat deployment with CVW-17 to CENTCOM Area of Responsibility. IRST Block II development and testing continues and is on track to Initial Operational Capability (IOC) in the fourth quarter of FY 2022, bringing critical out-of-band detection and weapon-quality-track capability against advanced air threats.

In terms of overall readiness and sustainment of the F/A-18E/F platform, the average mission capable rate of Primary Mission Inventory Aircraft was 80 percent for the F/A-18E/F in FY 2020 and continues that positive trend in FY 2021. The FY 2022 President's Budget requests $87.8 million of APN for support costs associated with the final delivery of F/A-18 E/F aircraft. Additionally, the budget requests $1,112.4 million of APN for F/A-18 A-D Unique, F/A-18 E/F and EA-18G Modernization and Sustainment, IRST, and F/A-18 Series. Finally, the FY 2022 budget requests $316.9 million of RDT&E for improvements, radar upgrades and Block III development.

AV-8B Harrier

During FY 2020 and FY 2021, the AV-8B Harrier program completed critical Fleet required Validation/Verifications to enhance flight safety, increase readiness and improve supply chain asset management. The program completed Joint Standoff Weapon (JSOW) integration and continued development of final fit capabilities including Sidewinder Air-Intercept Missile (AIM-9X) integration, expanded JSOW and Joint Direct Attack Munition (JDAM) capabilities, and enhanced Link-16 functionality. These upgrades enabled three combat deployments and are preparing the platform for continued MEU support through 2028.

The FY 2022 budget request initiates a time-phased budget transition from investment accounts toward Operations and Maintenance, Navy to support platform sustainment during sundown. $10.1 million in RDT&E funds continue design, development, integration and test of final fit platform capabilities. $17.9 million in APN continues the incorporation of Obsolescence Replacement/Readiness Management Plan systems, electrical and structural enhancements,

LITENING Pod upgrades, engine safety, digital interoperability upgrades that include Link-16, and inventory sustainment upgrade efforts to offset obsolescence and attrition.

AIRBORNE ELECTRONIC ATTACK (AEA)

EA-18G Growler

The EA-18G Growler is a critical enabler for the Joint force, bringing fully netted electronic warfare capabilities to the fight and providing essential capabilities in the Electromagnetic Maneuver Warfare environment. NGJ pods will augment and eventually replace the legacy ALQ-99 pods on the EA-18G and provide full spectrum integrated non-kinetic effects. The delivery of NGJ increases EA-18G Growlers lethality and capability against radar, communications, and non-traditional EW targets utilizing advanced AEA techniques while providing improved reliability and maintainability. Growler Capability Modifications started in FY 2021, consisting of the AEA System Enhancement upgrade and Integrated Capability Package 3. These modifications will improve emitter detection and electronic attack performance, and provide the ability to carry the NGJ-MB upon pod IOC.

Next Generation Jammer (NGJ)

The NGJ is the follow-on to the legacy AN/ALQ-99 to counter electronic warfare capabilities and keep pace with the evolving threat. NGJ will maximize the survivability and lethality of the Navy's 4th and 5th generation aviation platforms, strike weapons, and support all Services and joint/coalition air, land, and sea tactical strike missions. NGJ will be implemented via three separate programs: Mid-Band (MB), Low-Band (LB), and High-Band. NGJ-MB has entered developmental test, with positive results to date. NGJ-MB has a frequency range which covers the highest density threats and completed Milestone-C in June 2021. Currently in the Production and Development phase, NGJ-MB is focused on the development and delivery of test pods for ground and flight test activities, as well as the continued build of six System Demonstration Test Articles. NGJ-MB is a cooperative development, production and sustainment program with Australia. The FY 2022 budget includes $243.9 million in RDT&E funding for NGJ-MB to focus on instrumented test pod deliveries, continued mission system flight test and expansion of the flight envelope, and $266.7 million in APN funding for five Low Rate Initial Production II shipsets, associated support equipment and production support.

NGJ-LB had a successful Milestone B event and awarded an EMD contract in December 2020, which includes the delivery of eight operational prototypes. NGJ-LB is a critical AEA capability to augment and replace legacy ALQ-99 Tactical Jamming System on the EA-18G in the low frequency bands not covered by MB. The FY 2022 budget request $248.1 million RDT&E for NGJ-LB to focus on pod design, advanced capabilities development, and support to flight test. NGJ-LB is a cooperative development program with Australia.

WEAPONS PROGRAMS

The Department continues to support a wider, more systematic approach towards delivering offensive weapons balance. By preserving the readiness and capacity of our key strike weapons inventories, pursuing strike weapon capability enhancements, and developing next-generation strike missile capabilities to address emerging threats, the DON will increase overall force effectiveness to address emerging threats.

Offensive Anti-Surface Warfare (OASuW) Increment 1/ Long Range Anti-Ship Missile (LRASM), OASuW Increment 2, OASuW Navy JASSM

OASuW Increment 1/LRASM provides Combatant Commander the ability to conduct ASuW operations against near/mid-term high-value surface combatants protected by Integrated Air Defense Systems with long-range Surface-to-Air-Missiles and to deny adversaries sanctuary of maneuver. The program achieved Early Operational Capability on the Air Force B-1B in early FY 2019 and on the Navy's F/A-18E/F aircraft in early FY 2020. The FY 2022 President's Budget completes Navy LRASM 1.1 development, which will deliver incremental upgrades to keep pace with emerging threat capability and also supports procurement of 48 LRASM missiles. .

The FY 2022 President's Budget requests New Start authority to begin Technology Development in support of OASuW Increment 2. OASuW Increment 2 will provide a carrier-based, long range, air launched ASuW weapon to address advanced threats from sanctuary and enable the Navy to operate in, and control, contested battle space in littoral waters and A2/AD environments.

The FY 2022 President's Budget requests procurement of the Navy JASSM-ER with 20 missiles. The F/A-18E/F is capable of employing the USAF's Universal Armament Interface (UAI) compliant JASSM-ER and will complete full integration by delivery. This JASSM-ER

AGM-158 derivative will enhance the Navy's long range strike capability and respond to rapidly changing threats in the maritime environment.

Advanced Anti-Radiation Guided Missile (AARGM) & AARGM Extended-Range

AARGM procurement completed in FY 2021 with deliveries continuing through FY 2024 in support of the transition to AARGM-ER. AARGM-ER provides the DON with a 5th generation compatible extended range asset to project power and provide Suppression of Enemy Air Defenses, both at-sea and on land. There have been 1242 AARGMs (All Up Rounds, Training Missiles, and Spares) delivered to the Fleet (as of 28 June 2021). Program of record delivery is 1803 missiles. The FY 2022 President's Budget requests $116 million in WPN to procure 54 AARGM-ER missiles and supports operational testing of production representative hardware.

Sidewinder Air-Intercept Missile (AIM-9X)

The AIM-9X (Sidewinder) missile is a "launch-and-leave" munition that employs passive infrared energy for acquisition and tracking of enemy aircraft. The FY 2022 budget requests $23.9 million in RDT&E that will be applied toward the EMD of critical hardware redesign driven by obsolescence; and development of hardware and software to maintain required performance against evolving threat countermeasures. The budget also includes $86.4 million in WPN funding to procure a combined 178 All-Up-Rounds and Captive Air Training Missiles and associated missile/trainer related hardware.

Advanced Medium-Range Air-to-Air Missile (AMRAAM/AIM-120D)

The FY 2022 budget requests $32.6 million in RDT&E. The RDT&E will be applied toward continued software capability enhancements to counter emerging threats; completion of test and fleet release of System Improvement Program missile. Due to the AMRAAM Form, Fit, Function, Refresh (F3R) program experiencing hardware integration issues resulting in a 13 month schedule slip in 2020, AMRAAM procurement quantities were minimized through FY 2022 Lot 36, therefore allowing the DON to fund higher priority requirements in FY 2022.

Small Diameter Bomb II (SDB II)

Small Diameter Bomb Increment II (SDBII) is an Air Force led, joint program that provides the warfighter a capability to attack mobile targets in all weather conditions from stand-off range. The FY 2022 budget requests $46.8 million in RDT&E for continued development/test of the SDB II weapon, F-35 developmental testing and integration, Boeing BRU-61 integration and support for integration of BRU-55 racks on F-18 midboard stations. The Department also requests $40.9 million in WPN to procure 180 All-Up-Round weapons.

Harpoon II+

The FY 2022 budget request does not include procurement funds for additional Harpoon HII+. However, the Navy will continue to receive Harpoon II+ deliveries via the Sales Exchange Agreement through FY 2025.

Joint Air-to-Ground Missile (JAGM)

The Joint Air-to-Ground Missile (JAGM) is the replacement for Hellfire missile. JAGM is an air-launched missile system, which utilizes multi-mode seeker technology providing advanced line-of-sight and beyond-line-of-sight capabilities. The FY 2022 budget requests $0.356 million in RDT&E to support completion of JAGM integration on the USMC AH-1Z. The budget request also includes $49.7 million in WPN to procure 164 tactical missiles and six Captive Air Training Missiles.

Advanced Precision Kill Weapon System II (APKWS II)

APKWS II provides high-stowed precision capability combined with low-yield warheads to reduce the risk of collateral damage while achieving the desired effect on the target. The FY 2022 budget requests $24.3 million in Procurement of Ammunition, Navy and Marine Corps (PANMC) for procurement of 1,038 APKWS II guidance section kits for use on both rotary-wing and fixed-wing platforms.

Direct Attack Weapons and General Purpose Bombs

Fully funding the General Purpose Bombs and JDAM line items are critical to building and maintaining the DON's direct attack weapons inventory. The FY 2022 budget requests

$48.6 million for General Purpose Bombs, $74.1 million to procure 2,971 JDAM kits, and $52.2 million for more affordable practice bombs to enhance readiness and prepare for future contingencies.

OPERATIONAL TESTING

Currently there are two dedicated Navy Aviation Operational Test (OT) squadrons (VX-1/VX-9) that provide mitigation to risk-to-mission and risk-to-force for new and emerging capabilities. Each squadron manages OT for multiple Type Model Series (TMS) aircraft with a dedicated, military and civilian, staff of specialized operators, aircrew, test professionals, and maintainers; as well as contracted support for maintenance, project planning, and administrative functions. These squadrons are responsible for the test and evaluation of capabilities (weapon capabilities, platforms, networks, etc.) in the anticipated operational environment, against anticipated threats, using anticipated procedures, and using representative operators and maintainers to determine the effectiveness, suitability, lethality, and survivability of each capability.

The DON is continuing to search for more effective and efficient ways to conduct aviation OT, and satisfy OT requirements. While the majority of Navy aviation OT will continue to be conducted by dedicated OT squadrons, the Aviation Test community is reviewing current processes to identify real opportunity for efficiencies and to integrate with acquisition to reduce serial evaluation. There is potential to improve OT effectiveness, while maintaining a high level of confidence in the OT process. Part of these efforts include implementing "Capabilities Based" Test & Evaluation across the test continuum, accelerating early discovery, reducing overall cost, and providing relevant decision quality information while there is time and budget to make decisions, as well as focusing on Mission-Based vice Specification-Based testing. A key focus area will be achieving a clear differentiation between test and test support activities in order to baseline the true costs of OT.