

STATEMENT OF

LIEUTENANT GENERAL GARY L. THOMAS
DEPUTY COMMANDANT, PROGRAMS AND RESOURCES
UNITED STATES MARINE CORPS

AND

BRIGADIER GENERAL JOSEPH SHRADER
COMMANDER, MARINE CORPS SYSTEMS COMMAND
UNITED STATES MARINE CORPS

BEFORE THE

TACTICAL AIR AND LAND FORCES SUBCOMMITTEE

OF THE

HOUSE ARMED SERVICES COMMITTEE

ON

FISCAL YEAR 2018 GROUND FORCE MODERNIZATION PROGRAMS

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Lieutenant General Gary L. Thomas, USMC
Deputy Commandant for Programs and Resources

Lieutenant General Gary L. Thomas is currently serving as the Deputy Commandant for Programs and Resources.

A native of Austin, Texas, he graduated from the University of Texas and was commissioned in 1984. He previously served as the Commanding General, 2d Marine Aircraft Wing.

Lieutenant General Thomas is a Naval Aviator and has served in several FA-18 squadrons. He commanded VMFA-323 during Operation IRAQI FREEDOM while embarked aboard USS CONSTELLATION (CV-64). He also commanded Marine Aviation Weapons and Tactics Squadron One (MAWTS-1), and he served as the Commanding General, 2d Marine Aircraft Wing (Forward) in Afghanistan from February to December 2013.

He has served as the Assistant Wing Commander for the 2d Marine Aircraft Wing, Assistant Deputy Commandant for Aviation, and the Marine Corps Deputy Director of Operations.

His Joint assignments include service in the Strategic Plans Directorate (J-5) and in the Force Structure, Resources, Assessment Directorate (J-8).

Lieutenant General Thomas is a graduate of the Weapons and Tactics Instructor Course, the Navy Fighter Weapons School, Air Command and Staff College, and the National War College. He holds a M.S. in National Security Strategy from National Defense University.

Brigadier General Joseph Shrader, USMC
Commander, Marine Corps Systems Command

Brigadier General Joseph Shrader, a native of Princeton, West Virginia, enlisted in the Marine Corps in January 1981. He served for three years with 3rd Battalion, 5th Marines as an infantryman and was promoted to corporal. After his enlistment, he returned to West Virginia where he earned an associate degree in Mechanical Engineering Technology and a Bachelor of Science degree in Electrical Engineering Technology from Bluefield State College. He was commissioned a second lieutenant through the Platoon Leaders Course commissioning program in 1989.

Upon graduation from The Basic School, Brigadier General Shrader attended the Artillery Officer Basic Course in Fort Sill, Oklahoma, and then reported to 5th Battalion, 10th Marines (5/10). While assigned to 5/10, Brigadier General Shrader served as a Guns Platoon Commander, Battery Executive Officer and Battery Commander, and deployed to Southwest Asia during operations Desert Shield, Desert Storm and Provide Comfort.

Brigadier General Shrader reported in June 1993 to Marine Corps Recruit Depot, Parris Island, South Carolina, where he served as a recruit training company Series Commander, Company Executive Officer and Company Commander. He then attended the Field Artillery Advanced Officer Course in Fort Sill, and in August 1996, reported to the III Marine Expeditionary Force (III MEF), Okinawa, Japan. While there, he was promoted to Major and served as Assistant Operations Officer, 4th Marine Regiment, and Battalion Operations Officer and Battalion Executive Officer with 3rd Battalion, 12th Marines.

He then attended the Marine Corps Command and Staff College on Marine Corps Base Quantico, Virginia, where he earned a Master of Military Studies degree. In June 2001, he was transferred to Marine Corps Systems Command where he served as the Armor and Fire Support Targeting Team Lead. Upon promotion to Lieutenant Colonel, he was reassigned to serve as the Deputy Program Manager for the Expeditionary Fire Support System.

In July 2004, Brigadier General Shrader returned to III MEF where he served as 12th Marines Operations Officer and later that same year deployed to Sumatra, Indonesia, in support of Operation Unified Assistance. In May 2005, Brigadier General Shrader received orders to stand up 5th ANGLICO, III MEF. In early 2007, he deployed in support of Operation Iraqi Freedom. In October 2007, he relinquished command of 5th ANGLICO and was reassigned as the III MEF Force Fires Coordinator.

In August 2009, he was promoted to Colonel after graduating from the Industrial College of the Armed Forces at National Defense University in Washington, D.C. He was then designated primary military occupational specialty (8061) Acquisition Professional Officer and assigned to Marine Corps Systems Command. Over the next four years he served as Product Group Director for Combat Equipment and Support Systems, and Product Group Director and Program Manager for Armor and Fire Support Systems.

In May 2013, he transferred to the Office of the Deputy Assistant Secretary of the Navy for Expeditionary Programs and Logistics Management to serve as Chief of Staff. In July 2014, Brigadier General Shrader took the helm as Commander of Marine Corps Systems Command.

Introduction

Chairman Turner, Ranking Member Tsongas, and distinguished members of the subcommittee, thank you for the opportunity to testify on Fiscal Year 2018 Ground Force Modernization Programs. Your Marines continue to be in high demand from all our combatant commanders around the world. They're forward deployed, engaged on land and sea, and ready for crisis response in Africa, Europe, the Middle East, and the Pacific. As a result, we must constantly balance between capability and capacity, between current operations and future operations, between steady state and surge readiness, as well as between low end and high end operations and training. Our role as America's 9-1-1 force informs how we man, train, and equip our force. It also drives how we prioritize and allocate the resources we are provided by Congress. While today's force is capable and our forward deployed forces are ready to fight, we have been fiscally stretched to maintain readiness across the breadth of the force in the near term, and to modernize for future readiness against the threats we will face in the future. The Marine Corps' Fiscal Year 2018 budget request begins to fix readiness for today and tomorrow, with increased support for warfighting readiness and modernization for tomorrow's fight.

Fiscal Year 2018 Budget Request – Aligning Strategic Priorities and Budgetary Goals

As the nation's naval expeditionary force-in-readiness, we must posture ourselves for the evolving operational environment characterized by complex terrain, technology proliferation, information warfare, the battle of electro-magnetic signatures, and a contested maritime domain. While we engage in the current fight and maintain our forward presence in order to respond to crises, our adversaries have developed new capabilities which now equal, or in some cases exceed, our own, such as creating combined arms dilemmas using information, cyber, deception, unmanned intelligence, surveillance, and reconnaissance (ISR), and long range precision fires in highly advanced and lethal ways. The evolution and expansion of the information domain, advanced robotics, and improved weapons technologies are causing threats to emerge with increased speed and lethality. The actions of ever more aggressive and capable peer competitors are demonstrating advanced multi-domain (ground, air, sea, space and cyber) capabilities across the range of military operations (ROMO). Anti-access and area denial capabilities are proliferating, becoming cheaper, more lethal, and harder to target. Cyber threats target the

digital networks that are essential to the way we currently fight. Information warfare exploits global communications and social media. And adversaries leverage advanced commercial off-the-shelf technologies that out-cycle our acquisition process.

In recognition of this new era, we developed the Marine Corps Operating Concept (MOC) which describes in broad terms how the Marine Corps will operate, fight, and win in the future operating environment. This concept is shaping our actions as we design and develop the capabilities and capacity of the future force. To this end, we conducted a bottom-up review of the force necessary to deter, and if necessary, defeat 21st century threats. This review, entitled Marine Corps Force 2025, identified critical gaps in capability and capacity that must be addressed in order to build a Marine Corps with the 5th Generation ground and aviation elements that can fight and win in this environment. Our Fiscal Year 2018 budget request of \$26.3 billion for the base budget and an additional \$12.3 billion for Marine Aviation begins the process of rebuilding a balanced Marine Corps for the 21st Century in a prudent and executable manner to resource existing modernization requirements, address existing readiness challenges and shortfalls in infrastructure, aviation and ground platforms, and address the new structure, materiel and training requirements for our 185K active force. With sufficient resources guided by strategy, the Marine Corps will be able to develop the capacity and vital warfighting capabilities that will allow us to pursue five critical tasks necessary to build a 5th Generation Marine Corps: evolve the Marine Air-Ground Task Force (MAGTF) to be able to fight across all warfighting domains, enhance our ability to maneuver, integrate the Naval Force to fight at and from the sea, operate with resilience in a contested network environment, and leverage the competence of the individual Marine.

Fixing Readiness For Today and Tomorrow

Modernization is central to addressing near-term readiness and foundational to building the Marine Corps of the 21st century. It includes the replacement of legacy systems with new ones, such as the Amphibious Combat Vehicle (ACV), Joint Light Tactical Vehicle (JLTV), MV-22 Osprey, CH-53K King Stallion, and Ground/Air Task Oriented Radar (G/ATOR), key components of our strategy to keep pace with expected future threats and our MOC. Modernization includes changes to the structure of our Tables of Equipment (T/E) as we continue to incorporate the lessons learned on the modern battlefield into equipment sets that

balance affordability with the need for a networked, mobile, and expeditionary force. And it includes the insertion of technological advances into current capabilities, including such efforts as developing active protection systems, long-range precision fires and counter-unmanned aircraft system (C-UAS) capabilities. Over the past decade and a half, funding constraints and operational demand increases have forced us to take risk in our future readiness in order to preserve current readiness, deferring critical future aviation and ground programs. Between Fiscal Year 2012 and Fiscal Year 2016, for example, Marine Corps spending on ground procurement decreased by 48 percent in its base budget. Continued sustainment of legacy systems cost more and more to repair and maintain, while not providing the capabilities we know are needed for the future operating environment. Investing in and accelerating our modernization programs directly correlate to improved readiness by achieving efficiencies and providing needed capabilities sooner. For Fiscal Year 2018, the Marine Corps has increased its ground procurement request to \$2.4 billion, as well as aviation procurement request to \$6.5 billion. The Marine Corps is committed to recapitalizing and modernizing these key capabilities and others to ensure success against increasingly capable current and future threats.

Ground Combat Tactical Vehicle Modernization

A primary focus of our ground modernization efforts continues to be our combat and tactical vehicle portfolio, which accounts for approximately 50 percent of the Marine Corps ground modernization investment. Our Ground Combat Tactical Vehicle (GCTV) modernization strategy is to sequentially modernize priority capabilities, reduce equipment inventories wherever possible and judiciously sustain remaining equipment. The overarching priority within the ground portfolio is the replacement of the legacy Amphibious Assault Vehicle (AAV), fielded over 40 years ago, with modern armored personnel carriers through a combination of complementary systems. The Amphibious Combat Vehicle (ACV) program is the Marine Corps' highest ground modernization priority and will use an evolutionary, incremental approach that consists of two increments, ACV 1.1 and ACV 1.2. Increment 1.1 will field a personnel carrier; Increment 1.2 will improve personnel carrier capabilities over Increment 1.1 and will deliver command and control (C2), recovery, and maintenance mission role variants. The AAV Survivability Upgrades Program (SUP), will complement the ACV Program within the Amphibious Assault Echelon. The AAV SUP improves AAV capability in four of the ten companies, to support Marine Expeditionary Unit (MEU) deployments. When

globally sourced, the four companies provide the essential capacity necessary for the assault echelons of two Marine Expeditionary Brigades (MEBs). ACV Phase 1.1 modernizes two of our ten amphibious vehicle companies. ACV Phase 1.2 will modernize the remaining four of ten companies. This combination of a modern amphibious armored personnel carrier alongside the improved AAV generates a complementary set of capabilities to meet general support lift capability and capacity requirements of our Ground Combat Element. In parallel with these modernization efforts, a science and technology portfolio is being developed by the Office of Naval Research (ONR) to explore a range of high water speed technology approaches to provide for an affordable, phased modernization of legacy capability to enable extended range littoral maneuver. These efforts will develop the knowledge necessary to reach an informed decision point in the mid-2020s on the feasibility, affordability, and options for developing a high water speed capability for maneuver from ship-to-shore.

The second highest priority within the portfolio remains the replacement of the portion of our High Mobility Multipurpose Wheeled Vehicles (HMMWV) fleet that is most at risk; those trucks that perform a combat function and are typically exposed to enemy fires. In partnership with the Army, the Marine Corps has sequenced the Joint Light Tactical Vehicle (JLTV) program to ensure affordability of the entire combat and tactical vehicle portfolio while replacing one third of the legacy HMMWV fleet with modern tactical trucks prior to the fielding of ACV 1.1. These core Marine Corps modernization efforts have been designed to ensure their affordability. With the continued support of this committee and Congress we will maintain the momentum to modernize this portfolio and ensure that our Marines are equipped to answer our nation's calls.

Amphibious Combat Vehicle 1.1

Leveraging demonstrated mature technologies, ACV Phase 1.1 awarded two Engineering and Manufacturing Development (EMD) contracts to BAE and SAIC. Both manufacturers have begun delivering vehicles and we are initiating an extensive test and evaluation phase that will lead to a down select in Fiscal Year 2018. The Approved Acquisition Objective (AAO) of 204 vehicles will provide lift for two infantry battalions and will achieve Initial Operational Capability (IOC) in Fiscal Year 2020. The aggressive acquisition schedule for ACV 1.1 requires full funding and support from Congress. The Fiscal Year 2018 President's Budget requests

\$179.0 million in RDT&E for continued research and development, \$167.1 million in procurement, and \$1.3 million in operations and maintenance.

AAV Survivability Upgrade Program (AAV SUP)

AAV SUP is a well-defined program to increase the capability of the current vehicle by providing force protection upgrades to counter current and emerging threats to the underside of the vehicle. Specifically, the program will provide improved armor, spall liners, blast mitigating seats and protected fuel storage. These improved AAVs will play a key role in facilitating ship-to-shore mobility until replaced via a future phase of the ACV program. A contract was awarded to SAIC and all EMD vehicles are currently undergoing Operational Assessment that will inform a Milestone C decision later this year. The AAO for the program is 405 vehicles with IOC in Fiscal Year 2019. The Fiscal Year 2018 President's Budget requests \$58.7 million in RDT&E for continued research and development, \$107.7 million in procurement for Low Rate Initial Production (LRIP), and \$2.7 million in operations and maintenance.

Joint Light Tactical Vehicle (JLTV)

The Marine Corps remains firmly partnered with the U.S. Army in fielding a JLTV that lives up to its name, while also being affordable. JLTV will deliver a modern reliable truck along with companion trailers, capable of performing multiple mission roles while providing protected, sustained, and networked mobility for personnel and payloads across the full spectrum of military operations. The JLTV has effectively controlled ownership costs by maximizing commonality, reliability, and fuel efficiency, while achieving additional savings through effective competition in all stages of program execution. Oshkosh Corporation was awarded a production contract for both Low Rate Initial Production (LRIP) and Full Rate Production (FRP) options, and those vehicles are currently in testing at various locations. The Fiscal Year 2018 President's Budget requests \$20.7 million in RDT&E for continued research and development, \$233.6 million in procurement, and \$2.4 million in operations and maintenance. Funding for major activities in this budget includes continued developmental testing, validating the production process and continued LRIP assets. To date the Joint Program Office (JPO) has received nearly 250 trucks in support of the LRIP process. The approved AAO is 5,500 vehicles.

Rotorcraft Modernization

Marine Aviation is in the midst of a focused multiyear readiness recovery effort across every Type/Model/Series (T/M/S) in the current legacy inventory, all while we continue to procure new aircraft. Aviation readiness recovery is fragile; the plan requires stable and predictable funding, spare parts and supply support, flight operations, and time. Each T/M/S requires attention and action in specific areas: supply, in-service repairs, maintenance, and depot backlog. Our modern expeditionary force will require aircraft capable of flexible basing ashore or at sea in support of our Marine units. Our MV-22 Ospreys are key enablers in expanding the operational reach of Marines supporting Joint Force requirements. The CH-53K Heavy Lift Replacement remains critical to maintaining the battlefield mobility our force requires, nearly tripling the lift capacity of the aircraft it is replacing. The Marine Corps UH-1Y Venom and AH-1Z Viper are also combat proven force multipliers for the Marine Air Ground Task Force. Other priorities outside our rotary wing aircraft include: persistent multi-role intelligence, surveillance, reconnaissance (ISR) such as RQ-21A Blackjack and the MAGTF Expeditionary UAS (MUX); supporting capabilities such as electronic attack and vertical lift; robust strike weapons programs; creating manned-unmanned teaming capabilities; targeted modernization of the force for relevance and sustainability; and the 5th Generation F-35B and F-35C Joint Strike Fighter (JSF) that will not only replace three aging platforms, but also provide transformational warfighting capabilities for the future. The acceleration of these key aviation modernization programs and others will directly enhance warfighting readiness and increase the lethality of the force.

MV-22 Osprey

The MV-22 is the assault support platform of choice for all Combatant Commanders (CCDRs). From MEUs to Special Purpose MAGTF – Crisis Response (SPMAGTF-CR), the speed, range, and aerial refueling capability allow the Osprey to remain postured in strategic locations throughout the world, ready and poised to quickly support Marines Corps operations wherever they are required. The Fiscal Year 2018 President’s Budget requests \$171.4 million in RDT&E for continued product improvements, and \$228.3 million in APN to support Operations and Safety Improvement Programs (OSIPs), including Correction of Deficiencies, Readiness improvements, Common Configuration, and Aerial Refueling. To-date, 294 of 360 MV-22s have been delivered. The MV-22 continues to meet all Key Performance Parameters; cost and schedule also remain within established thresholds. Fiscal Year 2018 represents the first year of

the next V-22 Multi-Year Procurement (MYP) contract, MYP III, for production aircraft, sustaining Fleet aircraft, improving aircraft readiness, reducing operating costs, and expanding the domestic and international business base. The proposed MYP III contract will span seven years (Fiscal Years 2018-2024) and buy out the remaining domestic aircraft program of record. MYP III continues affordable procurement, provides stability to industry, and maintains a production line and contractual foundation to attract future V-22 international sales/customers. Continuing procurement under a MYP is especially beneficial to the supplier base as it provides long-term stability and generates lower costs that may incentivize international V-22 customers.

The MV-22 Osprey vertical flight capabilities, coupled with the speed, range, and endurance of fixed-wing transports, continue to enable effective execution of current missions that were previously unachievable. The MV-22 fleet continues executing at a high operational tempo consisting of multiple MEU deployments and two SPMAGTF-CR deployments in support of AFRICOM and CENTCOM. During 2016, the 15th of 18 planned active component squadrons achieved full operational capability (FOC), with the 16th scheduled for FOC in June 2017. These events are significant because community capacity is beginning to catch up to operational demand. However, due to CCDR's extremely high V-22 demand and operational tempo, the mission capability (MC) rates have not improved as desired. The primary contributor to lower than planned MC rates is our ability to train and keep enlisted maintainers with the requisite qualifications needed to sustain the high demand. An equally important secondary contributor is multiple V-22 configurations. In an attempt to increase our overall institutional readiness, the Marine Corps reduced each of the SPMAGTF-CR to a .5 VMM squadron footprint. The goal of this plan is to allow the remain behind element the time necessary to develop and train their personnel for future deployments and improve the overall V-22 readiness and MC rates.

Marine Aviation commissioned an Osprey Independent Readiness Review which identified a number of factors driving down MV-22 readiness. The major factor identified was the excessive number of aircraft configurations that resulted from years of concurrently incorporating engineering changes and reliability improvements during aircraft production. The "Common Configuration, Readiness and Modernization" (CC-RAM) plan will streamline the total number of V-22 configurations from 77 to 3, simplify the supply system, reduce the number of technical manuals and improve troubleshooting and maintenance procedures. This effort will decrease maintenance man-hours, increase aircraft availability and reduce total operating costs

by approximately \$1.5 billion. The Fiscal Year 2018 OSIP provides a necessary and stable source of crucial modification funding as the program continues to implement these readiness and cost reduction initiatives.

Along with the readiness and support initiatives, the Marine Corps is adding new capabilities to the MV-22 that will make it even more valuable to the CCDRs such as the development of MV-22 Aerial Refueling System which will enable the MV-22 to deliver fuel to other airborne platforms. This capability is a critical enabler for both shore and sea-based operations and will extend the operational reach of deployed MAGTFs. Initial capability is planned to deliver by the summer of 2019. Another transformative capability for the entire aviation force is the continued development and integration of Digital Interoperability (DI). Initial DI fielded capability will consist of a suite of electronics to allow the embarked troop commander and aircrew to possess unprecedented situational awareness via real-time transmission of full motion video and other data generated by multiple air and ground platforms throughout the battlespace. This DI suite will also be able to collect, in real time, threat data gathered by existing aircraft survivability equipment and accompanying attack platforms, thereby shortening the kill-chain against ground and air based threats. A limited DI objective experiment was conducted utilizing a deployed MEU. The results showed promise and informed continued development of this capability.

CH-53K Heavy Lift Replacement Program

The Fiscal Year 2018 President's Budget requests \$341.0 million in RDT&E to continue the Engineering and Manufacturing Development (EMD) phase of the CH-53K program and \$756.0 million in Aircraft Procurement, Navy (APN) for Low Rate Initial Production (LRIP) Aircraft (Lot 2). The CH-53K achieved Milestone C, receiving an Acquisition Decision Memorandum April 3, 2017, authorizing LRIP. To date, four EMD Model aircraft have accumulated over 450 test flight hours, completed the first 'Operational Test Assessment' ahead of schedule and set a U.S. Heavy Lift record with an 89.5K Maximum Gross Weight lift. During Fiscal Year 2018, the program will continue to execute developmental test flights, complete the relocation of test assets to Naval Air Station (NAS) Patuxent River, and take delivery of System Demonstration Test Article (SDTA) aircraft (production representative aircraft utilized for Operational Test). Three of the four SDTAs will deliver to NAS Patuxent River to supplement the remainder of developmental test. Marine Test and Evaluation Squadron One (VMX-1) will

take delivery of the balance of aircraft at MCAS New River to execute publication and maintenance demonstrations prior to Operational Test & Evaluation.

The CH-53K will provide land and sea based heavy-lift capabilities not resident in any of today's platforms and contribute directly to the increased agility, lethality, and presence of joint task forces and MAGTFs. The CH-53K can transport 27,000 pounds of external cargo out to a range of 110 nautical miles under the most extreme operational conditions, nearly tripling the CH-53E's lift capability under similar environmental conditions, while fitting into the same shipboard footprint. The CH-53K will provide an unparalleled lift capability under high-altitude and hot weather conditions and greatly expand the CCDRs operational reach and flexibility. Compared to the CH-53E, maintenance and reliability enhancements of the CH-53K will improve aircraft availability and ensure cost effective operations. Additionally, survivability and force protection enhancements will significantly increase protection for both aircrew and passengers. Expeditionary heavy-lift capabilities will continue to be critical to successful land and sea-based operations in future anti-access, area-denial environments, enabling sea-basing and the joint operating concepts of force application and focused logistics.

As the CH-53E approaches 30 years of service, the community has accumulated over 95,000 combat flight hours in support of various combat operations. The unprecedented operational demand for these aircraft (peaking at 3x the published utilization rate) caused them to age prematurely. The material condition of our heavy lift assault support aircraft has degraded sooner than expected, which makes it more challenging to maintain and underscores the importance of its replacement, the CH-53K King Stallion. We have instituted a fleet wide "reset" of the CH-53E inventory to ensure we extract maximum utility and readiness until we transition to the CH-53K.

H-1 Upgrades Program

The H-1 Upgrades Program is replacing the Marine Corps' UH-1N and AH-1W helicopters with state-of-the-art UH-1Y Venom and AH-1Z Viper aircraft. Marine Corps Venom and Viper utility and attack aircraft have been critical to the success of the Marines in harm's way and have flown over 162,000 hours over the past decade. The Fiscal Year 2018 President's Budget requests \$79.1 million in RDT&E for continued product improvements and \$822.2 million in APN for 22 AH-1Z aircraft and system improvements. The H-1 program is a key modernization effort designed to resolve existing safety deficiencies and enhance operational

effectiveness of the H-1 fleet. The 85 percent commonality between the UH-1Y and AH-1Z will significantly reduce lifecycle costs and the logistical footprint, and increase the maintainability and deployability of both aircraft. The program will provide the Marine Corps with 349 H-1 aircraft through a combination of new production and a limited quantity of remanufactured aircraft.

The UH-1Y and AH-1Z aircraft are fielded with integrated glass cockpits, world-class sensors, and advanced helmet-mounted sight and display systems. The future growth plan includes a digitally-aided, Close Air Support (CAS) system designed to integrate these airframes, sensors, and weapons systems together with ground combat forces and other capable DoD aircraft. Integration of low-cost weapons such as the Advanced Precision Kill Weapon System II (APKWS II) provides increased lethality with reduced collateral damage.

The UH-1Y aircraft achieved IOC in August 2008 and FRP in September 2008. The “UH-1Y Forward” procurement strategy prioritized UH-1Y production in order to replace the under-powered UH-1N fleet as quickly as possible. The last UH-1N was retired from service as of December 2014. The AH-1Z program received approval for FRP in November 2010 and achieved IOC in February 2011. As of April 2017, 210 aircraft are operational within the Fleet Marine Force (146 UH-1Ys and 64 AH-1Zs). An additional 72 aircraft are on contract and in production, to include the first three of twelve Pakistan Foreign Military Sales aircraft. Lots 1-7 (Fiscal Years 2004-2010) aircraft deliveries are complete for both the UH-1Y and AH-1Z. Lots 8, 9, and 10 (Fiscal Years 2011-2013) deliveries are complete for the UH-1Y. Lot 11 UH-1Y deliveries are in progress and ahead of schedule. Additionally, the Czech Republic signed a Letter of Request for Letter of Acceptance in April 2017 for 12 UH-1Ys, which will be placed on contract in Fiscal Year-2018.

The H-1 Upgrades program is integrating both the UH-1Y and AH-1Z into the Digital Interoperability environment established throughout the MAGTF. With the integration of Intrepid Tiger II Electronic Warfare (IT II EW) pod, the Marine Corps’ Light Attack Helicopter Squadron community will be able to provide MAGTF Commanders with all six functions of Marine Aviation, further increasing capability and flexibility. Additionally, these aircraft will incorporate Software Reprogrammable Payloads (SRP), which enables utilization of diverse networks and waveforms, thereby enabling maneuverability within the Electro-Magnetic (EM) spectrum. SRP will employ systems such as Link-16, Tactical Targeting Network Technology, Adaptive Networking Wideband Waveform, and the Soldier Radio Waveform.

Command and Control (C2) Modernization

Critical to the success ashore of the MAGTF is our ability to coordinate and synchronize our distributed C2 sensors and systems. A 5th Generation Marine Corps that will dominate the information domain requires transforming MAGTF C2 capabilities through a unified network environment that is ready, responsive and resilient, including integrating Navy and Marine Corps systems for naval amphibious forces to effectively command and control forces both afloat and ashore. The Combat Operations Center (COC) Family of Systems (FoS), for example, is designed to enhance C2 at all levels from the Marine Expeditionary Force (MEF) to Battalion echelons. We have delivered new MEF level COCs to I, II, and III MEF. Research and development is ongoing for cross-domain solutions to provide the ability to manually or automatically access or transfer information between two or more differing security domains. Enhanced C2 and digitally interoperable protected networks are modern capabilities that will facilitate improved battlefield awareness to and from small, dispersed tactical units. Our modernization priorities in this area are the Ground/Air Task Oriented Radar (G/ATOR), the Common Aviation Command and Control System (CAC2S) Increment I, and Networking On The Move (NOTM). These systems will provide modern, interoperable technologies to support real-time surveillance, detection and targeting and the common C2 suite to enable the effective employment of that and other sensors and C2 suites across the MAGTF. As warfare evolves into a battle of signatures and detection supporting an increasingly distributed MAGTF over greater geographical areas, these capabilities are vital to maximize the effectiveness of our forces.

Ground/Air Task Oriented Radar (G/ATOR)

G/ATOR is a highly expeditionary, medium range multi-role radar that represents the next generation in ground radar technology and will provide greater accuracy, detection, target classification, and performance against new and evolving threats and enemy countermeasures. G/ATOR will replace five legacy systems and will support air defense, air surveillance, counter-battery/target acquisition, and aviation radar tactical enhancements; the final evolution will also support the Marine Corps' air traffic control mission. G/ATOR Block 1 provides air defense and air surveillance capability, achieved Milestone C in 2014 and has received three of the six units which will be delivered this calendar year. G/ATOR Block 2 provides counter-battery/target acquisition and is in the EMD phase of acquisition. The Fiscal Year 2018 President's Budget requests \$54.6 million in RDT&E for the continued development of G/ATOR Block 2, transition

to Gallium Nitride (GaN) module technology, \$155.8 million in procurement funding supporting the LRIP of three G/ATOR Block 2 systems, and \$10.6 million in O&M,MC for support of the fielded systems. The approved AAO is 45 systems.

Common Aviation Command and Control System (CAC2S)

CAC2S is a critical enabler within the Marine Air Command and Control System (MACCS) that will fuse weapons and sensor data into a single integrated display and serve as the sensor and data integrator between aviation and ground combat elements. Phase I Limited Deployment Capability was achieved 2nd Quarter Fiscal Year 2012 and the initial fielding was complete during 4th Quarter Fiscal Year 2013. Phase 2 addresses the remaining Air Combat Element (ACE) Battle Management and C2 requirements. Phase 2 achieved a successful Milestone C in Fiscal Year 2015, and fielding of that system has begun with the first delivery in May 2017. The Fiscal Year 2018 President's Budget requests \$7.3 million in RDT&E for continued research and development, \$44.9 million in procurement funding supporting 15 systems, and \$19.8 million in O&M,MC for support of the fielded systems. The approved AAO is 50 systems.

Networking On The Move (NOTM)

NOTM provides the MAGTF with a robust, over the horizon/beyond line of sight digital command and control capability while on the move and at the halt. The Fiscal Year 2018 President's Budget requests \$11.4 million in RDT&E for continued research and development, \$111.3 million in procurement funding supporting 35 systems, and \$22.9 million in O&M,MC for support of the fielded systems. The 35 systems consist of three variants: NOTM-Ground Combat Vehicle (GCV) – 20 systems, NOTM-Airborne (A) – 10 systems, and NOTM-Internally Transportable Vehicle (ITV) – 5 systems. The AAO for variants is: GCV – 140; A-Increment I – 8; A-Increment II – 39; and ITV – 32.

Tactical and Satellite Communications

To improve our tactical radios, we are in the process of developing the Acquisition Strategy for the next generation of High Frequency radios and will look to field a modernized, more capable, COMSEC compliant version in Fiscal Year 2020. Across the Satellite Communications portfolio, several related modernization efforts are scheduled starting in the

fourth quarter of Fiscal Year 2017 and concluding in Fiscal Year 2019. The Global Broadcast System will field multiple component systems to Marine Corps Forces Special Operations Command (MARSOC) in the fourth quarter of Fiscal Year 2017 and second quarter of Fiscal Year 2018. The Very Small Aperture Terminal program will release a modification instruction in July to update software for interoperability with Department of Defense (DoD) hubs. Lastly, Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T) is scheduled to be procured in the fourth quarter of Fiscal Year 2017 and start fielding in the third quarter of Fiscal Year 2018 the capability to reduce the number of laptops required to operate the SMART-T. We continue to work with industry for solutions enabling operations in a contested environment. The Fiscal Year 2018 President's Budget requests \$83.9 million in procurement for tactical and satellite communications.

Small Arms Strategy

Small arms weapons and ammunition help to power our Marines' ability to close with and destroy our opponents on the battlefield. We continuously evaluate and improve Marine Corps small arms capabilities, when technology and funding allow, to ensure that the individual Marine and units throughout the MAGTF are armed with the most reliable and relevant weapons systems available. In the near term, through Fiscal Year 2020, we are pursuing selective ground modernization and prioritized sustainment of legacy capabilities. This involves an incremental approach to improve small arms accuracy, lethality, ergonomics, and weight reduction. Current funding levels impact USMC small arms in the speed with which we can implement near term improvements. We will improve these capabilities on a graduated scale, starting with the infantry and expanding to other combat arms when feasible. Long term, beyond Fiscal Year 2020, we plan to make larger gains in capability through pursuit of next generation weapons with the other services, including our Army partners where collaborative effort is made possible when requirements and execution profiles coincide. Efforts now underway are driven by the end in mind – improved lethality while maintaining/improving the mobility of the individual Marine, the Marine Rifle Squad, and the MAGTF.

Conclusion

Congress and the American people have high expectations for the Marine Corps as our nation's naval expeditionary force in readiness. To achieve institutional readiness, sustain operational requirements, and be prepared for crisis and contingency response now and in the future, we must maintain the right balance of capability and capacity for our Marine Corps across our modernization, manpower and current readiness efforts. Our Fiscal Year 2018 budget request builds on the additional funding received in the Fiscal Year 2017 Omnibus appropriation and begins the deliberate effort to fix readiness both today and tomorrow, but the fiscal instability of the current fiscal year, Budget Control Act (BCA) caps, and the trend of repeated and protracted continuing resolutions continue to create inefficiencies, disrupt our planning, and directly challenge our current and future readiness. The Marine Corps manages uncertainty and risk through planning. Unstable fiscal environments prevent the deliberately planned, sustained effort needed to recover current readiness of our legacy equipment in the near term, and to modernize in the longer term. We must work to avoid a budget-driven strategy and return to a strategy-driven budget, informed by the strategic requirements of the current and future operating environments. The Marine Corps must begin to rebalance and modernize for the future, creating a 5th Generation multi-domain force with overmatch that can deter and if necessary, defeat a highly capable near-peer adversary. With your continued support, we can and will rebuild your Marine Corps for the 21st century.