

U.S. Marine Corps

The U.S. Marine Corps (USMC) is the nation's expeditionary armed force, positioned and ready to respond to crises around the world. Marine units assigned aboard ships ("soldiers of the sea") or at bases abroad stand ready to project U.S. power into crisis areas. Marines also serve in a range of unique missions, from combat defense of U.S. embassies under attack abroad to operating the President's helicopter fleet.

Although Marines have a wide variety of individual assignments, the focus of every Marine is on combat: Every Marine is first a rifleman. The USMC has positioned itself for crisis response and has evolved its concepts to leverage its equipment more effectively to support operations in a heavily contested maritime environment such as the one found in the Western Pacific.

As of March 2019, according to the U.S. Navy's budget highlights document for fiscal year (FY) 2020, more than 40,000 Marines (roughly one-third of Marine Corps operating forces) were deployed around the world, "providing immediate options, assuring allies and deterring our adversaries." During the preceding year, "the Marine Corps executed 170 operations, eight amphibious operations, [and] 115 theater security cooperation events and participated in 51 exercises and relief operations for Hurricanes Maria, Florence, and Michael."¹

Pursuant to the national-level and service-level strategic guidance documents that provide direction and focus for the military services,² maintaining the Marines' crisis response capability is critical. Thus, given the fiscal constraints imposed on it, the Corps has

continued to prioritize "near-term readiness" at the expense of other areas such as capacity, capability, modernization, home station readiness, and infrastructure.³ However, as stated in the President's FY 2019 budget of \$43.1 billion for the Corps, the service elevated modernization as a means to improve readiness for combat.⁴ This is consistent with and central to its readiness-recovery efforts and represents a shift to a longer-term perspective. Recapitalization and repair of legacy systems is no longer sufficient to sustain current operational requirements. New equipment is necessary.

Capacity

The measures of Marine Corps capacity in this *Index* are similar to those used to assess the Army's: end strength and units (battalions for the Marines and brigades for the Army).

Ground Forces. The Marine Corps' basic combat unit is the infantry battalion, which is composed of approximately 900 Marines and includes three rifle companies, a weapons company, and a headquarters and service company.⁵ In FY 2011, the Marine Corps maintained 27 infantry battalions in its active component at an authorized end strength of 202,100.⁶ As budgets declined, the Corps prioritized readiness through managed reductions in capacity, including a drawdown of forces, and delays or reductions in planned procurement levels. After the Marine Corps fell to a low of 23 active component infantry battalions in FY 2015, Congress began to fund gradual increases in end strength, returning the Corps to 24 infantry battalions.⁷

President Donald Trump's FY 2019 budget request increased the size of the active

component Marine Corps by 1,100 Marines to an authorized level of 186,100,⁸ sustaining enough support for 24 infantry battalions. The additional manpower backfilled existing units and helped the Marine Corps to recruit and retain individuals with critical skill sets and specialties.

One impact of reduced capacity is a strain on Marines' dwell time. Cuts in capacity—the number of units and individual Marines—enabled the Marine Corps to disperse the resources it did receive among fewer units, thus maintaining higher readiness levels throughout a smaller force. However, without a corresponding decrease in operational requirements, demand for Marine Corps units and assets has resulted in grueling deployment rates, a situation that has remained largely unchanged since 2018.⁹ High deployment frequency exacerbates the degradation of readiness as people and equipment are used more frequently with less time to recover between deployments.

The stated ideal deployment-to-dwell (D2D) time ratio is 1:3 (seven months deployed for every 21 months at home).¹⁰ This leaves more time available for training and recovery and provides support for a “ready bench,” without which readiness investments are immediately consumed. FY 2019 budget constraints support only “an approximate 1:2 D2D ratio in the aggregate”¹¹ with the roughly 5 percent increase in funding (compared to FY 2018) going toward readiness and modernization at the expense of capacity or number of units.

Infantry battalions serve as a surrogate measure for the Corps' total force. As the first to respond to many contingencies, the Marine Corps requires a large degree of flexibility and self-sufficiency, and this drives its approach to organization and deployment of operational formations that, although typically centered on infantry units, are composed of ground, air, and logistics elements. Each of these assets and capabilities is critical to effective deployment of force, and any one of them can be a limiting factor in the conduct of training and operations.

Aviation. Marine aviation has been particularly stressed by insufficient funding. Although operational requirements have not decreased, fewer Marine aircraft have been available for tasking or training. For example, according to its 2019 aviation plan, the USMC currently fields 16 tactical fighter squadrons, compared to 19 in FY 2017 and around 28 during Desert Storm.¹² Though the availability of legacy aircraft has slowly improved—the result of increased funding for spare parts and implementation of recommendations from independent readiness reviews—the Marine Corps “is still challenged with low readiness rates in specific communities,” such as F/A-18 squadrons.¹³

The Corps is introducing the F-35 platform into the fleet, but F/A-18 Hornets remain “the primary bridging platform to F-35B/C” and will remain in the force until 2030.¹⁴ This primary tactical air (TACAIR) capability has to be carefully managed as it is no longer in production. The Navy completed its divestment of F/A-18 A-D models during FY 2019, making them available to the Marines and enabling the Corps to replace its older aircraft with planes that are less old.¹⁵ To further mitigate the aging of its fleet until full transition to the F-35, the Corps is also looking to acquire F/A-18s from other countries as opportunities arise.¹⁶

The Corps will maintain five squadrons of AV-8B Harriers, introduced in 1985, until FY 2022.¹⁷ In its heavy-lift rotary wing fleet, the Corps began a reset of the CH-53E in 2016 to bridge the procurement gap to the CH-53K and aims to “reset...the entire 143-aircraft fleet by FY20,” but this will still leave the service 57 aircraft short of the stated heavy-lift requirement of 200 airframes, and the Marine Corps will not have enough helicopters to meet its heavy-lift requirement without the transition to the CH-53K.¹⁸

According to the Corps' 2019 aviation plan, the transition to the MV-22 Osprey is complete, with 18 fully operational squadrons in the active component.¹⁹ However, depending on the results of an ongoing requirements-based analysis, the procurement objective could increase to 380 aircraft.²⁰ The Osprey has been

called “our most in-demand aircraft,”²¹ which means the Marine Corps has to reconcile high operational tempos (OPTEMPOs) with the objective of maintaining the platform in its inventory “for at least the next 40 years.”²² At present, MV-22 readiness has plateaued at 55 percent due to a wide variety in aircraft configuration, which complicates assessing problems and ordering parts—affecting repairs—and shortfalls in maintenance personnel.²³ The Corps has committed to funding its Common Configuration-Readiness and Modernization (CC-RAM) and Nacelle Improvement (NI) programs to increase availability by 15 percent.²⁴

Amphibious Ships. Although amphibious ships are assessed as part of the Navy’s fleet capacity, Marines operate and train aboard naval vessels. This makes “the shortage of amphibious ships...the quintessential challenge to amphibious training.”²⁵ The Navy was operating only 32 amphibious warfare ships as of August 20, 2019,²⁶ and is projected to continue operating short of the 38-ship requirement until FY 2033, thus limiting what the Marine Corps can do in operational, training, and experimentation settings.²⁷

Because of this chronic shortfall in amphibious ships, the USMC has relied partially on land-based Special Purpose Marine Air-Ground Task Forces (SPMAGTFs). SPMAGTFs have enabled the Corps to meet Joint Force requirements, but land-based locations still “lack the full capability, capacity and strategic and operational agility that results when Marine Air-Ground Task Forces (MAGTFs) are embarked aboard Navy amphibious ships.”²⁸ The lack of variety in amphibious shipping, especially as the Corps considers the implications of evolving enemy capabilities, and concerns about the shortage of amphibious lift in general make the exploration of alternatives with the Navy an increasingly urgent need.²⁹

The USMC continues to invest in the recapitalization of legacy platforms in order to extend platform service life and keep aircraft and amphibious vehicles in the fleet, but as these platforms age, they also become less relevant to the evolving modern operating environment.

Thus, while they do help to maintain capacity, programs to extend service life do not provide the capability enhancements that modernization programs provide. The result is an older, less-capable fleet of equipment that costs more to maintain.

Capability

The nature of the Marine Corps’ crisis response role requires capabilities that span all domains. The USMC ship requirement is managed by the Navy and is covered in the Navy’s section of the *Index*. The Marine Corps has been focusing on “essential modernization” and emphasizing programs that “underpin our core competencies,” making the Amphibious Combat Vehicle (ACV) and F-35 JSF programs its top two priorities.³⁰ The Corps has committed nearly one-third of its overall budget—\$13.8 billion in FY 2019 and a requested \$13.9 billion for FY 2020—to force modernization.³¹

Of the Marine Corps’ current fleet of vehicles, its amphibious vehicles—specifically, the Assault Amphibious Vehicle (AAV-7A1) and Light Armored Vehicle (LAV)—are the oldest, with the AAV-7A1 averaging over 40 years old and the LAV averaging 26 years old.³² The Corps had pursued a survivability upgrade for the AAV to extend its useful service life, but progress with the ACV program was better than expected, so the service canceled its contract with Science Applications International Corporation (SAIC) in September 2018.³³

Service testimony notes that the Marine Corps is “beginning to look at a replacement” for the LAV, which will “help accelerate movement to the acquisition phase within the next four to five years.”³⁴ As noted, the average age of the LAV is 26 years. Comparatively, the Corps’ M1A1 Abrams inventory is 28 years old with an estimated 33-year life span,³⁵ while as of 2014, the newest HMMWV variant had already consumed half of its projected 15-year service life.³⁶

All of the Corps’ main combat vehicles entered service in the 1970s and 1980s, and service life extensions, upgrades, and new

generations of designs have allowed the platforms to remain in service. However, these vehicles are rapidly becoming poorly suited to the changing threat environment. The President's FY 2020 budget seeks to provide \$13.9 billion for modernization across the service, with \$3.1 billion of this amount to be used for ground-related procurement in an effort to update key combat and combat-related systems that will extend the service utility of aging primary ground combat platforms.³⁷

The age profiles of the Corps' aircraft are similar to those of the Navy's. In 2018, the USMC had 251 F/A-18A-Ds (including one reserve squadron) and six EA-6Bs in its primary mission aircraft inventory,³⁸ and both aircraft had already surpassed their originally intended life spans. The Marine Corps completed retirement of its EA-6B squadrons in FY 2019.³⁹

Unlike the Navy, the Corps did not acquire the newer F/A-18 E/F Super Hornets; thus, a portion of the older F/A-18 Hornets are going through a service life extension program to extend their life span to 10,000 flight hours from the original 6,000 hours.⁴⁰ This is intended to bridge the gap until the F-35Bs and F-35Cs enter service to replace the Harriers and most of the Hornets.

As the Navy accelerated its transition to the Super Hornet, it transferred its "best of breed" aircraft from its F/A-18A-D inventory to the Marine Corps and scrapped the remaining for parts to help maintain the Corps' legacy fleet through FY 2030.⁴¹ The AV-8B Harrier, designed to take off from the LHA and LHD amphibious assault ships, will be retired from Marine Corps service by 2026.⁴² The AV-8B received near-term capability upgrades in 2015, which continued in 2017 in order to maintain its lethality and interoperability until the F-35 transition is completed in FY 2022.⁴³

The Corps declared its first F-35B squadron operationally capable on July 31, 2015, after it passed an "Operational Readiness Inspection" test and has reported that the aircraft reached full operational capability in late 2018.⁴⁴ During FY 2019, VMFA-211 made the first full operational deployment with a Marine

Expeditionary Unit (MEU) when it sailed with the 13th MEU from September 2018 to February 2019, supporting combat operations in Afghanistan, Iraq, and Syria.⁴⁵ To date, three F-35B squadrons have been delivered to the Marine Corps, including two operational squadrons and one fleet replacement squadron, totaling 158 aircraft comprised of 135 F-35Bs and 23 F-35Cs.⁴⁶

The Marine Corps has two Major Defense Acquisition (MDAP) vehicle programs: the Joint Light Tactical Vehicle (JLTV) and Amphibious Combat Vehicle (ACV).⁴⁷ The JLTV is a joint program with the Army to acquire a more survivable light tactical vehicle that was originally intended to replace a percentage of the older HMMWV fleet, introduced in 1985, although that objective changed in 2019. The Army retains overall responsibility for JLTV development through its Joint Program Office.⁴⁸

Following FY 2015 plans for the JLTV, the program awarded a low-rate initial production contract, which included a future option of producing JLTVs for the Marine Corps, to defense contractor Oshkosh.⁴⁹ As of June 2017, despite a delay in the program's full-rate production decision and reduced procurement quantities in FY 2016 and FY 2017, the Corps expected to complete its prior acquisition objective of 5,500 by FY 2023.⁵⁰ In mid-August 2019, the Corps announced that it would increase its procurement of JLTVs to around 15,000, effectively enabling replacement of its 15,390-vehicle HMMWV fleet.⁵¹ The JLTV program has reached sufficient production maturity that the Corps is fielding the vehicle to its first operational unit, 3rd Battalion, 8th Marines, located at MCB Camp Lejeune, North Carolina.⁵²

The Marine Corps is replacing the AAV-7A1 with the ACV. The ACV, which took the place of the Expeditionary Fighting Vehicle (EFV), "has been structured to provide a phased, incremental capability."⁵³ The AAV-7A1 was to be replaced by the EFV, a follow-on to the cancelled Advanced AAV, but the EFV was also cancelled in 2011 as a result of technical obstacles and cost overruns. Similarly, the Corps planned to replace the LAV inventory with the Marine

Personnel Carrier (MPC), which would serve as a Light Armored Vehicle with modest amphibious capabilities but would be designed primarily to provide enhanced survivability and mobility once ashore.⁵⁴ However, budgetary constraints led the Corps to shelve the program, leaving open the possibility that it might be resumed in the future.

After restructuring its ground modernization portfolio, the Marine Corps determined that it would combine its efforts by upgrading 392 of its legacy AAVs and continuing development of the ACV to replace part of the existing fleet and complement its AAVs.⁵⁵ This would help the Corps to meet its requirement of armored lift for 10 battalions of infantry.⁵⁶ BAE Systems won the contract award to build the ACV 1.1 in June 2018⁵⁷ and is expected to deliver the first 30 vehicles by the fall of 2019, for which the FY 2019 budget provided funding. The Marine Corps plans to field 204 vehicles in the first increment—enough to support lift requirements for two infantry battalions.⁵⁸

The ACV 1.1 platform is notable because it is an amphibious wheeled vehicle instead of a tracked vehicle, capable of traversing open water only with the assistance of Navy shore connectors such as Landing Craft, Air Cushion Vehicles (LCAC). Development and procurement of the ACV program will be phased so that the new platforms can be fielded incrementally alongside a number of modernized AAVs.⁵⁹ Plans call for a 694-vehicle program of record (a combination of upgraded AAVs and ACVs), with the first battalion to reach initial operating capability (IOC) in FY 2020, and for modernizing enough of the current AAV fleet to outfit six additional battalions, two in the first increment and four in the second. The Corps has requested \$318 million in its FY 2020 budget to fund the “first full-rate production lot of 56 vehicles,” nearly double the \$167 million it received for the ACV in FY 2019.⁶⁰

Regarding aviation, Lieutenant General Brian Beaudreault, then Marine Corps Deputy Commandant for Plans, Policies, and Operations, testified in 2018 that “[t]he single most effective way to meet our NDS responsibilities,

improve overall readiness, and gain the competitive advantage required for combat against state threats is through the modernization of our aviation platforms.”⁶¹ The F-35B remained the Marine Corps’ largest investment program in FY 2019. The Corps announced IOC of the F-35B variant in July 2015.⁶² Total procurement will consist of 420 F-35s (353 F-35Bs and 67 F-35Cs), 158 of which have been acquired.⁶³ AV-8Bs and F/A-18A-Ds continue to receive interoperability and lethality enhancements in order to extend their useful service lives during the transition to the F-35.

Today, the USMC MV-22 Osprey program is operating with few problems and nearing completion of the full acquisition objective of 360 aircraft.⁶⁴ The Marine Corps has increased its total of MV-22 squadrons to 16 fully operational squadrons in the active component toward a final objective of 18 active and two reserve component squadrons.⁶⁵ The MV-22’s capabilities are in high demand from the Combatant Commanders (CCDR), and the Corps is adding capabilities such as fuel delivery and use of precision-guided munitions to the MV-22 to enhance its value to the CCDR.

The Corps continues to struggle with sustainment challenges in the Osprey fleet. Since procurement of the first MV-22 in 1999, the fleet has developed more than 70 different configurations.⁶⁶ This has resulted in increased logistical requirements, as maintainers must be trained to each configuration and spare parts are not all shared. The Marine Corps developed its CC-RAM program to consolidate the inventory to a common configuration at a rate of “2–23 aircraft installs per year” beginning in FY 2018.⁶⁷

The USMC’s heavy-lift replacement program, the CH-53K, conducted its first flight on October 27, 2015.⁶⁸ The CH-53K will replace the Corps’ CH-53E, which is now 29 years old. Although “unexpected redesigns to critical components” delayed a low-rate initial production decision, the program achieved Milestone C in April 2017, and the President’s FY 2019 budget requested \$1,601.8 million for the procurement of eight aircraft in its second

year of low-rate initial production.⁶⁹ The Corps continued this effort by purchasing another six aircraft in FY 2020 for \$1.0 billion and determined that it would invest an additional almost \$517 million in continued engineering manufacturing development initiatives.⁷⁰

The helicopter is now forecast to reach IOC in FY 2021,⁷¹ six years later than initially anticipated. This is of increasing concern as the Marine Corps maintains only 138 CH-53Es and will not have enough helicopters to meet its heavy-lift requirement of 220 aircraft without the transition to the CH-53K, which even when fully implemented will still fall short by 20 aircraft.⁷²

Readiness

The Marine Corps' first priority is to be the military's crisis response force, which is why investment in immediate readiness has been prioritized over capacity and capability.⁷³ Although this is sustainable for a short time, concerns expressed when the Budget Control Act was passed in 2011 have proved to be impediments in the present. Modernization is now a primary inhibitor of readiness as keeping aging platforms in working order becomes increasingly challenging and aircraft are retired before they can be replaced, leaving a smaller force available to meet operational requirements and further increasing the use of remaining platforms.

With respect to training, the Marine Corps continues to prioritize training for deploying and next-to-deploy units. Marine operating forces as a whole continue to average a 1:2 deployment-to-dwell ratio.⁷⁴ At this pace, readiness is consumed as quickly as it is built, leaving minimal flexibility to respond to contingencies.

Marine Corps guidance identifies multiple levels of readiness that can affect the ability to conduct operations:

Readiness is the synthesis of two distinct but interrelated levels. a. unit readiness—The ability to provide capabilities required by the combatant commanders to execute

their assigned missions. This is derived from the ability of each unit to deliver the outputs for which it was designed. b. joint readiness—The combatant commander's ability to integrate and synchronize ready combat and support forces to execute his or her assigned missions.⁷⁵

As noted, the availability of amphibious ships, although funded through the Navy budget, has a direct impact on the Marine Corps' joint readiness. For example, while shore-based MAGTFs can maintain unit-level readiness and conduct training for local contingencies, a shortfall in amphibious lift capabilities leaves these units without “the strategic flexibility and responsiveness of afloat forces and... constrained by host nation permissions.”⁷⁶

In December 2017, a U.S. Government Accountability Office (GAO) official testified that even though deploying units completed all necessary pre-deployment training for amphibious operations, the Marine Corps was “unable to fully accomplish...home-station unit training to support contingency requirements, service-level exercises, and experimentation and concept development for amphibious operations.”⁷⁷ Lieutenant General Beaudreault identified the shortage of available amphibious ships as the primary factor in training limitations. Of the 32 amphibious ships in the U.S. fleet at the time, only 16 were considered “available to support current or contingency operations.”⁷⁸ Regrettably, conditions have not improved since then. While infantry battalions can maintain unit-level readiness requirements, their utility depends equally on their ability to deploy in defense of U.S. interests.

Marine aviation in particular is experiencing significant readiness shortfalls. Last year, the *2018 Marine Aviation Plan* found that “[a]cross all of Marine aviation, readiness is below steady-state requirements.”⁷⁹ With a smaller force structure and fewer aircraft available for training, aviation units were having difficulty keeping up with demanding operational requirements. Lieutenant General Stephen Rudder, Marine Corps Deputy Commandant for

Aviation, testified in December 2017 that most Marine aviation squadrons lacked the “number of ready aircraft required to ‘fight tonight.’”⁸⁰

In 2019, progress has been made, but the Corps still cites challenges: “[Aviation] readiness trend lines [are] moving up,” but “our backlog of deferred readiness, procurement, and modernization requirements has grown in the last decade and a half and can no longer be ignored,” and Marine aviation is “still challenged with low readiness rates in specific communities.”⁸¹ The Corps has not been explicit in citing specific readiness rates in public testimony, but it is clear that readiness problems remain

despite some improvement in Marine aviation readiness over the past few years.

The Marines Corps’ Ground Equipment Reset Strategy, developed to recover from the strain of years of sustained operations in Iraq and Afghanistan, has had a positive impact after being delayed from the end of FY 2017 to FY 2019. As of May 2019, the Marine Corps had reset approximately 99 percent of its ground equipment and “returned 72% of [its] ground equipment to the operating forces.”⁸² Reconstituting equipment and ensuring that the Corps’ inventory can meet operational requirements are critical aspects of readiness.

Scoring the U.S. Marine Corps

Capacity Score: Weak

Based on the deployment of Marines across major engagements since the Korean War, the Corps requires roughly 15 battalions for one MRC.⁸³ This translates to a force of approximately 30 battalions to fight two MRCs simultaneously. The government force-sizing documents that discuss Marine Corps composition support this. Though the documents that make such a recommendation count the Marines by divisions, not battalions, they are consistent in arguing for three Active Marine Corps divisions, which in turn requires roughly 30 battalions.

With a 20 percent strategic reserve, the ideal USMC capacity for a two-MRC force-sizing construct is 36 battalions. Unless a dramatic change in circumstances were to occur, such as the onset of a major conflict, it is unlikely that the Corps will push to expand end strength to this number. In fact, the prevailing federal budget environment and the effects of nearly 20 years of operations on equipment and readiness have led the Corps to prioritize modernization and readiness over force capacity and even to consider trading capacity for improvements in the other two areas.⁸⁴

Manpower is by far the biggest expense for the Marines. As requested for the Corps’ FY 2020 budget, the military personnel account

at \$14.2 billion⁸⁵ dwarfs both the funding requested for operations and maintenance (\$3.9 billion)⁸⁶ and the funding requested for procurement of new equipment (\$3.1 billion).⁸⁷ Nevertheless, the historical record of the use of Marine Corps forces in a major contingency argues for the larger number.

More than 33,000 Marines were deployed in Korea, and more than 44,000 were deployed in Vietnam. In the Persian Gulf, one of the largest Marine Corps missions in U.S. history, some 90,000 Marines were deployed, and approximately 66,000 were deployed for Operation Iraqi Freedom.

As the Persian Gulf War is the most pertinent example for this construct, an operating force of 180,000 Marines is a reasonable benchmark for a two-MRC force, not counting Marines that would be unavailable for deployment (assigned to institutional portions of the Corps) or that are deployed elsewhere. This is supported by government documents that have advocated a force as low as 174,000 (1993 Bottom-Up Review) and as high as 202,000 (2010 Quadrennial Defense Review), with an average end strength of 185,000 being recommended. However, as recent increases in end strength have not corresponded with deployable combat power, these government recommendations may have to be reassessed.

- **Two-MRC Level:** 36 battalions.
- **Actual 2018 Level:** 24 battalions.

Despite an increase in manpower, the Corps continues to operate with less than 67 percent of the number of battalions relative to the two-MRC benchmark. Marine Corps capacity is therefore again scored as “weak.”

Capability Score: Marginal

The Corps receives scores of “weak” for “Capability of Equipment,” “marginal” for “Age of Equipment” and “Health of Modernization Programs,” but “strong” for “Size of Modernization Program.” Therefore, the aggregate score for Marine Corps capability is “marginal.”

Readiness Score: Marginal

As in FY 2018, the Marine Corps again prioritized next-to-deploy units during FY 2019. As the nation’s crisis response force, the Corps requires that all units, whether deployed or non-deployed, must be ready. However, since most Marine Corps ground units are meeting readiness requirements only immediately before deployment and the Corps’ “ready bench” would “not be as capable as necessary” if deployed on short notice, USMC readiness is sufficient to meet ongoing commitments only at reported deployment-to-dwell ratios of 1:2. This means that only a third of the force—the deployed force—could be considered fully ready. Furthermore, in testimony provided to various committees of the House and Senate

and in its publicly available program documents, the USMC has continued to report challenges in aviation unit readiness.

Marine Corps officials have not been clear as to the status of ground component readiness during FY 2019, but in testimony to Congress during the year, as noted, they have emphasized a positive upward trend as a consequence of additional funding provided by Congress in FY 2018 and FY 2019 and a shift in focus toward high-end conventional warfare. The lack of a “ready bench” in depth (too few units and shortages of personnel in key maintenance fields) and continued challenges in readiness levels among the USMC aircraft fleet perhaps offset some of the gains made by increased effort, funding, and focus, but the *2020 Index* assesses Marine Corps readiness levels as “marginal,” an improvement over the *2019* score of “weak.”

Overall U.S. Marine Corps Score: Marginal

Marine Corps congressional testimony during 2019 struck an optimistic note, and increased funding for readiness and an emphasis on modernization give strong support to the Corps’ readiness-recovery efforts, but effects will take time to materialize across the force. Hence, the need for continued attention and support from the Administration and Congress. However, gains have been made over the past year, and the Marine Corps has increased its overall score to “marginal” in the *2020 Index*, which is both in line with its sister services and a welcome return from its overall assessment of “weak” in 2018 and 2019.

U.S. Military Power: Marine Corps

	VERY WEAK	WEAK	MARGINAL	STRONG	VERY STRONG
Capacity		✓			
Capability			✓		
Readiness			✓		
OVERALL			✓		

MARINE CORPS SCORES



Procurement and Spending ■ Through FY 2019 ■ Pending

Main Battle Tank

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p>M1A1 Abrams Inventory: 447 Fleet age: 16 Date: 1990</p> <p>The M1A1 Abrams is the main battle tank and provides the Marine Corps with heavy-armor direct fire capabilities. It is expected to remain in service beyond 2028.</p>	2	1	None		

Light Wheeled Vehicle

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p>HMMWV Inventory: 15,390 Fleet age: 21 Date: 1983</p> <p>The HMMWV is a light wheeled vehicle used to transport troops with some measure of protection against light arms, blast, and fragmentation. The expected life span of the HMMWV is 15 years. Some HMMWVs will be replaced by the Joint Light Tactical Vehicle (JLTV).</p>	2	1	<p>Joint Light Tactical Vehicle (JLTV) Timeline: 2017-2022</p> <p>The JLTV is a vehicle program meant to replace all of the HMMWVs and improve reliability, survivability, and strategic and operational transportability. This is a joint program with the Army. Full-rate production is scheduled for early 2019. JLTVs should be at full operational capability in FY2022. The first set of JLTVs were fielded in March 2019; IOC was achieved in mid-summer 2019 with fielding at Camp Lejeune, NC</p>	5	5
			<p>PROCUREMENT</p> <p>2,515 12,485</p>	<p>SPENDING (\$ millions)</p> <p>\$1,001 \$4,999</p>	

NOTES: See page 452 for details on fleet ages, dates, and procurement spending. JLTV spending figures reflect the full joint program spending.

MARINE CORPS SCORES



Procurement and Spending ■ Through FY 2019 ■ Pending

Amphibious Assault Vehicle

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p>AAV Inventory: 1,200 Fleet age: 41 Date: 1972</p> <p>The Amphibious Assault Vehicle transports troops and cargo from ship to shore. In September 2018, the USMC cancelled a survivability upgrade for this platform.</p>	1	1	<p>Amphibious Combat Vehicle (ACV)</p> <p>Timeline: 2018–2021</p> <p>The ACV is intended to replace the aging AAV. The first ACVs are expected to be fielded in 2020. Full operational capability is scheduled for 2023.</p>	3	5
<p>LAV-25 Inventory: 625 Fleet age: 37 Date: 1983</p> <p>The LAV is a wheeled light armor vehicle with modest amphibious capability used for armored reconnaissance and highly mobile fire support. It has undergone several service life extensions (most recently in 2012) and will be in service until 2035.</p>			2	<p>PROCUREMENT SPENDING (\$ millions)</p>	

Attack Helicopters

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p>AH-1W Super Cobra Inventory: 77 Fleet age: 24 Date: 1986</p> <p>The Super Cobra is an attack helicopter that provides the Marines with close air support and armed reconnaissance. The Super Cobra will remain in service until 2021; it is being replaced by the AH-1Z.</p>	1	2	<p>AH-1Z</p> <p>Timeline: 2014–2022</p> <p>The new AH-1Z Viper program is part of a larger modification program to the H-1 platform. Replacing the AH-1W, the Z-Variant will serve as the next generation of attack aircraft. The new H-1 rotorcraft will have upgraded avionics, rotor blades, transmissions, landing gear, and structural modifications to enhance speed, maneuverability, and payload. It is scheduled for full operational capability in 2021.</p>	5	4
<p>AH-1Z Viper Inventory: 100 Fleet age: 6 Date: 2010</p> <p>The AH-1Z Viper is the follow on to the AH-1W Cobra attack helicopter. The Viper has greater speed, payload, and range, as well as a more advanced cockpit. It is gradually replacing the Cobra-variant and should do so fully by 2021. The expected operational life span of the Viper is 30 years.</p>			5	<p>PROCUREMENT SPENDING (\$ millions)</p>	

NOTE: See page 452 for details on fleet ages, dates, and procurement spending.

MARINE CORPS SCORES



Procurement and Spending ■ Through FY 2019 ■ Pending

Airborne Electronic Attack Aircraft/ Ground Attack Aircraft

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p>AV-8B</p> <p>Inventory: 110 Fleet age: 28 Date: 1985</p> <p>The Harrier is a vertical/short takeoff and landing aircraft designed to fly from LHA/LHDs. It provides strike and reconnaissance capabilities. The aircraft is being replaced by the F-35B and will be fully retired around 2024.</p>	5	1	<p>F-35B/C</p> <p>Timeline: 2007-2031</p> <p>The Corps is purchasing 353 F-35Bs and 67 F-35Cs. The F-35B is the USMC version of the Joint Strike Fighter program. It is meant to replace the AV-8B Harrier, completing transition by 2030. The B-Variant achieved initial operational capability in July 2015. Full operational capability for both variants is expected in the late 2020s.</p>	4	4
<p>F-35B</p> <p>Inventory: 61 Fleet age: 3 Date: 2015</p> <p>The F-35B is the Marine Corps' short takeoff and vertical landing variant replacing the AV-8B Harrier. Despite some development problems, the F-35B achieved IOC in July 2015.</p>	5	5	<p>PROCUREMENT</p> <p>98 271</p> <p>SPENDING (\$ millions)</p> <p>\$19,549 \$35,727</p>		
<p>F/A-18 A-D</p> <p>Inventory: 251 Fleet age: 29 Date: 1978</p> <p>Many aircraft in the F/A-18 fleet have logged about 8,000 hours compared with the originally intended 6,000. However, the fleet life has been extended until 2030. This is necessary to bridge the gap to when the F-35Bs and F-35Cs are available.</p>	3	2			

NOTE: See page 452 for details on fleet ages, dates, and procurement spending.

MARINE CORPS SCORES



Procurement and Spending ■ Through FY 2019 ■ Pending

Medium Lift

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p>MV-22</p> <p>Inventory: 306 Fleet age: 13 Date: 2007</p> <p>The Osprey is a vertical takeoff and landing tilt-rotor platform designed to support expeditionary assault, cargo lift, and raid operations. The program is still in production. The life expectancy of the MV-22 is 23 years.</p>	4	5	<p>MV-22B</p> <p>Timeline: 2007–2019</p> <p>Fielding of the Osprey is nearly complete, and the platform is meeting performance requirements. The modernization program is not facing any serious issues. Full operational capability is expected in September 2019.</p>	5	5
			<p>PROCUREMENT</p>	<p>SPENDING (\$ millions)</p>	

Heavy Lift

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p>CH-53E Super Stallion</p> <p>Inventory: 138 Fleet age: 28 Date: 1981</p> <p>The CH-53E is a heavy-lift rotorcraft. The aircraft will be replaced by the CH-53K, which will have a greater lift capacity. The program life of the CH-53E is 41 years.</p>	2	1	<p>CH-53K</p> <p>Timeline: 2017–2029</p> <p>The program is in development. It is meant to replace the CH-53E and provide increased range, survivability, and payload. The program still has not fully developed the critical technology necessary. The program is expected to reach initial operational capability in December 2019 and full operational capability in 2029.</p>	5	3
			<p>PROCUREMENT</p>	<p>SPENDING (\$ millions)</p>	

Tanker

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p>KC-130J</p> <p>Inventory: 45 Fleet age: 8 Date: 2005</p> <p>The KC-130J is both a tanker and transport aircraft. It can transport troops, provide imagery reconnaissance, and perform tactical aerial refueling. This platform is currently in production. The airframe is expected to last 38 years.</p>	4	5	<p>KC-130J</p> <p>Timeline: 2005–2031</p> <p>The KC-130J is both a tanker and transport aircraft. The procurement program for the KC-130J is not facing acquisition problems.</p>	4	4
			<p>PROCUREMENT</p>	<p>SPENDING (\$ millions)</p>	

NOTES: See Methodology for descriptions of scores. The Fleet age is the average between the last year of procurement and the first year of initial operational capability. The date is when the platform reached initial operational capability. The timeline is from the start of the platform's program to its budgetary conclusion. Spending does not include advanced procurement or research, development, test, and evaluation. The total program dollar value reflects the full F-35 joint program, including engine procurement. As part of the F-35 program, the Navy is purchasing 67 F-35Cs for the U.S. Marine Corps, which are included here. The MV-22B program also includes some costs from the U.S. Air Force procurement. The AH-1Z costs include costs of UH-1 procurement.

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