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The special relationship and cohesion between Marine fixed-wing aviation and Marine ground forces is eroding due to several factors. This problem is driven by personnel shortfalls in the aviation community, lack of aviator attendance at residence schools, and a general isolation of fixed-wing aviators within their primary MOS due to intense training requirements to maintain proficiency in operating a complex platform such as the F-35. The Marine Corps must act now to re-energize the cohesion between fixed-wing aviators and those they support on the ground, or otherwise must reconsider the validity of the MAGTF concept in an ever-evolving global environment. Opportunities exist including increasing fixed-wing aviator attendance at resident PME, expanding immersion opportunities for fixed-wing aviators in ground units, to altering current procurement plans for the F-35, and potentially developing a cheaper, less complex close air support platform.

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The ACE that Divorced the MAGTF: A Widening Divide Between Marine Fixed-Wing Aviation and Those Reliant on its Support, and the Impact to Future MAGTF Employment

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Introduction

The battlefields of World War I and the Banana Wars ushered in a paradigm change with the advent of fixed-wing aviation support for military operations. The third dimension of aviation operations introduced the ability to observe battlefields, rapidly move forces, and most importantly, provide effective aviation fire support to ground forces. From initial experimentation in the jungles of the Caribbean, to the contemporary approach of fighting as part of an Air-Ground team, Marines have worked tirelessly to perfect the tandem of air and ground combat, often with remarkable results. Despite such synergy, the integration of Marine aviation and ground elements has not been without controversy or struggle as it continues into its second century of existence.

Today, the major challenges for Marine fixed-wing aviation involve cost, manpower shortages, maintaining a balance between service culture and relevance, and keeping up with the joint force. As the Marine Corps attempts to man, train, and equip for future conflict against peer competitors, it must carefully examine current and planned fixed-wing investments in capabilities to ensure they meet the demands of the service today, in the next fifteen years, and beyond. Throughout these ongoing challenges, the Marine Corps continues to reinforce the Marine Air Ground Task Force (MAGTF) concept as illustrated in the 2016 Marine Operating Concept.[1] The Corps's leaders continue to profess the validity of the MAGTF which affords leaders a scalable and flexible force, built around a special relationship between ground, aviation, and support units.

Unfortunately, a vital portion of the MAGTF, the fixed-wing community, is becoming further culturally isolated from their ground peers. Several factors drive this division including manpower shortages and the high number of hours required to master complex platforms like the

F-35 when compared to legacy platforms such as the F/A-18. In addition, the highly capable F-35 serves as a lucrative asset for the joint force, further pulling the limited and specialized Marine air support from the MAGTF in favor of joint missions. In light of these challenges, the Marine Corps must take actions now to protect and reinforce the foundational strength of the MAGTF, the close integration of the air/ground team, enabled by the unique bond between Marine air and ground forces. Without this bond, the effectiveness of the MAGTF becomes questionable and warrants criticism of its continued viability in a conflict within the next fifteen years.

In December 1963, the Marine Corps published MCO 3120.3, *The Organization of Marine Air-Ground Task Forces,* codifying the MAGTF. Today, the Marine Corps continues to struggle with how best to balance the immense capability sought from Marine aviation against limited personnel and fiscal resources. Compounding this, the Corps faces a wide-ranging service mission, as well as the uncertainty of tomorrow's conflict.[2] This struggle is not new; as early as 1920, aviation leaders including then Maj Alfred A. Cunningham sought to justify the utility and capability that aviation brought to the Marine Corps despite the belief of many ground officers that aviators weren't true Marines, and for their relative cost in manpower and equipment, they did not bring much to the organization.[3]

Today the debate over the F-35 continues in many forums, from school houses to command posts, and in intellectual forums including the *Marine Corps Gazette.* Even the *Gazette's* then Editor, John Keegan, has questioned how despite its immense capability, the F-35 will improve close-air support for Marines.[4] Authors including LtCol James Hammond have argued that rising aviation procurement costs are a direct threat to sustaining the Corps, and that the service should instead focus on a revised strategy of both high and low-cost technology

development and acquisition.[5] Despite this ongoing internal conflict and debate, Marines quickly unite in the face of threats to divide the MAGTF in support of joint operations. However, as the nation's leaders consider conflict with peer adversaries which would demand the full strength of the joint force, Marine fixation on the MAGTF could potentially be seen as dogmatic and out of touch with the changing nature of conflict.

The F-35 provides a common platform with advanced capabilities for the joint force, while also creating considerable friction in manpower and resources, and requiring Marines to examine the validity of the existing MAGTF construct. With the procurement of an advanced joint platform such as the F-35, Marine fixed-wing aviation is experiencing not only an exponential rise in cost but also a magnetic attraction to joint service utilization based on the capabilities of the platform at the expense of the MAGTF. Illustrating this high cost, April 2018 Marine Future Year Defense Program (FYDP) documents, which depict planned spending for the next six years, show aviation expenditures of $81.2 billion green dollars for modernization and readiness, approximately 36% of the Marine Corps's baseline of roughly $225 billion. This expenditure is well over eight times more than the entire ground combat element expenditure over the same period of time.[6] Fears of return on investment for the MAGTF are certainly reasonable as the 2018 Marine Aviation Plan details in depth the fifth-generation capabilities of the F-35 B/C for the joint force, with far less detail on support to the Marine ground force.[7]

The highly technical platforms of the contemporary aviation combat element demand sustained proficiency and afford little time for Marine aviators to serve outside of the cockpit. Compounding this, the Corps faces roughly a 25% shortage of fixed-wing aviators, forcing the filling of billets in accordance with established priorities, with flying billets being the highest priority. This has led to a further isolated fixed-wing community that, beyond initial training at

the Basic School, spends little time immersed in the greater Marine Corps culture, or serving aside their ground counterparts.[8] This cultural rift may be the greatest threat to sustaining proficiency in existing MAGTF doctrine, as the common background and understanding of combined arms integration has been a key strength of the Corps since the inception of Marine aviation. Without this common understanding and special bond, Marines may no longer provide a unique advantage over joint or coalition aviators flying the same or similar platforms, a staggering concept for a service which has fought so hard to justify its employment as a MAGTF.

As the nation transitions to focus on conflict with peer enemies, the Marine Corps will undoubtedly be required to serve as an integral part of the joint force, in both supported and supporting roles. The Corps must be able to draw on joint capabilities to alleviate mission-specific shortfalls, but it also must maintain an enduring, cost-effective, and effective fixed-wing capability to ensure the effectiveness of the MAGTF in future conflict. Without a careful examination of the future of Marine fixed-wing aviation, the validity of the MAGTF concept in future conflict stands in doubt.

Combined Arms Cultural Resurgence

Currently, the Marine Corps is the only US military service that requires every officer to complete a common baseline training and education period beyond entry-level training. The six-month Basic Officer Course (BOC), administered by the Basic School in Quantico, VA, assembles all Marines, regardless of commissioning source or educational background, and further introduces them to Marine culture, doctrine, and ethos. Arguably most important, the BOC comprises a cross-section of roughly 250-300 peers of varying occupational specialties,

who will upon graduation, disperse throughout the fleet with a wide peer base to call on throughout the rest of their service. This bond is strengthened as Marines from nearly all MOSs maintain touchpoints through their service, be it at headquarters staffs, "B-Billets," or in resident schools.

Fixed-wing pilots are one group, who after initial training at TBS, for the most part, stay within their own community as the Corps puts a premium on aviation proficiency, which requires significant cockpit time. With the current shortage of company grade fixed-wing pilots, simply ensuring squadrons are staffed to functional levels is a significant hurdle for the Corps.[9] This stove-piped experience hurts the MAGTF and the development of all officers, as that opportunity to share experiences is removed. Unfortunately, the solution to keep squadrons staffed at full strength benefits the aviation community in the short-term, but presents long-term cohesion implications between aviators and ground Marines due to the stove-piped experience.

Multiple opportunities exist to improve the bond between air and ground officers including increasing fixed-wing aviator attendance at resident schools, increasing ground tours for aviators, or implementing air wing tours for ground officers. Unfortunately, several of these come at the short-term cost of reduced time in the cockpit and associated proficiency. Limited duration immersion/exchange opportunities for aviators to temporarily serve with a ground unit while assigned to a flying squadron provide a relative low impact option. While such a program doesn't provide sustained interaction amongst a wide group of peers as at resident school, it does provide an opportunity for aviation and ground Marines to build and maintain relationships, develop shared procedures, and enhance MAGTF foundations.

The lowest impact solution with the least Marines removed from the cockpit for extended periods of time, would be to broaden the Aviator Immersion Program began in 2016 by Marine

Air Group-36. In this multi-step program, a winged aviator assigned to a flying squadron, in the case of MAG-36 a rotary-wing pilot, is temporarily assigned to a ground unit, most likely in an infantry battalion, for a period of 45-60 days. The intent of this program is to rekindle, refine, and maintain the vital relationship between aviators and the ground combat units of the MEF.[10] In this enhanced program, fixed-wing MAGs could direct each squadron to assign one pilot to an infantry unit on a rotational basis to share ideas, dispel misconceptions, and establish a familiar relationship within the respective units. Ideally, this would align with preparations for a MAGTF-level exercise similar to Enhanced Mojave Viper or in support of Marine Weapons and Tactics Squadron's Weapons and Tactics Instructor course. This could minimize the impact of time out of the cockpit, and would also serve as an opportunity to improve MAGTF-level planning in support of a large-scale exercise or other evolution. Tighter bonds between the wing and the division at the squadron and battalion level would mark success for this program.

A feasible counter-argument exists that this aviator representation in ground units already exists in the form of forward air controllers and air officers, and this proposal would be a duplicative use of limited manpower. The unfortunate reality is that due to the shortage of company grade fixed-wing aviators, a disproportionate number of aviators assigned to ground units as air officers or forward air controllers are rotary-wing or KC-130J aviators, with limited to no close air support experience. The benefits gained by putting one fixed-wing pilot in an infantry unit for a limited duration, especially in support of an upcoming training or operational evolution, significantly outweigh the loss of one aviator from a squadron with few airplanes and few hours available to fly.

Another sign of the cultural rift is the lack of fixed-wing aviator presence at resident schools.[11] Fixed-wing aviator attendance at resident career, intermediate, and advanced

intermediate schools has plummeted in recent years. An examination of the selection results of the Commandant's Career-Level Education Board (CCLEB) and Commandant's Professional Intermediate-Level Board (CPIB) from FY15-19 shows a clear and significant decline in fixed-wing aviator selection, and thus attendance at resident school.[12] On the FY19 Commandant's Professional Intermediate-Level Education Board, of the 159 officers selected to attend Intermediate-level School in academic year 2019-2020, only seven are fixed-wing aviators.

Requiring fixed-wing aviators to complete either resident Marine Command and Staff or resident Expeditionary Warfare School would increase aviator attendance, to the benefit of the Marine Officer Corps. Making resident PME completion a promotion requirement would be the best forcing function, but would face significant Title-10 difficulty as PME completion in grade, let alone dictating resident completion is not included in current law.[13] The Marine Corps does however, control the Lieutenant Colonel Command Screening Program, which is responsible for selecting battalion and squadron commanders. With guidance from the Commandant of the Marine Corps, the board could make completion of one Marine resident school (EWS or CSC) a requirement for selection on the non-statutory board.

Adding completion of at least one Marine resident PME school would require a minor change to current education board selection processes, merely ensuring all eligible fixed-wing aviators are screened for school selection. Those deemed as the most highly qualified would be selected to attend resident school. As such a requirement of resident school completion would only pertain to command selection, and not promotion, the current structure of the education boards and command boards would not require alteration, providing a significant boost in MAGTF representation at resident schools and beyond with a relatively low impact to the fleet.

The two counter-arguments to this such a policy are that it would drive more aviators from service, further exacerbating an existing problem and that it would take more Marines from the cockpit, further reducing the operational readiness rates of fixed-wing squadrons. To the argument of further incentivizing Marines to depart the service, typically those who achieve selection for LtCol and aspire for squadron command have amassed roughly fifteen years of service and have by that point in their career demonstrated a desire to continue to serve. Additionally, specific to EWS, Marines are typically screened for career level school between four and eight years of service, well within the service obligation accrued upon the completion of flight school.

Extending fixed-wing aviation service obligation to twelve years, a decision which must be carefully weighed for potential recruiting impacts, would significantly increase the number of Marines screened for Command and Staff College. Marines who complete resident school at thirteen years, and accrue its additional two-year service obligation, are even closer to the tipping point with many choosing to remain in service until retirement. There is however, a valid concern that a plan requiring resident PME may further exacerbate the high percentage of junior officers who leave the service at the end of their initial commitment. Unless countered with effective messaging from service leaders stressing the importance of air-ground integration in service competence, widespread effects would be felt within a few years.

Critical to countering this fear, is relaxing current rigid, but unofficial, career roadmaps and allowing Marines an opportunity for resident PME that helps their progression rather than retard it. The toughest challenge with this is convincing the senior Marine colonels and general officers who serve as members of the command selection board. Informing these leaders on the change, stressing the importance of resident PME for the good of the MAGTF, and

demonstrating through selection results are each useful means to demonstrate the importance of formal integration of the MAGTF in educational institutions.

Re-establishing the air-ground cohesive bond in resident PME is vital to the success of the Corps in the immediate future and for the next fifteen years. Especially given the joint and combined nature of an expected conflict, the immersion with joint and international service representatives is critical to the ability of the Corps to contribute materially to future conflict and continue to demonstrate the high value for relatively low cost that the Corps provides to the nation. Arguably, the current manpower shortage of fixed-wing aviators makes any concept that would potentially further decrease retention rates unpalatable. Unfortunately, the severe long-term risk of a fractured service culture and inherent reduction in cohesion due to a stove-piped fixed-wing community requires the Corps to take measures now to reinvigorate the shared learning and relationships cultivated through formal service education, despite the potential risk to retention.

Re-focus Aviation Equipment Procurement

In addition to cultural challenges, current aviation procurement plans threaten the viability of the MAGTF. Existing Marine fixed-wing platforms like the F/A-18 have significant quantities of airplanes that are rapidly reaching, or have reached their service life expectancies, forcing the Corps to either extend the service life of older platforms or fully invest in the F-35.[14] Unlike the Navy, the Marine Corps elected in 1992 to avoid participation in the F/A-18 E/F Super Hornet program and instead chose to rely on legacy F/A-18 C/D platforms until the arrival of the F-35.[15] The Marine Corps has effectively gone "all in" on the F-35, and the successful

future of Marine fixed-wing aviation rests on its capability to fulfill advertised roles within the agreed upon procurement timeline.

At this point, efforts to deviate significantly from the F-35 and develop a new platform would only exacerbate the current readiness problem which could have additional cost and production challenges. This would be felt not only within the Department of Defense but also by Allies participating in the F-35 program. Instead, the Corps may be able to save considerable money and increase MAGTF capability by shifting procurement numbers between variants of the F-35. The Corps is currently procuring two models of the F-35; the "B" variant capable of short take-off and vertical landing (STOVL), and the "C" variant, intended for service aboard Navy aircraft carriers. As of April 2018, the Corps plans to purchase 420 F-35s, 353 of the "B" STOVL variant, and the remaining 67, the "C" carrier-based variant.[16] Each "B" variant is expected to cost roughly $115.5 million, while the "C" variants will be slightly less, at $107.7 million each.[17] This ratio of STOVL to carrier-based platforms is greatly out of synch compared to the Corps's existing Harrier and Hornet platforms, with roughly 106 AV-8B Harriers and 173 carrier-capable Hornets in service in the fleet and in training squadrons. This does not include the aircraft in depot-level maintenance, allocated to pre-positioning elements, or otherwise unavailable.

As LCDR Christopher Williams identified in his 2012 Master of Military Studies thesis, reducing the purchase of F-35Bs, and replacing them with F-35Cs, would result in a significant cost savings for the Corps.[18] The $7 million per aircraft savings would rapidly add up, as doubling the planned forty F-35Cs (to equip four total squadrons) to 80 total F-35Cs would result in a savings of $312 million when compared forty F-35Bs. This cost savings could be returned to the American people, or otherwise be re-allocated in the Marine budget to nearly double the

existing budget allocations for MEU and Unit Deployment Program readiness, or the collective allocation for MAGTF-TC, MAWTS-1, MCTOG, and MCLOG.[19] These are poignant examples of the possibilities that could be realized in training and readiness by reallocating savings produced from altering procurement numbers for the F-35 variants.

Beyond cost-savings, an increase in Marine F-35C aircraft and squadrons would present a greater level of Marine integration afloat with the Navy, a strong point for the Department of the Navy in a future with growing likelihood of peer competition and conflict as discussed in the 2018 National Defense Strategy (NDS). As discussed in the NDS, threats from potential adversaries like China or Russia are best met with joint and/or combined solutions, which maximize capabilities across domains and services. While a venerable Marine Expeditionary Unit may find itself as the lead in a supporting action, or as a supporting effort to Air Force, Army, or Naval action, it is improbable that the MAGTF will function independently in any form of significant peer or near-peer conflict. Further Marine integration on Navy carriers can strengthen interoperability and better serve Marine ground units fighting to get ashore, and fighting ashore in support of joint missions. Currently, of the ten US Navy carrier air wings, typically only two to three have Marine squadrons assigned. Increasing the number of carrier air wings with Marines assigned would greatly increase the likelihood of Marine aircraft supporting Marines ashore in joint operations. In addition, Naval aviators sharing ready rooms with Marine aviators on board carriers would be able to interact with their Marine counterparts and learn how to support Marines ashore.

The presence of carriers also brings a quality of mass with respect to sortie generation. Compared to an LHA/LHD with six to eight Harriers/F-35Bs, and typically limited to 10-hour flight day, a carrier brings roughly fifty fighter aircraft, and the ability to conduct sustained 24-

hour flight operations. A carrier in support of MAGTF operations with Marine and Navy F-35Cs aboard brings considerably more capability than the MEU/MEB can provide based on available aircraft, deck space, and maintenance capacity. A carrier benefits from a highly-developed supply system, robust facilities and storage, and an internal transport capability to fly parts and equipment aboard to increase readiness. While a MEU/MEB onboard LHA/LHDs can tap into this, it simply cannot come close to generating the capacity of a carrier.

While losing the STOVL capacity of the F-35B, the F-35C provides increased range, payload, and G-force rating when compared to the F-35B. The F-35C possesses a combat radius of 600 nm, 150 nm greater than the 450 nm combat radius of the F-35B. The F-35C also possesses an additional 3,000 lbs of payload capacity, up from the F-35B's 15,000 lbs to 18,000 lbs. Finally, the F-35C is capable of 7.5 G-force where the F-35B is limited to 7.0.[20] These facts coupled with a less complex drivetrain and improved maintenance capacity on a carrier or on land are likely to add a higher maintenance readiness to an aircraft variant that is more capable than the F-35B.

This proposal to reduce F-35Bs in favor of F-35Cs includes some risk and reliance on carrier presence, but with the 5th generation capability of the F-35 comes significant maintenance requirements in order to sustain the stealth capability. Carriers provide a much more capable and robust maintenance platform than a relatively austere LHA/LHD can for a complex platform like the F-35. Having F-35s on a MEU/MEB is one thing, but having ready F-35s on the MEU/ARG is a far greater challenge. The Marine Corps can further mitigate this challenge by embracing further integration with the Navy and striving to operate as a team where possible, and independently as a MEU/MEB where required.

Alternative CAS Platforms

Instead of trying to make the F-35 fit the Marine Corps close air support requirement, the Marine Corps could explore an alternative platform with a focused role of close air support. The F-35 is a platform capable of all six functions of Marine aviation, and also meets the requirements of the Air Force, Navy, and participating Ally nations. With its 5th generation and broad spectrum capability comes significant complexity and cost. By developing a platform that can operate from land or from a ship, and focuses primarily on close air support and less on other functions, the Corps could potentially develop a responsive, effective, and affordable airplane which would provide the vital close air support needed to effectively function as a MAGTF.

Marines have had a long-term affinity for the Air Force A-10 based on its formidable performance in the Gulf War, and for more recent operations in Afghanistan and Iraq. The single-pilot aircraft with a massive 30mm cannon, armored fuselage, and a 16,000-pound payload is a tremendous close air support asset with roughly an 800-mile range.[21] The critical shortfall for the existing A-10 in support of Marine operations is its inability to operate from aboard a ship. The Air Force is currently exploring replacements for the aging A-10 through its OA-X program, focused on a new low-cost, light attack platform. Specifically, the Air Force is seeking to offset some of the Air Force F-35A cost of $42,000 a flight hour, with a new platform costing roughly $4-5000 a flight hour.[22] Both the capability and the operating cost of this platform should immediately interest Marine planners.

The two main contestants to replace the A-10 are both propeller-driven, although neither are ship-capable. Both the AT-6 Wolverine and the A-29 Super Tucano are dual-piloted, possess a range in excess of 700 nm (970 nm for the AT-6), and cost between $15-20 million each compared to the $107-115 each for the F-35C/B.[23] Both are available with a scalable suite of

avionics, sensors, and fuel/armament points, with varying impacts to end unit cost.[24] Additionally, each is capable of carrying a 20+mm cannon, Advanced Precision Kill Weapons System (APKWS-II), 500-pound bombs to include LGB and JDAM, 2.75" rockets, and countermeasure systems.[25]

The shortfalls of these platforms for the Marine Corps are lack of air-to-air refueling and an inability to operate from a ship. Adding an air-to air refueling capability may be feasible, but obviously with a cost of time and money before the platform would be available. With a radius of 300-400 nautical miles, each currently compares to the combat radius of the existing AV-8B. For ship-board considerations, the Corps could forgo the requirement for the platform to be carrier or amphibious ship-capable, and rely on other ship-board platforms or permissive expeditionary bases for initial support. Once airfields are established within range of ground maneuver operations, the Corps could then transition to the land-based Marine close air support platform. This option while reducing cost, training requirements, and fielding time would reduce operational flexibility, and likely not be in the long-term best interest of the Corps.

The Corps should seek a similar platform that can operate from an L-class ship, providing the most responsive support. Further modifications aside, both current submissions provide a much lower-cost, small-footprint, and easier to maintain close air support platform that can be flown by Marine aviators, in support of Marines and the joint force. At the same time, this lesser-capable platform would stand a much lower chance of being absorbed by the joint force to support deep strike, electronic warfare, and other missions, leaving the Corps with a highly capable and responsive platform to support the MAGTF.

Unmanned Platforms

No examination of alternative close air support platforms would be complete without the inclusion of unmanned or remotely-piloted aircraft. The wars in Afghanistan and Iraq, as well as continued counter-terrorism efforts, have demonstrated the proven capability of platforms such as the MQ-1 Predator and MQ-9 Reaper. Unmanned platforms may be the future of military aviation in later generations, but due to a myriad of reasons, the ubiquitous presence of unmanned platforms for close air support is likely outside the time horizon of this paper. The chief impediments to wide-spread unmanned platforms are open and entrenched opposition from manned-platform aviators, as well as the cumbersome and lethargic defense procurement process. As an example, the current F-35 program began in 1995. Twenty-four years later, the Marine Corps has four operational F-35 squadrons of projected twenty-two.[26] Citing this lengthy transition time amongst manned platforms, it is a safe assumption that unmanned platforms will not become mainstays of U.S. military aviation in the next fifteen years.

The Marine Corps's RQ-21 Blackjack reconnaissance platform has endured numerous challenges, and despite being seven years into the program, all three Marine Expeditionary Forces have found that it falls below their requirements.[27] While the Marine Corps pursues the MAGTF UAS Expeditionary(MUX), a platform likely not to be seen for at least fifteen years, some authors such as Capt Olivia Garard, an unmanned aircraft commander, argue for the widespread use of the MQ-9 Reaper as a "guardian angel," to be flown by Marines from VMU squadrons. According to FY-17 USAF data, procurement of thirty-six Reapers and associated control stations would cost roughly $778 million, or roughly the cost of 6.75 F-35Bs. One sixteen-plane F-35B squadron could be exchanged for 106 MQ-9 Reapers. At only $489 a flight hour to operate, over time MQ-9 Reapers would save millions over the F-35B's $40,000 per

hour.[28] These extended range Reapers are capable of twenty-seven hours of endurance, and firing several munitions including GBU-12, GBU-38, and Hellfire missiles.

The inability to operate from a ship and the reliance on protected sites for maintenance and operations are key operational hurdles to the widespread use of existing drone technology. Resistance from manned aircraft aviators and hesitancy from ground forces to rely heavily on a remotely-operated system are both cognitive hurdles that advocates of unmanned systems must overcome. Finally, based on the ongoing friction over rising cost and delayed timelines of programs like the F-35 and Joint Light Tactical Vehicle(JLTV), advocates for a further significant investment of time and money in untested and unknown technology will likely face stiff resistance. Amongst these challenges could be cognitive resistance from Congress, a lethargic defense acquisitions process, and finally, defense and service guidance focusing on procurement of less expensive and more off-the-shelf technology in order to mitigate the lengthy procurement process.[29] For these reasons, the future of military aviation should continue to focus on manned platforms, while continuing to experiment and test unmanned platforms for their eventual wide-spread use.

Conclusion

Today the special bond between Marine fixed-wing aviation and the ground combat element is threatened from within the Corps due to procurement decisions and the resultant capabilities and impact to doctrine. Culturally, the fixed-wing aviation community continues to drift from the rest of the Corps due to a continually stove-piped service experience, with fixed-wing aviators spending little time out of the cockpit due to personnel shortfalls, and highly technical platforms requiring extensive time for mastery. This isolation prevents the sharing of

ideas and experience across the MAGTF and threatens that cohesive identity that Marines have exploited and demanded since the advent of Marine aviation. Despite technical proficiency demands, and shortfalls in personnel, Marine leaders should take steps to preserve, reinforce, and maintain this special bond in order for Marine Aviation to continue to provide a unique capability for the MAGTF, and for the MAGTF to maximize its capability for the nation.

While the F-35 provides the Marine Air Component an incredible ability to support the joint force with advanced missions and 5th generation capabilities, it poses a threat to the close integration and dedicated close air support vital to MAGTF success. Through modifications to existing procurement plans, or more significant measures to include the pursuit of cheaper, simpler, and more reliable CAS-focused Marine platforms, leaders can ensure the Corps is manned, trained, and equipped to answer the nation's call across the range of future conflict. What is clear, is on the current path with no correction, the validity of the Corps's foundational employment concept of the MAGTF is in significant jeopardy in future conflict.

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