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Aviation Ground Support  
“The Seventh Function of Marine Aviation”

Masters of Military Studies Thesis Paper

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## Executive Summary

**Title:** Aviation Ground Support “The Seventh Function of Marine Aviation”

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**Thesis:** Aviation Ground Support (AGS) is justified as being the seventh function of Marine aviation, and this would improve coordination and integration of AGS within the aviation community and provide a better understanding and appreciation for AGS capabilities.

**Discussion:** In the United States Marine Corps there are six functions of Marine aviation: (1) Air Reconnaissance, (2) Anti-Air Warfare, (3) Assault Support, (4) Control of Aircraft and Missiles, (5) Electronic Warfare, and (6) Offensive Air Support. Aviation Ground Support is not a function of Marine aviation because it is currently considered an “enabler.” AGS provides Marine aviation its expeditionary capability and is essentially the foundation for the other functions of Marine aviation to operate. If the Marine Corps did not have an AGS capability, it would severely degrade its aviation capability.

As part of the 2010 Force Structure Review Group (FSRG), it was determined that the Marine Wing Support Group would divest and its subordinate Marine Wing Support Squadrons (MWSS) would transition and fall under their respective Marine Air Groups (MAG) based on their geographic locations. The MWSSs are now the operational arms of the MAGs, which provide AGS services to the Marine Air Wings. Many discussions have occurred resulting from this transition, and the idea of AGS being added as a seventh function of Marine aviation has surfaced, but has not gained much traction. Since 1912, Marine aviation has evolved into today’s current six functions of Marine aviation. There is a tendency in the Marine Corps to have a misunderstanding and lack of appreciation of the capabilities of the MWSS and the significant AGS it provides.

The argument in this paper is that Aviation Ground Support *is* an aviation requirement along with the other six functions of Marine aviation albeit sometimes used directly or indirectly in accomplishing aviation objectives and should be included as part of that group as a related action that also contributes to Marine aviation. This paper analyzes the definitions of ‘enable’ and ‘function.’ It references Air Force doctrine and reviews aviation doctrinal publications to provide some background of the different aviation functions and the AGS community. The results of the 2010 FSRG and its impact on the re-organization of the MWSSs under the MAGs are discussed. AGS capabilities are explained. Examples of MWSS support to the Marine Corps’s premier aviation exercise Weapons and Tactics Instructor course and recent historical perspectives from operations in Iraq and Afghanistan demonstrate the necessity of AGS and the importance of close coordination and integration within the aviation community. The time has come for AGS to be labeled the seventh function of Marine aviation as the MWSSs transition and realign under their MAGs. This paper contributes to understanding within the aviation community and will assist the MWSS and its AGS capability with future integration efforts.

**Conclusion:** The AGS functions, activities, and actions collectively as a whole are related actions that contribute to the larger action of Marine aviation. Therefore, by definition, AGS is justified as being included as the seventh function of Marine aviation.

Aviation Ground Support (AGS) is justified as being the seventh function of Marine aviation. This would improve coordination and integration of AGS within the aviation community and provide a better understanding and appreciation for AGS capabilities. Without AGS, Marine aviation cannot function efficiently or in an expeditionary manner. Without Marine aviation, there is not a Marine Air Ground Task Force (MAGTF). Marine aviation is very robust and lethal with an assortment of fixed and rotary wing assault support and attack aircraft. Its sole purpose is to support the MAGTF and Marines on the ground.

A significant effort is required in order to support and sustain aviation operations. The Aviation Ground Support capability in the Marine Corps is usually conducted behind the scenes, does not receive much praise or glory, and it is often taken for granted. The argument in this paper is that Aviation Ground Support *is* an aviation requirement along with the other current six functions of Marine aviation albeit sometimes used directly or indirectly in accomplishing aviation objectives and should be included as part of that group as a related action that also contributes to Marine aviation. Therefore, AGS is justified as the seventh function.

Imagine this hypothetical situation: A couple of Marines were just seriously wounded as a result of an Improvised Explosive Device (IED) detonation while on a foot-mobile patrol in a remote village deep within an austere Afghanistan province. A fire fight ensues with enemy insurgents which pin down the remaining Marines. The Marine Platoon Commander quickly jumps on the radio and submits nine-line reports for close air support and medical evacuation requests. Within minutes, Marine Corps fixed wing aviation assets arrive on station overhead and provide close air support to suppress the enemy targets. Shortly thereafter, once the enemy fire ceases and a landing zone is secured, a Marine Corps assault support helicopter along with attack helicopter escorts arrive on scene and transport the casualties back to the nearest medical

aid station. Because of the quick actions of the Marines on the ground and the timely response from aviation assets, the enemy was repelled, and friendly casualties were treated within the “Golden Hour” and luckily survived. Unfortunately, however, this scenario has happened time and time again in Iraq and Afghanistan.

Observing aircraft on station delivering precise, punishing fires to suppress or eliminate the enemy, and providing assault support helicopters with escorts to rapidly transport casualties to medical care, one could easily argue that fixed wing and rotary wing aviation assets saved the day in the above scenario. What isn’t always easily seen and is mostly transparent is all the support that goes on behind the scenes that contributed to the success of aviation missions and ultimately the saving of lives.

In the United States Marine Corps there are six functions of Marine aviation: (1) Air Reconnaissance, (2) Anti-Air Warfare (AAW), (3) Assault Support, (4) Control of Aircraft and Missiles, (5) Electronic Warfare (EW), and (6) Offensive Air Support (OAS). In 2013, Aviation Ground Support is not a function of Marine aviation. Rather, it is considered a critical “enabler.” According to Marine Corps Warfighting Publication 3-21.1, AGS “consists of ground support functions required (less aircraft supply, maintenance, and ordnance) for sustained air operations at [forward operating bases] and air bases.”<sup>1</sup> This essentially is combat service support for the Air Combat Element (ACE) and is the foundation for the other functions of Marine aviation. If the Marine Corps did not have an AGS capability, it would severely degrade its aviation capability, and in some cases aviation operations would grind to a halt.

Marine Corps AGS is provided by Marine Wing Support Squadrons (MWSS). As part of the 2010 Force Structure Review Group (FSRG), it was determined that the Marine Wing Support Group (MWSG) would divest and its subordinate MWSSs would transition and fall

under their respective Marine Air Groups (MAG) based on their geographic locations. The MWSSs are now the operational arms of the MAGs, which provide AGS services to the Marine Air Wings (MAW). Many discussions have occurred resulting from this transition, and the idea of AGS being added as a seventh function of Marine aviation has surfaced, but has not gained much traction. There are many examples of the MWSS not being integrated with aviation operations efficiently, or being misunderstood by the aviation community by not having a full understanding or appreciation of their AGS capabilities. This may lead to missed or late requests for aviation ground support and create inefficiencies in the support system. This is a concern because of the new realignment of the MWSSs that fall under the MAGs.

This paper argues that the MWSS would be better integrated and understood in the aviation community if AGS was included as the seventh function of Marine aviation. The definitions of 'enable' and 'function' are critiqued and analyzed. A review of doctrinal publications provides some background of the different aviation functions and the AGS community. The results of the 2010 Force Structure Review Group and its impact on the organization and re-organization of the MWSSs within the MAGs are discussed. AGS capabilities are summarized and explained. Examples of AGS during major exercises while in garrison, as well as command chronologies and lessons learned from recent operations in Iraq and Afghanistan help explain why AGS should be added as a function of Marine aviation.

The time has come for AGS to be labeled the seventh function of Marine aviation as the MWSSs transition and realign under their MAGs. This paper contributes to understanding within the aviation community and will assist the MWSS and its AGS capability with future integration efforts.

In order to justify AGS as a function, the definitions of ‘enable’ and ‘function’ must be examined. According to Joint Publication 1-02 (JP 1-02) Department of Defense Dictionary of Military and Associated Terms, the definition of an ‘enabling force’ is, “Early deploying forces that establish critical capabilities to facilitate deployment and initial employment (including sustainment) of a force.”<sup>2</sup> Similarly, Marine Corps Reference Publication 5-12C (MCRP 5-12C) Marine Corps Supplement to the Department of Defense Dictionary of Military and Associated Terms defines ‘enabling actions’ as, “Preparatory actions taken by the expeditionary force to facilitate the eventual accomplishment of the mission.”<sup>3</sup> Based on the aforementioned definitions, it can be argued that the MWSS is the ‘enabling force’ and AGS can be considered ‘enabling actions.’ In other words, the MWSS provides AGS which collectively enable Marine aviation to conduct and execute its missions, or as previously stated they provide the foundation for the other functions of Marine aviation to exist. However, functions also enable.

MCRP 5-12C defines the word ‘function’ as, “specific responsibilities assigned by the President and Secretary of Defense to enable Services to fulfill legally established roles.”<sup>4</sup> Additionally, JP 1-02 defines ‘functions’ as, “appropriate or assigned duties, responsibilities, missions, or tasks of an individual, office, or organization.”<sup>5</sup> These duties, responsibilities, missions, and tasks can be considered a group of related actions that contribute to a larger action.<sup>6</sup> This paper argues that the MWSS’s duties, responsibilities, missions, tasks, and AGS functions collectively as a whole, enable Marine aviation to fulfill its roles. Without the MWSS and its AGS capability, Marine aviation cannot operate in an expeditionary manner. Therefore, according to the two aforementioned definitions of ‘function,’ AGS is justified as being the seventh function of Marine aviation.

Air Reconnaissance, Anti-Air Warfare, Assault Support, Control of Aircraft and Missiles, Electronic Warfare, and Offensive Air Support are related actions or tasks that contribute to the larger action, that being Marine aviation. Marine Corps Warfighting Publication (MCWP) 3-2 Aviation Operations states, “Planners initially consider the functional area, not the means (i.e. particular weapons systems), when analyzing the fundamental requirements of accomplishing any given objective.”<sup>7</sup> Ironically, in this context it only refers to the current six functions of Marine aviation. Aviation Ground Support *is* a requirement albeit sometimes used directly or indirectly in accomplishing aviation objectives and should be included as part of that group as a related action that also contributes to Marine aviation. Without AGS, Marine aviation cannot function appropriately and would lose its expeditionary capability.

A lot can be learned from reviewing the doctrine of other Services. The Marine Corps AGS community borrows much from the United States Air Force. Many Air Force standards are adhered to, and Air Force doctrine, technical manuals, and pamphlets are referenced. It is therefore useful to look at Air Force doctrine and to compare how the Air Force and Marine Corps correspond or differ in their aviation functions.

Agile Combat Support (ACS) is the Air Force’s version of the Marine Corps’s AGS.<sup>8</sup> ACS is one of the Air Force’s twelve core functions.<sup>9</sup> According to the Air Force Doctrine Document 1, “Modern warfare demands that...even differing functions within a single Service be brought together intelligently to achieve unity of effort and unity of command...”<sup>10</sup> This matches up nicely with the aforementioned definition of ‘function’ with ACS being a specific responsibility or part of a group of related actions (core functions) contributing to a larger action.<sup>11</sup> Although USMC Aviation Ground Support functional capabilities are different than

say Electronic Warfare, Antiair Warfare, or Control of Aircraft and Missiles functional capabilities, they all come together to support Marine aviation and its collective end state, whatever the mission or operation may be.

AGS should not be treated any differently than the Air Force's ACS. All capabilities that contribute to the common end state of a larger action working together as a coherent unity of effort is vital for success. This helps to achieve better integration, coordination, and communication amongst all entities. According to Joint Publication 0-2, integration is "the arrangement of military forces and their actions to create a force that operates by engaging as a whole."<sup>12</sup> This is no different than working together as a whole while on the same team. Over time, solid teamwork builds unit cohesion and a better understanding of abilities and capabilities provided and how they can best be integrated to maximize efficiencies and mission success.

Having the end state in mind, or the military objective, is important to obtain unity of effort. For example, if the military objective includes utilizing aviation assets, AGS capabilities likely will be leveraged directly in the form of a forward arming and refueling point (FARP) to provide aviation fuel, or indirectly by operating from forward operating bases established and serviced by the MWSS, or by taking off and landing on expeditionary airfields or dust-abated helicopter landing zones (HLZ) that the MWSS operates or has prepared to support the mission. Incorporating AGS personnel and capabilities into the plan and integrating them into the overall mission is essential for success and is a requirement as it contributes to a "larger action" or aviation's collective end state. This integration is an area that can be improved in the current Marine Corps aviation and AGS communities.

Since 1912, Marine aviation has matured and evolved into today's current six functions of Marine aviation.<sup>13</sup> Because AGS is not included, bundled together, and taught as a function

of Marine aviation, its capabilities are not fully appreciated, are taken for granted, or sometimes overlooked altogether. A change in mindset across the Marine Corps aviation community will have to occur in order to accept and rewrite doctrine to include AGS as the seventh function of Marine aviation. Including AGS as the seventh function of Marine aviation and having that taught to Marines early on in their careers as they progress through the aviation pipeline will greatly assist with the effort of better understanding the AGS community and all its capabilities, while ultimately gaining better coordination and integration within the Marine Corps aviation community as a whole. With the Marine Wing Support Squadrons now falling under their own respective Marine Air Groups, they will be forced to work together more closely which will help with the integration process.

In the past, the Marine Wing Support Group provided Aviation Ground Support to the MAW. In the 1970s and 1980s, the MWSGs were originally formed by merging the Wing Engineer Squadron, Wing Engineer Repair Squadron, the Wing Transportation Squadron, and the Marine Air Base Squadron.<sup>14</sup> The idea was to have all the functions of AGS within the MAW under one commander.<sup>15</sup> The MWSG's mission was, "to provide aviation ground support to enable a composite Marine Aircraft Group (MAG) and supporting or attached elements of the Marine Air Control Group (MACG) to conduct expeditionary operations."<sup>16</sup>

According to doctrine, each MWSG had four Marine Wing Support Squadrons organic to them who were the operational arm that were task organized appropriately to provide manpower, equipment, and support directly to both fixed wing and rotary wing flying squadrons. There are exceptions to this rule. Due to its relatively small geographic location, the MWSG in Japan only had two MWSSs. Likewise, the reserve component restructured itself over the years and only had three MWSSs. The MWSG and MWSS relationship remained true for about thirty years.

In 2010, as part of the planning effort to downsize the Marine Corps from 202,000 Marines to approximately 186,800, a force structure review was conducted by senior field grade officers and civilians who were guided by an executive steering group composed of Deputy Commandants, Commanders, and Commanding Generals from the Marine Expeditionary Forces to “evaluate and refine the organization, posture, and capabilities required of America’s Expeditionary Force in Readiness in a post-OEF security environment.”<sup>17</sup> As a result of the review, there were many reductions, some increases, and much reorganization of units and capabilities throughout the entire Marine Corps’s operating forces, reserve component, and supporting establishments.<sup>18</sup> What this meant specifically for the AGS community was that aside from a small staff from its headquarters element, the MWSG was deactivated and divested, and its subordinate MWSSs realigned under their respective MAGs based upon their geographic location. The remaining MWSG staff of about 14 Marines will transition and serve as an Aviation Ground Support Department within each MAW to provide liaison and assist with AGS coordination.<sup>19</sup>

The MWSG divestiture began in early 2012 as it began to deactivate its commands and transition its MWSSs to the MAGs and should be complete by early 2013. The 14 Marines retained from the MWSG staff that composed the Fuels Operations, AGS Plans, and AGS Operations branches combined and realigned with the existing Engineer and Airfield Services branches of the MAW G-4 to make up the new AGS Department in each MAW.<sup>20</sup> This, of course, is a new transition and many lessons learned will result from this reorganization. However, having the robust capabilities of the MWSS now directly within each MAG, and having AGS experts residing in each MAW will ultimately assist with unity of effort. The AGS Department in the MAWs will provide liaison to help coordinate and integrate AGS capabilities

within the MAGs as they work closely together with their aviation partners and contribute to Marine aviation's 'larger action' or collective mission.

Not only are the MWSSs realigning organizationally within the MAGs, they are also aligning from a training and readiness (T&R) standpoint as well. One of the bi-products of the decision to divest the MWSGs and realign the MWSSs under the MAGs was a tasker from the AGS Operational Advisory Group (OAG) for the AGS community to create a Training and Readiness manual for the MWSS. The idea was to have this complete in order to give their new MAG Commander, who may be unfamiliar with the AGS community, a sense of its capabilities and training standards. Every unit in the ACE has a T&R manual except for the MWSS. The task of creating an MWSS T&R manual is no easy feat. The MWSS has over 70 different Military Occupational Specialties (MOSs) in the unit with each having their own T&R manual. The challenge is to merge those T&R manuals into one collective MWSS T&R manual which focuses on the MWSS's core competencies and mission essential tasks which are: provide airfield operation services, establish and maintain a Forward Operating Base, organize base/airfield security operations, and restore mission essential operations and communications.<sup>21</sup> The development of the MWSS T&R manual is currently underway and should be complete sometime in 2013. This effort will help the MWSS to further align with its aviation partners.

As a result of the MWSG divestiture, the MWSS will assume the MWSG mission to provide AGS to enable a composite MAG and attachments to conduct expeditionary operations. So what are these robust capabilities that arguably are the seventh function of Marine aviation and that enable a MAG or MACG to conduct expeditionary operations? Forward Operating Bases (FOB), FARPs, and expeditionary airfields and landing zones were alluded to earlier, but these are only a fraction of the capabilities within an MWSS.

Essentially, the MWSS is an engineer unit within the ACE that provides AGS (combat service support) to the MAW. Doctrinally, AGS is broken down into 13 different and distinct functions that support aviation operations either directly or indirectly and provides Marine aviation its expeditionary capability. They are further broken down into two sub-categories- *airfield and air base* support functions. The Aviation Ground Support Marine Corps Warfighting Publication (MCWP) is currently in the process of being rewritten to identify 12 instead of 13 functions due to the fallout of the Force Structure Review Group restructuring and reorganization of the Military Police Marines. However, because the rewrite is currently in draft form and not officially approved yet, this paper will discuss the doctrinal 13 functions of AGS.

The four *airfield* support functions are Expeditionary Airfield (EAF) Services, Aircraft Rescue and Firefighting (ARFF), Aviation and Ground Refueling, and Explosive Ordnance Disposal (EOD).<sup>22</sup> Going back to the definition of the word ‘function,’ these specific AGS functions or ‘actions’ contribute directly to and are essential to the ‘larger action’ of supporting flight line operations, and are for the most part unique to Marine aviation. The following paragraphs will briefly describe each function.

Expeditionary Airfield Services: The MWSS has the ability to maintain an existing airfield to include expansion of parking aprons, or they can create runways or helicopter landing zones from scratch by using expeditionary materials such as aluminum-two (AM-2) matting, heli-mat, mobi-mat, or by scarifying and compacting existing material, gravel, and Portland cement to create a sound, stable operating surface. They can install and maintain the M-31 emergency arresting gear for fixed wing tail-hook aircraft, determine aircraft spacing requirements, and light and mark the airfield, runways, taxiways, and parking aprons accordingly.<sup>23</sup> EAF services are aviation-specific found only within the MAW. This capability

assists the MAGTF to project power ashore and contributes to supporting aviation assets in order to operate in an expeditionary manner.

**Aircraft Rescue and Fire Fighting:** ARFF is also an aviation-specific capability and is also referred to as Crash, Fire, Rescue (CFR). AGS doctrine states, "...ARFF provides immediate and responsive rescue and fire fighting for airfield emergencies at [a] FOB."<sup>24</sup> Although ARFF primarily focuses on the airfield, aircraft emergencies, and aircrew extrication, they are also responsible for providing structural fire fighting on the air base or FOB. Due to their extensive training and the fact that most of them are emergency medical treatment (EMT) trained, ARFF personnel are also ideally suited to be first responders to medical emergencies and can assist with mass casualties.<sup>25</sup>

**Aviation and Ground Refueling:** The MWSS is responsible for the daily management of bulk fuel for airfields, FOBs, and FARPs. To accomplish this task, the MWSS utilizes the Tactical Airfield Fuel Dispensing System (TAFDS) which has a 320,000 gallon storage capacity per system and is usually set up near the airfield. The TAFDS has the ability to simultaneously refuel 12 aircraft from 12 refueling points. The MWSS also has other refueling equipment such as the Helicopter Expedient Refueling System (HERS) which consists of eighteen 500 gallon pods that can be ground transported or flown externally from assault support helicopters; the M970 refueler trailer which has a 5000 gallon storage capacity and can be used to either fuel or defuel aircraft; and the Six Container (SIXCON) system which has a 4500 gallon storage capacity and can be ground transported on either 7-ton trucks or Logistics Vehicle Systems (LVS).<sup>26</sup> The refueling capability within the MWSS is very robust and offers the commander much flexibility on its use and employment. This function is critical when planning the

employment of aviation assets in an expeditionary manner in remote and austere locations and must be closely coordinated and integrated into the overall mission.

Explosive Ordnance Disposal: Each MWSS has two EOD teams whose primary mission is to detect, identify, and render safe both friendly and enemy conventional weapons, munitions, and unexploded ordnance (UXO).<sup>27</sup> Although they primarily focus on aviation ordnance, explosive hazards, and the aircraft associated with them, MWSS EOD teams are also trained in and can respond to UXOs and Improvised Explosive Devices outside the FOB or air base as well.<sup>28</sup> The EOD capability is especially important during base recovery after attack operations while addressing UXO hazards and in support of aircraft recoveries.

The nine *air base* support functions are Internal Airfield Communications, Essential Engineer Services, Motor Transport Support, Food Services, Medical Support, Organic and Support Unit Personnel Training, Chemical, Biological, Radiological, and Nuclear Defense Support, Security and Law Enforcement, and Air Base Commandant Functions.<sup>29</sup> AGS doctrine states, “Air base support functions are those activities necessary to establish and maintain air base operations, to include base camp operations.”<sup>30</sup> Whereas the airfield support functions primarily directly support aviation’s flight line operations, the air base support functions, for the most part, indirectly support the Aviation Combat Element (ACE) as explained below.

Internal Airfield Communications: Although the Marine Air Control Group supports all of the ACE’s external coordination, command and control, and communication requirements, the MWSS is responsible for all of the ACE’s internal wire, data, telephone, and radio communication needs within the FOBs or airfields.<sup>31</sup> The MWSS’s communication section connects ACE units and supporting agencies that are co-located at the FOBs or airfields.

Essential Engineering Services: The MWSS has a tremendous engineering capability. Although these engineering skills and capabilities are common to other engineering units in the MAGTF, the MWSS engineers primarily focus on general engineering, utilities, vertical and horizontal construction, and heavy equipment and material handling services.<sup>32</sup> The engineer company is the workhorse behind any landing zone or runway maintenance, dust abatement, or construction project, base camp support in the form of generator and power support, water purification, shower and laundry services, and construction or renovation projects such as building aviation maintenance hangers, protective aircraft revetments, or expeditionary work spaces in the form of Southwest Asia (SWA) huts, just to name a few examples. The construction, maintenance, and dust abatement of runways, taxiways, and landing zones is vital to the support and safe execution of expeditionary aviation operations.

Motor Transport: The MAGs and their respective flying squadrons do not have their own organic transportation assets. Any lift or motor transport support requirements within the MAGs comes from the MWSS. Such assets include High Mobility Multi-Wheeled Vehicles (HMMWV), Motor Transport Vehicle Replacement (MTVR) 7-ton trucks, and LVS's, just to name a few. The MWSS utilizes these light, medium, and heavy lift assets to support intrabase motor transport requirements. Movement of MAG and Control Group personnel, supplies, equipment, as well as aviation ordnance to and from Ammunition Supply Points (ASP) is essential for efficient aviation operations.<sup>33</sup> Additionally, the MWSS uses motor transport assets to recover any maintenance or mishap-related aircraft down in the field

Food Services: The MWSS is the only organization within the MAW that has a field messing capability. The MWSS has the equipment and personnel to establish and operate dining facilities at a FOB or airfield. According to AGS doctrine, "This ability serves to further

enhance an air base's independence, mobility, and expeditionary nature,"<sup>34</sup> and greatly increases morale and quality of life for ACE personnel who oftentimes work irregular hours both day and night. This AGS function contributes to the uninterrupted support of ACE operations.<sup>35</sup>

**Medical Support:** Each MWSS possesses the medical personnel and equipment to support the ACE. It has the ability to provide corpsman support during convoys, at a FARP or engineer construction project, or provide routine sick call, aviation medicine, X-rays, or pharmacy services at a Flight Line Aid Station (FLAS).<sup>36</sup>

**Organic and Support Unit Personnel Training:** Although not a function that directly supports the ACE, it is the responsibility of the MWSS to train augment personnel to execute their assigned duties such as air base operations, air base ground defense, flight line security, or base recovery after attack. Because the MWSS does not have the organic personnel to perform these tasks, augmentation and cooperation is required from the entire ACE and other tenant units aboard the base.<sup>37</sup> The MWSS will train these augments in order to prepare them to perform their assigned missions at the air base or FOB. This training includes, but is not limited to establishing and manning Entry Control Points, security posts, patrolling, reaction drills, or combat marksmanship skills.

**Chemical, Biological, Radiological, and Nuclear Defense Support:** CBRN is a sub-function of Base Recovery After Attack. Because the MWSS has organic CBRN defense capabilities and the majority of the equipment necessary to conduct CBRN decontamination operations for the ACE, this function is consolidated under and managed by the MWSS.<sup>38</sup> The MWSS CBRN responsibilities include troop decontamination, equipment, vehicle, and aircraft decontamination, and monitoring and surveying operations throughout the ACE's area of

operations. Accurate monitoring and timely decontamination is essential to maintain and resume sortie generation.

**Security and Law Enforcement:** Doctrinally, when deployed a platoon of Military Police (MP) Marines is attached to the MWSS. MPs provide the core of the ACE guard force and normally focus on flight line security, secure critical ACE facilities and infrastructure, and maintain Entry Control Points (ECPs).<sup>39</sup> The MPs usually have the responsibility of establishing and executing the MWSS's air base ground defense plan for the air base, and they are augmented by service members of tenant units aboard the FOB. They can also provide security during convoys or at FARPs and perform traffic management functions within the FOB. A secure air base is essential for safe and unimpeded flight operations.

**Air Base Commandant:** Because the MWSS possesses a noteworthy logistical and engineering capability and provides the necessary functions and organization to plan and execute the daily requirements of an air base, the MWSS has the ability to perform Air Base Commandant responsibilities and oversee day-to-day base camp operations.<sup>40</sup> Some of these responsibilities are the establishment of billeting structures for the ACE, air conditioning, showers, laundry, heads, trash collection, and associated power and lighting requirements.<sup>41</sup> All these services are conducted so the ACE can focus its attention on flight plans and operations.

The thirteen aforementioned functions of AGS directly or indirectly support the employment of the six functions of Marine aviation, and as discussed, enable Marine aviation to operate in an expeditionary manner. When dissecting the previous definition of 'function,' it can be argued that the thirteen functions of AGS are those duties, responsibilities, missions, tasks, or are any of a group of related actions that contribute to a larger action, that being the employment of Marine aviation. Furthermore, as identified previously, MCWP 3-2 states, "Planners initially

consider the functional area, not the means..., when analyzing the fundamental requirements of accomplishing any given objective.”<sup>42</sup> If AGS is a “fundamental requirement” of supporting Marine aviation, why is it not labeled as a function? This argument can be further expounded when the thirteen AGS functions are used together as a whole to perform certain activities that support and contribute to successful Marine aviation operations.

Doctrinally, the MWSS is responsible for five activities that all support the ACE either in garrison, or while deployed. These five activities can also be grouped together as “related actions” that contribute to the “larger action” of the employment of Marine aviation. The five activities are establishing Forward Operating Bases (FOB), executing Air Base Ground Defense (ABGD), and performing Base Recovery After Attack (BRAAT), Airfield Damage Repair (ADR), and Forward Arming and Refueling Points (FARP). A sixth activity, aircraft recovery, is currently being taught and is in the process of being added to AGS doctrine. Although aircraft recovery is a significant capability and activity that the MWSS provides both in garrison and while deployed, the following paragraphs describe the five current doctrinal MWSS activities.

Forward Operating Bases: As previously alluded to, the MWSS is responsible for the establishment of Forward Operating Bases. According to AGS doctrine, “FOBs increase responsiveness through basing flexibility and aircraft dispersal by decreasing distances to areas requiring support.”<sup>43</sup> FOBs support Marine aviation’s shore-based activities. The MWSS has the capability of falling in on and/or modifying existing friendly or abandoned enemy airfields to meet mission requirements. If no existing airfields are available, the MWSS can utilize its engineering and EAF capabilities to modify existing roads or parking lots to accommodate aircraft, or it can build expeditionary airfields or landing zones from scratch.<sup>44</sup> The MWSS will develop an Air Base Master Plan that includes a base camp layout which is a graphic, scaled

depiction of the FOB which shows billeting areas, where each unit, work space, and support areas will be located, as well as services available such as the heads, showers, laundry, chapel, messing, etc. This allows the ACE to fall in on operational airfields, landing zones, and work spaces which enable them to rapidly plan and support combat operations.

**Air Base Ground Defense:** Once the FOB is established and operational, the MWSS is responsible for its security. It will establish a defensive plan which will tie in with the MAGTF rear area security plan. Because the MWSS has a full complement of both airfield and air base support functions when operating a FOB, it does not have sufficient personnel to defend the base in its entirety. While the MWSS will primarily focus its efforts on flight line security and critical ACE facilities such as the Tactical Air Command Center (TACC), command posts, and ammunition supply points, it will coordinate with and require augmentation from within the ACE and other tenant units to ensure all security aspects are covered.<sup>45</sup> Additionally, it will establish entry control points to monitor access on and off the FOB. It will construct aircraft revetments, field fortifications, fighting positions, and man guard towers. It will establish a detailed guard rotation, foot-mobile and vehicular patrol sectors, and maintain a reaction force to respond to any immediate threats aboard the base. All of these efforts are done to ensure maximum security of the FOB while using minimal resources in order to provide secure, continuous, and unimpeded base camp and flightline operations.

**Base Recovery After Attack:** Assuming substantial damage can be expected following an enemy attack or natural disaster aboard the FOB, the MWSS has the responsibility to assess and repair damage in a timely and efficient manner.<sup>46</sup> The MWSS will develop a Base Recovery After Attack (BRAAT) Plan which will define how the FOB will quickly recover and have the ability to launch and receive aircraft following an attack or other disaster aboard the FOB.

Depending upon the severity of the damage, these efforts can become an entire squadron effort. Damage Assessment Teams will assess damage, craters, and UXO along the runways, taxiways, and parking aprons. If the runway is significantly damaged, they will work closely with the Minimum Operating Strip Selection Team to identify an area that can facilitate the launch and recovery of certain aircraft depending upon the intent and guidance given by the ACE Commander until repairs can be made to expand the runway to its full operational length. Damage Assessment Response Teams will assess damage to non-airfield facilities such as works spaces, billeting areas, and other base camp structures. Other responsibilities include CBRN monitoring and decontamination, fire fighting, and mass casualty treatment and evacuation.<sup>47</sup> The BRAAT plan and all of the aforementioned efforts are closely coordinated with the ACE Commander and his staff to quickly and efficiently restore flight line operations and maintain sortie generation to keep Marine aviation in the fight.

Airfield Damage Repair: ADR is a sub function of BRAAT.<sup>48</sup> Once a minimum operating strip is approved and the area is secured from any UXO, the MWSS will commence ADR operations to repair any craters or other damage along the runways, taxiways, or parking aprons. This is an engineer-intensive effort with support from the Motor Transport Company to move the required engineer equipment and haul necessary repair materials. The engineers have a plethora of heavy equipment and various tools to execute the repairs, as well as different techniques to fix the craters that will facilitate the launch and recovery of aviation assets. Without this expeditionary capability to repair the airfield operating surfaces, Marine aviation would not be able to function aboard the FOB following an enemy attack or natural disaster.

Forward Arming and Refueling Points: The final doctrinal activity the MWSS is responsible for is the FARP. A FARP is considered an Air Point which is the lowest

classification of a FOB. The FARP is tactical in nature, close to the forward line of troops, short in duration, and supports a specific operation or mission.<sup>49</sup> In addition to supporting one FOB, the MWSS is capable of supporting two simultaneous FARPs. It will set up, light, and mark the FARP to accommodate the requested number and type/model/series of aircraft, issue fuel, and provide fire fighting, and medical support. The MWSS will plan for FARP security and coordinate with the MACG for communication requirements and with the Marine Aviation Logistics Squadron to accommodate any ordnance or aircraft arming requirements. This expeditionary capability keeps Marine aviation close to the action and significantly reduces response and turnaround time for close air support or medical evacuation while in support of combat operations.<sup>50</sup>

Now that there is an understanding of the organization of the MWSS, its realignment within the MAGs, the thirteen functions and five activities of Aviation Ground Support that it provides, it is important that the AGS community closely coordinates with and integrates its abilities with its aviation partners while in garrison to ensure it builds a coherent and well-oiled machine prior to transitioning to a deployed environment when called to do so. Day-to-day support of aviation operations provides constant opportunities for integration and training. Large scale training exercises such as Marine aviation's premier Weapons and Tactics Instructor (WTI) course also provide outstanding opportunities to train and coordinate with other aviation units prior to deploying to a combat zone. Yet again, aviation operations in support of these exercises cannot function without AGS provided by an MWSS.

Twice a year, Marine Aviation Weapons and Tactics Squadron One (MAWTS-1) hosts the semi-annual WTI course at Marine Corps Air Station Yuma, Arizona. According to Marine Corps Order 3500.109 Marine Corps Weapons and Tactics Training Program (WTTP),

MAWTS-1's mission is "to provide standardized advanced tactical training and certification of unit instructor qualifications that support Marine Aviation training and readiness... and also provides assistance in the development and employment of aviation weapons and tactics."<sup>51</sup> One of MAWTS-1's top priorities is to plan, facilitate, and execute the WTI course.

WTI is an intense seven week course designed to train and build Weapons and Tactics Instructors and return them to their units as training officers as the latest subject matter experts in their respective type/model/series aircraft or MOS. Specifically, the WTTP states, "The WTI Course emphasizes integrated training between all facets of aviation, aviation ground support and supporting arms working within the Marine Air Command and Control System (MACCS) while in support of a MAGTF and Joint scheme of maneuver."<sup>52</sup>

WTI is conducted in two primary phases: academics and flight. The first half of the course requires intense study and book work while the second half provides the aviators an opportunity to fly and pilots, crew, supporting personnel, and maintainers to practice the tactics, techniques, and procedures that they were just taught in the classroom.

It takes one MWSS and an augment FARP team from within the AGS community to support a WTI. The primary mission of the MWSS during WTI is to support flight operations, but it also acts as a training aid for the AGS WTI students as well. On average, the MWSS conducts approximately 40 FARPs that support the aviator WTI students in the execution of the flight phase of training. Each type/model/series-both fixed wing and rotary wing aircraft-are serviced by the MWSS via various configurations during both day and nighttime operations. During the WTI 1-13 exercise that ended in late October 2012, the MWSS issued over 131,000 gallons of aviation fuel to 360 aircraft.<sup>53</sup> Efficient FARP support allows the WTI students to maximize their time on station and provides them with more flight time deep within remote

training areas while they execute their training missions. Prior to the course, each FARP zone is maintained and dust abated by the MWSS in an effort to minimize brown-out conditions in the extremely dusty and arid Arizona and California desert training areas. This is an important safety measure that supports the execution of the course.

The MWSS also establishes a couple FOBs throughout the course and purifies water from a local canal, provides billeting, showers, laundry, and messing services, and fire fighting and motor transport support for themselves and hundreds of MACG personnel. They provide airfield damage repair demonstrations during an AGS practical application exercise, and the MWSS executes a training aircraft recovery mission. In the event of a mechanical problem and an aircraft is downed somewhere within the training area, the supporting MWSS provides a means to get to the aircraft, recover, and transport it back to the air station for maintenance.

Without the MWSS and its AGS capabilities, WTI simply cannot be executed. If the aircraft do not receive fuel, they will not fly. If landing zones are not created or maintained in the training area, the aircraft will not have a place to land or operate safely. If supporting personnel are not billeted or taken care of in the base camp, they cannot effectively support the exercise. AGS is an aviation requirement to execute the WTI course. This is another example of why AGS is a function of Marine aviation. The capabilities, responsibilities, duties, and tasks of the MWSS and the AGS it provides are any of a group of related actions contributing to a larger action, this time the “larger” action being the execution of the WTI course.

As a successful graduate of WTI, most aviators, air crews, and Control Group personnel receive an additional MOS for their efforts. They return to their units as training officers and/or SMEs in their respective fields. Although the WTTP requires an MWSS to have a minimum of one WTI on its roles, AGS students currently do not receive an additional WTI MOS upon

successful graduation.<sup>54</sup> Unlike flying squadron tables of organization that have a dedicated line number for a squadron WTI, the MWSS has no such line number. There is an effort within the AGS community to change this and create a line number and WTI MOS for AGS students, but it has not gained much traction. With the MWSSs now falling directly under the MAGs, now is a perfect time to implement such a change. This, too, will help the MWSS align more closely with its aviation counterparts.

The argument that AGS is a just candidate as the seventh function of Marine aviation can be further justified in a deployed setting while in support of combat operations. Historical perspectives of AGS from Operations Iraqi and Enduring Freedom offer many examples of the capabilities that the MWSS provides the ACE while deployed and its integration with Marine aviation operations. Once again, without this capability, the current six functions of Marine Aviation simply cannot function in the manner intended.

In early 2003, Operation Iraqi Freedom demonstrated that the MWSS was a ground maneuver element that was crucial to the ability of 3<sup>rd</sup> MAW supporting the rapid advance of the 1<sup>st</sup> Marine Division deep into Iraq.<sup>55</sup> During the 530 mile push from Kuwait north to Baghdad, MWSSs provided 19 FARPs, six FOBS, and eight KC-130 Tactical Landing Zones.<sup>56</sup> The MWSSs provided essential AGS that allowed 3<sup>rd</sup> MAW to deliver 6 million pounds of ordnance via 7,800 combat sorties in support of the scheme of maneuver.<sup>57</sup>

MWSS 371 was a key contributor to the AGS effort during the initial invasion of Iraq. During its deployment in support of OIF from January to October 2003, the squadron task organized itself into three different FARP teams, an airfield damage repair detachment, and a rear element. It operated air bases in Kuwait at Ali Al Salem and Al Jaber airfields, and during the push north, MWSS 371 established numerous FARPs in Iraq at or in the vicinity of locations

such as Rumaylah Southwest Airfield, An Nasiriyah, Qalat Sikar Airfield, Samara, Baghdad, Tikrit South, Ad Diwaniyah, Tallil Airfield, Al Hillah, and Al Kut.<sup>58</sup> This leap-frogging of FARPs enabled continuous rotary wing assault and attack helicopter support and reduced the AV-8B Harrier's dependence on refueling tankers for supporting the ground maneuver elements during their advance into enemy territory.<sup>59</sup>

Just during the timeframe of 1 January 2003 to 30 June 2003 alone, MWSS 371 dispensed approximately 2.7 million gallons of fuel to aircraft and over 300,000 gallons of fuel to ground assets.<sup>60</sup> Additionally, the motor transportation section drove over 66,000 miles, hauled over 104,000 short-tons of cargo, and transported 15,175 passengers.<sup>61</sup> The MWSS engineers were equally as busy.

The ADR detachment at Qalat Sikar Airfield repaired the main runway and taxiways which enabled KC-130 operations within 12 hours.<sup>62</sup> The FARP team at Ad Diwaniyah built 30 strongbacks to house 3<sup>rd</sup> MAW personnel, created a landing zone out of mobi-mat to park UH-60 aircraft, and provided messing services to over 7,500 personnel.<sup>63</sup> At the FARP at Ubaydah Bin Al Jarrah Airfield outside of Al Kut, Iraq, engineers constructed 41 strongbacks and established facilities to billet 3<sup>rd</sup> MAW personnel, constructed and operated a chow hall, and provided showers, laundry, air conditioning, and 24-hour refueling services.<sup>64</sup> It also enhanced the security posture of the FARP by working with the SEABEES to build a berm around most of the airfield, and MWSS 371 Marines provided interior perimeter security with a variety of vehicle and foot-mobile patrols and manning entry control points and observation posts in order to guard 3<sup>rd</sup> MAW critical assets.<sup>65</sup> At Tallil Airfield, the FARP team constructed six strongbacks and provided life support services for MWSS personnel, aircrews from MAG-39, and other transients traveling through the area.<sup>66</sup> EOD personnel were equally as busy working throughout the area

of operations locating, rendering safe, or destroying a multitude of UXOs and enemy weapons, ammunition, and explosives.

The preceding statistics from MWSS 371 is just a snapshot of what it accomplished during its initial deployment to Iraq in 2003, and it is by no means all encompassing of the entire operation. The MWSS contribution to aviation operations throughout Operation Iraqi Freedom was noteworthy. By providing AGS, the MWSS's collective actions during Operation Iraqi Freedom certainly contributed to the "larger action" of supporting 3<sup>rd</sup> MAW accomplish its mission in support of the ground maneuver elements.

Operation Enduring Freedom offers similar examples of the successes and contributions of the MWSS while providing AGS to the MAW in support of Marine aviation operations in Afghanistan. Of significance was the installation of aluminum-two matting (AM-2) to create expeditionary airfields, parking expanses, and landing zones.

In the spring of 2009, MWSS 371 deployed to Camp Bastion Afghanistan in Helmand Province as the first element of Marine Expeditionary Brigade-Afghanistan (MEB-A) and prepared for the arrival of Marine forces.<sup>67</sup> MWSS 371's primary mission was to design, prepare, and install a parking area for USMC rotary-wing aircraft aboard the FOB, while it also provided other logistical and engineering support to MEB-A such as HLZ surveys, construction and maintenance, aviation refueling, and fire fighting support.<sup>68</sup>

Two primary AM-2 parking expanses were constructed aboard Camp Bastion. The main project was an expanse approximately 4,882 feet long by 318 feet wide which included four taxiways that connected the expanse to the primary active runway and five additional helipads.<sup>69</sup> The other was a 336 feet by 84 feet AM-2 pad used to park four AH-1W Cobra attack helicopters.<sup>70</sup> To say this was a significant task would be an understatement. By the time the

deployment was over, MWSS 371 installed over two million square feet of AM-2 matting making it the largest expanse ever constructed in a combat zone.<sup>71</sup> The airfield also contributed to Operation Khanjar which was the largest heliborne operation conducted by the Marine Corps since the Vietnam War.<sup>72</sup> This was a monumental achievement.

In addition to the historic AM-2 expanse constructed at Bastion, MWSS 371 installed AM-2 matting at FOB Dwyer. The squadron installed a 4,300 feet by 96 feet KC-130 AM-2 assault strip and a 1,200 feet by 72 feet AM-2 strip for Unmanned Aerial Systems (UAS) operations.<sup>73</sup> The KC-130 assault strip greatly assisted the logistical efforts of resupplying Marines at the remote FOB. Instead of a convoy taking a whole day to travel down rudimentary desert roads with the constant IED threat, supplies could then be flown in arriving in less than 30 minutes which greatly reduced the turnaround time for resupplies and mitigated the IED threat.<sup>74</sup>

The MWSS with its collective AGS capabilities allowed Marine aviation to successfully employ its six functions in the remote and austere Afghanistan environment in support of Operation Enduring Freedom. Because of the arid, dusty, and harsh terrain, the MWSS carved runways, parking areas, and HLZs out of the desert for aircraft to operate from, and they constantly provided dust abatement procedures to minimize brown-out conditions for the pilots. These actions significantly contributed to and enabled Marine aviation to operate in an extremely expeditionary environment with the sole purpose of supporting the Marines on the ground and the MAGTF as a whole.

In conclusion, this paper analyzed the difference between the definitions of enable and function. The main argument focused on the fact that, by the definition of the word ‘function,’ AGS and the collective responsibilities, duties, missions, and tasks of the MWSS are “any of a group of related actions contributing to a larger action”<sup>75</sup> with the larger action being Marine

aviation. Air Force doctrinal terms were reviewed and compared. Details from the 2010 Force Structure Review Group were reviewed and the results affecting the AGS community were explained with the MWSG divestiture, the creation of an Aviation Ground Support Department within each MAW, the realignment of the MWSSs under each of their respective MAGs, and the development of a MWSS T&R manual. The 13 functions of AGS and the five activities that the MWSS is responsible for were explained. Lastly, examples from exercise support to WTI and operational perspectives from OIF and OEF provided more insights to the relevance of AGS in the aviation community and it being a requirement for Marine aviation to function properly.

There is no doubt that the MWSS with its tremendous AGS capability is an essential enabler that allows Marine aviation to execute its six functions and provides it with an expeditionary capability. The key point that this paper argued is that the AGS functions, activities, and actions collectively as a whole are related actions that contribute to the larger action of Marine aviation. Therefore, by definition, AGS is justified as being included as the seventh function of Marine aviation.

A myriad of doctrinal publications will have to be rewritten, but having AGS taught as the seventh function of Marine aviation throughout the aviation pipeline along with the additional aviation functions, Marines will have a better understanding of AGS capabilities and the MWSS community as a whole. This, in turn, will assist with unity of effort, whether it's day-to-day requirements, support of a major exercise, or operational combat deployments, and enable more thorough integration and coordination between the flying squadrons, the Marine Air Control Group, and the MWSSs that support them. The real question is not whether or not AGS is the seventh function of Marine Aviation. The question is why isn't it???

## Endnotes

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- <sup>2</sup> Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 8 November 2010 (As Amended Through 31 January 2011), 125.
- <sup>3</sup> Marine Corps Reference Publication 5-12C, *Marine Corps Supplement to the Department of Defense Dictionary of Military and Associated Terms*, 16 November 2011, Section II-24.
- <sup>4</sup> MCRP 5-12C, Section II-28.
- <sup>5</sup> JP 1-02, 149.
- <sup>6</sup> Merriam-Webster Online, s.v. “function.” <http://www.merriam-webster.com/dictionary/function> (accessed December 10, 2012).
- <sup>7</sup> Marine Corps Warfighting Publication 3-2, *Aviation Operations*, 9 May 2000, 2-1.
- <sup>8</sup> Air Force Doctrine Document 1, *Air Force Basic Doctrine, Organization, and Command*, 14 October 2011, 52.
- <sup>9</sup> AFDD-1, 43.
- <sup>10</sup> AFDD-1, 5.
- <sup>11</sup> AFDD-1, 43.
- <sup>12</sup> Joint Publication 0-2, *Unified Action Armed Forces*, 10 July 2001, GL-7.
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- <sup>15</sup> MCWP 3-21.1, 1-4.
- <sup>16</sup> Major Ryan Anderson, “Aviation Ground Support WTI Lecture,” (lecture, Marine Aviation Weapons and Tactics Squadron One, Yuma, AZ, March 2008).
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- <sup>18</sup> 2010 FSRG Report.
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- <sup>23</sup> MCWP 3-21.1, 2-6.
- <sup>24</sup> MCWP 3-21.1, 2-10.
- <sup>25</sup> MCWP 3-21.1, 2-10.
- <sup>26</sup> MCWP 3-21.1, 2-12.
- <sup>27</sup> MCWP 3-21.1, 2-13.
- <sup>28</sup> MCWP 3-21.1, 2-14.
- <sup>29</sup> MCWP 3-21.1, 2-14.
- <sup>30</sup> MCWP 3-21.1, 2-14.
- <sup>31</sup> MCWP 3-21.1, 2-17.
- <sup>32</sup> MCWP 3-21.1, 2-20.
- <sup>33</sup> MCWP 3-21.1, 2-23.
- <sup>34</sup> MCWP 3-21.1, 2-24.
- <sup>35</sup> MCWP 3-21.1, 2-24.
- <sup>36</sup> MCWP 3-21.1, 2-24.
- <sup>37</sup> MCWP 3-21.1, 2-25.
- <sup>38</sup> MCWP 3-21.1, 2-25.
- <sup>39</sup> MCWP 3-21.1, 2-26.
- <sup>40</sup> MCWP 3-21.1, 2-15.
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