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**NAVAL WAR COLLEGE
Newport, R.I.**

**CONSIDERATIONS FOR DISTRIBUTED SHORT TAKEOFF VERTICAL
LANDING (STOVL) OPERATIONS**

by

David Merritt

Major, USMC

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Paper Abstract

The U.S. Marine Corps' new concept, Distributed STOVL Operations, seeks to provide the Joint Force Commander (JFC) with options in the near-peer Anti-Access / Area Denial (A2/AD) environment. It is an enabler for the JFC's larger Joint Operational Access Concept. The concept is currently in its infancy, and analysis indicates that it places the preponderance of its planning at the tactical level of war. To become viable, Distributed STOVL Operations needs further review and doctrinal guidance at the operational level. This paper explains the Marine Corps' new concept and defines the operational level concerns in both protection and deception. It also suggests a modification to the concept that provides options to the JFC and the overall joint plan. The paper draws conclusions regarding the applicability of the new distributed concept and makes recommendations for consideration.

INTRODUCTION

As US combat operations began to wind down in Afghanistan on September 14th, 2012, it was just another night on a remote forward operating base in the middle of southern Afghanistan.¹ That all changed on Camp Bastion at approximately 2200 local time, when fifteen insurgents infiltrated the base under the cover of darkness. Donning US Army uniforms, they were able to pass through the base's security structure unnoticed until it was time to attack. Their coordinated attack pinned down the Marines of Fixed-Wing Marine Attack Squadron 211 (VMA-211) in their maintenance hangar while carrying out carnage upon personnel and aircraft.² While the squadron Executive Officer acted heroically, running from across the camp to defend his Marines and killing insurgents with both his own rifle as well as close air support well inside of danger close ranges, it was too late.³ In the end, VMA-211's squadron commander, LtCol Christopher "Otis" Raible, and Sgt Bradley Atwell were killed, seventeen US, British and contractor personnel were wounded, six AV-8B Harriers were destroyed, and eight other aircraft and multitudes of ground support equipment were damaged.⁴ That small but determined insurgent group cost the Marine Corps \$24 million per aircraft and forced VMA-231's Harriers to surge replacements within 36 hours of the incident.⁵

¹ Andrew deGrandpre, "Marine Officer to Receive Silver Star for Heroics in Camp Bastion Attack," *Marine* /Marine-officer-receive-Silver-Star-heroics-Camp-Bastion-attack.

² Ibid.

³ Matthieu Aikins, "The Untold Story of the Battle of Bastion," *GQ*, September 3, 2013, 4, <http://www.gq.com/news-politics/newsmakers/201309/battle-of-bastion-taliban-afghanistan-air-base>.

⁴ Dan Lamothe, "Bastion Attack Kills Squadron CO, Sergeant," *Marine Corps Times*, September 17, 2012, [http://archive.marinecorpstimes.com/article/20120917/NEWS/209170313/Bastion-attack-kills-squadron-CO-sergeant; Headquarters U.S. Army Forces Command Department of the Army, "USCENTCOM Bastion Attack Investigation Redacted 15-6 Report," August 19, 2013, 2, http://www.hqmc.marines.mil/Portals/142/USCENTCOM%20Bastion%20Attack%20Investigation%20Redacted%2015-6%20Report.pdf](http://archive.marinecorpstimes.com/article/20120917/NEWS/209170313/Bastion-attack-kills-squadron-CO-sergeant; Headquarters U.S. Army Forces Command Department of the Army,).

⁵ Dan Lamothe, "Harriers Destroyed in Attack to Be Replaced," *Marine Corps Times*, September 25, 2012, [The DEW Line, October 10, 2012, http://www.flightglobal.com/blogs/the-dewline/2012/10/marines-surged-harriers-to-afg/">http://archive.marinecorpstimes.com/article/20120925/NEWS/209250318/Harriers-destroyed-attack-replaced; Dave Majumdar, "Marines Surged Harriers to Afghanistan within 36 Hours of Attack," *The DEW Line*, October 10, 2012, <http://www.flightglobal.com/blogs/the-dewline/2012/10/marines-surged-harriers-to-afg/>.](http://archive.marinecorpstimes.com/article/20120925/NEWS/209250318/Harriers-destroyed-attack-replaced; Dave Majumdar,)

The above story, however tragic, serves as a recent and vivid reminder that no matter what phase of the operation, appropriate planning and resourcing for protection of forward deployed bases must occur so the operational commander retains their use. As of 2014 the USMC began developing a new plan to counter the Anti-Access/Area Denial (A2/AD) environment hinging on the utilization of the F-35B, sea basing, Mobile Forward Arming and Refueling Points (M-FARPs) and several other key components that will all require protection.⁶ According to the draft concept document, “The Distributed Short Takeoff Vertical Landing (STOVL) Operations (DSO) concept is a task-organized Marine Air-Ground Task Force (MAGTF) employing 5th generation STOVL aircraft in a distributed force posture independent of specialized fixed infrastructure.”⁷ This paper will argue, however, that in order for DSO to become a viable concept with regard to the Joint Operational Access Concept (JOAC), it will require heavy reliance on Operational Protection, Operational Deception, and Joint Platform Independence.

BACKGROUND

According to the Department of Defense’s *Joint Operational Access Concept (JOAC)* version 1.0 released in January 2012, operational access is defined as “the ability to project military force into an operational area with sufficient freedom of action to accomplish the mission.”⁸ It is “the joint force contribution to assured access, the unhindered national use of

⁶ Department of Aviation U.S. Marine Corps, “MAGTF F-35B Distributed Short Take-Off Vertical Landing (STOVL) Operations - DSO Concept of Operations DRAFT” (Washington, DC: Headquarters, U.S. Marine Corps, January 20, 2015), 1–2.

⁷ *Ibid.*, 1–1.

⁸ U.S. Office of the Chairman of the Joint Chiefs of Staff, *Joint Operational Access Concept (JOAC)* ver. 1.0. (Washington, DC: CJCS, 2012), i.

the global commons and select sovereign territory, waters, airspace and cyberspace.”⁹ The concept uses multiple guidelines for success including the use and protection of forward bases, deception and stealth, and the use of small, distributed forces able to delay enemy detection and mass fires when required.¹⁰ While this concept exists for the joint level A2/AD environment, the USMC has independently concluded to distribute its forces.

The concept of breaking down forces into smaller size units and distributing them across the battlefield started in the Marine Corps just after the turn of the millennia. In 2004, the USMC began designing a new concept intended to confuse the enemy through non-linear operations by creating a network of highly-capable battalion to squad sized units spread across the area of operations.¹¹ According to then BGen Robert E. Schmidle, at the time the concept was “deliberately focused on application by forward deployed naval forces to provide combatant commanders the capability to enable early joint operations as well as focus the development of key supporting capabilities. Subsequent conceptual development projects will further expand the application of distributed operations.”¹² According to LtCol Jon Jacobs, in June 2006 the Marine Corps Weapons Laboratory continued to develop the concept and focused on smaller infantry elements “[by] taking authorities from the battalion to company levels, and from company levels to platoon and squad levels.”¹³ In 2008, the concept narrowed even further, and the next iteration was named Enhanced Company Operations (ECO). Here, the infantry Company became the focus of the distributed concept

⁹ Ibid.

¹⁰ Ibid., 19–21, 25, 26.

¹¹ Bgen Robert E. Schmidle, “Distributed Operations: From The Sea,” *Marine Corps Association & Foundation*, July 2004, <https://www.mca-marines.org/gazette/2004/07/distributed-operations-sea>.

¹² Ibid.

¹³ Lcpl Michael S. Cifuentes, “Warfighting Lab Equips Marines with Added, Enhanced Capabilities,” *Free Republic*, June 2, 2006, <http://www.freerepublic.com/focus/f-news/1642930/posts>.

instead of either the Platoon or Battalion.¹⁴ As operations in Iraq and Afghanistan soon closed and the nation's strategy shifted to the Pacific theater, new visions developed for the USMC. These would now shift the focus of the next distributed concept from the Company level of the Ground Combat Element (GCE) to the Air Combat Element (ACE).¹⁵

The Marine Corps's *Expeditionary Force 21* dated 14 Mar 2014, states, "The development and proliferation of anti-access and area-denial (A2/AD) capabilities threaten freedom of action at sea and endanger the limited number of U.S. bases overseas."¹⁶ The Marines developed the DSO concept to counter this A2/AD threat through the use of several inherent capabilities centered around a critical strength – the F-35B.¹⁷ The initial assumption for DSO is that the Carrier Strike Group (CSG) is not available either due to threat or other tasking.¹⁸ The idea is to use F-35B stealth to fly in contested airspace with AH-1Z Super Cobras and unmanned aircraft conducting ISR while MV-22 Osprey, CH-53K King Stallion, and KC-130J Hercules aircraft refuel and re-arm the M-FARPs.¹⁹ DSO requires the use of multiple mobile bases distributed throughout the battle space.²⁰ The concept calls for host nation support starting in Phase 0 Operations (Shaping) by way of identifying various landing sites at airfields and roads.²¹ These sites must meet certain criteria for size and strength and may require reinforcement or preparation to avoid destruction when aircraft land

¹⁴ General James T. Conway, "A Concept for Enhanced Company Operations" (Washington, DC: Headquarters, U.S. Marine Corps, August 28, 2008), 2.

¹⁵ U.S. Marine Corps, "MAGTF F-35B Distributed Short Take-Off Vertical Landing (STOVL) Operations - DSO Concept of Operations DRAFT," 4–6.

¹⁶ U.S. Marine Corps, *Expeditionary Force 21: FORWARD and READY, Now and in the Future* (Washington, DC: Headquarters, U.S. Marine Corps, 2014), 8.

¹⁷ U.S. Marine Corps, "MAGTF F-35B Distributed Short Take-Off Vertical Landing (STOVL) Operations - DSO Concept of Operations DRAFT," 1–2.

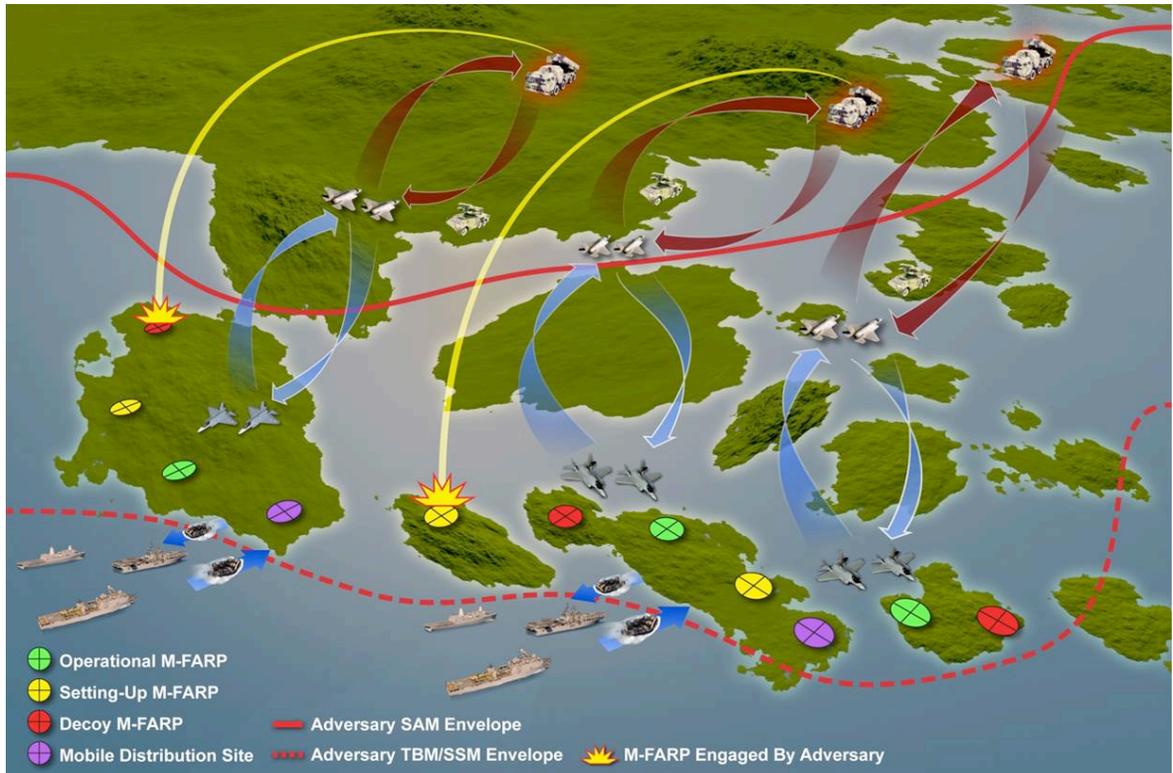
¹⁸ Maj Brett W. McGregor, DSO Q & A Session With The HQMC F-35B Requirements Officer, Phone Call, April 16, 2014.

¹⁹ U.S. Marine Corps, "MAGTF F-35B Distributed Short Take-Off Vertical Landing (STOVL) Operations - DSO Concept of Operations DRAFT," 4–1.

²⁰ *Ibid.*, 1–1.

²¹ *Ibid.*, 1–3, 1–4.

on them. DSO is highly modular, catering to nearly any littoral area of the world and created for capability against near-peer nations.²²



Visual Depiction of the DSO Concept²³

The M-FARPs range in size from light, medium, and heavy, based on the number of F-35Bs supported and length of time they are required to support.²⁴ Designed for the Marine Corps's small size and expeditionary ethos, DSO can use multiple simultaneous bases, but requires resupply from various assault support aircraft.²⁵ It assumes these mobile sites can maneuver inside the targeting cycle of the adversary, as this is arguably now considered the most cost-effective method to defeat the A2/AD threat.²⁶

²² Ibid., 2–7.

²³ Ibid.

²⁴ Ibid., 2–6.

²⁵ Ibid., 3–2.

²⁶ Ibid., 1–3; U.S. Office of the Chairman of the Joint Chiefs of Staff, *Joint Operational Access Concept (JOAC)*, 20.

The Marine Corps contracted Systems Planning and Analysis, Inc. to conduct a hypothetical A2/AD scenario beginning in 2024 where the People’s Republic of China (PRC) fights with the Republic of Philippines (ROP) over the Scarborough Shoals.²⁷ According to the study, there were up to 33 available sites in the ROP daily.²⁸ At any given time there may be only 9 operational (three setting up, three in use, three breaking down) and 24 decoy sites.²⁹ After approximately 24 hours, the sites will remove all their equipment and personnel and rotate to another site in order to complicate the targeting problem.³⁰ Some large sites may require more protection and heavy logistical support where “it will take approximately 72-96 hours to complete the preparatory work.”³¹ The premise is that F-35Bs will launch from amphibious assault ships to M-FARPs on the Philippine mainland.³² From there F-35Bs will refuel, conduct a mission, refuel and re-arm on the land base as necessary, repeat if required, and eventually complete at the sea base or possibly a land base.³³ In the scenario, protection for the mobile bases is focused primarily on a ballistic and cruise missile threat, although also mentioned are the insurgent and other threats.³⁴ Protection from the former is considerably weighted and enabled in the overall idea that the mobile land bases are just that – mobile.

²⁷ Systems Planning and Analysis, Inc., “Distributed Short Take-Off Vertical Landing (STOVL) Operations: An Initial Look at Concept Development and Feasibility - Final Report,” February 13, 2014, 9, 17.

²⁸ U.S. Marine Corps, “MAGTF F-35B Distributed Short Take-Off Vertical Landing (STOVL) Operations - DSO Concept of Operations DRAFT,” 52.

²⁹ Systems Planning and Analysis, Inc., “Distributed Short Take-Off Vertical Landing (STOVL) Operations: An Initial Look at Concept Development and Feasibility - Final Report,” 51.

³⁰ *Ibid.*, 21.

³¹ U.S. Marine Corps, “MAGTF F-35B Distributed Short Take-Off Vertical Landing (STOVL) Operations - DSO Concept of Operations DRAFT,” E-4.

³² McGregor, DSO Q & A Session With The HQMC F-35B Requirements Officer.

³³ *Ibid.*

³⁴ U.S. Marine Corps, “MAGTF F-35B Distributed Short Take-Off Vertical Landing (STOVL) Operations - DSO Concept of Operations DRAFT,” 2-1.

OPERATIONAL PROTECTION OF THE LAND BASE

They told us to open up the Embassy, or 'we'll blow you away.' And then they looked up and saw the Marines on the roof with these really big guns, and they said in Somali, 'igaralli ahow,' which means 'excuse me, I didn't mean it, my mistake'.

- Karen Aguilar, U.S. Embassy, Mogadishu, Somalia, 1991

Each of these mobile land bases has varying operational factors of space, time, and force that will affect protecting the sites. Considerations for protection will depend on the remoteness between each other and distance to the rear area, the time it takes to set up and tear down, and the size of the force at the mobile site. Currently per the plan, the Marines' Ground Combat Element (GCE) will provide protection for the mobile bases by supporting the Air Combat Element (ACE) with platoons of Marines augmented with host nation security forces if required.³⁵ Apparently the two functions of protection and intelligence are connected, and thus a heavy reliance on accurate and timely intelligence exists.

According to Milan Vego, "Operational intelligence relies more on human intelligence (HUMINT) and sophisticated signals intelligence (SIGINT) than on other sources in assessing enemy situations and intentions."³⁶ For the contracted scenario, one should assume continued maturation of Chinese intelligence abilities as well as a highly penetrated Philippine human terrain. There is a substantial reliance on the MAGTF Intelligence officer to provide early warning and proper threat assessment as to the adversary's intentions.³⁷ The DSO concept document recognizes that M-FARP locations may be compromised by "news and media sources" and that "a civilian with a smart phone and social media account may

³⁵ Ibid., 4–6.

³⁶ Milan N. Vego, "Operational Deception in the Information Age" (DTIC Document, 2002), 62, <http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA525610>.

³⁷ U.S. Marine Corps, "MAGTF F-35B Distributed Short Take-Off Vertical Landing (STOVL) Operations - DSO Concept of Operations DRAFT," 4–6.

pose as much risk as a dedicated collection system.”³⁸ Using Joint Operational Intelligence capabilities facilitates Operational Protection of this concept. The USMC must foster creation of the relationships between their intelligence officers and supporting agencies. Only then will these intelligence capabilities allow the MAGTF commander to assess the threat, maneuver his forces, and manage risk to an acceptable level while remaining in support of the JFC’s plan.

In aiding with managing risk, part of the DSO plan calls for a security element ranging from approximately twenty Marines in the smallest size M-FARP to more than one hundred Marines for the largest; however, there is no mention of counter special operations force capability.³⁹ During Phase I (Deter) and especially during Phase II (Seize the Initiative) operations, the MAGTF commander may need to coordinate assets from the Joint Special Operations Commander (JSOC) if enemy special operations forces are detected. During Phase II, one should not rule out an attempted direct attack, as was seen from the 2012 Camp Bastion attack.

Marines need to defend from not only special operations forces and direct ground attacks by conventional forces, but also from indirect fires. Research indicates that there was only a handful of times when STOVL aircraft have successfully used an austere landing site during combat operations in a hostile environment. The importance of protecting the landing site was demonstrated in Operation Iraqi Freedom when AV-8B Harriers landed on a road after a mission, refueled and departed. The makeshift runway (essentially an M-FARP) was soon rocketed (a form of indirect fires), demonstrating the enemy’s ability to target the land

³⁸ Ibid.

³⁹ Ibid., H-3, H-16.

base, and thus prevented attempting its use again.⁴⁰ While a tactical example, it is important to remember that DSO hinges on the protection of maneuvering forward bases so aircraft can conduct operations for the JFC until regular, more permanent forces can arrive.⁴¹ While success is never guaranteed, the Marine Corps must rely heavily on operational intelligence assets to pinpoint launch locations in indirect fire scenarios. If deemed necessary for Operational Protection, the JFLCC could direct operational fires to affect the sources of indirect fire support or shape the battlefield well in advance of DSO's commencement. While indirect fire threatens the DSO concept and requires protection, land, air, and sea-launched ballistic and cruise missiles are a greater threat to ground forces affecting not only Operational Protection, but potentially operational maneuver as well.

The DSO concept recognizes Marine Corps organic missile defense is only a tactical protection against aircraft and states, "Joint service enablers may be required to protect personnel and equipment from [Theater Ballistic Missiles] TBM[s]."⁴² The concept assumes use of Army ground-based and Navy sea-based missile assets and that coordination will occur between the services.⁴³ The Army's Terminal High Altitude Area Defense (THAAD) system is a low-density asset. Currently, three are deployed to the Middle East, and one full system is located on Guam and should be considered a strategic defense asset.⁴⁴ In contrast, the Army's Patriot and Navy's Aegis systems could defend both the sea base and the mobile land base with multiple assets; however, coordination between the JFMCC, JFACC, and

⁴⁰ L. Nordeen, *Harrier II: Validating V/STOL*, First Edition. (Annapolis, Md: Naval Institute Press, 2006), 137.

⁴¹ McGregor, DSO Q & A Session With The HQMC F-35B Requirements Officer.

⁴² U.S. Marine Corps, "MAGTF F-35B Distributed Short Take-Off Vertical Landing (STOVL) Operations - DSO Concept of Operations DRAFT," A-2.

⁴³ Ibid.

⁴⁴ Liz Klimas, "War Drums? U.S. Military Building Missile Defense Radar Station in Qatar," *The Blaze*, July 17, 2012, <http://www.theblaze.com/stories/2012/07/17/war-drums-u-s-military-building-missile-defense-radar-station-in-qatar/>; David Burge, "100 Bound for Guam: Fort Bliss THAAD Unit Readies for Historic Mission," *El Paso Times.com*, September 4, 2013, http://www.elpasotimes.com/news/ci_22983471/100-bound-guam.

JFLCC as well as the MAGTF commander must occur. This coordination will ensure the proper defense of the sea base, the land base, avoidance of fratricide, and preservation of assets. M-FARP missile defense will also directly compete with the JFC's other priorities.

There is no requirement in the DSO concept document for the JFC's priority of effort being the mobile bases, potentially at the risk of the defending assets themselves. According to Joint Publication 3-01, a board is convened naming assets to the Critical Asset List (CAL), and those deemed needing active defense then move to the Defended Asset List (DAL).⁴⁵ The JFC must prioritize that list as there usually more assets exist than intercepting missiles to defend them. It is conceivable that DSO may require operational maneuver in a relatively short time over potentially large distances; there may only exist a finite number of mobile sites available due to environmental factors. Thus, due to a reduced number of potential options for the enemy to target, all of the mobile bases could require protection via the DAL. In light of other assets the JFC may deem necessary to defend (e.g. cities, ports, etc.), this could be a taxing endeavor for the Joint Force Air Component Commander (JFACC) to support. If the bases are not protected, then the enemy can decide to target an unprotected mobile base thus eliminating future use options. This degradation leads to the enemy shaping the friendly battlefield against the MAGTF commander's idea. As events progress over time, the enemy can eventually target the remaining defended M-FARPs and mass fires, potentially overwhelming the defense assets and destroying the bases. Base destruction negates the entire DSO concept and removes an option for the JFC in his JOAC plan.

With the assumption that DSO is the opening move in the JOAC campaign, the JFC will need to protect the rear area, e.g. the sea base. According to Vego, Operational

⁴⁵ U.S. Office of the Chairman of the Joint Chiefs of Staff, *Countering Air and Missile Threats*, Joint Publication (JP) 3-01 (Washington, DC: CJCS, 2012), III-19 – III-22.

Protection is a combination of multiple facets of defense in a symphony conducted by the multiservice commander.⁴⁶ While the DSO concept seeks to forward-distribute F-35B combat potential through mobile bases, it consolidates them daily once operations are complete on their sea base, primarily for maintenance.⁴⁷ The assumption is, “Sea bases are inherently mobile and less vulnerable than land bases.”⁴⁸ The concept does not address force protection of the sea base, although it is left up to the naval commander’s acceptable level of risk.⁴⁹ While MAGTF operations may drive the placement and timing of these ships across the battle space, in this A2/AD environment the JFC will set priorities and the JFMCC must drive the forces required to defend them. Gaining temporary local sea control is needed not only in the sea and undersea domains, but also the air and space domains for as long as DSO employment is envisaged.

Considering air and space domains, one of the theater strategic “enabling tasks” listed in the DSO concept document is to “secure air superiority,” although specifics are not addressed.⁵⁰ While the JFACC is in control of the defense of space and the airspace, typically only excess applicable Marine sorties are given to the JFACC once USMC operations are satisfied.⁵¹ In regards to space, for example, the USAF’s 2nd Space Operations Squadron in Colorado operates and protects military GPS for the joint force.⁵² In regard to airspace, DSO assumes removal of the nuclear aircraft carrier option for the JFC severely

⁴⁶ Milan N. Vego, *Joint Operational Warfare: Theory and Practice* (Newport, RI: U.S. Naval War College, 2009), VIII–95.

⁴⁷ U.S. Marine Corps, “MAGTF F-35B Distributed Short Take-Off Vertical Landing (STOVL) Operations - DSO Concept of Operations DRAFT,” 1–2, D–18.

⁴⁸ *Ibid.*, 2–2.

⁴⁹ McGregor, DSO Q & A Session With The HQMC F-35B Requirements Officer.

⁵⁰ U.S. Marine Corps, “MAGTF F-35B Distributed Short Take-Off Vertical Landing (STOVL) Operations - DSO Concept of Operations DRAFT,” F–2.

⁵¹ U.S. Office of the Chairman of the Joint Chiefs of Staff, *Command and Control of Joint Air Operations*, Joint Publication (JP) 3-30 (Washington, DC: CJCS, 2014), II–16.

⁵² “Schriever Air Force Base - Global Positioning System,” *Schriever Air Force Base Official Web Site*, accessed April 23, 2015, <http://www.schriever.af.mil/gps/>.

degrading the naval airborne combat potential. Fixed land bases, such as Kadena AB in Okinawa, or Andersen AB, in Guam, while attainable through air refueling support, are too far to provide meaningful constant airborne presence by USAF aircraft. While the combination of these issues provides the JFACC his own space, time and force problems for air support, the JFACC's ability to "secure air superiority" for this concept is assumed.⁵³ The JFMCC and JFACC each must elevate protection of their respective domains to a top priority for a successful DSO operation in support of a larger JOAC campaign.

OPERATIONAL DECEPTION

The enemy must not know where I intend to give battle. For if he does not know where I intend to give battle he must prepare in a great many places. And when he prepares in a great many places, those I have to fight in any one place will be few... And when he prepares everywhere he will be weak everywhere.

- Sun Tzu, The Art of War

While Operational Protection in multiple domains is required for effective DSO, the MAGTF commander must also consider operational deception. According to the DSO Concept document, the plan, "increases survivability and complicates adversary targeting by dispersing small numbers of aircraft."⁵⁴ Furthermore, it "multiplies these effects via the use of passive measures, such as decoys and deception tactics (e.g. movement, dispersal, camouflage, concealment, and signature concealment)."⁵⁵ The concept plans for tactical deception such as the camouflage and concealment mentioned earlier. Operational Deception should also be designed to aid in the survivability of key concept components.

⁵³ U.S. Marine Corps, "MAGTF F-35B Distributed Short Take-Off Vertical Landing (STOVL) Operations - DSO Concept of Operations DRAFT," F-2.

⁵⁴ Ibid., 2-1.

⁵⁵ Ibid.

According to Milan Vego, “Operational deception pertains to actions and measures to deceive an enemy as to time, place, and details of the planned major operation conducted as a part of a campaign or major joint or combined operation with a strategic objective. Such a deception is normally multi-service and can require multinational assets. It must target enemy commanders with the authority and assets to react in the desired manner; and it must arrive through enemy intelligence systems.”⁵⁶ Effective Information Operations (IO) is an essential part of a believable deception plan.⁵⁷ It is not enough to try to add a little deception at the end of a plan, it must integrate from the beginning, resource accordingly, and must never count as part of the course of action.⁵⁸ It must be believable and in order to do so should be arranged like the real unit to include size, equipment, and personnel.⁵⁹

IO will be essential in deception operations, especially once they pass Phase I. A robust IO campaign (utilizing aid from several Other Governmental Agencies (OGAs)) requires planning and an early start in Phase 0, otherwise once the operation reaches Phase I it may be too late and by Phase II it will likely be lost. An example was seen in the 2011 Libya uprising where the Libyan Electronic Army had not started an effective IO campaign early on, and eventually lost control and with it any credible, believable idea.⁶⁰ Their ability to use the remainder of the local population not involved in the uprising as well as the outside world to their advantage had failed.

At the tactical level, decoy mobile bases must have a similar signature to real mobile bases in every spectrum: electromagnetic, infrared, acoustic, visual, etc. They will need to

⁵⁶ Vego, “Operational Deception in the Information Age,” 61, 62.

⁵⁷ Vego, *Joint Operational Warfare: Theory and Practice*, VII–97.

⁵⁸ *Ibid.*, VII–107.

⁵⁹ Vego, “Operational Deception in the Information Age,” 62.

⁶⁰ Matthieu Aikins, “Jamming Tripoli: Inside Moammar Gadhafi’s Secret Surveillance Network,” *WIRED*, May 18, 2012, http://www.wired.com/2012/05/ff_libya/.

locate in areas where aircraft can operate from, and will require near-real equipment with real people manning it. Rotary wing air traffic should move between them for resupply, and will need a full complement of personnel. Host nation personnel should work there, and convince locals of the base's realism through robust IO. Rather than blocking or attacking enemy networks, OGAs can normalize electromagnetic traffic with real mobile base traffic using cyber and communications transmissions.

This combination of the tactical deception items may increase the time for the enemy to target the mobile bases through diversion of a preponderance of his assets to the problem. Vego suggests considering the enemy's calculus and then assess the deception through operational intelligence sources such as human or signals intelligence.⁶¹ He also states two other things to consider for operational deception. The first is "plans that rely entirely on bluffing often fail," and the second is "an enemy must not have the capability to observe and evaluate the real situation."⁶²

For the MAGTF commander, the deceptions that involve daily movement of the mobile bases are primarily tactical in nature, focusing on items like "signature concealment."⁶³ For DSO to work, the deception must be beyond that, it must be operational. The JFC must prioritize DSO as the initial main effort in his JOAC idea, and set up supporting acts for it. One example is to create multiple pre-prepared sites across the area of operations years in advance to support the concept. For instance, the host nation builds civilian gas stations across the nation close to landing sites fillable with jet fuel from heliborne platforms. Assume operational security and a well thought out information

⁶¹ Vego, "Operational Deception in the Information Age," 62.

⁶² Ibid.

⁶³ U.S. Marine Corps, "MAGTF F-35B Distributed Short Take-Off Vertical Landing (STOVL) Operations - DSO Concept of Operations DRAFT," 2-1.

operations plan is adhered to from the beginning. The enemy may not know the gas stations along massive stretches of highway servicing regular vehicular traffic have also been engineered to fill aircraft. As another example, assume the aircraft carrier is determined to be the friendly center of gravity through the JFC's operational intelligence analysis. A deception forcing the enemy to hunt for the aircraft carrier while simultaneously using DSO to attack those same nodes is possible.

The DSO concept assumes tactical deception when it, in fact, requires planning for operational deception. It must be believable and know how the enemy acquires and uses the information.⁶⁴ It will need a conglomeration of joint assets and capabilities, as well as detailed planning and coordination. This concept warrants further discussion in future iterations to ensure proper nesting in the JFC's overall JOAC idea.

JOINT PLATFORM INDEPENDENCE

The following video of Finnish Air Force F-18s departing from a public road was filmed during Ex. Warkaus 2011 at on Highway 5 in Joroinen Finland. Such kind of training, has been part of the standard training conducted mainly in Central, Eastern and Northern Europe since the Cold War. With the dissolution of the Warsaw Pact, highway take-offs and landings have become less frequent. However, the threat of Russian bombers violating the airspace of Baltic countries requiring QRA intervention is still alive. North Korean Migs and Belarusian ones conduct highway operations every now and then.
- David Cenciotti

While the Marines may consider Operational Deception for future iterations of the concept, they might also need to investigate flexibility in the overall concept premise itself. The DSO concept is designed to give options to the JFC for how he wants to employ Marine F-35Bs in the future A2/AD environment.⁶⁵ It relies on the USMC's natural expeditionary

⁶⁴ Vego, "Operational Deception in the Information Age," 62.

⁶⁵ McGregor, DSO Q & A Session With The HQMC F-35B Requirements Officer.

posture and ability to use assets currently in the service's inventory. Against a near-peer adversary, however, it has already been argued that Operational Protection and Operational Deception are required to succeed with this concept. The final epiphany that nests well with Operational Deception is to divorce the requirement for a particular type of aviation platform. Only then will DSO be viable to the JFC as a concept worthy of priority and supported effort.

A term commonly used in the computing world is “platform independent” which the *BusinessDictionary.com* defines as “software that can run on any hardware platform (PC, Mac, SunSparc, etc.) or software platform (Linux, MacOS, Unix, Windows, etc.).”⁶⁶ Using that definition, the term “Joint Platform Independence” embodies what other foreign national defense organizations have practiced for years.⁶⁷ They do not “handcuff” the concept to a particular platform; rather they use multiple platform types (in this case: aircraft) to enhance a concept of operations. For instance, landing aircraft on highways as a way to distribute them is not a new concept. The Finnish Air Force uses “highway strips” to act as runways during their exercises, landing and taking aircraft off on them in relatively short distances.⁶⁸ In the translated Finnish article, “Russia demands from Finland for a naval base, Gotland occupied - could this happen?” hypothetical hostilities erupt in the littorals of the Baltic Sea between Russia and Sweden, with Finland unofficially aiding.⁶⁹ In the scenario, “One hour after the announcement, a deserted Finnish highway acts as a runway for six arriving JAS Gripen fighters. They are met by a group of Finnish aircraft mechanics who

⁶⁶ “What Is Platform Independent? Definition and Meaning,” *BusinessDictionary.com*, accessed May 16, 2015, <http://www.businessdictionary.com/definition/platform-independent.html>.

⁶⁷ The author of this paper created the term Joint Platform Independence to label the idea of using multiple types of a platform to conduct an operation jointly. The term does not currently appear in joint doctrine.

⁶⁸ “The Finnish Defence Forces: Aircraft of Whirlwind 2011,” accessed May 5, 2015, <http://www.puolustusvoimat.fi/wcm/Erikoissivustot/pvsh11/English/Units+and+equipment/Air+Force+Exercise+Troops+and+Equipment/>.

⁶⁹ Disciplescientist, “What If Russia Demands a Naval Base in Finland or Invades a Swedish Island?,” *Unsolicited Translations Blog*, March 4, 2015, <https://disciplescientist.wordpress.com/2015/03/04/what-if-russia-demands-a-naval-base-in-finland/>.

have received training on servicing Gripens. The Swedish mechanics are on a private plane flying towards the closest Finnish civilian airport.”⁷⁰ Other countries beyond those in the European theater are learning how to gain platform independence with their concepts.

In the Pacific Theater, Taiwan recently experimented with the concept of landing on highways as well.⁷¹ According to an article by the South China Morning Post, “Three jet fighters, an F-16, a Mirage 2000-5 and a home-made Indigenous Defence Fighter, practised landing on a freeway in southern Chiayi county, where they refuelled and loaded missiles and other ammunition before taking off again. [sic]”⁷² These examples show that it is physically possible to use highways, albeit some preparation as envisioned in the Finnish scenario, by conventional non-STOVL aircraft. This additional ability suddenly gives the JFC options for employing the DSO concept in concert with other services assets.

This change to the concept would nest well with Operational Deception while also aiding in maintaining Operational Protection. It gives the JFC more options for using DSO as part of his JOAC plan and allows for graceful degradation and flexibility depending on what the enemy allows. For example, the best option is if the host nation already conducts these aforementioned distributed operations. Then site preparation is likely already complete, and aircraft landing on highways pattern of life already established. Even if the USMC is not conducting DSO at that particular time, the USMC’s concept can still continue as planned and give the JFC options in employing his overall force. Most USAF and all Navy / Marine conventional fighter aircraft have an arresting hook and are able to take off in

⁷⁰ Ibid.

⁷¹ “Taiwanese Fighter Jets Land on Highway in ‘China Attack’ War Games,” *South China Morning Post*, accessed May 3, 2015, <http://www.scmp.com/news/china/article/1593763/taiwanese-fighter-jets-land-highway-china-attack-war-games>.

⁷² Ibid.

less than a mile.⁷³ If USAF and Navy aircraft can land at these prepared sites (possibly using an field expedient arresting gear or even catapult launching system to decrease the required length), giving the JFACC flexibility in employment of his air force.

As the next most degraded option, assume that air assets purely consist of USMC organic assets because of delaying USAF and Navy aircraft due to either swiftness of the crisis or even enemy action preventing their arrival. Marine Hornets could use the concept along with the F-35Bs. According to the 2015 Marine Aviation Plan, 8 of the 20 USMC squadrons will consist of F/A-18s in calendar year 2024, the year of the scenario.⁷⁴ A typical Marine F/A-18 squadron consists of twelve aircraft, and currently there are at least two in the Pacific theater. The most degraded and limiting option is using DSO as it is today, with only F-35Bs. Any increased capacity over just STOVL aircraft gives the MAGTF commander operational flexibility. It allows the massing of fires from multiple Marine and other service platforms and buys the JFC time to conduct follow-on operations with his remaining forces.

CONCLUSION

In a time of fiscally constrained defense budgets with a potential adversary continuing to progress technologically, the USMC must create niche capabilities compatible with the joint environment for the future conflicts that will undoubtedly arise. While the DSO concept is in its doctrinal infancy, Marine Corps leadership is looking for ways to make it more lethal, affordable, and repeatable. As contested near peer A2/AD environments will

⁷³ All USN/USMC F/A-18 Hornet and Rhino aircraft are considered conventional as they cannot conduct STOVL or V/STOL takeoffs or landings.

⁷⁴ For an accurate force breakdown, to include reserve units, F-35C units supporting the Navy and cadre squadrons, follow the column marked “FY23” in the 2015 Marine Aviation Plan; US Marine Corps Department of Aviation, “2015 Marine Aviation Plan.pdf,” 35, accessed March 18, 2015, <https://marinecorpsconceptsandprograms.com/sites/default/files/files/2015%20Marine%20Aviation%20Plan.pdf>.

inevitably continue to be the focus of effort for the foreseeable future, DSO can provide an option for the JFC to complicate the enemy's targeting and reduce asset effectiveness while conducting offensive operations. It will require long lead times to prepare sites and intelligence assets. Joint, interagency, and host nation efforts will need to be prioritized and coordinated. Protection of the force on the land and rear area, a deception plan created from the beginning, and the willingness to embrace Joint Platform Independence will provide the JFC and his subordinate commanders the requisite flexibility to achieve their objective. While DSO requires some changes to enhance its Operational Protection, it is better to have a concept sitting on the shelf to work with than to have nothing at all.

RECOMMENDATIONS

The following recommendations, in priority order, enhance Operational Protection for the DSO concept. First, MAGTF intelligence must commit to formalizing relationships with U.S. intelligence agencies and adjacent services. Second, during a phase where DSO is to be utilized, a plan to formalize relationships between the JFACC, JFMCC, and JFLCC with regards to missile defense must be created. This recommendation is to ensure prioritization of the M-FARPs on the Defended Asset List as well as establishing a command and control structure complete with checks and balances for avoiding fratricide in a near continuously mobile base environment. Third, consideration of deception and ways to conduct deception beyond the tactical level must be explored from the beginning of the plan. Focus should be on Operational Deception characteristics in support of higher deception plans. Fourth, the concept should examine the feasibility of divorcing platform specific aircraft from the M-

FARPs, especially when using highways. JFCs should be open to adding this to their Operational Idea and prior to deployment and joint forces should train to this concept.

BIBLIOGRAPHY

- Aikins, Matthieu. "Jamming Tripoli: Inside Moammar Gadhafi's Secret Surveillance Network." *WIRED*, May 18, 2012. http://www.wired.com/2012/05/ff_libya/.
- . "The Untold Story of the Battle of Bastion." *GQ*, September 3, 2013. <http://www.gq.com/news-politics/newsmakers/201309/battle-of-bastion-taliban-afghanistan-air-base>.
- Burge, David. "100 Bound for Guam: Fort Bliss THAAD Unit Readies for Historic Mission." *El Paso Times.com*, September 4, 2013. http://www.elpasotimes.com/news/ci_22983471/100-bound-guam.
- Cifuentes, Lcpl Michael S. "Warfighting Lab Equips Marines with Added, Enhanced Capabilities." *Free Republic*, June 2, 2006. <http://www.freerepublic.com/focus/f-news/1642930/posts>.
- Conway, General James T. "A Concept for Enhanced Company Operations." Washington, DC: Headquarters, U.S. Marine Corps, August 28, 2008.
- deGrandpre, Andrew. "Marine Officer to Receive Silver Star for Heroics in Camp Bastion Attack." *Marine Corps Times*, December 5, 2013. <http://archive.marinecorpstimes.com/article/20131205/NEWS/312050027/Marine-officer-receive-Silver-Star-heroics-Camp-Bastion-attack>.
- Department of the Army, Headquarters U.S. Army Forces Command. "USCENTCOM Bastion Attack Investigation Redacted 15-6 Report," August 19, 2013. <http://www.hqmc.marines.mil/Portals/142/USCENTCOM%20Bastion%20Attack%20Investigation%20Redacted%2015-6%20Report.pdf>.
- Disciplescientist. "What If Russia Demands a Naval Base in Finland or Invades a Swedish Island?" *Unsolicited Translations Blog*, March 4, 2015. <https://disciplescientist.wordpress.com/2015/03/04/what-if-russia-demands-a-naval-base-in-finland/>.
- Klimas, Liz. "War Drums? U.S. Military Building Missile Defense Radar Station in Qatar." *The Blaze*, July 17, 2012. <http://www.theblaze.com/stories/2012/07/17/war-drums-u-s-military-building-missile-defense-radar-station-in-qatar/>.
- Lamothe, Dan. "Bastion Attack Kills Squadron CO, Sergeant." *Marine Corps Times*, September 17, 2012. <http://archive.marinecorpstimes.com/article/20120917/NEWS/209170313/Bastion-attack-kills-squadron-CO-sergeant>.
- . "Harriers Destroyed in Attack to Be Replaced." *Marine Corps Times*, September 25, 2012. <http://archive.marinecorpstimes.com/article/20120925/NEWS/209250318/Harriers-destroyed-attack-replaced>.

- Majumdar, Dave. "Marines Surged Harriers to Afghanistan within 36 Hours of Attack." *The DEW Line*, October 10, 2012. <http://www.flightglobal.com/blogs/the-dewline/2012/10/marines-surged-harriers-to-afg/>.
- McGregor, Maj Brett W. DSO Q & A Session With The HQMC F-35B Requirements Officer. Phone Call, April 16, 2014.
- Nordeen, L. *Harrier II: Validating V/STOL*. First Edition. Annapolis, Md: Naval Institute Press, 2006.
- Schmidle, Bgen Robert E. "Distributed Operations: From The Sea." *Marine Corps Association & Foundation*, July 2004. <https://www.mca-marines.org/gazette/2004/07/distributed-operations-sea>.
- "Schriever Air Force Base - Global Positioning System." *Schriever Air Force Base Official Web Site*. Accessed April 23, 2015. <http://www.schriever.af.mil/gps/>.
- Systems Planning and Analysis, Inc. "Distributed Short Take-Off Vertical Landing (STOVL) Operations: An Initial Look at Concept Development and Feasibility - Final Report," February 13, 2014.
- "Taiwanese Fighter Jets Land on Highway in 'China Attack' War Games." *South China Morning Post*. Accessed May 3, 2015. <http://www.scmp.com/news/china/article/1593763/taiwanese-fighter-jets-land-highway-china-attack-war-games>.
- "The Finnish Defence Forces: Aircraft of Whirlwind 2011." Accessed May 5, 2015. <http://www.puolustusvoimat.fi/wcm/Erikoissivustot/pvsh11/English/Units+and+equipment/Air+Force+Exercise+Troops+and+Equipment/>.
- U.S. Marine Corps. *Expeditionary Force 21: FORWARD and READY, Now and in the Future*. Washington, DC: Headquarters, U.S. Marine Corps, 2014.
- U.S. Marine Corps, Department of Aviation. "2015 Marine Aviation Plan." *U.S. Marine Corps Concepts & Programs*. Accessed March 18, 2015. <https://marinecorpsconceptsandprograms.com/sites/default/files/files/2015%20Marine%20Aviation%20Plan.pdf>.
- . "MAGTF F-35B Distributed Short Take-Off Vertical Landing (STOVL) Operations - DSO Concept of Operations DRAFT." Washington, DC: Headquarters, U.S. Marine Corps, January 20, 2015.
- U.S. Office of the Chairman of the Joint Chiefs of Staff. *Command and Control of Joint Air Operations*. Joint Publication (JP) 3-30. Washington, DC: CJCS, 2014.
- . *Countering Air and Missile Threats*. Joint Publication (JP) 3-01. Washington, DC: CJCS, 2012.

———. *Joint Operational Access Concept (JOAC)*. Ver. 1.0. Washington, DC: CJCS, 2012.
Vego, Milan N. *Joint Operational Warfare: Theory and Practice*. Newport, RI: U.S. Naval War College, 2009.

———. “Operational Deception in the Information Age.” DTIC Document, 2002. <http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA525610>.

“What Is Platform Independent? Definition and Meaning.” *BusinessDictionary.com*. Accessed May 16, 2015. <http://www.businessdictionary.com/definition/platform-independent.html>.