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REPAIRING KNOWLEDGE SHARING IN THE UNITED STATES SPACE FORCE: UTILIZING THE SPECIAL OPERATIONS FORCES STRUCTURE

by

Cassandra A. Jerkovic, Maj, USSF

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Advisor: Dr. Jon Skinner

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PREFACE

My career has been like that of a pinball. From deployed Information Technology (IT) healthcare, to space and launch operations, to performing intelligence collection operations and supporting Special Operation Forces, I have gained a perspective across many different facets of the military that I would not trade. While the path was very unconventional, the various pieces have allowed me to formulate a holistic picture of how each job plays into one another and further expands my knowledge to understand and comprehend why the Department of Defense has maintained such success. However, as I transferred into the United States Space Force (USSF) from the United States Air Force (USAF) and shortly after supported Special Operation Forces (SOF) entities, it became apparent that there have been gaps in providing space-based services to a wider audience throughout the Department of Defense (DoD) and Intelligence Community (IC).

Working with reconnaissance satellites and communicating with the warfighter to understand their requirements, the process of communication appeared to be more of a relation-based network. In other words, the personal relationships between personnel within the service dictated who worked on the satellites and how some satellites were designed. As multiple crises kicked off within the past four years, such as COVID-19, the withdrawal from Afghanistan, the Russia-Ukraine Crisis, and the Israel-Gaza Crisis, it became more apparent that satellites were needed for contested areas of responsibilities. However, the need for satellite coverage placed heavy coverage in these crisis areas, leaving other areas of interest with little coverage; thus, this demonstrated to adversaries and competitors that distractions may take priority of U.S. assets, allowing gaps of coverage to occur. This gives the adversary another potential course of action being strategic distraction and forces opponent misalignment.

Both the DoD and IC can benefit from a properly distributed service. Special Operation Forces (SOF) are comprised of the elite units of the U.S. military and are given clandestine, dangerous tasks in hostile environments. They need as much support as they can get with respect to training, products, and intelligence given their small footprint. While Joint Special Operations Command was established in 1980, they proved their effectiveness with a selective force.

> *"We dubbed this goal—this state of emergent, adaptive organizational intelligence —shared consciousness, and it became the cornerstone of our transformation."*[1]
>
> — General Stanley McChrystal, Team of Teams

Other small forces can use the methods developed by SOF to create success. Therefore, the USSF can use the SOF Truths to emulate and redefine their culture and eliminate poor processes that otherwise would have been inherited from the USAF. This work illustrates how the USSF can study the SOF Truths and Joint Special Operations Command's (JSOC's) agility and mold those methodologies to fit the rapidly evolving nature of space-based support. Of the SOF Truths, the USSF needs to utilize liaison officers and representatives by placing them throughout the DoD as well as receive them from other services. To close the knowledge gap of what requirements are needed, the USSF needs to focus on getting the right information the first time from the users before expending years on satellite development. Additionally, as commercial industry has expanded their capabilities, the USSF needs to recognize more companies, including small businesses, to tap into and control the space domain. This is performed through placing quality personnel over quantity, placing them throughout the DoD, and accepting more commercial-based companies. This helps eliminate stovepipes and allows for more warfighters to benefit from the expanding space-based services.

I am thankful for by my husband, John, who provided his support throughout the ACSC program over the past two years. We would spend many nights discussing war theories and he would tell me stories of his 30+ year career in the 75th Ranger Regiment and DoD. He is the main inspiration for my papers topic and he truly is a hero in many ways. To the rest of my family who understood and accepted my time commitment to school after work, thank you for your patience and support. They are all a blessing, give me happiness, and are the reason I serve. Lastly, thank you to my fellow Guardians and SOF personnel who provided their input, wants, and needs that helped me formulate the thoughts and ideas for an ideal developing force. This all drives me to be a better leader, listener, and problem-solver. Together, we can make a difference and truly demonstrate that the sky is no longer the limit.

ABSTRACT

The USSF has the opportunity to take the lessons learned from their counterparts, specifically JSOC, to create a strong baseline as a unique, compact service. As the USSF has been a service for over four years and the budget continues to rise, the placement of personnel continues to change with an inconsistent structure. This causes not only confusion for current and incoming Guardians but further consternation between the USSF and services it is required to support. Thus, the USSF must reassess the organizational structure, qualifications, and use of current and future Guardians. Through research and observations of SOF Truths and JSOC agility, proven successes are demonstrated with elite units with limited personnel. The USSF can benefit from the powerful implementation patterns demonstrated by SOF as they are strong, agile forces with proved success. The SOF Truths and JSOC agility prove that utilizing a flat organization to share data rapidly with the use of a structured liaison system with refined compartmentalization and a strong familial culture will allow for a successful organization of a smaller, agile stature, such as the USSF.

Keywords: USSF, SOF, JSOC, Baseline, Culture, Partnerships, Liaisons, Integration

I. INTRODUCTION

The Department of Defense (DoD) and Intelligence Community (IC) are facing a new hybrid war in the Great Power Competition (GPC). Given the rapid evolution of technology and worldwide dissemination, the United States (U.S.) is in need of innovative means to rapidly transmit intelligence to the end-users supporting the warfighters. While the DoD and IC processes are widespread and deeply established, change must occur. Given that the United States Space Force (USSF) is the newest branch of service, it has the opportunity to reestablish a new baseline founded on lessons learned from streamlined, agile Special Operations Forces (SOF). Additionally, the USSF modeling a SOF organizational structure may serve as proof to other services to adopt and mimic later on. The most effective way for the USSF to improve intelligence sharing throughout the IC and DoD is to implement SOF Truths encompassing multi-domain access and adopt an agile and flexible joint task force team structure, similar to the Joint Special Operations Command, to rapidly reallocate limited space-based capabilities and respond with commercial and national technological means. Thus, more refined intelligence will be available to counter national threats and global crises.

The amount of data collected through national technical means and in the commercial sector is expanding at an exponential rate and is far greater than the number of DoD and IC analysts capable of processing and exploiting the intelligence data at mass volume.[2] Furthermore, the processed data is not filtered through the same data terminals, programs, systems, or networks across the numerous government infrastructures, which causes bottlenecks in intelligence sharing.[3] The USSF will continue to perform as a lean organization and must adopt a culture that embodies agile and rapid response teams to support the DoD and IC partners.[4] This will allow

the USSF to comply with the Joint Publication (JP) 3-14, as owners and enablers of the largest national technical means and new investors of commercial data. [5]

To address this concern, this paper examines the following question: "How can the USSF in its developmental operating stages, in a multi-domain operating environment, use the Special Operations Forces structure to fast-track intelligence sharing for operational analysis?"

While the USSF allocates over 7% of their personnel to perform detailed tours to support the National Reconnaissance Office, they lessen the amount of personnel who could be dedicated to the USSF-specific missions.[6] As the USSF re-baselines and grasps which mission-sets should belong to the USSF, United States Space Command (USSPACECOM), National Reconnaissance Office (NRO), and other space organizations, the USSF may need to plus-up their personnel by about 10% per space agency partnership for a temporary period of time. With this small increase in Guardian personnel, the USSF should insert their presence within the rest of the IC and DoD as temporary tiger teams and liaison officers providing knowledge capabilities and in-turn, gathering user requirements. Overall, this process will enhance the USSF process requirements and Tactics, Techniques, and Procedures (TTPs) to the Tasking, Collection, Processing, Exploitation, Dissemination (TCPED) process providing rapid support to the warfighter and national security needs.

This paper employs a Problem/Solution framework to determine the most effective way to implement the SOF Truths and JSOC model in rapid agility in the USSF as a testbed to close the knowledge sharing gap within the IC and DoD. Ultimately, this paper asserts that the USSF should utilize and adopt a SOF framework and JSOC model as a propagating force for improving the intelligence sharing process. While commercialized data centers are currently being used to support the DoD, this demonstrates the initial fault and stagnation of knowledge sharing by the

heightened security measures as technology continued to propel exponentially in the early 2000's.

The methodology in this paper assesses the cross-correlation of the SOF Truths and the JSOC agility to their successful structures. This historical examination of the formation of JSOC to their success infers that specialized, agile teams that are adequately prepared prove successful operations. Thus, it is argued Special Operations Forces framework of pulling resources from multiple resources in an agile fashion can be implemented within the baseline of the newly minted USSF. This paper also demonstrates how to alter the framework and policy to benefit the USSF's baseline.

Additionally, the USSF will not only act as a force to pull branches of service together, but act as the central data repository arm pushing out data to the rest of the DoD and IC. This demonstrates an open cross-communication structure with the use of more USSF Field Representatives across the DoD, IC, and industry partners. This will also fill the gaps and hindrances of the compartmentalization by allowing select USSF personnel into other organizations mission sets.

Given the new and most complex domains between space and cyberspace fall within the responsibility of the USSF, the USSF should have direct requirements from the National Security Council just as JSOC does in rapid responses. This partially flat structure will be compared to not only JSOC but successful entities such as the CIA. The business industry will be incorporated within the courses of action to enhance the partnerships within the USSF. The structure put forth may be drawn upon as the status for success leading to courses of action for implementation of SOF Truths through business operations and JSOC agility into the USSF.

Lastly, this research paper offers an overall solution to the intelligence gaps and allow for further investigation and implementations across the DoD and IC.

II. BACKGROUND

The DoD continually reshapes its many organizational structures to adjust to the current nature of the national security problems and national economic stability. For instance, the CIA added China Mission Center in 2021 to adjust to the current climate and need for personnel with those specialties.[7] Thus, the budget for the DoD and IC continues to increase at an exponential rate. The DoD budget has gone from $287B in Fiscal Year (FY) 2001 to a requested $773B in FY23, not including inflation adjustments.[8] However, as intelligence gathering, communication, and Information Technology (IT) costs increase, different DoD components and IC components use different platforms rather than consolidated platforms while receiving a fraction of the $130.1B Research, Development, Test and Evaluation (RDT&E) budget.[9] Although the RDT&E infrastructure is slowly changing, in hindsight, this will cost more to restructure as a reactive approach than if it was implemented twenty years ago as a proactive approach. For example, the medical records for the DoD are still in the process of being consolidated under a central data repository at the cost of $5.5B over budget and two years behind schedule.[10] This is just one example of collaborative platforms and knowledge sharing across the DoD that has adapted to the consolidated network and platform at a price greater than if it was in a centralized data repository from the beginning.

When various forms of intelligence are shared across various platforms and networks, depending on the classification and levels of protection and security, the costs and agreements on consolidated platforms increase immensely under Joint All-Domain Command and Control (JADC2) initiatives.[11] Additionally, the ability to alter these platforms to support the consumers'

needs become more difficult and accusatory in nature as to who is to be responsible for such efforts. Operating across multiple domains was recognized early by the DoD and the ability to react quickly was sharpened in 1980 when Joint Special Operations Command (JSOC) was created. JSOC efforts enabled rapidly deployable forces for quick emerging contingencies. Additionally, the U.S. DoD and IC developed modern warfare strategies and tactics commensurate with the technology that was available, as demonstrated with the success of Operation Desert Storm. During the 1990's, the internet gained more public popularity, allowing the flow of information to skyrocket. However, while the flow of information spread across the world, different platforms to store and contain this information within the government agencies were created; thus, overall causing multiple lines of disconnect.

Although the ability to share knowledge increased, the protection measures and more compartmented sections were created to protect critical information, while also hindering the distribution of critical information. This compartmentalization protects the government from leaked secrets but can also hinder the transference of knowledge in times of crisis. As such, tragedy struck with the events of 9/11. General McChrystal created Joint Special Operations Task Force - Al Qaeda in Iraq (JSOTF–AQI) following intelligence gathering post-9/11.[12] The Intelligence Reform and Terrorism Prevention Act (IRTPA) of 2004 created the Office of the Director of National Intelligence (ODNI) to provide overarching guidance and budget to the IC components and force collaboration within the IC.[13] The tragedies of 9/11 united the citizens of the United States and the DoD and IC began to collaborate more with knowledge sharing to ensure such a horrific attack would never happen again. Throughout the two-decade Global War on Terror (GWOT), more programs, compartments, and organizations have been created, which reverted back to stovepipes within the government.

One of those new organizations became the United States Space Force, separating the space component from the United States Air Force (USAF). Thus, only specific career fields, Acquisitions, Engineering, Space Operators, Cyber, and Intelligence Analyst career fields, were allowed to transfer from the USAF to the USSF. Consequently, the personnel can become subject matter experts in those fields. The USSF only received about 8,000 military personnel to join the Space Force since its formation in December 2019 and the plans are to keep the USSF small, agile, and focused in specific missions.[14] Therefore, while the Space Force acts as a support component to missions that are state-side and in forward-deployed environments, they may be called upon to provide their overarching viewpoint and analysis in a Joint Task Force (JTF) environment.

This paper argues for the inclusion of the USSF in Special Operation Forces (SOF) JTF teams inclusive of cyber and intelligence, thus, propelling the USSF leading environmental, cyber, signal, and imagery intelligence for the DoD and the IC. This does not mean that the USSF would have their own JSOC unit, but would use the SOF Truths implementing the multi-domain and multi-partnership methodology and the JSOC model of agility, flexibility, and flat and fast operation leading the Intelligence, Surveillance, Reconnaissance (ISR) domain and controlling the ISR flight plan. [15, 16, 17] Just as SOF evolved to defeat the new modern warfare where the new enemy is not following the Rules of Engagement and are using unethical tactics such as utilizing women and children as cover and weapons, the military needs to make another reassessment on how to fight the next war in the world of globalized technology utilized as weapons. While the U.S. government relies on dated technology that has been deciphered by adversaries, the creation of the USSF offers a new beginning toward capitalizing on commercial technology to monopolize on the ISR and space domain real-estate, placing the U.S. government ahead in the

Global Power Competition[18]. In order for the USSF to efficiently tackle this global mission, the foundation must implement the mindset of JSOC agility and SOF Truths through methods of unique and expansive partnerships.

III. IMPLEMENTATION OF SOF AND JSOC STANDARDS IN THE USSF

As the USSF begins their process on uncovering space-based and cyber-based intelligence and capability gaps, they must agree on an organizational structure that can fulfil the growing responsibilities. Through the observation of SOF and JSOC methodologies, the USSF should utilize the SOF Truths to build internal and external partnerships and JSOC agility to prepare and respond to immanent and current threats. Lastly, policy and process improvements are assessed for implementation.

A: SOF TRUTHS

Each of these SOF truths apply to how the USSF must treat their force in order to utilize a small force to support joint operations. Below are five SOF Truths and how they can be interpreted for the USSF missions.

1. "Humans are more important than Hardware."[19]

The first obvious answer is that without humans, the hardware would not exist. However, that is not the intent of this statement. The Special Operations Forces train their elite personnel to complete the mission, regardless of the hardware. They adapt and overcome their environment with their subject matter expertise. While the use of automated satellites or other tools of collection and communication are needed the human mind and subject matter experts (SMEs) are still needed to decide how and when to implement the capability. It is up to the personnel, or

SMEs, in the USSF to build, acquire, and utilize the next innovative hardware to support the space mission. There are some that may argue that artificial intelligence and machine learning (AI/ML) may take over some jobs, however, there will be a need to write those lines of code to generate the AI/ML. Even though the machine learning process will make advancements, it is up to the humans to continue to update the hardware and software during operations and maintenance. Additionally, AI can only go so far, while the use of human interaction and observation may provide more predictability factors.

Lastly, the human mind will be able to determine possible courses of action that take into consideration the optic and potential actions of others. AI/ML has yet to prove these capabilities. AI can determine a terrorists funding pattern but the analyst can determine the motive. In a recent Center for a New American Security (CNAS) study, Robert Work and Greg Grant illustrate that the U.S. has declined in purchasing power compared to China with their growing capabilities within the China's People's Liberation Army (PLA).[20] As the innovative stagnation plagues the U.S. while it continues to keep up with Operations and Maintenance (O&M), the PLA has been able to develop industrial and technical espionage due to quicker observation in the past two decades. Their historical study to present day provides reasoning and just-cause for the U.S. to change their battle network efforts in a more collaborative space given that the next war may occur in the space and cyber domains. Thus, the USSF will always need humans to stay in the loop of innovations and progress. It also proves the following SOF Truths below.

2. "Quality is better than Quantity."[21]

With respect to the second truth, quality must be taken into account over quantity. There are only so many satellites that the USSF and NRO can place into specific orbits. The collision

avoidance (COLA) list is expanding with each launch, collision incident, accident, and debris, in which the launch windows of opportunity decrease. Depending on the orbit the satellite is slated for, if the window is missed, it may be months to another year until they have the next opportunity to launch. Satellites have traditionally taken up to a decade in the lifecycle process to launch. Given the technological advancements, it is taking less time to produce such satellites. However, the amount of data they collect or the amount of data they are to transfer is increasing in fidelity which means more bandwidth will be needed at the ground sites for processing. Thus, the satellites must be carefully thought out and planned for extended use and have capabilities of on-board processing and allow for updates to keep up with the speed of technology. While small satellite or pico-satellite companies intend to replace satellites every three to five years, they must anticipate the increase in the COLA list and the potential for stricter space guidance in the near future. As global coverage is key, if the quality is not suitable for the warfighter, the capability may be considered a failure.

3. "Special Operations Forces cannot be mass produced."[22]

Additionally, the services of the USSF should not be mass produced since operations require different needs. Some missions may need a higher level of fidelity of the imagery. Some missions may need more signal coverage to perform multi-satellite geolocation to track a target. Other missions may only need special satellite communications to operate in difficult to detect frequencies. As stated in the second SOF Truth, since quality is coveted over quantity, the quality also deduces that mass production is not the answer. Thus, while many operations can utilize the same or similar USSF capabilities, the capabilities must be shared and continuously expanded upon to keep up with the rapidly changing technology and environments.

4. “Competent Special Operations Forces cannot be created after emergencies occur.”[23]

The fourth SOF truth explains that the capabilities cannot be created after the emergency, rather, it must be available prior to the emergency. This creates a more proactive approach instead of a reactive approach. For the USSF to be mindful of the allocated budget, it must promote innovative technology to create the unfair competitive advantage over the other great powers of the world and adversaries. Additionally, this technology must be made available to the users for use in their intended environment, otherwise, it is not a capability but a mere object.

5. “Most Special Operations require non-SOF assistance”[24]

Lastly, external assistance is needed. The USSF cannot perform their operations without the use of contractors and continuing to evaluate and partner with external companies and organizations. JSOC units are comprised of highly trained experts in their domain and they accept nothing less. They also contract specialized products and additional personnel to aid in their missions. If the USSF treated their recruiting in a similar fashion in which they too selected highly trained experts, created intense training programs to enhance their Guardian’s knowledge, and were more accepting of more contracts with newer space businesses, they would expand their reach and implement more control over the commercial space-based companies. By partnering with other commercial businesses, this would also allow for the USSF to develop other products otherwise not initially conceived through the USSF alone.

All five SOF Truths concepts can be applicable to the USSF to ensure this small force is successful. However, it is important to remember that the special operations forces have grown from 38,000 personnel in 2001 to 73,000 almost 20 years later.[25] This may be indicative of a

need for a growing Space Force as well. In the meantime, the USSF needs to continue to develop proven methods while maintaining a small force.

While these SOF Truths can be utilized in the USSF, the next step is to delve into the possibilities of how to implement these SOF Truths within the current USSF baseline structure. The JSOC Agility aids in implementing the SOF Truths by developing and utilizing subject matter experts through a highly selective process. JSOC Tier 1 units only select those with the will, determination, and talent to accelerate through the rigorous training courses and dominate on the battlefield. While JSOC units are competitively selective, the USSF should be competitively selective to ensure they are only receiving the most competent space operators, engineers, cyber professionals and space-based acquisition professionals. This is crucial for the USSF as it does not have a stable training curriculum yet. The training pipelines are still under active development, however, the mission to support the warfighter and Tier 1 units does not stop.

B: JSOC AGILITY

JSOC has been carefully crafted and due to its success rate, is carefully examined in an attempt to understand how it works, why it works, and how to replicate its structure and ethos to promote success in other lean organizations. A team of PhD's and CEO's with elite qualifications, higher educations, and many years of experience studying and implementing successful business trends from Deloitte applied their expertise to the understanding of the formation of Joint Special Operations JTFs.[26] The team analyzed how taking specific operators from the various elite DoD forces and combining them with the top analysts from the Intelligence Community, allowed the Joint Task Force teams to operate with efficiency, yielding

more raids with rapid results based on finished intelligence. The team also implemented the "train like you fight" methods giving the JSOC JTFs the ability to find the gaps.[27]

Through General McChrystal, the JSOC "team of teams" was developed in order to perform rapid operations in a flat organization.[28] Through Tier 1 units and intelligence analysts within the IC, the combination of backgrounds was carefully crafted to create small teams with maximum performance and brainpower. These teams created working-groups to meet at specified times to assess the developing threats. These teams then would be disseminated back to the general workforce within JSOTF-AQI. Through the broader JSOTF-AQI, technology and information were rapidly spread throughout the teams as a flat organization.[29] This flat organization within JSOTF-AQI is similar to how the CIA is run as a mostly flat organization, in which the teams are comprised of various levels and backgrounds, operating together under the structured organization.[30] In other words, more autonomy, responsibility, and trust are placed within the personnel to run operations while a formal structure provides top cover. Overall, based on aforementioned sources, this increased cross-communitive and collaborative team performance.

President of the Space Strategies Center, Paul Szymanski, used the Joint Planning Doctrine, JP 5-0 Joint Planning, in conjunction with historical data from the Campaign in Iraq, to formulate a proposed Space Centers of Gravity, based on Col Warden's Center of Gravity (COG) model.[31] Szymanski's adaptation of the COG model, the SPACE COG model, Figure 1, allows for the specific focus on space-based efforts supporting missions. The outer ring determines the products, such as satellites, needed for space launch. Once the assets are launched into space, the scientists and technicians are to maintain the assets, to include ground and other data-link assets. Once the products have reached Initial Operating Capability (IOC) or Full Operational Capability (FOC), situational awareness is monitored. The targeting and command process is

then implemented for collection, disseminations, and communications. Lastly, the Space Leadership determines how to command and utilize the assets and data. To continue momentum in the space domain, these rings must occur in a parallel manner in order to refine requirements over time. Figure 1 below depicts how the USSF can develop their flat organization while propelling towards the true aim to Act in the Scan-Observe-Select-Orient-Decide-Act (SOSODA) model, as demonstrated in section D. Process Improvement.

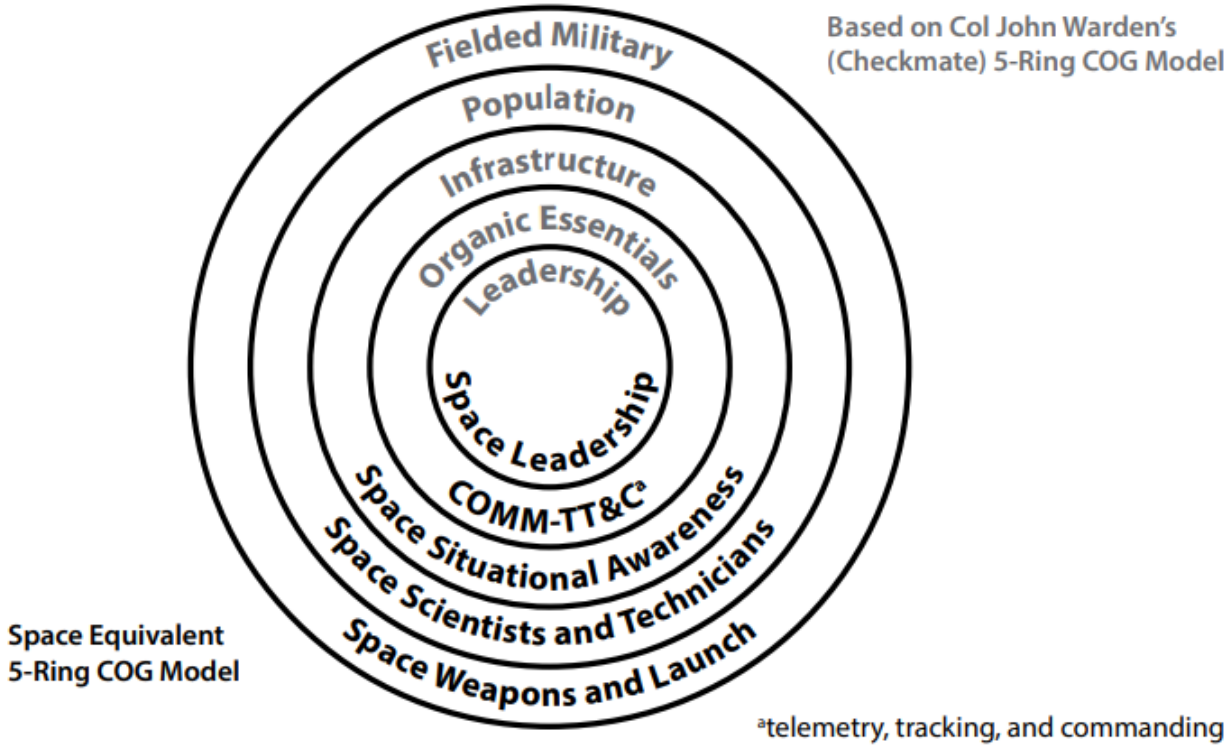

Figure 1: SPACE COG Model (Szymanski 2019)

What the COG model demonstrated for SOF was the ability for the teams to share information and tactics throughout the DoD and IC, closing the gaps to operate faster. This collaborative, joint structure with various entities to close the gap of knowledge and experience demonstrates the first and last SOF Truths, "Humans are more important than Hardware," and "Most Special

Operations require non-SOF assistance."[32] The combination of human efforts in a joint team brings together more courses of action and increases the likelihood of success. For the USSF to close the gaps and provide rapid intelligence, agile and joint teams must be integrated throughout the branches of service and other services should also provide subject matter experts to be integrated within the USSF missions. This bridges the communication gap and exposes the USSF to what the mission is, directly from the tip of the spear experienced personnel. The agile nature of the joint task force teams, in conjunction with their communication methods, prove that the requirements to the USSF come from both the Armed Forces overseas in enemy territories and within U.S. territory. Thus, given the different environments that the USSF provides support to, policy is the next hurdle.

C: POLICY

1. TIMING FOR INTELLIGENCE SHARING

Due to the joint nature in JSOC operations, the intelligence sharing was more collaborative given the joint environment within the JSOC Tier 1 units and the IC. Additionally, given the multiple lanes of authority between the units and agencies, operations were conducted at a more rapid pace. As the space domain responsibilities broke off into the USSF, the intelligence sharing capabilities must also be reviewed to perform in rapid applications to missions. This requires the USSF to understand the requirements of the joint community it now supports.

As the Joint Publication 3-14 is a joint doctrine under the Chairman of the Joint Chiefs of Staff, the Armed Forces are given instruction and goals for what the Chairman of the Joint Chiefs of Staff (CJCS) is intending on completing through the agreements with the joint force commanders and the combatant commanders. Under this Joint Publication, it is understood that these guidelines may change over time to adjust to the geopolitical situations and crises while

placing national security in the forefront. Though there are strategies produced solely by the United States Space Force and the United States Space Command, this publication propels all Armed Forces, regardless of branch of service, to cooperate, protect, and execute, the space missions, which in turn protect the United States. [33] The Joint Chiefs of Staff are broken out into only eight directorates and all publications under Joint Publication Section 3 fall under operations. Joint Commanders are to follow this joint doctrine unless paramount situations arise within unforeseen circumstances not covered within the Joint Publication Operations Series. This publication, in tandem with the National Security Strategy (NSS), will operate as a baseline for the justifications for the USSF to incorporate a joint operational unit nature.[34] As such, utilizing an already established joint force will set the tone and appropriate baseline for the newly formed USSF.

2. INTERNATIONAL CHANGES FOR INTELLIGENCE SHARING

The U.S. cannot collect intelligence on U.S. citizens without prior authority from government agencies; however, in order to protect against terrorists without borders, this paper argues that policy should change. With respect to the fourth SOF Truth, "Competent Special Operations Forces cannot be created after emergencies occur," policy changes to using title 10 and title 50 authorities must be made in a proactive manner or organizational structures must be joint to combine personnel on JTF's to utilize both authorities.

While it is known that social media and applications collect information on personnel who use them, policy should be adjusted to inadvertently collect U.S. wide, as well as any device that has traversed outside of U.S. soil, in efforts to create greater intelligence collections to increase the accuracy of collection algorithms. This would be in an effort to defend the nation against enemies, both foreign and domestic. This would be a combination of the USSF and the IC, given

the differences of authorities given to the Guardians, whether they are supporting the USSF or IC missions. However, the USSF would not need to directly report to the NSC as JSOC does because the USSF still acts as a conduit of information for the tip of the spear users.

As members of Deloitte examined JSOC abilities, to delve deeper into the Space Force strategies, the Center for a New American Security selected Elbridge Colby as the Robert M. Gates Senior Fellow to expand on the frameworks for deterrence in space.[35] Expanding on the current U.S. response to GPC threats, Colby created a framework based on rules of engagement in space and how they correlate to actions within other domains to drive down the risk of space assets. This study correlates to the need for change and driving down risk in a rapidly changing environment, similar to the need for JSOC in the 1980s. The fifth SOF Truth of incorporating outside partners and JSOC model of agility aids in the policy-based framework created by Colby.

There is no question that the USSF supports the joint mission on national security. However, as the USSF is a small service, the question lies in who should the USSF partner with in order to provide such protection measures to the joint force? They are small in numbers and can only support so much given the personnel and resources constraint. For instance, the Five Eye (FVEY) partners, United States, United Kingdom, Canada, Australia, and New Zealand are in an alliance for providing intelligence in a cooperative manner that provides a mesh network of information gathering and sharing in order to protect those five countries and their mutual interests.[36] The FVEY partners need to bring together their space capabilities in a more collaborative effort to halt the other great powers from propelling forward in their collaborative efforts, especially China, Russia, and Iran. To allow such maneuvers would implement more declassifications to allies to aid in rapid intelligence sharing and intellectual property sharing.

D: PROCESS IMPROVEMENT

In order for the USSF to create a solid baseline, they must develop their Guardians with the culture in mind, just as JSOC has done. More analysis has been conducted by non-profit organizations to illustrate the evolution of the decision processes. A team of military professionals took the 1950's Col John Boyd's Observe-Orient-Decide-Act (OODA) loop model and enhanced the measures to evolve and create the Scan-Observe-Select-Orient-Decide-Act (SOSODA) model, as illustrated in Figure 2.[37] The OODA loop originally provided fighter pilots the ability to make rapid decisions with a higher confidence of accuracy. The USSF could simply maintain the OODA loop by ingesting large amounts of information, deciphering how to act on the intelligence provided through various collection methods, and act by providing the information to the intended user. In some instances, the USSF will be the user as other countries attempt to attack the U.S.-owned satellites. While it is usually preferable to streamline the process and eliminate portions of the bureaucratic process that induce bottlenecks, data needs to include more protections and encryptions as technology and foreign advancements increase. Thus, the SOSODA model adds additional steps to Scan and Select. Given the increasing amount of data ingested by USSF and IC assets, the need for parsing out the data in an organized manner is becoming more difficult.

Therefore, this model adds additional steps to account for data analytics based on intelligence sources gathered from the DoD and IC as illustrated in Figure 2. While joint task force teams were observed, it was noted that the initial scanning of the environment based on what data is needed and selecting the efforts based on prioritization was missing from the traditional OODA loop model. The joint task force teams proved that this allows for enhanced predictive scenarios based on historical datasets. This has not been as apparent in the DoD as a whole where the

decision-making process is spread up throughout the command. Furthermore, these operational environments are transferred into the information domain for all DoD and IC components to utilize, based on specific levels of clearance, to send through decision nodes and output potential decisions in joint environments.

The SOSODA could also aid in the dynamic targeting kill chain, find, fix, track, target, engage, and assess (F2T2EA). While the Air Force Doctrine Publication 3-60 on Targeting focus establishing a common kill chain process, F2T2EA, it is also noted that commanders are encouraged to shorten the cycle by creating a common operational picture (COP).[38] The COP can be utilized among many different groups within the same Area of Responsibility (AOR). Through both the OODA loop and SOSODA loop, the Orient step allows for commanders to utilize Data Analytics. Thus, the patterns created in the COP may also be copied and repurposed for other AORs with similar missions. The knowledge sharing gap narrows with the implementation of the accessible COPs.

Since the USSF is taking on the bulk of the cyberspace role for the Armed Forces, due to data sharing and consolidated contracts and unified platforms, the Space Force can utilize the SOSODA model, Figure 2 below, to enhance their knowledge sharing across the joint operations and joint planning efforts. By enforcing the SOSODA model, the USSF commanders will gain a deeper understanding for the operational environment while also identifying multiple means and methods of alternatives to provide rapid response times to the changing environment. This model forces the commanders to realize their critical priorities. This enforces the second SOF Truth by increasing the quality of the decision-making process. As resources will continue to be constrained due to the expanding threats and limited numbers of analysts available, the USSF

will provide better sources of data per the mission at more rapid speeds in parallel to other areas of responsibility supporting various missions.

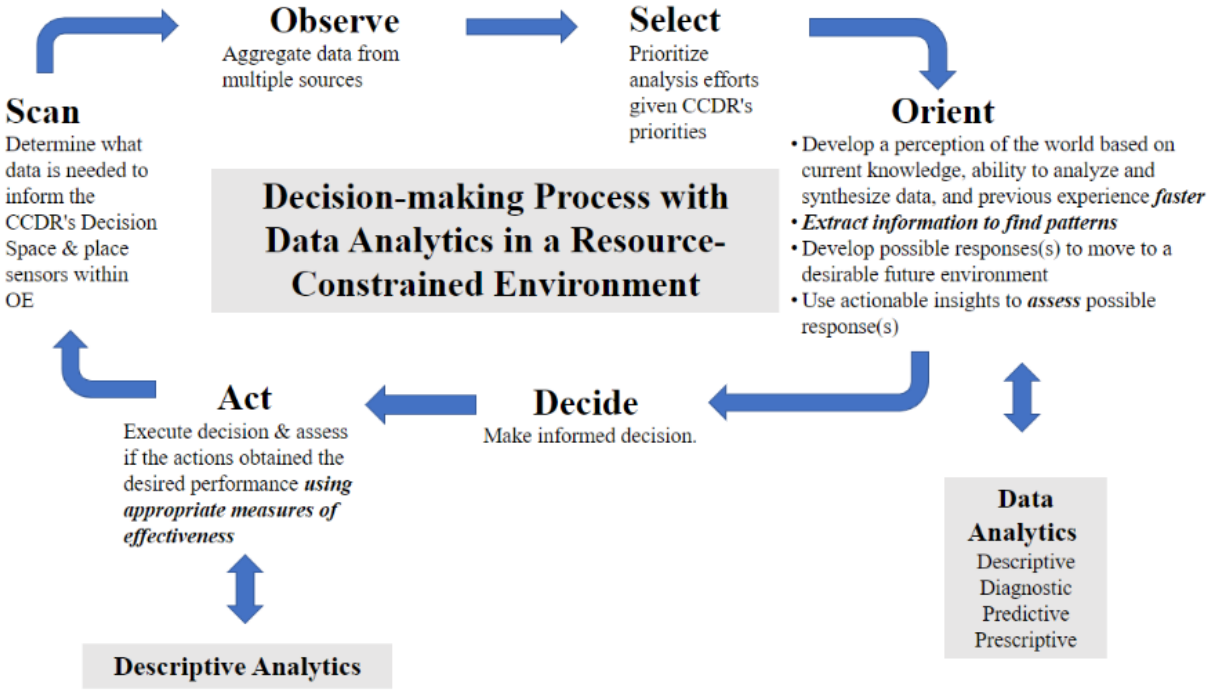

Figure 2: SOSODA MODEL (Butler 2021)

Once a proper decision model, such as SOSODA loop, is enforced, the escalation of efforts must also be established. Szymanski utilized former military models, such as the COG model, and enhanced them to fit the space-based mission. He also integrated a conflict escalation ladder based on historical attacks and ways to react: deny, degrade, disrupt, destroy, deter, and lastly, diplomatic actions (5 D's) for stabilization post-conflict. Each phase of a campaign is correlated to the mission type to the escalation level leading to the escalation effects, depicted in Figure 3.

Terrestrial Campaign Phase	Space Campaign Phase Full Name	Escalation Level	Escalation Effects
Phase 0: Pre-war Buildup (Shape)	1st Wave Attacks Phase A – Pre-conflict Deter	Pre-conflict Deter	Deter, Deny
Phase 0: Pre-war Buildup (Shape)	1st Wave Attacks Phase B – Pre-conflict Persuade	Persuade	Deter, Deny
Phase 0: Pre-war Buildup (Shape)	1st Wave Attacks Phase C – Pre-conflict Hide	Covert	Deter
Phase I: Deployment/Deterrence (Deter)	2nd Wave Attacks – Trans-conflict Deter	Trans-conflict Deter	Deter, Deny, Disrupt
Phase II: Halt Incursion (Seize Initiative)	3rd Wave Attacks Phase A1 – Terrestrial-to-Space Partial Temporary Effects	From Terrestrial Partial Temporary Kill	Delay, Deny, Disrupt
Phase II: Halt Incursion (Seize Initiative)	3rd Wave Attacks Phase A2 – Terrestrial-to-Space Total Temporary Effects	From Terrestrial Total Temporary Kill	Disrupt
Phase III: Air Counteroffensive (Dominate)	3rd Wave Attacks Phase B1 – Space-to-Space Partial Temporary Effects	From Space Partial Temporary Kill	Delay, Deny
Phase III: Air Counteroffensive (Dominate)	3rd Wave Attacks Phase B2 – Space-to-Space Total Temporary Effects	From Space Total Temporary Kill	Disrupt
Phase IV: Joint Counteroffensive to Restore Friendly Pre-conflict Status (Stabilize Borders)	4th Wave Attacks Phase A1 – Terrestrial-to-Space Partial Permanent Kill	From Terrestrial Partial Permanent Kill	Degrade
Phase IV: Joint Counteroffensive to Restore Friendly Pre-conflict Status (Stabilize Borders)	4th Wave Attacks Phase A2 – Terrestrial-to-Space Total Permanent Kill	From Terrestrial Total Permanent Kill	Destroy
Phase V: Joint Counteroffensive to Capture Adversary Capitol (Enable New Civil Authority)	4th Wave Attacks Phase B1 – Space-to-Space Partial Permanent Kill	From Space Partial Permanent Kill	Degrade
Phase V: Joint Counteroffensive to Capture Adversary Capitol (Enable New Civil Authority)	4th Wave Attacks Phase B2 – Space-to-Space Total Permanent Kill	From Space Total Permanent Kill	Destroy, Deter
Phase VI: Defend against Adversary Counterattacks against Friendly Homeland	5th Wave Attacks – Space-Manned Permanent Kill	Space-Manned Permanent Kill: Kill Adversary Astronauts	Degrade, Destroy
Phase VI: Defend against Adversary Counterattacks against Friendly Homeland	6th Wave Attacks – Space-to-Earth Permanent Kill	Space-to-Earth Permanent Kill	Degrade, Destroy
Phase VII: Defend Military against Adversary Use of Nuclear Weapons in Space	7th Wave Attacks – NBC Use - Space	NBC Use – Space	Degrade, Destroy
Phase VIII: Defend Military against Adversary Use of NBC against Friendly Military Targets	8th Wave Attacks Phase A – NBC Use - Space & Terrestrial - Military Targets	NBC Use – Space & Terrestrial	Degrade, Destroy
Phase IX: Defend against Adversary Use of NBC against All Friendly Targets (Military & Civilian)	8th Wave Attacks Phase B – NBC Use - Space & Terrestrial - Civilian Targets	NBC Use – Space & Terrestrial	Degrade, Destroy
Phase X: Post-hostilities (Reconstruction & Stabilization)	9th Wave Attacks – Post-conflict Deter	Post-conflict Deter	Diplomatic Actions

Figure 3: Escalation Ladder (Szymanski 2019)

Thus, the ultimate goal is to maintain Phase 0: Pre-war Buildup (Shape) to Deter and Deny, as demonstrated in Figure 3. Throughout each phase of the escalation ladder, the SOSODA decision model can be implemented in order to determine actionable joint results following both Joint Publication (JP) 5-0, Joint Planning doctrine and JP 3-14, Space Operations.

While abiding by the Joint Doctrines, the SOSODA decision model in tandem with the escalation of efforts utilizing the "5 D's" enhances the space strategy in a concise manner while expanding the integration and reach throughout the DoD, IC, and commercial sector. This would provide ultimate control within the multi-domain competition.

In the event that the phases in the escalation ladder escalate beyond Phase 0, it is crucial for the USSF to follow the F2T2EA kill chain method with the SOSODA decision loop in the second and third wave attacks identified in Figure 3. The SOSODA loop determinations and assessments will allow the commander to determine which phase they must implement in the escalation ladder.

IV. CRITERIA FOR USSF TO IMPLEMENT JSOC METHODOLOGIES

In order for the USSF to implement any of the aforementioned courses of action in section III, the USSF must also reestablish a baseline and basic objectives. The USSF must evaluate portions of the USAF that were hindrances to operating in joint environments and should consider the successes from the JSOC baselines. As the USSF has a separate budget from the USAF's air assets, the onus is on the leaders to look at the current space structure that has been cleaved from the USAF and formulate how such a small organization with limited responsibility is to function efficiently. To do so, the USSF should mirror the following JSOC methodologies, such as, implement flat units within the organization, provide liaisons and gain external liaisons, review over-classified technologies, and define the space culture.

A: FLAT ORGANIZATIONAL STRUCTURE TO SHARE DATA AND REQUIREMENTS RAPIDLY

While an initial glance at United States Special Operations Command's (USSOCOM's) organizational structure would provide no significant difference than other military structures due to its hierarchy structure, a closer examination would show how flat the organization runs. The hierarchy structure must be maintained to provide top cover to specialized units. However, as previously mentioned, JSOC is formulated differently within the Tier 1 units. Within those units, the hierarchy dissipates as they operate more as a flat organization to accomplish the mission. Although JSOC is one of the eight sub-unified commands under USSOCOM, it receives operational control (OPCON) from the Geographic Combatant Commanders (GCCs).[39] This is to allow the teams to integrate within the AOR command structures and plan missions accordingly.

For instance, General McChrystal, former JSOC Commander, sought out to build a force as a flat organization to empower the units to work as a cohesive team equally, regardless of rank. Additionally, he sought to have a force interconnected with other organizations for immediate support with the right expertise and backgrounds.[40] This allows the teams to be flexible in both size and expertise given the location-based task force teams with specialized missions. While the USSF aims to support all forces, it also needs to expand its horizon and ensure that it can support each mission with the right amount of support. As the USSF determines which areas become its mission versus what will stay with the intelligence community and other pre-existing DoD space missions, only then can it create a solid baseline.

While JSOC's Tier 1 units consist of Naval Special Warfare Development Group (NSWDG), otherwise known as Development Group (DEVGRU) or SEAL Team Six, Delta Force, 24th Special Tactics Squadron, Intelligence Support Activity, and the Army Ranger Regimental

Recon Company as an element of the 75th Ranger Regiment, these units are small in number, agile, and heavily funded to perform specified clandestine missions in hostile environments. They have a chain of command for direction but operate together regardless of rank. With the USSF having a nearly 1:1 ratio of enlisted to officer, the need for rank diminishes as the skills are coveted. Thus, the USSF has the opportunity to operate as a flat organization. As the USSF employ more autonomous spacecraft, the space operators will be redirected to perform more policy, liaison, and priority tasking functions. However, it is quite possible for the USSF to go in another direction in which it employs specific units to individualized missions or specific AORs on a consistent basis. This will force the USSF to grow in personnel and increase the number of operation centers to support the multiple missions in tandem. The interconnectivity will allow each operation center to deconflict. Rather than having a small number of operation centers, more missions can be supported with an interconnected operation center network. In either scenario of growth or repurposed assignments, the USSF will likely be forced to perform functions in separate groups in a more autonomous manner, flattening the organization across the force.

B: EMULATING SOF LIAISON STRUCTURE = CROSS COMMUNICATION THROUGH USSF TO IC AND DOD

Throughout most of the SOF elements, liaisons are relied upon for effective communication and collaboration. Rather than having one person from each element as a liaison, the U.S. Army created Special Forces Liaison Element (SFLE) and Special Operations Liaison Element (SOLE) to provide liaison services to fill gaps and eliminate barriers to enhance interoperability within the units.[41] These teams are created and empowered by the Joint Forces Special Operations Component Commander (JFSOCC) or JSOTF commanders. The presence by SFLE and SOLE

entities also allows for deconfliction between units with similar yet separate operations while having the top-cover by the joint commanders. Additionally, if one unit is provided situational awareness of what another unit will be conducting in a similar AOR, they may have information and intelligence to share. While missions may cross into different AORs, missions may also change depending on the intelligence or other situations or priorities. The situation may call for a different service depending on the environment or domain. Thus, flexibility and access to the different services within the command, such as JSOC, adds to the rapid response time. The ability to have liaisons embedded within other organizations is helpful towards the overarching national security and protection of personnel.

Even though the space-based capabilities are not new to the DoD or IC, the separation of space-based tasks to the new service, the USSF, is new and confusing to many DoD and IC entities. While the traditional space services have been transferred to the USSF and new contacts were made, it became more apparent to more parts of the military that they did not receive support from space-based assets and are now asking the questions of how they can get that support. Additionally, those which may not be able to get immediate support, due to priority constraints, may look into the commercial sector, bypassing currently implemented DoD technologies. The inability to service all DoD and IC components also introduces a duplication of effort. Thus, if liaisons were embedded into as many service components possible, the less confusion on space-based capabilities and consolidation of efforts can resume. The liaisons act as the central data repository for comprising and redistributing information to entities in need. The liaison methodology can be two-fold in which the USSF gains external service liaisons and the USSF provides liaisons throughout the DoD and IC. If manning is a continued constraint, then

they must look at drawing down their personnel from entities, like that of the NRO, to spread out their services equally.

C: COMPARTMENTALIZATION CORRECTION

While many who have Top-Secret clearances and have been deployed know that Joint Worldwide Intelligence Communications System (JWICS) or workstations that contain top-secret information are rare to come by in Outside Continental U.S. (OCONUS) environments. Additionally, as of 2019, 1.25M U.S. personnel, government, contractor, and other, maintained a Top-Secret clearance out of the 2.9M cleared personnel.[42] This does not specify the smaller number of those who are granted and actively use their access to Sensitive Compartmented Information (SCI) as that number is not disclosed. Of the 1.24M personnel who have a Top-Secret clearance, 605k were military and government civilians.[43] These numbers do not include those who have held a clearance in the past. Just because someone is read-out of a program or has their clearance revoked, does not mean they have their minds wiped of that sensitive information. With that in mind, that number of people who have held clearances rises and increases the risk of leaks or conflicts of interest. Nevertheless, as many service members are not cleared above a Secret clearance, let alone are read into further compartmentalized information, it becomes more difficult to share information. While JSOC's missions may require members to hold a higher security level due to the nature of the sensitivities with regards to national security, they were able to work with multiple departments and entities with lower classification levels as long as entities were kept separate with a need-to-know for only specific portions of their work. The goal is not to declassify all programs due to the capabilities of industry but to ensure that programs are not unnecessarily over classified, hindering mission progress and success.

SOF units contain higher clearances and the USSF, due to the nature of protecting sensitive information, contains a high amount of personnel with clearances at the Top-Secret level. Of the 1.3 million personnel who hold a top-secret security clearance, the USSF holds a large number of top-secret clearances for their Guardians when one considers that over 7% of Guardians are located at the NRO in which that level of clearance is mandatory.[44] As the USSF aims to collaborate with more partners, commercially and internationally, they must adjust the classification necessities. The status quo of the predecessor being classified at a high level needs to adjust as the rest of society and commercial industry increases their capabilities in the private and public realms.

The review of necessary classifications will also increase the allowable talent pool. For instance, as the Central Intelligence Agency (CIA), Federal Bureau of Investigation (FBI), and National Security Agency (NSA) recruit personnel from the special operations forces, the USSF will begin to recruit and contract out personnel who have prior space background through the DoD or through contracts. The largest difference is that the USSF will be a predominately contractor-heavy force. As the clearances are limited, especially with Special Access Programs (SAPs), the USSF can ensure protection of national security objectives with limiting the need-to-know information and keeping portions of the programs separate prior to integration processes. This can be applicable to both the intelligence gathering, as well as the satellite manufacturing process.

D: DEFINING THE SPACE FORCE CULTURE

Culture within a workplace plays a large role in job satisfaction. While the SOF have a high operational tempo, they breed elite members to work as a close team.[45] Between the training and operations the elite members endure, their bonds with one another become stronger while they

depend on one another to survive. The SOF deliberate and rigid training drives their success and eliminates complacency. The aforementioned SOF truths are crucial for the foundation of the SOF culture.

As the USSF was created to separate the space component from the air component, it has also given the opportunity to recreate the baseline. Given that the USAF has had some of the most egregious acquisitions of large Acquisition Category (ACAT) I programs, such as the F-35 Lightning II Joint Strike Fighter Program, the USSF is given the opportunity to perform acquisitions in a different manner and not follow the status quo.[46] For instance, they are learning from the NRO and are ordered to implement the Contractor Responsibility Watch List (CRWL).[47] This holds contractors responsible for abiding by their contracts even further for fear of future contract retribution. In order for the USSF to break the status quo, they must redefine their culture, instead of performing a copy and paste function. While the U.S. struggles to maintain their innovations as technology continues to become widespread, the USSF needs to reinvigorate and establish their foothold in the space domain within the GPC.

While the Special Operation Forces have focused decades of effort against counter-terrorism, their strategies have evolved to place more efforts in partnerships to eliminate the threat and control the playing field. Combined Joint Task Forces (CJTFs) are implemented with heavy international partnerships to gain ground, maritime, and aerial access internationally. The USSF has a specific niche environment, yet the customers or warfighters it can support is infinite in reach. Thus, the USSF Guardian must be familiar and understand their customer to provide the appropriate support. While the USSF continues to contract out most of its labor, they must bring back the innovative mindset to create ground breaking technology safeguarded by the U.S. government. The USSF needs to bring back the pioneer mindset to improve U.S. innovations in

the GPC. To do this, the USSF needs to reexamine their culture as a small organization. They must train their personnel and gain access to the quality people with the expertise needed in a collaborative environment. If the USSF models their culture after the SOF Truths, they will develop a culture for success.

V. SUMMARY OF RECOMMENDATIONS FOR IMPLEMENTATION

A. BRIEF SUMMARY

This paper has argued that if the USSF implements the modified SOF Truths, they can reset their baseline to create a sound foundation for the USSF to build on. Even though AI is a large focus for improving collection and delivery methods of information, the human interface remains essential to keep the mission going. Furthermore, the quality of personnel should be more desired than the amount of personnel to complete the job. It is important to remember that not every mission can follow the same procedure and protocol, therefore, various TTPs are necessary. The combination of commercial partnerships and developed TTPs will allow rapid responses or preventions of potential emergencies.

B. RECOMMENDED COURSE OF ACTION: IMPLEMENTATION

As the USSF begins to take on the SOF methodologies, the implementation will not occur overnight. In order for the USSF to implement the modified SOF Truths, they must take make small changes. First, the USSF must identify all units within the DoD and IC where to place liaisons and who to receive liaisons from. Then, the USSF and other services must request the billets either one or two years out from implementation. While members are identified to become USSF liaisons, they must go to courses, such as Space 200 and Space 300, and travel and learn

from USSF sites to ensure they have the overarching knowledge to become a liaison. Eventually, an educational structure will be built for the liaison force.

Next, the USSF needs to adjust their recruiting standards. Given the USSF will have a predominantly CONUS presence with low probability for deploying, the quality of education must be of a high priority for a narrow-focused force. Thus, the USSF is considering making a part-time or reserve force to reach industry talent.[48] The reservists or part-time Guardians in commercial industry also opens up more relations within industry.

Lastly, the combination of highly educated subject matter experts and liaisons provide the USSF the opportunity to develop a flat organization. When Guardians are operating in part-time status, their association with the commercial industry they work for increases their credibility, regardless of rank. Given the contracts that will be in place to prevent conflict of interests, knowledge gaps will decrease and collaborative efforts will be stronger, increasing innovative capabilities. The workforce will utilize a flat organizational system vice a relation-based system. In addition to specified contracts, policy will be revised to reflect closer partnerships with industry and foreign nations and reassess and invigorate space-based rules of engagement.

C. IMPLICATIONS FOR THE REST OF DOD AND IC IF MODEL ADOPTION PROVES SUCCESSFUL

The GPC will continue to grow unless domains are more controlled. The unknown answer is who will be first to control it? While the Chinese Communist Party attempts to take over the maritime environment through the Belt and Road Initiative, the U.S. must further assist their naval assets to combat that of their adversaries. If the USSF develops their framework mimicking the SOF framework and agility, they may be able to further rapidly aid the other domains through less detectable means providing multi-intelligence sources.

If the USSF proves that they could implement the SOF Truths and JSOC agility methodology, other DoD and IC service components may be able to replicate this methodology to their smaller units. This may further prove that some entities do not need to be as large as they are and could potentially downsize with the framework implemented. Organizations that overly large for the mission may not be able to implement the SOF methodologies. However, large organizations may be able to utilize a structure exemplified by JSOC by implementing it in smaller teams and slowly integrating this into their force via an agile approach. The use of the Scan-Observe-Select-Orient-Decide-Act (SOSODA), modified space-based Center of Gravity (COG) model, and "5-D's" escalation ladder may guide the liaison officers and representatives in their communication processes of cross-domain integration. Given the demonstrated models implemented by SOF, entities such as the USSF, small businesses, or industry can utilize their proven successful structure to enhance and build agile teams to fast-track operational processes.

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