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Air National Guard Intelligence Surveillance and Reconnaissance: A New Way of Doing Business

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ABSTRACT

Intelligence, surveillance, and reconnaissance (ISR) systems have proven critical to the combatant commanders to plan and execute military operations in Iraq and Afghanistan by providing them timely and accurate information on adversaries' capabilities and vulnerabilities. The continued success of ISR systems in providing commanders at all levels dynamic intelligence for dynamic conflicts has fueled growing demand for more ISR support. Additionally, this operational demand had far outpaced published guidance for ISR manning and organization, leaving critical gaps in organizational development and inhibiting fusion of capabilities.

This research answered the question: "How will a combined weapons and tactics shop facilitate integration of remotely piloted aircraft, distributed common ground system, and targeting missions? The problem/solution framework with the input from an ISR focus group was used to analyze current published guidance for manpower and organization of ISR and each mission's unique structure. Additionally, the weapons and tactics program was examined as a method of integration. The research and the valuable input from the focus group determined that although a combined weapons and tactics shop would provide a means of integration, analysis revealed that communications (systems) and training would prove to be better choice to initiate integration of unique ISR systems and operations.

Introduction

Intelligence, surveillance and reconnaissance is critical to United States Military Operations. Is the Air Force and the Air National Guard adequately postured to maximize critical ISR capabilities for the next fight? The ANG fleet of Remotely Piloted Aircraft (RPAs) grew from one in 2009 to 48 by late 2014, with RPA assigned to air wings in five different states, and six more air wings slated for potential establishment by 2018.[1] The advancement of ISR capabilities combined with the today's dynamic engagements around the world create an environment that enables commanders to make real-time decisions at every level of warfare.

The demand for ISR capabilities continues despite continued government cutbacks and efforts to streamline the current military force structure. Most noticeably those efforts seek to eliminate redundancies with ANG flying units in the form of phasing out airframes that are older and targeted for retirement. Many of those units are likely to receive a new mission that is ISR focused. Additionally, the Air Force Distributed Common Ground System (DCGS), currently composed of 27 regionally aligned, globally networked sites.

An AF DCGS is capable of robust, multi-intelligence processing, exploitation and dissemination (PED) activities such as sensor tasking and control. It can support multiple ISR platforms in multiple theaters of operation simultaneously. Cyber, ISR, RPA and targeting are all missions that have an increased presence in the ANG. Unfortunately, the development of guidance and methods to facilitate integration of ISR capabilities has not grown as quickly as demand.

To meet the demand for this dynamic and powerful force multiplier, the ANG must find a way to integrate ANG ISR in the effort to maximize professional and system capabilities to prepare for the next fight. One method for facilitating the integration of RPA, DGS, and targeting may be a combined weapons and tactics shop. This research answered the question:

how will a combined weapons and tactics shop facilitate the integration of ANG remotely piloted aircraft, distributed ground system, and targeting missions?

Gen Norton A. Schwartz, former Chief of Staff, stated:

> *"The Air Force ISR enterprise assures Air Force Global Vigilance, Reach, and Power and provides desired effects to combatant commanders. Analysts disseminate knowledge to better support decision-makers and shape operations. Still, the ISR community must never lose sight of the need for continued evaluation methodologies for employing and integrating ISR capabilities vice simply increasing the density of ISR capabilities".*[2]

While RPA, DGS, and targeting have enduring requirements and distinctively different missions, tremendous innovative potential exists due to a recent ANG unit's wing conversion. The 188th Wing, Fort Smith, Arkansas lost their A-10 aircraft and were given the task of integrating three ISR missions that historically, are not operationally integrated, yet are likely to provide elements of support to each other. Similarly, each mission may employ a weapons and tactics officer responsible for unit mission training, exercises, mission planning and evaluation scenarios.

All crewmembers assigned to weapons and tactics shops must maintain mission qualification in their designated Mission Design Series (MDS) to ensure desired tactical employment expertise in these areas.[3] Considerable lack of guidance provides opportunity for operational creativity in facilitating such mission integration. Thus, this research's hypothesis is that a combined weapons and tactics shop would provide framework for facilitating integration efforts between the RPA, DGS, and targeting missions at the 188th as well as similar mission assignment throughout the ANG community.

The problem/solution methodology was utilized in this research to analyze and determine if such a method would in fact facilitate integration of the missions found at the 188th. Due to the lack of formal, published guidance for ANG ISR mission integration, a focus group of experienced ISR professionals were consulted for consideration on mission integration methods.

Criteria was established by analyzing each mission's organization and structure with input from the focus group. Additionally, further analysis identified elements from each mission that were that existed the weapons and tactics capabilities and were also present in additional support functions. Once these criteria were established, an evaluation of a combined weapons and tactics shop was conducted. Based primarily upon the analysis of the focus group input, alternative methods emerged that would facilitate ANG ISR integration of multiple mission sets at the unit level.

This report begins with a background section, which addresses the current state of growth of the ANG's RPA, DGS and most recently, targeting capabilities. Then, in the analysis section, the above-developed criteria are applied to methods to integrate ANG ISR missions by combing weapons and tactics capabilities. Finally, in the conclusion and recommendations sections, recommendations are made based on the results of the analysis.

Background

The Air Force and the ANG operate under constrained budgets and with the reduction of ANG units that perform similar missions, it was only a matter of time before multiple missions were given to one unit. One of the challenges to this implementation is the organizational differences found within each mission set and the lack of guidance that exists within the ANG and USAF on operational integration. A different type of method for integrating distinct mission sets, such as RPA and DGS must be developed. This research explored the possibility of a combined weapons and tactics shop facilitating integration RPA, DGS and targeting at the 188th Wing, Fort Smith, Arkansas.

This research is needed because RPA, DGS and targeting capabilities are necessary for effective ISR operations. Additionally, the same ISR capabilities are critical across the entire spectrum of military operations. ISR operations are also becoming increasingly important in

domestic operations, counter-drug and for situational awareness during national disaster response. Individually, assigning ISR missions to ANG units does not create organizational issues. When the ANG chose to take away the aircraft at the 188th Wing, they replaced it with an ISR mission consisting of Operations, DGS, and Targeting missions, but provided no formal guidance on how to integrate all three mission areas into one single ISR capability. The current model means that dynamic operations dictate the increased reliance on squadron-level intelligence personnel to provide time-sensitive support to RPA aircrews. It is important to note that DCGS crews are geographically separated from RPA crews. The product of this research can be used to develop a model for integrating multiple ISR mission sets for any military or civilian ISR operational reducing costs associated with multiple ISR missions at multiple locations, while increasing cross domain synergistic effects for a dynamic response to any conflict or crisis that needs immediate attention.

The current construct focuses on each mission individually. Individually, the functional organizations continue to produce operationally for the warfighter, but functionally, the unit continues to struggle with synchronization of such distinctively different capabilities. Current RPA squadrons and DCGS have been built based upon models of existing manned aircraft organizations. ANG and AFR components continue to be a critical component in the Total Force Integration concept and work closely with RPA operations. Research efforts on this topic up to this point tell us: Air Force leaders saw the limitations of the current organization of capabilities and they recognized that the nature of warfare had shifted; intelligence and operations could no longer be viewed as separate entities, and quickly finding and identifying targets loomed as the US military's biggest challenge.[4] Vital sources that explain the criticality of economy of effort within the ISR community may be found on the 25th AF home page.[5] Current organizational

efforts to bring DGS, RPA, and Targeting communities under one force structure model to better facilitate operations are demonstrated by the 25th AF.

Air National Guard ISR

Recognizing the critical demand for capable ISR elements requires the USAF and the ANG to see ways of refining their organizations to provide commanders and warfighters with a cost effective, responsive ISR system of capabilities. This research sought to find a method of integration RPA, DGS, and targeting operations into a single, combined operations floor that will take the unique individual capabilities of each mission and fuse those capabilities to better provide ISR for the ANG, USAF, and Department of Defense (DoD) for future engagements.

To fully appreciate the lack of integration between RPA, DCGS and targeting units, it is necessary to understand the operational construct of these weapon systems. As a leading action officer assigned to Headquarters Air Force (HAF)/A2 ISR Collections Capabilities Division noted in 2011,

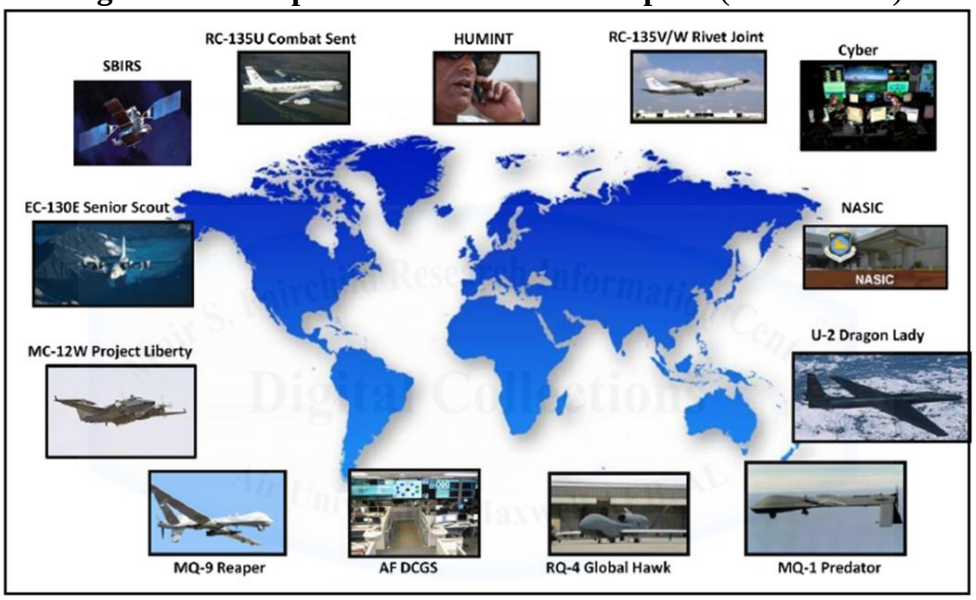
> *"We threw all of this together to meet the pressing needs of the war. But somehow, we have to mold the distributed ISR system to where it should be. The key is that we don't just mold it to meet the needs of the current wars in Iraq and Afghanistan but keep an eye on future operating concepts as well."*[6]

Since MQ-1, MQ-9, RQ-4 and DCGS are viewed as distinct weapon systems, they only have Major Design Series unique Training, StanEval and Operations manuals. No multi-weapon system documents exist to provide guidance on how to conduct virtual front-end/back-end operations. Similarly, there are no overarching Air Force Manual 3-1, *Air Force Tactics, Techniques and Procedures* instructions providing a systematic process to improve crew actions and guide RPA and DCGS operators.

DOD Directive (DODD) 5100.01, *Functions of the Department of Defense and Its*

Major Components directs the Air Force to — "Provide timely, global integrated ISR capability and capacity from forward deployed locations and globally distributed centers to support world-wide operations." Global integrated ISR is defined as cross-domain synchronization and integration of the planning and operation of ISR assets; sensors; processing, exploitation and dissemination systems; and, analysis and production capabilities across the globe to enable current and future operations.[7] Figure 1 depicts the global presence of the AF ISR Enterprise.

Figure 1 Global presence of AF ISR Enterprise (*USAF Photo*)



As an agile and inclusive component of the USAF, the ANG is integral to the overall success of USAF strategy and the defense of the nation. The ANG will continue to thrive in all five AF core missions as a unit-equipped community based steady state, engaged operational force that provides strategic depth for the Air Force. The cost effectiveness of the ANG will continue to provide return on investment for the nation and USAF by preserving capability and capacity for the Joint Force during a fiscally constrained era.[8]

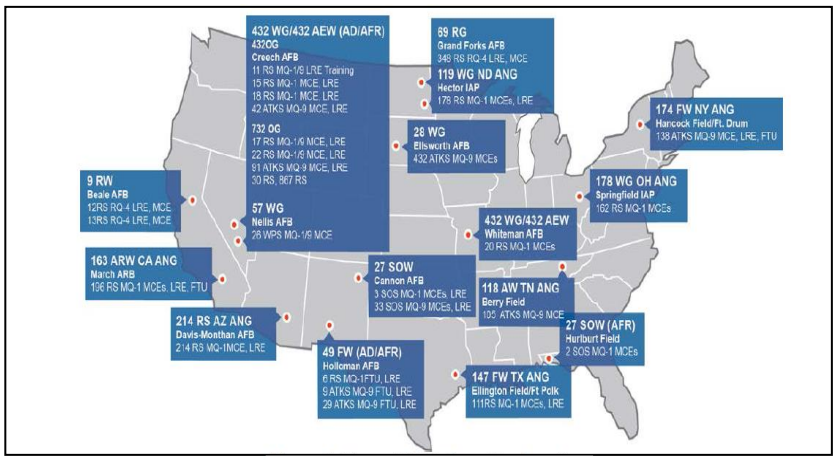
The ANG set forth five Capstone Principles as a part of their strategic planning process. The Capstone Principles help to align the ANG strategy with USAF Strategy to ensure continued

reserve component integration which allows the ANG to provide an integrated operational force multiplier for the USAF. One principle in particular that contributed to the basis for this research, is the principle of allocating at least one flying unit with ANG equipment to each state. This principle contributed to the 188th Fighter Wing losing their manned A-10 mission only to be assigned an ISR mission that would be comprised of RPA, DGS, and space focused targeting missions all located in one facility. Although, the USAF and ANG strategic visions continue to place increased emphasis on integration and combining capabilities, currently no guidance exists to combine such operational missions which creates a capabilities deficiency at the unit level that must be eliminated.

Remotely Piloted Aircraft

Over the last decade, remotely piloted aircraft (RPA) have become a critical component in the application of airpower and one of the most "in demand" platforms the Air Force provides to the joint force. Current DoD strategy highlights that the next 10 years will require renewed focus on solving challenges confronting a fundamental American military mission—global power projection. Time and resources must be invested now to organize, train, and equip the force to sustain American projection of global power (see Figure 2) for current RPA operating locations.[9]

Figure 2: Current RPA Operating Locations (*USAF Photo*)



RPA Organization

Today the primary mission of RPA is to conduct globally integrated ISR as an airborne ISR collection platform and to support ISR analysis and PED. Additionally, RPA capabilities are also increasingly leveraged for homeland defense application. Regardless of the mission, RPA systems and capabilities run parallel with DGS systems and capabilities and the DoD continues to emphasize the need for integration of resources at the operational level to maintain the high standard of ISR support to the warfighter.

Air National Guard (ANG) MQ-1/9 squadron construct can provides up to three CAPs. The Air Force RPA force structure completed a reconstitution period to ensure operational sustainment following an operational surge and surpassing 2 million combat hours in October 2013. The reconstitution enables a 65 MQ-1/9 CAP capability by May 2014. Steps to reconstitute the RPA fleet included:

• Remotely piloted fleet steady state consisting of just less than 400 aircraft

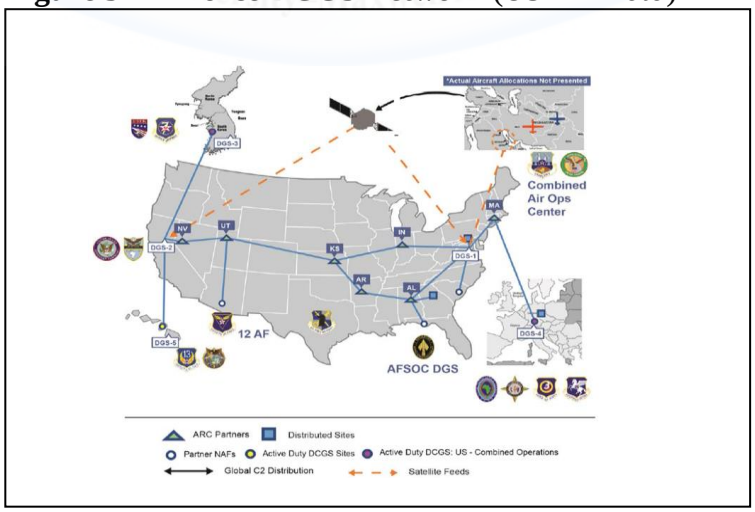
• 24 MQ-1/9 units at 18 continental United States (CONUS) locations (including 11 ANG units)

• RPA personnel cadre and experience (aircrew, intelligence, aircraft maintenance, communications maintenance) growth from 2,100 personnel (2005) to 9,900 (2017).[10]

Additionally, as the number of RPA CAPs grows, the sensor data is estimated to increase by more than 5,000 percent. The existing infrastructure used to fuse RPA data is insufficient to meet the projected increased demand. Improved collaboration is required between RPA operations centers and DCGS via the DCGS Integration Backbone (DIB). The DIB is a cohesive set of modular, community-governed, standards based data services focused on enterprise information sharing. DIB provides a common framework for data exposure and transformation and for enabling applications and users to discover and access information from a wide range of distributed sources. This information access and collaboration will allow operations centers to complement the exploitation efforts through mission-driven resource management. Current structure as seen from the DCGS and the RPA locations is historically accurate, however, the operational situation at the 188th Wing, Fort Smith, Arkansas is one that is unique and operationally limitless if a way to integrate those capabilities may be found.

Figure 3 depicts the current DCGS network.

Figure 3 Air Force DCGS Network (*USAF Photo*)



The mission crew for operational RPA squadrons are composed of a pilot, sensor operator, and mission intelligence coordinator and support crew, such as weather and a communications specialist. RPA missions are also supported by the DGS imagery analysts at a

separate location who watch the live feed coming from the aircraft. The air operations center (AOC) is the determining authority for where the aircraft will fly, what mission they will accomplish and provide any guidance or changes as the mission progresses. The wing operations center (WOC) acts as a central hub for critical mission support to the aircrew to accomplish the tasking orders from an air operations center. The WOC also serves as the central hub for the DGS missions around the country as they provide the critical imagery analysis and the PED capabilities to the RPA mission.

Recognizing the current and future demand from the ISR community, the USAF realigned the DCGS enterprise, which had been inefficiently divided across several Air Force major commands. It now resides under the administrative control of the 480th ISR Wing, but with clearly defined lines of support from the five core DGS sites to the component numbered air forces that they support. The five core sites are at Beale AFB, Langley AFB (DGS-1), Osan AB, South Korea (DGS-3), Ramstein AB, Germany (DGS-4), and JB Pearl Harbor-Hickam, Hawaii (DGS-5). They are supported by six Air National Guard DGS sites that analyze about 60 percent of all the full-motion video coming off Air Force ISR platforms today.[11] Despite this realignment under the 480th, DGS operations across the enterprise remain task-saturated while trying to develop better mission crew distribution and specific guidelines to increase their effectiveness as the U.S. looks toward future engagements.

Distributed Common Ground System

The Air Force Distributed Common Ground System (AF DCGS), also referred to as the AN/GSQ-272 SENTINEL weapon system, is the Air Force's primary intelligence, surveillance and reconnaissance (ISR) planning and direction, collection, processing and exploitation,

analysis and dissemination (PCPAD) weapon system. The weapon system employs a global communications architecture that connects multiple intelligence platforms and sensors. Airmen assigned to AF DCGS produce actionable intelligence from data collected by a variety of sensors on the U-2, RQ-4 Global Hawk, MQ-1 Predator, MQ-9 Reaper and other ISR platforms.[12]

The Air Force DCGS is currently composed of 27 regionally-aligned, globally networked sites. The sites have varying levels of capability and capacity to support the intelligence needs of the warfighter. An Air Force DCGS Distributed Ground System (DGS) is capable of robust, multi-intelligence processing, exploitation and dissemination (PED) activities to include sensor tasking and control. It can support multiple ISR platforms in multiple theaters of operation simultaneously. A Distributed Mission Site (DMS) normally has specialized analysis/exploitation capabilities, limited sensor command and control (C2) capabilities, and may be limited to select platforms and/or sensors. The Air Force DCGS PED Operations Center (DPOC) and 480th ISR Wing DCGS Operations Center (DOC) provide worldwide command, control, mission management and data dissemination allowing the Air Force DCGS to operate as a federated enterprise to meet worldwide intelligence needs. DGS and DMS sites are manned by a mixture of active duty, Air National Guard, Air Force Reserve and coalition partner units working to provide an integrated combat capability.

AF DCGS active-duty units are assigned to 25th Air Force (Air Combat Command), however AF DCGS employs a total force integration (TFI) concept for expanded capacity, using both Air National Guard units assigned to their respective states until activated by presidential order and classic associate Air Reserve intelligence units. The 480th ISR Wing, headquartered at Joint Base Langley-Eustis, Virginia, is the Air Force DCGS lead wing and is responsible for executing worldwide Air Force DCGS operations. The individual weapon system nodes are regionally aligned and paired with corresponding Air Force component numbered air forces to

provide critical processing, analysis and dissemination of intelligence collected within the numbered air force's area of responsibility; however, globally networked capabilities enable other DGS sites to execute missions beyond their numbered air force's geographic area of responsibility.[13]

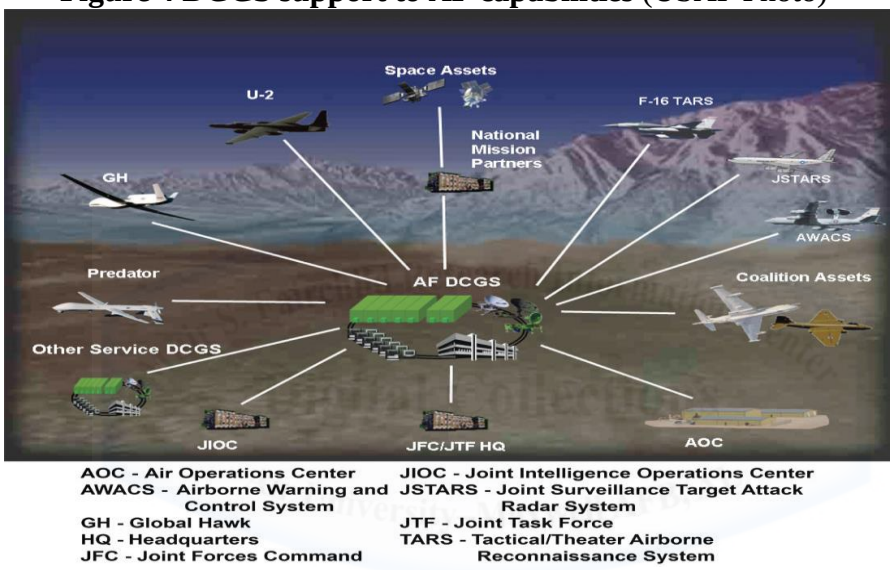
DCGS Organization

AF and ANG DCGS crew positions as applicable to normal mission unit operations are by AF ISR Agency Instruction (AFISRA) 14-153 V3 (1) as follows: Mission Operations Commander (MOC). The MOC is the tactical and command authority responsible for PED of timely, actionable, and fused multi-source intelligence for the apportioned mission. The MOC relies upon the senior enlisted crew member who is the Imagery Mission Supervisor – IMS. The IMS supervises the geospatial intelligence (GEOINT) PED mission and reports directly to the MOC. The IMS is responsible for review of the target deck, exploitation task apportionment, GEOINT sensor collection and re-tasking, external user contact information, product review and dissemination, as applicable, throughout the mission. Next, the Sensor Planner – SP. The SP coordinates the navigation routes and collection plan for sensors and controls applicable sensors. The SP will coordinate with the MOC, IMS, GMS, COMINT Mission Supervisor (CMS) and flying unit when generating the navigation and collection plan routes for mission aircraft based on tasked collection and safety of flight requirements.[14]

Additional crew positions include the Geospatial Analyst – GA. The GA exploits one or more Full Spectrum GEOINT (FSG) sub-disciplines, as required. The GA will create imagery products and reports to fulfill collection requirements. Screener (SCR). The SCR liaises and/or establishes a habitual relationship with supported units. The SCR will also perform dynamic communication between the AF DCGS and supported units using voice and data methods. The Multi-Source Analyst – MSA. The MSA conducts intelligence research in support of AF DCGS

crew and operational missions. The MSA will perform research on current operational objectives and collaborate with segment leads to maximize sensor focus and refine sensor collection. The crew positions listed above are commonly found in the ANG DCGS missions. Additionally, the DCGS will also have communications support to ensure 24/7 operations continue uninterrupted and other specialized positions that are mission task dependent.[15] Figure 4 illustrates the depth of ISR support DCGS provides to other AF capabilities.

Figure 4 DCGS support to AF capabilities (USAF Photo)



Targeting

"Targeting is the intersection of intelligence and operations"

General Henry A. "Hap" Arnold

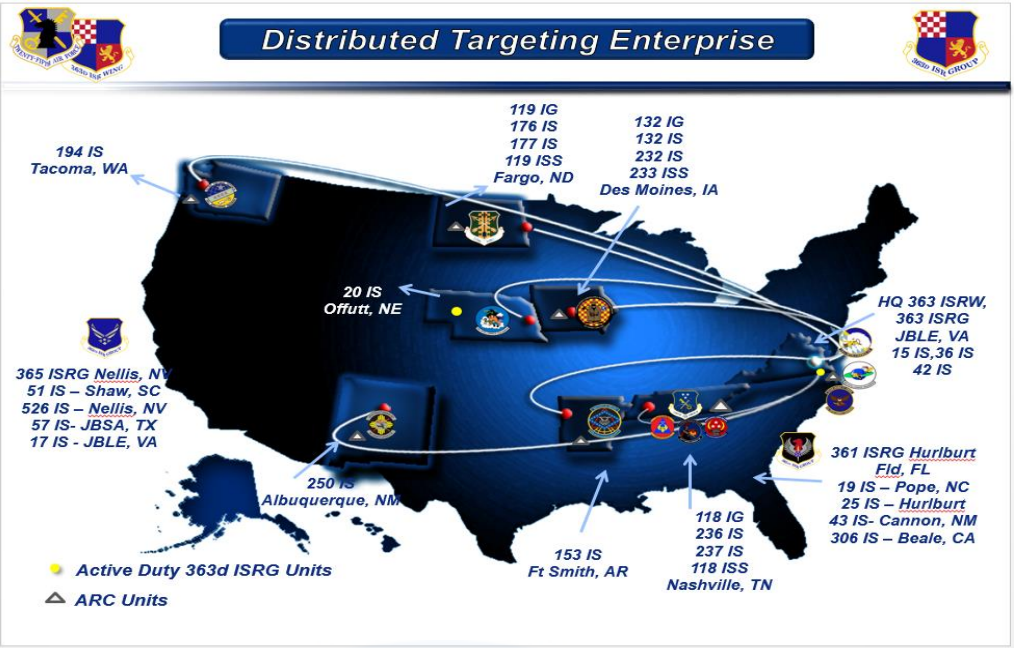
Targeting is the process of selecting and prioritizing targets and matching the appropriate response to them, considering operational requirements and capabilities. This process is systematic, comprehensive, and continuous. Combined with a clear understanding of operational requirements, capabilities, and limitations, the targeting process identifies, selects, and exploits

critical vulnerabilities of target systems and their associated targets to achieve the commanders' objectives and desired end state.[16] According to *America's Air Force: A Call to the Future*, tomorrow's operational agility demands flexible, integrated multidomain operations; superior decision speed; dynamic command and control; a balanced capability mix; and performance optimized teams.[17]

RPA and DCGS are critical elements of AF operational agility along with the Air Force Targeting Enterprise (AFTE). Unlike RPA and DCGS, the AFTE is not a taskable unit but an aggregation of the people, organizations, systems, processes and procedures that develop, plan, execute, assess, and support military operations with decision-quality target intelligence to include requisite target materials.[18] Fundamentally, enterprise targeting activities occurs at all levels of conflict, strategic, operational, and tactical for all phases of operations, across all domains, and across the range of military operations. Additionally, with the amount of media coverage streaming live around the globe, certain elements of AF and ANG targeting, such as critical damage estimation are even more critical to commanders when planning operations in contested environments around the globe.

The Air Force has developed specific ANG units that provide the 363 ISRG with 15 Air National Guard Groups and squadrons (118 ISRG, 118 ISS, 236 IS, 237 IS, 119 ISRG, 119 ISS, 176 IS, 177 IS, 132 ISRG, 132 ISS, 232 IS, 233 IS, 153 IS, 194 IS and 250 IS) and one Air Force Reserve Classic Associate Unit (CAU) (42 IS) at Langley AFB, VA aligned the 363rd ISR Wing (363 ISRW) a surge-to-war target production capability accomplished through the use of imagery analyst, targeteering analyst, and intelligence applications.[19] Those ANG units also provide local, state, and federal authorities a domestic Incident Awareness and Assessment (IAA) damage assessment of critical infrastructure key resources during defense support to civil authorities operations. ANG Targeting locations are shown in Figure 5 below.

Figure 5 Targeting Enterprise (*Reproduced from 363d ISRW)*



Additional Air Force Targeting (AFTC) major targeting production activities include:

- Target System Analysis
- Electronic Target Folders
- Target Materials
- Precise Point Mensuration (PPM)
- Weaponeering
- Collateral Damage Estimations (CDE)
- Battle Damage Assessment (BDA)
- Geospatial Intelligence Support

Targeting Organization

ANG Targeting units are organized differently according to the number of full-time unit members present prior to being assigned a targeting mission. Each ANG targeting squadron or group Unit Task Code (UTC) is different and their Unit Manning Documents (UMD) are also different. The unique opportunity for each unit to provide unique capabilities based on their different Air Force Specialty Codes (AFSC's) allows for tremendous flexibility when the 363rd

ISR Wing begins tasking ANG production capacity. Targeting career fields consist of numerous specialties, including intelligence officers (14N), target graphics analysts (1N1A), weaponeers (1N1B), signals analyst (1N1C), and some units also have a cyber capabilities with the (1N4) AFSC assigned to their specific mission set. Additionally, communications specialists (3D) may be assigned to support the operational targeting mission.

Even with the differences in manning and capabilities, targeting is a collaborative effort. Targeteers are consumers of multi-source intelligence data and operate across both the intelligence and operations functions. Manning and targeting resources at the joint task force (JTF), air operations center (AOC), and Joint Intelligence Operations Center (JIOC) are typically insufficient to support robust target planning and execution. The targeting process requires resources from many organizations to meet the commander's targeting demands. Targeting therefore requires reachback support via distributed and federated operations to be effective. Communications, information, and targeting systems of record should be established and coordinated to provide a seamless information flow of data to and from forward and rear locations.[20]

At its core, Air Force ISR is about enabling leaders to make informed decisions at a *superior decision speed* to help ensure freedom of action, maintain deterrence, contain crises, and achieve operational success. ISR focuses on operational outcomes and the closing of intelligence gaps.[21] Targeting allows those same leaders to translate strategy into discrete actions against targets by linking ends, ways, means, and risks. It is a central component of Air Force operational art and design in the application of airpower to create lethal and nonlethal effects. Strategy allows commanders to choose the best ways to attain desired outcomes.[22]

Existing Organizational Guidance

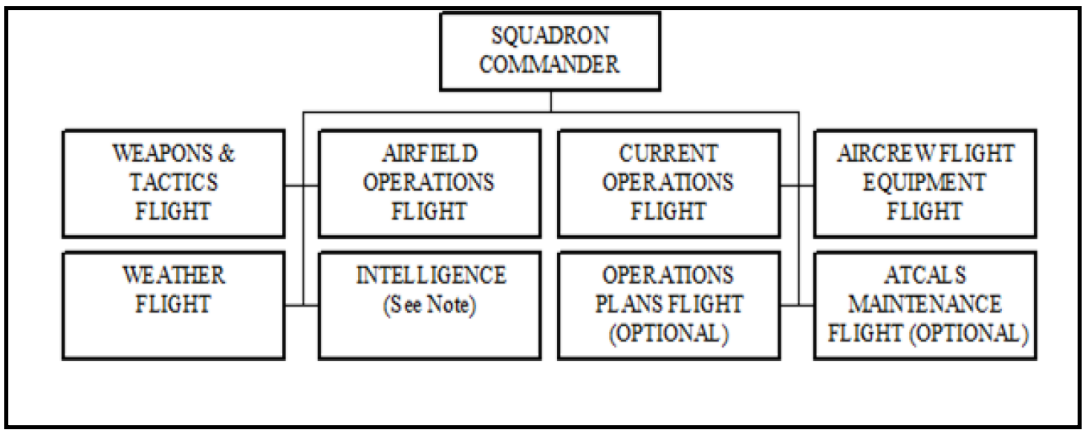
The individual ISR missions developed with unique manpower and organization elements that are effective in meeting mission requirements as a single capability, however gaps exist that prevent maximum utilization of assigned ANG ISR capabilities as identified by the 188th Wing, Fort Smith. Air Force Instruction (AFI) 38-101, Manpower and Organization applies to Air Force Reserve Command (AFRC) and the ANG. It describes the objectives and principles of AF organization. It prescribes various levels and standard structures for organizations and it outlines procedures for establishing and modifying organizations.[23]

Unfortunately, as mentioned earlier in this research, the ISR enterprise has developed much faster than the associated guidance. A good example is that despite AFI 38-101 recent publication date of 31 January 2017, intelligence is first referenced in paragraph 2.2.6.3. Specialized Mission Wing. A wing that performs a specialized mission and usually does not have aircraft or missiles assigned to it. For example, intelligence, surveillance and reconnaissance wing; training wing and so on. Further referenced in paragraph 3.6.3.

- Operations Group Intelligence (OGI) that provides intelligence support for the wing during all phases of conflict and decision making.
- Trains aircrew/operators and prepares the wing for contingency and wartime missions.
- Provides intelligence tailored to the wing's operational mission and base support activities.
- Provides full-spectrum threat assessments and mission planning in support of deployments, contingencies, and combat operations.[24]

This definition is out-of-date for current ISR constructs within the ANG and fails to provide definitive guidance representing ANG ISR as a stand-alone organization. Figure 6 illustrates current ISR only as a support function to the wing operations group (OG).

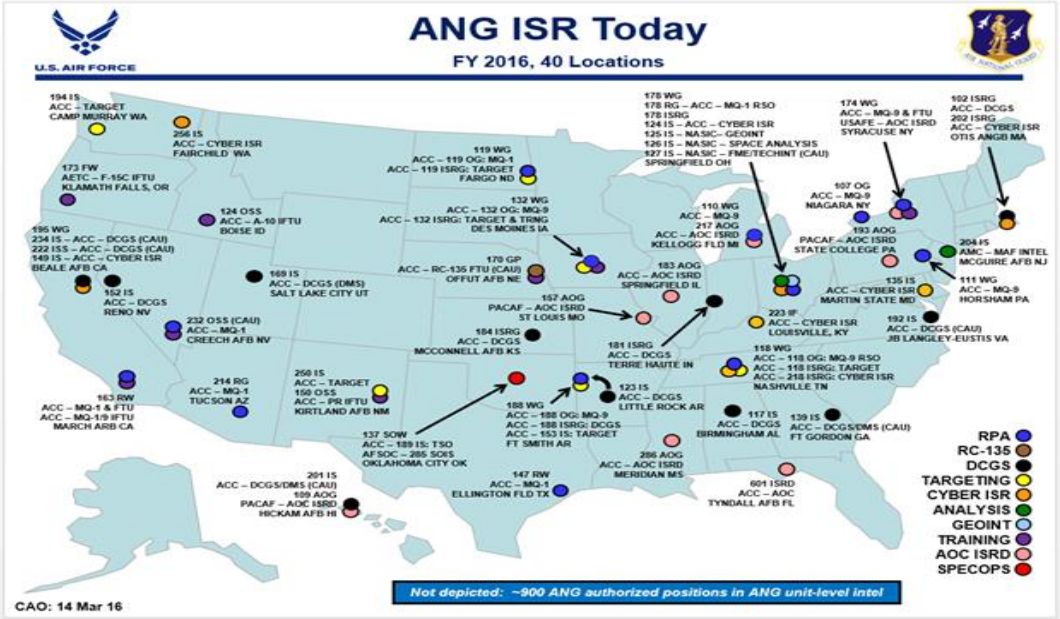
Figure 6 ISR support to wing operations group (*USAF Organizational Photo*)



The weapons and tactics function (DCOK) seen in Figure 5 above is evidence of a common element found within ANG ISR mission sets. Additionally, DCOK is essential to ensure assigned personnel are familiar with unit mission/taskings and expected enemy threats. Assesses unit combat capability, provides inputs to unit training programs, ensures appropriate tactics related study materials are available, ensures tactics information is disseminated to unit personnel and develops procedures and materials required for mission planning.[25] The gap in guidance for ANG ISR and the enterprise wide demand for the critical capabilities provided by RPA, DCGS, and targeting place increased emphasis on the need for integration methods to ensure that Air Force ISR is about helping leaders make informed decisions to maintain deterrence, contain crises, or achieve success in battle.

The evolution of globally integrated ISR has fundamentally changed how America fights wars. Today, the Air Force has embraced globally integrated ISR as one of the Air Force's feature calling cards. ISR is much more than a support function. It is the foundation upon which every joint, interagency, and coalition operation achieves success. Over 34,000 ISR Airmen identify and assess adversary targets and vulnerabilities from hideouts to bunkers to mobile launchers with greater accuracy than ever seen in the history of warfare.[26] See Figure 7 for 2016 ISR Locations.

Figure 7 ANG ISR 2016 Locations (*USAF photo*)



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Weapons and Tactics Program

Technology continues to advance the capabilities of ISR despite the ability to develop organizational guidance at the same rate. RPA and DGS are considered weapon systems, while targeting struggles with the lack of enterprise cohesiveness that would facilitate more effective fusion of such diverse capabilities. One guide for managing the critical elements of any mission is found in AFI 11-415, Flying Operations, Weapons and Tactics Programs. Additionally AFI 11-415 directs that weapons shops should be established at all levels.[27]

Weapons and tactics shops established at all levels provides continuity for missions that are designated as flying mission (RPA) or support to the operational mission. This is important as ISR capabilities are assigned, developed and implemented by the ANG to replace missions that are reassigned or removed altogether, leaving organizational and functional gaps that impact

the new missions. Additionally, organizational gaps in developing integrated missions led to analyzing how such a diverse program Combining mission weapons and tactics capabilities as a means of facilitating integration was the central focus of this research.

Organizationally, this is important because squadron weapons shops will report directly to the operations officer or commander (or Air Reserve Component (ARC) equivalent). Overall responsibility for all wing weapons and tactics guidance and policy rests with the wing/group weapons shop. Weapons shops will be organized into functional areas capable of supporting Design Operational Capability (DOC) tasked mission sets. Additionally, the weapons shop will function as the OPR or Office of Collateral Responsibility (OCR) for unit mission training, exercises, mission planning and evaluation scenarios. All crewmembers assigned to weapons and tactics shops must maintain mission qualification in their designated Mission Design Series (MDS) to ensure desired tactical employment expertise in these areas.[28]

Weapons and tactics shop members must be cleared for all mission-required access/clearances. Additionally, they are expected to work with any assigned ISR personnel to ensure all personnel receive current information on the unit mission, adversary threats and expected theater conditions that could impact mission execution. This structure contains mission crewmembers that have the knowledge and access to all weapon systems and mission related support elements. It is composed of the individual mission members that develop training, tactics, techniques and procedures (TTP's) to ensure individual mission success, thereby facilitating integration of those mission capabilities.

Analysis of ANG ISR Integration

"Matching Mindset to Mission"

This research confirmed that current ISR growth has outpaced manpower and organization instructions and the operational tempo is such that instructional development is not likely to catch up to operational development in the near future. This development is evident by the more than 40 ANG ISR locations supporting global operations 24/7. The historically "Ops" centric instructions (AFI 38-101, 2014) only define ISR as specialized missions that are subordinate to flying organizations. This construct is now dated as the last two decades of conflict in the Middle East have created enough of a demand that ISR wings and groups are more prevalent than a single ISR shop that exists solely to support flying operations.

Additionally, the established focus group collectively noted that the lack of published guidance complicated the efforts to create operational ISR organizations. Without foundational instruction or other published requirements, systems infrastructure, manpower and basic squadron design elements were difficult to establish. The coming decades will bring additional changes to technology, weapon systems, joint operational concepts and organization structures. To ensure we are able to maintain our military advantage, the AF must place more emphasis on developing doctrine, regulations and instructions prior to assigning critical ISR capabilities to ANG units. Development of such guidance will drive future ANG mission allocations and manpower structures that accurately reflect ANG's force posture.

"Combined Weapons and Tactics Shop"

The research focused on this program as a potential method to facilitate integration of RPA, DCGS, and targeting missions at the unit level. The current instruction AFI 11-415, Weapons and Tactics Programs applies to ANG units, however, it is designed as a key element of flying operations. Additionally, ANG ISR commanders have the flexibility to create weapons and tactics programs within individual ISR missions, such as RPA, DSGS, and targeting. It found that this instruction outlines several criteria essential to establishing this program and are

also key elements in ANG ISR missions. The criteria identified responsibilities such as, determining new tactics that address deficiencies while developing new Tactics, Techniques, and Procedures (TTP). The 188th Wing, 188th ISR group has identified mission crewmembers from each ISR mission to serve in the weapons and tactics role as they develop the structure or each organization.

The focus group agreed that the ability to utilize multiple weapons and tactics officers from the three operational missions rather than one weapons and tactics member/program in RPA creates an opportunity for unity of effort as each member represents specialized mission knowledge from their respective ISR operations. Additionally, it was identified that in the unique operational situation at Fort Smith, the identified weapons and tactics officer was one of the only positions present in each mission set, which was thought to be an important factor for integration efforts across the wing. Further analysis of this program's viability for integration revealed that although a combined weapons and tactics shop would facilitate integration of ISR missions by placing subject matter experts from each mission in a unique cross-share position with their counterparts, other avenues might provide more efficient integration for such unique capabilities.

"ISR Focus Group Input"

This research revealed the general lack of relevant published guidance that exists that would provide ANG commanders critical insight how to organize and even more importantly, integrate ISR missions that are assigned to them. Considering the lack of guidance and the gaps of instruction for such critical operations, a focus group of ANG ISR professionals was consulted to help answer the research question of: how will a combined weapons and tactics shop facilitate the integration of ANG remotely piloted aircraft, distributed ground system, and targeting missions?

This group of RPA, DCGS, and targeting professionals were selected based on their experience in their respective mission sets as well as their efforts over the last three years to stand up operational ISR missions at the 188th Wing, Fort Smith, Arkansas. Additionally, I chose to solicit input from those members involved in managing and working the mission crews rather than higher staff such as group and wing commanders to ensure the operational credibility of the focus group remained intact. A baseline discussion was established with a dialogue on the advantages and challenges of integrating the three mission sets. The responses were as expected from a specialized ISR community. Establishing a wing that is able to provide collection, processing and dissemination and more all at one location was the dominant advantage. Additionally the group discussed the unique opportunity to merge their respective missions from a historical perspective as it is something that has yet to be accomplished. Challenges were immediately apparent as members discussed the historical independence of each mission and the conflict of leadership in such a new organization structure was of great concern. The problem of each mission set having established higher headquarters, procedures and reporting chains would have to be addressed at the strategic level to encourage enterprise standards around integrated ISR.

A combined weapons and tactics shop was discussed as a way to integrate the current mission sets. This discussion focused on certain requirements within the program that could be found in the other programs, such as training and weapons systems knowledge for RPA and DCGS. It was during this discussion that other, possibly more effective methods of integration became apparent. Each mission has a training program and a communications shop to ensure mission readiness. Utilizing integrated training, specifically, scenario training would facilitate integration much earlier in crewmembers and diversify their respective knowledge base at the same time. Communication would also provide an avenue for integration, however, the funding

streams and complex requirement mechanisms might inhibit integration at this critical stage of mission development.

Conclusion

The Air Force of 2035 will harness the power of operational agility by leveraging flexibility, speed, coordination, balance, and strength at the operational level of war. AF forces will combine superior decision speed with dynamic command and control to plan and execute integrated multi-domain operations with a balanced mix of capabilities delivered by performance-optimized teams.[29] Additionally, although advancements in technology continues to push the development of ISR capabilities, the AF and the ANG both have failed to match that development with the necessary guidance, instructions and requirements that units need to provide those performance optimized teams for future engagements. ISR must become a priority and the Air Force must transcend its cultural biases and tribal fraternities organized around traditional weapons systems.[30]

This research focused on the individual mission and organizational construct for RPA, DCGS, and targeting missions as defined by current AFI's and regulations to answer the question: how will a combined weapons and tactics shop facilitate the integration of ANG remotely piloted aircraft, distributed ground system, and targeting missions? Additionally, this research identified critical gaps in the existing manpower and organizational publications, specifically AFI 38-101(2014) *Manpower and Organization*.

Weapons and tactics program structure and potential elements were identified that presented opportunities for integration of the identified mission sets, however, the AF and ANG must prioritize efforts to ensure they provide informative, detailed guidance in the form of instructions, regulations prior to assigning manpower and mission to a unit. Such guidance, even

if only a template, will be critical in providing commanders at all levels with a starting point from which to develop their own unique ISR organizations.

The research also revealed that although a combined weapons and tactics shop provided an avenue to facilitate mission integration by utilizing each mission's subject matter expert to improve cross-talk and develop system related training, it would not be the most effective method for such integration at the unit level. Additionally, this research also considered the current lack of guidance for organizing and integrating new ISR missions within the ANG and utilized a focus group comprised of experienced ISR professionals representing their unique mission areas to provide further analysis to identify how will a combined weapons and tactics shop facilitate the integration of ANG remotely piloted aircraft, distributed ground system, and targeting missions? The identified group of ISR professionals provided input that was extremely insightful, but the resulting data again did not justify selecting a combined weapons and tactics shop as the best method for facilitating integration of the RPA, DCGS, and targeting missions. Important information collected from the focus group did identify other options for facilitating ISR integration that previously had not been considered.

Training, communications, standards and evaluations and mission crews were identified as potential integration methods, however, communication (systems) and training and emerged as methods having the most potential for quickly and successfully bringing RPA, DCGS and targeting capabilities together. Further discussion of the additional methods of integration is found in the recommendation section of this report. Department of Defense, Air Force, and Air National Guard intent is for a leaner force, providing integrated capabilities at every level. In addition to integrated weapon systems, integrating multiple missions under one roof will decrease the operational footprint and lower operating costs at all levels.

Recommendations

Recommendation 1: Unifying Communications

The focus of the Air Force ISR enterprise needs to shift from providing capabilities reactively and invest in integrated infrastructure to ensure synergy of those valuable resources. This research demonstrates that the unique situation of three ANG ISR missions located at one unit would benefit from integrating the communications capabilities of RPA, DCGS and targeting as the most efficient means of integrating the operational missions. RPA and DCGS communications exist to support the assigned weapons system and infrastructure, while targeting communication section supports individual user systems and servers. This method of integration was identified as a necessary foundational move to integrate existing and emerging technologies while providing an avenue for mission crews to begin training on "like" systems. Combining systems at a unit such as the 188th Wing is made easier due to all three missions residing in one operational facility. Additionally, the AF and ANG must develop the guidance and instructions for any method of integration to ensure an enterprise standard is utilized. Integration of such critical capabilities must be supported by published guidance or the operational potential of fusing RPA, DCGS and targeting capabilities will never fully be recognized.

Recommendation 2: Training for Success

Mission crews engaging in combined training emerged as one recommended method to facilitate integration. Integrating RPA, DCGS, and targeting mission members on the ops floor would be the most cost effective method to initiate, while increasing each organization's operational ISR knowledge. Additionally, the potential to evolve this method into integrated training scenarios provides additionally advantages to the AF and ANG when looking at capabilities based ISR application for future conflict.

This option would allow mission specialists from each unit to observe and interact with other operational missions without changing costly communications infrastructure and is easily accomplished without any additional instructions from the AF or ANG. Organizational specific operating instructions should be developed specific to each operational scenario and continuity between each organization's standards and evaluations, training and scheduling departments. This method of integration would facilitate critical communication between leadership to ensure all missions and higher headquarters requirements were adequately met.

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Appendix A

Focus Group

Lt Col Patrick, Commander, 188th Operations Support Squadron (RPA)

Command squadron responsible for all direct support to MQ-9 RPA mission, including intelligence back shops. Currently Combat Mission Ready (CMR) MQ-9 Pilot / Prior A-10 pilot. Former Chief of Weapons and Tactics, integrated with unit support intelligence on all aspects of operations.

Lt Col Sara, Commander, 123rd Intelligence Squadron (DGS-AR)

Career intelligence officer. DGS-AR conducts near real time exploitation of imagery intelligence data, collected by intelligence, surveillance and reconnaissance (ISR) platforms and provides actionable, multisource combat intelligence to combatant commanders and war fighting forces. Lt Col Sara previously served as the 153d Intelligence Squadron Commander (Targeting).

Lt Col Greg, Commander 288th Operations Support Squadron

Career intelligence officer. The 288th OSS provides support to the day-to-day operations of the 188th ISRG to include training, plans, mission management, and weapons and tactics functions. Lt Col Greg previously served as the director of operations for 123rd IS / DGS-AR and possesses both an instructor qualification and intelligence evaluator certification on the SENTINEL weapons system (DGS-AR)

Lt Col Paul, Commander, 153d Intelligence Squadron (Targeting)

Career intelligence officer. The 153d IS is responsible for providing targeting production capability, consisting of the processing, exploitation, analysis and dissemination of targeting intelligence data from multiple sources. Prior to commanding the 153d IS, Lt Col Paul commanded the 288th OSS and is a former director of operations for DGS-AR. He possesses both an instructor qualification and intelligence evaluator certification on the SENTINEL weapons system (DGS-AR). He has accrued more than 4,500 hours of mission time both as an enlisted crew member and mission operations commander.

Capt Kimberly, Director of Operations, 288th Operations Support Squadron

Career intelligence officer. The 288th OSS provides support to the day-to-day operations of the 188th ISRG to include training, plans, mission management, and weapons and tactics functions. Capt Kimberly previously served as a flight commander for 123rd IS / DGS-AR and possesses both an instructor qualification and intelligence evaluator certification on the SENTINEL weapons system (DGS-AR). Capt Kimberly is a qualified Mission Operations Commander and is currently serving as the 288th OSS Weapons and Tactics Officer.

Capt Brian, Weapons and Tactics Officer, 153d Intelligence Squadron

Previously, Capt Brian served as a flight commander for the weaponeering flight until being selected to develop the space focused mission of the 153d IS. Capt Brian is currently deployed as a collection manager.

Lt Brad, MQ-9 Pilot, 188th Operations Group

Prior to becoming an MQ-9 pilot with the RPA group, Lt Brad served as an imagery analyst for a decade with DGS-AR. He earned his commission as an intelligence officer with the 188th ISRG.

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Notes

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[24] Ibid, 32.

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