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FLEXIBILITY VERSUS EXPERTISE: A CLOSER LOOK AT THE EMPLOYMENT OF UNITED STATES AIR FORCE IMAGERY ANALYSTS

by

Jennifer A. Hollock, Major, USAF

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Advisors: Dr. Andrew Niesiobedzki, Dr. Robert Smith

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Abstract

The demand for intelligence produced from airborne Intelligence, Surveillance, and Reconnaissance platforms has greatly increased in recent years and will likely continue to grow in the future. This places significant pressure upon Air Force imagery analysts to exhibit expertise in multiple disciplines including full-motion video, electro-optical still imagery, synthetic aperture still imagery, multi-spectral imagery, and hyper-spectral imagery. The training and skill sets required for each of these disciplines varies, but the greatest divergence is between full-motion video and all other forms of still imagery. This paper delves into three evaluation criteria – expertise and tradecraft, training, and career development – to determine possible impacts on the career field if a specific full-motion video discipline were to be created. The research reveals several positive aspects of this course of action but precautions would be required to mitigate potential negative effects as well. Many leaders and organizations are strictly pursuing technical, material solutions for this problem set but exploring the best way to manage the career field should also be pursued. More research should be conducted if Air Force leadership chose to pursue this action to prepare the imagery intelligence workforce for future warfighter requirements.

INTRODUCTION

During a commander's call in the summer of 2014 Colonel Timothy Haugh, the then newly appointed commander of the 480 Intelligence, Surveillance, and Reconnaissance Wing (480 ISRW), told Airmen he wanted them to "be world class intelligence analysts, the best at what they do."[1] One Airman responded with, "I want to be world class, but it's impossible…I have too many things I'm supposed to be an expert on."[2] That Airman had the Air Force Specialty Code (AFSC) 1N1A, imagery analyst, and was assigned to the Distributed Common Ground System (DCGS) at Langley Air Force Base. Like all DCGS imagery analysts he graduated from a lengthy imagery technical school, the DCGS formal training unit (FTU), and accomplished home station mission qualification training (MQT) with curriculum tailored to traditional still imagery exploitation. These Airmen spend over a year in training learning to analyze still imagery and then are expected to be "world class" in supporting full-motion video (FMV) missions that only a short certification prepares them for. In addition, FMV analysts are required to maintain expertise in conventional still imagery exploitation skills which typically atrophies because their mission focus is FMV. Differences in these two skillsets will be outlined in the tradecraft section of this paper.

The debate over flexibility versus expertise is an enduring one within the DCGS and greater intelligence community. Mission operations commanders (MOC) are charged with crew resource management for operations.[3] This responsibility includes utilizing Airmen to accomplish analysis on multiple missions while ensuring the highest priority missions are satisfied first. The intent is to promote maximum flexibility of manpower employment to meet ever fluctuating mission demands. The MOC could use a 1N1A who is trained on still imagery and FMV interchangeably on both types of missions throughout the day to meet tactical needs.

However, this very rarely happens. Flexibility is only theoretical and an advertised capability that places an excessive burden on imagery analysts to maintain multiple mission qualifications and certifications. A similar debate occurred regarding the differences between targeting functions and traditional still imagery exploitation. Until recently, there was only one imagery analyst course and Air Force Specialty Code but experts agreed that targeting was a unique skill set. A separate AFSC shred (term used when like skill sets are grouped under one AFSC but are still differentiated) should exist for those targeting missions – the 1N1B was born.

Overview of the Study

The United States Air Force (USAF) requires full-motion video experts to reap optimal exploitation and analysis of imagery sensor capabilities. As next-generation FMV and still imagery sensor technology are fielded, the two jobs will become more distinct and require dedicated skill sets. As of 2016, 362 of 457 USAF Intelligence, Surveillance, and Reconnaissance (ISR) aircraft were unmanned aerial vehicles (UAVs)[4]. A majority of those aircraft are equipped with full-motion video sensors and the future demand for FMV will not decrease. This research acknowledges the argument that if analysts become too focused on one specific imagery discipline leaders will lose flexibility when employing personnel. Another counterargument to specialization is the potential for stifling career progression and breadth within the imagery field. That thought process is also flawed because a majority of 1N1As already spend many years in the DCGS weapon system which is tasked to exploit hundreds of hours of FMV every day. This research intends to shed light on one possible way ahead to meet the highly technical skill sets that future imagery intelligence (IMINT) analysts must possess to best support tactical commanders and the warfighter.

Nature of the Problem

The demand for intelligence derived from USAF intelligence, surveillance, and reconnaissance assets has been insatiable across all combatant commands since they were introduced as a force multiplier years ago. Nearly 80 percent of today's USAF ISR aircraft are unmanned aerial vehicles.[5] A majority of those aircraft are equipped with full-motion video sensors that collect more than 30,000 hours of video per month.[6] The data collected must be analyzed for intelligence value which is then relayed back to tactical commanders for action. The Airmen responsible for the imagery portion of FMV analysis are assigned to the Distributed Common Ground System. The DCGS weapon system is a global enterprise network comprised of 27 locations with 5,400 assigned personnel who perform processing, exploitation, and dissemination (PED) 24 hours a day, 365 days a year.[7] The term DCGS encompasses all the communications networks and people, as well as the individual Distributed Ground Sites (DGS) where analysis takes place.

FMV already claims a large share of DCGS resources and advanced sensors will continue to emerge, consistently increasing the complexity and amount of raw data collected that requires analysis.[8] The Deputy Chief of Staff for Intelligence Surveillance and Reconnaissance (A2), Maj Gen VeraLinn "Dash" Jamieson, postulates that the future non-traditional ISR sensors on fifth generation aircraft along with multiple traditional sensors will be integrated via a combat cloud for fusion and analysis.[9] The Air Force Future Operations Concept predicts ISR will be the foundation upon which every joint, interagency and coalition operation achieves success in 2035.[10] All indicators point to a future increase in FMV data that will require expert analysis in the near and long-term future.

USAF imagery personnel are currently tracked as either a traditional imagery intelligence

analyst tasked to exploit still imagery or as a targeting specialist. FMV has grown into a primary job for many Airmen whereas in the past it was only a mission set few would do on select assignments. The existing training and manning practices for the imagery career field disregard the actual mission tasking. The Air Force must determine sooner rather than later the best way to prepare the intelligence workforce for the future and posture its manning to handle vast amounts of complex data successfully.

Purpose of the Study

The purpose of this study is to explore one potential course of action to address the high demand for FMV expertise. This challenge is recognized within the intelligence community, and many efforts are focused on technological solutions and the ability to process data more efficiently. One approach is developing software that cues analysts where to focus rather than having a human sift through thousands of hours of insignificant activity. A recent example produced by Space Dynamics Laboratory at Utah State University is called SIGMA. This software utilizes auto target detection algorithms to highlight significant activity for analyst to focus on and can perform autonomous cross cuing from multiple airborne platforms.[11] The imagery AFSC structure should be examined for possible improvements in addition to pursuing technological endeavors that will enhance capability and decrease human workload.

Research Question

Altering the current imagery AFSC construct would be a significant undertaking and a major shift in training practices and personnel organization. The research question for this study is, "What would be the impact on the imagery analysis career field if a distinct Full-Motion Video Air Force Specialty Code were created?" This study seeks to inform leaders and identify potential positive and negative outcomes of this course of action.

Research Methodology

The evaluation framework will be used to assess possible effects to the career field if the USAF pursues this course of action. Three key evaluation areas will be analyzed to draw conclusions on the overall effect – expertise and tradecraft, training, and retention. These evaluation areas were specifically picked because they address several vital facets that enable ISR mission success.

The first section will discuss expertise and tradecraft. It is unrealistic to expect Airmen to hone their skills and become experts when their day to day tasking is not aligned with the core functions of their AFSC. Airborne Cueing and Exploitation System-Hyperspectral (ACES-Hy) sensor exploitation will be used as a current example of how technology plays a role in advanced tradecraft and required knowledge. As next-generation sensors get fielded, it will become more apparent that the USAF needs expertise that the traditional 1N1A career field does not possess. The next evaluation criteria area examined is training. Air Force Instructions outlining training and operational standards for FMV exploitation, the 1N1 Career Field Education and Training Plan (CFETP), joint imagery publication, and various guidance documents will inform the evaluation area. Assessing this area will determine how much of an IMINT analyst's training time is spent on FMV specific training versus still imagery skill building. The final evaluation area is one that is constantly being tackled by the USAF – career management. This section will assess possible consequences of creating a specialized FMV AFSC including career expectation management and the constant lure of lucrative civilian employment for individuals with this skill set. The retention evaluation area will also be analyzed against similar challenges found in remotely piloted aircraft (RPA) pilot community.

An examination of the targeting AFSC (1N1B) shred out and lessons learned will be

included within each evaluation area to look for potential parallels for an FMV AFSC. 1N1 senior Non-Commissioned Officers (NCOs) and an USAF Civilian will be interviewed for their expert assessment of the effects the targeting shred has had on the career field since its inception as well as their perspective regarding the possibility of an FMV AFSC. A current FMV Flight chief will also be interviewed to glean information on current practices. These interviews will lend insight on how the broader 1N1 career field is managed and how DCGS 1N1s are currently employed. The paper will explore positive and negative characteristics of this proposed course of action and make recommendations for a way ahead in the conclusion section.

Interviewee Information

The author interviewed four Air Force imagery subject matter experts. The following individuals gave their permission to be interviewed and to use their views in this research.

Senior Master Sergeant Marcus – SMSgt Marcus has 21 years in the imagery career field with assignments at the 36 Intelligence Squadron (Training Target Graphics, Range Imagery), 607 Air Intelligence Squadron (National Imagery), 36 Intelligence Squadron (Commercial Imagery), 13 Intelligence Squadron (DGS-2), European Command J2 (Collection Management), 24 Intelligence Squadron (DGS-4), 315 Training Squadron (1N1A/B, 1N0, 14N AFSC Producing Courses, Superintendent).

Senior Master Sergeant John – SMSgt John has 12 years in the imagery career field and has experience as an RQ-4, Global Hawk Sensor Operator, an Air Operations Center imagery exploiter and a collection manager, and extensive DCGS experience at the squadron and 480 ISR Wing level.

Master Sergeant Christopher – MSgt Christopher is a career 1N1 with assignments at all echelons including the 9 Intelligence Squadron, Joint Intelligence Center, Pacific, 612 Air

Intelligence Squadron, the Defense Intelligence Agency, the National Geospatial Agency, and three separate DCS units.

Mr. Steven, GG-13 – Mr. Steven has 14 years in the imagery career field with one assignment as an FMV analyst and many jobs in the targeting field. He has served as an imagery analyst responsible for battle damage assessment, precision point mensuration, weaponeering, collateral damage estimation, and target development.

Interview Questions

The following questions were presented to the interviewees via email. These questions were formulated by the author to gain insight into the research question and were vetted prior to distribution by the academic advisor team, Dr. Robert Niesiobedzki and Dr. Robert Smith. Dr. Niesiobedzki's background is in academia and his expertise is in Research Methods. He has many years' experience teaching research courses and has served as the Chair and as a Committee member for several dissertations. Dr. Smith is currently the Associate Vice President for Research at the National Intelligence University. He is a retired United States Air Force intelligence officer with 35 years of experience in the field.

Your Information

1. What is your rank, name, unit, and current position?

2. What is your experience in the 1N1 career field? List pertinent assignments.

Interview Questions – Please answer the questions you have first-hand knowledge of:

1. Prior to the 1N1B shred out, did you think specialization for a targeting imagery analyst was a necessity for the career field? In retrospect, do you think it was a good decision?

2. Does the 1N1B shred improve the AFSC training process and targeting mission execution expertise?

3. How does having both 1N1As and 1N1Bs affect the management of the career field? Career progression? Quality of life?

4. How do you currently manage 1N1As within the DCGS for high altitude and FMV exploitation?

5. What would be the most beneficial aspect of creating an FMV shred? What would be the most problematic?

EVALUATION CRITERIA – EXPERTISE AND TRADECRAFT

Still Imagery Skillset Versus FMV Skillset

The fundamental skills required to interpret imagery does not differ significantly from still images to FMV. Both analysts must recognize and identify enemy and friendly order of battle, movement of personnel and equipment, and have the ability to understand a target area well enough to discern differences from day to day. However, there are many variances in the mission requirements and tempo, sensor capabilities, and PED processes for the two disciplines.

A still imagery analyst assigned to the DCGS is tasked to exploit static scenes collected via high-altitude aircraft such as the U-2 Dragon Lady and RQ-4 Global Hawk. For clarification, DCGS is not tasked to analyze national satellite imagery. These assets carry electro-optical infrared and advanced synthetic aperture radar (SAR) sensors that produce very detailed images. The mission tempo is steady throughout the duty day with a more experienced Airman assigning images to 1N1As for interpretation one at a time. The 1N1A must research the target area, investigate historical intelligence, and collaborate with fellow analysts while building an actionable product for the customer who requested this collection. The timeframe for

dissemination is important but typically not as critical as FMV because these collection requirements tend to support order of battle updates and are less time sensitive. The sensors and processors on the U-2 and RQ-4 have unique and powerful capabilities. Analysts must be experts on these sensors in order produce the best quality imagery products possible. For instance, analyzing SAR imagery is a unique skillset that is not easily mastered. Below, Figure 1 is an example of a SAR image taken by a commercial satellite. Proficient SAR analysts can point out features and detect changes in these images that unspecialized Airmen cannot.

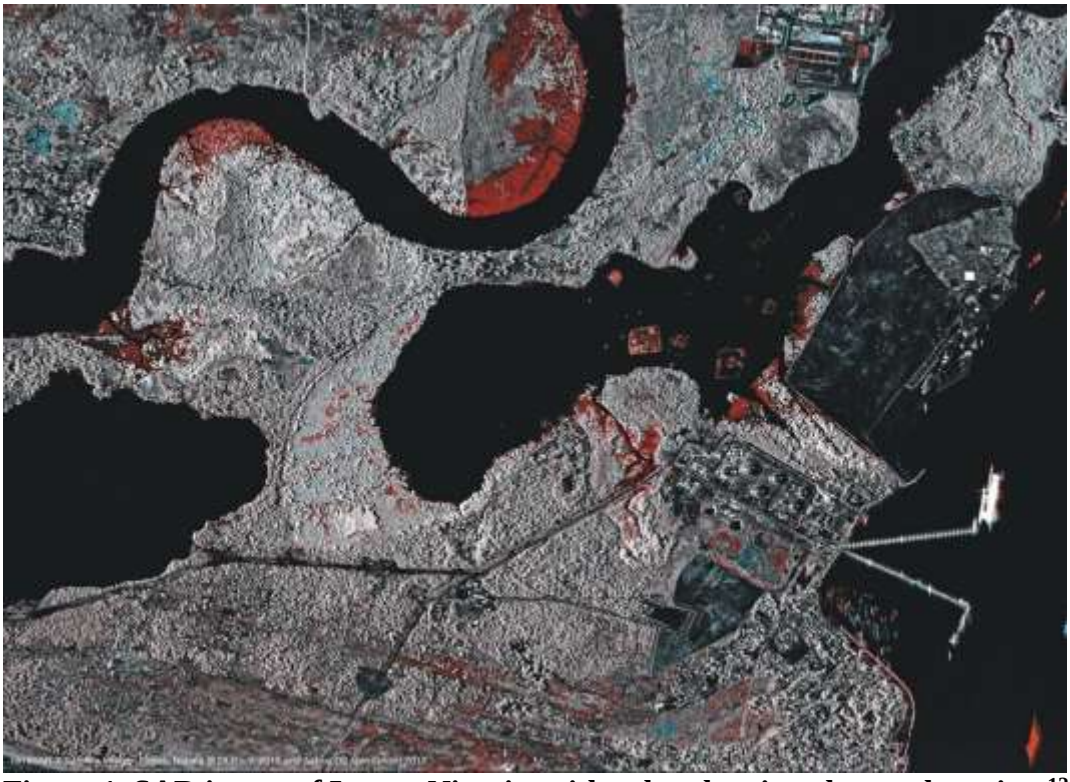

Figure 1. SAR image of Lagos, Nigeria, with color showing change detection.[12]

An FMV analyst sitting on the same DCGS operations floor as the still imagery Airmen has a very different job despite sharing the same AFSC. These 1N1s are tasked to exploit full-motion video being piped to their location near real-time from areas of operation all over the world. The MQ-1 Predator and MQ-9 Reaper carry FMV sensors and are the preferred ISR assets for tactical missions in areas of uncontested airspace. The operations tempo for an FMV

analyst can vary greatly mission to mission. If the aircraft is tasked to perform a pattern of life mission, it can loiter over the same area for an entire shift without observing any significant activity. The analyst must study the local area and recognize any changes in patterns or movement. See Figure 2 below as an example.

Figure 2: Example snapshot from an Italian Predator FMV feed.[13]

Inversely, the asset could support friendly troops taking fire from enemy forces, or it could track the fast pursuit of a high-value individual. An FMV analyst must be quick thinking and keep the tactical unit on the ground apprised of pertinent activity in the scene as quickly and accurately as possible. They must also produce imagery products in a very short time to support real-time operations. Perhaps the most important difference between the two skill sets results from MQ-1s and MQ-9s being armed and having the additional mission to perform close air support (CAS). In these cases, DCGS FMV analysts are responsible for informing the pilot of any potential civilian casualty risks and/or possible violations of the Law of Armed Conflict

(LOAC) prior to weapons employment. The responsibilities of 1N1As vary greatly from high-altitude missions to FMV and the expertise required to be excellent at either job varies.

Specialized Sensors

The differences in daily responsibilities outlined above address the skills required by 1N1As assigned to a DCGS. AFSC duties continue to differ for analysts tasked to PED specialized sensors. One such sensor flies on the MQ-1 Predator - the Airborne Cueing and Exploitation System-Hyperspectral, or ACES-Hy. ACES-Hy is exploited by an FMV crew who have additional training and certification. FMV analysts are used for this mission because the standard FMV sensor queues ACES-Hy where to collect. Humans can see visible light primarily in three bands within the electromagnetic spectrum; hyperspectral imaging (HSI) collects hundreds of bands beyond the visible light range. This advanced sensor has the capability to detect illegal opium crops and concealed objects, such as improvised explosive devices (IEDs), which are otherwise not observable on a standard FMV feed. ACES-Hy can also identify camouflage and discern manmade objects from natural ones.[14] The analysis is performed on spectral signatures, not actual images, to detect otherwise invisible substances or activities.

Figure 3 below is a depiction of how hyperspectral data can appear to a 1N1A for interpretation. The right side of the figure shows how different substances, such as vegetation, soil, minerals, and man-made materials are represented beyond the visual spectrum. This example highlights that HSI analysis requires advanced tradecraft compared to standard electro-optical exploitation. Airmen assigned to the ACES-Hy crew use their IMINT and FMV skills to plan and perform missions but must master additional abilities to gain the most intelligence value out of the collection. Both current and future advanced sensors require Airmen to possess unique capabilities that are a far reach from traditional still imagery. The ACES-Hy sensor is one

instance of technical capability evolving at a faster pace than the 1N1A AFSC. Expertise and tradecraft is focused on traditional imagery in lieu of the sensors that some Airmen exploit on a daily basis to provide advanced intelligence to supported commanders.

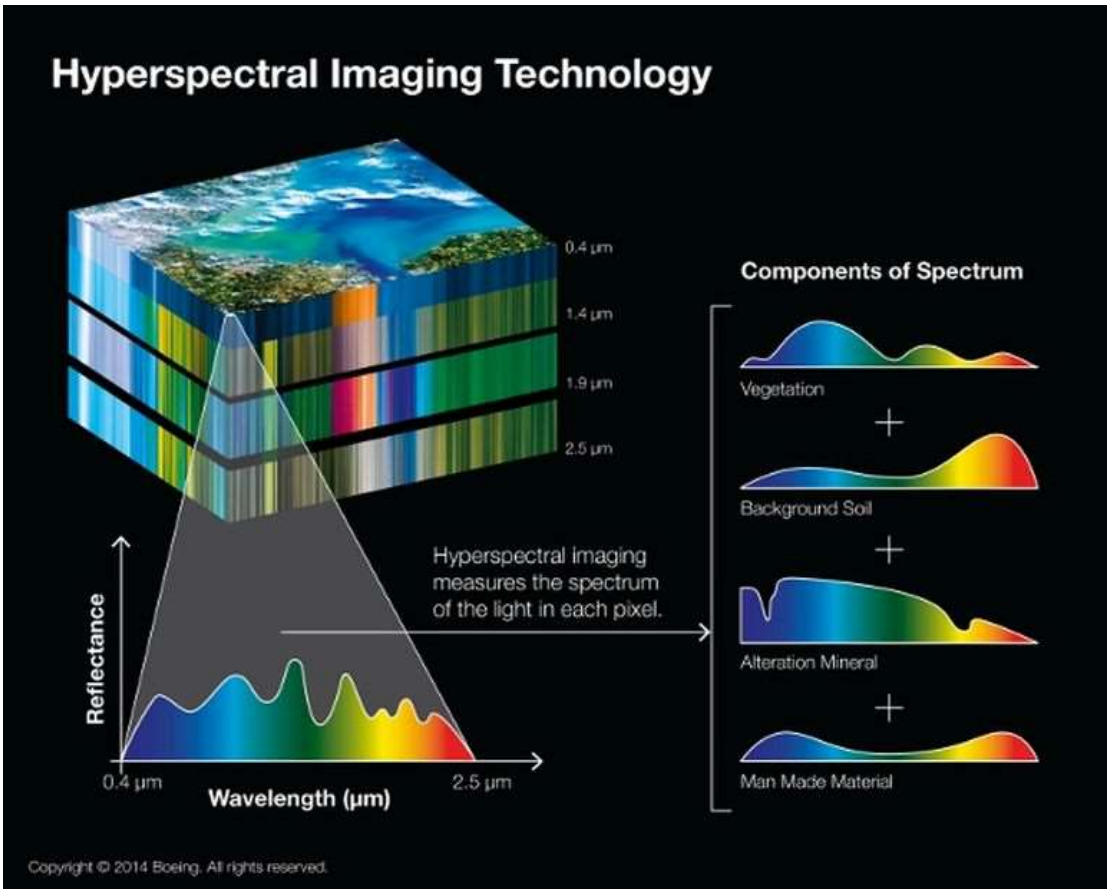

Figure 3: Hyperspectral data.[15]

Community of FMV Subject Matter Experts & Innovation

Mastering tradecraft in any career field requires years of experience. Specializing 1N1s as still imagery or FMV analyst can help build a strong community of subject matter experts within each discipline. Theoretically, an IMINT Airman's career could include an assignment as a still imagery analyst, then transfer to a unit with an FMV mission, then move to the National Geospatial Agency (NGA) to exploit overhead imagery, followed by a leadership role or something outside of the AFSC for career broadening, and then back to still imagery or FMV as

a senior NCO. Along the way, they might gain experience on advanced sensors or help develop and operate specialized systems. While this model builds NCOs with great breadth, many do not have great depth in one specific discipline. The Air Force relies on NCOs to have that depth. Intelligence officers do not specialize in any one intelligence discipline and are dependent on NCO expertise for mission accomplishment. The enlisted signals intelligence (SIGINT) career field is broken into three distinct AFSCs which allows Airmen to focus on one particular area throughout a career to truly become subject matter experts.

Other factors that contribute to the degradation of expertise are the fast pace of mission operations and technological advances. Operations move very quickly and practices can change rapidly as the tactical situation develops. Technological advances happen so quickly the Department of Defense's acquisition practices struggle to keep pace. A 1N1A who is solely focused on FMV will be better positioned to maintain a high level of proficiency in mission tactics, techniques, and procedures (TTPs) and have the time to become a true expert on sensor employment and exploitation. Someone who is considered an expert could leave the field for a short time and return with the capabilities of a novice due to changes.

Innovation is a buzz word currently heard around the DCGS and greater intelligence communities. Budgetary restraints and lengthy acquisition processes place limitations on the Air Force's ability to acquire and adapt capabilities from the private sector quickly. To combat this effect, innovation initiatives are popping up in places like DGS-1 at Joint Base Langley-Eustis. An innovation lab was stood up this year to provide a workspace dedicated to the development of new ideas and technological improvements to the weapon system. Master Sergeant Dustin Finamore, 480 ISRW innovation lead said, "Software must be updated and adapted to a much faster pace, and often dynamically, to meet mission requirements. The labs will enable our

Airmen to do exactly that and adapt the weapon system in real time."[16] These grass roots efforts were deemed necessary to keep up with the mission and technological demands already discussed. It also highlights the level of expertise required to make smart changes to the way ISR PED is performed. Only the most proficient analysts are trusted to make those decisions.

EVALUATION CRITERIA – TRAINING

1N1 Training Overview

The Air Force places considerable emphasis on the initial and life-cycle training of imagery analysts to ensure expertise at all skill levels. The official USAF careers website sums up the 1N1 AFSC responsibilities into five major categories – exploit and analyze multi-sensor imagery and geospatial data, analyze terrain and structures to determine usability and possible threats, utilize maps to determine location and distance from target, prepare and present intelligence reports, and compile and maintain imagery and target folders.[17] These skills are taught at Goodfellow Air Force Base, Texas during 112 days of technical training.[18] Criteria for 1N1 training can be found in the Career Field Education and Training Plan (CFETP). The CFETP is a comprehensive education plan that identifies requirements for the Air Force IMINT community and serves as the roadmap for instruction at all points throughout an Airman's career.

A common core of skills is taught to all 1N1s as a foundation prior to being placed in either the Imagery Analyst (1N1A) or Targeteer (1N1B) track. This approach is logical since many of the requisite proficiencies overlap. Core requirements include security procedures, operations planning, geospatial intelligence (GEOINT) analyst and targeteer duties and responsibilities, GEOINT doctrine and regulations, analytical processes and techniques, GEOINT systems and software, ISR capabilities and limitations, collection platforms and sensors, collection management principles, targeting basics, still and motion imagery

fundamentals, as well as cyber basics.[19] A capstone exercise at the culmination of the course allows students to apply knowledge and critical thinking to scenario-based intelligence problems and integrates imagery analysts with students studying other intelligence disciplines such as SIGINT and all-source intelligence.

After the common core section is accomplished, the students are split into their assigned track. The CFETP breaks out tasks and knowledge specifically applicable to 1N1As or 1N1Bs. The targeteer section of the document describes the distinct set of skills that 1N1Bs need to master in training. Focus areas include the planning and targeting cycle, weapons characteristics and uses, combat assessments, information operations (IO) and non-kinetic targeting, nuclear operations, target development, weaponeering, weapons of mass destruction, and mission planning.[20] Airmen graduating 1N1B technical school will obtain these basic skills, in addition to the common core curriculum, and be prepared for entry-level targeting jobs. Possible first assignments are unit level, the 363 ISRG (formally called the Air Force Targeting Center), or an Air Operations Center (AOC). They will spend their entire career performing targeting functions exclusively and not be permitted to perform traditional imagery analysis jobs without first accomplishing the 1N1A course.

The CFETP also details 1N1A, Imagery Analyst, education guidance. All 1N1As accomplish the same training tasks and knowledge requirements at technical school regardless of assignment to a DCGS site or a still imagery location like NGA or the 9th Intelligence Squadron which is responsible for processing, exploiting, and dissemination imagery from the U-2's optical bar camera (OBC). 1N1As train on the art of interpreting intelligence requirements in order to create useful imagery reports and products, the Law of Armed Conflict, briefing skills, critical thinking, and more recently a dedicated block of instruction on FMV resiliency.[21] The

CFETP then separates into two major subsections – tactical imagery analysis (DCGS and unit support) and strategic imagery analysis (national agencies, combatant commands, and joint intelligence centers). The tactical portion covers all facets of DCGS and RPA unit responsibilities such as reconnaissance platforms and sensors, cross-cueing, FMV analysis and software, DCGS weapon system knowledge, RPA launch and recovery and mission control elements, as well as the communications networks that enable these missions.[22] The strategic training areas are distinct from the tactical in that they concentrate primarily on order of battle, electronic and communications facilities, terrain analysis, and how to report findings in accordance with national IMINT guidance and standards.[23] The tactical portion of the CFETP encompasses 21 unique tasks, and the strategic portion presents 103. This is a strong suggestion that the two jobs have the same foundational education but different prerequisites for mission execution depending on job assignment as an FMV or still imagery analyst.

DCGS Training

This research will only outline training required for 1N1As who are assigned to a DCGS after completing initial technical training. Upon graduation from technical school, Airmen are still not qualified to perform the mission at a DCGS site without additional weapon system training despite finishing over five months of imagery instruction. There are three additional steps that must be accomplished to obtain full qualification and certification to sit mission as an FMV analyst. Airmen must first complete Initial Qualification Training (IQT), then Mission Qualification Training (MQT), and finally the FMV certification. If the analyst later goes on to PED a specialized sensor such as ACES-Hy, he or she must also complete a certification process applicable to that specific mission.

IQT can be accomplished either at the DCGS Formal Training Unit (FTU) at Goodfellow Air Force Base, Texas or at home station. The three-week, in residence FTU is the preferred method and home station IQT requires a waiver. Training requirements for IQT and MQT build upon the CFETP and are documented the Air Combat Command (ACC) Guidance 14-153, Volume 1.[24] The IQT phase teaches 1N1As the history and overarching functions of the DCGS enterprise. The curriculum then hones in on hardware and software, target research, communication with internal and external entities, building imagery products, and dissemination of those products. FTU is meant to serve as an introduction to the weapon system and operator responsibilities in a classroom setting versus during a live mission. Current and qualified DCGS instructors teach the course which must remain broad in scope since trainees from all DCGS sites attend the same FTU despite having varied mission areas at their home units.

Upon completion of IQT, Airmen move on to the Mission Qualification Training phase. MQT takes up to 90 days and is accomplished at the assigned DGS by current and qualified instructors assigned to that site. The purpose of this portion of training is to reinforce IQT standards, teach site-specific information, and mission execution.[25] Each DGS is regionally aligned to a Combatant Command (CCMD) and requires operators to be familiar with the missions, targets, and geography of that area of responsibility (AOR). Each CCMD also has unique intelligence challenges and imagery product requirements. MQT begins with classroom instruction and practice in a non-operational environment. Students then move on to the operations floor and begin exploiting still imagery collection from mission aircraft. At some DGS sites, an Airman may be moved from still imagery to an FMV crew to expand their skill set. This usually does not become an opportunity for six to twelve months, and not all 1N1As

will perform FMV exploitation during their DCGS tour. Some will continue within the still imagery realm and become leaders and experts for that mission set.

Figure 4: A DCGS Operation Floor[26]

Those who perform the FMV mission must then enter certification training to learn those distinctive tactics, techniques, and procedures. This certification training is less formal than IQT or MQT and takes place almost exclusively on the watch floor during real-world missions. Current and qualified instructors still supervise and guide this portion of training and students are not permitted to operate without instructor oversight until they are fully certified. The FMV certification takes approximately four to six weeks to complete. Analysts must study and practice their still imagery skills in preparation for 18-month periodic qualification while still working FMV missions as their primary responsibility. High-performing FMV Airmen are sometimes selected to PED specialized sensors such as ACES-Hy. Additional certifications are required for each additional sensor, and a similar training approach is used as in the FMV

certification process. The training timeline for each new sensor varies, but generally, it takes four to six weeks for an operator to be certified to perform mission duties unsupervised. Airmen assigned to the ACES-Hy crew must still maintain currency, certification, and qualification in standard FMV and still imagery.

The training burden placed on a 1N1A throughout a DCGS assignment is significant. By the time an Airman becomes FMV certified, he or she will have spent almost 23 weeks in AFSC training, three weeks in IQT, up to three months in MQT focused on high-altitude imagery, and another six weeks in FMV training for a total of 44 weeks. In addition, all 1N1As must complete CFETP training requirements. If an FMV AFSC shred were created, it could potentially eliminate a large number of training requirements for about half of the 1N1As assigned to the DCGS enterprise who exploit FMV as their principal function. Eliminating the 103 CFETP strategic training requirements, focusing on FMV in the AFSC producing course, and concentrating on FMV during DCGS IQT and MQT could present substantial savings in money for the Air Force and time for Airmen and yield combat ready analysts at a much faster pace.

EVALUATION CRITERIA – CAREER MANAGEMENT

Career Development

Deliberate career development and management are critical when organizing a large group of talented Airmen who possess unique skills that are in high demand. Senior Master Sergeant Marcus has 21 years in the imagery career field and currently works at Air Combat Command on the DCGS Functional Management team. Prior to the 1N1B shred out, SMSgt Marcus did not think a separate targeting AFSC was needed. However, in hindsight he believes it was a good decision because it allows for career development within the targeting skillset. It

also allows the Air Force assignment and development systems to readily identify Airmen with the appropriate qualifications to fill targeting positions at home station and deployed locations.[27]

Traditional imagery analysis and targeting are currently treated as distinct career paths from Airman Basic (E-1) through Master Sergeant (E-7). Within those ranks, analysts only compete within their shred for promotion and receive duty assignments to units which have billets for their respective AFSC. When 1N1A and 1N1B noncommissioned officers (NCOs) compete for Senior Master Sergeant (E-8) and Chief Master Sergeant (E-9), the shreds are merged, and the 9-skill level is awarded. All of these NCOs are then eligible to fill any 1N191 billets, regardless of specialization in earlier ranks.[28] The initial separation and subsequent merger of the imagery AFSC demand that the career field managers closely track the well-being of 1N1 staffing to ensure the promotion and career progression is available across the field.

When a 1N1A is assigned to a DCGS squadron, career development depends on how that site manages the imagery mission and workforce. Some DGSs have dedicated mission sets by the squadron. For example, one operational squadron is charged with the PED of only FMV and another handles all high-altitude analysis (including still imagery). In this circumstance, specialization is inherent since an Airman will be assigned to one squadron and then only execute that focused mission. This practice is not the norm at other DCGS sites. In those cases, unit leadership decides the placement of 1N1As for either FMV or still imagery exploitation. Previous experience, aptitude, and needs of the unit are all considered when vectoring an analyst to either a still imagery track or FMV track. Additionally, 1N1As at these combined mission sites may be switched to the opposite track if required to meet unit mission demands.

Promotion

Promotion criteria and opportunities for 1N1s must also be considered when examining career management. The Air Force utilizes the Weighted Airman Promotion System (WAPS) for enlisted promotions. WAPS is meant to capture the whole person concept and includes several data elements – Enlisted Performance Reports (EPRs), decorations, fitness examination, Specialty Knowledge Test (SKT), time in grade, and time in service.[29] Completion of grade-appropriate professional military education (PME) is also a promotion prerequisite. The SKT portion of WAPS is the focus for this research since it measures an Airman's knowledge of their career field. Topics for the SKT are limited to areas covered in that AFSC's CFETP. Additionally, Career Development Courses (CDC) are used to award AFSC skill levels. CDC test materials are also used to populate SKT questions and topics.[30] An Airman's performance on the SKT test directly impacts his or her chance for promotion.

How a 1N1A is utilized in the field has a significant effect on readiness for SKT and CDC testing. These tests are designed to reflect what an imagery analyst should have learned during AFSC training, through CDC accomplishment, and skills mastered by performing operational missions commiserate with their rank. It is unfair that a 1N1A assigned solely to FMV missions must perform well on testing that includes questions based on 103 CFETP items that do not apply to that Airman's day to day responsibilities. It is also a substantial drain on time for that Airman and unit leadership to prepare for testing. One example comes from a conversation with the author and Technical Sergeant Aaron, who spent all of his early years in the Air Force supporting RPA and FMV missions and never had a traditional still imagery exploitation job.[31] While deployed in theater, he was preparing for the Staff Sergeant promotion board and studying for the 1N1 SKT. Despite excellent performance and mastery of his assigned

duties, he found that very little of his work experience was included on the test which would play such an important role in his promotion opportunity. TSgt Aaron had the burden of working a full duty day at his deployed location then took it upon himself to spend additional time learning from still imagery experts deployed from the National Geospatial Agency. After his normal FMV shift concluded, he sat side saddle with the NGA team and exploited still images taken by satellites to master that portion of the SKT. This personal sacrifice and unconventional access to subject matter experts are what he asserts enabled him to score well on the SKT and earn a promotion. This example is one of many and counters the intent of SKT and CDC tests which are meant to assess an Airman's ability to perform their AFSC skills and job duties.

Retention

Retaining the best and brightest is a challenge every military leader faces and a particularly difficult task for 1N1A management within the DCGS. The DCGS enterprise operates 24 hours a day, 7 days a week and members are considered deployed in place. Unlike a unit that deploys away from home station, there is no carved out reconstitution or down time at DGS sites. Many enlisted members serve four-year tours at one site then transfer to another site. It is not unusual for a career 1N1A to spend a decade or more deployed in place at a multiple DGS sites by the end of a 20-year career. FMV Airmen are exposed to hours of hostile activity that can take a mental toll. Grueling work schedules and intense mission demands create stress and emotional exhaustion. A RAND dissertation was published in 2012 that specifically examined occupational burnout and retention of intelligence personnel assigned to the DCGS. This paper was prompted by widely publicized concerns within the Air Force about the mental and physical health of intelligence Airmen. It revealed that similar burnout rates were found among the air traffic controller and RPA communities. Additionally, the paper highlighted the

fact that PED is sometimes tedious and monotonous which can fuel burnout as much as work overload.[32] This makes FMV Airmen highly susceptible to burnout, and many members choose not to reenlist.

Many steps have been taken since the 2012 study to alleviate several root causes of strain on DCGS personnel. Air Combat Command has worked hard to balance combat capability and force presentation of PED personnel. This organizational improvement has better aligned operational demands with manning constraints and has allowed most sites to go from a 12-hour standard duty day to an 8-hour duty day for FMV crews. The 480 ISRW has put resiliency teams in place that include medical, psychological, and spiritual support professionals. The Operational Medical Elements (OME) personnel possess appropriate security clearances and are embedded within the DGS sites to provide immediate support for operators who find it difficult to seek help at base clinics or chapels due to non-standard work schedules or classification sensitivities.[33] Improved work schedules and access to support teams have greatly improved the quality of life for FMV professionals within the DCGS and will hopefully encourage more 1N1As to stay in the Air Force longer.

Creating an FMV shred could affect retention either negatively or positively in the short term, depending on each individual Airman's career objectives and personality. Currently, when a 1N1A enlists they do not know what their future career path holds. They could experience a wide variety of assignments at the tactical, operational, and strategic levels and be called upon to exploit FMV, still imagery, specialized sensors, or perform unique geospatial missions. One Airman might find this diverse example challenging and fulfilling while another might find it disjointed and frustrating because it is impossible to develop true expertise. If the imagery analyst field splits again, members will enlist knowing that their career would focus on one

imagery discipline and expect all future assignments to draw on the deep expertise of either FMV or still imagery exploitation, sensors capabilities, and operational employment. The expectation of their duties would be clear and allow for proficiency to increase from assignment to assignment. This would increase job satisfaction; providing leadership within the DCGS community continues to improve quality of life and promote a healthy, balanced work center for analysts deployed in place for extended periods of time.

Parallels with 1N1B

Similar to the concerns raised in the targeting community, one 1N1A expert considers the creation of a new AFSC management infrastructure the most problematic aspect to further specializing imagery analysts. SMSgt Marcus points out that assignment locations, billets, promotion, and career progression will all be affected by a new AFSC shred. It could also prevent Airmen from being eligible for desirable strategic assignment opportunities at locations such as NGA, the Defense Intelligence Agency (DIA), combatant commands, and Joint Intelligence Operations Centers (JIOCs). To mitigate this effect, AFSC managers would have to ensure billets were coded appropriately to have targeting, FMV, and still imagery skill sets all represented at those assignments and placed according to mission requirements.[34] Strategic locations require Air Force expertise in each discipline; another AFSC shred could theoretically posture Airmen to serve the joint community better if they were placed in assignments correlated with their expertise. This same management process had to be applied when 1N1 split into two and could be done again if warranted.

RESULTS OF EVALUATION CRITERIA

The three evaluation criteria areas – expertise and tradecraft, training, and career management – were examined to investigate what impacts could result if the imagery analysis

career field created a distinct Full-Motion Video Air Force Specialty Code. The intent was to identify positive and negative outcomes this course of action could produce. Subject matter expert interviews lent insight into current practices, lessons learned from the targeting 1N1B shred out and informed the results of the evaluation criteria.

The expertise and tradecraft criteria evaluation area revealed that true proficiency could only be garnered by those who have dedicated time to focus on one particular mission area. This research shows that the day to day tasking and skill sets required to be an expert at FMV or still imagery analysis differs greatly. Specialization allows expertise to grow over the length of a career and spur tradecraft innovation. SMSgt John, the current 1N1 Air Force Specialty Manager at Air Combat Command, indicated that the most beneficial aspect of creating an FMV AFSC would be producing experts.[35] MSgt Christopher, who is an FMV Flight Chief at DGS-1, agrees expertise would increase which would be beneficial, but worries that individuals who only perform FMV missions would lose advanced analytical skills. More in-depth research and analysis is required for still imagery products and those Airmen typically focus on one target area for a longer amount of time. Those skills are less relevant while performing FMV missions since the operations tempo is fast and the sensor might only be tasked for a short amount of time on a target area. MSgt Christopher believes imagery product quality could decrease if imagery analysts are not well rounded and readily execute both imagery disciplines.[36]

The same expertise argument is what spurred the 1N1B split. Mr. Steve is a senior targeting analyst at the 36 Intelligence Squadron and believes a dedicated targeting shred was necessary and was the correct course of action. Targeting skills, especially processes involved with deliberate targeting, were atrophying due to the dynamic nature of counterterrorism missions. 1N1As who did not have previous experience and were not graduates of the Combat

Targeting Course (CTC) did not have the targeting core knowledge to effectively function in a targeting billet.[37] Now that all 1N1Bs only focus on targeting, any Airman who fills a billet will likely have the appropriate expertise, and job experience commiserate with rank.

The second evaluation criteria, training, exhibited the strongest argument in support of a separate FMV AFSC because it showed a waste of time and resources training Airmen in job skills they do not necessarily use in their duty assignments. The 1N1 AFSC producing course is already set up with a common core portion followed by A and B shreds. Further specialization of the curriculum would not be difficult and would reduce training times while focusing students on one specialty applicable to all future assignments. The CFETP already delineates the roles, responsibilities, and training tasks for each respective area of the imagery career field. Separating FMV and still imagery would eliminate the tasks that do not apply outside of the Airmens' experience or expected duties. SMSgt Marcus cites the most beneficial aspect of creating an FMV shred would be at DCGS sites where Airmen must be trained for both FMV and still imagery jobs but typically only perform one job regularly.[38] The current training guidance and construct could be quickly adapted for this course of action and would reduce the extensive training burden currently felt within the imagery community.

Career management was the final evaluation criteria examined and caused the most trepidation for the subject matter experts who were interviewed. SMSgt John pointed out that FMV Airmen would be limited DCGS billets and the current 1N1A assignment flexibility would be lost.[39] Assignment stagnation could be mitigated and a diverse career path could still be achieved if the 1N1A billets were properly coded with FMV or still imagery requirements. Lastly, Mr. Steven questioned what FMV analyst would be tasked to do during major combat

operations with a near-peer adversary where no FMV assets would be able to operate.[40] With the current 1N1A construct, those analysts could flex and support national imagery exploitation.

Further research would be required to discover if promotion rates would be affected by this course of action but the extent of preparation Airmen would have to do for promotion boards would certainly decrease. TSgt Aaron's account of SKT preparation for his SSgt promotion board is just one example of the onus placed upon Airmen who currently do FMV jobs but must be proficient in still imagery despite duty assignment. It is too soon to know if the recent steps taken by DCGS and ACC leadership to improve quality of life and provide access to support professionals will increase retention rates. This factor will also require additional research.

CONCLUSION

Recommendations

The results of the evaluation criteria examined in this research indicate there are more positive aspects than negative when considering a specialized FMV AFSC. Expertise and tradecraft would certainly increase across the USAF imagery career field. Training would be more focused will better prepare Airmen for their careers and reduce the amount unnecessary training tasks for job preparation, progression, and proficiency. Career management, development, and promotion could become more difficult and potentially cause roadblocks that do not currently exist for a 1N1A progression. Overall, the positives outweigh the negatives assuming mitigation steps are taken to reduce risk in the career management area. Further study should follow to gain more insight on the feasibility of this course of action and if it would satisfy the future ISR PED demand in addition to technological solutions already being pursued.

Summation

The Air Force Future Operations Concept predicts ISR will be the foundation upon which every joint, interagency and coalition operation achieves success in 2035.[41] The USAF must prepare the imagery career field to meet the PED requirements of combatant commanders and the greater intelligence community. Is it more important for leaders to have an expert team of analysts or a flexible one? That debate endures, and a balance must be struck. Previously, intelligence officers were specialized into distinct disciplines, but now all officers are generalists. This puts more stress on Non-Commissioned Officers to have deep expertise. These NCOs are typically responsible for collection management, mission planning, and mission execution for all imagery sensors. As more advanced sensors come online, the amount of expertise required will also increase during all phases of ISR operations. The best way to prepare the imagery workforce for future challenges is to focus training on their assigned missions and allow them to build specialized knowledge and skills throughout their careers.

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