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A TASKING CONSTRUCT FOR NON-TRADITIONAL INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE

by

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NTISR is currently employed in Iraq to augment ISR collection; however, its employment is limited to accomplishment of a few tactical objectives. There are no standardized, coordinated processes to task and collect NTISR. Implementing a NTISR intelligence collection program requires constructing a standardized tasking process. This paper examines issues related to NTISR tasking and proposes a construct to establish a theater tasking process.

Introduction

The Value of Non-Traditional Intelligence, Surveillance, and Reconnaissance

A single B-52H launches from a forward operating area bound for Afghanistan. The aircraft, with the callsign Sugar 52, is carrying six GBU-38 JDAM 500 lbs GPS guided munitions, six GBU-12 500 lbs laser guided munitions, and a Litening AT Advanced Targeting pod with video downlink capability. The aircraft has been designated as on-call Close-Air Support for ground forces operating in the border region of southern Afghanistan, but has a secondary mission conducting intelligence, surveillance, and reconnaissance (ISR) to augment traditional ISR capabilities. While transiting to their preplanned orbit, the crew flies over three suspected terrorist assembly areas recording targeting pod imagery for post-flight analysis. Sugar 52 flies along a valley used for smuggling weapons to insurgents operating along the border. The crew looks for movement and vehicles in this remote area. Finding a vehicle parked near a small outpost, Sugar 52 records imagery and vehicle location before proceeding to their orbit.

After thirty minutes on-station, Sugar 52 gets a call from an Army Special Operations team that has begun taking mortar fire. Sugar 52 transmits Litening pod imagery via Remote Operations Video Enhanced Receiver (ROVER) datalink to Army ground forces helping to identify the source of mortar fire. The Joint Forward Air Controller authorizes release of two GBU-38 JDAM's, eliminating the enemy insurgents. The Army Special Operations team resumes their mission and Sugar 52 continues orbiting for the remainder of their vulnerability period. As they return to base, Sugar 52 collects imagery of three suspected poppy fields and

records imagery. After landing, the crew downloads recorded imagery and provides it to their squadron intelligence officer. The intelligence officer uploads the images and post-mission report to the Air and Space Operations Center (AOC) using a secure database for analysis.

Fact or fiction? The scenario fuses the long range striking power of a B-52 with intelligence collection capabilities of a traditional reconnaissance platform. Yet, this is not a far-fetched scenario based on future capabilities. The equipment used in this scenario is fielded today. What's missing is a standardized theater process to identify, task, and collect data from our strike platforms. Currently, the ability to task and utilize these capabilities in an efficient manner is not institutionalized and largely personality dependant. The concept of using traditional strike platforms to collect intelligence, surveillance, and reconnaissance (ISR) data is called non-traditional ISR (NTISR). The Air Force Functional Concept defines NTISR as "the concept of employing a sensor not normally used for ISR as part of an integrated collection plan developed at the operational level for preplanned, on-call, ad hoc, and/or serendipitous collection."[1] The fusion of traditional strike aircraft with a system of collecting ISR data is a concept that supports intelligence and strike objectives at tactical, operational, and strategic levels. AOC's currently lack standardized capabilities to task and utilize strike platforms in an efficient manner. This paper will discuss the utilization of NTISR and propose a method for AOC tasking of NTISR.

Use of Aircraft to Collect Intelligence, Surveillance, and Reconnaissance

Intelligence, Surveillance, and Reconnaissance (ISR) can be collected using a variety of platforms including space, airborne, and ground-based assets. Airborne assets include both manned and unmanned aircraft and are traditionally used to collect geospatial intelligence (GEOINT), signals intelligence (SIGINT), and measurement and signature intelligence

(MASINT).[2] ISR collection platforms have historically been *low density, high demand* assets with relatively low numbers of air and space assets providing data to fill the endless demand for intelligence.[3] The Global War on Terror has created exceptionally high demand for ISR by theater commanders. Heightened demand of *low-density* assets has placed operational strain on collection platforms and theater intelligence collection.

The proliferation of unmanned aerial systems (UAS) has relieved some strain on ISR platforms, but UAS's have become victims of their own success proving indispensable to theater commanders. Production of UAS's has increased exponentially since 2001 to keep up with demand. Over the past seven years, the Department of Defense has increased UAS's budget over 600% from $363M in 2001 to $2.25B in 2008.[4] While the number of UAS's have increased dramatically, so too has their utilization. Heavy usage during Operations Iraqi Freedom and Enduring Freedom has resulted in a large number of US ISR collection assets being assigned to operations in US Central Command (CENTCOM). Theater commanders both in CENTCOM and other areas of operations are unable to fulfill all requests for information (RFI's) and must ensure prioritization when tasking collection requirements. Collection requests are postponed or missed on a daily basis due to priority conflicts and lack of available collection assets.

The 2006 Quadrennial Defense Review (QDR) provides a future vision where "intelligence functions will be fully integrated with operations down to the tactical level, with far greater ability to reach back to intelligence collection systems and analytic capabilities outside the theater."[5] The US Army, in their concept of ES2 (Every Soldier a Sensor), acknowledged that its most capable, sophisticated collector of intelligence is the individual soldier.[6] The Army realized that some of its best intelligence data came from the tactical level and needed a systematic collection process to capture data from fielded soldiers. In 2006, Secretary of the Air

Force Wynne adopted the concept of ES2 searching for more efficient and effective means to network information across the battlefield.[7]

"Interdependence is an evolutionary step upward," stated Secretary Wynne, "where every sensor can be a shooter and almost every shooter a sensor."[8] The evolving interdependence between USAF strike and ISR platforms blurs the traditional distinction between sensors and shooters; a distinction that will eventually become irrelevant. Richard Haver, former intelligence advisor to the Secretary of Defense stated, "The biggest problem with [our ISR efforts] is that we do not maximize the value of what we collect. We have a lot of platforms out there. I would feel a lot better about the way we run the system if I had a high degree of confidence that the national leadership or tactical users were getting the full benefit of every one of these systems we have up there."[9] Potential solutions to the ISR problem maximize value and efficiency through integrating an interdependent force. The MQ-1 Predator is an example of the evolution of this effort.

The arming of MQ-1 Predator aircraft with Hellfire missiles demonstrated the integration of intelligence collection with battlefield effects. The Predator proved a highly effective ISR collection platform during NATO operations in Bosnia.[10] Yet, Air Force leaders believed they could get more utility out of the platform and General John Jumper, former Air Force Chief of Staff, directed that a laser designator be integrated with the Predator.[11] The combination proved highly effective during Operation Allied Force and paved the way for further integration of ISR and strike capabilities.[12] In 2001, the launch of a Hellfire missile from of a Predator further blurred the distinction between reconnaissance and strike platform.[13] The success of the armed Predator has led to the development of a more capable UAS, the MQ-9 Reaper, with nearly the

same payload capacity as an F-16.[14] The integration of high-tech sensors and battlefield strike capabilities has caused many to wonder where to draw the line between strike and ISR platform.

Air Force fighter and bomber aircraft have followed a similar path, adopting high-tech sensors for strike missions. Image quality of modern targeting pods and strike radars rival the intelligence collection sensors of ISR platforms. Aircraft, vehicles, and personnel are easily distinguished using third generation targeting pod sensors.[15] "With the Sniper pod, not only will I be able to see the road and the vehicle, but also I can tell you what kind of vehicle it is, how many people are in it, and if it's a pickup truck, whether it has anything in the back of it," said Lt Col Jim Pryor, Commander of B-1 squadron employing Sniper pods.[16] Integrating a high-fidelity sensor with the B-1's massive strike capability and range greatly enhances its combat effectiveness. The B-52 has pursued a similar path having integrated the Litening AT targeting pod in 2005. The Air Force recently contracted Boeing to integrate Sniper pod, making the B-52 compatible with all USAF third generation targeting pods.[17] The global range and high persistence of the strategic bomber make it an ideal platform for NTISR collection. Despite not having been designed for ISR, targeting pod equipped aircraft offer great potential collecting imagery for intelligence analysis.

The 2006 Quadrennial Defense Review stated that the future force will "define ISR needs by sensor or type of intelligence rather than the platforms that carry the sensors or the medium in which they operate."[18] The Air Force must begin transforming intelligence collection from a platform-based force to a capabilities- and effects-based approach. "The Air Force should effectively manage ISR with a capabilities- and effects-based approach," said Lt Gen David Deptula, Deputy Chief of Staff for ISR; "ISR effects and capabilities must drive and shape the effort to satisfy the needs of joint decision makers."[19] Instead of defining intelligence collection

requirements by collection platform, planners will define elements of information required and use the most appropriate sensor to collect them. This approach will allow substitution of sensors in theater to achieve required effects. Ultimately, intelligence requirements will be defined by collection needs rather than collection methods. NTISR is an extension of this vision, allowing substitution of strike aircraft sensors for those of traditional intelligence platforms creating battlefield efficiency.

NTISR is defined by the US Air Force Functional Concept as "employing a sensor not normally used for ISR as part of an integrated collection plan developed at the operational level for preplanned, on-call, ad-hoc, and/or opportune collection".[20] The document elaborates that, "NTISR should not be confused with tactical reconnaissance, a traditional ISR mission that uses sensors designed for intelligence collection."[21] NTISR is executed in essentially two forms. The first form is *armed overwatch*, which uses strike aircraft to provide real-time battlefield situational awareness to ground forces.[22] The second form is *theater collection* which uses strike aircraft to collect ISR that is then sent for analysis and disseminated as operational and strategic level intelligence.

The difference between armed overwatch and theater collection is the requirement for processing, exploitation, and dissemination (PED). Using armed overwatch, data is sent directly to the tactical level where the user is responsible for PED. Strike aircraft and the AOC have few follow-on requirements for collected data. Armed overwatch is more an extension of close air support than intelligence collection and can be tasked as such. NTISR theater collection is used at the operational level and data must be transmitted for PED. In order to ensure NTISR PED requirements are met, the process for tasking and collecting data must detail all aspects of data

storage and handling. Tasking requirements for theater collection are more complex and should be standardized.

NTISR platforms provide supplemental capability for theater commanders to collect intelligence data without levying additional taskings on traditional ISR platforms. There are a number of limitations to NTISR collection. Currently, there is no standardized tasking method for bomber and fighter aircraft to collect ISR. Strike platforms lack integration into the global ISR network. ISR platforms have dedicated datalinks and linked information hubs that transmit information to PED analysis centers. Additionally, the strategic reach of theater aircraft make collection efforts outside traditional operating areas difficult without a large logistical footprint. The lack of a standardized NTISR planning, tasking, and collection network has resulted in ad hoc application of capabilities instead of a coordinated collection effort. Brigadier General Blair Hansen, Air Force Director of ISR Capabilities, believes that NTISR tasking methods need to be refined. "One of the problems we face is how to take non-ISR platforms and task them as ISR assets," said BGen Hansen; "We've got to get out of our camps on the tasking process." [23] Despite its limitations, the U.S. Air Force continues to pursue NTISR as a potential solution to ISR shortfalls.

The Future of NTISR Collection

NTISR is a stop gap measure for legacy platforms. The eventual goal is to design and build network centric systems that eliminate distinctions between traditional and non-traditional ISR collection.[24] The future of NTISR focuses on integrating fighter and bomber aircraft with the Global Information Grid (GIG). The GIG is an integrated network of capabilities, platforms, and personnel that rapidly distributes intelligence information to all appropriate users.[25] The GIG vision connects sensors and platforms with network information systems to provide

automated collection and transmission of ISR data. Unused sensors will be automatically tasked to record target areas of interest without aircrew involvement. Data can be transmitted across networks and automatically forwarded for analysis. Achieving this level of integration will be difficult and requires a common architecture for ISR collection. Furthermore, the development cost for automating NTISR collection could be staggering with budgets under constant assault.

NTISR authors conceive a future where application of technology will solve the issues of tasking NTISR; however, a future of integrated ISR collection is hard to visualize when no formal integration process for NTSIR collection exists today. The USAF needs to improve tasking efficiency of NTISR collection with its current array of sensors and incorporate capabilities as soon as new technologies are developed and fielded. To paraphrase former Secretary of Defense Donald Rumsfeld, *you go to war with the capabilities you have, not what you wish you had*.[26] If the USAF cannot develop the processes to integrate today's advanced capabilities collecting NTISR, there is little reason to believe technology will solve this dilemma.

Constructing a Method to Task Non-Traditional ISR

The process of turning planning requirements into intelligence is referred to as tasking, collection, processing, exploitation, and dissemination (TCPED). In order to integrate NTISR into the collection process, TCPED for NTISR must be standardized at the AOC. NTISR collection management faces many obstacles at each step of the TCPED process. Some of the challenges faced by ISR collection managers are:[27]

1. Lack of uniform training on capabilities and limitations of strike platforms
2. Lack of a sensor to collection capability reference
3. Lack of processes to ensure collection and operations planners are aware of NTISR systems status
4. Lack of a standardized tasking architecture for NTISR
5. Lack of direct feedback to collection and operations planners on NTISR tasking effectiveness

These challenges result in AOC planning staff not having a shared mental model of available NTISR capabilities, employment options, or tasking processes. Once capabilities are tasked, there is no feedback mechanism to report effectiveness or make future improvements. A NTISR tasking process must address capabilities and requirements while institutionalizing communication and feedback. This can be accomplished by following a six-step process to implement an NTISR tasking program at the AOC:

Step 1: Define and categorize sensors and configurations in theater

Step 2: Match sensor capabilities to ISR collection targets

Step 3: Provide a NTISR LNO to the AOC

Step 4: Construct a collection tasking method

Step 5: Task aircrew with the requirement

Step 6: Construct a feedback mechanism for operations

Step One: Define and Categorize Sensors and Configurations in Theater

The first obstacle to overcome is ensuring a common definition of the types of sensors in theater and categorizing configurations in which they are employed. The planning challenge at the operational level is the lack of visibility on capabilities, limitations, and availability of sensors in theater. The Theater ISR Concept of Operations (CONOPS) discusses initial considerations for AOC planners:

> "In developing an ISR MAAP [Master Air Attack Plan], planners must first consider ISR collection assets available for a given tasking period. This includes components' organic ISR assets and the contributions they can make toward achievement of the ISR objectives. The full range of the collectors' capabilities, specifically their methods of processing, exploiting, and disseminating intelligence will be taken into account. A good understanding of the capabilities and limitations of available collectors is critical."[28]

Planners must have a solid understanding of the capabilities and limitations of the collection platforms in theater. Traditional ISR collection platform capabilities are well defined by collection planners. However, strike aircraft have multiple sensors and datalinks that are utilized in a variety of configurations. Capabilities and limitations of strike aircraft need to be commonly defined, catalogued, and categorized before they can be effectively utilized for NTISR collections.

Strike platforms employ a variety of sensors in theater. These aircraft have wide ranging capabilities from Litening and Sniper targeting pods to ground mapping radars. A comprehensive list of ATO strike aircraft sensors must be compiled in order to determine all available avenues for ISR collections. Collection capabilities will be defined on both U.S. and allied coalition aircraft. After sensor capabilities have been catalogued, aircraft communications

and transmission capabilities must be examined. Communication avenues such as Ultra High-Frequency voice radio, Link-16, Voice Satellite Communication capabilities, and targeting pod video downlink capabilities will be compiled and catalogued. Lastly, methods for recording and storing data will be captured and catalogued. There are a variety of ways by which strike aircraft can capture data from their different sensors, but it may not be possible to transmit data from aircraft immediately for processing. Therefore, many NTISR collections will be downloaded from aircraft recording devices post-flight. All avenues for recording, transmitting, and downloading data from theater strike aircraft should be captured. Once existing theater capabilities are fully defined, AOC planners can categorize common carriage configurations.

Bomber and fighter aircraft employ with various configurations of sensors, datalinks, and recording equipment, but commonly fly with a few standard loadouts. The most common configurations can be categorized into NTISR loadouts and listed on the ATO in the same way weapon loadouts are listed on the ATO. For example, the B-52 in the vignette may be capable of a multitude of weapons configurations, but may only commonly carry either GPS guided GBU-38's, laser guided GBU-12's, and unguided Mk-82's in some combination thereof. The strike planners categorize common munitions configurations and list them on the ATO as Standard Conventional Loadouts (SCL). The SCL requested for each strike mission is listed on the ATO and sent to the unit to coordinate munitions availability in theater. In the same manner, strike aircraft commonly carry specific sensor and communications configurations that can be grouped into common categories or Intelligence Configuration Loadouts (ICL). The ICL will be documented on the ATO to create visibility on available theater sensors. Once all theater aircraft have been categorized, ISR and Combat Plans divisions will maintain a shared list of ICL

categories for aircraft assigned to an area of operations. This common coding system will ensure planners have a shared mental model of NTISR capabilities available in theater.

It is important to note that intelligence planners have a solid understanding of theater capabilities. The purpose of this reference is not to supplant their knowledge, but rather ensure a complete and common reference that promotes a shared understanding of capabilities among planners. Furthermore, as sensor, datalink, and data storage technologies are developed and fielded, this reference will be updated to reflect new capabilities and define how best to exploit them.

Step Two: Match Sensor Capabilities to ISR Collection Targets

Current NTISR tasking processes do not commonly define which target sets that strike sensors could effectively collect. Planners contend with a vast number of collection requirements and use a wide variety of products. Collection requirements range from high-resolution imagery to real-time full motion video. Capabilities of current strike platforms are not able to fill all planning requirements; however, many missed RFI's could potentially be filled by current sensor capability. Step one of the tasking construct establishes a comprehensive list of sensors. The AOC can examine each sensor's capabilities and categorize collection targets they will be most effective against. For example, a Litening AT pod will not likely be able to provide the imagery quality necessary to satisfy all requirements, but may be able to identify the contents of pickup truck bed.[29] Some aircraft may not have the ability to stream persistent full-motion video to the AOC, but it may be possible to record this video for upload to the AOC post-mission. ISR collection targets that can be serviced by NTISR sensors will be catalogued and categorized by collection target type into a *NTISR Target Capability List* (NTISR TCL). The

NTISR TCL will list each available sensor and transmission capability against potential collection targets in a common reference guide.

Planners must be able to filter the NTISR TCL based on datalink configurations. Customer requirements constrain collection target type based on aircraft ICL. Planners will use the ICL and NTISR TCL daily to match against unfilled collection requirements. Potential collection targets will be identified and tasked based on these databases. In the vignette, Sugar 52 had the ability to transmit targeting pod imagery over ROVER datalink and record it for post-mission analysis, but lacked capability to transmit data directly to the AOC. Sugar 52's ICL is matched against the NTISR TCL generating a list of potential NTISR targets. The potential target list is then matched against the unfilled target list to generate possible taskings for Sugar 52.

The NTISR TCL will take considerable time to compile and will be modified after implementation based on feedback. The initial list may overestimate or underestimate NTISR sensor ability to collect required information; however, the NTIST TCL will be continually refined and updated based on experience. Feedback will refine types of targets current platforms can collect. This process provides planners the ability to identify collection capabilities for targets that would have remained unfilled by traditional means. The QDR envisions that the "future force will define ISR needs by sensor or type of intelligence needed rather than the platforms that carry the sensors or medium in which they operate."[30] The first two steps in this process bring the Air Force closer to realizing the QDR transformation goal of platform-based to sensor-based ISR collection.

Step Three: Provide a NTISR Liaison to the AOC

Each strike and ISR collection platform has a liaison officer (LNO) at the AOC to support tasking and operations. The LNO serves as the subject matter expert on the employment of their platform and acts as a liaison between the deployed unit and the AOC to facilitate communications. The Air Force Theater ISR CONOPS states, "A good understanding of the capabilities and limitations of available collectors is critical. ISR liaison officers (LNO's) will educate end users and planners on these factors."[31] Collection ISR LNO's currently exist at the AOC; however, there is no designated LNO for NTISR operations.

There are two types of ISR LNO's. The first type of LNO represents a collection platform to the collection manager. They ensure planners understand how units conduct operations along with capabilities and limitations. The second type of LNO represents the collection manager to the end user. They coordinate actions between collection platforms and end users that require the data.[32] Unfortunately, no one person is responsible for tasking NTISR collection or coordinating between ISR and Combat Ops divisions. NTISR collection is handled by planners with time available to coordinate NTISR collection. The lack of a LNO and designated subject matter experts is why NTISR collection efforts to date have been personality dependant. The AOC must designate an LNO for NTISR operations.

The NTISR LNO will have two major responsibilities: act as a liaison between ISR and Combat Plans divisions and act as a process manager for NTISR collection. As a liaison between ISR and Combat Plans, the NTISR LNO will have planning visibility of each strike aircraft's ICL and planned strike missions, target sets, weapon configurations, and potential routing options. The NTISR LNO will manage the process of matching ICL with NTISR TCL and generate NTISR taskings in a manner that most efficiently manages assets. They will ensure situational awareness between ISR and Combat Plans and deconflict potential ISR collection

areas with operational requirements. The NTISR LNO will also provide a conduit for feedback between ISR and Combat Plans operations and manage conflicts of interest between divisions. Communication outside the AOC will be necessary as well.

As a process manager for NTISR collection, the NTISR LNO will ensure mission requirements are complete and appropriate for assigned platforms. The NTISR LNO will facilitate communication of NTISR taskings and maintain situational awareness of ISR and Combat Plans operations and limitations to maximize collection capability. Additionally, they can coordinate planning for strike aircraft to optimize orbit locations and mission routing. They will maintain situational awareness of customer needs, the ATO cycle, and manage the flow of information throughout the process. The NTISR LNO will provide the AOC with a subject matter expert and a single-point of contact on theater NTISR operations. They will collect feedback, manage the improvement process, and update the NTISR TCL and ICL. Lastly, the NTISR LNO will shift the collection process from a personality dependent initiative to a standardized, coordinated effort capable of coherent collections tasking.

Step Four: Construct a Collection Tasking Method

The first three steps of the process developed a means for identifying capabilities, matching them to requirements, and creating a conduit for coordination. Step four develops a framework to task crews. The Air Force Functional Concept identifies several areas where current tasking methods fall short of a comprehensive solution. The scope of this paper does not lend it itself to solving all issues that arise in formulating a common tasking method. Based on the recommendations of the Functional Concept, an ATO-based method of tasking NTISR collection currently offers the best solution.[33] Preplanned NTISR taskings will be included in the

Reconnaissance, Surveillance, and Target Acquisition (RSTA) Annex of the ATO.[34] Requirements for on-call NTISR will be included in the mission tasking section of the ATO.

Three elements must be addressed in an ATO tasking for NTISR. The first element is *Target* and includes information about target type, location, and elevation along with descriptive data. The second element is *Essential Elements of Information (EEI's)* which include specific information that must be collected from the target site. EEI's must be comprehensive enough to describe complete collection requirements but abbreviated enough for inclusion in the ATO. EEI's should include customer requirements for information usage and processing. The inclusion of customer requirements increases aircrew's situational awareness enabling them to collect data using methods that best fit customer needs. The third element, *Data Transmission,* includes method, place, and time of transmission. Transmission method will vary from UHF radio and datalink to post-mission file upload. Transmission method, time, and place must be identified in the ATO tasking. The tasking must also address whether information is time-sensitive or non-time sensitive; thus ensuring information urgently needed by end users is transmitted via proper channels. Time sensitive data must be processed and disseminated to the end user quickly in order to generate actionable intelligence. The requirements for time sensitive data may range from immediate transmission up to a few hours from collection. Non-time sensitive data can be transmitted post-flight, but usually not more than 24 hours after collection. All three elements of the tasking must be communicated and understood by crews to ensure effective tasking.

In addition to the ATO tasking, Special Instructions (SPINS) must be generated to provide clear directions on NTISR collection processes. SPINS establish mission priorities and define how priority conflicts are resolved. SPINS will provide clear guidance to aircrews on

tasking authority for NTISR collection. Additionally, SPINS will provide procedures for the post-mission handling of data. The NTISR LNO will be responsible for maintaining the SPINS and ensuring the adequacy of NTISR ATO taskings.

Step Five: Task Aircrew with the Requirement

The next step in developing a tasking process focuses on actual tasking of aircrews. Ideally, taskings will be preplanned and listed on the ATO. The mission planning cell (MPC) at bomber or fighter units receive this tasking and determine mission flow and routing. The MPC will determine the best point in the sortie to collect information if it is not designated in the ATO. The MPC uses the tasking to prepare background information on the collection target to enhance the situational awareness of the crew and improve likelihood of successful collection. The MPC will develop a plan to avoid timeline compression and deconflict mission essential crew actions. This plan will be presented to the aircrew during mission briefing.

Inflight retasking of NTISR collection is less desirable from a planning perspective and may increase chances of an unsuccessful collection. Aircrews will not be able to thoroughly mission plan and must determine collection techniques on the fly. Yet, inflight retasking provides a valuable rapid response option for high-priority developing targets and surge capacity for traditional ISR shortfalls. Planners must consider inflight retasking methodology when constructing a tasking process. Inflight NTISR retasking will be conducted via radio or datalink message similar to the J-Fire 9 message and must contain the three elements of information discussed in step four. Mission priorities and crew workload will be taken into consideration when conducting inflight retasking. The NTISR LNO will deconflict priorities between ISR and Combat Plans divisions prior to transmitting taskings. Inflight retasking provides the AOC with a valuable tool, but planners must accept the risk that lack of preplanning may achieve less than

desirable results. Improvement to the process will be institutionalized through the implementation of a feedback program.

Step Six: Construct a Feedback Mechanism for Operations

The use of feedback is necessary to improve operations and develop enhancements to collection processes over time. A structured feedback program focuses on collection effectiveness and not quantitative measurements. Qualitative feedback informs aircrew how techniques were successful or deficient. For NTISR to be effective, feedback must be institutionalized rather than provided on an ad hoc basis. Feedback will improve collection efforts over time and open a channel for dialogue that serves to break down organizational friction between the operations and intelligence communities. The NTISR LNO will be responsible for administering the feedback program and serve as the focal point for communication.

The feedback program has four purposes. First, the NTISR LNO will use feedback to continually reexamine sensor capabilities, the ICL, and the NTISR TCL, thus improving accuracy and enhancing the effectiveness and capability of the planning tools. Second, the AOC will direct feedback to collection and operations planners on effectiveness of specific NTISR taskings.[35] Feedback will allow planners to improve the quality of tasking process. Third, feedback will serve as the basis for fighter and bomber NTISR collection and transmission tactics, technique, and procedures (TTP) development. Feedback will hone strike units ability to employ tactics more appropriate for planning, collecting, and transmitting data. Fourth, feedback will provide an institutionalized channel for program communication. Feedback will break down organizational friction that may exist between the operations and intelligence communities and

highlight the contribution that both organizations are collectively making towards mission success.

Assumptions

The tasking construct presented is a template upon which to build a theater specific program. Many efforts, such as cataloging and classifying sensor configurations, are transferable to other theaters. Effort to match ISR collection targets to sensor configurations will be coordinated among theaters during implementation. Additionally, TTP development and lessons learned will be shared amongst an NTISR community forum. However, a myriad of issues must be addressed before an NTISR program can be successfully implemented. The following paragraphs detail assumptions made by this plan as well as other considerations for implementation.

The first assumption is individual units and platforms can train aircrews to collect NTISR. This assumption is based on current NTISR operations and predeployment unit readiness training. NTISR collection requires no additional hardware be added to aircraft and uses standard aircraft configurations for employment. Aircrews are trained and qualified on sensor and datalink equipment prior to deployment and many skills used during combat operations are directly transferable to NTISR. Training will focus on employing sensor capabilities in ways aircrews are familiar for a purpose that may be somewhat foreign. NTISR training plans must incorporate several factors.

Aircrews collecting NTISR must have a basic familiarity with the overall ISR collection process. Specific training will focus on understanding tasking message formats, SPINS, and methods of transmission. Additionally, training will aid aircrews to optimize image quality by manipulating sensor configuration, viewing angle, and sun angle to achieve a better product.

Finally, trainers should address negative transfer stemming from switching between strike execution and NTISR collection roles. Training plan development must evaluate where strike and NTISR missions overlap, how mistakes may occur, and focus training on preventing mistakes. NTISR training will add to the pre-deployment schedule, but qualification will eventually become part of aircrew mission qualification.

The second assumption is that planners are able to categorize aircraft configurations. Strike platforms have active acquisition programs that constantly provide new capabilities to the warfighter. Different units in the same weapon system may deploy with remarkably different capabilities. Each AOC must have a comprehensive list of capabilities for units deployed in theater. Capability categories may shift as unit rotate during deployments. Strike platform and NTISR LNO's will coordinate to ensure ICL's are current. ICL's should be changed as little as possible to ensure consistency for ISR planners and a more stable NTISR collection plan.

The third assumption is that planners can identify, categorize, and prioritize collection requirements. Intelligence targets do not lend themselves naturally towards categorization. Developing a NTISR TCL is a daunting task; but this construct does not require a one-hundred percent solution. Broad categories of collection types can be grouped by ISR planners to match target types to specific sensors. The NTISR TCL will not be all-inclusive and requires frequent adjustment and modification. Process improvement over time will enhance planning effectiveness in assigning NTISR collection priorities.

This paper is not about who generates ISR collection requirements. Requirements are theater specific and typically originate from the J2. After the J2 office tasks RFI's, unfilled requests should be funneled to ISR Division for NTISR consideration. The ISR division may

have their own collection requirements or RFI's from other theater customers. The intent of this construct is to provide an efficient means of tasking NTISR to capture unfilled RFI's.

Additionally this paper does not address issues of processing, exploitation, and dissemination (PED). PED processing requirements vary from tactical dissemination to strategic analysis. The Distributed Ground Station (DGS) is the Department of Defense's primary source of processing and exploitation for collected intelligence data. Much of NTISR data collected can be processed by DGS, but variations in data format presents problems. There is not an easy or complete solution to the PED issue, but the PED shortfall spans the entire intelligence community and is not specific to NTISR. One avenue for NTISR processing is to create a Secure Internet Protocol Routing network (SIPRnet) portal to transmit data post-mission to DGS or AOC analysts. Squadron intelligence officers will upload files through a SIPRnet portal to DGS in a compatible data format. DGS can analyze the data and forward their product to the requesting agency. The NTISR LNO, will ultimately be responsible for determining avenues to incorporate PED in the tasking.

Counterarguments

The subject of NTISR can generate strong emotions among those involved in the planning process. The first argument is organizational resistance to yielding control of capabilities and resources. Strike platform operators may offer resistance to taking on a new mission outside of primary strike operations. Combat Plans may not be willing to cede capability to other divisions or could be concerned that their primary mission may be compromised. Additionally, Combat Plans may be concerned that combat capability of their platforms will be unavailable when needed due to "higher" priority ISR requirements. Questions

of priority, aircraft and aircrew ownership, and resource funding could lead to organizational resistance and inertia.

The answer to these questions is leadership. The Joint Force Air Component Commander (JFACC) must emphasize importance of the NTISR mission from program inception. The JFACC must assign the appropriate resources necessary for mission accomplishment. Manpower will be required to fill the role of the NTISR LNO and augment the ISR staff. A concept of operations must be established based on comprehensive commander guidance. Aircrew and operator roles must clearly be spelled out in the SPINs. The function of NTISR in the planning cycle must be clearly delineated. Tactical Control of strike aircraft should be fully understood in the AOC and by aircrews. Despite a clear understanding of NTISR, aircrews may be reluctant to accept a new mission.

Many operational units and aircrew will argue that strike platforms should not be used for ISR collection. NTISR collection will interfere with their primary mission and reduce strike platform effectiveness. Additional responsibilities will sap situational awareness resulting in aircrew task saturation. Adding requirements for NTISR will reduce focus on the primary mission with potentially hazardous consequences for weapon employment. Additional training requirements and qualifications for NTISR will add to a hectic pre-deployment schedule.

However, NTISR can be conducted in conjunction with the primary strike mission. Crews are already trained on targeting sensors and only need training on NTISR collection process. Collection of NTISR data enhances battlefield situational awareness. Many NTISR taskings will be tactical requirement directly contributing to strike mission effectiveness. Lastly, NTISR collection is based on opportunistic availability rather than prescribing ISR as a primary

role. NTISR adds to overall platform effectiveness and can generate budgetary interest in funding sensor upgrades

Another argument is collection requirements and strike operations planning are not on the same cycle and incompatible. Intelligence requirements cannot be generated as fast as the strike ATO tasking cycle and the additional time required to define and match target sets will render the process ineffective. Today's ATO cycle is the process of years of tasking evolution. Operations in Iraq highlighted the need to better integrate intelligence requirements in the planning cycle. Incorporating NTISR into a collection plan is one way to advance a constantly evolving system. Yet, an NTISR collection process will form the foundation upon which subsequent technological upgrades will exploit and improve.

One of the biggest arguments against NTISR is difficulty determining avenues for analysis. The current intelligence system lacks adequate analysts to absorb additional exploitation requirements. NTISR does not meet the standard architecture for data analysis and transmission. There are no avenues to send data into the DGS structure for processing. The USAF can collect more data than it can handle already. The intelligence community is facing information overload that will be difficult to overcome without additional manpower. Yet, PED requirements are not standardized among customers and will vary by AOC. Planners in one theater may have challenges processing information, but planners in another situation may be well suited to analyzing collected data. NTISR is not the source or the solution to PED issues; rather, its purpose is to provide planners another tool to collect required information.

Conclusion and Implications

This paper presents a construct for establishing a NTISR collection program in the AOC. The construct defines and catalogues NTISR capabilities, distinguishes where capabilities could be employed, provides a liaison for employment, constructs a collection tasking framework, and implements a feedback program. NTISR augments existing theater ISR collection capabilities while providing combatant commanders with ISR surge capacity. This program is theater tailored for AOC operations, but transferable in methodology. As technologies are fielded, collection tasking can be expanded to incorporate and exploit new capabilities. Lastly, it is accessible to coalition partners and involves them in the process.

NTISR collection requires commander buy-in and leadership emphasis is necessary for effective implementation. The tasking construct is not intended to be an off-the-shelf program and must be tailored to each AOC. Implementation will vary at each AOC, but lessons learned and information gathered during development can be levied by other AOC's. Because NTISR is theater specific, the program does not detract from USSTRATCOM's role as intelligence provider. Rather, NTISR augments and enhances USSTRATCOM's capability to provide more complete intelligence data.

Further research should focus on appropriate use of specific strike platforms for NTISR collection. For example, the global reach and persistence of strategic bombers naturally lends itself to an NTISR mission. Both the B-1 and B-52 have the reach necessary to collect geographically isolated targets. Bombers could be utilized to relieve the burden on traditional ISR platforms or capture imagery outside the normal theater operating area. The external carriage capacity of the B-1 and B-52 make it a candidate for externally mounted reconnaissance

systems such as the Tactical Airborne Reconnaissance System pod used by F-16's in Iraq.[36] Multi-person aircrews of strategic bombers also provide manpower to collect NTISR without task saturation. Use of the strategic bomber to collect NTISR has implications outside of warfighting.

Further research should be conducted on the use of NTISR to augment collection capabilities after natural disasters. Both Barksdale Air Force Base (home of the B-52) and Dyess Air Force Base (home of the B-1) are located within two-hours flying time of anywhere on the Gulf Coast. Bombers could be used by Northern Command to survey damage, locate stranded civilians, and identify hazards after a major hurricane passes. The B-52 performed this mission in 2008 after Hurricane Ike, collecting over 700 high-resolution images and two hours of video of storm damage along the gulf coast.[37] Litening or Sniper pod imagery can be transmitted to ground personnel via ROVER datalink and uploaded via satellite to anywhere in the world. Targeting pod imagery can be linked to an internet protocol address and used by state and federal agencies to assess storm damage. The ability of a B-52 to transmit ROVER datalink to a satellite was demonstrated in 2008.[38] The bomber's NTISR capability could also be used to augment domestic maritime security. Domestic roles for NTISR currently exist and will expand as future technology enhances capabilities.

Future NTISR systems will leverage automation and datalink technology to offer fully integrated ISR collection systems on traditional strike platforms. As advanced imagery sensors and communication suites are fielded, the line between strike platform and ISR platforms will become blurred to the point of obscurity. ISR and strike sensors have already fused on the battlefield; the MQ-1 Predator armed with Hellfire laser-guided missiles and the larger Reaper variant are essentially ISR platforms converted for use as a strike platform. By the same logic,

our strike aircraft are migrating toward multi-role, multi-mission platforms. "Take the F-22, for example," said Lt Gen David Deptula, Deputy Chief of Staff for ISR. "What I like to tell folks is it's not just an F-22. It's an F/A/B/E/EA/RF/RC/AWACS-22. It's a flying sensor platform."[39] The massive strike capabilities of the bomber and fighter fleet will see higher fidelity sensors, better datalinks, and more automation as technology improves in the future.

Improved technology will transform the US Air Force closer to the QDR vision of warfighting. Tomorrow's fighter and bomber aircraft must be designed with ISR collection in mind. The bottom line is that we will never have the perfect bomber or fighter aircraft for NTISR collection; at the end of the day you go to war with what you have. The USAF should direct efforts toward achieving more efficient use of current systems and quickly developing processes to integrate current NTISR capabilities with ISR collection programs. This is the first step toward the future of NTISR.

Notes

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[15] Scott, *Nowhere to Hide*, 54
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[19] Deptula, *A House Divided*, 12
[20] HQ ACC/A2, *NTISR*, 6
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[22] Hinote, *Armed Overwatch*, 10
[23]Hansen, *MIS Forum*, address
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[28] HQ USAF/A2CP, *Theater ISR CONOPS*, 16
[29] Scott, *No Where to Hide,* 54
[30] DoD, *QDR Report*, 55
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[32] HQ USAF/A2CP, *Theater ISR CONOPS*, 20
[33] HQ ACC/A2, NTISR, 17
[34] HQ ACC/A2, *NTISR*¸16
[35] HQ ACC/A2, *NTISR,* 23
[36] AFPN, *Guard Squadron Makes Mark*, online
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Appendix: Abbreviations and Acronyms

AOC – Air and Space Operations Center

ATO – Air Tasking Order

CENTCOM – US Central Command

CONOPS – Concept of Operations

DGC – Distributed Ground Station

EEI – Essential Elements of Information

ES2 – Every Soldier a Sensor

GIG – Global Information Grid

ICL – Intelligence Configuration Loadout

ISR – Intelligence, Surveillance, and Reconnaissance

JDAM – Joint Direct Attack Munition

JFACC – Joint Force Air Component Commander

LNO – Liaison Officer

MPC – Mission Planning Cell

NATO – North Atlantic Treaty Organization

NTISR – Non-Traditional Intelligence, Surveillance, and Reconnaissance

PED – Processing, Exploitation, and Dissemination

QDR – Quadrennial Defense Review

RFI – Request For Information

ROVER – Remote Operations Video Enhanced Receiver

SCL – Standard Conventional Loadout

SIGINT – Signals Intelligence

SIPRnet – Secure Internet Protocol Routing Network

SPINS – Special Instructions

TCL – Target Capabilities List

TCPED – Tasking Collection, Processing, Exploitation, and Dissemination

TTP – Tactics, Techniques, and Procedures

UAS – Unmanned Aerial System

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