INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE COLLECTION

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For Heather, Preston, and Scarlett, the reason I do everything.

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ABSTRACT

Collection Management across the Department of Defense is a complicated process largely because there are so many organizations at all levels who play a role in intelligence collection. This thesis reviews the doctrine associated with collection management across the joint community and all military services. Explanation of the key concepts of doctrine highlight how important doctrinal processes are to the collection management enterprise. Following the discussion on doctrine, each of the available collection management training programs are reviewed to showcase differences in training and how those differences can affect operations in a joint environment. The final recommendation for a standardized joint training program and a professionalized cadre of collection managers will emphasize the importance of collection management in a joint environment.

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INTRODUCTION

"...the army's disposition starts from the basic tactics in which it has been instructed and trained in time of peace – characteristics not susceptible to basic change once war has broken out."

- Carl Von Clausewitz[1]

Training is the lifeblood of the military. When not engaged in combat, a military's primary purpose is to train for the next conflict, to be ready at a moment's notice to deploy anywhere in the world to engage any adversary. The pinnacle of military training is reflected in the capabilities of the United States Armed Forces. Every branch (or service component) trains constantly to ensure its preparedness for that time in which the President calls on it to advance American interests, and to promote and defend the American way of life.[2] The capabilities of the United States are unmatched anywhere on the planet and this is in no small part a direct reflection of the amount of time spent training across all specialties, from Infantryman to Medic to airborne Intelligence, Surveillance, and Reconnaissance (ISR) specialist. Clausewitz's comment holds true no matter what job or task any soldier, sailor, airman, marine, or coast guardsman is performing. When he wrote those words some two hundred years ago, he was referring to the army's organization and how it is deployed in the field before engaging the enemy. Today, however, it emphasizes the importance of training to ensure that when the stress of battle and the "fog of war" sets in, forces perform as trained. When a unit practices a tactic or procedure enough times, it creates muscle memory. A troop does not have to think about how to handle a situation while engaging an enemy and leaders can anticipate the actions of their troops based on the training they receive. The muscle memory kicks in, the task becomes second nature, and the troop reacts.

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Air & Space Power Journal

Training regimens apply to ISR professionals as well. Generally, these personnel are referred to as ISR collection managers and are normally selected from somewhere within the Intelligence Directorate (A/G/N/S/J2)[3] of an operational staff. The primary challenge of becoming a collection manager is that none of the services employs a professionalized cadre of ISR collection managers.[4] These individuals are usually trained to perform some other intelligence function or in some other intelligence discipline such as geospatial analyst, all-source intelligence analyst, or naval intelligence specialist. For example, in most cases, airborne ISR collection managers come from the Air Force [usually working within the Air and Space Operations Center (AOC)], however, airborne ISR collection management spans all services and all members participate. To this end, the services provide training only to select individuals as they enter a collection management position. Again, in most cases, these managers serve a six- to nine-month rotation to the United States Central Command (USCENTCOM) area of operations. This contributes to a high turnover rate where members vacate the position at a time when they are only beginning to master the skills necessary to perform airborne ISR collection management, primarily developing collection requirements, collection strategies, and collection plans.

In today's operational environment, conflicts are almost exclusively joint endeavors. One would be hard pressed to find an area of the world where one service is operating completely independent of the rest. Members from all services must work together to accomplish the Joint Force Commander's objectives, including planning and executing global ISR operations. However, joint training for the ISR Collection Management skill set is severely lacking in the operational environment despite the Defense Intelligence Agency's

(DIA) robust training program. The individual services organize, train, and equip their collection managers as they see fit resulting in a wide range of training experiences across the services. Service specific training creates a capability gap in operations when those service-trained collection managers execute their planning and tasking responsibilities in a joint environment.

The DIA conducts several modules of collection management training. Unfortunately, there are no common or accepted standards or competencies identified for personnel filling collection manager billets, or requirements for collection managers to attend these courses in the various combatant commands. This may not be the case much longer as the Joint Staff recently approved a Joint Training Standard (JTS) for collection managers. Presently, each service can levy its own requirements on individuals tasked to perform this function or waive it outright, provided the gaining unit commander concurs. Indeed, this often happens in USCENTCOM since billets are generally short-term deployments where waiving collection management training eases the member's pre-deployment training load and prevents possible delays in the member reporting to theater on-time.

In the Air Force, for example, it is difficult to identify an exact number of times this occurs because there is not one central repository for all of the requests. The member need only work through their gaining unit to get approval to arrive without the preferred training. However, it happens often enough. According to Lieutenant Colonel Suzanne Barroquiero, Division Chief of the Warfighter Operations Support office for United States Air Forces Central (USAFCENT), the office responsible for training for Air Force specific deployments to USCENTCOM, some commanders have removed the training from their deployment prerequisites in favor of locally sourced training in order to bypass the waiver process

outright.[5] This training usually comes in the form of a two and a half day briefing that covers approximately 85-90% of the Air Force's ISR Operations Course (IROC). There are no control or evaluation measures in place to ensure quality training is provided.

For example, USAFCENT training does not evaluate whether a member understands the difference in authorities and responsibilities which are associated with Collection Requirements Management (CRM) and Collection Operations Management (COM), or the difference in the capabilities of a MQ-1 Predator and a MQ-9 Reaper, or any number of other aspects that are essential to the success of a collection manager. From USAFCENT's perspective, they would prefer assigned collection managers attend IROC but the course length precludes attendance for all members. For this reason, they believe the local briefing is better than no training at all, because they can at least ensure that a member has at least heard the terminology and definitions associated with collection management prior to entering theater. Someone who receives no training, and has no previous experience, will arrive in theater unable to function until existing cadre can bring him or her up to speed.

This thesis reviews current doctrine documents to provide a baseline of definitions and guidance on existing collection management training. Once this baseline knowledge has been established, a review of the current training programs highlights how differences in doctrine and training can ultimately lead to potentially risky collection management situations. This discussion includes examples of real-world scenarios which could have resulted in problematic outcomes. This thesis culminates with recommendations that, if implemented, could provide commanders with a staff of collection managers capable of seamlessly integrating into organizations regardless of service or previous experience or training. The thesis uses notional concepts of collection management but includes real

world, anecdotal experiences to highlight these principles and service specific collection management training differences. Additionally, discussion throughout is designed to encompass collection management at all levels and across all intelligence disciplines. However, the intent is to focus on operational level airborne ISR operations. The ultimate goal is to drive home Clausewitz's point that there are basic components to military training and airborne ISR collection management is no different. Collection Managers should be trained during times of peace so that they can function effectively in war, regardless of service component.

DOCTRINE

JOINT DOCTRINE

Joint Publication (JP) 1, *Doctrine for the Armed Forces of the United States*, explains joint doctrine forms the backbone of all service-specific publications, "joint doctrine takes precedence over individual Service's doctrine, which must be consistent with joint doctrine."[6] Additionally, JP 1 spells out the authoritative nature of joint doctrine and mandates that services comply whenever possible.[7] Doctrine is a collection of best practices or a library of wisdom and experience on how to conduct operations. To this end, JP 1 explains commanders have the authority to deviate from doctrine should a situation necessitate such an action. However, this is the exception rather than the rule. For this reason, joint doctrine related to collection management is the primary source material for all service specific guidance.

Collection management is the process of converting intelligence-related information requirements into collection requirements, establishing priorities, tasking or coordinating with appropriate collection sources or agencies, monitoring results, and retasking, as required (See Figure 1).[8] This definition comes from Joint Publication 2-0, *Joint Intelligence*, and is the authoritative definition for all service specific doctrine on the subject. In its most basic form, this definition is not specific to any particular collection sensor or platform type or branch of service. It applies to all intelligence needs across the intelligence collection spectrum. In theory, this would mean collection management functions occur at all levels and in all services the same way. To a certain extent, this is true but depending on the type of sensor employed, there can also be drastic differences in the practice of collection management. This section introduces several of these concepts and explores the differences

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in service specific doctrine on collection management principles. The objective of this section is to establish the standard to measure and assess how service specific doctrine can affect the application and effectiveness of collection management.

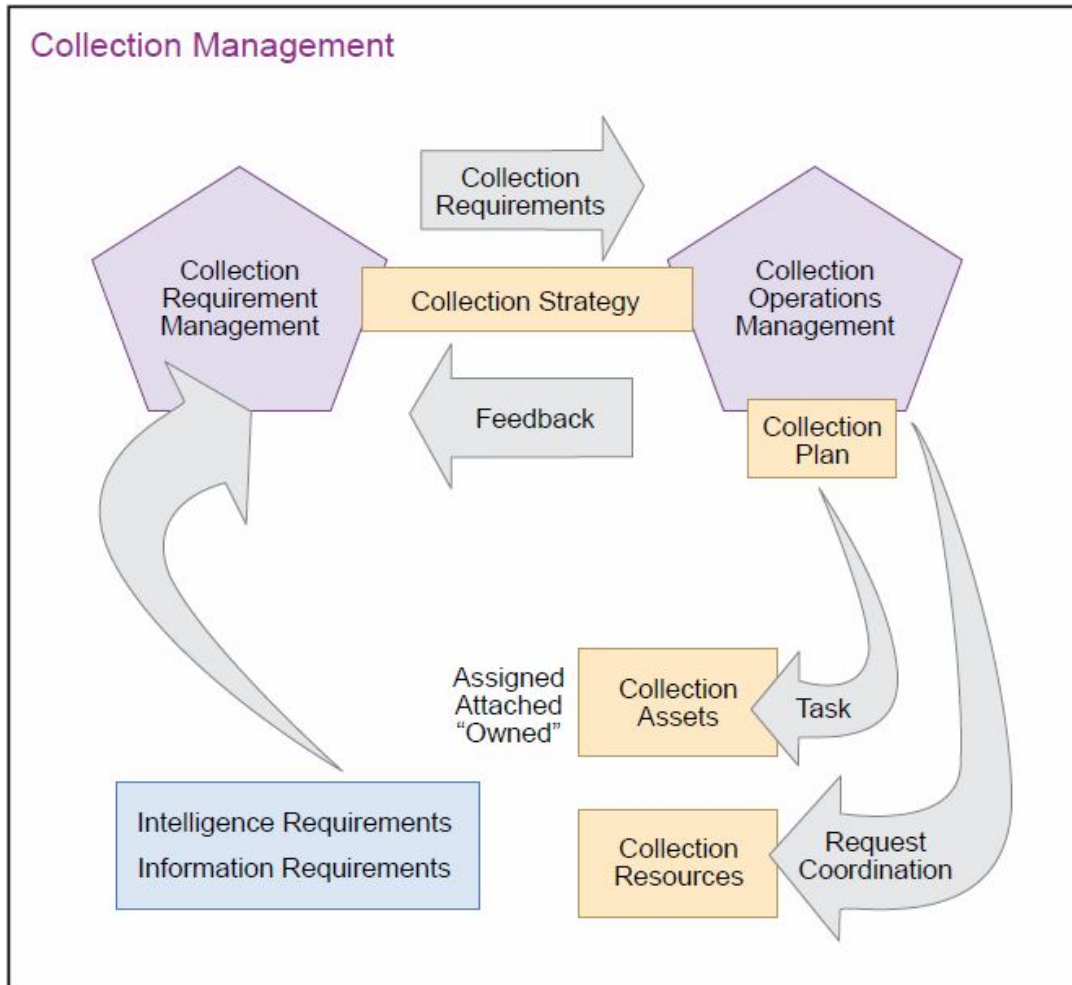*Figure 1. Doctrinal Collection Management Process[9]*

To understand the nuances of collection management, it is important to understand what doctrine establishes the basic principles and authorities of collection management. For collection managers developing requirements, the end goal is the collection strategy. For those tasking assets, the objective is a coherent collection plan. In both cases, collection

managers must balance the unit's needs with competing priorities as well as limited

resources. To reach this goal, Joint Publication 2-01, *Joint and National Intelligence Support

to Military Operations*, specifies four principles of collection management which ensure

maximum optimization of capabilities against as many requirements as possible. The first of

these principles is the early identification of requirements. Collection managers who work

with analysts and understand the nuances of their Area of Responsibility (AOR) are in a

position to identify requirements much sooner in the planning process. This will facilitate

more thorough planning and enhance the ability to respond to the requirement while the

desired information is still of value.[10] To a certain extent, this principle is advocating for

speed in identification of requirements. However, the more important reason for this

principle is to ensure the most appropriate asset is tasked to collect on the requirement which

will ultimately generate better intelligence. The later a requirement is identified; there may

be fewer assets available, which will potentially affect the quality of the collected

information.

Within USCENTCOM, dynamic retasking of assets is a common occurrence. In

some cases, these events are unavoidable, however, in others these events could have been

avoided through earlier identification of the requirements driving them. For example, an asset

collects intelligence that indicates a high-value individual (HVI) will be on the move in the

next hour. This time-sensitive reporting justifies the last minute retasking of an asset.

Conversely, when recurring collection against an HVI has shown that he transits from his

house to a local market every day for the past three weeks, it would be unwise not to plan for

collection against the individual during that time in the future. Some may see this as a waste

of resources against this target since this pattern has already been identified. However, it is

precisely for this reason that the HVI may take the opportunity to deviate from this routine on any given day. Should this occur, an asset should be in place to capture the deviation. Identifying this requirement as early as possible provides flexibility in the number and type of assets that might be assigned to it. Collection of this requirement might be impacted if the requirement is not identified early because of the limited amount of assets which may be available (they will already be tasked to other requirements by this point).

The second principle of collection management is prioritization of collection requirements. This is arguably the most important of the four principles because of how much impact it has on collection strategies. The purpose of this principle is to ensure "... limited assets and/or resources are directed against the most critical requirements."[11] In all theaters, criteria for prioritization of requirements will be situationally based on ongoing operations and theater events. Joint Force Commanders (JFCs) publish Priority Intelligence Requirements (PIRs) that dictate prioritization of collection requirements. Across virtually all theaters, units always want their requirements to be the most important. The harsh reality, however, is some of them are not, and hard decisions are made to determine which requirements are a higher priority than others are. This prioritization happens at all levels through CRM and at the Combatant Command (CCMD) through Collection Management Authority (CMA) and provides the COM authority the ability to develop an effective collection strategy.

The next principle of collection management is the multi-disciplinary approach. To most intelligence personnel, this should be obvious; however, it is surprising how often collection managers ignore this principle. The basic premise is this, collection managers should employ a variety of collection capabilities against a requirement in order to

corroborate different pieces of information as well as increase the confidence level of an assessment.[12]   For example, an analyst can see an image of a target and glean a certain amount of intelligence from it. This is Geospatial Intelligence (GEOINT).

For example, an image of a North Korean space launch facility may show the assembly of a rocket on a launch pad. This scenario raises collection concerns. Does the rocket have a warhead? Alternatively, can it carry a satellite payload into orbit? The analyst exploiting this image may or may not be able to determine the purpose of the rocket without any additional information. However, if Signals Intelligence (SIGINT) is collected which tells the analyst what the payload is going to be, then the confidence level in their assessment will go up and a commander can make a better-informed decision on how to handle the situation. From an airborne ISR perspective, nearly every ground unit wants Full-Motion Video (FMV) to support their requirements. FMV is great at providing a certain type of intelligence. The perception exists operationally that commanders often put too much faith in this one capability to the detriment of all the others. If Collection Managers do not corroborate what analysts see through other collection methods, then commanders must fill intelligence gaps.

The final principle of collection management is tasking available collection assets first. This principle refers to "organic" ISR assets. According to JP 2-01, tasking organic assets first allows for a quicker, more tailored response to requirements because the unit does not have to request outside help.[13]   By using an organic asset against a unit's highest priority requirement, the unit can ensure that the requirement is collected. Conversely, when the unit does not have an organic capability, or decides to task organic capabilities to lower priority requirements, they can send the higher priority requirement to another command echelon

(either higher, lower, or laterally) and that particular requirement will have to compete with requirements from other organizations for priority. In this situation, the unit runs the risk the requirement may not be satisfied if the supporting unit does not fulfill the collection need. In real-world operations, units can often be very creative when drafting requirements in an attempt to elevate the priority, ultimately allowing them to save their organic assets for other requirements that violates this principle. From time to time, this tactic (method) can hamper a unit's collection efforts because they did not task their organic assets appropriately.

A collection manager's authority can change depending on the asset or requirement and it is vital to understand what authority a collection manager has in each case. The first basic authority is Collection Management Authority (CMA). JP 2-01 defines CMA as the authority to "establish, prioritize, and validate theater collection requirements, establish sensor tasking guidance, and develop theater-wide collection policies."[14] According to doctrine, this authority generally resides at the CCMD level, therefore only CCMD collection managers within the J-2 exercise this authority. By centralizing CMA at the CCMD level, collection managers can manage the intelligence collection effort across an entire theater, to include requests for spaceborne collection.[15] If lower level collection managers executed CMA, the potential exists for a duplication of effort, and therefore a waste of resources, since multiple units may have overlapping requirements. Additionally, CCMD collection managers executing CMA ensure that requirements support the JFC's PIRs. Ultimately, they validate requirements that support operations. This avoids the collection of intelligence just for the sake of intelligence.

The U-2 Dragon Lady employment during Operation DESERT STORM illustrates the importance CMA has on operations. There are mixed opinions regarding U-2 operations

during the first Gulf War and this is partially due to policy decisions and limited technical capabilities but also includes decisions regarding the prioritization of requirements at the CCMD level, a responsibility of the Theater J-2 holding CMA. Saddam Hussein used his Scud missiles to some effect politically in an effort to draw Israel into the war. For this reason, locating and destroying Scud systems became a political priority for United States forces despite the limited threat they provided to American ground forces. The U-2 helped locate these systems and relayed targeting data to an F-15E Strike Eagle to carry out a strike mission on suspected Scud launch positions. Additionally, commanders still needed U-2 intelligence to protect their troops during engagements with Iraqi ground forces.[16] Balancing these competing priorities is one of the CMA's primary functions.

CMA is a broad authority which encompasses the other two collection management authorities – CRM and COM. The CMA could effectively exercise the other two authorities, but those with CRM or COM authorities do not necessarily possess CMA. The first of these other two authorities is Collection Requirements Management (CRM). CRM is the "authoritative development and control of collection, processing, exploitation, and information reporting requirements."[17] All collection should be requirements-based, again, to ensure collection is supporting operations and to avoid collection without effect. Therefore, the CRM is responsible for developing those requirements. CRM exists at all levels, from the tactical level unit, such as an Army Brigade Combat Team (BCT), to the operational level command staff, such as a Joint Task Force Headquarters, to the strategic, national level, such as the National Security Agency or the Defense Intelligence Agency. Additionally, at each level between the requestor and the CMA, CRM includes prioritization of requirements among all other units at the given level.

For example, any given unit can draft a requirement which supports its mission within the overall campaign through CRM. When that requirement goes to the next echelon, the higher echelon exercises CRM when they prioritize all of the requirements from units below them. In this prioritized list, the parent unit also includes its own requirements and then forwards them up the chain once again, where the process begins anew. At some point, the requirements list will reach the CCMD staff where the CMA approves final prioritization and validation. Operationally, proactive collection managers can push a requirement through in just a few hours by following up with higher echelons after its submission. At this point, collection management focuses on the requirement. None of the available ISR assets has been allocated and no collection has taken place (See Figure 2).
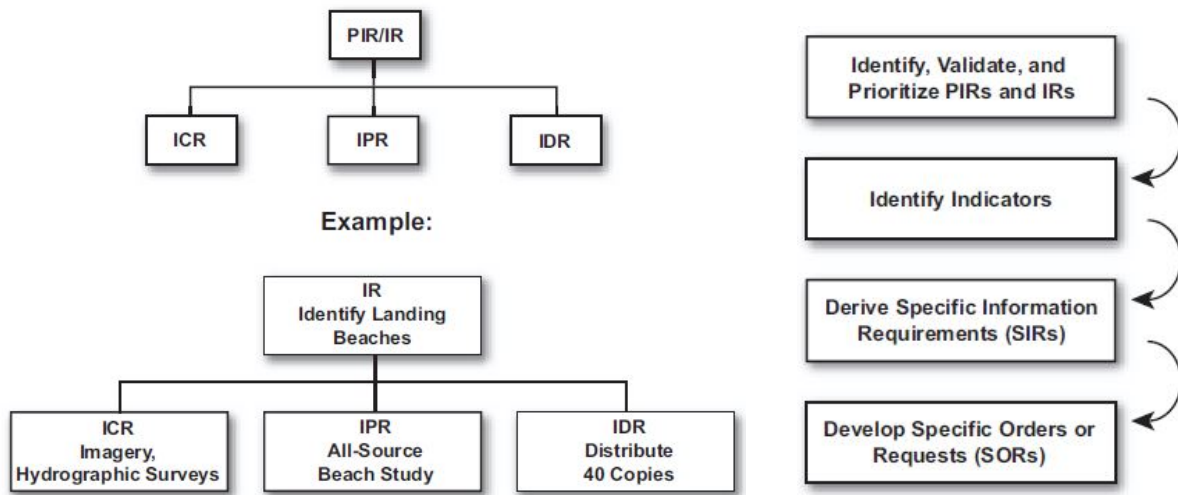

Figure 2. Collection Requirements Managements Process[18]

A prime example of real-world CRM doctrinal process occurred during Combined Joint Task Force-Operation INHERENT RESOLVE (CJTF-OIR). CJTF-OIR is the highest echelon of command where CRM occurs prior to forwarding to USCENTCOM for CMA. Below CJTF-OIR are several levels of command that all hold some portion of CRM to

develop and prioritize requirements at each of their levels. CJTF-OIR executes CRM, and controls the lower echelon requirements by mandating the use of a database called CRATE (Collection Requirements Analysis Tool for the Enterprise) for requirement entry. CJTF-OIR then pulls requirements from CRATE, adds in their own requirements, and prioritizes the final list before inputting the requirements into PRISM (Planning tool for Resource Integration, Synchronization and Management), the system of record for collection management, for USCENTCOM to execute CMA.

The final collection management authority is Collection Operations Management (COM). JP 2-0 defines COM as the "authoritative direction, scheduling, and control of specific collection operations and associated processing, exploitation, and information reporting resources."[19] This authority is usually, but not always, delegated to the organization responsible for carrying out the collection operations. Specifically, for airborne ISR operations, this authority is usually the Combined/Joint Forces Air Component Commander (C/JFACC) and, by extension, the AOC, the C/JFACC's mechanism for executing the air campaign. Within the AOC, collection managers execute COM by matching the CRM requirements validated by CMA with the specific collection assets.

Additionally, the COM authority determines when collection will take place based on the needs identified in the requirement. Although the AOC is one example of where COM usually resides, other organizations could execute COM. Essentially, whoever "owns," or has Operational Control (OPCON) of the collection sensor is the COM authority for that particular asset with one caveat. The "owner" can delegate Tactical Control (TACON) over an asset to another organization thereby passing COM to the new organization in accordance with a predetermined arrangement which might include a timeframe or situationally

determined end point. For example, the Joint Force Maritime Component Commander

(JFMCC) holds OPCON over variants of the P-3 aircraft and he often delegates TACON

over these assets to the JFACC. The JFACC is free to utilize these aircraft on a day-to-day

basis. However, since the number one priority for all naval aviation is to support the fleet, if

a situation requires the Navy to employ these aircraft for its own requirements, the JFMCC

will rescind the delegation of TACON to the JFACC until the Navy's needs have been

satisfied.[20]

The AOC for each theater, or CCMD, is generally responsible for, or "owns," theater-

level airborne ISR assets. They do not own naval/maritime sensors, ground-based sensors,

tactical level airborne assets that belong to specific ground units, etc. Generally, these assets

are "organic" to the owning unit; therefore, the owning unit has COM over the asset and can

task it accordingly. For example, a battalion-level unit on the ground in Afghanistan may

have its own Remotely-Piloted Aircraft (RPA), such as an RQ-7 *Shadow*, which it can use to

satisfy its own requirements as it sees fit. Alternatively, a Navy ship captain controls a ship-

based radar to meet the fleet's or vessel's needs. Additionally, units can request national-

level, overhead assets by forwarding requests to CCMD collection managers who then reach

out to national agencies to satisfy requests.

The key to making the process function effectively is open communication between

units. When a unit tasks an organic asset against a valid requirement, it should ensure that

other entities are aware of the tasking so that those other entities do not also task an asset

against the requirement. Operationally, this communication is most often in the form of

situational awareness emails and phone calls between echelons. Additionally, at the theater

level, the collection strategy usually forms a recurring pattern over time so collection

managers become accustomed to when collection will take place for certain requirements. Lower echelon collection managers only need to make higher echelons aware when there will be a change to normal operations.

For collection managers with COM authority, doctrine highlights several considerations for developing a collection plan. These considerations relate to the target, the available assets or resources, correlation of the target with available sensors, and factors within the operational environment that may affect collection.[21] All of these considerations help the collection manager determine what sensor is best to employ against a requirement. When considering the target, the collection manager must think about the target's physical, operational, or technical characteristics.[22] What does the target look like? What is the function of the target? Collection managers must answer these questions to match the appropriate sensor to the requirement. At this point, the intelligence value of the target has been identified since the requirements have already been validated, or approved. Collection managers are thinking about which asset may be the best to match to the requirement. In addition, they must consider the location of the target in reference to the various collection platforms and the operating area.[23] This consideration includes thinking about potential threats to the ISR platform; however, these considerations do not automatically prevent the collection manager from tasking the requirement.

If there is a threat that may inhibit collection, the unit that is operating the sensor will plan the mission around this threat. Since the operators are the experts on how to employ the platform, they may have a tactic which can still satisfy the requirement despite the threat. If the target is out of the collection platform's range, then that particular sensor should not be matched to that requirement. Finally, when considering the target, the collection manager

must think about the timeliness of collection to include processing and exploitation time. If a particular sensor cannot provide the needed intelligence at a time when it is still valuable, then the collection manager should not task that sensor.[24]

Generally, most intelligence is perishable. The timeline for intelligence value is usually dictated by the operational level of the requirement. For example, tactical level requirements will generate tactical level intelligence that usually has a very short life span. In some cases, this can as quick as a few hours. A Marine reconnaissance team may identify the location of an enemy force prior to a friendly assault force advancing on their position. The disposition of the enemy force can change in a moment should the enemy decide to bring in reinforcements or pack up and abandon the location rendering the reconnaissance team's information useless.

Conversely, national level requirements generate intelligence which will be valuable for a longer period because the information is often very broad. Governments are generally very slow to change because of their size and complexity as well as the personalities of the leadership. Therefore, intelligence collected on a government will retain value, potentially for months or years. If there is a collection requirement to prepare for a raid or strike on an Improvised Explosive Device production facility, it does no good to collect the intelligence if the product will not reach the requesting unit before the adversary abandons the target facility. Necessary information should be identified and disseminated before the raiding unit gets underway so lives are not unnecessarily put at risk.

Next, the collection manager should consider the assets and resources available for collection. These considerations address a given sensor's ability to satisfy a requirement and includes the performance characteristics of a sensor, range of the sensor, dwell time, revisit

time, and timeliness.[25] Performance characteristics refer to a sensor's technical ability. If

the requirement is to collect on a particular frequency and the sensor does not operate in that

frequency, then the sensor should not be used. In the previous discussion of range, the intent

was to determine if the platform was in a position to reach the target from its home operating

base. In this section, the collection manager considers if the sensor can reach the target from

where the platform is operating.[26] For example, most ISR aircraft flying out of Kuwait, can

reach most targets anywhere within Iraq. This is an example of range as it relates to the

target characteristics.

However, for the sensor's range, the actual collection equipment on an ISR aircraft

flying over Baghdad most likely cannot detect targets in Mosul. Dwell time refers to a

sensor's ability to maintain coverage over a given area and is essentially the difference

between surveillance and reconnaissance, the former is extended coverage over an area while

the latter is short term (Full Motion Video (FMV) vs. still imagery). Revisit time refers to a

sensor's ability to return to an area within a specified period. Finally, timeliness when

considering a sensor has to do with the time it takes a sensor to perform the collection.[27]

Once the collection manager has considered the target characteristics and the

capabilities of the available sensors, he or she must correlate the two.[28] This allows the

collection manager to eliminate sensors not suitable for employment against a given

requirement. Once the correlation of the target and sensors has taken place, the collection

manager can further refine their list of sensors suitable for tasking by considering factors

within the operational environment that may prohibit a particular sensor to collect on the

target. This includes factors such as weather and terrain as well as the susceptibility of the

sensor to potential deception efforts, such as camouflage netting, electronic decoys, or inflatables which resemble various pieces of equipment.[29]

The final steps of the collection management process are to finalize tasking orders and then execute the mission.[30] Once the process is complete, a collection manager's job is not over. The collection manager conducts a quantitative and qualitative assessment of the daily operations and starts the process again the next day incorporating lessons learned from the previous day. The entire procedure is a cycle that continues until the operation ends, and, in some cases, beyond mission completion as was the case following the first Gulf War.

The preceding paragraphs represent the doctrinal guidance for all collection management practices, regardless of service or component. Once services begin to address collection management to meet their individual needs, however, differences arise. This would be fine in cases where services operated independently; however, this rarely happens and is unlikely to occur in the future.

SERVICE DOCTRINE

A review of service doctrine highlights glaring differences affecting training and operations in a joint collection management function. Training will be discussed in detail later; but first it is important to understand service doctrinal differences and why those differences can cause joint operational collection management problems.

Army Doctrine Publication (ADP) 2-0, *Intelligence*, only briefly, and somewhat vaguely, addresses the collection management function, despite its importance to Army operations. In fact, ADP 2-0 only dedicates one paragraph solely to collection management. Moreover, that paragraph provides a definition that loosely resembles the one in JP 2-0. It states, "Collection management is the task of analyzing requirements, evaluating available

assets (internal and external), recommending taskings to the operations staff for information collection assets, submitting requests for information for adjacent and higher collection support, and assessing the effectiveness of the information collection plan."[31] Beyond that definition, collection management is mentioned only a handful of times, and for the most part, that only includes collection management in a list of several other functions of Army Intelligence.

While the Army does not dedicate much doctrine to the specific function of collection management, it does have a process that it uses for intelligence collection. The Army takes a unique approach by focusing information collection at the tactical level. Most of the doctrine centers on the Brigade Combat Team (BCT).[32] Additionally, the Army is the only service component which addresses collection management as an integrated function between the command staff's intelligence and operations directorates. In Army doctrine, the intelligence directorate is only responsible for developing the collection requirements based on the commander's PIRs, recommending a plan to answer those requirements and then assessing the results. The operations directorate is responsible to conduct the operations.[33] Army Techniques Publication (ATP) 2-01, *Plan Requirements and Assess Collection*, lays out the process the intelligence directorate uses to fulfill its role.[34] None of the joint processes appears in the document's main body. In fact, there is no mention of the term collection management until Appendix A, where approximately three pages identify some of the joint terminology and joint processes a soldier may encounter at echelons higher than a BCT.[35] However, because of the predominant focus at the tactical level, there is no guidance on how to perform those functions.

Field Manual (FM) 3-55, *Information Collection*, provides guidance to the operations directorate for the conduct of collection operations.[36] Much like ATP 2-01, it addresses the lower echelons of command, specifically the BCT. Additionally, any guidance from joint doctrine is relegated to the end of the volume and addresses mostly terms and definitions. One positive note from FM 3-55 is that the Army recognizes its weakness in conducting joint ISR operations at middle and upper level echelons. Indeed, FM 3-55 welcomes the advice of joint ISR subject matter experts who have recently been incorporated into those middle echelon's command structures.[37] These experts are called ISR Liaison Officers (ISRLOs) and they serve as air component representatives that are specifically trained in ISR employment. They are embedded into corps, division, and lower levels of command to advise and train Army units on ISR employment.

The Navy goes to much greater lengths than the Army does to cover collection management in its doctrinal publications. Navy Warfare Publication (NWP) 2-0, *Naval Intelligence*, explains the main concepts of JP 2-01 in detail using additional graphics as well as specific examples to enhance understanding of relevant concepts. For example, when discussing the collection management principle, "Take a Multidisciplinary Approach," NWP 2-0 provides the following example:

> The enemy is so well hidden that it takes multiple sources of intelligence to corroborate one another.
>
> > —Signals intelligence (SIGINT), for example, can locate a target but may not be able to discern who it is.
> >
> > —Full-motion video (FMV) can track but not necessarily identify.
> >
> > —Human intelligence (HUMINT) can provide intent but may not be able to fix a target to a precise location.

—Airborne intelligence, surveillance, and reconnaissance (ISR)'s effectiveness grows exponentially when it is cued to and driven by other sources of intelligence rather than operating alone.

Without a robust, collaborative intelligence network to guide it, sensors are often used in reactive modes that negate their true power and tend to minimize their full potential. These intelligence disciplines provide a start point into the enemy network that can be exploited through persistent and patient observation.

Flynn, M.T., Juergens, R., Cantrell, T.L.
Employing ISR: Special Operations Forces (SOF) Best Practices
Joint Force Quarterly, Third Quarter 2008[38]

Throughout the majority of the discussion of collection management, Navy doctrine differs very little from joint doctrine. However, the most significant difference is in COM. Similar to the Army and Marine Corps, the Navy possesses a variety of organic sensors capable of collecting information but naval doctrine implies that the majority of collection will come from airborne or overhead ISR resources that are not organic to the Navy.[39] There is some discussion on the process of tasking collection assets, which generally mirrors that of joint doctrine; however, the Navy's focus is primarily on requesting other components to satisfy intelligence requirements. Even some assets organic to the Navy, such as the P-3 and EP-3 aircraft, are allocated to the air component for most missions, meaning the Navy does not usually have tasking authority over those assets except in direct support or fleet protection.[40]

Protection of the fleet applies even in times of peace. Some specific situations can be especially dangerous for Navy ships, such as an aircraft carrier transiting a narrow strait. This maritime chokepoint can heighten the security level for the personnel involved and the Navy will task their organic ISR assets to provide necessary coverage of these types of operations. Naval doctrine implies most collection managers should focus on CRM and the

COM function usually falls to other components, generally the AOC. It is currently not the case operationally, but it is possible a Navy leader could serve as the JFACC in a theater. Despite this, Air Force personnel and processes will still predominant in AOC operations. For this reason, Navy collection managers may not be well versed in the COM function of collection management.

Where the Army had very little in doctrine which focused on collection management as a function, the Marine Corps provides nearly an entire volume of doctrine dedicated solely to collection management. More than half of the 77 pages that make up Marine Corps Training Publication (MCTP) 2-10A, *MAGTF Intelligence Collection*, provide detail on the primary USMC collection management functions and execution.[41] After some general discussion on Marine Corps collections operations, there is an entire chapter on CRM. The Marines do emphasize the importance of intelligence requirements and MCTP 2-10A goes to great lengths emphasizing this importance. Much of the discussion is focused on how to develop quality collection requirements in a systematic process. Marine doctrinal detail far exceeds that of joint doctrine highlighting the importance the Marine Corps places on creating quality requirements.

Discussion on COM also generally exceeds that of joint doctrine; however, this can be misleading. MCTP 2-10A provides broad COM guidance, covering much of the same discussion as JP 2-01, but it identifies specific Marine Corps procedures for a variety of different collection disciplines and reporting formats.[42] These points focus on Marine Corps-specific operations and actually highlights the Marine Corps' desire for tactical intelligence linked to very specific, tactical operations.

Indeed, the Army could potentially benefit greatly from application of Marine Corps doctrine. As an example, Marine Corps ground reconnaissance reports from forward observers are intelligence and can potentially satisfy a commander's PIR.[43] To the Marine Corps, these are requirements developed through CRM and tasked through COM for collection by a ground reconnaissance team. The tactical nature of this requirement does not require collection from another means such as a theater airborne or national resource. Joint doctrine does not explicitly identify entities such as ground reconnaissance teams and the like as collection sensors due to their tactical nature. The collection manager can only infer this information when considering the key elements sets during development of a collection strategy. This is not to say joint doctrine does not apply at the tactical level. Indeed, it is written to be broad enough to cover all levels and all intelligence disciplines. However, when describing sensor characteristics and key element sets, the language used in joint doctrine is technical and implies that sensors will be technical in nature. Essentially, joint doctrine assumes that collection will occur from technical platforms such as technical sensors such as aircraft or RADARs instead of a nontechnical sensor such as a ground reconnaissance team.

To this point, discussion on service doctrine has shown there is vast difference between each of the services and in doctrine compared to joint doctrine. Joint doctrine provides basic definitions and intentionally broad guidelines that can apply to any service, sensor, or collection manager. Army doctrine is disjointed and the responsibility for collection management belongs to the intelligence and operations directorates. The Navy is better, but largely regurgitates joint doctrine, though with more details and examples. The

Marine Corps provides nearly an entire volume, but has the expected Marine Corps-specific focus.

Where doctrine takes a different approach to collection management is Air Force Doctrine Document (AFDD) 1, Annex 2-0, *Global Integrated Intelligence, Surveillance, and Reconnaissance Operations*. To a certain extent, the Air Force focuses more on organization than execution. This is in part because one organization controls the majority of Air Force ISR versus a variety of units spread out across a battlespace. The AOC houses airborne ISR collection managers and, for this reason, doctrine explains collection management by articulating the various areas where ISR personnel operate within the AOC (See Figure 3).[44] It is not until the end of the volume where the standard joint doctrine definitions for the functions of collection management appear.[45]

Additionally, Air Force doctrine does not account for the principles of collection management and does not include guidance for CRM and COM entities that develop collection strategies and collection plans. In this regard, Air Force doctrine is lacking considerably given that AOCs control a vast majority of available airborne ISR platforms within a given theater. Air Force doctrine also provides nothing more than the definition and purpose of Intelligence Requirements, the key component of CRM, and there is no discussion of the key element sets that managers use to help determine appropriate asset selections with COM.[46] Similar questions exist for Air Force doctrine as well as the other services. Why does the Air Force exclude these details? Does the AOC collection manager know how to follow joint doctrine in the execution of the duties?
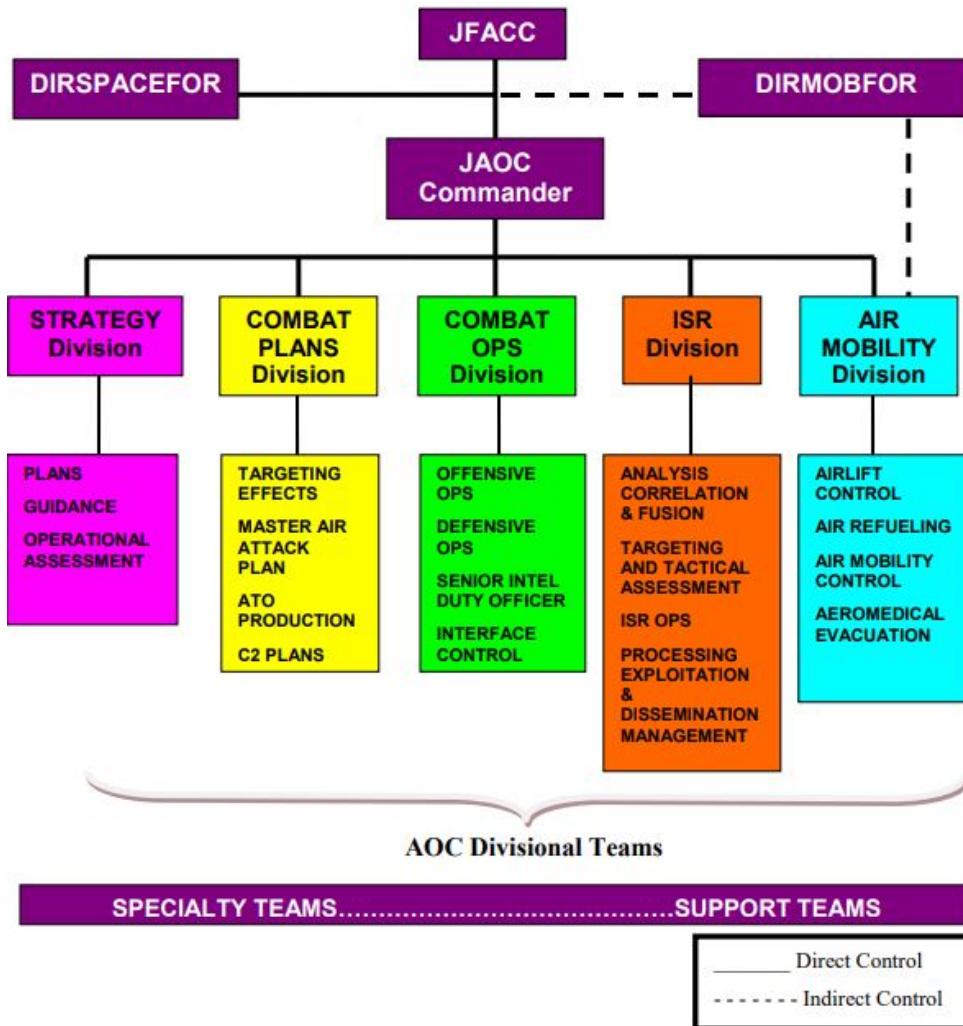
Figure 3. AOC Organizational and Functional Teams[47]

What is lacking from service and joint doctrine is any discussion on how to train collection managers. Further discussion on the specific training programs follows, but for now, it is important to note that the differences in doctrine influence collection manager training. One would assume joint and service doctrine serve as the foundation of training programs. However, the second and third order effects of training this way can dramatically influence operations. For example, if the Air Force trains solely to the contents of Annex 2-0 then collection managers would not get any training on how to execute their responsibilities. Similarly, the Army, as an American military organization, has a completely different

mindset and focus regarding collection management and training. The reason for these differences is based on different mission sets for each of the branches, which is understandable when analyzing the services individually. However, there must be a mindset shift to joint operations in today's military environment. Individual services will almost never operate unilaterally; current and future conflicts will be fought in a joint environment. Basing service specific training solely on service specific doctrine would indicate that Navy and Marine Corps personnel *should* be the best-trained collection managers in a joint organization because their doctrine most closely resembles joint doctrine.

TRAINING

"We do not rise to the level of our expectations, we fall to the level of our training."
- Archilochus[48]

If doctrine is considered the best way to perform a particular task or function, then training is the execution of the task enough times that it can be performed without thought. Essentially, the old adage of practice makes perfect is the point. This was the point Archilochus made. If the United States expects its military to perform to a certain level, then it must practice tactics and procedures repeatedly. Collection management is no different. When collection managers revert to different levels of training, collection operations can get complicated, particularly in the more active theaters such as USCENTCOM or United States Indo-Pacific Command (USINDOPACOM). This happens most often when the individual services train personnel a certain way and then those individuals come together in a joint organization during real-world operations.

The following review of the DIA collection management training program compared to each of the services training programs identifies significant, and potentially costly, differences in collection management training. These differences can stem from dissimilarities in doctrine, since training is generally based on the applicable service doctrine. This review of each of the joint and service programs shows there is a clear need for the standardization of training and professionalization of collection management personnel.

The DIA, in conjunction with the Joint Staff, sponsors what is probably the most robust training and certification program for collection managers. The primary problem with all aspects of the program is it is not mandatory for personnel working outside of DIA assigned billets even though those personnel may be working in joint or other organizational

billets.[49] DIA's program features a building block approach to training by providing a

fundamentals course, called Collection Management Fundamentals Course (CMFC), which

is offered online and ensures collection managers receive all of the baseline knowledge

necessary to be a collection manager. The course covers eleven modules spanning the range

of collection management operations and tasks as well as all the doctrinal terms, definitions,

and basic processes important to collection managers. This course is a prerequisite for the

follow-on resident course.[50]

Once a collection manager has completed the fundamentals course, he/she can apply

to the Collection Management Basic Course (CMBC). This is a one-week long in-residence

course which allows collection managers to practice their craft and gain some experience

applying the knowledge and concepts from the fundamental course in a variety of scenarios

and exercises.[51] According to the course description, CMBC is designed to show new

collection managers "what right looks like" at the tactical, operational, and strategic levels.

The faculty accomplishes this task by focusing the course on doctrinal concepts such as CRM

and COM across the range of military operations.

Finally, the DIA training program concludes with a two-week in-residence course,

called Collection Management Intermediate Course (CMIC). This advanced level course

challenges collection managers with advanced collection management concepts and tactics.

Several topics included in this course include collection management research, ISR

apportionment and allocation, Processing, Exploitation, and Dissemination (PED) principles,

and collection strategy development. Students also get to participate in a capstone exercise

that integrates all phases of the collection management process from requirement creation

through plan development and execution, and finally assessment.[52]

In addition to the three courses, the DIA also offers a certification program, known as Certified Collection Management Professional-Fundamentals (CCMP-F). Those who complete and pass the exam become certified DIA collection managers. The test is based on a standard the DIA created known as the Essential Body of Knowledge (EBoK). The exam's subject matter comes from more than 80 different reference documents, both classified and unclassified, including both joint and service doctrine. The EBoK comprises the knowledge that the Defense Collection Management Enterprise recognizes as the minimum standard that all collection managers should know.[53] It is important to point out that this is a *fundamental* level certification and is considered a baseline certification. What makes the DIA program so robust is it applies to all intelligence disciplines, such as GEOINT or SIGINT and all levels of war (strategic, operational, and tactical) in a joint environment. For this reason, it is useful to all collection managers, from the Combatant Command staff to the lowest level ground troops.

Finally, the Joint Staff recently approved a Joint Training Standard (JTS) for collection managers which provides a common standard for all collection management training courses. Currently, no course exists that trains to the JTS standard, including the DIAs courses, and there is no requirement at this time to train to this standard. The DIA program is the closest to meeting the JTS and, with minor modifications to content, should adapt to the JTS quickly. But, because the JTS is so new, course developers have only just begun the work of updating courses. The idea behind the DIA's program is someone who has completed all three of the courses would be considered a fully qualified collection manager according to the JTS and should be capable of passing the certification exam. Additionally, the goal of the JTS is that service specific training programs would eventually

adapt their courses to the JTS and collection managers who attend those courses would receive reciprocal credit to the DIA in-residence courses.[54] However, the JTS is so new that services have not yet levied this requirement in their individual courses.

The Air Force does not offer a course that is designed specifically to train collection managers, though what it does offer is an ISR professionalization course that is a worthy substitute. This is the ISR Operations Course (IROC). IROC is primarily available for Air Force personnel. Deploying members receive top priority for the twenty available seats per class. The course is open for personnel from the other services to attend; however, this rarely happens. The course graduates approximately 120 students per yearand in the past three years only three non-Air Force personnel have attended. Following from Air Force doctrine, AOC operations influence the IROC Program of Instruction (POI), therefore, it is largely focused on the operational level of war.[55]

Because the Air Force considers IROC an ISR professionalization course, the curriculum is not specifically tailored for collection management and includes some topic areas outside of the scope of collection management. However, the faculty approach the course from a collection management perspective making it the best course available for Air Force personnel since no other Air Force course teaches collection management principles and concepts. The course includes a variety of scenarios that build towards the capstone exercise where students simulate AOC operations by planning and executing a theater ISR campaign.[56] The focus on AOC operations directly stems from Air Force doctrine and, in some cases, likely deters other services from sending their personnel. Conversely, the benefit of ISR professionalization outweighs the cost of focusing on AOC operations to some sister

service commanders. In recent months, interest in the IROC has increased but the onus ultimately falls on sister service commanders to send their personnel.

The IROC currently runs for approximately five weeks (204 contact hours over 25 training days), which is a long course compared to the other offerings across the Department of Defense (DOD). Since the course applies to a slightly broader audience than just collection managers, it is longer. Additionally, there are currently no IROC prerequisites. This often necessitates that the instructor provides additional contact time on collection management fundamentals. The course length is a challenge for IROC because it forces many individuals to seek other forms of training or get the training waived outright. This is primarily a result of Air Forces desire to reduce the training demand on deploying personnel but also stems from other AOC's claims the training timeline is too long for members filling collection management billets.[57] For those assigned to collection management billets, many are either selected for deployment at the last minute or they are unable to attend or have additional training that make the overall training preparation time difficult to manage due to course scheduling issues.

From a doctrinal standpoint, the Air Force reference material is weak when compared to the other services. Air Force doctrine for collection management lacks detail on the execution of collection management tasks. For example, Air Force doctrine does not provide specific guidance on how to develop a collection strategy or a collection plan effectively. To compensate for the lack of doctrinal guidance, the IROC curriculum uses Joint Publications. This is not necessarily a bad thing since it ensures joint doctrine methods take precedence. However, because Air Force doctrine has such a heavy AOC focus, there is a possibility for confusion between the two sources that can complicate the training process. Joint doctrine

clearly states that it will take precedence over service doctrine when there are conflicts. Joint doctrine addresses collection management and Air Force doctrine addresses AOC operations. Merging the two can create conflict when neither document addresses it specifically. As an example, joint doctrine specifically states that a Theater J-2 retains full CMA.[58]

According to Air Force doctrine, both the Combatant Commander and the Theater J-2 have full CMA.[59] This is generally accurate in the way theater organizations execute CMA operationally. Since Air Force doctrine identifies two different individuals as the CMA, students may become confused without clarification that joint doctrine takes precedence.

The Air Force program is currently in transition. Recently, the 17th Training Group faculty at Goodfellow Air Force Base, Texas, hosted a conference for designated experts from the field to review and update the IROC training requirements. As part of this review, conference attendees recommended the current course become three different courses and follow a model similar to the DIA program. How closely the new Air Force program will actually resemble joint training is yet to be determined, but the faculty's goal is for the Air Force program to lead the way in graduating students who satisfy the new JTS. Essentially, the Air Force will host an online fundamental course for all personnel as a prerequisite to an intermediate or advanced resident course. The intermediate course will cater to deploying personnel and is capped at 10 days. The faculty will operate this course with the assumption that students are already on the same foundational level because of the fundamental course. To this end, they can proceed immediately to intermediate level training focused on application of concepts through a variety of exercises. Additionally, the program will include an advanced level course that will have an experiential prerequisite along with the fundamentals course. The intermediate course will not necessarily be a prerequisite provided

the member has met certain other criteria. Graduates of the advanced course will meet the JTS.

The US Navy offers the Naval Collection Managers Course (NCMC). The course is open to Navy and Marine Corps personnel filling collection manager billets and it focuses on the tactical and operational levels of war. The course covers much of the same basic doctrinal and procedural information as the DIA program and IROC do, but it is only 19 training days (approximately 152 contact hours).[60]

One reason it is shorter is the Navy and Marine Corps doctrine is far more robust than the Air Force making it is easier for the cadre to present this material in a coherent manner to students in a shorter period. The course references joint doctrine and doctrine from both services but because the doctrine is so similar the faculty does not have to work as hard to organize and present the material. The first week of training covers an introduction to collection management, the different intelligence disciplines, the sensors that collect information within each discipline, and discipline specific reporting procedures. Training in week two includes an introduction to the various software applications that collection managers use. Additionally, there is training on some of the collection management processes and procedures such as how to develop a collection plan. Finally, week three continues training on processes and dedicates the final two days to a capstone exercise.[61]

What is intriguing about NCMC is the emphasis on airborne ISR operations. Of course, the Navy does employ some airborne ISR, but there are specific line items that directly reflect airborne operations and very little indicates planning specifically for maritime-based collection platforms.[62] This confirms the implication naval doctrine assumes the majority of collection will come from airborne or overhead ISR resources which are not

organic to the Navy. From a training perspective, the Navy is preparing collection managers to work in AOCs and other organizations, such as Joint Task Forces or CCMD headquarters, that rely heavily on airborne ISR. Since Navy doctrine places emphasis on CRM and focuses less on COM, sailors may not always be as experienced in airborne operations as Airmen may be. This is even truer for the Marines that attend NCMC and work with airborne ISR operations.

A final difference between NCMC and other training programs is the culminating application exercise appears to be noticeably deficient, particularly when compared to IROC, since NCMC has such an emphasis on airborne operations. During the final practical, NCMC students construct a collection plan generally focused on airborne operations and then present it in the form of a briefing.[63] This explains the difference in course lengths. The IROC offers a 6-day comprehensive exercise where students create, update, execute, and assess a collection strategy over consecutive days providing an opportunity for students to correct mistakes from previous days. They also learn to adapt to dynamic situations that require adjustments to the plan and truly integrate all parts of the overall process. The IROC exercise simulates actual operational processes within an AOC over several days.

The NCMC only addresses the first step in this process. The NCMC course documents do not indicate an end-of-course culminating exercise thus highlighting a potential difference in skill proficiency. The gap between the NCMC exercise and the one offered in IROC is significant. This is in large part due to the Air Force focus on AOC operations. However, even if the Navy focused strictly on maritime operations, the time allotted does not permit students to immerse themselves in a scenario. There is little

opportunity to practice holistic collection management processes from planning, to execution, and to assessment.

Since the Navy and Air Force are the primary providers of ISR resources at the operational level, these are the two services most likely (though not exclusively) to work together in joint organizations. For this reason, the Navy is justified to train with a focus on airborne operations but the proficiency level is not to the Air Force's standard. The main gap in training is the Naval students do not see how each of the pieces fit together and how the process flows. Additionally, the Navy does not offer a single lesson on ISR Assessment.[64] (Source) Joint doctrine provides an entire section dedicated to assessment and assessment is critically important operationally. The NCMC students do not get to see how assessment fits into the larger operations process. This leads to differences in knowledge of overall processes and application of procedures in the joint environment. For Marine Corps personnel who focus more on tactical level operations, this course is sufficient to train the basics of collection management, but the Army course may prove more useful because of its tactical focus.

The Army offers the Information Collection Planners Course (ICPC). This course is a four-week course that reflects Army tactical doctrine, specifically doctrine associated with the Brigade Combat Team (BCT).[65] The Army's unique doctrinal approach makes this course equally as distinctive since it does not train personnel on the same concepts as the other available courses. For example, the ICPC may not train to maximize the effectiveness of a platform or sensor, but instead, it requires students to answer a specific question, or Priority Intelligence Requirement (PIR), one at a time in some cases. Specifically, if a brigade level unit has a tactical RPA as an organic asset, the Army may plan a mission that

only lasts an hour or two to answer a specific question even though the sensor may be capable of flying for additional hours.[66]

This differs from operational level operations where collection managers seek to maximize utilization rates on platforms by loading up sensors with as many requirements as possible. For example, a unit may only need one or two images of a target. If this requirement is satisfied at the operational level by a U-2 aircraft, collection managers are not going to plan a U-2 sortie for only these one or two images. Instead, they will add as many other requirements as they can to the U-2 collection deck. The ICPC trains students to approximately the same proficiency level as NCMC and not all soldiers attend the DIA courses in addition to the ICPC. When these factors are combined with the tactical mindset emphasized at ICPC, this could lead to disjointed operations in a joint organization.

So far, this thesis has examined the DIA joint training program, the Air Force's IROC, the Navy's NCMC (which also serves the Marine Corps), and the Army's ICPC. In addition to these offerings, two geographic theaters, USCENTCOM and USINDOPACOM, offer a theater-specific collection management course. From an ISR perspective, these are two of the busiest theaters in the world, so it makes sense that they would offer collection management training. Both of these courses are one week long and focus on theater-specific processes. The operational processes in each theater are similar, but collection managers assigned to a given theater are often doing so for the first time.

Based on the operational tempo in USCENTCOM and USINDOPACOM, these theaters felt it was worth taking time to ensure members understood the conduct of operations in the theater. Both courses dedicate time on each of the major intelligence disciplines that are identified in doctrine (GEOINT, SIGINT, MASINT, HUMINT, OSINT),

but with a theater-specific focus.[67] Students learn about what sensors are available in the specific theater for each discipline and how to develop requirements and plan collection from each of those sensors. Additionally, these courses focus specifically on the systems and software in use in those theaters, such as PRISM. Both courses focus less on a doctrinal approach and more on the application that they may experience in each theater.

Doctrine is flexible enough to allow commanders to adapt to unique situations. In every theater around the world, there are exceptional considerations that may require some deviation from doctrine. One example is how CCMD staffs may include partner nations in their operations, especially when those nations provide forces in that theater. Multinational collection management is not specifically addressed in joint collection management doctrine, so this process is included in the theater specific courses. Both theaters offer their courses to personnel who will be working anywhere in the theater but offers a focus on CCMD level operations, specifically individuals working with ISR operations in the theater J-2 directorate.

Each of the courses described are so different it is virtually impossible to ensure all collection managers have the same foundational level of training. Indeed, Air Force personnel would likely flounder if assigned to a BCT much like a soldier would likely be overwhelmed in an AOC. Recent experiences in CJTF-OIR illustrate this point. While deployed forward as a collection manager from the headquarters to a lower echelon (Navy Special Forces), an Air Force collection manager had almost daily conversations with Navy collection managers to educate them on the AOC processes and procedures for generating collection requirements and utilizing theater airborne resources properly.[68]

Conversely, those same Navy collection managers spent an equal number of hours training the Air Force collection manager on Navy procedures. The same was true regarding how Special Forces personnel tasked tactical, organic ISR assets. There were several differences beyond the service training. At a fundamental level, the two collection managers did not speak the same language when discussing ISR. As a result, ISR collection for the command was strained until both sides fully understood the capabilities of the other and there were instances where collection assets were not tasked appropriately on a given day affecting the unit's collection mission.[69]

In another example, at the CJTF-OIR headquarters, Air Force personnel predominantly managed and staffed the ISR division of the intelligence directorate. As a result, Air Force programs and software applications were employed to manage ISR in the theater, even though the Army was the largest element in the command. There was a significant operational issue between Air Force personnel, familiar with the various tools at their disposal, and both Army and Navy personnel who, at times, served as lead collection managers on duty. On several occasions, this influenced the command's ability to obtain ISR coverage leading up to and following kinetic events.[70] There are countless examples that illustrate the point that collection managers will operate at the level of their training and, when training is not standardized, will operate at different proficiency levels.

RECOMMENDATIONS/CONCLUSION

Joint doctrine provides the authoritative guidance for how to accomplish collection management regardless of the specific intelligence discipline or the branch of service. It details who is responsible for performing the critical functions of CRM, CMA, and COM and joint doctrine identifies the four guiding principles of effective ISR. The Army approaches collection management with a different mindset; it focuses specifically on ISR support to tactical level operations. The Army emphasizes the BCT as "the Army's primary close combat force" because it serves as the basic ground component associated with Joint Task Forces (JTF). At the JTF level, guidance exists on how to conduct information collection operations, but the Army places the responsibility for execution on the operations directorate, while the intelligence directorate is primarily responsible for planning operations and assessing the results. It only references joint doctrine concepts through some basic terminology and definitions.

The Air Force also takes a different approach. Its doctrine focuses on the AOC because the AOC is the single organization that controls the majority of ISR operations and most air component collection managers are consolidated within this entity. Air Force doctrine concentrates less on how to conduct ISR operations and more on how the AOC is structured and how ISR provides input into the different AOC divisions. Navy and Marine Corps doctrine most closely resemble joint doctrine and provides more detail in explaining concepts and processes. However, both stress CRM for each service, indicating an acceptance that airborne ISR, largely provided by the AOC, will execute the majority of COM in support of operations.

Collection management training, on the other hand, is not specifically identified in any of the doctrinal references. This leaves the joint community as well as the individual services to train collection manages how they see fit. This may work in some situations but given the joint nature of collection management and the importance effective ISR collection has on operations; this is not the best course of action. For many military occupational specialties, doctrine does not need to provide specific instruction on training. There are established training standards for those specialties (some even come with additional qualifications or certifications) and leaders who are responsible for identifying training requirements. Collection management is not one of those specialties. To this end, the joint (intelligence) community should assert its control over collection management training by mandating all collection managers in all theaters complete the DIA training program as a way to ensure all collection managers in all services have a foundational experience that establishes a common language among collection managers. A key aspect to this finding is for commanders to prioritize the joint training program and ensure **ALL** collection managers receive this training. Current practices of waiving the training only hurts the organization and the supported operations.

In addition to the requirement for joint training baseline all collection managers, the second finding, in the near-term, is that current training managers should complete the existing DIA certification program. The long-term goal is for the certification to become a prerequisite to fill a collection manager billet, regardless of service or assigned theater. If the program is applied logically, receiving the certification would include completion of the course and ultimately meeting the newly released JTS. This ensures commanders receive collection managers that have a standardized baseline and foundational knowledge of

collection management. The service specific courses should continue since they emphasize executing collection management in specific organizations or operational environments.

However, the DIA program should be a prerequisite for attendance to service courses. This allows services to reduce training time, save money, and incorporate joint collection management principles. Less time is needed on teaching concepts and more time can be spent on application exercises in specific scenarios. For example, the IROC's 25 training days could be reduced significantly (potentially by as many as 15 days) because the student has experienced a majority of the foundational concepts, allowing the IROC faculty to focus its curriculum specifically on AOC operations. The same holds true for the other service's courses. The Army would not have to spend time in ICPC on the basic concepts of collection management and could address BCT operations.

Finally, once an established cadre of personnel who have completed the DIA program exists, services should examine the possibility of establishing a separate career field for collection managers. The career field would be added as one of the several already existing intelligence specialties and the initial skills training would become the DIA program, taught by a joint cadre in a joint environment. For this new course design, the JTS serves as the standard. Within the JTS, there are five main tasks are essential for commanders. These tasks are listed in an order that mirrors the operational collection management process and serves as the main blocks of instruction. These five main tasks are divided into approximately 45 sub-tasks. From a course design standpoint, these sub-tasks are essentially the units that make up the larger units. One of the best aspects of the JTS is that it provides more than 220 individual learning objectives for each of the tasks and sub-tasks. From this standpoint, a large portion of the course design work is complete. Faculty would only need

to develop the material to support these objectives. A notional program of instruction narrative is offered below to provide a point of reference for curriculum design and development.

Block one is an introductory block. Tasks and sub-tasks in this block are knowledge level items.

Learning objectives include:

Define collection management;

Describe Strategic, Operational, and Tactical levels of intelligence;

and Define the Principles of Collection Management.

This level of knowledge provides the foundational details necessary for later blocks where application exercises are included and provides a common language to collection managers regardless of service or branch. Ideally, this block would only take somewhere between five and ten training days to complete depending on the instruction delivery method used.

Block two takes on the function of CRM. This is the first step in the collection management process since all collection management is requirement driven. This block is largely knowledge based as well.

Learning objectives from this block include:

Describe the relationship between the customer's information need and the Commander's Intent, Objectives, and End State;

Identify all intelligence disciplines' validation and adjudication criteria for requirements;

Explain the Purpose of modifying an existing collection requirement;

and Identify and define components of a collection requirement.

Additionally, during this block, students are exposed to some of the collection management related systems-of-record. These include national-level requirements databases among others. As students begin to understand requirements, the block would culminate with an exercise in drafting requirements. The evaluation would include writing requirements spanning all intelligence disciplines and operational levels. A second component of this evaluation is for students to swap papers and exercise CMA (validate) each other's requirements. CRM is arguably the most important component of collection management since requirements drive everything that follows therefore this would be a critical block for students to master before moving to the next. This block should take anywhere between twenty and twenty-five training days to complete.

Block three tackles collection strategies, which flows from CRM. There is a knowledge component to this block; however, most of this block encompasses the first phase of an ongoing exercise.

The knowledge level learning objectives for this block include:

Define collection strategy;

Explain the requirement flow for all intelligence disciplines;

and Identify the role and function of CRM support to collection strategy development.

To advance from block three, students must develop a collection strategy that will be executed in a later block. This exercise should be holistic in nature and simulate actual operations as much as possible (without including theater specific nuances). Evaluation should encompass all aspects of doctrine that have been covered to this point. Overall, this block is relatively short compared to others, but will ideally take about ten training days.

Block four then introduces the COM function. This block will most likely be the longest block of the course since students will be introduced to all of the assets and resources to them as collection managers.

Knowledge components include:

Describe the Collection Operations Management process;

Identify methods for employing ISR in support of collection operations;

and Identify considerations impacting collection operations.

This block also includes several practical application exercises where students can practice different aspects of COM. The second and third phase of the ongoing exercise occurs at the end of this block. Students use the previously developed collection strategy to create a collection plan with a notional set of collection of assets and resources in phase two. Phase three of the exercise is the execution phase. This requires some administrative support to run a common operating picture and feed injects to the students to provide experience with real-time execution of operations. The primary purpose of phase three is to practice the dynamic re-tasking process. This is another critical block that must be completed to a higher learning level before progressing. Ideally, this block will take between twenty-five and thirty training days.

Block five touches on the management functions related collection management and introduces ISR assessment to close the collection management circle.

Some of the key learning objectives include:

Analyzing Global Force Management and its impact on collection posture;

Define key terms in collection assessment;

and Explain how collection assessments impact Collection Management functions.

To pass this block, students must complete phase four of the ongoing exercise assessing the operations they conducted in block three. This block will take approximately ten training days.

Once students have completed all blocks of instruction, they will participate in a comprehensive capstone exercise. This exercise is a multi-day event where students begin with a scenario and develop requirements which must be validated before developing their collection strategy. Once requirements are validated and the strategy is complete, they develop a collection plan and then execute that plan. Finally, they must assess that plan and provide feedback into the planning cycle for the next day. Once requirements have been validated, each of these steps will occur simultaneously as they develop a plan for the next day while executing today's plan and assessing yesterday's results. This approach mirrors collection management processes and is similar to the IROC capstone exercise concept. The critical difference is the exercise encompasses all disciplines and involves tactical, operational, and strategic levels. The capstone scenario should run for no less than five days and ideally for eight. This length allows the faculty to rotate students through all of the different collection management functions. This is necessary since several functions occur simultaneously.

Finally, this capstone exercise uses a go/no-go checklist to evaluate the students. Either the student can perform the task or they cannot. If not, they will be required to remediate the task until they get it right. The checklist would encompass all of the different tasks that students are expected to perform but students would only be graded in the function they are performing on a given day. By the end of the exercise, they will have completed the entire checklist. In total, the entire course should take between four and five months to

complete. This might be a high estimate, but it allows time to ensure students achieve the

necessary learning levels before graduating. Appendix B illustrates this notional collection

manage course flow in more detail.

Essentially, a new service member who becomes a collection manager would attend

accessions training (basic training, commissioning program, etc.) and then proceed directly to

collection management training before moving on to their first duty station. The faculty for

this training already exists within the current DIA program but would need augmentation by

military members from all services who have extensive collection management expertise. In

order to graduate, the member needs complete the CCMP-F certification program. At this

point commanders would never again need to question the proficiency of their collection

managers. Additionally, should collection managers revert to collection management

training experiences during operations, that level of training would be the same no matter the

individual's service or theater of operation if the DoD adopts my recommendations.

[1] Carl Von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, New Jersey: Princeton University Press, 1976), 292.

[2] Headquarters, Department of the Army, *Army Doctrine Publication 7-0, Training*, (Washington D.C., August 29, 2018), [v]. https://armypubs.army.mil/ProductMaps/PubForm/Details.aspx?PUB_ID=1005317

[3] A=Air Force, G=Army/Marines when commanded by a general officer, N=Navy, S=Army/Marines when commanded by a field grade officer, J=Joint staff (multiple services); these are not all inclusive

[4] Individuals whose primary career field is collection management. Personnel are normally only in a collection management position for one assignment and then move on to another assignment.

[5] Suzanne Barroquiero, email message to author, October 24, 2018.

[6] Joint Chiefs of Staff, *Joint Publication 1, Doctrine for the Armed Forces of the United States*, (Washington D.C., March 25, 2013, incorporating Change 1, July 12, 2017), VI-3.
https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp1_ch1.pdf?ver=2019-02-11-174350-967

[7] Ibid., VI-3.

[8] Joint Chiefs of Staff, *Joint Publication 2-0, Joint Intelligence*, (Washington D.C., October 22, 2013), I-13.
https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp2_0.pdf

[9] Joint Chiefs of Staff, *Joint Publication 2-01, Joint and National Intelligence Support to Military Operations*, (Washington D.C., July 5, 2017), III-17.
https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp2_01_20170705v2.pdf

[10] Ibid., III-15.

[11] Ibid., III-15

[12] Ibid., III-15-III-16

[13] Ibid., III-16

[14] Ibid., III-17

[15] Specifically, regarding satellites, CCMD collection managers consolidate all requests for collection and forward to the appropriate national agency (based on required capability) for tasking. These requests are not guaranteed to be satisfied since spaceborne platforms are already saturated with national level requirements. National collection managers incorporate theater level requests into satellite collection decks where possible but generally prioritize national requirements ahead of CCMD requirements.

[16] Coy F. Cross II, *The Dragon Lady Meets the Challenge: The U-2 in Desert Storm* (United States Air Force, [1996?]), Ch. 6.

[17] JP 2-0, *Joint Intelligence*, I-13.

[18] Headquarters, United States Marine Corps, *Marine Corps Training Publication 2-10A, MAGTF Intelligence Collection*, (Washington D.C., May 2, 2016), 2-5.
https://homeport.usmc.mil/sites/mcdoctrine/Publications/MCTP%202-10A.pdf

[19] JP 2-0, *Joint Intelligence*, I-14.

[20] JP 1, *Doctrine for the Armed Forces of the United States*, [xxi].

[21] JP 2-01, J*oint and National Intelligence Support to Military Operations*, III-21-III-26.

[22] Ibid., III-23.

[23] Ibid., III-24.

[24] Ibid., III-24.

[25] Ibid., III-24.

[26] Ibid., III-24.

[27] Ibid., III-25.

[28] Ibid., III-25.

[29] Ibid., III-25.

[30] Ibid., III-26-III-34.

[31] Headquarters, Department of the Army, *Army Doctrine Publication 2-0, Intelligence*, (Washington D.C., September 4, 2018), 5-4. https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/ARN14158_ADP%202-0%20FINAL%20WEB%201.pdf

[32] Headquarters, Department of the Army, *Army Techniques Publication 2-01, Plan Requirements and Assess Collection*, (Washington D.C., August 19, 2014).
https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/atp2_01.pdf

[33] Ibid., 1-2.

[34] Ibid.

[35] Ibid., A-1.

[36] Headquarters, Department of the Army, *Field Manual 3-55, Information Collection*, (Washington D.C., May 3, 2013), [III]. https://armypubs.army.mil/ProductMaps/PubForm/Details.aspx?PUB_ID=102534

[37] Ibid., 6-2.

[38] Headquarters, Department of the Navy, *Navy Warfare Publication 2-0, Naval Intelligence*, (Washington D.C., March 2014), 3-20. http://portal.nwdc.navy.mil/ndls

[39] Ibid., 3-30-3-33.

[40] Ibid., 3-33.

[41] MCTP 2-10A*, MAGTF Intelligence Collection*, Ch 2-4.

[42] Ibid., Ch 3.

[43] Ibid., 3-2.

[44] Headquarters, Department of the Air Force, *Air Force Doctrine Document 1 Annex 2-0, Global Integrated Intelligence, Surveillance, and Reconnaissance Operations*, (Washington D.C., January 29, 2015), 16-19. https://www.doctrine.af.mil/Doctrine-Annexes/Annex-2-0-Global-Integrated-ISR-Ops/

[45] Ibid., 53-58.

[46] Ibid., 53-58.

[47] Headquarters, Department of the Air Force, *Air Force Instruction 13-1AOC Volume 3, Operational Procedures-Air Operations Center (AOC)*, (Washington D.C., November 2, 2011, Incorporating Change 1, May 18, 2012), 13. https://static.e-publishing.af.mil/production/1/af_a3_5/publication/afi13-1aocv3/afi13-1aocv3.pdf

[48] Quote commonly attributed to the ancient Greek poet, Archilochus, though the exact work that it is contained in is unknown.

[49] Jason Thompson, email message to author, February 25, 2019.

[50] "DIA Collection Management Newsletter," Defense Intelligence Agency, Fall 2018, website available on classified networks.

[51] "DIA Collection Management Newsletter," Defense Intelligence Agency, Fall 2018, website available on classified networks.

[52] "DIA Collection Management Newsletter," Defense Intelligence Agency, Fall 2018, website available on classified networks.

[53] Jason Thompson, email message to author, February 25, 2019

[54] Jason Thompson, email message to author, February 25, 2019

[55] Derived from the IROC Course Training Standard, a listing of the training requirement levied on the IROC faculty.

[56] Derived from the IROC Course Training Standard, a listing of the training requirement levied on the IROC faculty.

[57] Comments from attendees to the Air Combat Command-sponsored, 17th Training Group hosted IROC Training Planning Team (TPT) meeting 26-28 February 2019. A TPT is the venue for subject matter experts from the field to come together and update the requirements for Air Force training courses, specifically for collection management in this instance.

[58] Joint Chiefs of Staff, *Joint Publication 2-01, Joint and National Intelligence Support to Military Operations*, (Washington D.C., July 5, 2017), III-18.

[59] *AFDD 1, Annex 2-0, Global Integrated Intelligence, Surveillance, and Reconnaissance Operations*, 21.

[60] "NCMC syllabus," Department of the Navy, accessed March 21, 2019, website available on classified networks.

[61] "NCMC syllabus," Department of the Navy, accessed March 21, 2019, website available on classified networks.

[62] "NCMC syllabus," Department of the Navy, accessed March 21, 2019, website available on classified networks.

[63] "NCMC syllabus," Department of the Navy, accessed March 21, 2019, website available on classified networks.

[64] "NCMC syllabus," Department of the Navy, accessed March 21, 2019, website available on classified networks.

[65] Norman Rosentreter, email message to author, March 8, 2019.

[66] Norman Rosentreter, email message to author, March 8, 2019.

[67] GEOINT=Geospatial Intelligence, SIGINT=Signals Intelligence, MASINT=Measurement and Signatures Intelligence, HUMINT=Human Intelligence, OSINT=Open Source Intelligence.

[68] Scenario is real world sample of the experiences of the author while deployed to Baghdad International Airport in support of Combined Joint Special Operations Task Force-Iraq during Operation INHERENT RESOLVE, January 19, 2018-April 12, 2018.

[69] Scenario is real world sample of the experiences of the author while deployed to Baghdad International Airport in support of Combined Joint Special Operations Task Force-Iraq during Operation INHERENT RESOLVE, January 19, 2018-April 12, 2018.

[70] Scenario is real world sample of the experiences of the author while deployed to Camp Arifjan, Kuwait in support of Combined Joint Task Force-Operation INHERENT RESOLVE, October 2, 2017-January 19, 2018.

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APPENDIX A

<u>List of Acronyms</u>

ADP – Army Doctrine Publication
AFDD – Air Force Doctrine Document
AOC – Air and Space Operations Center
AOR – Area of Responsibility
ATP – Army Techniques Publication
BCT – Brigade Combat Team
C/JFACC – Combined/Joint Forces Air Component Commander
CCMD – Combatant Command
CCMP-F – Certified Collection Management Professional-Fundamental
CJTF-OIR – Combined Joint Task Force-Operation INHERENT RESOLVE
CMA – Collection Management Authority
CMBC – Collection Management Basic Course
CMFC – Collection Management Fundamentals Course
CMIC – Collection Management Intermediate Course
COM – Collection Operations Management
CRATE – Collection Requirements Analysis Tool for the Enterprise
CRM – Collection Requirements Management
DIA – Defense Intelligence Agency
DOD – Department of Defense
EBoK – Essential Body of Knowledge
FM – Field Manual
FMV – Full Motion Video
GEOINT – Geospatial Intelligence
HUMINT – Human Intelligence
HVI – High-Value Individual
ICPC – Information Collection Planners Course
IROC – Intelligence, Surveillance, & Reconnaissance Operations Course
ISR – Intelligence, Surveillance, & Reconnaissance
ISRLO – Intelligence, Surveillance, and Reconnaissance Liaison Officer
JFC – Joint Force Commander
JFMCC – Joint Force Maritime Component Commander
JP – Joint Publication
JTS – Joint Training Standard
MAGTF – Marine Air Ground Task Force
MASINT – Measurement and Signatures Intelligence
MCTP – Marine Corps Training Publication
NCMC – Naval Collection Managers Course
NWP – Navy Warfare Publication
OPCON – Operational Control
OSINT – Open Source Intelligence
PED – Processing, Exploitation, and Dissemination
PIR – Priority Intelligence Requirement

PRISM – Planning tool for Resource Integration, Synchronization, and Management
RPA – Remotely Piloted Aircraft
SIGINT – Signals Intelligence
SOF – Special Operations Forces
TACON – Tactical Control
USAFCENT – United States Air Forces Central
USCENTCOM – United States Central Command
USINDOPACOM – Unites States Indo-Pacific Command

APPENDIX B

Notional Collection Management Initial Skills Course Layout

Block 1: Introduction to Collection Management (5-10 days)

      Unit 1: Collection Management Policy and Doctrine
      Unit 2: Collection Management Authorities, Roles, and Responsibilities
      Unit 3: Collection Management and the Joint Intelligence Process
      Unit 4: Collection Management Community
      Unit 5: Principles of Collection Management

Block 2: Collection Requirements Management (20-25 days)

      Unit 1: The Customer
      Unit 2: Research
      Unit 3: Requests for Information/Production Requirements
      Unit 4: Collection Requirements
      Unit 5: Validation
      Unit 6: Application

Block 3: Collection Strategies (10 days)

      Unit 1: Intelligence Disciplines
      Unit 2: Collection Management Tools
      Unit 3: Exercise Phase 1

Block 4: Collection Operations Management (25-30 days)

      Unit 1: Asset Introduction
      Unit 2: Developing a Collection Plan
      Unit 3: Execute operations
      Unit 4: Exercise Phase 2
      Unit 5: Exercise Phase 3

Block 5: ISR Management/Assessment (10 days)

      Unit 1: Management Basics
      Unit 2: ISR Assessment
      Unit 3: Exercise Phase 4

Block 6: Capstone Exercise (5-8 days)