**Case 2 – Military Intelligence (MI) Force Design Update[[1]](#footnote-1)\***

In the aftermath of two of the most significant and defining acts of foreign aggression to occur on American soil in the last century—Pearl Harbor and 9/11—the United States Intelligence Community has twice undergone a fundamental reorganization. Each time, the overarching direction has been to further centralize intelligence gathering and analysis capabilities. It was believed that the failure of American intelligence to anticipate and forestall the surprise attack at Pearl Harbor was due not to a lack of information, but rather to a lack of coordination: collectively, the information gathered by all of the service and intra-department intelligence bureaus was sufficient to foresee and prevent the attack, but no centralized authority existed then that could compile all of the collected intelligence and view it as a composite whole. This was to be the role of the Central Intelligence Agency, established in 1947. The same approach to restructuring was repeated after 9/11 revealed additional gaps in coordination among the various intelligence agencies: in 2004, the Intelligence Reform and Terrorism Prevention Act created the Office of the Director of National Intelligence, a further centralization of intelligence gathering and analytical capabilities. For the United States Intelligence Community, the lessons of two of the most harrowing attacks on home soil in American history have created an innate and persisting recognition of the importance of centralized analysis and decision making.

The wars in Afghanistan and Iraq, together with the impacts of technological progress on intelligence capabilities, present a challenge to this long-standing paradigm. The demand for up-to-date data has increased due to the proliferation of cheap instant communications such as cell phones, email, and Twitter as well as the proliferation of camera and sensor technology once only available to the wealthiest militaries. This has closed the information asymmetry gap between the U.S. military and non-state actors on the modern battlefield, as the importance of intelligence gathering has increased relative to centralized coordination.

Cognizant of this trend and based on conversation with the Secretary of Defense, Army Senior Leaders are considering a reorganization of MI-related assets based upon recent lessons learned from Iraq and Afghanistan. The MI collection and information distribution capability has been organized around a force on force scenario and while effective, DOD leaders are now wondering if an alternative organization and capabilities could better provide intelligence without sacrificing the general capabilities to support a force on force war. Recent proposals on the upheaval of the entire MI structure were thought to be overly disruptive to traditional capabilities of support maneuver warfare. The creation of an MI structure focused on irregular warfare in addition to the current organization designed for maneuver warfare are thought to be too costly. While all leaders agree that MI is more important than ever and that this redundancy would provide the most capability, none are willing to pursue such a strategy in case other capabilities in the Department of Defense must be sacrificed to pay for such a structure. Given the current resource-constrained environment, it has been determined that a cost-benefit analysis is necessary to further inform the decision.

**Problem**

The challenge of the current MI environment is to adequately address and balance two competing concerns: (1) how to maintain U.S. MI preponderance against adversaries given the narrowing information gap, and (2) how to maintain centralized coordination of intelligence analysis and decision making capability. It has been widely argued that in order to address the first point, the amount of intelligence gathered must be greatly increased in some form of intel collection where the United States still maintains unrivaled technological superiority. But the more intelligence that is collected, the more that must be processed, and the more difficult it is to preserve a centralized coordinating capacity for all of the information. HQDA G-2 and TRADOC present two varying assessments below.

**HQDA G-2**

The G-2 has recently published documents stating that current ISR assets present a continuing inability to meet the sustained ISR needs of two theaters of operation followed by the mission needs of other COCOMs. The demand from commanders for additional UAV and ground sensor feeds has increased exponentially in recent years. UAVs are now a standard part of every BCT, Division, and Corps structure. However, the top priority on every commander’s wish list seems to be more UAV/UAS.

The G-2 expects that requirements will not be so different in the future. The effectiveness of current aerial ISR platforms has increased the belief that aerial platforms are the optimal means of ISR exploitation in the near future. The scanning area capability of aerial ISR platforms far exceeds that of land vehicle-based sensors: at an altitude of 2 miles, a UAV can scan an area of 4 square miles, while a sensor on a tank-based scanner is limited by terrain and on-the-ground visibility. Two types of unmanned aerial systems are available as ISR platforms: the RQ-7 Shadow and the ERMP MQ-1 (Extended-Range Multi-Purpose UAV). Both of these UAVs can be installed with sensors that collect signals intelligence and video imagery in flight. In addition, the manned EMARRS aircraft (Enhanced Medium Altitude Reconnaissance and Surveillance System) can carry twice as many sensors as the ERMP and serves as a third option for aerial ISR. Because non-state actors and adversaries have access to various modes of cheap ground-based ISR platforms, aerial ISR platforms are particularly useful in preserving the informational asymmetry gap between the United States and its adversaries. In addition, while ground-based ISR devices commonly employed by Taliban and al-Qaeda groups are limited by range, speed, and terrain, aerial surveillance platforms can achieve ranges of beyond 1,000 miles and reach speeds of up to 400mph in all types of terrain. Because many of these systems are unmanned, they may be employed with a range and flexibility far exceeding manned ISR systems. Importantly, certain aerial ISR systems are equipped not only with signals intelligence (SIGINT) capabilities, but also with Full Motion Video (FMV) capabilities, which provide realtime video imagery over long distances. Surveys of battlefield commanders (see Annex 2) supply ample evidence that long-range aerial ISR platforms are a necessary advantage that should be further developed. A recent report proposed the fielding of additional aerial surveillance support to augment fifteen Brigade Combat Teams (BCTs).

While designed primarily for non-traditional warfare, these aerial surveillance platforms can be adapted to support a force-on-force war. However, HQDA and OSD planners have indicated that the threat of non-state actors and extremists will be a long-range concern, and that the necessity of an MI force structure designed for these scenarios will not dissipate in the near term. Despite the anticipated draw-down in Iraq and possibly Afghanistan, it is believed that future conflicts will demand these capabilities.

**TRADOC**

Past Force Design Update (FDU) proposals from the TRADOC Intelligence Center of Excellence (ICOE) have indicated that the increase of ISR collection assets since the beginning of wartime supplement and OCO funds provides the Army sufficient capability to meet current ISR requirements. Recent studies of intelligence analysis force structure show that the ability to conduct analysis is largely centralized, which allows for better centralized decision making. Past TRADOC studies reinforced the idea that large maneuver force designs necessitated the strongest possible central decision making capability.

The recent wars in Iraq and Afghanistan have increased the autonomy of brigade and lower level units. The number of situation reports has steadily increased while the number of theater, corps, and division level operational orders related to combat or hazardous operations has decreased. The conclusion is that operational decisions have steadily increased at the tactical unit level since the initial invasion of Iraq, and that resources should be devoted to the coordination of centralized intelligence analysis rather than to the collection of more intelligence.

Current staffing and analysis capabilities support this appraisal. At present, aerial surveillance support for each of fifteen BCTs consists of two EMARSS, four RQ-7 Shadow UAVs, and three ERMP MQ-1 UAVs (see Annex 1 for capabilities listing and systems specifications). For the total sensor-hours capability (see Annex 2 for definition) that these aerial ISR platforms provide, each BCT maintains a staff of 35 intelligence officers (see organization chart) to package and analyze aerial ISR intelligence at the brigade level. These officers are provided with equipment and facilities that cost FY12 $3M to build/procure and FY12 $1M per year to maintain. The intelligence gathered by Army aerial surveillance systems is simultaneously transmitted to U.S. Army Central Command, which maintains a staff of 500 intelligence officers (50 O-5, 100 O-4, 200 O-3, 150 O-2) to package and analyze all Army intelligence gathered in the field, which is then forwarded to the Defense Intelligence Agency, the Central Intelligence Agency, and the Office of the Director of National Intelligence for the purpose of maintaining a centralized coordination and decision making capability. It is estimated that the current workload resulting from Army aerial ISR platforms accounts for 10% of the workload for the 500 HQDA intelligence officers.

The prevailing opinion is that the intel officer staffing at the brigade and HQDA level are already overburdened, and facilities are at capacity. Current manpower will be insufficient to handle any large increase in sensor-hour capability resulting from the acquisition of additional aerial surveillance platforms. Moreover, the capabilities and overall number of cameras on vehicles has increased significantly. The range of Infrared (IR) cameras on tanks, Bradleys, and LRAS3 have approximately doubled since the start of the war. The proliferation of Driver’s Vision Enhancer and Thermal Weapon Sight provide access to IR technology to the individual soldier.

 The conclusion of TRADOC is that more resources should be devoted to the centralized coordination and analysis of intelligence, not to the expansion of current collection capabilities.

**Utility Data**

Data on the estimated benefits based on volume of aerial ISR (measured by sensor-hours and number of dedicated analysts) is tabulated below.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Year | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
| Sensor-hour capability per Brigade | 120 | 150 | 200 | 235 | 240 | 280 | 312 |
| # of Intelligence Analysts (15 BCTs)not including ARCENT | 145 | 181 | 242 | 284 | 290 | 339 | 377 |
| # of casualties per 1000 patrols, Iraq and Afghanistan | 12 | 10 | 9 | 5 | 2 | 2 | 2 |
| Estimated # of attacks forestalled and thwarted by aerial ISR | 46 | 61 | 80 | 95 | 120 | 135 | 140 |

**The Present Strategic Environment**

A new Defense Strategic Guidance issued by the President of the United States in January 2012 signaled a shifting focus for the Department of Defense. Army planners have noted a landmark change in perceived defense priorities compared to the past ten years: a move away from land power, as characterized by the wars in Iraq and Afghanistan, and toward air and sea power. Army leaders at the highest levels have referred to the coming years as a “pivot point” for the United States Army.

Given this strategic environment, it has been argued that additional ISR procurements for the Army will be unnecessary and improvident given the increased emphasis on air and naval capabilities. The President’s Defense Strategic Guidance specifically mentioned a shift in focus from Europe and the Middle East to the Asia-Pacific, where the likelihood of protracted land campaigns is far less pronounced. Planners of this opinion foresee a necessarily diminished role for the Department of the Army.

A differing camp argues that ISR capabilities are in fact all the more necessary given the new strategic imperatives defined in the Defense Strategic Guidance. While access and power projection capabilities will be based primarily on air and sea power (particularly in the Asia-Pacific region), the Army nonetheless maintains an indispensable role in the changing strategic environment, even if that does not involve boots on the ground. These planners argue that one of the Army’s primary service contributions to operations within the Asia-Pacific region will be ISR, a capability of increasing importance in the region given the likelihood of attacks with little to no indication or warning. Moreover, heavy investment in Anti-Access/Area Denial (A2/AD) capabilities by rising and rival powers in the region such as China, Russia, and Iran have significantly limited freedom of action for conventional air and sea based platforms. UAV/UAS, which are much less vulnerable to A2/AD threats, have been suggested as a possible solution to this growing challenge. Even as defense priorities shift to the Air Force and Navy, planners believe that unmanned ISR capabilities are ones that the Army is uniquely suited to provide. They argue that this will be the future of the Army, and that the structure of its capabilities must evolve in this direction in order to meet the unprecedented challenges of a new strategic environment.

**Task**

After collecting this data and having formed a team of functional expert contacts, your task is to conduct an analysis to support the next briefing to the VCSA on the best options for updating the composition of aerial surveillance support to BCTs. Write a Cost-Benefit Analysis comparing these options. Possible criteria to consider in the comparison: cost, total sensor-hour capability and over what range, speed, payload, operational flexibility over missions of varying altitudes.

**Annex 1 – Aviation Assets**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  | EMARSS | ERMP (MQ-1 UAV) | RQ-7 Shadow UAV |
| # of SIGINT sensors(per aircraft) | 2 | 1 | 0 |
| # of FMV sensors(per aircraft) | 2 | 1 | 1 |
| Maximum duration(hours per flight) | 4 | 24 | 4 |
| Optimal altitude(feet) | 17K | 10K | 10K |
| Crew requirement | 4 | 0 | 0 |
| Payload (lbs) | 2200 | 435 | 100 |
| Top speed (knots) | 400 | 200 | 200 |

All new requested aircraft will need to be procured.

Equipment fielding typically does not result in 100% fielding. A certain number are reserved for testing, others are used in for schoolhouse training, and some are operational floats. Typically, 1.2 dedicated training aircraft are necessary for every 12 fielded.

**Annex 2 – Requirements Data**

The Secretary of Defense and Chairman of the Joint Chiefs of Staff have recently released guidance on minimum aerial surveillance capability requirements for Army: each BCT must maintain a capability of 170 sensor-hours of SIGINT and 250 sensor-hours of FMV during any given 24-hour period.

Sensor-hours per day are defined as follows: the sum of the number of operating hours for each sensor over any given 24 hour period. For example, if 3 SIGINT sensors operated for 10 hours each in one day and 5 FMV sensors operated for 12 hours each in the same day, then 30 SIGINT sensor-hours and 60 FMV sensor-hours were recorded for that day. For estimating purposes, it may be assumed that each aerial ISR platform can be in the air for approximately 22 hours a day (refueling time is negligible). However, note that flight and sensor range are limited by maximum flight duration for each system.

A survey was conducted among a group of 200 Army commanders returning from theater at a recent Army-Air Force warfighter staff talk. The question surveyed was: what is the minimum sensor-hours per day capability beyond a range of 1600 miles needed for adequate ISR support? The results are presented in the graph below, one for SIGINT sensor hours and one for FMV:

**Annex 3 – Procurement Sheets and Cost Data**

Procurement Sheets for ERMP, RQ-7 Shadow Mods, and C-12 Cargo Airplane: see attached.

Each EMARSS system consists of a C-12 Cargo Airplane with ISR modifications. These modifications cost FY12 $13.5M per aircraft.

The cost for a set of four RQ-7 Shadow aircraft and all associated equipment (launcher, ground control station) is FY12 $15.5M.

**AMCOS Data—Active Officer, 35D: Military Intelligence-All Source Intelligence (Analysts, Intel officers)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **APPN** | **Category** | **Element** | **O1** | **O2** | **O3** | **O4** | **O5** |
| MPA | Military Compensation | Avg Cost of Base Pay (Military) | $35,601.88 | $48,568.62 | $63,626.45 | $78,301.49 | $90,385.64 |
| MPA | Military Compensation | Avg Cost of Basic Allowance for Housing (in cash) | $15,251.58 | $17,418.32 | $21,494.93 | $27,980.83 | $30,841.66 |
| MPA | Military Compensation | Avg Cost of Basic Allowance for Subsistence | $2,848.67 | $2,848.67 | $2,848.67 | $2,848.67 | $2,848.67 |
| MPA | Officer Acquisition Costs | Avg Cost of Officer Acquisition (Amortized) | $10,555.28 | $10,555.28 | $10,555.28 | $10,555.28 | $10,555.28 |
| MPA | Other Benefits | Avg Cost of Other Benefits | $10,510.98 | $10,510.50 | $10,578.20 | $10,425.50 | $10,234.59 |
| MPA | Permanent Change of Station Costs | Avg Permanent Change of Station-annualized | $1,769.64 | $5,704.53 | $5,832.02 | $7,107.13 | $7,096.01 |
| MPA | Retired Pay Accrual | Avg Cost of Retired Pay Accrual | $12,211.44 | $16,659.04 | $21,823.87 | $26,857.41 | $31,002.28 |
| MPA | Separation Costs | Avg Cost of All Separation Incentives | $99.84 | $346.91 | $1,199.31 | $976.18 | $2,218.80 |
| MPA | Special Pays | Avg Cost of Special Pays | $1,258.78 | $2,103.74 | $2,143.51 | $2,508.73 | $3,192.95 |
| MPA | Training | Avg Cost of Training (Amortized) | $2,265.18 | $2,372.18 | $4,537.22 | $4,206.10 | $4,821.52 |
| OMA | Medical Support Costs | Avg Cost of Medical Support Cost | $9,921.70 | $9,921.70 | $9,921.70 | $9,921.70 | $9,921.70 |
| OMA | Morale, Welfare and Recreation Costs | Avg Cost of Morale, Welfare and Recreation | $262.52 | $262.52 | $262.52 | $262.52 | $262.52 |
| OMA | Officer Acquisition Costs | Avg Cost of Officer Acquisition (Amortized) | $24,734.39 | $24,734.39 | $24,734.39 | $24,734.39 | $24,734.39 |
| OMA | Training | Avg Cost of Training (Amortized) | $9,889.95 | $10,097.05 | $29,936.50 | $14,994.18 | $16,852.20 |
| Other | Training | Avg Cost of Training (Amortized) | $161.54 | $163.54 | $227.53 | $215.44 | $242.16 |
| Total |   |   | $137,343.36 | $162,267.00 | $209,722.11 | $221,895.56 | $245,210.36 |

**AMCOS Data—Active Officer, 15a: Aviation, General (Pilots, Navigators, Maintenance)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **APPN** | **Category** | **Element** | **O1** | **O2** | **O3** |
| MPA | Military Compensation | Avg Cost of Base Pay (Military) | $34,849.69 | $45,831.97 | $62,008.11 |
| MPA | Military Compensation | Avg Cost of Basic Allowance for Housing (in cash) | $15,251.58 | $17,418.32 | $21,494.93 |
| MPA | Military Compensation | Avg Cost of Basic Allowance for Subsistence | $2,848.67 | $2,848.67 | $2,848.67 |
| MPA | Officer Acquisition Costs | Avg Cost of Officer Acquisition (Amortized) | $6,684.75 | $6,684.75 | $6,684.75 |
| MPA | Other Benefits | Avg Cost of Other Benefits | $10,530.84 | $10,527.80 | $10,577.18 |
| MPA | Permanent Change of Station Costs | Avg Permanent Change of Station-annualized | $969.61 | $4,702.95 | $4,758.21 |
| MPA | Retired Pay Accrual | Avg Cost of Retired Pay Accrual | $11,953.44 | $15,720.36 | $21,268.78 |
| MPA | Separation Costs | Avg Cost of All Separation Incentives | $99.84 | $346.91 | $1,199.31 |
| MPA | Special Pays | Avg Cost of Special Pays | $2,853.82 | $5,426.56 | $7,292.23 |
| MPA | Training | Avg Cost of Training (Amortized) | $1,641.68 | $14,631.90 | $2,914.45 |
| OMA | Medical Support Costs | Avg Cost of Medical Support Cost | $9,921.70 | $9,921.70 | $9,921.70 |
| OMA | Morale, Welfare and Recreation Costs | Avg Cost of Morale, Welfare and Recreation | $262.52 | $262.52 | $262.52 |
| OMA | Officer Acquisition Costs | Avg Cost of Officer Acquisition (Amortized) | $15,664.52 | $15,664.52 | $15,664.52 |
| OMA | Training | Avg Cost of Training (Amortized) | $5,003.62 | $76,969.85 | $4,894.47 |
| Other | Training | Avg Cost of Training (Amortized) | $81.91 | $3,636.09 | $98.56 |
| Total |   |   | $118,618.18 | $230,594.88 | $171,888.39 |

**AMCOS Data—Active Officer, 15C: Aviation All-Source Intelligence (UAV operators)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **APPN** | **Category** | **Element** | **O3** | **O4** | **O5** | **O6** |
| MPA | Military Compensation | Avg Cost of Base Pay (Military) | $66,044.06 | $81,144.35 | $95,593.86 | $119,791.44 |
| MPA | Military Compensation | Avg Cost of Basic Allowance for Housing (in cash) | $21,494.93 | $27,980.83 | $30,841.66 | $33,274.97 |
| MPA | Military Compensation | Avg Cost of Basic Allowance for Subsistence | $2,848.67 | $2,848.67 | $2,848.67 | $2,848.67 |
| MPA | Officer Acquisition Costs | Avg Cost of Officer Acquisition (Amortized) | $6,684.75 | $6,684.75 | $6,684.75 | $6,684.75 |
| MPA | Other Benefits | Avg Cost of Other Benefits | $10,577.18 | $10,571.78 | $10,582.51 | $10,582.51 |
| MPA | Permanent Change of Station Costs | Avg Permanent Change of Station-annualized | $4,758.21 | $5,832.91 | $5,763.71 | $5,798.70 |
| MPA | Retired Pay Accrual | Avg Cost of Retired Pay Accrual | $22,653.11 | $27,832.51 | $32,788.69 | $41,088.46 |
| MPA | Separation Costs | Avg Cost of All Separation Incentives | $1,199.31 | $976.18 | $2,218.80 | $3,635.76 |
| MPA | Special Pays | Avg Cost of Special Pays | $7,292.23 | $9,903.29 | $9,399.94 | $6,878.45 |
| MPA | Training | Avg Cost of Training (Amortized) | $484.62 | $482.37 | $1,384.58 | $1,218.82 |
| OMA | Medical Support Costs | Avg Cost of Medical Support Cost | $9,921.70 | $9,921.70 | $9,921.70 | $9,921.70 |
| OMA | Morale, Welfare and Recreation Costs | Avg Cost of Morale, Welfare and Recreation | $262.52 | $262.52 | $262.52 | $262.52 |
| OMA | Officer Acquisition Costs | Avg Cost of Officer Acquisition (Amortized) | $15,664.52 | $15,664.52 | $15,664.52 | $15,664.52 |
| OMA | Training | Avg Cost of Training (Amortized) | $1,633.43 | $1,837.96 | $4,754.81 | $3,717.68 |
| Other | Training | Avg Cost of Training (Amortized) | $7.73 | $11.47 | $40.99 | $35.71 |
| Total |   |   | $171,526.98 | $201,955.80 | $228,751.71 | $261,404.66 |

**Glossary**

CSA Chief of Staff Army

VCSA Vice Chief of Staff of the Army

SA Secretary of the Army

ISR Intelligence, Surveillance and Reconnaissance

LRAS3 Long Range Advanced Scout Surveillance System

UAV Unmanned Aerial Vehicle

UAS Unmanned Aircraft System

OCO Overseas Contingency Operations

TRADOC Training and Doctrine Command

FMV Full Motion Video Imagery

SIGINT Signals Intelligence

EMARSS Enhanced Medium Altitude Reconnaissance and Surveillance System

ERMP Extended-Range Multi-Purpose UAV

1. \* All concepts and proposals in this case study are notional and for educational purposes only. They are not indicative of current or historical Army force design plans. The data should not be used for actual analysis outside of the classroom exercise. [↑](#footnote-ref-1)