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JOINT DOCTRINE AND UAV EMPLOYMENT

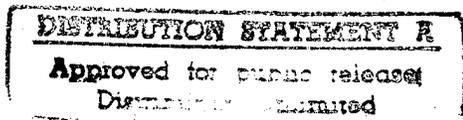
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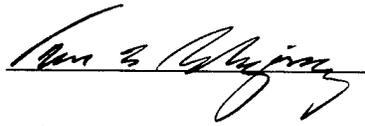
Thomas B. Lukaszewicz

LCDR USN

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The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.



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## ABSTRACT OF JOINT DOCTRINE AND UAV EMPLOYMENT

The increasing number and improved capabilities of UAV's becoming available to JFCs and Service components has outpaced the ability of policy makers to produce current and applicable joint doctrine. Doctrinal publications dealing with UAVs must reflect current and future capabilities categorizing them in line with individual platform missions. Doctrine concerning the issue of JTF control and tasking of Service component UAV assets is unclear and should clearly favor the JTC's requirement to support the JTF as a whole force. Current doctrine on tasking procedures for UAV's is also unclear and must be updated to reflect operational and intelligence requirements based on EEIs, not methods for requesting individual collection platforms. The current doctrinal architecture for prioritizing intelligence requirements under the J-2 through the collection management process is effective and should be adapted to encompass operational requirements as well. Existing doctrine clearly outlines the importance of Service component interests in UAV mission planning and tasking and the doctrinally suggested method of having the J-3 broker competing requirements is sound.

Experiences with UAVs in Bosnia clearly demonstrate doctrinal shortfalls and the need to create new procedures for meeting both current problems and those that will arrive with newer systems. At the heart of the problem is the ability of the JTF to plan and manage requirements for near-real-time data. To accomplish this, I recommend the establishment of a UAV Mission Cell (UMC) within the JTF to support both operational and intelligence requirements and implement near-real-time collection management principles. Such a would have prevented problems that arose during UAV operations over Bosnia.

## JOINT DOCTRINE AND UAV EMPLOYMENT

### Introduction:

**“One of the surest ways of forming good combinations in war should be to order movements only after obtaining perfect information of the enemy’s proceedings. In fact, how can any man say what he should do himself, if he is ignorant of what his adversary is about? As it is unquestionably of the highest importance to gain this information, so it is a thing of the utmost difficulty, not to say impossibility, and this is one of the chief causes of the great difference between the theory and the practice of war”**

**Jomini <sup>1</sup>**

Recent improvements in the capabilities of U.S. reconnaissance/surveillance systems, especially UAV’s, have the potential to dramatically increase a modern battlefield commander’s knowledge of his opponent’s movements and actions. While “perfect information” of the opponent will never be achieved, it is the goal today’s commanders should strive for. Modern technology is advancing the capabilities of collection platforms and commensurably increasing the volume and timeliness of available intelligence. As these capabilities become more widely available to JFC’s, doctrine on how to appropriately manage collection platforms becomes increasingly important. Experiences to date in Bosnia indicate current Joint doctrine concerning UAV’s is inadequate and that JTF structural/organizational systems originally devised for manned collection platforms do not optimize UAV employment.

### Background:

New UAVs are now being developed and fielded to support military forces with improved reconnaissance and surveillance capabilities. UAV’s differ from other airborne

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<sup>1</sup> Jomini, The Art of War, 1892, p. 268.

collection platforms in that they are unmanned and can therefore be utilized in high threat environments without fear of loss of life or capture of personnel. UAV's also tend to have greater endurance than manned platforms permitting extended periods of near-real-time coverage. Taken together, these capabilities will provide JFC's and their service components with unprecedented amounts of near-real-time information in direct support of military operations. This increased information flow must be managed and processed into intelligence to provide the operational commander with a clear understanding of the battlefield. Doctrine exists to provides principles and guidance in managing this process.

#### **UAV Platform History/Development:**

Several UAV's are under development that will directly or indirectly support JFC commanders. UAV development is managed by the Defense Airborne Reconnaissance Office (DARO) formed in 1993 to expedite and unify UAV programs.<sup>2</sup> DARO has organized UAV programs into tiers, Tier I includes short range conventional (non-stealth) UAVs such as the "Maneuver" and CIA sponsored "Gnat 750" UAV's. Tier II includes the conventional low to medium altitude "Predator" UAV (range 930 kilometers) currently in service to support Bosnia operations. The naval version of Predator is the Pioneer UAV.<sup>3</sup> Tier III Minus will be a stealth configured high altitude UAV called "Dark Star" (range 1860 kilometers). Finally, Tier II plus will be a conventional high altitude vehicle with a range of over 5,000 kilometers (platform designation not available).

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<sup>2</sup> Sweetman, Bill. "Send In The Drones" Popular Science, October 1995, pg 67.

<sup>3</sup> LCDR James Boyd, Brief, Joint Employment of Unmanned Vehicles in Littoral Warfare. U.S. Naval War College, Newport R.I: 1996.

### UAV Sensor Capabilities:

UAV's are being developed offering a wide range of sensor packages that will dramatically expand collection capabilities. The 1996 deployment of the Predator UAV to Bosnia will have an electro-optic, infrared imagery, synthetic aperture radar (SAR) and SATCOM communications capability. The Predator UAV also has an endurance of over 24 hours, providing extended RSTA coverage not available on current manned platforms.<sup>4</sup> Other planned UAV platforms will have SIGINT, ELINT and multispectral imagery capabilities and possibly laser designators to highlight targets for attack weapons systems.<sup>5</sup> These increased capabilities in platform endurance, sensors, communications, timeliness and capabilities are unprecedented and will complicate the JFC's efforts to plan, prioritize, task and control UAV missions in his AOR.

### Scope and Currency of Joint UAV Doctrine:

All joint doctrine dealing with UAV employment doctrine was released within the past three years and is current by most standards, if not all encompassing. Joint Pub 3-55 sets forth overall Reconnaissance, Surveillance, and Target Acquisition (RSTA) doctrine of which UAV employment is a component (April, 1993). Joint Pub 3-55.1, the Joint Tactics, techniques and procedures for Unmanned Aerial Vehicles provides specific doctrine to be applied to UAV's (August, 1993). Other relevant doctrine includes Joint Pub 3-52 which discusses the issue of UAV airspace deconfliction (December, 1993), and Joint Pub 2-0 which discusses Joint Doctrine for intelligence support (May, 1995). Another relevant

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<sup>4</sup> U.S. Commander in Chief Atlantic Command. Operational concept Document for the Medium Altitude Endurance (MAE) Unmanned Aerial Vehicle (UAV) "Predator" Norfolk, VA: 1995, p. 2.

<sup>5</sup> U.S. Department of Defense. Joint Publication 3-55 Doctrine for Reconnaissance, Surveillance, and Target Acquisition Support for Joint Operations (RSTA) Washington, 1995, p. II-4.

document is the concept of operations for the Predator UAV deployment produced by USACOM (December 1995). Clearly a substantial body of joint doctrine exists dealing with UAV employment.

**Doctrinal Categories/Descriptions of UAVs:**

As a substantial body of joint UAV doctrine exists, several issues follow concerning its clarity and usefulness. Joint doctrine currently identifies five UAV categories which are not associated with the DARO tier structure discussed earlier<sup>6</sup>. Close range UAV's (CR-UAV) support lower level tactical operations within their area of interest and influence and have a range of approximately 50 kilometers<sup>7</sup>. Short Range UAV's (SR-UAV) support Army divisions, detached battalions and brigade task forces Navy and Air Force combatants and Marine Air-Ground Task Forces (MAGTFS) out to a range of 150 kilometers or more beyond the forward line of own Troops (FLOT) or launch platform. Vertical takeoff and landing UAVs (VTOL-UAV) will support maritime operations. Medium- range UAV (MR-UAV) are to operate at high subsonic speeds and provide near-real time imagery reconnaissance with a range of approximately 650 kilometers. Finally the Endurance UAV (E-UAV) will provide high altitude heavy payload, multi-mission support using a wide variety of sensors and payloads.

The current joint listing of five UAV categories is significant because of the confusion that arises over what systems currently/will exist and what category they fall under. Further, joint UAV categories are vague in their descriptions of specific ranges, speeds and sensors,

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<sup>6</sup> U.S. Department of Defense. Joint Publication 3-55.1 Joint Tactics, Techniques, and Procedures for Unmanned Aerial Vehicles. Washington: 1995, p. I-2.

<sup>7</sup> Joint Pub 3-55, p. II-4.

and do not discuss stealth capabilities/requirements. These definitions become important when discussing MAGTF operated UAV's for instance. Under the Omnibus agreement of 1986 "During joint operations, the MAGTF air assets will normally be in support of MAGTF missions. The MAGTF commander will make sorties available to the joint force commander, for ... long range reconnaissance".<sup>8</sup> Neither joint or Marine corps doctrine precisely defines long range reconnaissance or whether SR-UAV's deployed with Marine units are considered non-organic assets. Clearer joint doctrinal definitions would clarify such issues and reduce inter-JTF organizational conflict.

#### **Joint Doctrine on the Control of UAV Assets:**

Current joint doctrine does not clarify JTF authority to assume operational control (OPCON) and tactical control (TACON) of UAV assets. While the JFC is clearly given the authority to assign missions to all his forces,<sup>9</sup> joint doctrine suggests he should exercise OPCON of RSTA/UAV assets only through his service component commanders.<sup>10</sup> This doctrine was not implemented in Bosnia for the Gnat 750 deployment in 1994, or the Predator UAV deployment in 1995. In the case of Bosnia, OPCON and TACON have been assigned directly to the JFC.<sup>11</sup> In the future, Predator UAV OPCON may be delegated to the JTF air component commander or JFACC given the Joint Requirements Oversight

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<sup>8</sup> Murrow, Richard C. Marine TACAIR and the 1986 OMNIBUS Agreement, U.S. Air Force Air University, Maxwell AFB, AL: 1990 p 2.

<sup>9</sup> Joint Pub 3-55.1 p. II-1. "The Joint force Commander (JFC) has full authority to assign missions to and task component UAVs to conduct operations in support of the overall joint force."

<sup>10</sup> Joint pub 3-55, p. III-3, "JFCs exercise operational control (OPCON) over assigned or attached RSTA forces through the commanders of subordinate organizations; normally, this authority is exercised through Service component commanders." and Joint Pub 3-55.1, pg II-4, "All Service component UAV assets remain under the operational control of the Service component."

<sup>11</sup> USACOM Predator MAE UAV CONOPS, pg. 5 "When deployed, OPCOM and TACON of equipment, personnel, and MAE UAVs will be assigned to the JFC."

Council (JROC) recommendation to the Secretary of Defense that the Air Force be assigned the single Service lead for planning and executing Predator deployments.<sup>12</sup> Proposed Air Force doctrine already supports such a move, suggesting that the JFC will normally delegate OPCON of air reconnaissance and surveillance capabilities made available to him to the JFACC to support the joint force as a whole.<sup>13</sup> To be useful, joint doctrine must clarify the JFC's authority to assume OPCON of Service component UAV assets in addition to assigning/allocating UAV assets and missions.

Current joint doctrine also discourages multi-Service component tasking of UAV assets. The stated primary mission of UAVs is to support their respective Service component commands as a tactical RSTA system.<sup>14</sup> Thus doctrine does not adequately address UAV assets the JFC has OPCON over, and discourages tasking of UAV assets to support multiple JTF requirements **“UAV units are only designed to support a single command or component. When UAV units are tasked to support more than one command or Service component simultaneously, degradation of effectiveness can result”**.<sup>15</sup> While a strong argument can be made that UAV assets organic to Service components should be dedicated to support that component unless the JFC determines a superseding requirement, doctrine should not discourage the efficient utilization of UAV assets that can accrue from assigning missions that maximize UAV collection capability for the joint force as a whole.

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<sup>12</sup> Owens, William A. Memorandum, Assignment of Service Lead for Operation of the Predator UAV. Washington: 1995.

<sup>13</sup> U.S. Department of the Air Force. Air Force Doctrine Document (AFFD) 33 (Draft) Washington: 1995. p. 18.

<sup>14</sup> Joint Pub 3-55.1, p. II-1.

<sup>15</sup> Joint Pub 3-55.1, p. II-3.

### **The Doctrinal Mission of UAVs:**

Current joint doctrine is unclear in stating the mission of UAVs. This is important because missions drive subsequent doctrine on platform control, tasking and mission planning. Joint doctrine defines the mission of UAVs as follows, **“The primary mission of UAV units is to support their respective Service component commands as a tactical RSTA system providing the commander a capability to gather near-real-time data on opposing force position.”**<sup>16</sup> Intelligence is not listed as a UAV mission because although intelligence requirements and collection management procedures are the basis for planning most UAV missions, UAVs do not collect intelligence. As joint doctrine states, **“RSTA operations do not always collect intelligence; rather, they collect data that becomes intelligence after it is processed, evaluated, and integrated with other pieces of information and data (fused)”**.<sup>17</sup> Joint doctrine confuses the issue by stating in other places, **“The UAV has both an intelligence and operational application”**,<sup>18</sup> “application” is not defined. Adding further confusion, the draft TTP for targeting includes intelligence as a component of RSTA.<sup>19</sup> This imprecision in definitions can lead to confusion over who within a JTF should control, task and plan missions for UAV assets.

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<sup>16</sup> Joint Pub 3-55.1, p. II-1.

<sup>17</sup> Joint Pub 3-55, p. II-1.

<sup>18</sup> Joint Pub 3-55.1 p. II-5.

<sup>19</sup> U.S. Air Land Sea Application Center. Targeting Procedures for Coordinating, Deconflicting and Synchronizing Attacks Against Time Critical targets, Draft Langley AFB, VA: 1995. pg II-8.

## **The Doctrinal Role of Intelligence in RSTA and UAV Employment:**

The key to understanding the role of intelligence in UAV employment is the Intelligence cycle which drives most UAV tasking. As stated in Joint doctrine,

**“ The intelligence cycle is the process by which information is obtained, converted into intelligence, and made available to the requester . . . Understanding the intelligence cycle enables the JFC to use RSTA assets more effectively. RSTA operations are linked to all five steps of the cycle and are particularly important to the planning and collection steps”.**<sup>20</sup>

Most UAV missions are based on intelligence requirements, but not all. All UAV missions do have Essential Elements of Information (EEI) that define the mission objective. As an example, a UAV could be tasked with a meteorological or fire support mission in which the objective was to obtain information in support of operations in no way related to an intelligence collection requirement. Intelligence is, however involved in all UAV mission planning and collection because of the requirement for deconfliction, threat warning, and risk-gain analysis. Simply put, intelligence requirements are a reflection of operational planning and support requirements, and form the basis for tasking most UAV collection operations.

### **Joint Doctrine for Prioritizing UAV missions:**

Another issue not adequately addressed in joint doctrine is a formal mechanism for reconciling competing requests for UAV support within a JTF. It is left up to the JFC to determine procedures for prioritizing J-3 and Service component operational requirements as well as intelligence requirements that support operations **“The UAV has both Intelligence and operational application. Joint force procedures for resolving conflicting joint**

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<sup>20</sup> Joint Pub 5-55, p. III-1.

**UAV support requests should be established”**.<sup>21</sup> Doctrine also suggests the responsibility for deconflicting UAV tasking should reside with the J3 **“Joint force procedures must provide for resolution of conflicts between Service components and joint force requirements. Normally, the J-3 should prioritize requests and resolve any conflicts in tasking joint force UAV assets”**.<sup>22</sup> While joint procedures for prioritizing intelligence requirements in consonance with JFC priorities is well established through the collection management process under the J-2, no procedural framework exists to deconflict operational UAV requirements between the JTF and Service components.<sup>23</sup> RSTA doctrine does define the role of the Joint Reconnaissance Center (JRC) under the J-3 as the agency charged with monitoring RSTA assets and establishing priorities among them to support requirements, but prioritization is within the context of determining optimal asset employment rather than prioritization and deconfliction of requirements themselves. This lack of an operational prioritization mechanism can result in conflicts over collection resources and UAV tasking which does not optimize collection assets.

**Joint Procedures for Requesting UAV Support:**

In the area of procedures for requesting UAV support, joint doctrine emphasizes using “normal air request procedures” in practice however, there are other means of requesting support. This has been a recurring problem, during Operation Desert Storm many commanders found their personnel were unfamiliar with the procedures and forms for

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<sup>21</sup> Joint Pub 3-55.1, p. II-5.

<sup>22</sup> Joint Pub 3-55, p. II-5.

<sup>23</sup> Joint Pub 3-55, III-2, “The J-2 establishes collection requirements to meet the JFC’s operational objectives, while the J-3 determines how to employ assigned RSTA systems available to satisfy the collection requirements”

requesting reconnaissance.<sup>24</sup> The doctrinally suggested method of requesting UAV support for direct operational missions is through formatted AIRREQSUP or AIRREQRECON messages via the J-3.<sup>25</sup> Another method, not mentioned in RSTA or UAV doctrinal publications is through submission of Requests For Information (RFI) via the chain of command to the J-2 who, if required, will task UAV assets. Both the formatted messages and RFIs contain EEIs. The collection manager under the intelligence officer at each level in the chain of command will review RFIs and determine if their EEIs have already been fulfilled, or can be with organic collection assets. If the requirement is beyond the organic collection capabilities of the unit, the RFI continues up the chain of command ultimately reaching the J-2 for tasking. This procedure emphasizes satisfying EEIs at the lowest possible level in the JTF structure, conserving scarce collection assets and reducing duplicative collection. To be useful, joint doctrine must clearly identify how a commander requests collection to fulfill a specific EEI, not how to request specific collection platform he believes can fulfill them.

#### **UAV Operations in Bosnia:**

Operations in Bosnia in 1994 highlight the problems caused by joint doctrine not addressing UAV support outside the normal service architecture. In 1994 the CIA sponsored Gnat 750 UAV was deployed to Albania in support of JTF operations. As originally planned, the UAV video downlink was to be sent directly to National decision makers in Washington DC, bypassing the JFC. The JFC determined that the purpose of the

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<sup>24</sup> Lichtman, Major Bruce A. Requesting Intelligence on the Tactical Battlefield. Maxwell AFB, AL: 1994, p. 9.

<sup>25</sup> Joint Pub 3-55.1, pp. II-4-5.

UAV unit was to directly support his operations and should provide video data directly to his headquarters in addition to Washington. The J-2 was given responsibility for both controlling and tasking Predator in a diversion from joint doctrine. The JFACC commander argued that as he was responsible for the air campaign and should have both control over the UAV and a separate video downlink. This request was not approved by the JFC. The end result was that the J-2 developed UAV tasking based on prioritized EEI and JFC guidance with input from the J-3. UAV support to operations was subsequently hampered by arguments over JFC priorities and platform limitations.<sup>26</sup> Doctrine outlining who should control UAV assets and how tasking should be deconflicted would have improved UAV integration and support.

In 1995, the first Predator UAV deployment took place. OPCON and TACON of the Predator were assigned to the JFC with TACON subsequently delegated to the UAV detachment commander. In most respects, the J-2 actually ran the UAV program with input from J-3. J-2 responsibilities included collection management, prioritization of collection requests, defining reporting requirements and managing exploitation, production, and dissemination of "intelligence data".<sup>27</sup> The UAV detachment submitted flight plans to the JFACC based upon the J-2 collection plan for deconfliction with other airspace users and inclusion in the ATO. The role of the J-3 in UAV mission planning and operations was limited.

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<sup>26</sup> Based on information provided during an interview with Commander H. Loughery, N2 Surface Warfare Officer School (SWOS) January 1996.

<sup>27</sup> USACOM CONOPS for Predator UAV Deployment, Sep 1994. p. 6.

Request procedures for UAV support were based upon RFI's submitted to the J-2 and there is no mention in the USACOM conops of formatted tasking messages. UAV mission recommendations and priority sorties were determined at a Daily Aerial Reconnaissance Syndicate (DARS) meeting which was led by the J-2 collection manager and included JTF staff and Service component representatives. This was the level at which Service components could directly support their individual collection requirements. Ad hoc tasking was developed at the AOC in response to emerging time-sensitive tasking. As the Predator UAV has an extended mission duration, ad hoc tasking while the UAV was in flight did not significantly degrade pre-planned collection.

The 1995 Predator UAV deployment highlighted the need for doctrine that clarifies control and tasking procedures. Towards the end of the 1995 deployment, the J-3 assumed greater control over the Predator UAV as a RSTA platform due to real or perceived shortfalls in the ability of the J-2 organization to disseminate imagery to operational forces. To implement greater J-3 influence over UAV employment, a "Red Cell" was created with both intelligence and operational personnel to facilitate mission planning and ensure the dissemination of imagery.<sup>28</sup>

**Recommendations:**

Several changes in joint doctrine would improve its utility to the JFC. Joint doctrine must be updated to reflect current/future UAV systems and clearly define their categories. The authority of the JFC to assume OPCON of Service component RSTA/UAV assets should also be clarified. All joint doctrine on RSTA, UAVs and Intelligence should be reviewed

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<sup>28</sup> Information provided during phone conversation with Commander G. Koumbis USACOM J22, January 1996.

and the distinction between RSTA and intelligence missions clarified. Joint doctrine concerning UAVs and RSTA should clearly identify the intelligence RFI process as the preferred means of requesting collection to fulfill EEIs requiring intelligence and formatted messages (AIRREQSUP and AIRREQRECON) for EEI supporting purely operational UAV requirements.

To remedy the issue of deconflicting competing requirements for UAV support between JTF Service components, JTF staff and the JTF intelligence organization, I propose the following procedural and organizational structure be established in doctrine:

A UAV Mission Cell (UMC) should be established to manage all aspects of UAV mission planning, operations and information dissemination. This organization would be similar to the "Red Cell" developed to improve UAV operations over Bosnia. The UMC will not report directly to either the J-2 or J-3, but will be composed of both operations and intelligence personnel. The UMC will have dedicated collection managers responsible for implementing the portion of the collection plan developed by the J-2 and validated at the DARS meeting, at which the UMC will be represented. Further, UMC collection managers will be responsible for near-real-time collection management, responding to immediate tasking approved by the J-3 or his designated representative. UMC collection managers will keep both the J-2 and J-3 informed of the impact immediate taskings have on previously planned collection so they can make informed judgments in line with platform optimization and JFC priorities. UMC operations planners will keep the JRC informed of the status of UAV platforms, plan UAV missions with input from UMC collection managers and meet all JFACC requirements for airspace deconfliction. The UMC being familiar with UAV

communications and system capabilities will ensure information is disseminated to consumers within requested timelines. The combination of intelligence and operational personnel working together with clear responsibilities should improve UAV mission planning, responsiveness and support to operations.

Doctrine should be modified allow delegation of the J-2 responsibility for consolidating and prioritizing both intelligence and operational requests for RSTA in accordance with the priorities established by the JFC. The collection management branch of the J-2 will fulfill this responsibility and develop a collection plan for all reconnaissance assets including UAVs. The collection manager will present the collection plan at the DARS meeting and modify it with any accepted changes.

The collection management branch of the J-2 will conduct extensive liaison with the UMC, JRC, J-2 and J-3 in developing the collection plan and tracking the fulfillment of collection objectives. The basic role and responsibilities of the J-3 would not change significantly and he would still be able to resolve competing requirements of Service components after a collection plan has been formulated and presented to the DAR. These recommendations would have precluded the conflicts that arose between the J-2 and J-3 over UAV assets and improved the ability of the JTF to dynamically retask UAVs within the framework of near-real-time collection management.

**Conclusion:**

The increasing number and improved capabilities of UAV's becoming available to JFCs and Service components has outpaced the ability of policy makers to produce current and applicable joint doctrine. Doctrinal publications dealing with UAVs must reflect current and

future capabilities categorizing them in line with individual platform missions. The issue of JTF control and tasking of Service component UAV assets is unclear and should be clearly stated in favor of the JTC's requirement to support the JTF as a whole. Current doctrine on tasking procedures for UAV's is unclear and must be updated to reflect operational and intelligence requirements based on EEIs, not methods for requesting individual collection platforms. The current doctrinal architecture for prioritizing intelligence requirements through the collection management process is effective and should be adapted to encompass operational requirements as well. Existing doctrine clearly outlines the importance of Service component interests in UAV mission planning and tasking and the doctrinally suggested method of having the J-3 broker competing requirements is sound.

Experiences with UAVs in Bosnia has clearly demonstrated the doctrinal shortfalls described above and the need to create new procedures for meeting both current problems and those that will arrive with newer systems. At the heart of the problem is the ability of the JTF to plan and manage requirements for near-real time data. To accomplish this, I recommend the establishment of a UMC within the JTF to support both operational and intelligence requirements and implement near-real-time collection management principles. If such a structure had been in place for UAV operations over Bosnia, many problems that arose over UAV control and utilization would have been avoided.

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