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COORDINATING OPERATIONAL FIRES IN A HIGH-RISK BATTLE SPACE: A New Concept for the Joint Commander

By

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations.

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

Current joint doctrine is adequate for coordinating fires up to the corps/MEF level. Operation Allied Force, the 78-day major air operation designed to stop Serb aggression in Kosovo from March to June 1999, has clearly shown the need for a common method to coordinate operational fires and ground maneuver, while simultaneously minimizing collateral damage. The Joint Force Commander has a requirement for a permanent joint staff fires element to plan, coordinate and execute fires to support the JFC's overall objectives. My thesis emphasizes that the solution is not a technological one, but one capitalizing on service experts to form a joint fires cell. In my opinion, the joint fires problem stems from a combination of factors; lack of joint integration at the JFC level, and no one with their finger on the pulse of the total joint fires picture. My thesis proposes a way that the joint staff could be integrated to more effectively address the joint fires function of the JFC.

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The operational depth of the battlefield is expanding. Sensors and weapon system advances have expanded the battle space to the point that their capability may have implications beyond the Joint Force Commander's (JFC) ability to manage them. Traditional command and control measures may not be sufficient to integrate joint fires seamlessly--from one component to another--especially when collateral damage considerations are important.

Our national policy has been committed to deterring aggression, and maintaining the credibility of the United States to promote democracy. As precision fires--weapons capable of guiding to a specific aim point--proliferate on the battlefield, policy makers and coalition partners expect collateral damage and civilian casualties to be minimized, even when an adversary deliberately exposes non-combatants to the effects of fires. When our 'targeting process' is aimed at the enemy's strategic center of gravity, such as his political power base and national infrastructure in support of limited objectives, and that has a high potential for collateral damage, we should not be surprised that the product of the JFC's targeting process, i.e., the target list, will be reviewed closely by our policy makers and coalition partners. Nor should we be surprised that this review for 'target legitimacy' will have a negative impact on our speed of targeting response.

Joint doctrine neglects these realities, and when applied to coordinate fire and ground maneuver it may not provide the speed of response required. The problem with our current doctrine is that it does not adequately address collateral damage, and orchestrating service unique fires in the joint operating area.

PROBLEM DEFINED

Minimizing collateral damage. Complicating fires at all levels of war, will be the requirement to minimize collateral damage in addition to fratricide. The JFC commander, regardless of the theater his forces will be committed to, must plan for minimizing collateral damage. At the strategic level of war, JFC's must plan for and expect to submit target lists for review by national and coalition leadership. [1] At the operational and tactical level's, JFC's will have to prioritize and coordinate the lengthening reach of fires with maneuver, while being mindful of their collateral effects.

Complicating the JFC's fires plan is the certainty that our adversary will strive to leverage the public's aversion to collateral damage against the JFC. As the "CNN effect"--live images of military operations which have a tremendous effect on public opinion--continues to broadcast more of the intended and unintended effects of precision fires to the world's viewers, the more our armed forces may have to focus on only the "politically legitimate" targets of our adversary's power base. "Legitimizing" the targets will require more oversight by the coalition's leadership, not less. This will equate to more target list oversight from command legal teams and coalition members, and will slow our targeting process as it did in Allied Force. By moving high value targets to his population centers, an adversary can complicate our targeting decision cycle to the point it may not respond quickly enough to counter his maneuvering. Throughout the battlespace the JFC will have to contend with the growing political requirement to separate enemy forces from civilians. Our current fires process is not designed to operate in this environment and as a result, may not be responsive enough to meet the needs of minimizing collateral damage and supporting maneuver.

Service unique fire capabilities. Each component brings unique fire capabilities to a joint operating area (JOA). The Navy has the capability to employ the Tomahawk Land Attack Missile (TLAM) and naval gunfire, the Army has Army Tactical Missile System (ATACMS) and the Air Force exclusively employs the Conventional Air Launch Cruise Missile (CALCM). Each of the components also has complementary striking capabilities such as aviation and its corresponding precision weapons. There are also fire capabilities that reside in two of the service components such as artillery (Army and Marine Corps) and special operations forces (SOF), Army, Air Force and Navy. Common to all component fires is the requirement for a command and control (C2) system that integrates them with reconnaissance, surveillance, and target acquisition (RSTA) assets (see appendix) to help accomplish the JFC's theater campaign objectives.

RSTA assets available to the joint force commander are service unique-platforms, but have redundant capabilities. These are: SOF (they can be both a sensor or fires); unmanned aerial vehicles (UAVs) such as Air Force's Predator, Navy/Marine Corps' Pioneer and the Army's Hunter; manned aerial sensors such the Air Force's U2, joint surveillance and reconnaissance system (JSTARS), Rivet Joint, Navy's EP-3; tactical reconnaissance systems on the Marine Corps' FA-18 and the Navy's F-14; and finally, the forward air controller, airborne (FACA), trained pilots that all four services employ. Appendix A breaks out each asset by platform and lists its capability.

As can seen be from the joint fires available to the JFC, a management architecture is required wherein the fires can essentially be 'plugged in' to his C2 structure so that they can be orchestrated throughout the battlespace without disruption to the service component's requirements. But, when the JFC is competing against the

individual service component for the same fire asset, friction can develop, especially when it's perceived the fires are not being used efficiently. To illustrate this potential problem, integrating air power under a joint force air component commander (JFACC) during Desert Storm--the campaign to evict Iraqi forces from Kuwait--offers some relevant lessons. MajGen Royal Moore, commander of the 3rd Marine Aircraft Wing for I Marine Expeditionary Force, was concerned that the newly established JFACC would not be responsive enough for Marine aviation to support the Marines when the ground war started. He was able to "game the air task order process" so that the "commander could do whatever he wanted to." [2] Essentially, he did not trust the JFACC to employ his limited air assets efficiently, and therefore 'sand bagged' close air support (CAS) sorties that could be flexed into armed reconnaissance if they were not needed for CAS. This workaround enabled Marine TACAIR to effectively support the Marines during the offensive, but from the JFACC's perspective, was not an efficient method of employing tactical aircraft to accomplish the JFC's mission. Essentially, MajGen Moore was able to employ Marine TACAIR as he desired within the JFACC's overall air campaign. Fortunately, the overwhelming superiority of available aircraft enabled MajGen Moore to develop an effective work-around to a ponderous centralized process of allocating and employing tactical aircraft without significantly affecting the outcome of the air operation. One could imagine the potential problems the JFC would have in shaping the battle space if service components parochially applied similar practices in the employment of ATACMS, TLAM and sensors.

In order for joint fires to be effective, they must be coordinated through a C2 system that has the confidence of not only the JFC, but the subordinate commander as

well. Gaming the system as was done by MajGen Moore during Desert Storm, was a direct result of the perception that, the system at the time was not flexible enough to meet needs of the component commander and the JFC.

Joint Doctrine and Fire Support Coordination Measures. Joint Pub 3-09 defines fires as "...the effects of lethal or nonlethal weapons."[3] These fires can be a combination of air, land, naval, special operations forces, and space assets. Joint fires are the product of coordinating the fires of two or more components to support a common objective. An example of joint fires would be the use of Navy, Marine and Air Force aircraft to achieve suppression of enemy air defenses or to achieve air superiority during the opening phases of a campaign.

A JFC use various geographic boundaries to facilitate coordination and control of air and ground missions within his area of responsibility (see figure-1). Areas of operations (AOs) are designated by JFCs for land and naval forces to operate in. Within the confines of an AO, land or ground commanders are responsible for coordinating the supporting fires and maneuver of his units. Boundaries are continually updated as maneuver and operational needs dictate. Within the joint operating area (JOA), the JFC is responsible for coordinating fires and maneuver (fig. 1).

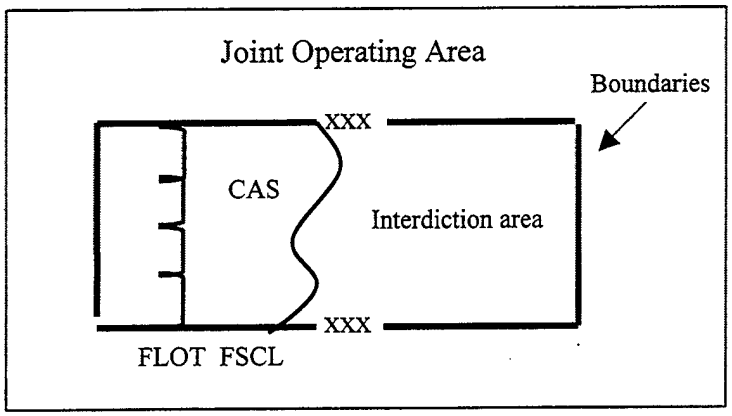

Figure 1

Land and amphibious commanders enable smooth C2 through the use of fire support coordinating measures (FSCMs). FSCMs can be permissive, in that no coordination is required to attack targets, or restrictive, wherein units attacking targets within a restrictive FSCM must coordinate the attack with the owning unit. FSCMs "...enhance the expeditious attack of targets; protect forces, populations, critical infrastructure, and sites of religious or cultural significance; and set the stage for future operations." [4] The fire support coordination line (FSCL) was designed to minimize fratricide (Figure 1). As a permissive measure it is used to facilitate "...the expeditious attack of targets of opportunity beyond the coordinating measure."[5] As a restrictive measure, all fires short of an FSCL (between the forward line of troops (FLOT) and FSCL) "...are controlled by the appropriate land or amphibious force commander. The FSCL applies to all fires of air, land, and sea-based weapon systems using any type of ammunition against surface targets. Forces attacking targets beyond an FSCL must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide, both in the air and on the ground."[6]

A traditional argument between airmen and the ground forces they support is where to place FSCL to best accomplish commander's intent. An airman will argue to keep it close to the FLOT, (fig. 1), so pilots can interdict a larger operational depth of the battlefield, while minimizing the chances of fratricide against ground maneuver forces. In other words, if an airman sees a target beyond the FSCL, he can be reasonably sure it is not a friendly target. Ground commanders would like to place the FSCL generally as deep as his supporting arms maximum range (which in the case of ATACMS can be as far as 300 kilometers), to allow his maneuver forces greater autonomy to control both surface and air delivered fires that will support the maneuver of his ground forces.

Targeting Process as Written in Joint Doctrine

The JFC is ultimately responsible for the development of targeting guidance and objectives for his battlespace. Typically this function is delegated to the JFACC. The targeting process develops attacks on two target categories, planned targets, and immediate, time-sensitive targets (see fig.-2). Planned targets can be further sub-divided into scheduled and on-call targets. Immediate targets can be sub-divided into unplanned targets with known location and unanticipated targets with unknown location.[7] Planned targets with fixed locations (known target coordinate) can be "scheduled" or "on call" (the target is planned for, but the order to launch has not been given) and generally posing the least risk of collateral damage (depending on their location), and are the easiest to schedule.[8] Immediate targets consist mostly of mobile targets that a JFC will want, to attack but cannot until they are detected. Delegating the targeting process to a component like the JFACC makes sense, since air-delivered fires form the preponderance of fires available to the JFC. Real time battle management of the fires is accomplished

through the JFACC and, as I have described above, can be difficult to manage in a high-risk collateral damage JOA.

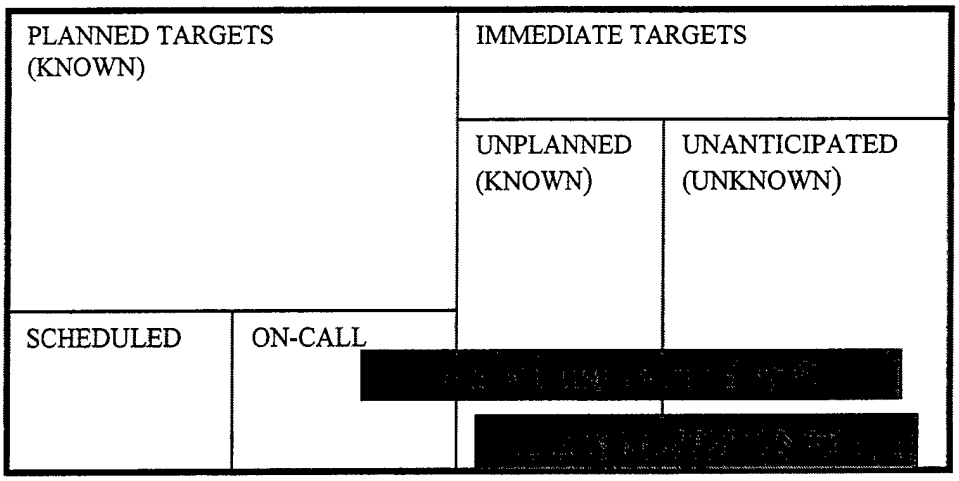

Figure-2

The first step in the JFC's targeting plan should be the manning of the joint target coordination board (JTCB), composed of a members from all service components, to be the forum for "...discussion of component targeting requirements and integration of joint fires."[9] The JFACC then develops the air apportionment recommendations, a joint integrated prioritized target list (JIPTL), master air attack plan (MAAP), and air task order (ATO), which coordinates direct attack and re-attack with assets allocated by the JFC. Note that the above discussion on the targeting process did not cover the requirement for submitting target lists to the NCA or coalition leadership for review or having to visually confirm targets are legitimate prior to engaging them. Additionally, joint targeting doctrine does not adequately address the requirement for coordinating cross-service fire support.

The question remains, how can the JFC best develop a targeting plan that minimizes collateral damage, reduces duplication of effort, and synchronizes the fires with ground maneuvers? Currently, there is no way to deconflict real time changes of surface-to-surface fires with aviation beyond the FSCL above the corps/MEF level which will limit the advantages of long range fires. Will our current joint FSCMs have the fidelity to maximize joint fires in a high-risk battlespace?[10] Will the FSCL be relevant in a battlespace complicated by a high potential for collateral damage? The JFC will have to plan for limiting the potential effects of collateral damage, regardless whether if he is conducting a MOOTW or major regional conflict.

ANALYSIS

> ...he [Milosevic] chose to fight chiefly through asymmetric means: terror tactics and repression directed against Kosovar civilians; attempts to exploit the premium the alliance placed on minimizing civilian casualties and collateral damage.[11]

The coalition's aversion to collateral damage, and Milosovic's willingness to expose his population to it, greatly complicated the JFACC's conduct of the air operation. The coalition became increasingly reliant upon sensors to detect possible mobile targets, then assigning an airborne forward air controller (FACA) to verify it, and then rapidly targeting the threat with precision weapons that were already airborne in theater, to minimize the effects of collateral damage.[12] Milosevic's counter tactics led to an unprecedented use of manned and unmanned sensors to counter his asymmetric means.

RSTA assets were employed more in Allied Force than in any conflict to date.[13] Planning and sequencing RSTA assets into the JFC's targeting plan proved to be challenging in a number of ways, but the most important of which was that possible targets detected by joint surveillance target acquisition radar system (JSTARS) and

UAV's had to be confirmed by a FACA. Matching available fires to a previously un-located mobile target, once it is detected, that was either unplanned or unanticipated, requires careful and deliberate use of the above-mentioned RSTA assets.[14] Perhaps the most striking element of the targeting process was that, in the case of immediate targets, an FACA was the final arbiter in determining if the immediate target to be attacked was in fact a legitimate Serbian target. This was in direct response to the requirement to manage collateral damage.

LtGen Short, the JFACC for Allied Force, explained that mobile targets detected by RSTA assets such as Predator and JSTARS had to be verified by a FACA to minimize the potential for collateral damage.[15] There was no shortage of RSTA-derived 'possible' targets, but there was a shortage of FACAs covering the Kosovo theater of operations. In his opinion, out of all the targets submitted for attack, his most critical decision became "which ones do I send the FACA, the guy with the binoculars, to?" [16] In most cases, the FACA was the critical link in the chain, and in some cases--due to a shortage of FACA qualified aircrew--became the weak link in the chain. The targets FACAs were verifying were clearly interdiction type targets and if collateral damage was not a concern, any tactical aircraft in the theater could have attacked them. But, since the highly publicized attack on a tractor convoy thought to be a Serbian army convoy, FACAs were the only aircrew authorized to, and was now a requirement to, verify targets as hostile to minimize possible collateral damage. How will the JFC balance the new operational requirements for a man-in-the-loop--in this case a FACA--to legitimatize RSTA derived targets with those of the tactical requirements, i.e., support ground forces?

Historically, the level of coordination described above, between a sensor and shooter was reserved for close air support missions (CAS), a mission wherein aircraft are used to attack enemy forces in close proximity to friendly forces. Ground or airborne FAC's (sensor) marked the target for the CAS aircraft (shooter), and fires are coordinated to suppress and or support the CAS mission. As explained earlier, air interdiction occurs beyond the FSCL and normally does not require the level of coordination used during Allied Force. When conducting interdiction missions, the attack pilots conducted their missions beyond the FSCL and did not require close coordination with ground forces. If there is one thing that potential adversaries have learned from our experience in the Balkans and Iraq is that collateral damage (or a fear of it) can weaken any fires superiority a coalition may enjoy.[17]

How will the JFACC balance these new interdiction requirements with the normal requirements--such as CAS and interdiction--to support the maneuver commander? Legitimizing targets has created a requirement for someone (in this case, a FACA) to be integrated into interdiction missions, and due to their limited numbers will be in direct conflict with the FACA's tactical requirements to integrate with maneuver forces. On both sides of the FSCL there will be a growing need to separate enemy forces from civilians that will change the way we interdict the enemy. The central question remains, how can joint fires be coordinated to meet the requirements of limiting collateral damage, and yet be responsive enough to be effective against mobile targets?

During Allied Force, FACAs were given target engagement authority based on their 'on-the-spot estimate' of the validity of the target. This on the spot assessment was achieved through the lens of the FLIR, or by looking at the target through binoculars.

FACAs visually confirmed the target as a Serbian military target and then coordinated the attack. There were other instances wherein the FACAs were directed to a target location by LtGen Short himself to confirm UAV video being linked to the combined air operations center.[18] The major limitation in targeting became the man in the loop interpreting the target and target environment in real time, in this case, the FACA.

FSCLs were not employed during Operation Allied Force, and yet mobile targets within the border of the Former Republic of Yugoslavia (FRY) were treated as though these were between the FSCL and FLOT. Due to concerns with collateral damage, pilots were not allowed to exercise their own judgment when interdicting Serbian 3rd Army forces without the help of an airborne FAC.

If friendly ground forces were put into the equation, and a FSCL was drawn, traditional interdiction beyond the FSCL would still have to be coordinated, as explained above, to minimize the potential for collateral damage thus reducing its effect on enemy forces. This procedure will increase the requirement for FACAs to support interdiction in addition to CAS. The unintended consequence will increase friction between the ground component and the air component as they strive to synchronize fires and maneuver.

Component commanders must have the flexibility to focus on executing their organic fires plan, but remain within JFC's mission intent. If they see requirements to engage targets outside of their boundary, there is no real-time method for achieving cross boundary joint fires coordination that deconflicts and masses aviation and surface-to-surface fires. The problem remains how does the JAOC efficiently assign fires assets to a request if he only controls air delivered fires, and has to prioritize that request with other commanders? Complicated by concerns for collateral, the current practice of employing

fires within well-defined AO's may cause the squandering of RSTA and fire assets, which will be detrimental to achieving JFC objectives.

SOLUTION: ESTABLISH A JOINT FORCE FIRES COORDINATOR (JFFC)

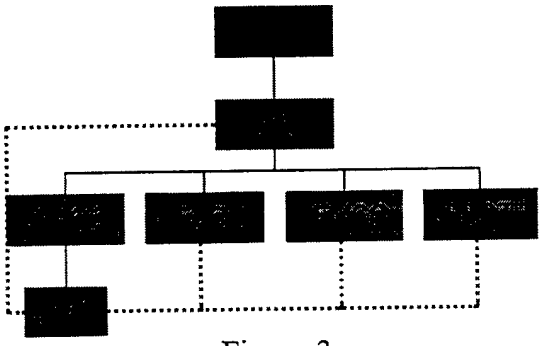

Figure-3

The JFC is ultimately responsible for interdiction priorities, targeting guidance and the apportionment of assets based upon input from component commanders. JFCs normally assign this function to the JFACC to achieve unity of command in the planning and execution of a JOA-wide air interdiction operation, since all service components possess aviation assets.[19] Applying this same logic to coordinating the surface-to-surface fires of the components with that of the aviation to achieve a synchronized joint fires plan makes sense. Establishing a JFFC cell, designated by the JFC to work for the JFACC, in an aircraft similar to an airborne battlefield command and control (ABCCC) would possibly achieve the following advantages.[20]

Shortened response times. Traditionally, the JFACC, through his JAOC staff coordinates air delivered fires on time-sensitive targets and those across AO boundaries.[21] As described above, the combination of high-risk of collateral damage and maneuver

forces can make this coordination very difficult, and require numerous RSTA or FACA assets to be devoted to this effort. As surface-to-surface weapons systems are integrated into the fires problem, engaging mobile targets across component boundaries may exceed the capabilities of the Corps fire support element or the JFACC. The JFFC and his joint staff would be empowered to reduce reaction time, and enable the sensor to shooter match to be made with air assets already airborne or standing ground alert, or substitute surface-to-surface assets if deemed necessary.

Responsibilities. The JFFC's responsibility would be the real-time exploitation of joint fires that have operational reach between the FSCL and the boundaries of the JOA. The JFFC would be primarily concerned with the coordination of the effects of fires to achieve JFC's objectives, while simultaneously remaining in position to synchronize those fires with ground component maneuver. The JFFC would be 'one stop shopping' for all joint fires requests. The fires he would coordinate are air interdiction, TLAM/CALCM, ATACMS and if within range of the target, naval gunfire. The JFFC would require an extensive C2 capability that can have access to RSTA assets and the fires platforms. He would also have to interface between the ground components senior fire support agencies (Corps fire support element and MEF's force fires coordinator) to coordinate the effects of fires beyond their FSCLs. With such a wide area of responsibility, requiring connectivity to all the RSTA assets in the theater, component fire support coordination centers, it would be logical for the JFFC to work for the JFACC. Additionally, the preponderance of fires the JFFC would control are air delivered, and reside with the JFACC, or have to be deconflicted with those that are air delivered. Thus,

the JFFC would require ready access to C2 links controlling the assets flying through the airspace.

Putting the JFFC in an aircraft like ABCCC has several advantages. First, it immerses the JFFC and his team in the "fires execution system" as the battle or campaign unfolds, and keeps them in constant contact with the ground component senior fire support agencies and the JAOC. As described above, operations against mobile targets in AO's with high potential for collateral damage, require highly integrated actions among Joint C2 nodes, particularly in weapon/target assignment processes. Second, the ABCCC has connectivity to each component (which implies links to TLAM, ATACMS), connectivity to the JAOC, and AWACS, and most importantly, connectivity to the FACAs assigned to validate targets within the JOA. Probable enemy choke points, forward operating bases, known or postulated SAM sites that have low probability of collateral damage can all be pre-planned into weapon systems such as TLAM and ATACMS. TLAM/ATACM release authority relationships between the JFC and the JFACC/JFLCC can be delegated to the JFFC, for alert launches and immediate launches, while the JFACC has responsibility for all pre-planned fires. When execution authority is decentralized, the JFFC would be the joint entity exercising engagement authority to implement joint procedures for integrated execution. Acting as the JFACC and the JFLCC representative, the JFFC will have the authority to directly influence the battle through the application of fire assets forward of the FLOT, or FSCL, if one exists. FACA's give the JFFC a unique ability to shift emphasis rapidly (they would be trained to work the coordination issues with ground components) on either side of the FSCL and

can be used to coordinate CAS attacks for friendly ground forces, or shift sorties to interdiction missions to ensure collateral damage is minimized.

Direct communications links (similar to the "quick fire links" used during Desert Storm) to the corps air support operations center and the MEF's direct air support center/deep battle cell will allow quick coordination and approval of fires beyond the FSCL and across component boundaries.[22] The use of a "quick fire links" directly to the ATACMS battery and TLAM shooters would allow hasty fire missions to capitalize on the emergence of high payoff targets. Since speed of response is critical in attacking mobile targets, the JFFC should have the authority to 'trump' other targeting requests for lower priority targets. If required, the JFFC could establish informal FSCM's in order to deconflict fires and aircraft real time for on-call missions.

Who's in charge of the JFFC? The head of the JFFC cell should be at least a Major General, and designated by the JFC to be responsible to the JFACC, while maintaining liaison between the JFC and JFLCC/JFMCC through specialists within the cell (see fig 3). The JFFC would be a joint cell comprised of colonels representing each service component, who have the authority from service component commanders to make real-time fires decisions.

The area of responsibility the JFFC controls would be designated by the JFC but would probably fall between the FSCL and the boundary of the JOA. The JFFC would require a thorough understanding of the JFC's intent and the component commander's scheme of maneuver to anticipate component fires needs. The JFFC's area of responsibility would be designated through consultation with the service component commanders and through their concurrence of the JFFC's boundaries, all concerned

would know and agree with the area responsibilities of the JFFC. The JFFC and his fires/targeting/battlefield management cell would recommend review, coordinate, and publish theater/JOA FSCMs in consultation with air and land force commanders. Currently, either the land force commander or the JFACC accomplishes coordination/synchronization of fires between the FSCL and forward land boundaries. By making this a JFFC function, the coordination of cross-service, surface-to-surface fire support and air delivered fires would be seamless, and simultaneously achieve JFC and land component objectives. The most significant contribution of the JFFC would be the establishment of a single manager of airspace and joint fires on both sides of the FSCL.

CONCLUSION

Orchestrating the effects of joint fires will never be a reality until a single joint commander has the responsibility for their planning and employment. We learned this lesson many times over as the employment of air power has evolved. The results of these lessons led to the establishment of the JFACC[23]. As the range and capability of joint fires continues to expand, there will be an urgent need to coordinate their effects with aviation so that the employment of one type of fire does not inhibit the employment of another. By not doing so, fires synchronization within the individual components will be the most that can be expected, which will negate any effect that joint fires may have in the joint operating area. Current joint C2 and fire support coordinating measures will limit the Joint Force Commander's ability to maximize the desired effects of fires. To maintain our advantages in present and future precision fires to better support the JFC's objectives, we must explore new methods of joint C2 that has the responsiveness and flexibility to

minimize duplication of effort, collateral damage, and fratricide. The JFFC concept would be a step in the right direction towards improving joint fires.

Endnotes

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[1] This "perceived meddling" from the politicians will always be contentious for JFCs. But current joint doctrine does not address any method or procedure for incorporating any government agencies into the targeting process. However, this must be planned for by the JFC.
[2] LtGen Royal N. Moore, "Marine Air: There When Needed," Proceedings (November, 1991): 64.
[3] JP 3-09, I-1.
[4] Ibid, II-33.
[5] JP 3-09, A-3.
[6] Ibid, A-3.
[7] FM 90-36, Joint Targeting Process.
[8] No target is free from risk of collateral damage. But fixed targets are the easiest to locate through EO means and analyst can generally estimate the possibility for collateral damage.
[9] Joint Warfare Center, Joint Force Fires Coordinator (JFFC) Study, 7 February 1997, EX-2.
[10] For the purposes of this paper, "high-risk" is defined by any unintended fires effects on civilians or infrastructure.
[11] Report to Congress: Kosovo/Operation Allied Force After Action, 31 January, 2000, 6.
[12] Short, Michael M.LtGen. Interview with author, 9 January 2001.
[13] Kosovo/Operation Allied Force A/A, 59.
[14] RSTA assets used by joint forces are the U2, JSTARS, Predator UAV, P-3, RC-135 Rivet Joint, manned reconnaissance platforms on tactical aircraft like the FA-18 and F-14.
[15] Short, LtGen. JFACC for Operation Allied Force. Interview with by the author, 9 January 2001.
[16] Ibid.
[17] The bombing of the Al Firdos bunker in Baghdad, the Chinese embassy in Belgrade both resulted in either severe or complete curtailment of coalition bombing in Baghdad and Belgrade respectively.
[18] Short, LtGen. Interview with author, 9 January 2001.
[19] JP 3-03, III-1.
[20] JFFC Study. The JFFC concept has shown some promise in exercises like Unified Endeavor 97. In this exercise it functioned as apart of the JFC staff and was physically located with the JFC headquarters. FM 100-3 recognizes a requirement for a Corps/MEF level "fires" coordinator. My proposal would combine the two into a unified staff action group that would be employed in the battle space by flying in a ABCCC or AWACS.
[21] JP 3-03 II-9.
[22] Moore, "Marine Air: There When Needed," 72. Marine FACA employed this concept during Desert Storm. The FA-18D's would search for artillery sites and once found, they would radio fire missions directly back to an MLRS or artillery battery. This process greatly reduced reaction time and has applicability to the JFFC for shortening response times for TLAM or ATACMS missions.
[23] James A. Winnefeld and Dana J. Johnson, *Joint Air Operations: In Pursuit of Unity in Command and Control, 1942-1991.* (Annapolis Md.: Naval Institute Press, 1993), 156-157.

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Appendix

Targeting Cycle Phases and Responsibilities

Targeting is the process of selecting targets and matching the appropriate response to them. It takes into account strategic and operational requirements and capabilities and the threat to friendly forces imposed by the adversary. Targeting occurs at all levels of command within a joint force and is performed at all levels by forces capable of attacking targets with both lethal and nonlethal disruptive and destructive means. Targeting is complicated by the requirement to deconflict duplicative targeting by different forces or different echelons within the same force and to synchronize the attack of those targets with other components of the joint force. An effective and efficient target development process and air tasking cycle are essential for the JFACC and/or JFC staff to plan and execute joint air operations. This joint targeting process should integrate capabilities and efforts of national, unified, joint force, and component commands, all of which possess varying capabilities and different requirements. The process is the same in war and MOOTW. **(JP 3-56.1, Chapter IV, para 1)**

The targeting process is a cyclical one, which begins with guidance and priorities issued by the JFC and continues with identification of requirements by components; the prioritization of these requirements; the acquisition of targets or target sets; the attack of targets by components; component and JFC assessment of the attacks; and continuing guidance from the JFC on future attacks. Some important points about the targeting cycle are as follows. The cycle begins with objectives and guidance, proceeds through execution, and ends with combat assessment. Targeting mechanisms should exist at multiple levels. The National Command Authorities or headquarters senior to JFCs may provide guidance, priorities, and targeting support to JFCs. After the JFC makes the targeting and air apportionment decisions, components plan and execute assigned missions. The JFC may establish and task an organization within the JFC staff to accomplish these broad targeting oversight functions or may delegate the responsibility to a subordinate commander (e.g., JFACC). Typically, the JFC organizes a joint targeting coordination board. The JFC will normally delegate the authority to conduct execution planning, coordination, and deconfliction associated with joint air targeting to the JFACC and/or JFC staff and will ensure that this process is a joint effort. **(JP 3-56.1, Chapter IV, para 2)**

Synchronization, integration, deconfliction, allocation of air capabilities and/or forces, and matching appropriate weapons against target vulnerabilities are essential targeting functions for the JFACC. Other components targeting requirements to support their assigned missions are provided to the JFC and JFACC via the target information report. All component commanders within the joint force should have a basic understanding of each component's mission and general concept of operations and/or scheme of maneuver to support the JFC's campaign. Therefore, components should provide to the JFACC a description of their direct support plan through the liaison elements within the JAOC. This basic understanding will allow for coordination and deconfliction of targeting efforts between each component and within the JFC staff and agencies. **(JP 3-56.1, Chapter IV, para 3)**

Joint Air Operations
Targeting Cycle Phases and Responsibilities

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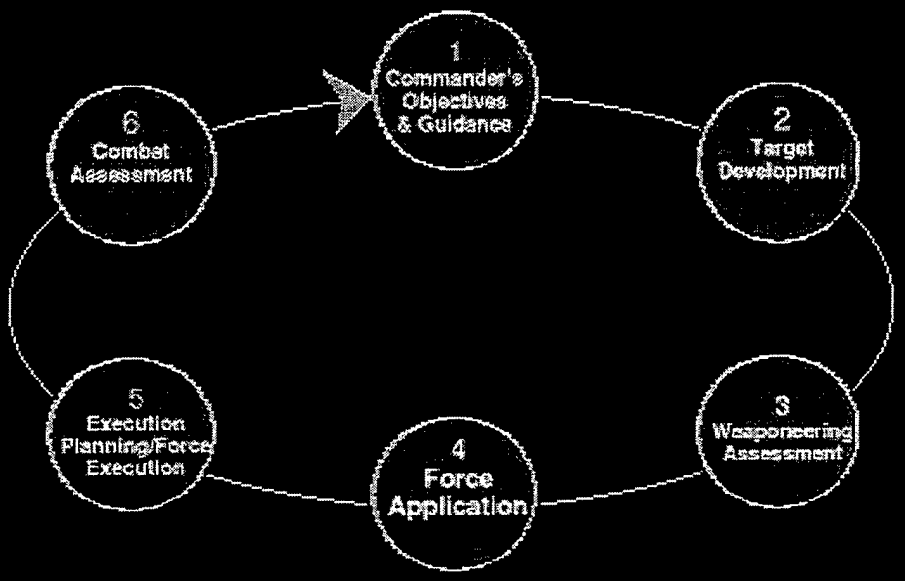

JP 3-56.1, "COMMAND AND CONTROL FOR JOINT AIR OPERATIONS" 7

RSTA ASSETS

Nomenclature	Function	Prime Mover	Reporting Timeline	Approx. Range/ Endurance
AN/TPQ-36	Weapon Location Radar	Vehicle mounted	RT to Artillery HQ	24 km
AN/TPQ-37	Weapon Location Radar	Vehicle mounted	RT to Artillery HQ	50 km
JSTARS	Wide Area Surveillance/MTI radar, SAR/Fixed Target Imagery (FTI)	E-8C	NRT to GSM	3.5-4 hrs
Pioneer UAV	Live TV video and FLIR real time to JSTAR GSM and Pioneer GCS. Recon, surveillance, target acq		NRT	140 km
Predator RQ-1A E-UAV	All weather SAR, day-night IR, EO		NRT to GCS	<24 hrs
Rivet Joint	SIGINT low probability of detection communications and radar signals	RC-135	NRT	11-12 hrs
Airborne Reconnaisance Low (ARL-M)	MTI cueing radar, SAR, DB-110 long range optical sensors, HF/VHF/UHF intercept and direction finding ESM system	RC-7B	NRT	8 hrs
Guardrail common sensor (GRCS)	COMINT, ELINT, DF	RC-12	COMINT, ELINT, DF in NRT	5 hrs
Hunter UAV	Video			12 hrs
EP-3	SIGINT and target identification		NRT	<12 hrs
U-2	ASARS 2 / Enhanced MTI or EO and SIGINT		NRT	<24 hrs

EXTERNAL INFORMATION SOURCES

Source	Function
Rivet Joint	Exploits enemy BM/C4I Interfaces with the TACS
Defense Support Program.	Detects missiles in boost phase; Processed data to theater via ALERT
JTAGS (Joint Tactical Grnd Station)	Theater based node for receiving out-of theater TM launch information Army / Navy asset
ALERT Processing node at AFSPC	Correlates and analyzes out of theater sensor and intelligence data for transmission to theater forces
COBRA BALL	Detects and tracks ballistic missiles Technology could be used as a multi-spectral sensor/cue for ground and other airborne elements
U-2 /Contingency Airborne Reconnaissance System (CARS)	Processes and exploits U-2 intelligence collection Integrates several airborne sensor systems Passes data to AOC for target support
Uninhabited Aerial Vehicle (UAV)	Employs a variety of sensor packages tailored specific mission tasking. Extends coverage to otherwise denied areas or to focus on specific areas of interest. Avoids notice by or manned system exposure to enemy defenses
Special Operations Forces (SOF)	Employs a variety of equipment, sensor packages, and crew tailored to specific mission tasking Provides extended coverage to blind areas or focuses on specific areas of interest that are beyond technical capabilities