Real-Time Mission Tasking:
Keeping the Tenets of Aerospace Power
Relevant in the 21st Century

Tenets *- The tenets of Air and Space power are the most fundamental truths about war in the third dimension, distilled from eight decades of experience…Although not hard and fast rules to be blindly followed regardless of the situation, both logic and experience indicate they can be ignored only at considerable risk.*[1]

AFM 1-1

Changing political realities dictate that the military forces of the United States develop new strategies to cope with current and future defense concerns. The United States Air Force's response to these requirements are embodied in the strategies of *Global Presence* and *Global Reach, Global Power*. These strategies however, hinge upon the ability to rapidly task air power in response to national command authority requirements. Real-time mission tasking is the ability to assign air and space assets to a desired objective as rapidly as required. It is an essential tool the Air Force must acquire if we are to remain one of our nation's premier instruments of power.

The purpose of this paper is to explain the concept of real-time mission tasking and if implemented, how it could ensure the Air Force's responses are of value in achieving national objectives. This task will be accomplished by examining the following areas:

- A conceptual description of an operating system that employs real-time mission tasking
- Real-time mission tasking employment scenarios
- What real-time mission tasking means to those who employ air and space forces

Before proceeding, I make two critical assumptions. First, while many of the constructs described will be addressed in terms of Air Force operations, the system is equally applicable to the air and space forces of all services. Second, the synergy realized by composite force package operations will continue to play a critical role in future operations.[2] Operation Proven Force (i.e. air operations from Turkey during the Gulf War) and years of Red Flag exercises have demonstrated the value of face-to-face interaction during the pre-mission and post-mission phases of composite force flying operations. While composite operations could easily be the subject of a separate study, it is sufficient to state here that real-time mission tasking will contribute significantly to the synergy of composite operations by enabling geographically separated units to plan, coordinate, execute, and debrief missions as if they were collocated.

The Air Tasking Order

Since the birth of military aviation, commanders have continually searched for better methods to task air power missions. While Desert Storm disclosed several air power success stories, it also revealed problems with the mission tasking process. Most of these problems are attributable to the Air Tasking Order (ATO) process. As the following discussion will show, mission tasking in

the Gulf was not as responsive to the needs of military planners as is desired in a modern, dynamic air campaign.

Let us now examine these problems. Weaknesses in the ATO process included long lead times needed for planning, equipment problems, and an inability for units to effectively coordinate mission details with other geographically separated units. Though a formal change process existed to address last minute target changes, developing the ATO was basically a three-day process. It began with the development of a master air attack plan (MAAP) which projected mission and sortie requirements for the war to be waged 48 hours in the future. The MAAP was then translated into an ATO by adding such information as call signs, Identification Friend or Foe (IFF) codes, aircraft weapon loads, tanker information, and radio frequencies. When experience proved that this three-day process was not responsive enough, General Glosson, the man directing the air war, often had to resort to calling wing commanders with last minute changes.[3]

Even when last minute changes were not an issue, equipment problems still hampered mission tasking. The Computer Assisted Force Management Systems (CAFMS) used to translate the MAAP into an ATO did not share connectivity with the Army and Navy. Additionally, CAFMS required up to five hours to transmit and print the roughly 800 pages that made up the ATO.[4] The lack of CAFMS responsiveness resulted in a work-around system, the Mini-ATO Distribution System (MADS). The MADS concept used STU-III secure telephones and personal computers to shorten the time it took to transmit the ATO to units. However, this expedient was not without cost. It placed a significant demand on an already heavily tasked communications system.[5]

The final problem with the ATO process was that it hampered the full realization of the synergy of composite force operations. Mission commanders and individual flight leads were responsible for coordinating routing, tactics, and other procedures to maximize the effectiveness of composite force operations. Unfortunately, the ATO process did not provide mission commanders with a medium for conducting this coordination. Instead, they were forced to rely on the STU-III to coordinate package activities, competing for the same phone lines that were transmitting the ATO.[6] Awkward change procedures, equipment deficiencies, and coordination problems rendered the ATO process unresponsive to U.S. needs during the Gulf War.

Clearly, the ability to task air and space assets against a desired objective, as rapidly as required, is limited. So, how can real-time mission tasking be made a reality? Before proposing a real-time mission tasking concept of operations, it is necessary to understand the entire air campaign process in order to evaluate where real-time mission tasking can have the most impact.

The Air Campaign Planning Process

The air campaign process is important because it translates national objectives into an executable operational strategy in support of the overall military campaign.[7] In the air campaign planning process, national objectives are first converted into a concept of operations. This concept of operations, in conjunction with an analysis of enemy centers of gravity, allows the identification of target systems (e.g. enemy leadership, electrical power, and transportation). Further analysis allows the selection of specific targets within those target systems (e.g. transformers, electrical

generators, switching stations). The MAAP is developed by deciding when and how to strike the selected targets, and is the product of the air campaign planning process. It embodies the campaign objectives of the day and provides theater level sequencing and resource inputs for the development of the ATO.[8] It is the tool through which the air campaign is executed, ensuring national objectives are met and the desired end state achieved. Therefore, real-time mission tasking must focus on the MAAP as the centerpiece of a more timely and efficient air campaign process.

Having established the MAAP's critical role in the air campaign planning process, it is time to outline a proposed concept of operations for real-time mission tasking. In this discussion, the air and space mission will be broken into three parts: mission planning, mission execution, and mission debriefing. Mission planning is the first critical step to successful mission execution, and it can be greatly enhanced with a real-time mission tasking capability.

The Joint Air Operations Center

Before proceeding further, it is essential to address the role of the Joint Air Operations Center (JAOC). The JAOC is where air campaign planning takes place and from where the execution of the plan is monitored. As such, its location and composition are important to the real-time mission tasking process. First, its location must support the operational demands of the Joint Force Air Component Commander (JFACC), while being survivable. The Washington, DC area can meet these requirements and provides several other benefits as well. For example, Washington offers immediate access to intelligence gathered by national technical means. Access to national level decision makers would also be improved.[9] In an age of "global reach, global power", such a location will allow the JAOC to be fully functional as soon as it is needed. A subordinate JAOC could be established in theater to handle unforeseen circumstances, and to deal with coalition air and space forces. Ideally, however, the location of the JAOC should be transparent to the user.

Second, the composition of the JAOC is important in the real-time mission tasking system. A mission planning cell (MPC) will be needed in the JAOC to enable the operational/tactical interface within the system. The JAOC MPC will conduct preliminary mission planning allowing wing planners to concentrate on mission details.

Mission Planning

With the role of the JAOC understood, the specifics of the mission planning aspect of real-time mission tasking can now be presented. In this proposed concept of operations, mission planning briefings will be conducted by the JAOC every three-to-six hours. Time selection should be based on operational needs, flight planning requirements, munitions upload and maintenance turn-around times, and sortie schedules. The JAOC would use secure audiovisual teleconferencing and secure networked mission planning systems; i.e. a secure networked version of the present Mission Support System IIs (MSS IIs), to bring all participants into a face-to-face interactive environment.[10] Audiovisual teleconferencing will allow all participants to see the briefing, ask questions, and provide inputs (up, down, and laterally throughout the chain) as appropriate. Networked mission planning systems will allow the MPC and intelligence functions

of the JAOC to provide all participating units with updated route projections, targeting materials, and plotted threat envelopes simultaneously. This feature will allow a mission commander to concentrate on tactics and target attack when he conducts his package planning and briefings by minimizing the effort spent on transcribing, plotting and checking the administrative details of mission preparation. The JAOC MPC would also produce the mission specific aircrew data cards containing such information as radio frequencies and call signs. This system could eliminate the need for an ATO while making the MAAP the centerpiece of air operations. Finally, the inclusion of an MPC function in the JAOC will allow an effective response to last-minute mission changes.

With this basic concept of mission planning in mind, who will participate in the mission briefings? The mission briefing will be conducted by a JFACC representative who will provide the JFACC's intent and mission type orders. This will allow the decentralization of detailed planning to the mission commander. Wing, operations group, and squadron commanders will attend in order to gain a broad overview of the day's mission tasking and their unit's role in its execution. At the unit level, mission commanders, package commanders, and unit maintenance representatives should also participate. Mission and package commanders will be present for obvious reasons. Unit maintenance representatives need to be involved so they can determine aircraft requirements and configurations. Additional participants should include representatives of the support functions critical to mission execution, such as intelligence, Airborne Command Element (ACE), Airborne Warning and Control System (AWACS), and Joint Surveillance Target Attack Radar System (JSTARS).

Once the mission briefing is completed, the mission commander will use the same audiovisual teleconferencing and networked mission planning systems to conduct his briefing. Here the participants will be the package commanders, flight leads, and anyone else the mission commander deems necessary. The mission commander will use this forum to develop a detailed game plan including such things as target attacks and their sequencing, ingress and egress routes, communication plans, electronic countermeasure support, and tanker support. He will use the JAOC-provided routing as a starting point. Participants will interact to develop the details. Any annotations to the routing, to include target attacks, will be depicted instantaneously to all participants via the networked MSS IIs. Once the plan has been developed and reviewed by all, it will be downloaded into data transfer modules (DTMs) at the unit level. JAOC planners, the JFACC, and mission support elements such as the ACE and AWACS will have access to this information which will aid these agencies in implementing last minute changes and updates.

Next in the mission planning process is the flight briefing. Here flight leads will use the data developed in the mission commander's briefing to instruct flight members on their duties and responsibilities. The products produced and transmitted by the networked mission planning system will be used to run simulations before mission materials are loaded into each jet via DTM. The simulation process will enable two things: it will allow mission commanders to view the projected flow of the mission, and it will allow the individual crew member to rehearse the mission before actual execution. With DTMs in hand, crews are now ready to step (depart the squadron operations facility) to their aircraft and launch on their missions.

Mission Execution

Moving to execution of the mission itself, the first subject to be addressed is airborne tasking or retasking of missions (e.g. target changes). The ability to accept airborne tasking will be constrained by mission type. Deep strike or interdiction missions requiring detailed planning and large composite forces should not receive mission changes after step time unless absolutely necessary. On the other hand, missions in direct support of the Army and those going after mobile targets such as Scuds, by their very nature, require the most current targeting information available. For all types of missions, threat status and participant status will be continually updated through all phases of an operation via secure data link. In the event of retasking, new mission and target materials can also be transmitted to aircrews via data link from MPC elements at the unit, ACE, and JAOC levels in a timely fashion. The JAOC, ACE, JSTARS, and AWACS will also provide key controlling and coordinating functions. A modified version of the present Joint Tactical Information Distribution System (JTIDS) could provide the mission commander with the necessary combined secure voice/data transfer capability to make rapid notifications of such changes. In addition, the mission commander (and all other crews) could selectively choose information about the ground order of battle, air order of battle, and position of friendly aircraft along their projected routings. This will facilitate rapid decisions for the proper employment of assets.

Mission Debrief

The real-time mission tasking process is not complete until the mission has been debriefed. Using the same audiovisual teleconferencing and networked mission planning capabilities discussed earlier, the mission commander should conduct a debriefing. The participants in this debriefing should be the same as those who attended the mission briefing and mission commander's briefings. This debriefing, while succinct, is still important because it can lead to improved BDA, improved intelligence debriefings, improved lessons learned, and wider dissemination of those lessons. While this debriefing will take some time in the short-run, in the long-run it will save time by precluding repeated strikes of destroyed targets, preventing the repetition of mistakes, and ensuring the timely retasking of missed targets.

Employment Scenarios

Having addressed the specific details of the real-time mission tasking concept of operations, three scenarios will now be presented to illustrate its potential use in a notional future conflict. The scenarios depict a power projection sortie launched from U.S. soil against a mobile target, a deep interdiction mission, and a direct army support mission. These scenarios are based on a situation that finds the U.S. involved in a Korean MRC and facing the possibility of a second with Iran.

In the first scenario, the U.S. has begun preliminary deployments to Southwest Asia in preparation for potential operations against Iran. Strike assets capable of deep interdiction are not yet in place. On the other side of the world, the U.S. has just become embroiled in a conflict with North Korea. Iran, taking advantage of this distraction, has deployed mobile ballistic missiles armed with chemical warheads, thus posing a threat to U.S. forces in the Persian Gulf region. Intelligence indications suggest Iran is not just posturing its forces for political effect, but is, in fact, preparing to launch a chemical attack. Within 30 minutes of the warning, the JAOC issues

launch instructions for three B-2 bombers from Whiteman Air Force Base to proceed towards Iran and destroy the weapons. The JAOC also ensures tanker and AWACS assets are available and in place to support the B-2s. While the B-2s are enroute, the JAOC uses reconnaissance platforms to determine the exact locations of the missiles. Intelligence and MPC personnel develop a mission plan including route, threat and target information. The information is up-linked to the B-2 crews who review the mission data and prepare for their strikes. Approaching the target area, the aircrews access reconnaissance platform data directly to ensure they have the latest information on threats and target positions. The B-2s successfully strike and destroy the missiles before the Iranians are even aware of the B-2s' presence. The attacks are so effective, the Iranians cease their aggressive force deployments, thus providing the U.S. additional time to deploy forces to the area.

The second scenario takes place in the Korean Theater of Operations. Here, a composite strike package, composed of assets from various bases in the theater, has been tasked to strike a portion of the North Korean electrical grid. Mission tasking and planning are handled in accordance with the procedures outlined earlier in this chapter. Mission planning and briefing are uneventful. At launch time, one of the bases is attacked and a flight of strikers is prevented from taking off. At about the same time, reconnaissance assets identify a new mobile surface-to-air missile system operating along the packages' projected route of flight. The ACE passes this information to the mission commander. The mission commander determines that he can still achieve the mission objective with the remaining strikers. Using secure data link and voice, an abbreviated briefing format, and other cockpit selectable information, the mission commander informs everyone of the changes in force composition and routing. The package successfully attacks and destroys 85 percent of its targets. Upon returning to their home bases, a mission debrief is held. The debrief uses inputs from the flight leads and reconnaissance assets to assess battle damage. Intelligence uses this information to determine that mission objectives were achieved and that the targets need not be reattacked. The debrief also discloses problems with the abbreviated briefing format used by the mission commander to conduct the in-flight updates. Solutions to these problems are developed and incorporated in an updated briefing format for future missions.

The final scenario also occurs in the Korean Theater of Operations. This time, however, the air forces are flying sorties in direct support of the Army. Once the JFACC has apportioned and allocated sorties for these missions, briefing and flight planning are once again handled as outlined above. Aircrews are also briefed on the Army operations they will be supporting and the area in which they will occur. After completing mission planning and briefing, the crews will step to their aircraft and wait for tasking. Upon receipt of the tasking from Corps headquarters, the aircraft launch to support an infantry battalion that has encountered a large armored force. Enroute to the target, the forward air controller transmits target imagery obtained from an unmanned aerial vehicle (UAV). Prior to the aircraft reaching the target, JSTARS detects another armored thrust threatening to envelope the entire division. With Corps approval, JSTARS passes the information to the ACE who retasks the aircraft against the new threat. Additional sorties are scrambled to handle the original mission of destroying the armored force before it can engage the outnumbered infantry battalion. The mission debrief validates the wisdom in retasking the original air support mission.

Each of these scenarios demonstrate various elements of a holistic system that will enable air and space assets to exert influence. It is this ability to influence the enemy that will make the Air Force's strategies a reality.

Enabling Capabilities And Technology

Having looked at how this real-time mission tasking system could work in various scenarios, it is now necessary to examine the capabilities and technologies required to achieve such a system in the near future. First, computers and technology that facilitate extremely fast, secure data and voice transfer are needed. Second, a secure data link capability to allow transfer of real-time information to and from the aircraft (e.g. target imagery and cockpit BDA video, respectively) is also required. Third, an integrated picture of the battlespace is essential. This picture would provide cockpit-selectable options for viewing the ground order of battle, air order of battle, and the position of friendly aircraft and their projected routings. Next, each aircraft should have an onboard mission support system capable of depicting routing, threat envelopes, and target information. An ability to overlay target predictions and imagery would also be useful. A highly precise navigation kit that does not produce detectable emissions and detailed mapping information for all theaters of interest is also key to this system. Finally, and most importantly, the real-time mission tasking system components must be interoperable to allow participation by air and space assets from all services.

This paper began with a discussion stating that changing political realities have dictated that the United States Air Force develop new strategies to cope with current and future defense concerns. Next, a basic definition of real-time mission tasking was provided. Using this definition, it was shown how mission tasking problems uncovered during Desert Storm dictated a need for real-time mission tasking. Finally, a real-time mission tasking system concept was developed within the framework of the present air campaign planning process. How this operating system might make the Air Force's strategies, embodied in the concepts of "global presence" and "global reach, global power" was illustrated through the use of specific scenarios. Before closing this essay, the potential weaknesses of this real-time mission tasking system must be addressed and the following question answered: What does real-time mission tasking mean to employers of air and space forces?

Potential Weaknesses

What are the major objections that opponents to this real-time tasking system might raise? First, they might attack the system because it is highly dependent on audiovisual teleconferencing and networking requirements. However, it is no more vulnerable than the system employed today with its dependence on STU-IIIs and CAFMS. Second, they might object to the central location of the JAOC in Washington. The location of a subordinate JAOC in theater to support the primary JAOC should address most of these objections. Additionally, since the location of the JAOC is transparent to the user, the benefits of being centrally located with key national decision makers, sources of intelligence, and the ability to rapidly constitute in time of crisis will far outweigh any drawbacks this system might pose. Finally, opponents to this system might attack the establishment of an MPC function at the JAOC because of the additional manpower required and concern that mission commanders will no longer have the flexibility to govern tactics. This

concern stems from a misunderstanding of the role of the JAOC MPC. First, the JAOC MPC does not do detailed planning. Instead, it takes care of preliminary planning, allowing mission commanders to focus on the details of how to get the mission done. Tactics remain the domain of the mission commander. Second, MPC elements at the wing level will remain in place to aid the detailed planning and serve as a backup to the JAOC. The bottom line is that the benefits of allowing geographically separated units to operate with the synergy realized by Proven Force/Red Flag-type missions far outweigh any drawbacks.

Conclusion

Real-time mission tasking means air and space forces will be flexible and responsive. By improving the means to centrally control air and space forces and ensuring decentralized execution of assigned objectives, real-time mission tasking will allow airmen to create advantageous synergies, establish effective priorities, ensure unity of purpose, and minimize the potential for conflicting objectives while preserving effective spans of control, responsiveness, and flexibility. Flexibility and versatility, concentration, and persistence are also enhanced because real-time mission tasking will allow air and space forces to exploit mass and maneuver against an enemy at the tactical, operational, or strategic levels to an even greater degree than ever before. In fact, the ability to operate within the enemy's decision making cycle with weapons of ever greater precision will further enable our ability to induce a operational and strategic paralysis upon him. As well, the capability to do this at any time, any place on the globe, gives a new meaning to the term persistence. Finally, the fact that this system of real-time mission tasking centers on the air campaign planning process will ensure that air and space operations remained focused in priority and enhances our ability to meet ever increasing demands with available assets.[11] In other words, real-time mission tasking takes those fundamental truths for waging war in third dimension, truths learned through the blood, sweat, and tears of airmen over the past 80 years, and breaths new life into them as we enter the 21st century. The Air Force needs this system of real-time mission tasking.

Notes

1. Air Force Manual 1-1, *Basic Aerospace Doctrine of the United States Air Force* (Washington, DC: U.S. Government Printing Office, 1992), II: 113.

2. Major Scott J. Norwood, "Thunderbolts and Eggshells: Composite Air Operations during Desert Storm and Implications for USAF Doctrine and Force Structure" (Thesis for School of Advanced Airpower Studies, Air Command and Staff College, September 1994), 2, 19.

3. Thomas A. Kearny and Eliot A. Cohen, *Gulf War Air Power Survey Summary Report* (Washington D.C.: U.S. Government Printing Office, 1993), 150-151. Interview with Major William M. Bruner, School of Advanced Airpower Studies, Air Command and Staff College, Maxwell AFB, AL, 11 Jan 1995.

4. John Paul Hyde, Johann W. Pfeiffer, and Toby C. Logan, *The First Information War:* "CAFMS Goes To War," ed. Alan D. Campen (Fairfax, VA: Armed Forces Communications and Electronics Association International Press, October 1992), 42. Keaney and Cohen, 5, 149.

5. Hyde, Pfeiffer, and Logan, 41-42.

6. Keaney and Cohen, 169. Norwood, 19.

7. Interview with Colonel John A. Warden III, Commandant Air Command and Staff College, Maxwell Air Force Base, AL, 13 Jan 1995.

8. Department of the Air Force, *JFACC Primer* (Washington: HQ USAF, February 1994), 43. Interview with Colonel John A. Warden III, 13 Jan 1995.

9. Warden interview.

10. Norwood, 43.

11. AFM 1-1, I, 8.

Bibliography

Bruner, Major William M. Student, School of Advanced Airpower Studies, Air Command and Staff College, Maxwell AFB AL. Personal interview. 11 January 1995.

Department of the Air Force. Basic Air and space Doctrine of the United States Air Force, Volumes I & II. AFM 1-1. Washington: GPO, 1992.

Department of the Air Force. JFACC Primer. Washington: HQ USAF, February 1994.

Hyde, John P and others. "CAFMS Goes To War," in The First Information War. Ed. Alan D. Campen. Fairfax VA: Armed Forces Communications and Electronics Association International Press, October 1992.

Keaney, Thomas A. and Eliot A. Cohen. Department of the Air Force, Gulf War Air Power Survey Summary Report. Washington: GPO, 1993.

Norwood, Scott J. Thunderbolts and Eggshells: Composite Air Operations during Desert Storm and Implications for USAF Doctrine and Force Structure. Thesis. School of Advanced Airpower Studies, Air University, Maxwell AFB AL, September 1994.

Warden, Colonel John A., III. Commandant, Air Command and Staff College, Maxwell AFB AL. Personal interview. 13 Jan 1995.

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