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Enabling Intelligence, Surveillance, and Reconnaissance Effects for Effects-Based Operations Conditions

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Foreword

In support of national and military security strategies, the DOD has established the joint force commander (JFC) as the means to provide unity of command, exercised through component commanders, during contingency operations. Intelligence, surveillance, and reconnaissance (ISR) is key to the JFC's successful prosecution of contingency operations. The term *ISR* is often misperceived as a generic synonym for such platforms as uninhabited aerial vehicles or satellites without regard to the complexities of the larger US national intelligence community (IC), or even a full understanding of the convoluted command relations and underpinnings of the DOD's intelligence resources beyond the JFC's span of control. Colonel Johnson states that ISR processes are at least as challenging, if not more so, than the targeting process used to place a bomb on a target. The multifaceted complexity cannot be overstated as both national and theater ISR architectures include many linked nodes that can act and be tasked independently from one another (i.e., the platforms, sensors, DOD and commercial communication nodes, and a variety of exploitation organizations). The JFC cannot continue to ignore this reality if he or she wants to properly employ ISR-intensive effects-based operations (EBO) to achieve overall campaign objectives—that is, to provide unity of ISR effects in support of the campaign plan. The author recognizes that there are elements of the IC that are beyond the JFC's direct control, but he also recognizes the value of these national ISR assets in support of the overall campaign plan and the need for the JFC to influence the IC and its processes. Hence the author asserts that there is a requirement for the JFC to establish an ISR "strategy-to-task" methodology to set EBO conditions as they evolve, such that they will enable both the smooth execution of requisite command authorities (operational control, tactical control, and direct support) within theater ISR, and create a JFC/component commander mechanism to establish or influence priority ISR needs beyond his or her control. This will better enable theater and national ISR to provide measurable effects under the strategy, planning, execution,

and assessment war-fighting construct in support of the campaign plan.

In the case of ISR, a viable option for the JFC is to follow the joint force air and space component commander (JFACC) precedent and delegate theater air and space ISR command and control (C^2) authority to the component with the preponderance of air assets and ability to command and control them. The JFACC's air operations center (AOC) weapon system already exercises such delegated authorities as air coordination authority, area air defense authority, air interdiction, air superiority, time-sensitive targeting, space coordinating authority, and preplanned targeting oversight. In the air operations directive (AOD), which outlines the JFACC's guidance for employment of air and space forces in support of the JFC, the JFACC/AOC already has in place processes, resources, and expertise that could be easily adapted to help unify ISR efforts. This action would establish clear lines of ISR C^2 for theater, reach-back organizations, and national agencies. This C^2 linkage, together with the AOD, would also provide the JFC a tool to assess how well ISR organizations and agencies are meeting the JFC's effects-based objectives. It is the author's belief that there has been significant progress in the existing joint processes—the Joint Collection Management Board and the Joint Targeting Coordination Board—and that this evolutionary process has improved to a point that the time is right for the introduction of a means to "unify ISR efforts" via clear command relationships and establishment of a "coordinated influencing strategy."

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About the Author

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Enabling Intelligence, Surveillance, and Reconnaissance Effects for Effects-Based Operations Conditions

Let me illustrate the complexity of the situation via a short vignette. In March 2002, while stationed at Osan Air Base, Korea, as the commander of the 607th Air Intelligence Squadron, I was preparing for a visit by the chief of staff of the Air Force (CSAF). Our squadron was excited about the visit and ready to showcase how we were operationalizing the "air operations center (AOC) as a weapon system." We had recently completed a two-week field exercise called Foal Eagle with the Republic of Korea (ROK) and were confident that we had made great strides in improving the AOC's Intelligence, Surveillance, and Reconnaissance (ISR) Division processes, in particular the kill-chain timelines for time-sensitive targets (TST). Armed with an ISR operations cell assigned to the AOC's Combat Operations Division, we were able to find, fix, track, target, engage, and assess (F^2T^2EA) surrogate North Korean Scud batteries operating in ROK training ranges well under the nominal 10-minute TST kill-chain timeline.

Prior to the CSAF's arrival, the Seventh Air Force commander received a dry run of our briefing on ISR visualization in combat. The briefing began by showing multiple orbits of various collection platforms. But the mere display of orbiting intelligence assets and their associated sensor volumes compelled him to ask, So what? I knew I missed his intent. I persisted by continuing to show the many ways ISR could be displayed to support today's and tomorrow's wars. But it was only when I showed him the integrated tasking order (ITO)—aka the air tasking order (ATO)—and its targets and various collections of orbits and sensor taskings that the "light came on" for both of us. That is, we both realized the importance of assessing ISR effects within the ITO to the joint force air and space component commander's (JFACC) ability to move to the next phase of his air strategy in support of the joint force commander's

(JFC) campaign plan. Better assessment led to greater progress.

This action led to other challenging questions. How, he asked, do you handle TSTs and emerging targets along with assessing the preplanned ITO targets? Well sir, I answered, we have to coordinate with the combat ops floor to ensure we task a sensor in the right orbit, or we call combined force commander's (CFC) J2 (intelligence staff) section to check on the availability of national coverage. Next, we need to coordinate with the tasking authority, which might be within JFACC control, organic to component commanders, or a national agency. Then we have to coordinate with the exploitation air or ground stations to ensure they know what to read out (i.e., exploit). He then asked how flexible and adaptive is the ISR community to changing enemy courses of action and the evolving battlespace? Sir, it's a challenge because many do not understand the complexity of ISR which includes the tasking authority, platform, sensor, communication networks, and multiple exploitation nodes. This is not a clean weapon system. He shook his head and departed, leaving me in search of a better way to manage and influence ISR operations especially in support of effects-based operations (EBO) that require on-demand ISR from a variety of sensors and platforms depending on the effects you want to target. The process is difficult to explain especially when there is no positive control like a fighter/bomber weapon system; however, if planned right, ISR can be a key enabler that helps target the right effects and potentially helps limit the amount of collateral damage.

Subsequent to Operation Desert Storm, the pace and manner of war for the US military changed. This change required improvement in our war-fighting construct that guides strategy development, planning processes, the execution cycle, and effects assessment. Our new tools of war have increased our adversary's observe, orient, decide, and act (OODA) speed. In response our adversaries are not sitting still, waiting to be destroyed in place. They are using technologies and strategies that enhance their mobility and deception and increase their decision time. Today's warfare tools are not limited to the theater of operation because many agencies and organizations in reach-back locations

provide invaluable support to the JFC in such areas as communications and intelligence. Historic approaches that focused on weapon systems and bomb damage assessment have evolved to focus on EBO in support of the JFC campaign objectives. Operation Iraqi Freedom (OIF) had 80-plus US and coalition ISR platforms flying at any particular time over Iraq.[1] Such experiences, coupled with the shortened target-identification and kill-chain timelines, have changed how campaigns and wars will be fought in the future.

Enabling ISR effects is a daunting task when one realizes how many agencies, organizations, and component commands have a stake in the sand. There are an ever-increasing number and capability of specialized organic military assets, personnel, and techniques potentially available within the JFC's subordinate forces; the larger US intelligence community that encompasses more than 20 agencies; and the capabilities that help with predictive analysis, target materials, and national-level exploitation. Additionally ISR capabilities (i.e., platforms, sensors, communication networks, and exploitation nodes) have been traditionally labeled high demand/low density or scarce assets that create a conundrum when trying to horizontally integrate component-specific capabilities into an overall campaign plan. Despite all the positive movement to horizontally integrate systems, there remains a huge shortfall in guiding and setting priorities for airborne ISR in support of the JFC's campaign plan.

Component commands have a tendency to reserve their assets for their own tasks, precisely because the processes for integrating and achieving desired ISR effects theater-wide are not in place. This, coupled with the highly structured processes for tasking national collection platforms, leads to suboptimization of ISR across a campaign plan. Despite all the positive movement to horizontally integrate systems, there remains a huge shortfall in guiding and setting priorities for ISR for the JFC's campaign plan.

Currently, under strategy, planning, execution, and assessment (SPEA) processes, the JFC has a fragmented ISR planning process that does not realize fully ISR effects during contingency operations. As recently as Operation Unified Assistance (OUA) in January to February 2005, the

pitfalls of not having adequate unified ISR command and control of theater and national collection assets remain a lingering lesson observed. OUA resulted from a tsunami that hit India, Thailand, Sri Lanka, and Indonesia on 26 December 2004, causing over 200,000 deaths and over 5 million displaced people. At the onset of this humanitarian and disaster relief operation—before the P3s (reconnaissance and surveillance aircraft) were assigned under tactical control (TACON) to the JFACC—they remained service-focused. If they were routinely orchestrated as part of a unified Pacific ISR operation under the JFACC, the P3s early on may have been able to help better by deploying units like Transportation Command's (TRANSCOM) tactical airlift control elements to assess runway status for relief aid as they would have known of this requirement. Analysis of OUA indicates that until all airborne ISR assets were assigned to the JFACC, they did not have the requisite processes in place at the start of the contingency to focus on joint requirements. Eventually P3s were chopped to the JFACC.[2]

The JFC could integrate ISR better by establishing an ISR "strategy-to-task" methodology to set EBO conditions as they evolve. This could provide command authority (OPCON, TACON, or direct support) coupled with a JFC and component commander's priority ISR needs and influence agencies and organizations beyond the JFC's control. This, in turn, will enable effects of ISR under the SPEA warfighting construct from theater and national ISR in support the campaign plan.[3] Within the current joint air operations planning (JAOP) construct, the ISR planning approach lacks specific linkages to the SPEA processes and does not reflect the highly interconnected relationship between ISR and EBO. The interconnection between EBO and ISR priorities enables the JFC a means for measuring both behavioral and physical effects at the right time and at the right place, especially in a contingency operation that is fluid and changing. The JFACC and other functional component processes can be modified easily to meet these deficits, and in doing so, could provide the basis for eventual ISR unity-of-effort, by using the air operations directive (AOD) format to reach not only component commanders but also ISR organizations and agencies also supporting campaign objectives.

This paper will begin by looking at the challenge of setting EBO conditions. It will then show how the JAOP's strategy-to-task methodology could be a viable solution for establishing the requisite command relations. Lastly it will show the positive or cascading effects this approach may have on other, often contentious processes dealing with ISR support to campaign plans.

The Challenge—Enabling ISR Effects to Achieve EBO Conditions

Have you noticed the tendency by the media to talk about intelligence failure? There is no intelligence failure in our country. There has been simply inadequate (use) of our intelligence bases.

—Gen Tommy Franks, USAF, Retired

The following is a short vignette on the importance of understanding ISR effects and the need for requisite command authority and a unifying ISR influence on agencies and organizations beyond JFC span of control. The Marine Expeditionary Force (MEF) drive to Baghdad in OIF proved there is a need for faster target identification and combat assessment to measure effects better and allow operational commanders decision-quality information while in combat. The 1st MEF was tasked to face eight Iraqi armor divisions in their zone of operations. On D-day they jumped into the middle of three Iraqi divisions without theater priority for ISR. A detailed examination of this major air-ground operation revealed that the lead units in the Marine Air Ground Task Force (MAGTF) did not have a "good read" of what was in front of them because of a lack of theater-level ISR allocation in their zone. As a result, the aviation combat element (3d Marine Air Wing) used its organic flying assets to complete the much needed intelligence picture. Without allocated theater ISR, the MAGTF's air control element commander related that the air war and ground war effects-based targeting assessments could not keep up with their schemes of maneuver against the Iraqis.[4] Army lessons observed point to similar problems as operational commanders were unable to assess operational effects caused by a lack of ISR focus and were forced to rely on armed re-

connaissance to fulfill those mission needs.[5] Both the Marines and Army lacked the airborne ISR to enable EBO conditions which could provide them all-weather, day/night, real-time video and near-real-time imagery.

The JFC must better enable ISR effects in support of component commanders and better employ ISR to enable EBO. The SPEA processes of the JFC and his or her combatant commanders do not adequately link in a strategy-to-task method, as required for EBO from the tactical-to-strategy levels. Desert Storm demonstrated the effectiveness of intense sustained airpower over a period of time, targeting fixed locations using precision munitions. However, OIF demonstrated that the direct weapon-to-target engagement time line has markedly decreased during combat operations because of the introduction of precision munitions, dominant maneuver, and improved command and control (C^2). Accordingly, the JFC must authoritatively articulate ISR intent and priorities to drive theater, service reach-back, and national agencies.

ISR-SPEA processes are more complicated than the targeting process for putting bombs on targets. First, the JFC may not have positive control of the entire theater ISR entity that includes platforms, sensors, communication networks, and exploitation organizations supporting the contingency. ISR continues to be labeled a high-demand and low-density capability that lends itself to component ownership/tasking. Second, if the JFC wants to set the conditions for EBO, there needs to be a better way to establish the requisite command authority among theater-controlled ISR and an influence mechanism to guide the various ISR organizations/agencies supporting EBO to understand better and contribute to the overall campaign objectives.

The relatively new acronym *EBO* is often misunderstood. It is described as a way for policy and military planners to think primarily through results rather than on how those results are achieved. EBO is a process that may produce a condition, or set of conditions, that drives how campaign planners think about what, when, and how the enemy will and can act. The concept centers on showing causal linkages between strategic objectives and tactical tasks to ensure that planners from the highest and lowest levels focus

efforts on achieving results in line with objectives. Examples of tactical tasks include denying enemy capabilities and options, expanding and disrupting leadership's decision-making cycle, forcing the fight on friendly terms, and making an adversary more predictable to campaign planners.[6] Tactical tasks include kinetic and nonkinetic targeting schemes that have the potential to create first-order, second-order, and third-order effects that link back to the original objectives. Kinetic effects are often categorized with action verbs such as defeat, destroy, interdict, isolate, neutralize, suppress, and fix. Nonkinetic-effect verbs—as found within information operations—include inform, influence, isolate, and deceive.

Order-of-effects thinking takes planners beyond traditional targeting methodology and battle damage assessment, which is the basis for EBO's first-order effects.[7] It also requires planners to think about second- and third-order effects that may ripple through the adversary's actions or behavior in executing his or her war plan and helps to minimize unintended consequences and elements of friction in war, which makes even the simplest enemy actions difficult.[8] The concept is comprehended when examining the JFC's JFACC priority of attaining air superiority. By viewing this from a traditional perspective, targeting and weapon employment would focus on attriting or destroying the enemy.

EBO planners take a different approach by considering the dual nature of effects, focusing not only on priority objectives or desired effect but also on cascading effects upon enemy actions.[9] As an example, instead of conceiving air superiority in relation to attacking airfields, aircraft, or surface-to-air missiles (SAM), planners would think about reducing adversary sortie generation for time and space in relationship to ground and maritime commanders' need to posture and prosecute the schemes of maneuver. They would evaluate short- and long-term effects and how ISR should be integrated. EBO allows planners to consider mass for precision effects rather than massing of forces or resources. EBO efficiencies may save lives on both sides, cause less collateral damage, expend fewer munitions, and reduce risk of fratricide.[10]

The Solution: Embed ISR Effects into JAOP Strategy-to-Task Methodology

When you talk about the number of targets that we're servicing and the synchronization or linkage between that and ground movement, and you're shooting, you know, say, a thousand targets overnight, how do you get that information, I mean feedback from that to the guy who needs it, who's the guy in the tank that's going—or the Bradley that's going to cross that piece of ground the next day.

—Brig Gen Robert W. Cone
Joint Forces Command

Within the war-fighting "strategy" development construct of SPEA, the JFACC is currently without an overarching framework to both articulate his ISR requirements to the JFC and tie the employment of ISR assets (platforms, sensors, production, and people) to the strategy-to-task methodology. This methodology should not only guide sensors, platforms, and exploitation nodes but also guide or influence organizations beyond the JFACC's or JFC's control in a unified manner for setting the conditions conducive for EBO. Inadequate ISR C^2 relationships create confusion and uncertainty, which result in untidy linkages between ISR support and overall campaign objectives. The inclusion of airborne ISR guidance into the JFACC's strategy-to-task methodology could help overcome a major obstacle within the ISR high-demand and low-density asset availability area by establishing a clear linkage between ISR efforts and SPEA processes.

Why is ISR planning different from other assigned missions (e.g., strategic attack, interdiction, and close air support)? Because of the multifaceted nature of some platforms and sensors, the current airborne ISR-planning process tends to prefer apportioning (e.g., joint force land component commander [JFLCC] gets one Predator on D-day) rather than allocating ISR assets to meet the broader, emerging battlespace needs.

If the situation warrants, ISR could dynamically shift to the battlespace and component commander's needs. The lack of ISR priority and mission focus becomes apparent when there is no arbitrator to balance competing interests and where there is no clear relationship of ISR intent to

the targeting, strategic warning, and situational awareness processes.[11]

The Authoritative Means: JFC/JFACC's Joint Air Operations Planning Process within the AOC

The following sample JFACC daily operations directives provide examples of how requisite C^2 and a unified statement of ISR needs to guide agencies and organizations beyond JFACC (or JFC) control could be integrated into the existing AOD format.[12] This guidance, methodologically based on the JFACC's (and therefore the JFC's) strategy, would provide the framework for the rigorous application of scarce resources to attain campaign objectives as well as an ongoing assessment of its effectiveness.

Situation

The situation section lays out the JFC's prioritized mission-type orders to component commanders and restates the JFACC's task to allocate efficient air and space power to produce prioritized effects. This section also assesses enemy and friendly intent. Within the friendly portion, the JFACC describes the components' (i.e., JFLCC, joint force maritime component commander, joint force special operations component commander, and JFACC) schemes of maneuver and expected high-level results (i.e., the focus of EBO) based on campaign emphasis.

With the JFC's concurrence, or through explicit JFC-provided guidance, the situation section also could establish clearly ISR priorities based on the JFC-assigned missions by component. These priorities may change as operations move forward; however, establishing JFC-ISR priorities 96 hours and beyond will enable the JFACC to prioritize and secure ISR platforms, sensors, and exploitation nodes to meet JFC campaign objectives. This section could allow component commanders a means to inject their theater priority ISR attention based on assigned JFC missions thus establishing a mechanism to potentially correct the ISR shortfalls such as those experienced by the 3MEF command center (CC) and 5th Corps during OIF.

However, this change is contingent on recognition at the JFC, rather than the component level, that the JFC, the J2, the Joint Collection Management Board (JCMB) (or some combination thereof) needs to improve the rigor and format of ISR guidance beyond its current level, a requirement discussed further in this paper.

Mission of the Joint Force Air and Space Component Commander

This section relates how the JFACC will conduct air and space operations to achieve the JFC's desired end state. Within the mission of this section, the JFACC could articulate the need for ISR to enable the desired effects of the JFACC/JFC campaign objectives.

Air Operations

In the first section—JFACC intent—the JFACC with component commander coordination gives the primary aim of the ATO, which normally centers on degrading an adversary's combat effectiveness and ensuring friendly freedom of action. To set the stage for ISR employment, the JFACC intent lends itself, for instance, to establishing a specific intent to measure first-, second-, and third-order effects. Similarly, the allocation intent could identify under what circumstances ISR can shift from its preplanned use. For instance, the JFACC might make these statements: "The primary aim of theater airborne ISR is to support priority JFC and component assigned-mission tasks or in such instances as asymmetrical attacks or emergent high-value targets, ISR priorities may shift with the battlespace in support of predictive analysis, the assessment of emerging or fleeting targets, or other TST scenarios." It could also describe the JFC's ISR SPEA intent for component needs.

The second section—operational concept—describes how the JFACC will conduct air and space operations in support of the JFC mission-type orders from the JFACC-intent situation. Those JFC mission-type orders are the foundation for the operational objectives, which are translated into tactical objectives and tasks. Direct or annex integration are two possible approaches to integrating ISR tactical objectives and tasks into the AOD.[13]

Direct Integration

The direct-integration approach includes the theater airborne ISR objectives and tasks embedded within the AOD's existing operational and tactical objectives and tasks. ISR would then draw direct linkage to measure the effects of the JFACC with component coordination targeting priorities. Below is an example of an EBO-based AOD that directly includes implicit ISR linkages, such as "assess," "discover," and "confirm":

1. Assess, gain, and maintain air superiority in support of land and maritime schemes of maneuver.
   - 1.A Neutralize SAMs.
     - 1.A.1 Detect, discover, and degrade key components of SA-10 systems; confirm damage to target acquisition radars and height-finding radars.
     - 1.A.2 Detect, discover, and degrade key components of SA-5 systems; confirm damage to target acquisition radars, and height-finding radars.

In addition to linking to JFC targeting priorities, the AOD could also develop prioritized ISR-specific objectives to support all component commanders that deal with predictive analysis of enemy intentions regarding, for instance, weapons of mass destruction. These ISR-specific objectives would then gain prominence, visibility, and ranking in the AOD process, and would benefit from the actions of the AOD staff to support them. For example:

2. Assess enemy intent to employ land, air, and maritime weapons of mass destruction at D+3.
   - 2.A Monitor strategic leadership.
     - 2.A.1 Locate key leadership.
     - 2.A.2 Exploit communication links between top leaders and subordinates as the results of friendly actions are reported.
     - 2.A.3 Predict strategic behavior based on friendly action.

This same ISR objective construct could also be used to develop ISR objectives and tasks specifically to improve EBO conditions. For instance, an ISR objective may be

conceived to exploit enemy communications nodes that are vulnerable to existing ISR capabilities. To achieve this objective, specific communication nodes would be targeted with a weapon system in the ATO process; this different approach has kinetic actions supporting an ISR requirement to understand enemy intentions. For example:

3. Exploit strategic leadership C^2 nodes for land, air, and maritime course of action.
   - 3.A. Drive key leadership nodes to exploitable communications.
     - 3.A.1 Destroy encrypted communications between C^2 leadership and fielded forces.
     - 3.A.2 Exploit communication links between top leaders and subordinates.
     - 3.A.3 Predict enemy strategic and operational intent.

The direct-integration approach enables a direct ISR linkage to the existing AOD product. It clearly integrates ISR alongside the JFC/component commanders' targeting priorities and provides specific guidance on the kind of effect to be measured. This approach, if adopted/vetted/sanctioned by the JFC, enables the AOD to become the theater vehicle for all ISR prioritization, much as it is the theater vehicle for bomb prioritization.

The downside to this approach is that the document may become too unwieldy for other users across the AOC. The current AOD product averages between 10 to 15 pages and, with the addition of airborne ISR objectives and tasks, could potentially triple the product size. The size and complexity of ISR input may encourage AOD planners, working under time constraints, to cut back on ISR input, potentially defeating the purpose of methodologically including ISR objectives and tasks. Another danger is the possibility that specific ISR objectives, in the ruthless prioritization of alphanumerical hierarchy, would gravitate towards the bottom of the list. Instead of being seen as an enabler needed to support all objectives and tasks across the board, ISR could be "ghettoized." Simply, an ISR tactical objective will more than likely be a lower priority than a targeting priority. When placed against the competing requirements of other components, this lower priority may not bode well in

securing ISR because numbers and priorities mean everything in the ISR high-demand, low-density community.[14]

Annex Integration

An alternative to the direct approach would be to create a separate air ISR annex based on the AOD's prioritized operational objectives using the same strategy-to-task methodology.[15] For this approach, the AOC would repeat the wording of the AOD strategy-to-task section and develop ISR tasks that link directly to the AOD's objectives and tasks. An ISR annex extracted from the AOD might resemble the following:

1. Gain and maintain air superiority for land and maritime schemes of maneuver.
   - ISR 1. Provide direct threat warning to US and coalition aircraft.
     - 1.A Neutralize SAMs.
       - 1.A.1 Degrade key components of SA-10 systems.
         - ISR 1.A.1a Confirm damage to target acquisition radars and height finding radars and threat to coalition aircraft.
         - ISR 1.A.1b Confirm prestrike operational status and prepare for postdamage assessment of acquisition radars located at X locations between X hour and Y hour.
         - ISR 1.A.1c Monitor site for reconstitution.

The above approach offers the JFACC an alternative to making his or her AOD too unmanageable. This approach also would allow the ISR professionals, working on behalf of the JFACC, to craft an intel-user-friendly document that translates the JFC and JFACC operational language into words that the larger intelligence community would understand.[16]

The ISR annex route would establish an easy vehicle for the JFACC to demonstrate to various ISR agencies how his priorities support the JFC without major changes to the AOD process. This method would enable the JFACC, under the authority of the JFC, to give a stamp of approval on an ISR annex that would provide clearer direction and priorities for ISR to the guiding SPEA processes. When comparing these two options, if the contingency turns out to be on the magnitude of an OIF or a future Korean peninsula conflict, the indirect integration of an ISR annex would probably be the best course of action for the JFC and component commanders due to the magnitude of ISR support needed to enable and assess EBO conditions.

Coordinating Instructions

The third section—coordinating instructions—defines the commander's critical information needs along with guidance on the use of the reconnaissance, surveillance, targeting, and assessment (RSTA) annex. It also describes priorities for combat and operational assessment as well as TST priorities and guidance. There is a need to provide ISR guidance beyond that provided by the RSTA annex, which is doctrinally 10 years old and woefully inadequate for enabling EBO conditions. For instance, in its current format the RSTA only considers one ATO and does not allow for past and future assessments.

The coordinating instructions could be used by the AOD to provide assessment instructions to theater, reach-back, and national organizations and agencies tasked to support the AOC. Such guidance could be given, for example, as requiring that first-order effects must be measured in X hours, second-order effects within Y hours, and third-order effects within Z hours. Guidance could also include instructions stating if these timelines are not met (e.g., because of a lack of collection opportunity), then the agency should move on to the next target set.

By specifying the useful life cycle of certain types of information, the AOD would positively encourage an interaction between agency and consumer on supporting the requirements of the current battlespace and dropping superceded requirements. Well-meaning ISR agencies

often work doggedly to support JFACC needs (tasked to them through the JFC) but without full knowledge of the battlespace—sometimes at the expense of current and future predictions. For example, with well-thought-out guidance, agencies could avoid expending collection resources for battle damage assessment (BDA) on enemy assets already leapfrogged by swiftly advancing blue forces. By providing this type of "exception" guidance to the supporting organizations, the JFACC has the potential to free up ISR resources for current- and future-effects thinking. This also could be a good section to establish coordinating instructions between various ISR organizations and supporting agencies to minimize duplication of work and ensure a higher level of confidence in enabling and measuring effects to provide a better assessment of the battlespace.

Logistics

The logistics support section deals with the phasing of joint air operations. Regarding ISR logistics, it could identify primary basing and divert basing for airborne ISR assets that include prior consideration for ISR logistical support. ISR systems are complex and require specialized maintenance and logistical tails.

Command and Control

Assuming JFC delegates this authority, the JFACC focus for this section would center on command and control of air and space power. This would be the ideal place to establish the requisite ISR command relationships between the JFACC and subordinate ISR organizations, as well as solidify this process as the mechanism for the JFACC to establish ISR requirements to influence agencies and organizations beyond the JFACC span of control. This could be a good section to identify the JFACC's AOC as the theater ISR C^2 node and the entry point for coordinating authority for ISR organizations and agencies supporting the contingency.

In improving the JFC's assessment process, the JFACC within this section—through the AOC—could receive dedicated ISR exploitation and assessment through the joint Distributed Common Ground/Surface Systems (DCGS) pro-

gram. In tasking the DCGS, the AOC ISR planners should use a process that embodies "centralized planning and decentralized execution."[17] The result would be planning for sensor sorties with clear, authoritative guidance on prioritized targets and reporting requirements, but it would employ the expertise at the DCGS to determine how to best satisfy the requirement, similar to the current performance of aircrews at wing and squadron operations. Making the JFC/JFACC ISR strategy available to DCGS organizations would deepen their understanding of theater campaign needs and allow them to make more useful decisions. The strategy can also offer practical help to ISR organizations or agencies beyond JFC/JFACC control by defining reporting expectation levels. ISR coordinating strategy within the SPEA construct has the potential to help theater and national agencies prioritize support and produce more tailored products to meet the assessment needs of EBO.[18]

Cascading and Positive Effects on Established Processes—Joint Targeting Coordination Board and Joint Collection Management Board

On Operation Iraqi Freedom's intelligence, surveillance, and reconnaissance employment, A. You work the targeting cycle, and I think we did real well at that. B. You understand enemy composition and disposition. We did pretty well at that. And the last part is you assess the effects of what you did. And quite frankly, we struggle with that.

—Brig Gen Robert W. Cone
Joint Forces Command

The parallel processes between the Joint Targeting Coordinating Board (JTCB) and Joint Collection Management Board (JCMB) create a rough seam in ISR support to the SPEA processes. If the JFC adopts the AOD with integrated ISR effects as described above, this AOD would be a viable means for all component commanders to drive ISR requirements according to assigned tasks and guide ISR organizations beyond the JFC control.[19] The AOD could ensure ISR planners at the JTCB and JCMB secure the appropriate means and sensors for enabling and measuring

the desired effects; help articulate the level of ISR support from theater, reach-back, and national agencies; and define the JFC-ISR C^2 and influence architecture throughout all phases of the contingency operations.

The AOD structure also lends itself to this prioritization while providing a logical and accountable framework for stating ISR priorities and requirements to the JCMB process. Under this framework, the JFC's AOD and ISR strategy could task theater-assigned ISR organizations and guide reach-back organizations and national agencies on ISR intent. That tasking and guidance could include tailored production requirements; high-value targeting scenarios; sensor cross cueing; TST prosecution; ISR feedback and assessment; and triggering events for diverting ISR sensors. These tasking and guiding instructions could enable an ISR decision matrix for making real-time decisions on ISR employment and help prioritize and focus analytical efforts on desired effects.

Improvements to the Joint Targeting Coordination Board Process

The current AOD process centers on "the JFACC's guidance for each ATO to the succession planning steps . . . [which provides] guidance with respect to acceptable risk, usually based on mission type orders."[20] The AOD drives the JTCB's ATO cycle and production focus three days from its publication. There are parallels to be drawn from existing AOD and ATO processes for dropping bombs on targets and putting airborne ISR sensors on targets.[21]

Like bombs and aircraft sorties, ISR assets are a scarce resource, and planning for ISR employment and managing its use are invariably more complicated from a C^2 perspective than bombing targets (i.e., greater positive control). There is not, however, a comparable, recognized, and formalized process for the AOC to plan and manage it. Such a process would require ISR professionals to prioritize targets, production, and analytical efforts to meet the JFACC's most important intelligence needs. In some ways, planning for ISR employment can be considered more complicated than planning for bombing because the AOD in its current form focuses on one ATO, whereas one cycle of ISR must multi-

task to assess the effects of past ATOs, to support and report on the effects of the current ATO, and to look forward to future enemy courses of action.[22]

The most effective ISR support to the JFACC thus requires the same or greater levels of planning as the traditional JTCB process. This support requires the JFACC—through the AOD—to provide the same guidance to determine and assign the priorities of platforms, sensors, air and ground stations, and ISR personnel. This guidance should be as authoritative with requisite C^2, focus, and prioritization as the weaponeering in the ATO process. Gen Charles A. "Chuck" Horner highlighted a need for ISR to be planned in the same "manner as riflemen, bomb-laden aircraft, or attack submarines. As hints and clues are received in the execution element then they must redirect planned ISR collection assets knowing that in doing so they will disrupt the priority of the original planning effort."[23]

The parallels between weapon employment and ISR employment are visible even when the processes managing them diverge. JTCB processes focus on weapon platforms to include the traditional bombers and fighters effects to the role of nonkinetic effects that help enable EBO conditions. Obviously, the AOC is both a contributor to, as well as manager of, the JTCB process. The JFACC is but one component with requirements for airpower effects, even though the AOC is the provider of these effects. Likewise, the AOC provides the bulk of airborne ISR assets, but is merely one consumer of ISR products. Because the AOC manages the process, we Airmen have a tendency to forget the distinction. The current authority for managing the ISR process is the JCMB, under the auspices of the JFC/J2.

A JFC-adopted AOD with integrated ISR effects may also be the procedure to establish an ISR linkage to nontraditional ISR sensors during the JTCB processes. Such sensors, when integrated with space- and theater-based ISR collectors, can provide a valuable means for assessing and supporting the JFC's campaign objectives. Nontraditional capabilities include advanced targeting and navigation pods (e.g., LITENING AT), seismic ground, and sea acoustic sensors. Integrating them with the rest of the traditional ISR platforms (e.g., satellites and theater reconnaissance platforms) can only enhance intelligence support to intelli-

gence—hungry EBO orders-of-effects thinking, and a common operational picture of the battlespace.[24]

Improving on the Joint Collection Management Board Process

The existing procedure to submit ISR requirements from the JFACC and other component commanders to the JFC, and from the JFC to the national community, is via priority intelligence requirements (PIR) and component collection requirements to the JCMB. This method as it is currently used is inadequate both because PIRs and component collection requirements are traditionally phrased in a question format (e.g., What is the enemy's scheme of maneuver in the next 24 hours?) that does not necessarily link directly to a commander's prioritized objectives and because collection needs tend to be suboptimized because they are component-centric. Collectively they do not provide a rigorous framework to connect ISR to the JFC's campaign or to connect it to the JFC/JFACC's operational objectives and tactical tasks for enabling EBO orders-of-effects thinking.[25]

The JCMB complexity of balancing competing requirements in the ISR world increases when strategic requirements supporting the national command level are included. Operational and tactical intelligence requests for national-level support must compete with the requirements of agencies such as the Defense Intelligence Agency (DIA), National Security Agency (NSA), Central Intelligence Agency (CIA), Department of State Intelligence Division, and others.[26] These agencies often have higher priorities for ISR than the JFC. During combat operations, these priorities frequently overlap, and JFC ISR requirements are met either because national agency support to the JFC is itself a priority or because these requirements are also national collection requirements. However, if these distinctions are not well understood, this can create a false sense of ISR support to the JFC or component commander; a JFACC may be disabused of this notion only when national agency support decreases because of other ISR priorities at the strategic level.

As opposed to an ambiguous comingling of requirements, the JFC and component commanders should have the

ability to know what type of national collection they can rely on so they can plan accordingly. If other strategic requirements will supplant operational or tactical requirements, this will translate into less national-level and/or lower-quality intelligence support for target development, assessment, and predictive analysis. At best, this deficit would force a heavier reliance on theater ISR assets normally tasked for situational awareness or indications and warning missions, not specialized production needs. At worst, the deficit would remain unaddressed, and products supporting the EBO beyond the immediate operation would be relegated to a perpetual "back-burner," contributing to operational and intelligence "near-sightedness" as ISR assets focus on immediate and near-term needs as opposed to longer-term, strategic analyses.[27] A component-vetted AOD with guidance on ISR effects would help mitigate this problem.

Strategy-to-Task Methodology Provides Other Benefits to the JFC

A one-man band is a waste of talented musicians and their expensive instruments. It also sounds like s--t.

—Gen Charles A. "Chuck" Horner, USAF, Retired

Could Provide Assessment Guidance That Draws Effects to a Campaign Plan

Today's campaign plans rely on theater and reach-back ISR organizations such as the joint DCGS, coalition ground stations (e.g., ROK Kumgang for imagery and Paekdo for signals in the Korean theater), theater tactical reconnaissance ground stations (e.g., Great Britain's Tornados), and various national agencies such as DIA, CIA, NSA, and National Reconnaissance Office. With the proliferation of ISR sources supporting the JFC and component commanders, it is imperative to have some form of assessment and feedback loop that helps measure the overall effectiveness of ISR to the JFACC's campaign objectives. When guided by an overarching statement of ISR strategy/priorities (i.e., AOD), the JTCB and JCMB processes can accomplish this feedback.

The JFACC, like component commanders, uses operations assessment to measure achieved effects and determine how they contribute to the overall JFC campaign. The JFACC uses the AOD as his scorecard in looking at the JFC overall campaign assessment. The campaign assessment attempts to quantify the EBO results for future campaign strategies.[28] ISR effects are missing from the overall assessment process.

Quantifiable ISR data, such as numbers of taskings, processing timelines, exploitation satisfaction, and timelines of dissemination to the operational user are routinely captured by supporting ground stations and airborne reconnaissance platforms. Moreover, these ISR operators, as well as ISR personnel embedded in the AOC, can qualify the data and aid an AOC-level operational assessment of the overall utility of intelligence received. Knowing this information, the JFACC can recommend to the JFC whether to adjust the allocation of ISR platform assets, insert priority collection for missing assessments, revector ISR tasking to higher-priority needs, or target ISR shortfalls for enabling and measuring EBOs.

Campaign and operational assessment commonly measure effects to objectives by using a "stoplight" chart based on objectives, tasks, and measures of effectiveness and merit. By adding ISR guidance to the AOD as detailed above, the JFACC could ensure an assessment of ISR's effectiveness is incorporated into the operational-assessment process, thus providing continuous ISR feedback to the JFC's campaign assessment. Some examples of potential feedback include observations from ISR units that tasked sensors were not suited for the tasked collection, reports on collection limitations due to sensor capabilities, mission problems, and information on potential areas for predictive analysis.

The current process lacks a theater and national feedback mechanism that informs the JFC how well ISR planning and employment meets objectives and tasks. Reach-back organizations such as national agencies and the DCGS often provide reporting via standard reporting procedures, and the JFC and component commanders rarely get insight as to how well these organizations are meeting the campaign objectives and tasks. Along with a well-established C^2 relationship, a well-developed ISR assessment process would

provide the means for national agencies to report meaningful metrics to the JFC on how well ISR is meeting the campaign objectives.

Doctrinally the JFC does not have a level of authority to hold national and reach-back organizations or agencies accountable for tailored ISR assessment and reporting, although by the nature of this position, the JFC can influence these organizations or agencies based on his or her operational needs. During OIF, the ISR command relationships for reach-back and national organizations or agencies were not clearly established, nor was there clear guidance from the CFC or JFC on ISR objectives to meet their operational needs.[29] This was problematic for components needing theater ISR support during combat operations, and it fragmented persistent ISR operations during the stabilization phase in Iraq.

This AOD approach provides the JFC and component commanders, through the JFACC, a viable means for guiding airborne ISR effects and assessment at the JCMB, just as they do at the JTCB. OIF demonstrated that the JFACC could successfully direct theater airborne ISR platforms and sensors during TST scenarios earmarking the JFACC/AOC as the "supported" theater ISR C^2 node and coordinating authority for supporting ISR.[30]

Improves Execution—Could Help Solve the ISR Ownership and Fragmented Reporting Issue

The problem of ownership and reporting cannot be overstated. In the winter of 2003, a US reconnaissance aircraft flying in the Sea of Japan was intercepted by a North Korean M-29. A key lesson observed centered on an ISR C^2 seam between Korean area of responsibility (AOR) and Pacific Command (PACOM) AOR which led to a dangerous lapse in direct threat warning to a PACOM ISR asset. Peeling the onion back further, the C^2 seam between the PACOM-US-only reporting and Korean-peninsula-combined reporting environment was the question of which one was in the best position to warn against North Korean threats.[31] This example further strengthens the need for ISR requisite command authority and a method to influence the tasking and exploitation nodes based on JFC priorities to agencies and

organizations beyond JFC control. Within the JFC's authority, theater airborne ISR assets fall under the JAOP process, and so Air Force planners are used to counting the U-2, RC-135, Predator, Global Hawk, and others among the assets they manage from the AOC perspective. Sensor priorities, however, are often managed at the national and/or JFC level because of the high-demand, low-density strain on these assets. Moreover, true ISR "unity of effort" must recognize the need for a full management of the ISR continuum, of which the JFACC only provides a portion, albeit a large one. Without guiding ISR effects and established planning process, ISR ownership and execution become fragmented and inefficient because of misunderstandings about who owns ISR platforms and sensor tasking. The key execution reality is that the airframe and sensor tasking can occur independently from one another and that they likely are responsible to different authorities.

Additionally, the physical control and tasking of an ISR sensor is analogous to the physical control a fighter pilot exerts over her aircraft. It is in most cases influenced by, but distinct from, the control of the airframe. ISR operators, whether ground or airborne, receive their taskings, analyze the collection deck, plan the use of the sensor for maximum efficiency in meeting reporting requirements, and have the physical means to dynamically retask the sensor during execution. Just like any other operator, their work derives from the authority under which they are tasked. We often view theater ISR C^2 backwards because we look at the platform carrying the sensor, rather than looking at the requirements and authority driving the production of the intelligence from the sensor. ISR sensor tasking must be allocated clearly, regardless of platform ownership, to enable EBO conditions.[32]

The effects of the discrepancy between platform and sensor authority can be seen in an AOC. In the ATO, the JFACC as the airspace control authority plans airspace for theater ISR assets, to include the U-2, Rivet Joint, Global Hawk, Predator, EP-3, and others. Once produced, the ATO reflects ISR assets, orbits, and altitudes. However, the JFC's AOC often lacks sensor-tasking authority over these assets when fighting today's war. The results are confusing to the AOC's combat operations crew because lines of con-

trol to ISR sensors are not necessarily similar to those of traditional weapon systems, such as those that support close air support, air interdiction, and strategic attack. Lack of understanding of sensor control and muddled ISR C^2 has the potential to put joint and coalition forces in harm's way; for instance, is the AOC crew trained to think about this when redirecting AOC manned assets that rely on ISR for direct threat warning? An additional frustrating conflict can occur during TST scenarios when the AOC's chief of combat operations attempts to task the optimum sensor in the TST hunt, only to find retasking the sensor is outside of his authority. OIF observations point to process breakdowns resulting from a lack of unity of ISR effort in prosecuting TST scenarios and supporting tactical ISR requirements.[33]

Could Establish a Central Node for JFC ISR as the Strategy-to-Task Builder and Theater ISR C^2 Node

A logical link was set for the JFC to establish the JFACC as the supported commander for formulating unity of ISR effort by building an airborne ISR strategy under the JFC's SPEA construct. The JFACC normally leads the JAOP process, which plans and executes targeting priorities determined by the JTCB. The JFACC could allocate ISR assets as he does traditional weapon systems from other services in support of the JFC's campaign objectives.[34] The JFC normally designates the JFACC for the planning and execution processes for component commanders' needs as the airspace control authority, area air defense control authority, and most recently as the space coordination authority. There are also instances when the JFC delegates weapon system control to the JFACC for the Army Tactical Missile System supporting TST scenarios and the Navy's Aegis cruiser for air defense.[35] Having air and space control or coordinating plus targeting responsibilities makes the JFACC, coupled with the AOC weapon system, the most likely choice as the supported theater ISR C^2 node. The JFACC is the most logical choice for providing the JFC this ISR support.[36]

This process is going to require an aggressive promotion for components to relinquish their ability to influence

national-ISR collection via the JCMB. But if the component commanders examine this process from the same point of view as the JTCB, they may recognize the synergy they can achieve by having influence over theater and national-ISR collection. As RADM Jack Dorsett, Pacific Command/J2 and former Central Command Joint Intelligence Center commander, pointed out, "This relinquishment will rest on a matter of trust and proven performance."[37]

May Help Solve Coalition ISR Sharing—through Guidance

A thornier issue that often gets overlooked is the JFACC's intent about ISR sharing in a coalition environment. By providing clear intent, the JFACC establishes an operational justification that will enable the foreign disclosure officers' sufficient time to work with national policy decision makers on releasability and disclosure guidance. The JFC through the JFACC can explain their ISR intent for integrating coalition partners ISR to enable effects for campaign objectives.

Conclusions

> *All the high-tech weapons in the world won't transform the US Armed Forces unless we also transform the way we think, train, exercise, and fight.*
>
> —Secretary of Defense Donald H. Rumsfeld

The JFC should have a planning process that establishes theater-ISR effects with theater-ISR and ISR organizations or agencies beyond JFC control. The latter deals primarily with establishing processes for components to state their national-ISR needs in conjunction with theater-ISR needs. This process creates a synergetic effort when prioritizing national ISR with one theater voice instead of attempting to satisfy separate component interests on equal footing.

The major phases of combat for Desert Storm, Operation Enduring Freedom (OEF), and OIF were all less than 100 days. In comparison Operations Northern and Southern Watches maintained ISR vigilance for 11-plus years after Desert Storm—predominantly supported by the combined

force air component commander (CFACC)/Ninth Air Force's ISR organizations in the south, and the CFACC and European Command's ISR organizations in the north. The Korean peninsula remains a hot spot and strong consumer of ISR needs—mostly supported by the JFACC and Seventh Air Force's ISR organizations. Both OEF and OIF are shaping into long-term ISR support missions. The author asserts that the JFC needs clear requisite C^2 authority over theater ISR and the ability to influence those ISR organizations beyond his/her control during all phases of a conflict for understanding an adversary's intent.[38] This requirement is especially true in Iraq where stabilization operations continue to demand ISR support against insurgents. The current OIF ISR focus misses the conceptual premises behind setting EBO conditions as management of ISR platforms centers on numbers of missions and hours of coverage rather than effects required to achieve campaign objectives.[39]

These untidy linkages affect ISR support to the entire SPEA construct—from not having an overarching or guiding ISR effects strategy-to-task methodology for high-demand and low-density ISR platforms to fragmented planning processes, dangerous C^2 at the execution level as demonstrated during OIF, and unfocused ISR for the intelligence-intensive EBO assessment. The problem remained unsolved as recently as OIF, as witnessed by the Marine and Army lessons observed for not having theater ISR support during their drive to Baghdad.[40] For EBO to be effective, the JFC needs an operational-level ISR strategy to task methodology that enables EBO conditions through requisite commander relationships and provides influencing direction at the national-interagency level. Precedence has been established, and the JFACC possesses the best capabilities to develop and execute an operational-level ISR strategy that can centralize theater ISR planning and provide a forum for consolidating and prioritizing national-level ISR priorities up through the JFC.

If the JFC embraces EBO conditions, there is a need to establish a theater C^2 ISR node and an ISR effects strategy-to-task methodology that link to the JFC's SPEA processes for achieving campaign objectives. The problem has and continues to be with the JFC's ISR planning and execution processes that do not have an overarching ISR strategy-to-

task methodology to guide national and theater ISR in a unified manner. This lack of an ISR-effects strategy has a ripple effect, impeding the full operationalization of EBO even though improved processes and better tools have matured to support the intelligence-intensive JFC's SPEA requirements. An integrated ISR strategy-to-task methodology could help solidify theater airborne ISR C^2 lines of communication that often get blurred or ignored because there is not a clear chain of command for theater and national ISR (which has to manage competing interests among strategic, operational, and tactical commanders). If adopted, an AOD with integrated ISR effects could be the means for conveying the JFC's ISR strategy through the JFACC's JAOP process. Placing the JFACC in the position of the supported theater-ISR node would help guide the two parallel SPEA processes—the JTCB and JCMB. The JTCB's primary focus is to produce an ATO that puts bombs on targets, and the JCMB's primary focus could likewise become putting sensors on target and providing ISR effects for all the components.

By using parallels to this process, a first transformation step would be to ensure the appropriate sensors are on the correct targets at the right time. The JCMB processes focus on JFC and component-priority-intelligence requirements and the components' ability to influence collection requirements with agencies and organizations beyond JFC control. As a separate but equally important process, the JFC/JFACC and component commanders need one coherent ISR position expressed at each forum. By including ISR effects and focus during these guiding processes, the JFC/JFACC can enable and measure effects at the right time to future campaign direction. Clear ISR intent in the AOD also will help theater, reach-back, and national agencies understand their role in the contingency operation and assist them to tailor reporting to AOD's desired effects in the form of an ISR assessment. The ISR assessment from these organizations and agencies would enable the JFC to recognize how well ISR is meeting his or her campaign objectives.

The role of ISR effects must be addressed to maximize EBO for ongoing and future contingencies. OIF demonstrated an unprecedented number of real-time ISR platform

feeds to the AOC that enabled the AOC to act much faster than in previous conflicts. These capabilities coupled with TSTs and emerging targets have overtaken preplanned targets, which beg a better way to guide and prioritize ISR. It is often the plea of the operational commanders that ISR is not responsive; in this case, the operational intent in the form of an ISR effects strategy-to-task methodology is not delineated effectively and clearly. We now need the JFC to respond and adjust the ISR processes to establish requisite C^2 for theater ISR and establish a guiding mechanism to influence agencies and organizations beyond his or her control.

Notes

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36. Col Mark Kipphut, PACAF/IN, Hickam AFB, Hawaii, interview by the author, 29 July 2004. Kipphut stated, "The JFACC is best poised to work all airborne assets, and I would argue this also includes national systems (involving building the collection strategy, run the de-confliction, determine natural tasks, etc.) [In short] we need a more unified effort achieved by an agreed process under a single commander who would be held accountable for functions and processes."

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Glossary

AOC	air operations center
AOD	air operations directive
ATO	air tasking order
C^2	command and control
CFC	combined force commander
CIA	Central Intelligence Agency
CSAF	chief of staff of the Air Force
DCGS	Distributed Common Ground/Surface Systems
DIA	Defense Intelligence Agency
EBO	effects-based operations
F^2T^2EA	find, fix, track, target, engage, and assess
ISR	intelligence, surveillance, and reconnaissance
ITO	integrated tasking order
JAOP	joint air operations planning
JCMB	Joint Collection Management Board
JFACC	joint force air and space component commander
JFC	joint force commander
JP	joint publication
JTCB	Joint Targeting Coordination Board
MAGTF	Marine Air Ground Task Force
MEF	Marine Expeditionary Force
NRO	National Reconnaissance Officer
NSA	National Security Agency
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
OODA	observe, orient, decide, and act
PIR	priority intelligence requirements
ROK	Republic of Korea
RSTA	reconnaissance, surveillance, targeting, and assessment
SAM	surface-to-air missile
SPEA	strategy development, planning processes, execution cycle, and assessment of effects
TCT	time-critical targeting
TST	time-sensitive targets

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