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NTISR

Nontraditional Intelligence, Surveillance, and Reconnaissance

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Cover Photo By – TSgt Cecilio M. Ricardo Jr., USAF

Director's Comments—Supporting the Warfighter

The mission of the Air Land Sea Application (ALSA) Center is to rapidly develop multi-Service tactics, techniques, and procedures (MTTP) publications and studies in order to meet the immediate needs of the warfighter. The purpose of the *Air Land Sea Bulletin (ALSB)* is to "spread the word" on recent concepts and issues while providing a vehicle for the cross-flow of information among the Services. The Airmen, Marines, Sailors, Soldiers, and Coast Guardsmen who live and fight at the tactical level of war are the lifeblood of ALSA and the reason why the *ALSB* is written. As the ALSA Director, I will keep our focus squarely on that mission and maintain the *ALSB* as a forum for your multi-Service dialogues.

The theme for this issue of the *ALSB* is Nontraditional Intelligence, Surveillance, and Reconnaissance (NTISR) which is a topic of significant relevance for both Operation IRAQI FREEDOM and Operation ENDURING FREEDOM. So whether you call it NTISR, Inherent ISR, or believe there is only ISR, one fact remains constant. Advanced technology, such as Sniper Pods and TOW Thermal Imaging sights, is providing increased capabilities to the warfighter, and smart operators like you are discovering ways to use existing equipment to improve the commander's situational awareness. The lead off article by Lieutenant Colonel Lewis D. "Dough" Hill (Ret) reviews an Air Force definition of NTISR and its practical application in Operation DESERT STORM and Operation IRAQI FREEDOM (OIF). In the second article, Lieutenant Colonel Wayne L. Shaw III discusses the need for NTISR tactics, techniques, and procedures (TTP) and focuses in on his experiences with the Remotely Operated Video-Enhanced Receiver (ROVER) during OIF. For the final article, Capt Kevin "Gunner" Pratte describes the effectiveness of "packaging" NTISR systems with traditional ISR methods.

At the back of this and every issue of the *ALSB*, you will find a complete listing of current ALSA publications which are available to the warfighter on our website. As you will note from our mission statement, our publications cover the entire military spectrum, and if something is missing we want to hear from you ASAP. In the coming year, we will publish revised editions of *Joint Application of Firepower (JFIRE)* and *Tactical Convoy Operations (TCO)* while we develop new publications in the areas of *Air Operations in Maritime Surface Warfare,* and *Strike Coordination and Reconnaissance*.

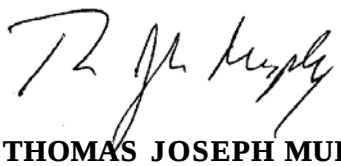
We know that our readers are a broad and varied group of warriors, many with multiple tours in one or more theaters, and the bottomline is that we want to hear from you, learn from your practical experience with tactics, techniques, and procedures at the tactical level, and improve Service interoperability. Even when your input doesn't directly match the theme of a particular issue of the *ALSB*, we often find it applicable to an MTTP that may be coming due for revision. That said, don't be bashful. We need you to continue submitting articles and ideas so we can improve life for the warfighter. Our January 2008 *ALSB* will be focused on military operations in urban terrain (MOUT) and the May 2008 *ALSB* will be focused on advisor teams working with foreign forces. The suspense for accepting articles for these two *ALSB* issues is 15 October 2007 and 29 February 2008 respectively.

ALSA is no different than your organization, and we experienced the traditional summer personnel

rotation. We bade farewell to the Givens' family as Colonel Rob "Snort" Givens moved to Luke AFB, to take command of the 56th Operations Group. Congratulations to "Snort"; he was an outstanding director, and we were fortunate to have had such a quality officer leading ALSA for the past year. Along with Colonel Givens, we said farewell to six other outstanding ALSA personnel: Colonel Sam Clear (USA) off to Kuwait as the G3 Chief of Operations for Third Army, Lieutenant Colonel Rob McCreadie (USAF) retiring after 21 years of service, Commander John Evans (USN) retiring after 23 years of service, Lieutenant Colonel Bob Finn (USA) to US Army Training and Doctrine Command at Fort Monroe, Lieutenant Colonel James Egbert (USAF) now flying again as an instructor pilot for Pilot Instructor Training at Randolph AFB, and Ms Tomeka Evans (GS) who stepped up to work for the US Department of Homeland Security.

However, it is not all departing personnel at ALSA. At the end of June, our new Deputy Director, Colonel Steve "Judy" Garland arrived with his wife, Paula, and three children, Mitch, Erica, and Peter. He just finished a year of study at the Air War College and brings a wealth of experience in the F-15E, F-117A, and F-4G with multiple combat tours. I have no doubt, Colonel Garland will be a welcome addition to the ALSA team. He is not alone as a new arrival. Captain (select) Matt Danehy (USN) joined us from the Industrial College of the Armed Forces and he is now in the Command and Control Branch. Lieutenant Colonel David "Norm" Kilcher (USAF) joined us from Pope AFB and he is now in the Land and Sea Branch. Lieutenant Colonel (select) Chris Petersen (USAF) joined us from Moody AFB and he is now in the Air Branch, and Leila Joyce is our new automation assistant.

Lastly, I would be remiss if I did not also mention a historic date for ALSA. The ALSA Center recently celebrated its 32nd Anniversary this past July. Established in 1975 in the aftermath of the Vietnam War to continue cross Service cooperation between the Air Force and Army, the Air-Land Force Application (ALFA) Agency evolved to become the ALSA Center in 1992 with the addition of the Navy and Marine Corps. Well into our thirty-third year of service, we will continue to keep our focus on rapidly and responsively developing MTTP to meet the immediate needs of you the warfighter.



THOMAS JOSEPH MURPHY
Colonel, USA
Director

An Airman's View of NTISR

By
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Let's get the Air Force definition out of the way first before we go into how we got here. Nontraditional Intelligence, Surveillance, and Reconnaissance (NTISR) is the concept of employing a sensor not primarily used for ISR as part of an integrated collection plan, developed at the operational level, for preplanned, on-call, ad hoc, and/or opportune collection. This is straight out of the USAF's *NTISR Functional Concept.* Talking with some of my sister-Service brethren, they are mortified to hear our efforts on nontraditional ISR. "What? You don't normally use all the information you get in your aircraft?" or "You just want to take over another mission." No we don't, but we do see the need for a cultural change in attitude.

First, NTISR is not a mission but a long neglected functional capability. Second, look at some of our mottos: "To Fly and Fight" — "Global Reach Global Power" — and SAC's "Peace is Our Profession." Thinking about what's on the ground and collecting intelligence was not a main stream topic at the O'Club. We flew at 40,000 feet, had great aerial duals and bombed on radar returns...not exactly helpful for getting ground-based intelligence. We had specialists who worried about tactical reconnaissance (TACRECCE), peacetime application of reconnaissance programs (PARPRO), Rivet Joint (signals intelligence [SIGINT]), and Joint Surveillance Target Attack Radar System (JSTARS) (moving target indicator); and a whole community in D.C. who thought satellites could gather all the surveillance and reconnaissance we needed. A man holding a camera out of an open cockpit was quaint and had as much to do with the modern Air Force as did Adam and Eve with modern man.

But all that was changing in the 90s and DESERT FOX started a USAF movement, even though it was for Public Affairs purposes.[1] We began looking at weapon sensor video (WSV) seriously. There had been previous blips on the radar, such as when the Gulf War Air Power Survey helped the Defense Nuclear Agency (now Defense Threat Reduction Agency) with a nascent effort after Gulf War I (GW I). Operations DENY FLIGHT and SOUTHERN WATCH also used WSV more extensively.

...NTISR is not a mission but a long neglected functional capability.

United States Central Command Air Forces (USCENTAF) asked its parent major command, Air Combat Command, during the planning stages of Operation IRAQI FREEDOM (OIF) to take a look at the SCUD problem that almost broke the political and military coalition. In GW I, originally two action officers were told to "think out of the box" (including yours truly). They were soon joined by a handful of really smart people and a couple O-6s. After a real learning curve that continues to this day, the Counter SCUD Team developed and trained a force of US and UK, fighter, bomber, and reconnaissance aircraft to work with US, UK, and Australian ground special operations forces (SOF). All the forces had one job: find the SCUDs before they fire at Israel. Everything else was a secondary mission. While the learning curve

[1] In DESERT FOX the Navy was transmitting WSV off their carriers to the news channels while the Air Force had nothing for days.

was probably at the steepest in the Fall of 2002, an intelligence officer and an F-16 pilot exercising the plan thought "what do we call this mission?" "NTISR" was coined.

We had to train the aircrews for the mission, train them on identification, integrate SOF reporting (still learning that lesson) and exploit the WSV back at the base(s). For Airmen it was a big lesson. Lots of things went against our nature. We didn't blow up bridges, we looked under them. We took our target acquisition sensor data and gave it to UK imagery interpreters. All of this was fused with national sources and we waited to find a SCUD. Normally battle damage assessment (BDA) is the only thing that (some) Airmen thought important on WSV. Now we exploited it for things like Iraqi security force positions. It was new stuff to us. The joint force air component commander (JFACC) was the supported commander for the Counter SCUD mission and we had ground forces supporting us. The guys in eastern Iraq were using targeting pods on the way home to get imagery for the air operations center (AOC). What a concept!

The guys in eastern Iraq were using targeting pods on the way home to get imagery for AOC... NTISR was so successful that it was a revelation.

NTISR was so successful that it was a revelation. However, some Airmen were adamantly against this sordid history ever repeating itself. (I joke, but the number of other names used for NTISR or related functions are still lively debated.) It was natural for some of us who remember Conrac radar warning receiver tapes (Wild Weasels—suppression of enemy air defense) and how we brought battlefield electronic intelligence (ELINT) back home to be analyzed. More and more impetus for NTISR happened in the great OIF Monday morning lessons learned sessions. The Counter SCUD Team had to process targeting pod imagery and synthetic aperture radar images after the fact because none of the info could feed directly into where the analysis was performed. The processing of most sensor information, however, was internal to the aircraft and the data was not recorded. We realized that over the decades, we had completely disconnected aircraft from battlefield situational awareness.

The *NTISR Functional Concept* mentioned above tries to rectify this error. NTISR is a function, not a mission. With any luck we will inculcate NTISR into our Airman culture. Nobody will give it a second thought that the AOC can see what the aircrew sees in near real time. Aircrews should be as nervous about this as traffic engineers are about traffic cams: nobody but the engineers can control those cameras; nobody but aircrews will control aircraft sensors. Aircrews will, however, receive guidance from collection experts regarding the intelligence they're collecting.

Technology is also enabling us in several ways. The latest targeting pods allow us to identify trucks from 15,000 feet. My next refrigerator will have an internet protocol (IP) address as we move electronics into a net-centric environment. Imagery formats have been established and ELINT data should be soon. We couldn't do these things 20 years ago. Our flying ops were different. At 200 feet and 400 knots we could not see what a Huey pilot could. But we have different capabilities now and we as an Airman are changing. As General Jumper said, "Every Airman is a sensor."

NTISR in Division TACP Operations

By
Lt Col Wayne L. Shaw III, USAF
11 EASOS/CC
(June to November 2006)
Camp Liberty, Iraq

Looking back on one of the original uses of airpower—observing the enemy—pilots today flying F-16s, F-15Es, F/A-18s, and A-10s are using advanced targeting pods (ATPs) to conduct what is known as Nontraditional Intelligence, Surveillance, and Reconnaissance (NTISR) in a more advanced, robust, and sophisticated fashion than ever before.

F-16C Block 30, carrying a LITENING II navigation/targeting pod and AIQ-131 jamming pod on the centerline.
(USAF Photo by MSGT Joe Cupido.)

Persistent, full-motion video (FMV) from these aircraft has been a benefit to ground commanders. Anyone with a device capable of intercepting and displaying FMV via a video data link (VDL) has been able to leverage battlefield ISR to greatly enhance operations. The display device is the Remotely Operated Video-enhanced Receiver (ROVER). The special operations community provided ROVER to the tactical air control party (TACP) community. It consisted of a Panasonic Toughbook CF-18 for the needed software and display of the video feed, a "black box" receiver, an antenna, and the associated cables. It is "THE" piece of TACP gear the Army knows and cares about. To illustrate the Army's interest in ROVER, you only have to look at the buildup for the summer 2006 Baghdad security surge. The one question on the minds of ground brigade commanders was, "How many ROVERs were available and were there extras?"

During Operation IRAQI FREEDOM (OIF), I was privileged to command the 11th Expeditionary Air Support Operations Squadron (11 EASOS) and had the opportunity to see NTISR firsthand. The joint terminal attack controllers (JTACs) that worked for me routinely used ROVER III to view what the pilots and aircrew of the aircraft they were controlling observed through their various ATPs to conduct NTISR in support of numerous Army operations. In one instance, the 11 EASOS successfully located three improvised explosive devices (IEDs) using ROVER and NTISR techniques and the IEDs were defused before they could explode.[1] The fact that JTACs are predominately controlling missions such as "Armed Recce," "Armed Overwatch," and "NTISR" is what makes it an important topic since these are NOT the missions for which they train.

Anyone with a device capable of intercepting and displaying FMV via a VDL has been able to leverage battlefield ISR to greatly enhance operations

During my deployment for OIF, the Army ground commanders requested hours upon hours of NTISR support resulting in JTACS controlling these NTISR sorties. So what is the problem? The problem is that there is no defined NTISR doctrine or tactics, techniques, and procedures (TTP); little to no stateside NTISR training for JTACs; and no established joint methodology for measuring effectiveness of the missions.

I will discuss each of these in this article based on my experience in Baghdad with the 4th Infantry Division (4 ID) from early June to late November 2006 as the 11 EASOS Commander responsible for TACPs and combat weather teams in the Multi-National Division-Baghdad (MND-B) area of operations. Any ideas presented in this article are my own and have not been vetted through any official channels but are merely my opinions based on my experiences and offered up for professional military dialogue.

One of the first things I learned upon arriving in Baghdad was the lack of common terminology to discuss what missions were being flown.

NTISR Defined

In an effort to define NTISR, let's now switch gears a bit. As a former chemist, let me propose an equation for NTISR. At "1 atmosphere of pressure and under ambient temperature" it is as follows:

NTISR = ATP w/VDL + ROVER + JTAC w/ radio

Take away any of one these "ingredients" and you do not have NTISR as it is presently understood and executed. None of these components are unique to any one Service. Examples of ATPs my JTACs leveraged in OIF were the Litening II pod (only flown on F-16s during my OIF stint), and the advanced targeting forward-looking infrared (ATFLIR) pod (flown on US Navy F/A-18s). The VDLs differ by platform as well...some are analog and some are digital. The ROVER gear has been used by multiple Services to great effect.[2] Of course, as the acronym implies, JTACs can be of any Service.

NTISR Doctrine/TTP

One of the first things I learned upon arriving in Baghdad was the lack of common terminology to discuss what missions were being flown. Upon arrival in theater, the Division air liaison officer (ALO) that I was replacing told me, "The CFACC [combined force air component commander] doesn't want us using the term "Armed Recce" on our air support requests (ASRs)."[3] To both the incumbent and myself, this seemed to be the term that most accurately reflected the mission that the aircraft were actually performing and it was an established doctrinal term. However, time would show me the wisdom of the CFACC's ways. Lt Col Bob "B2" Beckel, Jr. collaboratively working through weekly video teleconferencing with the combined air operations center's (CAOC) Strategy Cell coined the term "Armed Tactical Overwatch" as a substitute—albeit nondoctrinal—that we should use on the ASRs instead. This eventually evolved to the current missions in order of priority and precedence of "Armed Recce," "Armed Overwatch," and "NTISR." Armed Recce and Armed Overwatch are requested through normal ASR channels and NTISR is requested through intelligence channels. Emphasis is now being rightly placed on Armed Recce or Armed Overwatch in support of troops on the ground versus using fixed-wing air as very expensive "manned" unmanned aircraft systems (UAS) looking at patches of ground for hours on end and not directly supporting any ground forces.[4]

11 EASOS JTAC, SrA Michael Garrett.
(USAF Photo by SrA Jessie Arnold.)

While the term NTISR does not appear in the unclassified ALSA MTTP publication for "*Strike Coordination and Reconnaissance*" (SCAR) (Final Coordination Draft dated February 2007), it might rightly belong in such a publication

which codifies MTTP for strike as well as reconnaissance operations. This would be an excellent place to provide some modicum of guidance to future JTACs and aircrews. Another possibility would be to role NTISR TTP into the next re-write of Joint Publication 3-09.3, *Joint Doctrine for Close Air Support*, unless it's deemed that this publication should remain exclusively dedicated to doctrinal kinetic operations vice TTP guidance. Regardless of the location of NTISR in the doctrinal world, without any existing or pending doctrine or TTP, how are commanders to plan, coordinate, execute, and assess the effectiveness of NTISR?

NTISR Training

I have already mentioned the lack of official TTP for NTISR. The 11 EASOS, being good "Type A" military members, did what we could to uncover whatever we could find before deploying using personal contacts and internet searches. As expected, there were some good, unofficial TTP floating around cyberspace. The problem here is of course—maybe you have a good "Google-type" search, maybe you don't—and not everyone finds the same material. These unofficial TTP we found were also aircrew and "switchology" oriented versus JTAC and TACP-oriented.

NTISR Measures of Effectiveness and Performance

Like most people, we all like to know "How am I doin'?" This is where measure of effectiveness (MOEs) need discussion. Right at the outset, let me pass on some "feelings" from my Army brethren. Some things cannot be measured. For example, the incredibly positive psychological effect to the troops on the ground from jets flying overhead and just knowing that they are there is immeasurable. But at the end of the day, we need to be able to show more than that intangible to justify the risk and expense of these sorties completed with our nation's blood and treasure.

Under the leadership of Lt Col Bob "B2" Beckel, the 11 EASOS developed a TACP-tracked measure of performance (MOP) for NTISR sorties that was fed up the chain to the air support operations center (ASOC) and then on to the CAOC. It was a tracker that counted NTISR sorties flown, significant observations, numbers the Army "actioned," significant findings, and "positive finding" numbers. In other words, for each sortie flown, when our pilot-JTAC team saw something and reported it to the Army, how many times did they "action it" and when they did action it, how many times did it turn out to be the proverbial "needle in a haystack" (e.g., an IED, weapons cache, etc.).

As one might imagine, when I made the calculations at the end of the month, the "efficiency" of these sorties was VERY, VERY low. Under my watch, we never developed the harder MOE. But if we did, it may have been something along the lines of, "NTISR is effective at locating enemy items of significance" with indicators such as "OUTSTANDING = MOP efficiency of 90% or better," "EXCELLENT = MOP efficiency of 75% or better," and so on. We didn't have all the answers but, we had a starting point.

...the incredibly positive psychological effect to the troops on the ground from jets flying overhead and just knowing that they are there is immeasurable.

Way Ahead

How do we know we're being effective? How do we measure it? What do we measure? Currently you have EASOS commanders who are operating on a shoestring budget of sleep and manpower trying to figure this out in combat. The Air Force is addressing this through assignment of "ISR Liaison Officers" which should help. I would also suggest we have School of Advanced Aerospace Studies graduates or contracted workers with the RAND Corporation assist us in this area.

I would also suggest the development of a reference video with still photos that would be used in a training program so that pilots and weapon systems officers as well as JTACs know what "thermal signatures" may be worth further scrutiny (e.g., some "thermal signatures" turn out to be burning trash or oil from a vehicle instead of the illusive recently buried IED). With these reference photos/videos available for aircrew and JTAC study before the mission, we can improve our "efficiency" by better knowing what an IED, command wire, recently buried IED, etc. looks like through ATP video. This endeavor could be rolled into future testing.

What we can develop for TTP on how to conduct NTISR will be a much-needed chapter in the relatively meager existing literature on COIN airpower employment.

More testing is required to refine our unofficial TTP in order to determine the most productive way to conduct NTISR. Tests need to take into account factors like type of mission being flown (such as main supply route patrol, traffic check point patrol, forward operating base perimeter surveillance, or enemy safehouse surveillance), as well as, airspace concerns such as host nation air force activities, nearby Army or special operations forces (SOF) restricted operating zones, killbox boundaries, keypad restrictions on the number of aircraft, and accounting for in-theater control and reporting center (CRC) radar and communications capabilities. With these TTP in hand, then the ASOSs can do more standardized ROVER training before deployment. We did as much as we could in the 11 ASOS but the challenge of getting the required squares filled (i.e., old-fashioned controls dropping iron at a range) makes this a big challenge with the current demand for JTACs.

As we wrestle with how to make airpower even more relevant than it already is in the ground fight in OIF; Armed Reconnaissance, Armed Overwatch, and also NTISR will continue to be key in this counter-insurgency (COIN) fight for winning the "hearts and minds" of the Iraqi people. What we can develop for TTP on how to conduct NTISR will be a much-needed chapter in the relatively meager existing literature on COIN airpower employment.

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[1] AF Link News story, 17 July 2006, *Airmen, Soldiers thwart terrorists emplacing IED* at http://www.af.mil/news.

[2] *The Hook: A Journal of Carrier Aviation*, Spring 2006 (Vol 34, No 1), "Giving Boots on the Ground an Eye in the Sky," pp. 64-65.

[3] Personal interview, Lt Col Robert D. Beckel, Jr., 3 June 2006, Camp Liberty, Iraq.

[4] Personal interview, Lt Col Jeff Kelley, 4 June 2007, Fort Hood, TX.

Sensor Packaging – Making the Most of NTISR

By
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An enabler in our ability to dominate the battlespace has largely been driven by the capabilities and integration of our intelligence, surveillance, and reconnaissance (ISR) systems. Persistent ISR from airborne, ground, sea and space-based sensors is critical to warfighters who need an actionable near-real-time picture of the battlespace. Improvements in network centric intelligence operations and broadband access have sped information flow to decision makers and strike assets but we are still limited by the finite number of collection platforms. Lessons-learned from recent combat has shown an increase in the need for additional collection capability.

One solution to mitigate this has been to couple every traditional sensor with Nontraditional Intelligence Surveillance and Reconnaissance (NTISR) systems such as targeting pods.

Future mission planners and operators need to account for tactics, techniques, and procedures (TTP) of these systems in order to create smart sensor packages. By combining traditional and NTISR capabilities, the overall effect is a faster and more efficient kill chain process.

Sniper Advanced Targeting Pods on F-15E. (USAF photo by SrA. Lynne Neveu.)

The term NTISR has gained wide spread notoriety in the past few years, however the concept has been evolving for sometime. During Operation ALLIED FORCE, limited availability of surveillance assets combined with terrain issues forced planners to become more creative with non-traditional collection assets, such as utilizing the targeting pods onboard the AC-130U Gunship. The goal was to detect, track, report, and destroy enemy troops and targets of opportunity. The gunships were tasked for surveillance of suspected enemy lines of communications in an attempt to fill collection gaps in wide area surveillance. Areas of interest were given to crews prior to takeoff and limited updates were provided by traditional ISR assets. The collection requirements were often too large for persistent coverage based on the AC-130 sensor capabilities. Search patterns maximized sensor effectiveness yet only allowed a few square miles of usable coverage at any time. As a result, these collection assets had to be in the right place at the right time for detection of enemy ground forces. Solely using targeting pods for wide area surveillance predictably resulted in few enemy contacts detected or engaged.

By combining traditional and NTISR capabilities, the overall effect is a faster and more efficient kill chain process.

The fusion of wide area surveillance from "traditional" sensors on the E-3, E-8C, RC-135…combined with specific area surveillance from fighters equipped with targeting pods dramatically shortened the F2T2EA kill chain.

Additional lessons learned from Operations ALLIED FORCE and ENDURING FREEDOM led to a more cohesive approach to using NTISR assets. During Operation IRAQI FREEDOM, the true lethality of sensor packaging was demonstrated on numerous occasions. The fusion of wide area surveillance from "traditional" sensors on the E-3, E-8C, RC-135 and others combined with specific area surveillance from fighters equipped with targeting pods dramatically shortened the find, fix, track, target, engage, and assess (F2T2EA) kill chain. The effective cross cuing of NTISR assets by the air weapons controllers onboard the E-8C led to many successful operations. By fusing sensor information quickly, Iraqi targets were easily eliminated. One example involved detection of enemy troop movements south of Baghdad by an RC-135 Rivet Joint. This information was quickly relayed via voice and datalinks to other command and control (C2) and ISR agencies. E-8C aircraft performing C2ISR operations in the area cross cued this data with their internal systems and detected two contacts. Since neither contact could be positively correlated to enemy activity, Joint Surveillance Target Attack Radar System (JSTARS) coordinated with Airborne Warning and Control System (AWACS) to request additional assets with the specific sensor capability to obtain the positive identification. F-15E Strike Eagle aircraft equipped with LANTIRN pods were passed to JSTARS via voice and data links and Eagle crews cued their pods to the targets. The Strike Eagles positively identified one contact as civilian traffic and the other as an enemy radar facility. This information was quickly relayed to ground commanders and resulted in the swift elimination of a key Iraqi air surveillance site. The timely prosecution of this target was just one of many instances of wide area surveillance assets cueing specific area sensors onto targets. It worked because fighter aircraft were routinely instructed to contact JSTARS for additional targets once they completed their primary mission. This informal sensor packaging drastically reduced the F2T2EA kill chain with lethal effects on Iraqi forces.

JSTARS (USAF Photo)

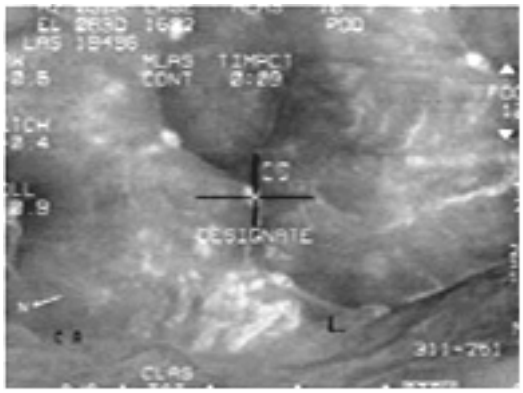
F-18 (USMC Photo)

AH-64 (USA Photo)

F-16 (USAF Photo)

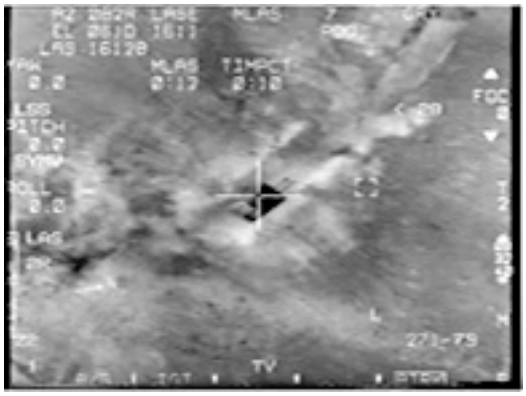
During Operation IRAQI FREEDOM E-8C Joint Surveillance Target Attack Radar System (JSTARS) cross cued with numerous NTISR assets from all Services which shortened the F2T2EA kill chain.

Knowing sensor capabilities against a target set and how to effectively task and disseminate information from that source is important in building and employing an effective NTISR collection package. Two elements which may aid in this effort are: who to coordinate with during mission planning and the type of sensors available. For planning purposes, generally theater-level ISR assets such as RC-135 (Rivet Joint), U-2, and E-8C (JSTARS) are provided prioritized collection decks from J-2 division planners. NTISR assets are normally tasked by J-3 division planners based on primary missions such as interdiction, suppression of enemy air defenses (SEAD), close air support (CAS), etc. The first step in the planning process is the melding of the collection priorities with mission taskings. Additional consideration must also be given to the actual sensor available for that asset. For instance, in the example below you can see that if positive identification is the desired effect than choosing sorties with LITENING instead of LANTRIN pods may drive which asset to choose.



LANTIRN
T-55 Tank, 3.5nm Slant Range IR Only

More advanced targeting pods such as Sniper XR are entering the arsenal bringing with them even better resolution at farther stand off distances. These systems will allow even greater flexibility in using NTISR with an integrated sensor package.



LITENING POD
T-55 Tank, 3.5nm Slant Range TV Image Multi-spectral Capes

During Operation IRAQI FREEDOM, one reason JSTARS planners were effective in pairing CAS assets and their NTISR capabilities was mission planning and coordination. By reviewing Joint Tactical Air Strike Requests from joint terminal attack controllers (JTACs) and coordination with air support operations center (ASOC) liaison officers, a clear picture of timing and assets was compiled. Using this information, the E-8C crews were able to identify and plan which CAS assets could be utilized for NTISR opportunities without affecting their primary mission. That information was then used to choose cross cue tracks of interest based on aircraft and sensor type. This near-real-time fused information was then passed to Army and Marine Command Ground Stations from JSTARS using situational control data links and voice. Simultaneously, the same information was relayed directly to the ASOC and JTACs using Link-16, Remotely Operated Video-enhanced Receiver (ROVER) and voice. Not only could aircraft be employed against detected enemy locations but quick reaction forces were also dispatched when appropriate based on the tactical situation. The result was fused information from several sources to produce a highly efficient cross cuing network whose results were quickly relayed to other warfighters.

...one reason JSTARS planners were effective in pairing CAS assets and their NTISR capabilities was mission planning and coordination.

Finding innovative ways to utilize every sensor in the battlespace will continue to challenge joint operators for the foreseeable future.

In the joint environment the need for actionable intelligence is growing faster today than ever before. Finding innovative ways to utilize every sensor in the battlespace will continue to challenge joint operators for the foreseeable future. Though the lessons learned have focused primarily on E-8C employment, several underlying concepts are universal. Effective use of NTISR lies in knowing when and how to employ these sensors in an array that provides timely information to battle field commanders. Sensor packaging relies on integration rather than area coverage to quickly gain a clearer picture of the battlespace. Experience from Afghanistan and Iraq has shown that NTISR alone may not always be the answer to certain tactical situations. NTISR packaged with traditional ISR has shown to produce persistent intelligence which has proven lethal to our adversaries and may require even more consideration for future operational planners.

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CURRENT ALSA MTTP PUBLICATIONS

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TITLE	DATE	PUB #	DESCRIPTION / STATUS
ADUS *Multi-Service Tactics, Techniques, and Procedures for Air Defense of the United States* **Classified SECRET/ REL CAN**	22 MAR 04	FM 3-01.1 NTTP 3-26.1.1 AFTTP(I) 3-2.50	Description: Supports planners, warfighters, and interagency personnel participating in air defense of the US by providing planning, coordination, and execution information. Pub is primarily focused at the tactical level. Status: **Current**
AVIATION URBAN OPERATIONS *Multi-Service Tactics, Techniques, and Procedures for Aviation Urban Operations* **Distribution Restricted**	9 JUL 05	FM 3-06.1 MCRP 3-35.3A NTTP 3-01.04 AFTTP(I) 3-2.29	Description: Provides MTTP for tactical-level planning and execution of fixed- and rotary-wing aviation urban operations. Status: **Current**
JFIRE *Multi-Service Procedures for the Joint Application of Firepower* **Distribution Restricted**	29 OCT 04	FM 3-09.32 MCRP 3-16.6A NTTP 3-09.2 AFTTP(I) 3-2.6	Description: Pocket size guide of procedures for calls for fire, CAS, and naval gunfire. Provides tactics for joint operations between attack helicopters and fixed-wing aircraft performing integrated battlefield operations. Status: **Revision**
JSEAD / ARM-J *Multi-Service Tactics, Techniques, and Procedures for the Suppression of Enemy Air Defenses in a Joint Environment* **Classified SECRET**	28 MAY 04	FM 3-01.4 MCRP 3-22.2A NTTP 3-01.42 AFTTP(I) 3-2.28	Description: Contributes to Service interoperability by providing the JTF and subordinate commanders, their staffs, and SEAD operators a single, consolidated reference. Status: **Current**
JSTARS *Multi-Service Tactics, Techniques, and Procedures for the Joint Surveillance Target Attack Radar System* **Distribution Restricted**	16 NOV 06	FM 3-55.6 MCRP 2-1E NTTP 3-55.13 AFTTP(I) 3-2.2	Description: Provides procedures for the employment of JSTARS in dedicated support to the JFC. Describes multi-Service TTP for consideration and use during planning and employment of JSTARS. Status: **Current**
KILL BOX *Multi-Service Tactics, Techniques, and Procedures for Kill Box Employment* **Distribution Restricted**	13 JUN 05	FM 3-09.34 MCRP 3-25H NTTP 3-09.2.1 AFTTP(I) 3-2.59	Description: Assists the Services and JFCs in developing, establishing, and executing Kill Box procedures to allow rapid target engagement. Describes timely, effective multi-Service solutions to FSCMs, ACMs, and maneuver control measures with respect to Kill Box operations. Status: **Current**
SURVIVAL, EVASION, AND RECOVERY *Multi-Service Procedures for Survival, Evasion, and Recovery* **Distribution Restricted**	20 MAR 07	FM 3-50.3 MCRP 3-02H NTTP 3-50.3 AFTTP(I) 3-2.26	Description: Provides a weather-proof, pocket-sized, quick reference guide of basic survival information to assist Service members in a survival situation regardless of geographic location. Status: **Current**
TAGS *Multi-Service Tactics, Techniques, and Procedures for the Theater Air-Ground System* **Distribution Restricted/ REL ABCA**	APR 07	FM 3-52.2 MCRP 3-25F NTTP 3-56.2 AFTTP(I) 3-2.17	Description: Promotes inter-Service awareness regarding the role of airpower in support of the JFC's campaign plan, increases understanding of the air-ground system, and provides planning considerations for the conduct of air-ground ops. Status: **Current**
TST *Multi-Service Tactics, Techniques, and Procedures for Targeting Time-Sensitive Targets* **Distribution Restricted**	20 APR 04	FM 3-60.1 MCRP 3-16D NTTP 3-60.1 AFTTP(I) 3-2.3	Description: Provides the JFC, the operational staff, and components MTTP to coordinate, de-conflict, synchronize, and prosecute TSTs within any AOR. Includes lessons learned, multinational and other government agency considerations. Status: **Current**

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TITLE	DATE	PUB #	DESCRIPTION / STATUS
UAS *Multi-Service Tactics, Techniques, and Procedures for Tactical Employment of Unmanned Aircraft Systems* **Distribution Restricted**	3 AUG 06	FM 3-04.15 NTTP 3-55.14 AFTTP (I) 3-2.64	Description: Establishes MTTP for UAS addressing tactical and operational considerations, system capabilities, payloads, mission planning, logistics, and most importantly, multi-Service execution. Status: **Current**

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TITLE	DATE	PUB #	DESCRIPTION / STATUS
AIRFIELD OPENING *Multi-Service Tactics, Techniques, and Procedures for Airfield Opening Operations* **Distribution Restricted**	15 May 07	FM 3-17.2 MCRP 3-02.18 AFTTP(I) 3-2.68	Description: A quick-reference guide to opening an airfield in accordance with MTTP. Contains planning considerations, airfield layout, and logistical requirements for opening an airfield. Status: **Current**
CORDON AND SEARCH *Multi-Service Tactics, Techniques, and Procedures for Cordon and Search Operations* **Distribution Restricted**	25 APR 06	FM 3-06.20 MCRP 3-31.4B NTTP 3-05.8 AFTTP (I) 3-2.62	Description: Consolidates the Services' best TTP used in cordon and search operations. Provides MTTP for the planning and execution of cordon and search operations at the tactical level of war. Status: **Current**
EOD *Multi-Service Tactics, Techniques, and Procedures for Explosive Ordnance Disposal in a Joint Environment* **Approved for Public Release**	27 OCT 05	FM 4-30.16 MCRP 3-17.2C NTTP 3-02.5 AFTTP(I) 3-2.32	Description: Provides guidance and procedures for the employment of a joint EOD force. It assists commanders and planners in understanding the EOD capabilities of each Service. Status: **Current**
IADS *Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System* **Distribution Restricted**	30 OCT 04	FM 3-01.15 MCRP 3-25E NTTP 3-01.8 AFTTP(I) 3-2.31	Description: Provides joint planners with a consolidated reference on Service air defense systems, processes, and structures to include integration procedures. Status: **Current**
JAOC / AAMDC *Multi-Service Tactics, Techniques, and Procedures for Joint Air Operations Center and Army Air and Missile Defense Command Coordination* **Distribution Restricted**	22 MAR 04	FM 3-01.20 AFTTP(I) 3-2.30	Description: Addresses coordination requirements between the JAOC and the AAMDC. Assists the JFC, JFACC, and their staffs in developing a coherent approach to planning and execution of AMD operations. Status: **Current**
JTMTD *Multi-Service Procedures for Joint Theater Missile Target Development* **Distribution Restricted**	11 NOV 03	FM 3-01.51 (FM 90-43) NTTP 3-01.13 AFTTP(I) 3-2.24	Description: Documents TTP for threat missile target development in early entry and mature theater operations. It provides a common understanding of the threat missile target set and information on the component elements involved in target development and attack operations. Status: **Current**
MILITARY DECEPTION **Multi-Service Tactics, Techniques, and Procedures for Military Deception** **Classified SECRET**	12 APR 07	MCRP 3-40.4A NNTP 3-58.1 AFTTP(I) 3-2.66	Description: Facilitate the integration, synchronization, planning, and execution of MILDEC operations. Servce as a "one stop" reference for service MILDEC planners to plan and execute multi-service MILDEC operations. Status: **Current**
NLW *Tactical Employment of Nonlethal Weapons* **Approved for Public Release**	15 JAN 03	FM 3-22.40 (FM 90-40) MCWP 3-15.8 NTTP 3-07.3.2 AFTTP(I) 3-2.45 USCG Pub 3-07.31	Description: Supplements established doctrine and TTP providing reference material to assist commanders and staffs in planning/coordinating tactical operations. It incorporates the latest lessons learned from real world and training operations and examples of TTP from various sources. Status: **Current**

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TITLE	DATE	PUB #	DESCRIPTION / STATUS
PEACE OPS: *Multi-Service Tactics, Techniques, and Procedures for Conducting Peace Operations* **Approved for Public Release**	26 OCT 03	FM 3-07.31 MCWP 3-33.8 AFTTP(I) 3-2.40	Description: Provides tactical-level guidance to the warfighter for conducting peace operations. Status: **Revision (Delayed until JP 3-07.3 is released.)**
TACTICAL CONVOY OPERATIONS *Multi-Service Tactics, Techniques, and Procedures for Tactical Convoy Operations* **Distribution Restricted**	24 MAR 05	FM 4-01.45 MCRP 4-11.3H NTTP 4-01.3 AFTTP(I) 3-2.58	Description: Consolidates the Services' best TTP used in convoy operations into a single multi-Service TTP. Provides a quick reference guide for convoy commanders and subordinates on how to plan, train, and conduct tactical convoy operations in the contemporary operating environment. Status: **Current**
TECHINT *Multi-Service Tactics, Techniques, and Procedures for Technical Intelligence Operations* **Approved for Public Release**	9 JUN 06	FM 2-22.401 NTTP 2-01.4 AFTTP (I) 3-2.63	Description: Provides a common set of MTTP for TECHINT operations. Serves as a reference for Service TECHINT planners and operators. Status: **Current**
UXO *Multi-Service Tactics, Techniques, and Procedures for Unexploded Explosive Ordnance Operations* **Approved for Public Release**	16 AUG 05	FM 3-100.38 MCRP 3-17.2B NTTP 3-02.4.1 AFTTP(I) 3-2.12	Description: Describes hazards of UXO submunitions to land operations, addresses UXO planning considerations, and describes the architecture for reporting and tracking UXO during combat and post conflict. Status: **Current**

COMMAND AND CONTROL (C2) BRANCH - POC: alsac@langley.af.mil

TITLE	DATE	PUB #	DESCRIPTION / STATUS
BREVITY *Multi-Service Brevity Codes* **Distribution Restricted**	15 JUN 05	FM 1-02.1 (FM 3-54.10) MCRP 3-25B NTTP 6-02.1 AFTTP(I) 3-2.5	Description: Defines multi-Service brevity codes to augment JP 1-02, *DOD Dictionary of Military and Associated Terms*. It standardizes air-to-air, air-to-surface, surface-to-air, and surface-to-surface brevity code words in multi-Service operations. Status: **Revision**
COMCAM *Multi-Service Tactics, Techniques, and Procedures for Joint Combat Camera Operations* **Approved for Public Release**	15 MAR 03	FM 3-55.12 MCRP 3-33.7A NTTP 3-13.12 AFTTP(I) 3-2.41	Description: Fills the void that exists regarding combat camera doctrine and assists JTF commanders in structuring and employing combat camera assets as an effective operational planning tool. Status: **Current**
HAVE QUICK *Multi-Service Tactics, Techniques, and Procedures for HAVE QUICK Radios* **Distribution Restricted**	7 MAY 04	FM 6-02.771 MCRP 3-40.3F NTTP 6-02.7 AFTTP(I) 3-2.49	Description: Simplifies planning and coordination of HAVE QUICK radio procedures. Provides operators information on multi-Service HAVE QUICK communication systems while conducting home station training or in preparation for interoperability training. Status: **Current**
HF-ALE *Multi-Service Tactics, Techniques, and Procedures for the High Frequency-Automatic Link Establishment (HF-ALE) Radios* **Approved for Public Release**	1 SEP 03	FM 6-02.74 MCRP 3-40.3E NTTP 6-02.6 AFTTP(I) 3-2.48	Description: Standardizes high power and low power HF-ALE operations across the Services and enables joint forces to use HF radio as a supplement / alternative to overburdened SATCOM systems for over-the-horizon communications. Status: **Current**

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TITLE	DATE	PUB #	DESCRIPTION / STATUS
ICAC2 *Multi-Service Procedures for Integrated Combat Airspace Command and Control* **Approved for Public Release**	30 JUN 00	FM 3-52.1 (FM 100-103-1) MCRP 3-25D NTTP 3-52.1 AFTTP(I) 3-2.16	Description: Outlines the importance of an integrated airspace control function on the battlespace and describes the organization responsible for airspace control in joint operations. Status: **Current**
IDM *Multi-Service Tactics, Techniques, and Procedures for the Improved Data Modem Integration* **Distribution Restricted**	30 MAY 03	FM 6-02.76 MCRP 3-25G NTTP 6-02.3 AFTTP(I) 3-2.38	Description: Provides digital connectivity to a variety of attack and reconnaissance aircraft, facilitates exchange of near-real-time targeting data, and improves tactical situational awareness by providing a concise picture of the multi-dimensional battlefield. Status: **Revision**
IFF *MTTP for Mark XII IFF* *Mode 4 Security Issues in a Joint Integrated Air Defense System* **Classified SECRET**	11 DEC 03	FM 3-01.61 MCWP 3-25.11 NTTP 6-02.2 AFTTP(I) 3-2.39	Description: Educates the warfighter to security issues associated with using the Mark XII IFF Mode 4 Combat Identification System in a joint integrated air defense environment. Captures TTP that addresses those security issues. Status: **Revision**
JATC *Multi-Service Procedures for Joint Air Traffic Control* **Distribution Restricted**	17 JUL 03	FM 3-52.3 (FM 100-104) MCRP 3-25A NTTP 3-56.3 AFTTP(I) 3-2.23	Description: Provides guidance on ATC responsibilities, procedures, and employment in a joint environment. Discusses JATC employment and Service relationships for initial, transition, and sustained ATC operations across the spectrum of joint operations within the theater or AOR. Status: **Current**
JTF IM *Multi-Service Tactics, Techniques, and Procedures for Joint Task Force Information Management* **Distribution Restricted**	10 SEP 03	FM 6-02.85 (FM 101-4) MCRP 3-40.2A NTTP 3-13.1.16 AFTTP(I) 3-2.22	Description: Describes how to manage, control, and protect information in a JTF headquarters conducting continuous operations. Status: **Current**
JTF LNO Integration *Multi-Service Tactics, Techniques, and Procedures for Joint Task Force (JTF) Liaison Officer Integration* **Distribution Restricted**	27 JAN 03	FM 5-01.12 (FM 90-41) MCRP 5-1.B NTTP 5-02 AFTTP(I) 3-2.21	Description: Defines liaison functions and responsibilities associated with operating a JTF. Status: **Current**
REPROGRAMMING *Multi-Service Tactics, Techniques, and Procedures for the Reprogramming of Electronic Warfare and Target Sensing Systems* **Distribution Restricted**	22 JAN 07	FM 3-13.10 (FM 3-51.1) NTTP 3-51.2 AFTTP(I) 3-2.7	Description: Supports the JTF staff in planning, coordinating, and executing reprogramming of electronic warfare and target sensing systems as part of joint force command and control warfare operations. Status: **Current**
RISK MANAGEMENT **Approved for Public Release**	15 FEB 01	FM 3-100.12 MCRP 5-12.1C NTTP 5-03.5 AFTTP(I) 3-2.34	Description: Provides a consolidated multi-Service reference, addressing risk management background, principles, and application procedures. Identifies and explains the risk management process and its differences and similarities as it is applied by each Service. Status: **Current**
TACTICAL RADIOS *Multi-Service Communications Procedures for Tactical Radios in a Joint Environment* Approved for Public Release	14 JUN 02	FM 6-02.72 MCRP 3-40.3A NTTP 6-02.2 AFTTP(I) 3-2.18	Description: Standardizes joint operational procedures for SINCGARS and provides an overview of the multi-Service applications of EPLRS. Status: **Current**
UHF TACSAT/DAMA *Multi- Service Tactics, Techniques, and Procedures Package for Ultra High Frequency Tactical Satellite and Demand Assigned Multiple Access Operations* **Approved for Public Release**	31 AUG 04	FM 6-02.90 MCRP 3-40.3G NTTP 6-02.9 AFTTP(I) 3-2.53	Description: Documents TTP that will improve efficiency at the planner and user levels. (Recent operations at JTF level have demonstrated difficulties in managing limited number of UHF TACSAT frequencies.) Status: **Current**

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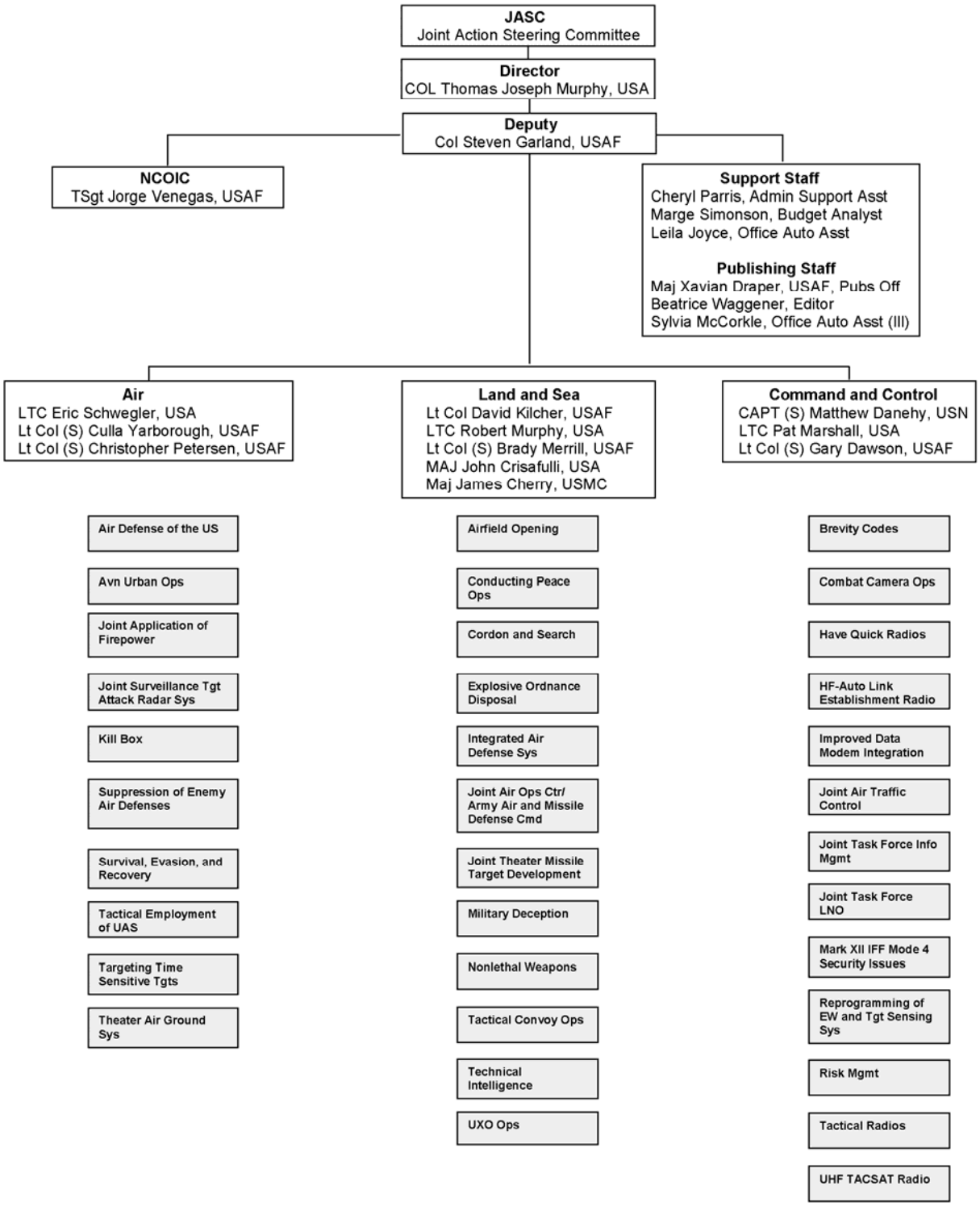

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