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"BLINDING THE OPPONENT "
SUPPRESSION OF ENEMY AIR DEFENSE CAPABILITY FOR THE JOINT COMMANDER

by

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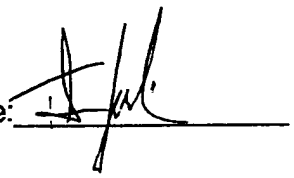
A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

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

Signature: 

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Abstract of
"BLINDING THE OPPONENT"
SUPPRESSION OF ENEMY AIR DEFENSE
CAPABILITY FOR THE JOINT COMMANDER

Modern airpower can often be the determining factor on the battlefield. As an enabler and subset of airpower, the airborne suppression of enemy air defense capability possessed by the United States must be viewed as a critical link in obtaining air superiority. The collapse of the Soviet Union has refocused our national strategy, and a revitalized concentration on regional instability and uncertainty has developed. Nonetheless, the ability of joint force commanders to apply direct and indirect fire against an opponent has never been as important. The employment of airborne and ground-based assets to render an opponent impotent and susceptible to assault from the air has increased in relative proportion to the amount of effort directed against his ground forces. This paper demonstrates the continuing evolution of suppression doctrine and training and why it is still necessary to maintain these forces in order to meet new challenges.

It then focuses on the development of strategies, hardware, doctrine and the resources available today. Finally, it addresses the differences inherent in individual service doctrines and how these dissimilarities can be overcome and integrated to offset weaknesses in interoperability and flexibility. Recommendations include integrating air, ground and sea-borne assets, optimizing training opportunities and support for the concept of a JFACC who knows how to effectively integrate operational fires.

Preface

Most analysis and opinion written about the use and availability of suppression of enemy air defenses (SEAD) operations falls into one of two categories. The first concentrates on the tactics utilized by individual service components when embarking on operations to gain air superiority. The second focuses on technological strengths and shortcomings of particular systems and weapons. In this era of reduced fiscal availability, it is not uncommon that most United States strategic thought is seduced by technology instead of focusing on attainment of military objectives.

This paper focuses on the potential strategic, operational and tactical aspects of SEAD at the joint force commander (JTF) or theater commander-in-chief (CINC) levels. Although bringing familiar issues to the surface, it is not aimed at re-hashing old arguments. Its purpose is to use the concept of Joint-SEAD (J-SEAD) as a platform upon which to illustrate the relevance of applied operational art, specifically J-SEAD as an operational fire, in the attainment of air superiority.

Overview

Suppression of enemy air defenses is the latest iteration of the defense suppression concept, its application to air power as a fundamental element in protecting friendly air attackers and destroying the enemy's ability to defend against air attack is the result of a long and natural evolutionary process. Since the Vietnam war, SEAD has become an integrated part of an air campaign and when concentrated against the whole integrated air defense system (IADS), this enables war planners to generate a SEAD operation as an initial phase of the overall air campaign.[1] In this era of reduced budgets and military "right-sizing" it has become increasingly important to combine our limited resources and integrate operations in order to accomodate solutions to the military problems posed by our strategic policies. Operating

jointly is the best way of solving the particular dilemma resulting from reduction of hardware and corporate experience. Pooling resources is the most optimum way of integrating joint technologies, tactics and operationl insights into J-SEAD, and facilitates the development of doctrine for this operational fire.

Evolutionary Trends

Since the advent of the aircraft as a weapon of war, many types of countermeasures have been used to offset the obvious advantages gained by the unrestricted use of aircraft over the operational/tactical battlefield, or over an opponents strategic homeland. The Joint publication definition addresses air defense directly:

> "Integrated air defense doctrine normally stresses detection, identification, and warning of air threats; destruction or neutralization of hostile aircraft; redundant protection for high value assets, strategic targets, key command, control, communications and computer nodes and critical military units;and jamming of aircraft navigation, communication, and target-acquisition systems. Enemy integrated air defense system (IADS) doctrine often stresses rigid control over air defense activities."[2]

As the art of aerial warfare progressed so did the technologies required to counter the assault. The first, and most common, means of "bringing down" an aerial intruder was through the use of Anti-Aircraft Artillery (AAA). Fighter aircraft, used in the counter-air role were another means to destroy enemy aircraft. Currently, the widespread use of radar guided Surface-to-Air Missiles (SAM) are the preferred, cost-effective method, of detering an enemy from unrestricted use of the sky.

Just as overall command of the air is a precondition for taking and holding enemy territory, overall command of the electromagnetic environment is a precondition for taking and holding enemy airspace.[3] Strike planners have learned to suppress direct anti-aircraft fires by bringing offensive resources to bear at the critical points of opposing IADS. This has historically been accomplished in many ways, but generally has involved technology and exploitation of the

electromagnetic spectrum, which offsets the advantages of radar and, therefore, aids operational surprise/deception.

Strategic Bombing Campaign Against Nazi Germany:

By 1942, leaders of the Third Reich had established a sophisticated air defense network to counter the bombing raids being staged against them by the Allied air forces. The network they established focused on fixed-position, radar sites situated throughout occupied Europe and provided aerial early warning information to their command and control establishment. The intelligence allowed them sufficient time to marshall their forces in order to bring overwhelming concentration of mass against the dispersed bomber armada approaching from bases in England and Italy. With the intelligence provided by these far seeing eyes they could scramble fighter-interceptor aircraft and alert AAA batteries along the routes that the bombers would be expected to travel. The losses incurred by the Allied aircrews became so staggering that countermeasures were developed to confound the German radar chain. The British eventually devised several uncoordinated, tactical solutions to offset the German advantage, but on the whole, these were never totally successful. That there was never a concerted effort to destroy the German command and control network [as the Luftwaffe had initially attempted to do in the Battle of Britain] must be viewed as a shortcoming in the overall concept of operations developed by the Combined Air Staff.

Linebacker Campaigns in Vietnam:

In 1972, the United States was forced to reinstate bombing operations against North Vietnam and once again aircrew would have to face the intense integrated air defense network organized around Hanoi. During previous operations there had been little or no effort to provide a coordinated SEAD effort to bring down the defenses. The theater Rules of Engagement (ROE) had allowed planners to attack only those

SAM sites that proved a direct threat to aircrew. A four year bombing hiatus had allowed the North Vietnamese opportunity to establish what was hitherto considered to be one of the most formidable air defense networks in the world.

The forthcoming air operations were enacted at two levels. Linebacker I (April-October 1972) was designed primarily as a tactical airpower "show" to halt the North Vietnamese invasion of South Vietnam. There was never any real effort exhibited to neutralize the national IADS, and minimal effort was expended to build sanctuaries for the strike aircraft. As a result, the air defense commanders were able to deny United States aircrew the unrestricted use of airspace. American decision makers still labored with a conceptual framework mired in strategic dogma that lagged behind the tactical realities of air deniability.[4] The 1972 strategy of air deniability centered primarily around such SEAD platforms as electronic jamming aircraft and *Wild Weasels* (a dedicated fighter aircraft designed to duel with the SAM threat). Although some raids proved effective against particular SAM sites there was still no concerted effort to attack the command and control network. The arbitrary separation of tasks imposed by the 'roles-and-missions' doctrine of the time frequently resulted in one aspect of the IADS being beaten down, only to be supplanted by another.

The subsequent campaign (Linebacker II) was eventually successful in achieving its operational goal of bringing the opposition back to the peace talks. But, initially, it was not well integrated between the tactical and strategic assets utilized by the component commanders.

Linebacker II (the 11-day air campaign over North Vietnam, 18-30 December 1972) introduced a new element into the already muddled arena: the use of Strategic Air Command (SAC) B-52s against the North Vietnamese IADS using SAC-only tactics. While the B-52 possessed a formidable EW capability against specific radar threats, it had never faced the wrath of the integrated North Vietnamese IADS of Hanoi and Haiphong. While Tactical Air Force (TAF) assets had amassed a wealth of knowledge on how to deal with the radar-guided SA-2 SAM threat, little of this knowledge was transfered to SAC aircrews. SAC carried the preponderance of the campaign. Unfortunately, the combination of poor tactics, a strong dose of over confidence, and a failure to integrate tactical SEAD resources with strategic assets resulted in the loss of 11 B-52s to SA-2s by the end of the fifth night of operations. It was

not until 26 December 1972 that air campaign planners made the decision to commence an all-out attack on the North Vietnamese air defenses. Once the IADS was defeated, it took three days to bring the North Vietnamese to the bargaining table.5

Bekaa Valley:

The Israelis had been attacked by Islamic extremists in Lebanon and decided to conduct a military invasion of their neighbor in order to thwart future terrorist activities. Prior to the insertion of ground forces they had to conduct an operation to reduce the elaborate Syrian IADS which had been constructed in the Bekaa Valley.

The Israelis commenced their invasion of Lebanon on 6 June 1982. During the air portion of the campaign, they destroyed more than 20 Syrian SAM sites and shot down over 90 enemy MiGs. The lessons they developed were clear, they had begun where Linebacker II had ended and learned that the first order of business was to destroy the Syrian ability to hamper Israeli air attacks. SEAD was not meant to play a support role in the Bekaa Valley, in fact the destruction of IADS was the intermediate operational goal which allowed the next sequence. By successively taking down the Syrian IADS the Israelis allowed the free reign of their tactical air units, which furthered their unhindered ground and air operations against the opposing ground forces. Lt Gen Kelly H. Burke, USAF, Ret., commented: "Lebanon was the war of the future-a war in which electronic combat was a central and dominant theme."6 The Israelis employed the entire gamut of weaponry in their EW arsenal to achieve this stunning success: airborne jamming of radars and communications, ground-launched and air-launched drones, anti-radiation missiles and sophisticated detection and location equipment. Most importantly the SEAD operations, primarily of an electronic combat (EC) nature, were an integrated function of the overall military campaign. SEAD, conceptually formed the sanctuary from which overwhelming military force could be brought to bear against a weakened, mostly defenseless enemy.

On a limited scale, and working within some very

restricted geographical airspace limitations, the Israelis engaged in a joint campaign which would foreshadow the much larger coalition effort enacted during Operation Desert Storm. A three-phase campaign ensued: the first phase was deception; the second, harassment with minor destruction (a continuation, in some respects, of the deception campaign); and the third, the actual destruction of the sites. Timing (time compression and sequencing), precision, and integration were critical.[7] Thus, they synchronized a well-conceived, integrated operations plan that included deception, maneuver and multiple fires to satisfy their overall objectives.

Operation Eldorado Canyon, Libya 1986:

Mission planners for this 11-minute, joint, reprisal operation were allowed to use a whole host of computer enhanced technologies, including some very high resolution imagery provided by the SR-71 spy plane. This technology afforded the planners a detailed account of the Soviet designed IADS employed by the Libyans. Utilizing mission profiles similar to those employed by the Israelis in the Bekaa Valley, the SEAD experts devised means of attacking the IADS through a 'most-likely' vice 'worst-case' scenario, (which had been popular in the 60's and 70's). The threat-based response to attaining localized air superiority included the use of High Speed Anti-Radiation Missiles (HARM), radar jamming of the entire IADS, as opposed to destructive means of suppression or piecemeal jamming as practiced by the Israelis, and the use of surprise. Additionally, attacking at night with a very compressed time window afforded easier synchronization.

Electronic jamming of EW/GCI radars and key C^2 nodes by USN EA-6Bs and USAF EF-111 aircraft provided the necessary deception which allowed the strike aircraft to go after strategic ground targets without concern about the radar-guided SAM threat. To complement this electronic barrage a host of expensive HARM missiles were fired at several

predetermined threat sites, whether or not those specific sites were actually emitting. The use of *Wild Weasel* aircraft would have been more cost-effective in this role, but due to political constraints the planners were unable to stage this valuable, land-based asset near the conflict. The operation was better coordinated and more joint than had been experienced in the past. The USAF provided aerial tanking assets, while the USN supplied the HARM shooters. It was not totally integrated in the EW arena, however, as the USAF EF-111 aircraft applied jamming coverage to the USAF strike aircraft while USN EA-6Bs geographically deconflicted and accomplished the same mission for the Navy. Overall, the mission was a success and no aircraft were lost to radar-guided weapons. The raid on Libya marked the incipient stages of a deliberate effort to combine Navy and Air Force SEAD assets in the prosecution of a battle.[8]

Operations Desert Shield/Desert Storm:

The most recent conflict with Iraq provided the impetus for the joint use of dedicated SEAD forces from each of the American services. It was understood at CENTCOM that a dedicated effort to bring down the Iraqi C^2 network and disable the air defense system would allow an almost unrestricted use of coalition airpower (strength) against Iraqi ground forces, who possessed little cover in the open desert, (vulnerability). The assymetric application of air power strength versus vulnerable ground forces in the Kuwait Theater of Operations led directly to attacks on the enemy center of gravity.

> That the Iraqi capacity to wage war was crippled so swiftly and completely belies the great complexity and severe challenge they actually posed for coalition air forces. The Iraqi integrated air defense system was in many ways the finest in the world. Netted together with an extremely sophisticated system of landlines and microwave systems as well as standard relay radios, the Iraqi IADS was fed by a system consisting of literally thousands of radars and observation posts.[9]

The air strategy of Operation Desert Storm was to utilize its SEAD forces in a total-force concept. It was designed to

employ a myriad of forces across a wide spectrum in order to accomplish the plan, which was to be completed in four phases: 1.Gain air superiority. 2.Suppress enemy air defenses in Kuwait. 3.Keep the pressure on Phase I and II targets while shifting emphasis to the field army in Kuwait. 4.Support ground operations.

It soon became apparent that the first three phases were to be executed almost simultaneously.The campaign used not only EC assets but all available weapons to suppress the IADS. The strategy, integrated hardware and doctrine from each of the services in order to complete the operation. The dedicated suppression aircraft, or 12% of the fixed-wing aviation forces, supported operations for approximentally 1,250 U.S. fighter/attack aircraft. Although the Air Tasking Order orchestrated the complex air operations, most Air Force strikes were covered by the Air Force SEAD, and all Navy/Marine strikes were covered by Navy/Marine SEAD. Coalition air forces had virtually no SEAD capability of their own.[10] USAF stealth aircraft attacked communication links, while U.S. Army helicopters were utilized to destroy key C^3 nodes, and Navy EC aircraft, flying from aircraft carriers, escorted land-based coalition strike aircraft. The cement that held it all together was the USAF effort to maintain an integrated EC operation. The Joint Forces Air Component Commander (JFACC) did an effective job of integrating all assets in order to adhere to the concept of shaping the three-dimensional battlefield. It was the first time that the idea of integrating the Navy philosophy of letting the threat dictate the tactics and the Army doctrine of fighting AirLand Battle was combined in one plan. General Malyukov of the Soviet Air Force summed it up best:

> "How was this (low loss rate) attained? First by massive use of electronic warfare, especially airborne systems. Second, by wide use of air-to-surface anti-radiation missiles fired from beyond the range of Iraqi air defenses. Electronic warfare was essentially one-sided, guaranteeing multi-national supremacy...."[11]

The final SEAD product of the Gulf War was an integrated,

cohesive philosophy which can be used in the future by the war fighting CINC or the JTF. This was the beginning of a coordinated defense suppression concept which relies on the strengths of all the component parts in order to offset weaknesses inherent in individual service capabilities.

Service Approaches to SEAD

The end result of any SEAD campaign must lead to the attainment of air superiority. Present air campaign doctrine calls for the rapid establishment of air superiority in the theatre of operations. In fact, air superiority is the top priority and all possible means should be employed to achieve it. Even close air support (CAS) or battlefield air interdiction (BAI) should not commence before air superiority in the theatre of operations is achieved.[12] A trap in analyzing an air superiority operation is to consider control of the sky an end in itself. Air superiority is a supporting objective in the overall design of a major operation or campaign. Its relevance cannot be entirely removed from the context of the entire military mission. U.S. Joint Chiefs of Staff doctrine defines air superiority as:

> "That degree of dominance in the air battle of one force over another which permits the conduct of operations by the former and its related land, sea and air forces at a given time and place without prohibitive interference by the opposing force."13

Air superiority, then, provides operational protection of friendly forces from enemy air (and to a lesser extent, surface-to-air power). Any measure of its effectiveness reflects the degree to which friendly freedom of action to achieve objectives is unhindered by the enemy.

That each of the U.S. armed forces has a different approach to the conduct of SEAD operations should come as no surprise. Individual wants, needs, and doctrine continue to drive the use of tactics and hardware. The issue today, becomes one of expenditure of effort, joint doctrine and the obvious necessity of combining limited resources in such a way as to accomplish the objective of the war-fighting

commander. Although an objective-based approach to SEAD favors J-SEAD (vice single-service options) it would help the CINC/CJTF immensely if he knew what to expect, doctrinally, from each of the service representatives on the joint staff.

Global Reach-Global Power

The USAF has a majority of the air assets available in most theaters, and as such an Air Force officer will almost certainly become the JFACC. As SEAD is a subset of counter-air operations, the JFACC becomes a supported commander and is thus responsible for coordinating theater area of responsibility SEAD operations. Air Force doctrine, unlike a majority of the rest of the services, is fairly dogmatic when covering strategy and to a lesser extent, tactics. This is not surprising as the combat arm that fights it's wars from above, with long-range aerospace weaponry would have a very broad view of the three-dimensional battlefield.

The USAF has tended, somewhat, to take a "threat-based" approach to SEAD. In the recent past, the monolithic threat posed by the former Soviet Union drove us into a bipolar world of military confrontation. The "enemy" was well known and his capacities were understood and tactics evolved to deal with specific capabilities. As the USSR has ceased to exist as an immediate menace, a more complex problem has evolved in attempting to predict the diverse threats posed by potential adversaries. Unfortunately, as the Soviet-style IADS equipment begins to disappear from the world stage it is rapidly being replaced by more technologically sophisticated "western" gear. The problem is further exacerbated by the fact that we are in an era of reduced fiscal availability, which compounds the difficulties involved in research and procurement of modern hard/software resources. Taking air asset availability as one example, the USAF maintained three different types of SEAD aircraft in the inventory throughout the 70's and 80's. These included the F-4G *Wild Weasel* with a 'hard-kill' capability, the EF-111 *Raven* for EW jamming of

radars and the EC-130 *Compass Call* aircraft for communication jamming. Although *Compass Call* aircraft will be maintained, the F-4G has been retired and the EF-111 will no longer be flying by the year 1997. There are currently no plans for dedicated follow-on aircraft to fulfill these lost mission areas with the same degree of capability formerly experienced in those communities. Instead, the USAF is relying on 'stealth' technology, C^3 Countermeasures (C^3CM) and the integration and employment of U.S. Navy aircraft and aircrew into all SEAD operations.

Forward...From the Sea

Navy doctrine is ambiguious, at best, and in some instances is totally absent. The philosophy that governs mission planning is typically a "capability-based," tailored operation that tends to be short in duration.

> A fundamental element of naval doctrine is the concept of enabling. The ability of forward-deployed naval forces to respond rapidly to a crisis, to take action controlling escalation, and to prepare for the arrival of ground and ground-based air power. Once these forces are on scene, naval forces fight along side them and--after the objectives of the operation are achieved and the ground and airpower withdraw--cover the post-conflict period. J-SEAD is the ultimate enabling mission for today's air warfare.[14]

This implies that the SEAD assets available to accomplish the mission will probably be transported into theater on the decks of an aircraft carrier or in the missile tubes of a ship or submarine. The limited amount of available deck space aboard aircraft carriers has prompted the strategists within naval aviation to design and develop aircraft that are more multi-mission capable and less threat specific. This means, that Navy strike aircraft tend to be "jacks-of-all-trades" and "masters-of-none." As long as the Navy remains focused on expeditionary warfare this works fine. Clearing a path through the IADS for a short period of time in order to allow aircraft to attack their targets without worrying about the air defenses works well in the limited type of operations typical of the world's littoral or coastal regions.

But this philosophy has its drawbacks as well. The

operations allowed by limited assets are, of necessity, short in duration and require a great deal of logistics support in order to maintain sustainment. On the tactical level, the Navy has a tendency to expend many costly HARM missiles to suppress SAM sites long enough to allow strike aircraft unhindered operation in the target area. In contrast, the USAF used the very capable *Wild Weasel* to accomplish this same mission with the ability of accurately targeting and subsequently "hard-killing" those SAM sites that posed an immediate threat.

Air/Land Battlefield

The Army approach to SEAD is not too dissimilar from that of the Navy. Both services tend to conceptualize the mission in a piecemeal fashion, as part of the overall requirement to strike a decisive point. Because of this traditional view, Army planners have tended to utilize their SEAD assets like artillery, and used them to attack the enemy C^3M network. There is a serendipitous effect to this concept, however, as the clear distinction between C^3M and SEAD is rapidly diminishing. In fact, most experts agree that J-SEAD should begin to shift at least some attention to information denial.

The first view of the modern use of Army SEAD assets was in Desert Storm. That operation utilized *Apache*, attack helicopters, which worked in conjunction with USAF "pathfinder" forces, to attack critical Iraqi IADS nodes on the opening night of the war.

> A historical feature of Army SEAD was to retain control of assets used to support the J-SEAD campaign and to release them to the theater commander *only after* (author's italics) Army requirements had been met. During Desert Storm, however, the theater commander had virtual control over all assets, and--as often as not--directed Army support for Air Force SEAD operations, even at the expense of withdrawing support from some frontline U.S. Army units to bolster the J-SEAD effort.[15]

Many staffs have parted with the time-honored concept of fire support coordination lines and the deeper phases of battlefield development, and applied a new strategy which fits in more closely with the concept of the integrated air-

land battlefield. The Army brings unique battlefield SEAD assets into the equation through the use of helicopters, advanced tactical missile systems, Special Operations Forces and long-range artillery. As long as friendly close air support and interdiction aircraft are at risk from enemy organic air defense systems the U.S. Army will have to maintain a credible force to counter the threats.

USMC SEAD

Not surprisingly, the USMC has developed its own approach to SEAD and in the purest tactical sense it probably comes closest to being *true* J-SEAD. A discussion of the written doctrine associated with Marine Corps operations would exceed the classification level of this paper, however, it can be mentioned that the Marine use of SEAD is tactical, and tailored specifically to support the "grunt" on the ground. They have more experience in working together with the combined-arms concept than any of their sister services. This is, however, a direct result of their ablity to operate in the air, land and sea environments. As a result they are quite adept at integrating and innovating a multitude of forces and philosophies to accomplish the objectives.

It would seem that the use of USMC assets in the J-SEAD environment would be a relatively easy problem to solve. The stumbling block occurs not at the tactical, or even strategic levels, but at the doctrinal/operational plateau. Although they recognize the need to coordinate the employment of maritime with continental operations, the very notion of possibly releasing Marine Corps support forces to a joint commander is an anethma to many of those in senior leadership positions. The view of some Marine officers is that joint operations are a means to an end-not the end in itself.[16]

Recommendations

It is readily apparent that with the effective use of SEAD doctrine and tactics, modern airpower can cripple an

opponent nation's ability to wage war. Without it, the effectiveness of any air operations are significantly diminshed. How does the CINC/CJTF utilize effective J-SEAD forces? There are three main areas in the field of operational design which are tailored for, and exploited by the application of J-SEAD, these are: operational fires, operational deception and sequencing. When these are *synchronized* into a campaign at a decisive time and place they can allow maximum combat power to be applied against any opponent's critical vulnerability (frequently the C^3 nodes),which may leave his center of gravity open to attack. It is critical that the JFACC advise his chief of the flexibility ingrained in a combined SEAD campaign aimed at supporting the overall operational objectives. After having been given the guidance from the JFC, the JFACC, and other component commanders, should begin analyzing the threats and should formalize courses of action in order to achieve the joint mission objectives.

It is imperative that the individual service approaches to SEAD be integrated to allow the greatest amount of flexibility to be built into any plan which may call for attaining and maintaining air superiority. There is currently a move afoot to significantly reduce SEAD capability. Admiral Owens, former Vice Chairman of the Joint Chiefs of Staff, believes that it is no longer important enough to maintain EC and non-destructive SEAD assets. He believes that "hard-kill" weaponry will completely dominate all aspects of the future battleground. Owens says: "If we can destroy every hostile radar emitter minutes or seconds after it is activated, why should we need jammers? If we know where an opponent's ground forces are and can attack them with long-range weapons, would there still be a need for close-air support?"[17] Although this type of capability would certainly be useful in an all out war it limits the available options allowed the local war fighter who is engaged in any operation short of total conflagration. In the reality of combat operations for the

near future we will see increasing opportunity to exploit the electronic warfare spectrum through the use of J-SEAD airborne EC assets as well as exploitation of the enemy C^3 spectrum in order to capitalize on the operational deception inherent in information warfare. Information denial should be a key component in any future SEAD operations.

The fact that the USAF has now stood down EF-111 EW and F-4G *Wild Weasel* aircraft in favor of using USN EA-6B EC aircraft to handle all J-SEAD airborne duties is a testament to the willingness of service chiefs to compromise in order to satisfy the desires of the theater CINCs. USAF Chief of Staff, General Fogleman, comments: "This is what it really means to be joint. The Navy relies on us for long-distance tanking, for example, and we rely on them for escort stand-off jamming. I don't have a problem with that."[18] The operational fire capabilities supplied by the EA-6B alone, allows both lethal (HARM) and non-lethal (electronic jamming) fires to be brought to bear against an enemy IADS. This allows an exploitation of the opponents operational depth which may allow an unrestricted movement of the remainder of our own airpower assets. In addition to disrupting freedom of maneuver, J-SEAD supported BAI aircraft can be active participants in the potential isolation of enemy reserves by wreaking havoc on the command, control and communications structure. Conversely, there is no better use of deceptive SEAD assets than to strike at an opponents IADS/C^3 Net with decoys, cruise missiles and jamming in order to draw his attention away from the main effort. Under the emerging strategy, timely intelligence, standoff and precision munitions, stealth, and inter-linked sensors and "shooters" will make it possible to cripple an enemy IADS rapidly, then pick off the pop-up threats in a matter of minutes from the time they are first detected.[19]

Air Force personnel are now training in Navy and Marine Corps aircraft with the eventual integration of those personnel into Navy EC squadrons. The concept of jointness is

heightened to new levels as the exposure and broad-based knowledge of inter-service doctrine will now become readily available to the operation planners. It will be extremely helpful to have personnel on joint planning committees who have intimate knowledge of how best to employ their respective capabilities when sequencing the SEAD team into the air operations of the overall campaign. It now behooves those responsible for generating doctrine that they build a sound, integrated philosophy of J-SEAD asset useage tailored for forces which can be fielded in the 21st century. SEAD is a force enabler, and one of the "tools" in the CINC war chest which should not be relegated to the scrap heap in favor of technologies that are not yet available. The dynamic environment of the modern battlefield is certainly not the place to be prone to static philosophies which tend to put all winning strategies in one "basket". The rapid movement of ground forces, alone, must be taken into account when planning J-SEAD operations. Although it takes time to relocate mobile SAM and AAA systems, they will eventually catch up to their maneuver elements and will establish zones of protection and fields of fire. Therefore, J-SEAD planners must be aware of the constant changing nature of the AirLand battlefield and act accordingly to neutralize mobile IADS.

Conclusion

In almost any conflict involving intense air activity, achieving air superiority will be a crucial step in meeting strategic and operational aims. We have come a long way since the Second World War in attempting to develop means to achieve this superiority in an integrated and synchronized fashion. As the traditional threat diminshed in 1989 the actual threat increased. At the same time a tangible threat to divest the United States inventory of SEAD assets increased. The end of the Cold War has seen an increased amount of down-sizing which has affected all force levels and it has become increasingly important that we combine our

strengths amongst the five services in order to offset individual shortfalls. In order to aid their cause, SEAD practicioners must learn to state their case in terms of overall objectives and final outcomes rather than in technical jargon and short term desires.

SEAD has become an offensive weapon in it's own right and in the era of diminshed resources, *truly* J-SEAD offers the operational CINC the most flexibility in direct and indirect fire. Destruction and deception should be utilized not just as a means to gain limited air superiority, but in certain circumstances they are an end in themselves (assuming total effectiveness in exploiting the C^3 network completely disables an opponent's ability to wage counter-operations). The application of overwhelming electronic force, when dovetailed with an unrelenting hard-kill SEAD campaign, saves lives. Let us not forget, either, that in addition to saving lives, effective SEAD saves aircraft--aircraft that will remain central to the air component commander's ability to generate and sustain a high number of sorties over an extended period of time.[20]

NOTES

1. Gert Kromhout, "The WILD WEASEL Controversy," Military Technology, No. 8, August 1995, 42.

2. Chairman, Joint Chiefs of Staff, Joint Suppression of Enemy Air Defenses/JTTP [J-SEAD], Joint Pub 3-01.4 [Washington: 1995], p. V.

3. William J. Luti, "Battle of the Airwaves," U.S. Naval Institute Proceedings, January 1992, 50.

4. James R. Brungess, Setting the Context, Suppression of Enemy Air Defenses and Joint War Fighting in an Uncertain World [Alabama: Air University Press 1994], 8.

5. Ibid., 9.

6. Ibid., 17.

7. Ibid., 19.

8. Ibid., 129.

9. Ibid., 37.

10. Kenneth G. Krech, "The Navy Must Suppress Enemy Air Defenses," U.S. Naval Institute Proceedings, October 1995, 77.

11. William J. Luti, "Battle of the Airwaves," U.S. Naval Institute Proceedings, January 1992, 54.

12. Gert Kromhout, "The WILD WEASEL Controversy," Military Technology, No. 8, August 1995, 42.

13. Chairman, Joint Chiefs of Staff, Department of Defense Dictionary of Military and Associated Terms: JCS Publication 1-02, [Washington: 1994] 20.

14. Kenneth G. Krech, "The Navy Must Suppress Enemy Air Defenses," U.S. Naval Institute Proceedings, October 1995, 79.

15. James R. Brungess, Setting the Context, Suppression of Enemy Air Defenses and Joint War Fighting in an Uncertain World [Alabama: Air University Press 1994], 111.

16. Ibid., 123.

17. William A Owens, "The Emerging System of Systems," U.S. Naval Institute Proceedings, May 1995, 39.

18. John A. Tirpak, "Electronic Warfare, Economy Style," Air Force Magazine, November 1995, 26.

19. Ibid., 28.

20. William J. Luti, "Battle of the Airwaves," U.S. Naval Institute Proceedings, January 1992, 55.

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