Expeditionary Advanced Base Operations (EABO) Handbook

Considerations for Force Development and Employment

1 June 2018

Version 1.1

Purpose: This paper is a concept handbook produced to inform force development, and solicit ideas for the further conceptual development, naval integration, materiel requirements, and operational employment of the EABO concept. Elements of this paper may also inform future updates to the official naval concept, as well as EABO functional concepts of support. The information contained herein is designed to supplement that contained in the inter-service document and will be iteratively updated in accord with lessons learned through wargaming, experimentation, and the suggestions of warfighters and functional experts. The author welcomes critique, and solicits additional information, corrections, or refinements to this paper. To meet its intended purpose and benefit from open debate, this paper is unclassified. Contributions to the EABO Handbook that require higher levels of classification will be included in a classified annex.

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Expeditionary Advanced Base Operations (EABO) Handbook

Executive Summary:

EABO is a future naval operational concept that meets the resiliency and forward presence requirements of the next paradigm of US Joint expeditionary operations. The concept is adversary-based, cost-informed, and advantage- focused. The EABO concept is designed to defeat adversary attempts to execute counter intervention and *fait accompli* strategies that might otherwise inhibit a credible US response to aggression against treaty allies and economic partners. EABO creates a more resilient forward force posture that circumvents the efforts and obviates the investments of aspiring peer competitors employing long-range precision fires directed at dislodging US forces dependent upon legacy bases, fixed infrastructure, and large targetable platforms. By enabling persistent presence and a more resilient force posture, EABO offers the opportunity to conduct expeditionary operations to defeat an adversary's strategy without the requirement to destroy all of his forces.

EABO is conducted by low-signature naval and joint forces with operationally relevant sea control and denial capabilities—in particular, the ability to offensively target and strike adversary naval and air platforms, and defensively form the nucleus of an active integrated maritime defense-in-depth. EABO is premised on the creation of an alternative forward force posture based on a more difficult to target, low-signature, and dispersed forward-basing infrastructure. The lethal, yet resilient, combination of low-signature forces operating from a more amorphous forward-basing infrastructure will enable US naval and joint forces to *persist, partner, and operate* within range of adversary long-range precision fires--particularly ballistic and cruise missiles designed to attack critical joint, fixed, forward infrastructure, and large platforms.

EABO supports the joint force maritime component commander (JFMCC) and fleet commanders in the fight for sea control, by exploiting the opportunities afforded by key maritime terrain, particularly in close and confined seas. The EABO concept is framed within the *dual-posture* context of a persistent "*inside force*" established by the Joint Access and Maneuver in the Global Commons (JAM-GC) concept, and consequently is a foundational enabling capability for other naval and joint concepts, such as Littoral Operations in a Contested Environment (LOCE) and Distributed Maritime Operations (DMO) that require persistent forward presence to achieve advantage. EABO advances, sustains, and maintains naval and joint sensor, shooter, and sustainment capabilities of the *inside force* to leverage the decisive massed capabilities of the *outside force* with enhanced situational awareness, augmented fires, and logistical support.

The EABO concept enables US naval forces to exercise 21st century naval operational art, meet new enemy anti-access/area denial (A2AD) threats with new capabilities, and operate and thrive in and around close and confined seas. When confronting aspiring regional hegemons and peer competitors, the EABO concept provides future strategic decision-makers with

coercive sea denial options that do not promote vertical escalation. EABO enables JFMCC to secure the complementary advantages of the strategic offense and tactical defense. By occupying key maritime terrain adjacent to adversary seas, JFMCC can secure the strategic initiative. EABO then creates a robust, active, maritime defense-in-depth—exploiting the stronger form of contemporary battle to deter adversary aggression, or achieve disproportionate result in combat.

1.0 Concept Objectives, Purpose, And Scope

1.0.1 The EABO Concept Seeks To:

Describe the growing strategic challenge that emerging peer competitors and potential A2AD adversaries have imposed on the US joint force,

Detail how the A2AD challenge operationally impacts US joint and naval forces conducting expeditionary operations with current methods and means

Propose a new naval operational concept that will ameliorate the impositions created by adversary advances, restore advantage, enable persistent forward presence and create the conditions necessary to initiate the next paradigm of US joint expeditionary operations in accord with JAM-GC, DMO, LOCE and fleet design

Provide sufficient details of the EABO concept in terms of method and means to guide future naval force development and supporting functional concepts and capabilities

1.0.2 EABO Must Generate Advantage And Expand Options

EABO is a future naval operational concept for the conduct of the next paradigm of joint expeditionary operations. As an operational concept it must meet several expectations to achieve credibility and influence future force development and naval operations. Just as the operational level of war coordinates the details of tactics with the overarching goals of strategy, so, too, must a credible future operational concept describe *how* new tactics, units, and capabilities can be coordinated to better achieve campaign objectives and generate new strategic options. Effective strategy is predicated on creating an advantageous alignment of ends, ways, and means. Consequently, a credible future operational concept must describe in sufficient detail *how* new methods of thought and action can better achieve strategic ends, and *how* new capabilities can better secure operational advantage within the constraints of allocated resources. An important part of the '*how,*' or method, of a credible operational concept is *how* it makes more advantageous use of limited resources to achieve strategic ends. While EABO may be pulled into supporting contemporary operations, it is primarily designed to provide future decision-makers with better operational and strategic options.

1.0.3 EABO Must Be Cost-Informed

It is readily evident that more resources might create greater advantage when applied in the same general method. Clear indication of a failing operational method would be the application of additional resources without a concomitant increase in relative advantage. The growing realization that additional investment in the current methods and capabilities of the joint force will not yield new operational advantage contributes to our current dilemma. For EABO to be credible, it must demonstrate *how* the application of the new operational method, *with a similar level of resource investment*, can generate additional advantage relative to anticipated adversary methods and capabilities.

1.0.4 EABO Must Establish New Assumptions

The EABO concept makes the bold assertion that it represents the foundation for a broad paradigm shift in the American approach to expeditionary operations. This assertion is founded on the understanding that the EABO concept is not based upon incremental changes in methods and means, but is predicated on *changes to the fundamental assumptions* that underlie the dynamic character of war. The fundamental assumptions of presumptive sea and air control that currently support the long-evolved *American Way of War,* are waning fast. The new assumptions identified in EABO must undergird and shape the next paradigm of expeditionary operations.

1.0.5 Scope

EABO proposes a naval concept that enables US forces to persist forward with allies and partners, and operate against peer and near-peer competitors who have initiated *fait accompli* and counter intervention strategies that incorporate A2AD capabilities into their operational design. The EABO concept is particularly applicable to the close and confined seas fight.

Each potential adversary is unique in terms of strategy and geography, and each requires unique application of a general methodology in a particular way. EABO proposes a generic method for dealing with a fast evolving A2AD military challenge by peer competitors employing counter-intervention strategies. The concept will use the most populous, robust, and rapidly advancing of our potential adversaries as the '*pacing threat*,' but the concept is designed to be applicable against all A2AD-equipped adversaries operating in the vicinity of contested close and confined seas.

The alternative force posture and structure identified in the EABO concept is foundational to maintaining credible forward presence against peer competitors with developed precision strike regimes. Consequently, while EABO is an operating concept in its own right, it can also be regarded as an enabling concept to support other joint (JAM-GC) and naval concepts (LOCE & DMO) that require persistent forward presence as a precondition.

EABO is immediately applicable to ameliorate the current challenge from rising A2AD near-peer competitors, but the concept as described in this paper is *future focused*. Combatant

commanders responsible for *fight tonight* contingencies will grasp at the operational advantages of EABO, and appropriately adapt current capabilities to meet immediate operational demands in a short term '*bubble gum and bailing wire'* approach. The draft EABO concept is already informing fleet experimentation. However, a far more optimized *inside force* capability set is necessary for the concept to meet anticipated requirements against a peer competitor. It is important to distinguish necessary short-term adaptations to *fight tonight* from the more resilient and optimized *inside force* capabilities required to *fight right* in the near future.

As the intended purpose of EABO is to provide the conceptual and material foundation for the *next* paradigm of expeditionary operations, efforts to exploit EABO to extend archaic investments are of dubious value and outside the scope of the concept. The opportunity cost of maintaining vestigial systems is significant, but specifically what legacy capabilities should be divested or retired to create opportunity space is similarly beyond the scope of this paper.

The resilient capabilities required to implement EABO are needed soonest, but, in order to cogently join conceptual ambitions with temporal realities, this concept paper assumes desired capabilities that can be credibly delivered within the complexities of the evolved acquisition process in 5-10 years. (The urgent need for acquisition reform informed by the competitive nature of information age warfare exceeds the scope of this paper.)

1.0.6 Naval Concept In A Joint Framework

The applicably of EABO to joint expeditionary operations will be apparent, and this concept paper will make allusions to the many advantages that can be achieved by incorporating joint forces and capabilities. The EABO concept is overtly aligned with the JAM-GC concept, and can serve as a basis for other joint concepts and initiatives. However, the formal naval concept was directed by the Naval Board and is focused on the conduct of naval operations to persist and operate within the arc of long-range enemy fires, particularly in the vicinity of contested close and confined seas. It will describe how naval forces will advance, host, and persistently maintain naval and joint sensors, shooters and sustainment capabilities to partner and operate forward despite robust adversary A2AD investments. While the EABO concept is naval in development, it will be inherently joint in application, as all elements of US military and national power will be required to deal effectively with rising peer competitors and aspiring regional hegemons. However, a fully coordinated joint EABO concept represents future work.

In light of the above, for the EABO concept to serve as a vision for future naval force development and employment, it must describe *what* must change, *why* it must change and *how* changes in assumptions, means and method can lead to new operational advantage. The concept must describe *how* to restore the strategic initiative and mitigate the adverse consequences of the operational challenges currently imposed by advances in enemy strategy and capabilities. Most importantly, the EABO concept must describe *how* an artful integration

of anticipated future *means* with the described *method* offers relative operational advantage to future naval and joint force commanders.

2.0 Strategic Considerations: The Case For Change

The EABO concept is a naval operational concept that anticipates the presence and resiliency requirements of the next paradigm of joint expeditionary operations. The concept is predicated on the increasingly obvious need for US naval and joint forces to adapt the method for conducting expeditionary operations in light of significant adversary advances in the capability and capacity of their long-range precision fires. Many open press sources and military journals have documented the growing long-range precision strike capabilities of America's most likely future antagonists and the counter-intervention strategies and capabilities they have developed. Aspiring regional hegemons have worked hard and fruitfully to discern and target the military center of gravity of America's expeditionary capabilities. The global *'democratization of technology'* has enabled formerly second-rate powers to rapidly acquire sophisticated long-range weapons systems that imperil the forward-basing infrastructure and capital assets that have long enabled the global reach and influence of the US joint force. If the United States is not content to become a North American power, then the US joint force must make rapid and decisive change to restore its long held expeditionary advantage. For naval forces to remain relevant to the joint fight, they must extend persistent naval power into and from contested seas.

Before discussing conceptual change requirements, it is important to note *how* potential adversaries have expanded their options at the expense of our own. First, they have done a credible assessment of our '*center of power and movement,*' and have discerned the critical relationship of US forward-basing infrastructure to power projection capabilities. Joint force global power projection and sustainment capabilities provide the military credibility that undergirds the assurance the US gives to treaty allies and economic partners. A credible and assured military response guarantees America's leadership position within the evolved world economic order. To displace American leadership, aspiring regional hegemons understand the need to defeat, dislodge, or discredit the utility of American forward based forces by threatening the critical infrastructure they rely upon.

Next, aspiring military competitors developed a capacious long-range precision strike capability to imperil the well-developed, long used and relatively concentrated forward-basing infrastructure that supports the long evolved American method of conducting and sustaining expeditionary operations. *Potential adversaries realized that they could change the regional balance of power if they could transform America's center of gravity into a critical vulnerability via long-range precision fires*. A force dependent upon fixed forward-basing could not long persist or effectively partner if it's most valuable military capabilities were based on readily targetable and highly vulnerable locations.

Currently, in disparate corners of the world different competitors are testing their growing military parity with new regional strategies and increased military adventurism. The repetitive *fait accompli* strategies that the Russians have worked to achieve territorial expansion in Eastern Europe have been noted and emulated by the People's Republic of China (PRC) in the South China Sea. Both nations have pursued successive '*salami slicing'* initiatives at the expense of US regional partners and American global credibility. Recently, even the Houthis have exploited anti-ship missiles to interdict US naval forces seeking to transit the Red Sea. Recognizing a dramatic shift in the correlation of force relative to regional contenders, US military leaders must *provide national decision-makers with credible new options* for effectively deterring further adversary adventurism.

The artful combination of *fait accompli* military strategies and innovations in both the quality and quantity of adversary anti-access and area denial (A2AD) weapons systems have contributed to this seemingly abrupt, but in reality long simmering shift in strategic balance. Identifying the strategic and operational disadvantages this novel combination of new *ways* and innovative *means* has imposed on the joint force is the first step toward understanding our strategic predicament. *Once we understand the nature of the adversary challenge we can begin to offer practical methods and means to counteract the rapidly deteriorating correlation of force*. Optimally*, our new concept will not only rectify our current dilemma, but will also offer new opportunities to secure advantage and restore the strategic initiative*.

Much analysis has gone into understanding the nature and characteristics of the A2AD threat. EABO credits the validity of our intelligence analysis, acknowledges the change in the relative correlation of forces and synthesizes a new operational method to create a new means of securing naval operational advantage.

2.0.1 Towards A Unifying Operational Vision

Our strategic dilemma is disquieting because our waning position is clearly not due to lack of effort, and we regress despite our considerable economic investments, endless technical innovation, unequalled research and development and world-wide alliances. Our force development processes are robust in seeking improvements, but appear to lack a unifying vision to describe *how* America will continue to find expeditionary advantage amid the many options to influence the character of future war. A credible, affordable and unifying operational vision is required if our technical innovations are to be focused, generate mutual support and enable operational advantage. The EABO concept asserts that it can create the conditions and be the '*sand in the oyster'* for a credible operational concept that initiates and supports the unifying joint vision articulated in JAM-GC.

2.0.2 Paradigm Shift

For over 70 years the US has perfected a paradigm of expeditionary operations and power projection that has ensured the peace and security of its allies and fostered unparalleled economic growth and prosperity. Begun in World War II and refined by successive generations

of military professionals, the *American Way of War* has proven to be a winning formula for American power, international security and enduring global prosperity. The *American Way of War* methodology exceeded the bounds of a mere operational concept and by dint of permanence and repetition became the ambient paradigm for how American warriors think about and conduct war.

The problem with paradigms is that the assumptions that underlie them are so fundamental, so integral to our observed experience and so basic to our understanding, that when they are challenged by the innovation of others the result is often a deeply disquieting dislocation of the established order. We can easily credit our potential adversaries with stealing a technological march or generating unforeseen economic potential, but what we have been slow to realize is that they have initiated the next paradigm in the ever dynamic character of war, a new and aggressive paradigm that boldly challenges the long evolved *American Way of War* and defiantly confronts our ability to adapt. *The changes in the character of war that our most aggressive competitors have initiated invalidate the fundamental assumptions upon which we have built the joint force.* The challenge is significant and cannot be met by simply refining our current methods and capabilities.

Paradigm shifts bring discontinuous change and impose significant institutional discomfort to those who opt to compete. New paradigms are intellectually disorienting and often physically dislocating. They challenge our ability to adapt and compete, and often are the precursors of historic inflection points that change the relationships among dominant powers. Invariably, new paradigms threaten old assumptions and demand new means, new method and new competencies. Paradigm shifts can abruptly reduce the utility of past investments in human capabilities, material goods and military infrastructure. Sometimes new paradigms take years to dominate and displace the old—for many years the horse and internal combustion engine shared the same roads. Sometimes paradigm shifts are as abrupt as Montezuma confronting the cold Toledo steel of the Conquistadores. Paradigm shifts create new winners and losers.

2.0.3 Changed Assumptions

The subtly of paradigm shifts renders them sinister and enables surprise. Our adversaries have not chosen to suddenly attack our known strategy, but to slowly erode the fundamental assumptions that undergird it. The three assumptions upon which the US has built the contemporary joint force—presumptive or readily achieved *sea control*, *air superiority* and *assured communications* have all been invalidated by fielded adversary force development initiatives associated with long-range precision fires. The changes in fundamental assumptions regarding sea and air control necessitate concomitant changes in the posture, character, structure and qualities of the joint force, but the immediacy of these change requirements has long gone unrecognized. That is not to say that our deteriorating military advantage is not acknowledged, nor that progress is not being attempted, but these efforts are largely improvements in current competencies and capabilities and do not acknowledge the requirement for significant and fundamental change foisted upon us by adversaries who have

crafted the next competitive paradigm. Many contemporary efforts at innovation hold great promise, but those that have been institutionally accepted amount to relining the field, not changing the game.

The legacy joint force structure that comprises most of today's joint force capabilities were developed within a strategic context of presumptive or readily achieved sea control, air superiority and assured communications. The evolved joint force is designed to achieve advantage by exploiting the enhanced operational reach and logistics support afforded by the global US forward-basing infrastructure acquired during WWII and sustained throughout the Cold War. The contemporary '*American Way of War*' has evolved to a high state of operational competence, reach and efficiency, but the foundational assumptions of sea and air control, assured communications, geographic access and forward-basing that undergird the current paradigm of joint expeditionary operations are fast eroding and no longer valid.

The presumption that the United States had, or could rapidly achieve, forward sea and air control were fundamental assumptions in the creation of the modern joint force. When the sea is sanctuary, it is prudent to build a comparatively small number of large, expensive, exquisite and remarkably *efficient* ships and platforms that enable technical overmatch and support persistent power projection from a short distance off an enemy coast. Efficient ships were enabled by sophisticated systems, concentrated crews, multiple weapon systems, effective defenses and numerous aircraft, missiles or munitions on a single platform. But an *efficient* fleet becomes brittle and un-risk-worthy when confronted by an aggressive adversary determined to contest our sea control with ample long-range, land-based precision fires and many small risk-worthy platforms with adequately lethal payloads. Particularly troublesome are adversaries who can take advantage of short interior lines of communications, make a virtue of risk and overwhelm our expensive joint capabilities with relatively inexpensive but capacious systems of adequate lethality. Comparatively cheap but capacious anti-access and area denial (A2AD) systems impose disproportionate cost and risk on forces equipped with exquisite and expensive systems and platforms. Similar asymmetries in capability and risk afflict our forward bases and infrastructure. Deep water ports, long runways, big ships and fixed infrastructure are increasingly *brittle*, and all are readily targeted by adversary long-range precision fires to increasingly extended distances.

Foundational to the *new assumptions* that must guide our approach to developing the next paradigm for expeditionary operations is the need to displace our past appreciation for platform and installation *efficiency* with a new fascination for operational *resiliency*. Over emphasis on force efficiency has led to an *exquisite but brittle force*. The lack of operational resiliency is fast eroding the traditional expeditionary advantages enjoyed by the US joint force.

The cunning combination of A2AD counter intervention military systems and a *fait accompli* military strategy to achieve hegemonic territorial ambitions is playing out well for our adversaries, not only because of their observable gains, but because of the potential loss of US credibility among our allies and partners. Potential adversaries and aspiring regional hegemons

were oft thwarted or deterred by the global power and reach of the American military enterprise and identified the forward-basing infrastructure and large platforms from which the US supported expeditionary operations as the center of gravity of US power projection. They appear resolved to turn our source of strength into a critical vulnerability via ambitious development and fielding of long-range rocket forces, extended range cruise missiles and the surveillance/targeting architecture that supports them. While our current anti-access area denial anxieties are largely centered on peer and near-peer competitors, it is reasonable to expect that these lethal long-range capabilities will quickly proliferate among second and lower tier actors, as evidenced by the recent actions of the Houthis against the 5th Fleet at the BAM.

Although the United States continues to wield great naval and air might from its forward-basing infrastructure, advances in the development of precision long-range munitions by potential adversaries imperils these facilities and makes the current paradigm of expeditionary operations of fast waning advantage. Posturing great capabilities in increasingly vulnerable locations compromises their deterrent value and places major assets at risk in the event of strategic surprise or during routine combat operations once hostilities have commenced. Valuable lessons learned at Pearl Harbor and Clark Air Base in WWII need not be repeated.

By dint of insight, innovation and investment, America's military competitors are striving to create a strategic dilemma for the United States and compel a choice between mutually undesirable alternatives: The United States can continue to risk our most valuable military assets in increasingly vulnerable forward locations, or we can step back from our forward based posture and risk losing credibility among treaty allies, who accept our assurances of military protection because they are insured by our continuous presence. If we continue to play the board as currently set, the US forward based posture will constrain rather than expand political options.

Wittingly, and with commendable malice of forethought, our most likely adversaries have stolen a march on America's strategic position in the world. The 'democratization of technology' may have accelerated both the ambitions and capabilities of our strategic competitors, but it was inevitable that this dilemma would ultimately be foisted upon us. History has not ended and humanity thrives on competition. Arguably, the 'fork in the road' decision point for maintaining competitive advantage is now far behind us. But this argument, and the pessimism that surrounds it, is predicated on passively allowing our competitors to both change the character of the military competition and dictate the next paradigm of war. Change is now an imperative. At question is "*who will drive it, and where*?"

A2AD adversaries *will* drive legacy US forces off of our current forward based infrastructure. At issue is *where* US naval forces will go. If all retreat, then the credibly of the force to maintain treaty commitments is immediately compromised. But if part of the force just steps off the prepared X ring of fixed targets and persist forward with a different force posture, structure and capability set—then *we* initiate the next paradigm before enemy initiatives can bear fruit.

Leading and managing change is the business of military professionals in peacetime. Historically, and throughout the Cold War, the US had an adversary based force development process that creatively adapted to the constantly changing character of war. More significantly, the United States initiated several modern paradigm shifts with conceptual and technical innovations, such as nuclear weapons and the PNT architecture. It is imperative that the naval services resume an adversary (vice own capability) based force development process and initiate the *next paradigm* of expeditionary operations to properly *focus our innovation and investments*. A force development process predicated on rectifying current capability gaps instead of discerning future operational advantage is clearly not a winning formula.

Recognizing that the evolved ways and means that brought the US to the pinnacle of global military might will not enable us to retain our competitive position is the first step toward eliminating the institutional inhibitions to change. The sword that we have long honed to a sharp edge will not adequately serve in the gun fight our most enduring and determined adversaries have prepared. New ways and means, both concepts and capabilities are required. New assumptions concerning capacity, resiliency, proximity, cost imposition and the relative value of investments in platforms and payloads must be adopted. Minor DOTMLPF corrections to the current force will prove inadequate and more fundamental changes to posture, force structure, organization and capabilities will be required.

The salient and most essential challenge for the US joint force is the requirement to stand forward—within the ever-growing arc of adversary long-range precision fires. The A2AD capability set that our enemies have conjured is focused on achieving '*counter intervention'* against US forces that can contest their hegemonic military *fait accompli* gambits. If the US joint force cannot persist forward or get to the fight, adversaries win by default. If the cost and risk to meet our treaty obligations is prohibitively high, allies question resolve. The Achilles' heel of the evolved *American Way of War* is the growing vulnerability of our fixed forward-basing infrastructure and the large platforms that enable power projection. The EABO concept is designed to undercut this fundamental assumption in our adversary strategy. A2AD can work both ways. We too can attack our adversary's assumptions. EABO is a small, but critical concept in a wider joint vision for restoring competitive advantage and strategic initiative.

2.1 Consequences Of A2AD On The US Joint Force: Understanding The Nature Of The Challenge

The virtues of the EABO concept are best appreciated in light of the steep challenge that adversary A2AD initiatives have imposed on the joint force. To understand the appropriate solution, it is necessary to have a considered appreciation of the nature of the problem.

A frank and perhaps unflattering appraisal of the current state of international military competition is a necessary first step toward devising an effective counter strategy, envisioning a new operational approach, and generating the tactical capabilities required to avoid marching onto the ground our adversaries have long prepared. The A2AD challenge to the US strategic

posture is designed to create new advantages, leverage new technologies, exploit regional geography, incite partner apprehension, inhibit US intervention and preclude American theater access. Specific nations have specific goals, but in general, their military strategy is apt, advantageous and appropriately aligned with political objectives. Their investments are in accord with their strategy and their resource allocation and force development is increasingly formidable. Most significantly, potential adversaries are actively seeking to change the strategic order and have initiated a far more holistic approach to international competition that makes the American five phased approach to operations appear naive. Future military competitors are already active in establishing theater conditions for future success and have induce A2AD anxiety on the US joint force by successfully challenging the assumptions that underpin the *American Way of War*. All, while being careful to not to cause conflict that would wake the giant and make US conceptual and material deficiencies overtly apparent.

Yet our potential adversaries are not ten feet tall. Adversary forces are the creation of despotic regimes, and consequently offer myriad points of dysfunction and fracture by their very nature. A2AD can work both ways and *our competitor concepts of future operations are as vulnerable to our initiatives as ours has proven to be to theirs.* We need only chose to compete effectively. There is no need for pessimism among willful and creative nations and people.

How US forces perform defending US vital interests in the future depends upon how we think, invest and prepare today. The US continues to exercise huge advantages in terms of human ingenuity, treaty allies, trading partners, natural resources and the economic efficiencies inherent to a free and energetic people. To effectively leverage our strengths to full advantage, it is necessary to observe the current state of the military competition with a professional eye and discern the particulars of the adversary strategy that our new concepts and operational paradigm must off-set.

2.1.1 Forward Posture Imperiled

The most obvious and immediate problem created by adversary A2AD systems is the challenge they pose to US forces postured on a forward-basing infrastructure centered on large runways, deep water ports and large capital ships. The size and concentration of our bases and platforms now render them a self-optimized target set when positioned within the arc of ample adversary long-range precision fires, such as IRBMs and long-range cruise missiles. *The core of our A2AD anxiety is rooted in the knowledge that our most valuable capabilities are increasing based on and dependent upon highly vulnerable locations and platforms.* The active measures to defend and harden these installations is cost imposing, and the forces necessary to defend them would absorb all available forces and capabilities, enabling adversaries to achieve their territorial hegemonic ambitions unimpeded. Long evolved US concepts for conducting expeditionary operations are heavily dependent upon forward-basing infrastructure. Once a critical enabling capability, our forward-basing infrastructure is increasingly a critical vulnerability. In a major war, long-range enemy fires will fix or destroy fprward-deployed US forces and preclude the opportunity to take advantage of exterior lines of operation. While it is possible to develop

plans that might withdraw or move vulnerable forces upon credible indication and warning, retreat is clearly not a favorable deterrence option that will inspire allies and partners, or an effective indication of American resolve.

To be effective, our forward strategic posture must enable joint forces to rapidly move to an advantageous operational stance amid credible indication and warning. Our posture must be enduring and sustainable, without undue risk to force or mission in the event of conflict or surprise enemy action, and support cost effective capabilities to deter and coerce potential adversaries. Without the ability to position and sustain credible forces forward, deterrence is compromised and myriad other problems afflict the joint force. An advantageous forward force posture must be durable, sustainable and resilient.

2.1.2 Partnering Becomes Problematic

It is difficult to partner with treaty allies and economic partners without the ability to persist forward within range of an expanding arc of enemy precision operational fires. The ability to persist and partner forward with *operationally relevant capabilities* to support and defend US interests and those of our allies is essential to meeting treaty obligations. *The crux of our current operational dilemma is the unambiguous requirement to maintain a forward posture with an increasingly brittle force.*

2.1.3 Proximity Is Lost

Proximity matters. *Regionally aligned* platforms and payloads that do not have to cross oceans to be deployed are far less expensive and can be produced in much greater numbers to rectify the capacity advantage now enjoyed by regional competitors. Proximity is not only an imperative for partnering, but essential for reducing the cost and expanding the capacity of joint force capabilities that can be brought to bear.

Situational awareness is proximity dependent and persistent surveillance and reconnaissance forward is indispensable to precluding surprise and maximizing warning times. The US joint force cannot afford to allow adversaries to exploit A2AD capabilities to leverage US forces out of operational proximity. Persistent presence, not episodic visits, are integral to maintaining the proximity advantage afforded by treaty allies.

Partner proximity also offers the opportunity to *preposition* the capabilities and logistics support assets that enable forces to persist forward in sufficient capacity to be operationally relevant for an extended period of time. Effective use of partner proximity early in a conflict will preclude the exponential cost in blood and treasure required to regain lost ground.

2.1.4 An Efficient But Brittle Force

Forces primarily designed for efficiency can take advantage of presumptive or readily achieved sea control and air superiority to concentrate essential support functions and take advantage of the efficiencies of economy of scale. Efficient forces can exploit proximity and increase relative

capability to reduce capacity requirements. These efficiencies enable investments in a relatively slender number of highly exquisite and expensive capabilities that overmatch adversary capacity with technological capability. However, when the sea and air space becomes contested, efficient forces become brittle, with numerous single points of failure that defy graceful degradation. The high relative cost of exquisite capabilities reduces the number that can be acquired and they become too few and expensive to risk in peripheral operations. *Adversary advances in long-range precision fires have made resiliency and efficiency alternative virtues*. In peacetime we appropriately value efficiency, but in war we lust for resiliency. Inevitably, the joint force will be compelled to sacrifice some elements of efficiency to achieve the resiliency that is now a warfighting imperative.

2.1.5 Risk Aversion

Forces once deemed agile become brittle when positioned within reach of adversary long-range precision fires. Brittle forces render decision-makers risk adverse. Abiding by Clausewitz's *rational calculus of war*, competent decision-makers seek engagements where the forces placed at risk are proportionate to the military objective. Forces composed of a slender number of hyper expensive and exquisite capabilities exacerbate risk aversion even among the most aggressive commanders, as the calculations in *calculated risk* become increasingly one sided. When every ship is a capital ship, and every capability is a large percentage of a critical national asset, risk acceptance becomes problematic. Risk acceptance is a military virtue. The ability to calculate risk and act in the face of a dangerous enemy is the essence of the moral quality of command. Commanders need risk-worthy forces to exercise effective combat command and battle management. Every time a sentry is posted, a combat outpost is established or an advance guard is sent forward commanders exploit the qualities of risk-worthy forces to preclude surprise and avoid destruction of the entire force. Like agile chess players, capable commanders exploit risk-worthy, lethal, forward positioned capabilities to create favorable conditions, shape battle and defend critical assets. When virtually all of our forward-deployed forces are dependent upon a few readily targeted forward bases the force becomes inherently brittle and commanders lack the force resiliency necessary to shape conditions and accept battle on favorable terms.

2.1.6 Cost Imposition

Adversary strategy benefits from the disproportionate cost it imposes on the joint force. Defensive capabilities to shoot down incoming precision munitions are many times more expensive than the offensive missiles themselves. Potential enemies have invested in a relatively large number of comparatively less expensive platforms and payloads. Because they intend to control and deny sea and air space in proximity to their own shores, their capabilities need not be trans-oceanic and are less expensive and more numerous. They have created a capability – capacity mismatch that works decidedly in their economic favor. Consequently, a conventional *system versus system* scheme to rectify the imbalance might quickly break the bank.

Just as judo uses the strength and weight of an opponent against himself, the cunning behind adversary initiatives is how they exploit the expensive and exquisite nature of US systems to impose disproportionate cost. For this reason, the *operational* solution to the problem requires the joint force to change from a system versus system approach primarily rooted in *what we fight with*, to a more fundamental operational approach that changes *how we fight*. By adopting a new operational method the highest hurdle toward achieving the next competitive expeditionary paradigm becomes conceptual, not financial.

Once focused on a cogent alternative posture that obviates adversary investment in long-range precision fires and precludes his strategic ambitions, the relative cost and necessary investments are far less cost imposing than conventional means. New and improved weapon and sensor systems remain important, but they must support a fundamentally more advantageous concept. A cost informed approach toward rectifying the current capability-capacity mismatch must be a cornerstone of the next paradigm of US joint expeditionary operations and is a foundational tenet of EABO.

2.1.7 Placing The Joint A2AD Challenge In Context

The strategic and operational consequences of adversary A2AD force development initiatives enumerated above are strategically significant, operationally disruptive, cost imposing and taken together constitute a disadvantageous paradigm shift in the character of war. The extent of the challenge and requisite changes in fundamental assumptions are disorienting to a nation long accustomed to presumptive military superiority. Significant changes in the relative correlation of force compels the US to re-think our force posture, structure, platforms, capabilities and operational concepts in light of new vulnerabilities, and to conduct a realistic appraisal of current and anticipated adversary capability, capacity, activities and intentions.

2.2 The Nature Of The Naval Challenge

US naval forces share in the overall joint force challenges imposed by A2AD equipped adversaries, but there are appreciable and distinct differences in both threats and opportunities. As a naval concept, EABO is focused on how naval forces can counter adversary initiatives and invalidate adversary assumptions to restore advantage to the joint force. To do so, naval strategists must first understand how aggressive adversary A2AD initiatives have imperiled the conventional approach to naval operations.

2.2.1 Close Sea Challengers

Relative to other elements of the joint force, the Navy enjoys some unique advantages in terms of its durability in the face of A2AD threats. Deep water ports are as vulnerable as large airfields, but the mobility inherent in ships make them more difficult to target at range and their defenses are close, sophisticated and robust. Fleets at sea are difficult to surprise with long-range precision fires, and while not immune, ships on the high seas require a high level of effort and longer duration of time to effectively target. There is little doubt that in an open

ocean fight, the superior competence and capability of the US Navy can readily overmatch any two other navies in the world today. For this reason the US Navy is not contested on the high seas, and the most credible threats to US naval dominance are found in close and confined seas in relatively close proximity to adversary territory. The Navy would do well to avoid the dangers of narrow seas, but treaty allies and economic partners draw us there, and US interests require access and persistent forward presence to maintain an effective deterrence posture.

The confined sea fight is a formidable challenge for naval forces. It is difficult to find a more aggressive naval commander than Admiral Horatio Nelson, but his admonition that "A ship is a fool to fight a fort" is even more relevant today than it was when he uttered it. The asymmetric advantage between land and ship has grown as land-based ISR, weapon systems and aircraft have greatly increased range and massed capacity compared to ships. Moreover, the '*hider/ finder' competition* between asymmetric forces greatly favors the land-based defender. The '*fort*,' once a defended location of highly concentrated fire power, can now be disguised and dispersed over a wide area and still provide lethal massed fires to extended ranges at sea. Land-based aviation assets, particularly regiments of long-ranged bombers with hundreds of similarly extended range anti-ship cruise missiles can overwhelm robust seaborne defenses at great distance.

Historically, and still today, inferior fleets will back into ports or confined seas where concentrated land-based capabilities can be brought to bear to off-set enemy naval superiority. Dominant fleets expand their range and influence by preemptively controlling key naval terrain that enables access, control or denial of close and confined seas. British control of Gibraltar is an enduring historic example.

The crux of the A2AD challenge for naval forces is that the enemy will avoid a force on force navy to navy challenge on the high seas and judiciously employ their fleet under the umbrella of a capacious mix of land-based and airborne long-range precision fires. It is the expanded range and magazine depth of land-based rocket forces and bomber borne anti-ship missiles that generates the disproportionate threat to Navy surface forces. In close and confined seas the US Navy will not only have to fight the enemy surface and sub-surface naval forces, they will be simultaneously beset by the abundant and concentrated fires of the enemy joint force. In the era of long-range precision weapons*, the tactical maritime defense is the stronger form of battle* and the greatest challenge to sea control need not come from the sea itself.

2.2.2 The Mass Or Persistence Dilemma

Historically, dominant naval powers have created the conditions for sea control through massed firepower and persistence on station. To extend naval influence and endurance Mahon and other naval theorists advocated advance bases and 'coaling stations.' In the recent past naval forces could loiter indefinitely off an adversary coast with massed firepower and power projection forces to deter, coerce, defeat or compel political decision-makers. However, *contemporary peer and near pear adversary long-range weapons and persistent ISR makes*

mass and persistence alternative virtues for large surface naval platforms with defined magazines. The range, precision and massed capacity of land-based systems makes extended naval persistence perilous. When a ship is run *Winchester* on defensive missiles defending itself, it becomes a large target on an open expanse of water. *Persistence with massed firepower defined the salient advantage of naval power in the 20th Century*, but naval forces today must operate elusively on the high seas and become more vulnerable when confined to a defined sea space. *A2AD capabilities foist an inelegant dilemma on conventional naval forces, compelling them to choose between persistence and mass*.

The dilemma facing the joint force is significant. Our traditional forward bases lack resiliency. Most of our exquisite land-based air superiority and strike platforms require long and hardened runways that are of limited number, predictable location and are easily targeted via space based assets. Dispersal locations, while more numerous, face similar challenges and are as apparent to enemy planners as they are to ours. Potential adversaries have ample munitions to destroy or degrade numerous bases tethered to readily identifiable and predictable runways. Similarly, the limited number of ports suitable for reloading missiles on ships and supporting fleet operations forward makes sustaining naval forces forward in the face of a determined adversary problematic. Our combat platforms are remarkably capable, but are rendered brittle by infrastructure requirements that are highly vulnerable to evolved enemy capabilities.

2.2.3 Capability Vs. Capacity Mismatch

Discussion of the operational A2AD dilemma often focuses on the rapidly diminishing qualitative edge we hold over competitors in terms of weapons range and precision. The closing capability gap is a worthy concern, but the more significant and less addressed problem is the growing numerical capacity of potential adversary platforms and missiles. Our exquisite operational capabilities remain technically superior, but their cost is prohibitive and their effectiveness is belied by their limited number, since adequately lethal adversary systems can readily outnumber US defenses near enemy home waters. In short, US naval forces are far more likely to be overwhelmed than overmatched. A growing capability / capacity mismatch is at the core of our A2AD anxiety and renders naval forces more brittle, since a determined enemy willing to accept risk can numerically overwhelm US ability to stand forward and fight at strategic distance in support of American interest and treaty allies.

The nature of the sea control challenge is both qualitative and quantitative. Qualitatively, potential adversaries are rapidly developing and fielding new long-range precision strike capabilities designed to replicate, or in the case of anti-ship ballistic missiles, surpass our own. Quantitatively, adversaries are looking to build on the relative strengths of fighting on interior lines in home waters to mass sufficient forces of adequate lethality to ensure success. If we choose to respond to greater adversary capacity with greater technological capability alone, the cost imposition will be prohibitive. *The naval force development challenge is to devise a broad naval operational concept that will advantageously enable more resilient naval forces to persist and prevail forward in defense of US interest and those of our allies.* As described, the EABO

concept is designed to enable naval forces to posture and persist forward and supports other future naval concepts.

As a consequence of aggressive adversary force developments, a long era of presumptive US sea control has ended. *The growing operational challenge to sea control must be appreciated as a critical inflection point in naval force development.* With longstanding allies, treaty obligations, national interests and trading partners situated within the growing arc of potential adversary long-range fires, it is imperative that US naval forces develop *new methods and capabilities* to continue to prevail forward across the range of military operations.

Sea power is the primary enabler of joint expeditionary operations. Only through enduring sea power can the United States bring the logistical sinew of the joint force to bear. *How* we contest control of the sea will determine America's relative position in the world. Potential adversaries have demonstrated commendable initiative in reducing the access and influence of the legacy joint force, but to paraphrase Captain John Paul Jones, we have only begun to think.

2.3 Joint And Naval Conceptual Alignment

2.3.1 Joint Concept For Access And Maneuver In The Global Commons (JAM-GC)

The JAM-GC was designed to serve as a joint framework for approaching the A2AD challenge. It is a cogent document with a credible vision for how to defeat the strategy of A2AD equipped adversaries and frustrate their expansionist *fait-accompli* gambits. The JAM-GC concept leaves plenty of room for service initiatives within its broad framework, while shaping a common and unified joint vision. The most substantive contribution JAM-GC makes toward framing a joint operational solution is articulating the need for a *dual-postured* force. JAM-GC uses the terms *inside* and *outside* forces relative to the threat posed by enemy long-range precision weapons to distinguish the character and qualities of *inside* and *outside forces*.

As discussed above, US legacy forces postured on legacy infrastructure have become a self-optimized target set for long-range precision weapons. *To persist forward naval forces must create a new force posture that can survive and operate with operationally relevant capabilities within the range of adversary long-range precision weapons.* This EABO concept details *how* naval forces can be based and employed to create operational advantage despite adversary A2AD capabilities. In accord with the JAM-GC framework, EABO *inside* naval forces provide persistent presence and continuous partnering forward. Legacy *outside* forces will continue to be the force of decision and provide maneuverable massed fires and capabilities, but their limited magazine depth will make their fleet actions iterative and episodic and their continuing requirement for deep water ports and developed airfields will necessitate eventual withdrawal. Future 21st century naval operational art will depend on the creative ability of a common naval commander to leverage the persistent capabilities and low-signature qualities of the *inside* force with the maneuverability and mass of the *outside* force to create competitive advantage.

EABO incorporates the JAM-GC inspired *dual-posture* into the conceptual design. By creating, maintaining, and optimizing both *inside* and *outside* forces, EABO enables naval forces to episodically converge and re-acquire the virtues of both persistence and mass without placing any portion of the force at disproportionate risk. Fundamentally, *EABO is about how to create and employ a persistent, resilient, and survivable forward naval force posture that can operate within the arc of adversary long-range precision fires in support of the overall joint force commander (JFC) /JFMCC / fleet commander's scheme of maneuver.* As such, EABO becomes a fundamental enabling concept for other naval concepts designed to deal with rising peer competitors that require persistent forward presence. EABO is incorporated within LOCE, and is aligned with, and supports DMO and the Fleet Design initiative.

2.3.2 Littoral Operations In A Contested Environment (LOCE)

LOCE calls for greater naval integration among Navy and Marine forces. EABO provides another operational context for regarding naval forces as a holistic blend of land and sea-based forces focused on sea control and sea denial activities in contested seas.

2.3.3 Distributed Maritime Operations (DMO)

DMO refocuses the Navy on peer and near-peer competitors that will demand fleet level engagement in major combat operations. It posits more integrated command relationships, and advocates for *mission command* and calculated *risk acceptance* in application. EABO creates a more viable forward force posture and operational conditions that ameliorate otherwise disproportionate risk to force, and enables calculated risk in pursuit of mission objectives. EABO complements DMO, and asserts that Marine units are integral Fleet Forces that support fleet commanders and JFMCC in the sea control and denial fight. As such, Marines must be integrated into the overall naval scheme of maneuver. EABO encourages both the Marine Corps and Navy to develop optimized *inside* force capabilities to serve within the overall DMO construct. EABO extends the distribution of naval forces landward, and takes advantage of partner proximity to advance persistent naval and joint sensors, shooters, and sustainment capabilities.

2.3.4 Alignment

EABO seeks to influence future Fleet Design and Marine Corps force development to create viable *inside* forces with new capabilities that are both low-signature and operationally relevant contributions to the sea control and denial mission. The EABO concept creates the ability and requirements to position flotillas, UXX squadrons, land-based anti-ship missiles, logistics support, and other innovative Navy capabilities forward to enable persistent naval presence and influence. EABO advocates some *regionally-aligned Navy forces*, as they are essential to generate the persistence and capacity necessary to deal with determined A2AD adversaries in the vicinity of close and confined seas.

The EABO concept has broad applicability for future integrated naval operations, and is overtly designed to influence future naval force development and support all joint and naval concepts that can benefit from persistent presence and active partnering. This EABO handbook should inform and be informed by other evolving naval concepts.

EABO has utility across the range of military operations, from humanitarian assistance/disaster relief (HA/DR) to major combat operations, and throughout the joint campaign operational phases. EABO is designed to support the wider naval DMO concept premised on a fleet balanced with risk-worthy *inside* force capabilities that can persist forward and accept risk in major combat operations against a peer competitor. EABs are crux to proliferating cost-effective and lethal naval and joint capabilities at the leading edge of the joint campaign to ensure persistent presence, restore competitive advantage, and ameliorate the growing capability / capacity mismatch that characterizes the force development aspirations of our likely adversaries. EABO enables JFMCC to secure the complementary advantages of the strategic offense and tactical defense.

EABO is conceived with a full appreciation of how the extended range of modern weapons has changed the relative advantage between the offense and defense at the tactical level with legacy forces. EABO enables JFMCC to secure the complementary advantages of the strategic offense and tactical defense, while informing future force development to achieve new areas of competitive advantage.

While many of the benefits of EABO will be realized in the future, there is significant advantage to be gained from developing and accelerating this capability in the near term. The ability to leverage complex littoral terrain to impede an adversary *fait accompli* strategy with forward, capable, persistent, and distributed naval forces will support a wide variety of stratagems, operational concepts, and current capabilities, both naval and joint.

3.0 Expeditionary Advanced Based Operations

3.0.1 New Assumptions: Resilient, Dual-Postured, And Regionally-Aligned

The fundamental operational assumption underlying the EABO concept is the new requirement for force resiliency to persist and operate within range of adversary precision long-range fires. Since most of our current force continues to require legacy fixed infrastructure, t*his assumption leads to the requirement for a dual-postured force*. By simultaneously operating two distinctly postured naval forces, one forward-positioned and focused on persistent presence and partnering, and the other legacy-based to generate decisive mass and maneuver, the naval commander can converge the fleet at the time of his choosing to achieve advantage.

As currently postured, joint and naval forces cannot maintain persistent forward presence and partnership without suffering disproportionate risk to both mission and force in the event of major war with a peer competitor. Legacy forces, constructed under the now invalidated assumptions of presumptive sea and air control, are large, signature-rich, expensive, to defend

and heavily dependent upon easily targeted, fixed, forward infrastructure. These characteristics render legacy platforms and capabilities highly vulnerable, and induce risk aversion when postured within range of adversary precision fires. Nevertheless, current US joint and naval forces are remarkably powerful when fielded, and have the qualities of mass and maneuver necessary to be decisive in battle.

In order to generate the necessary qualities of *both* persistence and mass, the joint force must create two distinct force postures. The legacy force, or in JAM-GC terminology-- the *outside* force, will be the force based outside the range of adversary long-range fires that maneuvers massed capabilities forward for decisive episodic engagements. *Outside* forces will remain dependent on vulnerable infrastructure that must remain out of reach, or heavily defended against adversary long-range massed fires. By advancing maneuverable *outside* forces episodically, and leveraging the persistent situational awareness generated by the *inside* force, the JFMCC or the fleet commander can achieve superiority at the decisive time and place.

The *inside* force is optimized to persist and partner within range of adversary long-range fires with minimum signature, wide distribution, and acceptable risk. *Inside* forces move tactically to enhance survivability and enable local defense, but are more restricted in operational maneuver than *outside* forces. The *qualities* of the *inside* force enable *persistent presence* to conduct robust intelligence, surveillance, and reconnaissance (ISR) activities, control or deny sea and air space, and enhance situational awareness. EABs are optimized to host low-signature *inside* force capabilities on a more amorphous, distributed, and hard-to-target infrastructure that complements the low-signature of *inside* forces and enables EABO.

A second new assumption is the requirement for *a portion of naval forces to be regionally-aligned and specific threat-focused*. There is great utility in a trans-oceanic naval force that is globally deployable and can mass and disperse throughout the world as required. However, the required range and seakeeping capabilities for a surface force optimized for trans-oceanic global deployment is necessarily composed of large ships. To create the resilient, low-signature, low maintenance, and larger quantity of lower capacity platforms optimized for *inside* force employment by EABO, some portion of the naval force must be better optimized for localized persistence than global mass and maneuver. Many of the new innovative naval capabilities that are currently under development will well answer this requirement.

3.0.2 Naval Warfighter Challenges

The naval warfighter challenges are the *new operational imperatives* in terms of how the naval services must posture, structure, and operate differently in response adversary A2AD initiatives. From a force development perspective, the naval warfighter challenges are foundational considerations that underlie all *inside force* requirements. The legacy capabilities of the *outside* force already exist, but the naval services now have the opportunity to create a more optimized *inside* force that conforms requirements to achieve the new operational imperatives identified below.

The Persistent *Inside* Force Must:

Generate the virtues of mass without the vulnerabilities of concentration

Create a more dispersed, resilient and hard to target forward-basing infrastructure

Create a more resilient continental United States (CONUS) / sea base-to-shore sustainment infrastructure capable of supporting distributed forces and operations

Win the hider / finder competition

These generic naval warfighter challenges must guide future naval force development, particularly as they pertain to the *inside* force. They are described broadly, so that all types of forces can interpret them relative to their own combat capabilities or functional support role.

3.0.2.1 The first, *Generate the virtues of mass without the vulnerabilities of concentration,* reflects the need to distribute force assets, but retain the ability to mass fires and integrate capabilities. It has implications for *how* and *how fast* we must maneuver distributable forces. (The term distributable forces is used in preference to distributed, as it implies that the posture is not necessarily fixed, but can mass and disperse advantageously.) EABO introduces the concept of *horizontal dispersal and vertical integration* to meet this challenge.

3.0.2.2 The second, *Create a more dispersed, resilient and hard to target forward-basing infrastructure,* enables naval forces to persist forward, and is the reason for creating EABs.

3.0.2.3 The third, *Create a more resilient CONUS / sea base to shore sustainment infrastructure capable of supporting distributed forces and operations* becomes critical, since deep water ports and large runways are vulnerable targets inside the range of enemy fires. More resilient means and methods of logistical transport and sustainment must be devised that are not dependent upon fixed vulnerable infrastructure like large ports and airfields.

3.0.2.4 The last, *Win the hider/finder competition,* will be the most pervasive and salient requirement of the *inside* force. The ability to *see first* enables the ability to *shoot first*, and in naval warfare there is significant advantage to shooting first in the salvo competition. The *inside* force should be replete with resilient ISR capabilities to provide a robust, full spectrum, all domain understanding of the battlespace to JFMCC and the fleet commander. Equally important is the ability to confound the enemy's understanding of our force disposition and intentions. Signature management is a crux capability of all *inside* forces.

3.1 Central Idea

EABO is a future naval operational concept that enables naval forces to persist and operate forward within range of adversary long-range precision fires, in order to contest, control or deny sea space. EABO supports the JFMCC, JFC, or fleet commander's scheme of maneuver, particularly in the vicinity of close and confined seas where control of key maritime terrain supports sea control and denial operations. EABs are designed to host, secure, sustain, and

maintain warriors and their weapons systems on a more amorphous and difficult to target forward-basing infrastructure. Resilient EABO forces and capabilities maintain situational awareness and persistent forward presence with operationally relevant sea control and denial capabilities in order to deter enemy *fait accompli* gambits and reassure treaty allies. Persistent EABO forces deter the ambitions or defeat the strategy of adversaries conducting counter-intervention operations with A2AD capabilities, and enable restoration of the strategic initiative in the face of hegemonic aggression. The EABO concept is threat-based, cost-informed and future-focused. The concept is framed within the common joint operational vision of a resilient *dual-postured* force articulated in JAM-GC, and informs a more integrated vision of future naval operations and force development. EABO employs risk-worthy naval assets that are designed to be cost-informed, resilient, low-signature, operationally relevant, and optimized to meet *inside* force requirements. In concert with legacy *outside* force capabilities, EABO supports fleet operations in major combat operations, provides the alternative force posture and structure necessary to initiate the next paradigm of naval expeditionary warfare, and provides new operational and strategic options for future decision-makers.

As an integrated naval operational concept, EABO calls for the distinct qualities and optimized capabilities of *dual-postured inside* and *outside forces* to be united and employed under a common naval commander. The varied qualities and *dual-postured* capabilities of *inside and outside forces* provides the operational commander with a broad pallet of new tactical options to artfully weave into an advantageous naval scheme of maneuver that can adapt as circumstances and opportunity dictate. EABO enables JFMCC to secure the complementary advantages of the strategic offense and tactical defense.

The *inside* force provides persistent presence to assure partners of our strategic commitment, and leverages partner proximity, forces, and local logistical means to deter aggression or support the combined campaign. The *inside* force sets and maintains conditions of sea control and denial from key maritime terrain adjacent to contested straits and waters, and provides continuous situational awareness so that the *outside* force never need advance into a situation where the risks are unknown. The *inside* force is designed to be inherently resilient and passively defended, enabling risk acceptance, and imposing new costs on the enemy. In major combat operations, a well-designed and executed *inside* force posture allows JFMCC / JFC to seize the strategic initiative by securing key maritime terrain early and then exploiting the contemporary advantages of the *maritime defense-in-depth* to achieve operational result disproportionate to investment.

The *outside* force brings high volume fires and massed capabilities at the critical time and place to force decision, and compel enemies to accept battle on unfavorable terms. The *inside* force enables the fleet commander to shape the battlespace, and can cover and mask the advance and withdrawal of the *outside* force as it iteratively reduces the enemy in decisive engagements. Accepting calculated risk, the *inside* force extends and exhausts enemy ISR, munitions, and forces through persistent presence, movement, and limited engagements. The

overall operation is under the common command of the fleet commander, who focuses all naval forces and resources to create an advantageous synergy of different platforms, arms, and capabilities to achieve common purpose. When circumstances dictate, mission command allows for *inside* and *outside* forces to self-coordinate for mutual support, and to create advantageous tactical opportunities.

To survive and operate within range of adversary long-range fires, the joint and naval personnel and capabilities required to create a persistent, distributed, credible, and operationally relevant *inside* force must be based and sustained on a more amorphous and difficult to target forward-basing infrastructure that *clouds, rather than clarifies,* the locations, capabilities, and intentions of our forces. EABs are designed to meet the requirements for resilient forward-basing.

EABs support *persistent* operations within the arc of enemy long-range fires and sensors systems. They are intended to *make austerity a virtue,* and to minimize the need for fixed infrastructure. To the degree possible, EABs use passive defenses and rely upon mobility, deception, and concealment to compound the adversary targeting problem. EABs support the dispersal and concealment of key assets to preclude providing a lucrative target. EABs are designed to persist, but, as required, can be rapidly established, disestablished, and displaced to support the advance of the joint campaign. EABs are forward postured to support a wide variety of naval and joint capabilities, and enable the joint force to gain proximity advantage within the joint operations area (JOA). The JFMCC or JFC can create many EABs to host numerous and varied weapon systems to mitigate adversary capacity advantages. Conceptualizing and creating new weapons and surveillance systems optimized to meet *inside* force capability requirements is integral to the concept.

3.2 Concept Components And Definitions

The EABO concept has several constituent parts that require definition and distinction. It is important to differentiate 1) EABs from 2) EABO, and to describe the preferred or more optimized 3) *inside force capabilities* that EABs are designed to host and EABO would employ.

3.2.1 Expeditionary Advanced Bases (EABs)

An EAB is established to secure, support, and sustain warriors and their weapons and surveillance systems within range of A2AD adversary long-range fires.

EABs are capable of hosting and sustaining *regionally-aligned* naval forces and platforms.

EABs are designed to create a more amorphous and difficult to target forward-basing infrastructure that clouds, rather than clarifies, enemy situational awareness and postures, and supports distributed expeditionary capabilities forward.

EABs are not specific places. They are a collection of distributed support functions that, in aggregate, provide the essential security and support capabilities required to host, sustain, and maintain *inside* forces and their combat and combat support capabilities. An EAB may be

mobile, using trucks, barges, ferries, etc. to provide mobility and continuity of mission support from different locations. For example, a mobile forward arming and refueling point (FARP) using fuel barges and fast domestic ferries to move equipment. Alternatively, an EAB might be established in a broad area to support several different missions or functions. Its support functions may be mobile, covered, concealed, or a mixture of means and methods that make it a difficult or inopportune target for long-range fires.

EABs are designed to PERSIST forward, and enable HOSTED forces and capabilities to accomplish on-call missions, or to create enduring conditions. Traditional missions, such as artillery raids and episodic FARP sites, that involve unique mission profiles, have a planned withdrawal, and do not require persistent support services, are not part of the EABO profile.

An EAB is designed to provide the *essential* functions of a traditional base with a far less vulnerable and more resilient support infrastructure. Signature management is an essential function of EABs and EABO. Decoy capabilities are within the scope and requirements of EABO. EABO requires EAB commanders to have an *'own signature'* detection and management capability.

Some EABs may require active protection measures beyond local security due to the nature of the capabilities they host, but to minimize cost, footprint, and signature, EABO is preferentially conducted while exploiting passive security options, and maximizing cover, concealment, decoys, and deception.

EABs prize resiliency over efficiency. They enable force dispersal, and consequently lack the economy of scale and efficiencies that can be developed and sustained in conventional bases, where singular support assets can be concentrated to serve many similarly concentrated hosted forces. Dispersion is inherently inconvenient and inefficient, but essential to resiliency and survival in future war. EABs should disperse redundant support capabilities, and divide sustainment items to avoid single points of failure in the event of an attack.

EABs *make a virtue of austerity,* and encourage logisticians to forage forward for as many support components and classes of supply and sustainment as practical to reduce the burden on the logistics tail and transport systems. *21st century foraging* involves contracting non-commissioned officers (NCOs) and credit cards. When practical, EABs can conserve unused resources in dispersed *iron hills* that might sustain the force should lines of communications (LOCs) become temporarily interdicted without inviting the attention of enemy fires as traditional *iron mountains* would. Future logisticians will provide assured continuity of support with information about asset location vice asset stockpiling.

When hosting an operational *force in being,* EABs can preclude uncontested *fait accompli* gambits, and serve as a significant complication to enemy time lines, risk calculations, level of effort, and munitions expenditures. EABs are not invulnerable, and are designed to accept risk and invert the cost and effort curve of enemy strikes on fixed forward infrastructure. When EABs are passively absorbing enemy ISR efforts, drawing enemy forces into defensive fires, and

depleting the enemy quiver of long-range fires, they are highly effective in creating significant impositions on enemy costs, timelines, and risk calculations.

A single EAB can host multiple combat units, combat functions, and combat logistics capabilities. Consequently, their naming conventions should avoid using hosted mission capabilities as designators.

3.2.1.1 EAB Hosting Requirements

EABs are designed to support, sustain, and maintain warriors and their weapon systems. Some EABs can be optimized to host the unique requirements of regionally-aligned naval forces and platforms. Hosted forces might expect EABs to provide:

Security – Marines and host nation forces

Food – Meals-ready-to-eat (MREs), rations contracted, or purchased from host nation

Water – Marine / Naval Expeditionary Combat Command (NECC) reverse osmosis water purification unit (ROWPU), contracted or purchased from host nation

Shelter – Tents or local improvised billeting

Fuel – For aircraft, vehicles, prime movers, generators

Power – For basic equipment

Medical – First-aid, casualty stabilization, and evacuation

C2 – Intra-EAB communications for coordination, external communications for common operating picture (COP), targeting, etc.

Mobility –Sufficient mobility to effect internal coordination, force distribution, and defensive maneuver

CCD – Cover, concealment, and decoys to manage signature

Contracting – 21st century foraging

3.2.2 Expeditionary Advanced Base Operations (EABO)

EABO is the tactical operations and operational support activities conducted by forces hosted on EABs.

As required by the JFMCC scheme of maneuver, EABO is capable of generating a dynamic tactical maritime defense-in-depth to secure or deny key maritime terrain, and to exploit the contemporary stronger form of naval battle.

EABO is conducted in the air, land, sea surface, sub-surface, and electro-magnetic spectrum (EMS) by resilient, low-signature platforms and forces that opportunistically disperse

horizontally and concentrate vertically to achieve tactical advantage. EABO platforms are optimized to coordinate across the physical domains at the leading edge of battle.

EABO is network optional, leveraging networks when available, and executing mission orders when not.

EABO is conducted in support of ISR, sea control and sea denial missions, JFC/ JFMCC/ fleet scheme of maneuver, defense of allied or partner territory, or to control or exploit the control of key maritime terrain.

Preferably, EABO is conducted by low-signature capabilities that are designed, optimized, or adapted to operate and persist within the arc of adversary long-range fires.

EABO is tactical actions focused on advancing sensor, shooter, and sustainment capabilities that are operationally relevant to fleet commanders, JFMCC, and the JFC in conducting ISR and supporting sea control and denial operations.

Inside naval forces, operating from EABs, conduct EABO. Optimally, EABO sets conditions and shapes battle in support of *outside* force maneuver and engagement.

3.2.2.1 Example EABO Missions

Surveillance and reconnaissance

Air interdiction and missile defense

Sea control and sea denial

Integrated, active, maritime defense to close straits to enemy maritime traffic

Land-based rotary-wing anti-submarine warfare (ASW) pouncers

Flotilla force operations

Swarm missions

Mobile FARPs

UXX operations of all types

Electronic warfare (EW), information operations (IO), and cyber

Decoy and operational deception activities

Fleet support activities, battle damage repair, and rearming and refueling of surface ships and flotilla forces

3.2.2.2 EABO Optimized Capabilities

EABO capabilities are *operationally relevant*—they have the ability to conduct and influence operations well beyond the tactical space they occupy.

EABO enables naval forces to exploit key maritime terrain, to control or deny sea space, support the fleet scheme of maneuver, or conduct ISR.

Some legacy capabilities can be adapted to serve as *inside* force capability sets if their signature, cost, or vulnerability can be appropriately reduced.

Optimally, *inside* forces are resilient, risk-worthy, redundant, and cost-informed. They degrade gracefully, and avoid creating single points of failure.

EABO optimized capabilities exploit partner proximity to preclude the need for large, expensive platforms that must self-deploy over trans-oceanic distances. EABO exploits the proximity advantages of *regionally-aligned forces* to reduce platform size, cost, and signature, and enable greater distribution and larger numbers of platforms at lower cost.

EABO capabilities place greater emphasis on lethal payloads than exquisite platforms, and rely on the Fleet Tactical Grid to integrate targeting data between networked sensors and shooters. EABO enables large numbers of sensor and lethal capabilities to be proliferated forward at competitive cost to ameliorate the capability / capacity mismatch the adversaries currently enjoy.

EABs will vary in specific purpose, size, general location, and composition relative to the missions of hosted units and requirements of the JFC and JFMCC. Naval forces, largely composed of Marine and NECC units, create the dispersed, resilient, minimal signature infrastructure that hosts and secures the forces and capabilities that conduct EABO. EABs *host the sensor, shooter, and sustainment capabilities of the inside force.* EABO is the tactical activities and actions conducted from EABs. EABO capabilities and systems are designed to complement the resilient, minimal signature, and dispersed nature of EABs, so that EABs, the forces and capabilities they host, and the operations they support, can all persist forward within range of ample adversary long-range precision fires.

3.2.2.3 Seize Or Occupy, And Defend

EABO can be advantageous in a wide variety of circumstances across the range of military operations, from humanitarian relief to major combat operations. EABs can be situated far inland to gain proximity to objectives and extend operational reach, or on an island or archipelago to support JFMCC's efforts to secure sea control. It is this latter purpose that makes EABO novel in contemporary and future naval operations. When necessary, bases can be seized (amphibious assault) by a naval task force with an embarked Marine air ground task force (MAGTF) to overcome enemy resistance, and establish a secure operating area for hosted capabilities. When required to seize enemy-occupied terrain to establish an EAB, the size and

task organization of the MAGTF will be dictated by anticipated resistance and other mission, enemy, troops, terrain and weather, and time (METT-T) factors. However, when practical, the preferred means of establishing EABs is to simply occupy friendly or undefended terrain with task-organized naval forces.

Optimally, treaty allies and partners will create opportunities for the advance reconnaissance, selection, survey, and preparation of EABs, and, in some cases, prepositioning of EABO assets and sustainment. Adequate preparation and robust prepositioning of fuel, munitions, and mission-purposed vehicles is critical to timely response. Likewise, exercising combined defense plans with prepositioned asset is critical to assuring the ability of US forces to meet treaty obligations, particularly when defending allies and partners that are already within reach of long-range threat weapon systems. The judicious use of the pre-war phase of operations to develop a persistent, lethal, EABO capable and ready *inside* force will be the greatest deterrent to war, and the greatest assurance of effective combined operations in the event of conflict.

In all cases, EABO should free other naval forces to maneuver. Initially, an amphibious naval task force may be required to seize an EAB and defend it until it becomes self-sustaining and defendable. When conducting tactical maritime defense-in-depth, multiple mutually-supporting EABs will greatly contribute to the survivability and resilience of each. Ultimately, the EAB should allow JFMCC to assert a greater degree of sea control or denial, while enabling the fleet to maneuver opportunistically to provide an advantageous combat synergy between land and sea-based capabilities.

The proven power of an afloat MAGTF to compound uncertainty and compel the enemy commander to self-imbalance, hesitate, or poorly dispose his force in anticipation of an amphibious landing, is the reason fleet commanders should avoid the gratuitous use of the ready fleet amphibious ready group (ARG)/Marine Expeditionary Unit (MEU) assets to secure and sustain EABs. When it is possible to simply occupy an EAB without opposition, a Special Purpose MAGTF built around a company or battery landing team, and deployed by alternative means, may be adequate to the initial task of securing critical terrain and infrastructure to enable follow-on naval forces and capabilities. The initial EAB occupying force may be composed of only security forces and functional Marine and Navy experts to make assessments that will influence the composition and sequencing of subsequent EAB-hosted units and support requirements. Many variables should influence decisions regarding EAB force composition, and it will be JFMCC responsibility to determine the purpose, size, and capabilities hosted by each EAB. EABs will likely be multi-purpose, hosting various capabilities with distinct missions or functional support responsibilities. EABs will be naval in character, and capable of advantageously exploiting the sea space in archipelagos and confined seas, but may also host joint capabilities, and be in direct support of joint task force (JTF) missions as required. EABs may be likened to a versatile tool bag that expands, contracts, and episodically relocates depending on the capabilities hosted within.

3.3 Characteristics Of EABs

EABs *are not* similar to the forward operating bases (FOBs) Marines and Sailors are familiar with from experience in Iraq and Afghanistan. Instead of a tight well-defined perimeter designed to enhance security from penetration by sappers and infiltrators, EABs are designed to hide and disperse critical capabilities to defy adversary long-range targeting. Although attacks by amphibious and special operations forces against EABs are clearly possible, such threats are more difficult and less likely than enemy long-range precision fires, and will require local site security rather than wide perimeter security. A distributed posture is more resilient against long-range fires and will greatly enhance survivability of forward-based units. However, this *wider distribution of forces will not enjoy the economies of scale of traditional bases and will necessitate significantly more intense and innovative logistics and functional coordination measures* to maintain operational effectiveness. Likewise, local security for many sites may require more personnel from both US and host nation forces.

In order to enhance speed of deployment and minimize infrastructure and logistical support requirements, *EABO will exploit passive defenses to the degree prudent and practical*. Dispersion, decoys, cover, camouflage, and concealment will all be maximized to preclude effective enemy targeting of EAB-hosted assets. Smaller, more numerous, adequately lethal, but less expensive capabilities create an unfavorable 'cost to loss' exchange ratio to deter enemy attack, and enhance survivability and operational resilience in the event they are targeted. Active defense measures are not precluded, and active defenses may well be part of a particular EAB's profile to defend critical assets, but passive measures should be fully exploited to enhance the speed, simplicity, and deployability of the force. Emerging directed-energy weapons, such as rail guns, lasers, and high-powered microwave systems hold promise of mitigating enemy fires capabilities without imposing significant cost, and may make future active defenses more viable.

Historically, advanced naval bases have frequently been found astride straits or on islands. It is appropriate to think of future EABs being similarly situated, but the expeditionary advanced 'base' is purposefully ill-defined in terms of its perimeter and specific geographic location. '*Amorphous*' is an apt description of how we wish EABs to appear to adversaries. Contributing to the amorphous nature of EABs is the potential for many of the capabilities or supporting functions hosted by EABs to remain afloat on barges, ferries, and small craft. By keeping some assets, such as fuel and munitions stockpiles, afloat on barges, we might significantly mitigate their vulnerability as fixed targets and avoid restrictions on storing ammunition ashore due to explosive arc safety concerns. Future directed-energy weapons systems and their power generators might also be mounted on barges to benefit from the ready access to afloat refueling, and the ease and economy of maneuvering by water, yet still be in relative proximity to the capabilities they are designed to defend.

There is great economy and efficiencies in moving large volumes of heavy materials, such as ammo, fuel, long-range weapons, and repair items by water. Should the enemy choose to

target smaller and less costly platforms, like barges, with expensive missiles, we bend the cost curve in a favorable direction. The logistical benefits of afloat support in proximity to shore bases will be discussed in greater detail later. What is important to note in characterizing EABO is the distributed capabilities hosted or provided by the EABs may be located on mobile platforms, or afloat in inland or contiguous waters, to enhance resiliency and better enable logistical sustainment. The amorphous nature of EABs contributes to their passive defense posture. Redundant capabilities distributed both ashore and afloat can also contribute to force resilience.

3.3.1 Resiliency, Capacity, And Proximity

A fundamental premise that underlies EABO is the growing joint requirement for *resiliency*. Throughout the joint force, there is a compelling need to achieve greater balance at the lower end of the platform mix with a greater number of affordable, risk-worthy, and lethal platforms and capabilities that can restore numerical advantage, and rectify the evolved capability / capacity mismatch long cultivated by potential regional competitors. Greater relative economy and *capacity* can be realized by reducing platform cost to expand their number. Closer basing *proximity* to the joint operational area (JOA) and contested seas can greatly reduce operational range and sea-keeping requirements, and consequently reduce platform cost. Though reduced in range, these platforms can leverage the proximity of EABs to gain and maintain a numerical advantage. EABs enable more, and more affordable, capabilities to be distributed across more locations, potentially contributing to greater resilience, capacity, and ultimate operational advantage. The exquisite capabilities concentrated on our decreasing number of expensive capitol ships can be complemented by more numerous smaller, manned and unmanned platforms carrying sophisticated weapons that are advantaged by the wider reconnaissance, surveillance, target acquisition/command and control (RSTA/C2) network and the Fleet Tactical Grid.

3.3.2 Innovating Towards A Balanced Force

An overarching concept for naval resiliency has yet to emerge in detail, but alternative force structures and affordable options are predicated on *a low-signature fleet better balanced at the low end with small, fast, durable, more numerous and risk-worthy surface platforms, complemented by numerous widely distributed manned and unmanned aviation, surface and sub-surface assets*. To achieve economy and resiliency, it is likely that many innovations will involve single-mission platforms operating in networked swarms with diverse, but complementary, capabilities to detect and destroy adversary ships and aircraft in and around complex littoral terrain. Smaller minimally manned and unmanned platforms provide an affordable means to proliferate sensors and shooters with relative economy and acceptable risk. Smaller platforms, with smaller radar cross sections (RCS), are far from impervious to attack, but their greater number of dispersed capabilities allows them to degrade gracefully and maintain a lethal *force in being* in the complex littoral environment.

Resilient and lethal platforms with the required low-signature characteristics needed to optimize the *inside* force are at various stages of technical readiness and experimentation at US corporate, Service, and national labs. These game-changing capabilities hold great promise of generating tactical advantage, but they require a concept of employment that provides the proximity to the enemy that their smaller size demands. These emerging capabilities provide advantage in terms of cost, number, and capability if deployed, recovered, and maintained from forward bases. EABs will provide the required support infrastructure to support these new capability sets, and EABO should synergize their differing capabilities into a cogent, resilient, and lethal combined arms and capabilities force, optimized to find and destroy enemy forces that venture into close and confined seas.

Future naval flotilla forces will enable persistent presence without exposing capital ships to defeat in detail in dangerous littoral regions. Their small size enables concentration of lethal payloads on inexpensive and relatively expendable platforms. They can be assigned to specific missions, such as surveilling or closing a strait, or patrol opportunistically awaiting enemy offensive forces to wade into the web of fires they can create. Flotillas may be surface or sub-surface, manned, minimally manned, or autonomous; some may incorporate manned-unmanned teaming (MUT) capabilities to leverage the qualities of both warriors and their machines. Some surface platforms can be optimized to work at high speed in shallow water to exploit the complex terrain of littorals, particularly archipelagos where dash and shoot tactics are optimal.

Regionally aligned against specific threats, new capabilities can be optimized to task and environment, and employed in advantageous numbers and combinations. Some may be optimized for hunting and targeting, others for lethality or mission kills on radars and C2 systems. Swarms of inexpensive, but adequately lethal, capabilities can be unleashed from semi-submersibles that are difficult to detect and efficient to maintain in austere locations. The reduced size and signature that optimizes naval platforms for the close sea fight is likely to reduce their ability for global deployment. However, some regionally-aligned forces will be critical to creating the naval force required to fight and win in confined seas.

A *dual-postured* force is premised on an understanding of the tradeoffs noted above. A singular-postured force must choose between alternatives, while a *dual-postured inside and outside* force can achieve greater overall capability and balance in the missile age.

A balanced fleet will require *forward-basing* within the JOA for these more numerous and risk-worthy assets to persist forward. The enhanced survivability and credible lethality of both the platforms and the EABs themselves will assure allies, deter adversaries, maintain readiness, and allow fleet commanders to dictate operational tempo and conditions early in the fight. Forward- based naval expeditionary platforms will balance the fleet and be networked to leverage capital ship sensor capabilities and those of the wider joint network to ensure local sea control at the decisive time and place. EABs are designed to meet the future basing requirements for low-signature naval platforms, as well as host joint *inside* force capabilities

that can support the Navy's fight for sea control. Strategically placed, EABs can also deny critical sea space, such as straits, to adversaries, and support a variety of JFMCC or JFC-assigned *inside* force missions.

3.4 EABO Missions

Naval Expeditionary Forces advance and extend the joint line of operations by securing advantageous islands, archipelagos, and key terrain in proximity to close and confined seas to support JFMCC sea control and sea denial missions. Example EABO missions and characteristics:

Naval expeditionary forces secure (seize or occupy) forward bases to *advance and distribute joint sensors, shooters and sustainment capabilities.*

Maximize use of *permissive terrain* and *passive defense* / force protection. (Mobility, cover, concealment, decoy, and deception)

When practical, establish *mutually-supporting strongpoints adjacent to close and confined seas* to conduct *tactical maritime defense-in-depth* of key maritime terrain.

Establish rotating FARP sites for fixed-wing, rotary-wing, & unmanned aerial vehicle (UAV) operations.

Lend resiliency to the joint force by proliferating mobile land-based anti-ship cruise missiles, anti-air missiles, anti-ballistic, and ballistic BM missiles that are difficult to target by enemy long-range precision fires systems.

Integrate landward sensor and fires systems with Cooperative Engagement Capability (CEC) under JFMCC C2. Close coordination to advantage fleet with land-based fires capability, range, and capacity.

Provide secure advance locations for rearming of combatant ships, exchange of surface combatant modules, and basing of missile/torpedo/swarm boat flotillas.

EABO enables persistent Scouting, Fires, Protection, and Sustainment

3.5 21st Century Naval Operational Art

Effective employment of EABO in major combat operations is dependent upon the wider appreciation for how land-based naval capabilities can be brought to bear in the fight for sea-control. History is rich with examples of the artful and advantageous integration of land and sea-based forces in campaigns directed toward achieving strategic ends. It has been many decades since the Navy and Marine Corps worked closely together to achieve and advance sea control over the Central Pacific in pursuit of strategic objectives against a peer competitor. Arguably, naval operational art reached its apogee with the US Navy in WWII and Nimitz's march across the Pacific. Conscious of logistics, operational reach, lines of communication,

scouting, aviation capabilities, and the myriad other elements of operational art, Nimitz's campaign was a masterful integration of sea and land-based capabilities that enabled persistent advantage and maintained the strategic initiative. Of necessity, expeditionary basing was closely integrated into the campaign objectives and the operational scheme of maneuver.

In recent decades, the United States Navy and Marine Corps forces have cultivated a complimentary relationship that *assumed presumptive sea control* and focused on power projection. The battlespace was distinctly divided by the high water mark, and command relationships were agreeably de-conflicted in commander amphibious task force (CATF)/commander landing force (CLF) relationships. The advent of potential adversaries with long-range integrated A2AD capabilities has ended the long era of presumptive sea control, and generated prudent interest in the effective integration—vice mere de-confliction-- of Marine and joint capabilities into the naval fight for sea control. The future role of naval forces in joint operations is dependent upon how practitioners of naval operational art effectively integrate new, persistent *inside* force capabilities, land-based near key maritime terrain, with legacy fleet capabilities, to achieve temporal sea control in support of joint operations.

Naval operational art is a sub-component of joint operational art that includes the advantageous planning, integration, and engagement of those joint and naval capabilities present at the leading edge of a joint expeditionary campaign, when operations are largely naval in character, to achieve JFMCC assigned missions. This is an inherently complex enterprise that involves sequencing of events, maneuver of forces, timely engagement of dissimilar weapons platforms and systems, as well as the logistical sustainment and support of the entire force. JFMCC's ability to achieve success, optimized in terms of the expenditure of time and resources, is heavily dependent upon the judicious application of naval operational art, and the integration of all naval capabilities.

War is more art than science because the fog of uncertainty that shrouds military operations masks enemy intention and precludes linear calculation of cause and effect. Consequently, the biggest, and materially best, forces often do not win. Much of the art of war involves the ability to lure the enemy into disadvantageous maneuver, and induce him to self-imbalance to achieve favorable, hopefully even disproportionate, results in battle. Naval operational art is particularly complex, as a consequence of the many variables across multiple domains that contribute to achieving sea control and denial. Sea control remains a necessary temporal condition for expeditionary operations and power projection, and involves mastering the forces and platforms that can influence the sea from the sea surface, subsurface, air, and land domains. The electromagnetic spectrum and space are also significant contributors to the growing complexity of sea control operations. At the tactical level on the open ocean, naval engagements may largely involve ships and afloat capabilities, but, at the operational level of war, in the vicinity of confined seas, JFMCC's resources for achieving sea control can be greatly expanded. Artfully employed, these many diverse forces, and emerging capabilities, can provide the decisive edge in close contests.

Traditional bases will remain essential to support the *outside* force, but, they represent static and increasingly vulnerable hubs in otherwise dynamic joint operations. EABs are designed to support forces maneuvering at the edge of the advancing joint campaign, and are themselves moveable entities that contribute to more resilient and advantageous maneuver.

Much of America's success in war can be attributed to military culture. Modern US military culture has evolved to favor material overmatch and tactical excellence. Our habitual victory mechanism is closely linked to an extravagant expenditure of material resources to support tactical actions with a surfeit of mobility, range, lethality, protection, and firepower. US ability to exploit complex C2 and ISR systems to minimize risk and achieve an advantageous synergy among many joint capabilities is admirable. However, the evolved American paradigm of war, where air and sea control are presumptive rather than contested, is fast waning. The evolving paradigm of naval operational art will demand greater synergy among a broader range of increasingly scarce and expensive operational capabilities that must be closely integrated from forces operating *inside* and *outside* of the adversary threat range. There is a significant professional leap from proficiency at fleet and MAGTF tactics to the broader competency of naval operational art. Reclaiming the ambition and ability to conduct naval operations that closely integrate forces and capabilities that are best employed from land with those that are optimally sea-based, is essential to realizing the potential of EABO. Naval leaders must rejuvenate the competencies that enable the agile and advantageous application of naval operational art from diverse capabilities operating throughout the battlespace.

3.5.1 Preparation, Deterrence, And Defense

The context of the US approach to expeditionary operations is conditioned by the historic events of the Pacific campaign in WWII and the Allied invasion of Europe, where US forces began at home and moved into enemy-occupied territory. That context was established after the initial failure of US and Allied forces to defend the Philippines and Europe necessitated a long and bloody sequel. As in WWII, and all wars since, the first battles of the next major war will be fought '*over there,'* and will likely involve US attempts to meet treaty commitments to maintain the territorial integrity of treaty allies and economic partners against hegemonic gambits by regional peer competitors. Understanding the complexity and cost of offensive expeditionary operations makes deterring or winning first defensive battles the infinitely more prudent military strategy. This is especially true in the current era, where long-range, observed, precision fires and innovative undersea threats make the maritime defense the far stronger form of battle.

Inchon well demonstrated the exceptional advantage of employing amphibious forces to re-dimension the battlespace, but regaining lost territory by amphibious assault is extravagantly expensive in blood and treasure. Every prudent effort to meet our treaty commitments without loss of allied territory is ultimately less costly. Military deterrence pays. In the current era, the maritime defense is disproportionately advantaged. Once potential aggressors are assured that US forces can, and will, mount a credible and enduring defense to meet our treaty

commitments, the likelihood of conflict is significantly diminished. It is imperative that the US develop the conceptual methodology and deploy the requisite means to demonstrate commitment to both friends and enemies. For this reason, deterrence is greatly enhanced as US and partner nations create the conditions that will enable the EABO concept to be employed in combined operations. Prepositioning of forces and materiel, developing relationships with partner forces and local vendors, exercising EABO skill sets, and integrating *inside* and *outside* force capabilities before conflict, is essential to ultimate success.

3.6 EAB Forces

A wide variety of naval forces may be involved in preparing, securing, developing, defending, sustaining, and operating from EABs. EABs may host different capability sets depending on assigned missions, but, in aggregate, a capable *inside* force will have a full array of resilient operational, functional, and support capabilities essential to supporting the JFMCC concept of operations. Future naval force development should focus on optimizing these capabilities to meet the low-signature characteristics required by the *inside* force. Marine forces are suited for many of these missions, but Marine forces alone will be inadequate to develop, man, and operate the full range of EABO capabilities. Crux naval capabilities for the establishment, maintenance, and operation of EABs are found in the NECC. The construction, small craft, and many other expeditionary capabilities of the NECC are integral to EABO. Navy and joint personnel involved in operational and functional support activities can be expected to support and operate from EABs. Not to be overlooked are the considerable capabilities and naval competencies of the US Coast Guard that can contribute to EABO.

As previously discussed, the optimized naval *inside* force capabilities necessary for sea control and denial operations are currently under development, and are the centerpiece of naval research and innovation efforts. These smaller platforms will be greatly advantaged by employment from EABs situated on partner territory in proximity to close and confined seas. As they are fielded, we can anticipate that more Sailors will be forward-postured ashore to maintain and operate these forward-deployed and employed naval capabilities.

In addition to naval forces, the US Army has robust small craft and ships optimized for littoral operations; and USAF experience and expertise in fixed-base defense and resilience can be leveraged in support of EABO development. As aforementioned, EABO is a naval concept with broad joint implications, and is designed to incorporate and host all joint capabilities that can support the C/JFMCC and JFC scheme of maneuver. In practice, EABO will require innovative leaders capable of leveraging all available resources, joint, combined, and host nation, to advantage.

Host nation forces will be critical to maintaining the security and effectiveness of EABO. Whenever possible, host nation security forces should be incorporated into the EAB security plan as the outer security cordon. To preclude misunderstandings and frictions, host nation forces should interface with the local populace to the degree practical. Perhaps more important

is the ability for host nation forces to expand the capacity of US forces with their own platforms and capabilities to achieve a coordinated and combined defense. Logistical sustainment can be extended and enhanced by purchasing or contracting host nation resources, and many transportation assets are already available from the host nation economy to support naval maneuver and landward movement. In archipelagic environments, contracted ferries, barges, and small coastal ships have great potential to support EABO.

3.6.1 The Integrated Maritime Defense-In-Depth

New operational concepts and capabilities should offer future strategic decision-makers new and more viable options. Future strategies designed to compel nuclear capable peer competitors will be better optimized when naval and joint forces can *generate military conditions that are adequately coercive, but not vertically escalatory*. By developing the EABO capabilities necessary to conduct a dynamic, integrated maritime defense-in-depth at straits adjacent to partner territory, naval forces can take advantage of partner geography astride close seas to turn a competitor's near-seas into mutually-denied space. Such conditions are highly coercive and take advantage of the stronger form of contemporary battle, the tactical maritime defense; yet employed defensively in close proximity to partner national territory, they are neither unduly provocative nor vertically escalatory.

Demonstrating to regional partners and competitors alike that the US has both the means and method to stand forward and meet its treaty obligations will reassure allies and greatly assist US diplomatic efforts to ensure continued regional access. The ability to generate an integrated, active maritime defense-in-depth at key maritime terrain from EABs will serve as a credible forward deterrent force. Integrated naval defenses astride key maritime terrain can readily incorporate the capabilities of regional partners to expand US capacity, and be the cornerstone of mutual defense agreements.

EABO capabilities can be optimized to meet the requirements of an integrated maritime defense-in-depth. Naval forces can readily control access to adversary near-seas with minimal risk to force and mission by integrating ample ISR and sensors, numerous unmanned underwater vehicles (UUVs), both manned and unmanned surface and air capabilities, land-based fires, and other inexpensive, low-signature, high-lethality capabilities to block confined straits. This strategy would enable US forces to restore the strategic initiative by quickly occupying EABs adjacent to key maritime terrain, and then allow them to fall back on the tactical maritime defensive, exploiting the stronger form of contemporary naval battle to deter or defeat enemy attempts to breakout. Compounding the adversary problem, varied and diverse *EABO platforms and capabilities would be able to disperse horizontally at EABs, and concentrate vertically at the point of decision to generate disproportionate result in battle*.

The concept of *vertical concentration* is based on the anticipated ability to simultaneously mass smaller, low-signature, and more risk-worthy platforms on the sea surface, sub-surface, and air, and then cover them with land-based fires and EMS effects to provide a persistent, high density

network of integrated lethal capabilities. Since risk-worthy, low-signature platforms are concentrated over/under adversary platforms and can deliver payloads simultaneously, they are effectively massed, but their horizontal distribution makes them significantly less vulnerable.

To create new and better military options for future strategic decision-makers, exploiting the unique opportunity EABO presents to generate the advantages of *vertical concentration* as part of an active integrated maritime defense-in-depth should be a primary objective of naval force development. The offensive and defensive merits of *vertical concentration* will be detailed as a separate concept.

3.6.2 The Role Of Marines In EABO

The formal mission to establish EABs arises from the enduring operational requirement to support and sustain forward-deployed naval forces. In recognition of the enduring nature of this naval mission, it has been formally included within the Marine Corps' Title 10 responsibilities:

> *The Marine Corps shall be organized, trained, and equipped to provide fleet marine forces of combined arms, together with supporting air components, for service with the fleet in the seizure or defense of advanced naval bases and for the conduct of such land operations as may be essential to the prosecution of a naval campaign.*

Long before Title 10 was envisioned, the US Navy and embarked Marines were engaged in seizing and defending advanced naval bases. The first American naval expedition was to capture British munitions for the Continental Army from British bases in Bermuda, an expeditionary mission that was naval in character, but joint in purpose. During World War II the Marine Corps formed Defense Battalions with the mission of defending the advanced bases that Marines had occupied or seized and subsequently defended against Japanese counter-attack—such as at Wake and Guadalcanal, where Marines manned shore-based naval guns. During the Wake Island battle, the Marines sank the first Japanese surface ship of the war with land-based naval gunfire. The requirement for EABs is nothing new; what will be new are the advanced systems and low-signature, resilient capabilities they will host and support, and the new options they will give national decision-makers.

While EABs are clearly not new from a historical perspective, EABO will be new to a generation of naval officers and naval theorists who have had the luxury of largely focusing on power projection from the sea. Presumptive sea control since the end of WWII has allowed Marines to focus almost exclusively on power projection, crisis response, and small wars. Yet, Marines are first and foremost naval forces, and it is imperative that Marines join efforts with the Navy to support JFMCC and fleet commanders in the fight for sea control, particularly in the vicinity of close and confined seas. If the joint campaign is to be expeditionary, sea control will be a first, and necessary, condition for subsequent power projection.

For over 70 years, Marines have fought with the luxury of sea control assured by the US Navy. Consequently, Marines refined and optimized their organization, kit, and ships for offensive power projection operations from the sea. The last time Marines fought with the Navy for sea control was at Guadalcanal during the WWII Solomons campaign, where land-based naval aviation assets from Henderson Field were integrated with fleet actions afloat by a common naval commander. The Solomons campaign serves as a valuable historic metaphor that illustrates the operational advantage of maintaining both an *inside* and *outside* force posture.

Now that the sea is again a contested space, Marines must return to *fighting for and from the sea*. Two old imperatives are new again:

Marines must develop a new line of operations and force development to support JFMCC and fleet commanders in the fight for sea control. Marines are essential to successful sea control and denial missions in close and confined seas. Marines fight for and from *contiguous land masses that enable control of the sea—especially close and confined seas.*

Marines are *Fleet Marine Forces*—an integral naval asset in fleet sea control and denial operations, and must be incorporated into the overall fleet scheme of maneuver by the naval commander. Effective maritime defense-in-depth integrates land and sea-based capabilities.

Marines know how to make *a virtue of austerity*, and together with the NECC, and other Navy assets, can create the optimized *inside* force capability set. At the same time, other Marines formed as MAGTFs afloat on amphibious ships will also be part of the weighted *outside* force, and their employment will be coordinated with wider fleet actions. The Marine Corps will have a role as both *inside* and *outside* forces in future naval battles.

It is often and aptly stated that *Marines must return to their naval roots*. However, as Marines *return to their naval roots*, they *must not go back* to being the naval force they were before going into the desert to fight the war on terror. Our most agile and aggressive enemies have moved *forward* and invalidated the fundamental assumptions upon which the legacy force was built. Marines *must move forward* to become the new expeditionary naval force the nation and the Navy need. The institutional ability to adapt to new realities with new capabilities, competencies, organizational structures, and operational concepts, are essential to institutional agility and enduring relevance. The Nation revers the United States Navy and Marine Corps for our history, but Congress only invests in our potential.

3.6.3 The Role Of The Navy In EABO

Due to size and signature, most of the Navy's surface combatants are optimized *outside* forces that are noteworthy for their maneuverability, massed fire power, and offensive and defensive capabilities. Legacy *outside* forces will provide the battle-winning mass and maneuver forces for the foreseeable future. Until ships evolved to meet the threats posed by long-range precision weapon systems can be acquired, legacy platforms and their support infrastructure will venture into close and confined seas with great trepidation. Creative naval commanders will exploit the

persistent situational awareness and distributed capabilities of the *inside* force to leverage the mass and maneuverability of *outside* naval forces at reduced risk to force and mission.

As the *inside* force evolves to incorporate today's R&D platforms into tomorrow's Navy, progressively more Sailors will become part of the *inside* force to man and maintain the flotillas of new lethal, yet low-signature, capabilities that modern warfare demands. *Regionally-aligned* Navy forces with emergent capabilities will be employed and sustained from EABs. These new capabilities will include classic flotilla forces of missile and torpedo boats, an array of unmanned, and minimally manned, platforms on the sea surface, sub-surface, and air, that cooperatively scout, maneuver, and engage enemy platforms with missiles, torpedoes, and mobile mines. Some may deploy lethal swarms, while others tag and track enemy platforms for subsequent engagement. Land-based Sailors servicing and maintaining sea control and denial capabilities from barges and small craft will be part of a more balanced future fleet.

Submarines are the ultimate *inside* force capabilities, combining both stealth and lethality on platforms that can persist forward. Submarine demand will far exceed capacity in a major combat operation against a peer competitor. To achieve a larger submerged capability inventory in a fiscally sound manner, consideration should be given to the cost and tactical advantages of unmanned underwater systems (UUSs) and non-nuclear boats operating in confined and shallow seas. EABO could support the ASW fight as part of the overall sea control and denial effort by deploying and supporting UUVs, underwater sensors and replenishing submarine stores and munitions forward.

Long-range Maritime Patrol Aircraft (MPA) that require long runways, are not well suited for forward-basing. Fixed-wing MPA might be refueled forward at FARPs and serve to search for enemy submarines deep into the ocean, but, for closing straits, rotary-wing and UAS pouncers hosted on EABs can quickly prosecute enemy submarines when detected by underwater sensors, freeing more capable, but less combat resilient, MPA assets to defend the SLOCs.

EABO platforms and capabilities must be connected as nodes in the Fleet Tactical Grid to operate as an integral part of the fleet. EABO will be coordinated with the *inside* and *outside* forces to support DMO. This may include ISR, sea denial and control activities, torpedo and missile reloads, refueling, critical repair parts, and other support. The availability of EAB support capabilities in proximity to the fight will extend surface combatants time on station by minimizing the transit time to otherwise obtain support from fixed bases outside the range of the enemy's long-range fires. EABs must be capable of self-defense so that vulnerable surface combatants will not be required for their defense and will be available to conduct other high priority missions.

3.6.3.1 The Role Of The NECC In EABO

The NECC has robust capabilities that will be required to establish and sustain EABs. Just as Navy construction battalions were critical to the creation of Henderson Field on Guadalcanal, so, too, will today's NECC assets be integral to the planning, preparation, establishment, and

successful operation of EABs. Like Marine forces, the NECC will require force development initiatives to better optimize its capabilities to *win the hider/finder competition* and support *inside* forces. The diverse competencies of NECC Sailors and units can be task-organized with Marines to create low-signature infrastructure, and enhance services and security for EABs. In addition to the renowned construction battalions, the NECC has competencies in port security, small craft and patrol boat operations, and underwater construction and demolition, which will be essential to establishing, maintaining, and securing EABs.

3.7 EABO In A Notional Campaign

EABO is designed to host and employ joint and naval capabilities in a dynamic future joint campaign. The capabilities and activities related to EABO will change as the campaign progresses. Some common, albeit notional, missions and activities that might be directed by JFMCC or JFC during the campaign are discussed below to illustrate the concept:

3.7.1 Pre-Conflict Shaping

Theater support and cooperation (TSC) activities and investments can be tailored to prepare host nation infrastructure to better support future operational requirements for humanitarian relief operations or military conflict. TSC activities build relationships with regional allies and partners, develop partner capabilities, and expand infrastructure capacity to foster deterrence and enable future interoperability. Interoperability exercises not only develop greater ability for coherent combined operations among partnered forces, but enable US forces to develop greater familiarity with forward operational environments. Exercises can be used to build enduring infrastructure (such as FARP sites, roads, and water access ramps), and to preposition equipment that has relevance for both disaster relief and future conflict. Likewise, contingency contracts can be researched and let for local equipment or infrastructure critical to future operations, minimizing the time and cost impositions associated with transporting assets from CONUS. Most importantly, the military-to-military relationships that engender trust in both peace and war can be fostered by fprward-deployed forces to reassure allies and build interoperability. Well-considered advance work done pre-conflict can provide decisive advantage in future war. While we must be careful not to telegraph our intentions concerning the locations of EABs, subtle improvements that require long lead or construction time merit particular consideration in how we can work to shape and prepare for future conflict.

3.7.2 Deterrence

Active deterrence activities include moving combat capabilities from the permanent forward bases where US regional forces are strategically postured to more proximate positions where they can assume a ready and operationally advantaged stance. These visible actions demonstrate resolve, and are designed to reassure allies, as well as deter aggressors. Today, the movement of forces from their accustomed strategic posture to a more forward and ready operational stance enables the US to better exploit its significant investment in comparatively short-legged tactical aviation assets. However, by so doing, it may also place critical joint assets

within the range of enemy ballistic missiles directed at high-value targets and permanent infrastructure. In the future, advance *inside* forces will exploit the opportunities created by improved / dispersed positions and mobile infrastructure developed pre-conflict. Quickly established, mutually-supporting EABs will host the advance of numerous joint sensor and fires capabilities that can be tactically dispersed in proximity to operational decisive points. EABO will threaten enemy critical vulnerabilities, constrain enemy movement and maneuver, compound enemy uncertainty, and greatly slow or stop enemy ability to achieve operational objectives. Quickly established EABs will be particularly important when the adversary's strategy is based on a well-calculated bid to rapidly create *fait accompli* military events and conditions that lead to a favorable political conclusion. *Effective deterrence against an A2AD-equipped adversary will be dependent on a credible dual force posture, prepositioning, and quickly executable deployment plans that generate readiness and indicate resolve.* Demonstrated ability to close or constrict confined seas with an integrated maritime defense is a strong deterrent.

3.7.3 Gaining The Initiative

Joint and combined operations will likely initiate in response to adversary aggression, hence, the initiative will originate in the enemy's court and may be compounded by surprise. However, a dual-postured force with proper preparation and prepositioning will prove far more resilient than the contemporary force, and better insulated from enemy attempts to threaten or create a catastrophic strike.

By quickly occupying EABs situated on key maritime terrain, US naval expeditionary forces can quickly turn the table and seize the strategic initiative. The expanded range of precision fires in the missile age means the tactical defense is again the stronger form of naval battle. By rapidly occupying key maritime terrain astride close seas, US naval forces can gain the strategic initiative, and then require the enemy to assume the far more vulnerable tactical offensive. Military minds conditioned to reflexively assume the tactical offense may well miss the opportunity this change in modern warfare presents. Selecting objectives that generate opportunity for strategic offense and tactical defense may be central to early advantage in 21st century naval operational art.

The defense has many strengths in the missile age that can be leveraged by the judicious application of operational art. To exploit key maritime terrain, naval forces at the leading edge of the advancing joint line of operations seize or occupy EABs in proximity to critical sea lines of communications or anticipated areas of contested sea control. These advanced expeditionary bases may be mutually-supporting islands in critical archipelagoes, or mainland bases near key maritime terrain or decisive points. EABs may be actively defended, or passively rely on their remote and isolated nature for all but close security. Alternatively, they may be defended by indigenous allied / partnered forces. An adversary's attempts to effectively strike capabilities aboard EABs with long-range ballistic and cruise missiles are mitigated by dispersion and passive protection activities such as decoys, cover, concealment, and frequent displacement.

The time and cost imposition involved in reducing numerous mutually-supporting EABs is fundamental to their purpose, and contributes to the passive nature of their defense. Operational requirements and calculated risk must guide the disposition, composition, deployment, and defense of the capabilities placed on EABs.

The relative ease and speed of moving personnel compared to materiel suggests that early actions to seize the initiative should rely on rapidly integrating deployable personnel with prepositioned equipment to augment permanently stationed forces. EABs are not envisioned as locations for conducting reception, staging and onward movement and integration of forces (RSO&I), but once personnel are integrated with their equipment, EABs must be ready to support EABO.

EABs can be used to simply advance sea denial capabilities, or to extend naval and joint 'sensor and shooters' as far forward as practical. In the near term, sensors, such as land-based radars (ground/air task-oriented radar (G/ATOR)) and manned and unmanned aviation assets, combined with vertical/short take-off and vertical landing (V/STOVL) aircraft will extend the detection capabilities of the JFMCC and the JTF. Existing fires capabilities (such as high mobility artillery rocket system (HIMARS) and Army tactical missile system (ATACMS)) may also include aviation combat element (ACE) aircraft bounding forward from land-based FARPs and expeditionary runways. These current adaptations of current capabilities will serve until more optimized low-signature *inside* force capabilities can be designed and procured.

Future conceptual capabilities include shore-based operational-level fires to enhance EAB defense, contribute to sea denial, and complement naval operational maneuver with long-range anti-air and anti-ship missiles. Land-based missile systems might be designed for greater commonality with naval sea-based missile systems. Mobile, concealed, and dispersed long-range missile systems can disproportionately contribute to the sea control and sea denial mission, are relatively inexpensive to operate, and are more difficult, and less lucrative, to target than sea-based systems. Mobile land-based missiles lack the extensive maneuver capabilities of navy ships, but can compensate for the inherent limitations of sea-based missiles in range and capacity, and can be dispersed to ensure that even successful enemy strikes have limited consequences. Land-based missiles are not constrained by the dimensions of ship vertical launching system (VLS) tubes, and can be created in the length and diameters necessary to 'out-stick' enemy weapons. Weapons and sensors engaged in the sea control/denial mission are commanded by JFMCC and controlled via CEC. The differing, but complementary, advantages of resilient land and maneuverable sea-based systems offer more lethal combinations, and provide additional means for the joint commander to exercise operational art.

By quickly deploying forces to man prepositioned materiel and conduct EABO, US naval forces can compel adversaries to assume the tactical offensive. Forward-positioned and dual-postured forces, complemented by strategic maneuver and tactical defense, will create the greatest advantage from available time, resources, preparation, and positioning in future naval

battles in close and confined seas. Advancing large ships across an expanse of exposed and technically observed water in the missile age is not an enviable prospect.

A modern fleet engagement against a peer competitor will place great demands on the capacity of missile magazines of forward-deployed ships. Volleys of enemy missiles will quickly diminish the defensive capacity of capital ships and their defending escorts. Transit time for ships to go to fixed ports to reload missiles will detract from the forces needed forward to maintain offensive operations. With new rearming technology on afloat fleet replenishment platforms, ships could more quickly rearm missiles in protected anchorages in the operational lee of mutually-supporting advanced expeditionary bases, and return to station far sooner than if required to rearm at distant ports. Likewise, damaged ships requiring *in extremis* repairs could find respite in proximity to self-protecting EABs. EABs are not invulnerable to enemy action and raid forces, but to the degree that they compel the enemy to distribute resources, time, and attention, they reverse the A2AD challenge, and add significant resilience to the joint force.

Missiles are not the only means to destroy ships. Small diameter torpedoes are highly effective and difficult to detect and interdict. New alternative means of reducing enemy ships with swarm technologies deployed by unmanned systems, and similarly unmanned mobile minefields and other innovative systems, will be optimally deployable from EABs. The new capabilities of a credible *inside* force are at the cutting edge of readily achievable innovation and technical possibility. They are in various stages of technical readiness levels in our Service and national research laboratories. These capabilities are smaller and make better use of energetics, autonomy, artificial intelligence (AI), power, swarms, and stealth. They will be more deployable, hide-able, preposition-able, lethal, and affordable, than legacy systems, and will greatly enhance the combat power of EABO and the *inside* force.

To achieve the advantages of the strategic offense and tactical defense, the JFMCC must act quickly early in the joint campaign to establish EABs at forward locations. The deployment and employment of these forces will be inherently risky, as JFMCC will move and maneuver forces in close proximity to a hostile and aggressive enemy similarly bent on shaping the close seas battle to his own advantage. The tempo of operations in this phase will be important, and will set the opening conditions that will shape subsequent events. The ability of expeditionary forces to hold a “foot in the door” will preclude the need for more sanguine operations later to “kick the door in” with an amphibious assault.

Besides competing with the enemy for temporal advantage, JFMCC will be in competition with the rest of the joint force for scarce air and sea mobility resources. Other component commanders, who are more heavily dependent upon sophisticated fixed infrastructure and lengthy airfields, will be simultaneously attempting to defend themselves, disperse combat and support assets, and support forward-deployed forces. Reliance on already stressed and tenuous joint mobility assets will prove imprudent; all commanders will want C-17s to move forces and assets out of ballistic missile range. Consequently, JFMCC should look to transport EAB assets on less optimized, but more practical and prolific, platforms. The use of commercial

assets available forward and already in theater, such as barges, ferries, and container carriers may prove a more pragmatic option that will not compete with the support and sustainment of forward-deployed fleets and MAGTFs. Austerity, an inherent characteristic of expeditionary operations, will similarly characterize EABs, and enable the rapid transport of materiel with an optimized tooth-to-tail ratio.

3.7.4 Sustained Combat Operations

In this phase, naval forces continue to hold or extend the joint line of operations to accomplish JTF campaign objectives. As operational requirements dictate and terrain permits, JFMCC artfully integrates the complementary capabilities of land and sea-based forces to maintain the initiative, secure sea control, and achieve operational advantage. While the particulars of each campaign will be unique, EABs will enable creative commanders with agile forces to present the adversary with a growing array of operational capabilities that will generate new dilemmas, complicate his calculations, and compound friction. Naval forces that can exploit littoral terrain to advantage with EABs will be better able to persist forward, sustain fprward-deployed forces, and integrate more capabilities with greater resiliency, capacity, and acceptable risk.

Quickly established and capable of self or mutual defense, EABO *inside* forces will free fleets to maneuver while constraining enemy options by denying sea-space. Designed to be inherently resilient, EABs can absorb enemy fire and maintain continuity of operations while dissipating enemy combat power, and extending the enemy's operational time line. Quickly deployed and artfully executed in conjunction with fleet operations, EABO can enable JFMCC to dictate tempo and create advantageous conditions for decisive engagements.

Risk-worthy EAB-hosted ISR assets will project forward to discover and maintain contact with enemy forces and platforms and diminish uncertainty for JFMCC. Decoys ashore and afloat will confound enemy situational awareness and generate mis-perception.

In the near term, shore-based aviation from expeditionary airfields and FARP sites can be employed to complement fleet actions in the fight for sea control. Land-based fires capabilities can deny or restrict air and sea space, give range and depth to missile capacity, and defend sanctuaries for naval assets to quickly reload, replenish, refit, and reengage. SLOCs can be better defended, and critical sea lanes interdicted, when naval forces are supported by EABO.

The operational resiliency and tactical advantages EABO achieves through passive defenses and dispersion are at the expense of the ease and efficiency of functional support and logistical sustainment at conventional bases. *Dispersion of assets inevitably reduces the economy of scale that makes conventional basing logistically efficient*. All combat support functions will experience increased friction when operating dispersed. Sustained combat operations will place great demand on logistical infrastructure and materiel stockpiles. Traditional combat support ships will be stressed to provide adequate combat sustainment and logistical service and support to the fleet. Consequently, EABO will require a new concept of logistical support

and sustainment, and demand innovative platforms to execute novel distribution and delivery requirements.

As the joint campaign advances toward strategic goals, EABs may need to displace forward to maintain operational synergy with the joint force. The minimal use of fixed infrastructure and austerity of EABs should diminish the difficulty of displacing assets, and, to the extent that many capabilities may be maintained afloat, on barges, ferries, and small craft, the speed of displacement can be greatly enhanced.

In major combat operations, EABO provides an alternative force posture and structure that enables naval forces to persist, partner, and operate within the arc of adversary long-range fires—but these qualities and capabilities must be woven into the fabric of the overall fleet scheme of maneuver if they are to develop the combat power needed to confront and defeat modern adversaries. The *inside* force enables persistence, the *outside* force generates mass and maneuver. With foresight in force development and creative application in battle, the US Naval Services can initiate the next paradigm in naval warfare.

4.0 Considerations For Force Development

The naval services will require new types of forces, organizational structures, and capabilities to persist, partner, and fight within range of adversary long-range fires in accord with the EABO concept. Many of these force capabilities and characteristics are apparent today; other requirements will evolve through wargaming, experimentation, functional force development, and the innovation of creative and determined warriors. It is imperative that the new EABO *inside* force capabilities be holistically designed, functionally complete, fully integrated, and mutually supporting.

4.0.1 Holistically Designed

A robust *inside* forces must be capable of exploiting all physical domains of the common battle space to advantage. Some capabilities may be optimized to operate in a specific battle space domain, others to create asymmetries and advantage from an adjacent domain, or to move more seamlessly between them. Each new capability expands the pallet of options for the operational commander to create new lethal combinations of *'sensors and shooters'* that enable temporal advantage, persistent surprise, and the ability to accomplish assigned missions with a variety of unpredictable operational patterns.

4.0.2 Functionally Complete

EABs must possess the full array of security and functional support services to sustain warriors and their machines. EABO is predicated on a mission- appropriate complement of cross domain sensor arrays and weapons systems that are integrate-able on a common C2 architecture—the Fleet Tactical Grid. In aggregate, a number of mutually supporting EABs should provide for a comprehensive suite of local defense capabilities that can serve to defend key maritime terrain,

ensure force persistence, and leverage proximity to advantage the *outside* force, and support the JFMCC/JFC scheme of maneuver.

4.0.3 Fully Integrated

Optimized EABO *inside* force capabilities are largely still under development. As they are fielded they must avoid the interoperability challenges currently faced by the legacy force. New EABO capabilities must be designed from the start to meet common naval and joint interoperability standards for data, targeting, and communications systems. Currently, Marine and Navy forces de-conflict the battle space and C2 arrangements based on the high water mark and CATF/CLF protocols. EABO will require a more fully integrated naval battle space if we are to observe, orient, decide, and act at the near 'machine speed' demanded by future battle.

4.0.4 Mutually Supporting

As we distribute forces we must take great care not to create a posture that is ripe for rapid defeat in detail. Depending on METT-T circumstances, EABO should enable mutual support among EAB-hosted capabilities. EABO should leverage the capabilities of the afloat fleet and not tax *outside* forces for self-defense. Most importantly, naval forces should leverage the significant tactical advantage that the defense holds in modern naval warfare to ensure the persistence of forward postured forces.

4.1 New Operational Imperatives

The aforementioned naval warfighter challenges comprise the new operational Imperatives that describe broad operational requirements for the EABO enabled *inside* force, and are repeated below, as they are fundamental to guiding the force development process in creating future *inside* force capabilities.

1. Generate the virtues of mass without the vulnerabilities of concentration
2. Create a more dispersed, resilient and hard to target forward-basing infrastructure
3. Create a more resilient CONUS / sea base-to-shore sustainment infrastructure capable of supporting distributed forces and operations
4. Win the hider/finder competition

4.2 Tenets Of EABO

To maximize the utility of EABO, certain tenets should guide our approach to force development. The EABO tenets describe desired force qualities and characteristics.

4.2.1 Enable Economy-Of-Force

This principle of war is well served by EABs that host sea control / denial capabilities that free ships and other fleet assets to maneuver and accomplish missions elsewhere. EABO can be employed to disproportionately draw enemy forces.

4.2.2 Plan, Prepare, And Preposition

The strategic competition has already begun. Advance work to set the theater before armed conflict will greatly contribute to deterrence and ultimate success. Creating an advantageous force posture that incorporates allied territory and forces exceeds the authority of the Defense Department, and must include other diplomatic, information, military, and economic elements and international partners in developing future strategy. Speed of response is critical to future success, and prepositioning is critical to speed of deployment. Preparation, particularly for sustainment and support activities, is an EABO prerequisite in any future expeditionary scenario.

4.2.3 Expand Capacity With Partner Capability

To the degree possible, *inside* force capabilities that can be shared with partners to expand capacity are preferable.

4.2.4 Invert Cost Imposition

The requirement to defend legacy infrastructure and platforms imposes huge costs on the joint force. The *inside* force must invert this imposition and extend the enemy's relative cost in time, expense, and level of effort required to find, fix, target, and destroy EABO capabilities.

4.2.5 Relative Economy

Nothing expended in war is inexpensive, but understanding that much of the brittle nature of the current joint force is compounded by exquisite weapons of great cost and slender supply, EABO should be designed to enhance relative economy to gain additional capacity. The term *economy* has many permutations, but innovative systems that enable less manpower, reduce maintenance and infrastructure requirements, and enable greater resiliency in austere environments, are particularly desired enablers for EABO.

4.2.6 Leverage Partner Proximity

Use more proximate allied and partner basing options to enhance persistence and reduce size and cost of capabilities. All ISR efforts are enhanced by closer proximity.

4.2.7 Make Austerity A Virtue

The *inside* force must thrive in austere conditions amid adequate, but comparatively underdeveloped, infrastructure. Robust, user maintained, *logistics-light* capabilities, and hearty, mission focused forces are critical to maintaining persistent presence.

4.2.8 Minimize Signature

The ability to minimize and manage signature is critical to winning the enduring *hider/finder competition* on EABs. EAB commanders will need 'own force' signature detection and mitigation ability.

4.2.9 Balance The Force

For EABO, a larger number of smaller capabilities that are inherently resilient and risk-worthy are preferred to a smaller number of singular, expensive, exquisite, and maintenance intensive capabilities. Exquisite platforms that cannot persist forward in austere conditions are sub-optimized for EABO.

4.2.10 Conserve Assault Shipping And Fleet Support Assets

Some EABs may need to be seized by a sea-based MAGTF, and initially supported by afloat MAGTF assets and supplies. However, to the degree possible, EABO will strive to use capabilities and platforms that conserve expenditure of the forward-deployed MAGTF assets, and limited and vulnerable amphibious shipping.

4.2.11 Promote Operational Resiliency

For forces to operate and thrive in conditions of austerity within range of enemy long-range fires they must be resilient. Capabilities that degrade gracefully are preferred to those with single points of failure. Redundant systems and capabilities that are interoperable are preferred to those characterized by brittle "kill chains," where destruction of one link in a system induces mission failure. Qualities that contribute to *winning the hider/finder competition* are particularly valuable. For example, capabilities that can be transported and operated in containers greatly compound the enemy target location problem as the ubiquity of the container enables capabilities to be hidden in plain sight. These '*pea under the cup'* and many other creative methods of achieving a more austere, low-signature, and resilient force posture with minimal infrastructure should guide our approach.

4.2.12 Naval Task Force Organization

EABs may host MAGTF elements, but fundamentally they are designed to free MAGTFs and fleets to fight elsewhere. While primarily naval in character, they may also host many joint capabilities and forces. We can anticipate that many, if not the majority of forces in some cases, may be Navy personnel from the NECC, or Sailors to replicate traditional fleet capabilities from innovative unmanned or minimally manned platforms that are launched and sustained ashore. Capabilities such as decoys, C2, ISR, ASW, and many repair and support functions may necessitate placing Sailors on EABs ashore. Marines and Sailors operating under an agile command arrangement can support JFMCC as a unified naval task force.

4.2.13 Mutual Support

EABs may achieve greater security and resiliency by being situated to provide mutual support. A series of proximate and well-sited EABs with complementary capabilities can provide significant operational advantage. In other cases, the ability of the EAB to interact advantageously with the afloat fleet or other joint force capabilities will determine its resiliency and value. Well distributed capability sets will need to join or concentrate to develop tactical synergy. For example, a surface flotilla of missile boats may require an advance screen of UAVs to detect and identify targets for engagement. To minimize signature, these capabilities may be based separately and join at sea. Likewise, the fires or ISR capabilities of one base may provide support for another. In all cases, the EAB is designed to be an interactive entity that indirectly supports and sustains the JFMCC and JFC concept of operations and scheme of maneuver through the forces and capabilities that it hosts.

4.2.14 Calculated Risk

Risk is the moral challenge of command. Battle demands the risk and expenditure of precious blood and treasure. As noted by John Paul Jones "...those who dare not risk cannot win." EABO must provide better options for commanders to make and take calculated risks. Many smaller, yet lethal forces that degrade gracefully and are not single points of failure will help restore risk as a military virtue.

4.3 Creating The *Inside* Force And EABO Capabilities

For the most part, the optimized *inside* force capabilities necessary to conduct EABO are not extant today. By adapting current capabilities we can create viable surrogates until force development meets actual future force requirements, but we should not allow future force development focus, funding, and bandwidth to be consumed by near-term adaptations to current sunset capabilities at the expense of an overall more optimized future force. Clearly, there will be tensions between the alternative needs to both *fight tonight* and *fight right* in the near future, but the sooner our procurement processes reflect the paradigm shift in the character of war, the sooner our expenditures will become relevant and enduring investments that reflect future requirements against peer competitors.

Similar tensions between expenditures for legacy force maintenance and future force requirements will also occur. As *the nation's 911 force*, naval forces have readiness requirements for immediate on-call missions, such as humanitarian assistance and disaster relief (HADR) and contingency response in the war on terror, for which legacy naval capabilities are well optimized. However, the future requirements for meeting more existential threats are significantly different from those of the recent past, and we must plan to transition our force posture, structure, and capabilities without dropping any of the naval missions currently being juggled.

The transition from legacy force structure to *inside* force requirements will be as significant as the transition from sail to steam, and from horses to internal combustion engines. Nations that appreciate the new opportunity and capability requirements and act first will enjoy significant advantage, while late adopters will be punished in the crucible of battle. John Boyd's "Destruction and Creation" theory and Darwinian realities all apply to the current circumstances. These theories are well-known, and their applicability is self-evident; what history adds to the dynamic is the realization that change is difficult, and, that even in the face of obvious evidence and warning, military institutions are loath to self-destroy what has become habitual--even when patently archaic, in favor of what is clearly advantageous. Billy Mitchell's convincing demonstration of the vulnerability of the battleship was as evident on 6 Dec 1941 as it was on 8 Dec 1941. Pearl Harbor only provided the catalytic force of embarrassment and defeat to precipitate change. Once again, the naval services are offered the opportunity to create new sources of advantage before adversary action becomes the debilitating catalyst.

What we disinvest in will be as important as discerning new requirements. The need to disestablish and destroy conventional capabilities to create the opportunity space for change and growth is where military services often flounder. Although the paradigm shift can be attributed to technological opportunity, the challenge will be met or bobbled on the moral force of visionary leaders. By advocating a *dual-postured* force, the EABO concept seeks to ameliorate the *fight tonight vs. fight right* dilemma by providing the opportunity to begin investment and experimentation in new *inside* forces, while exploiting the still viable, but fast waning capabilities of the legacy *outside* force. Eventually, as the range and precision of long-range fires grows ever further and more lethal, all forces need to meet the 'new imperatives' that characterize the *inside* force, but there is near-term opportunity to create an elegant and advantageous transition with a dual force posture.

An analysis of why the gestation period for new military capabilities from concept to fielding has expanded into decades is beyond the scope of this paper. However, a competent force development and acquisition process is integral to the overall strategic military competition, of which EABO is but a part. Nevertheless, EABO capability requirements will both drive and benefit from technological innovation. Many legacy naval capabilities are invested in ships--large, highly durable platforms that are now produced at few domestic locations in small numbers at predictable rates. Most of the world's ships are built in competitor nation yards at far higher rates of production. *A major combat operation that might require the risk, expenditure, and replacement of ships would not be fought in conditions that are advantageous to the United States.* The industrial base for legacy ships is no longer a source of US advantage. In contrast, the *inside* force capabilities and platforms required for EABO are dependent upon the growing *innovation base* that remains highly competitive for US industries.

By preferentially developing and investing in *inside* force capabilities, *the naval services can drive the future character of war toward US advantage*. The technical qualities and operational

characteristics of the *inside* force will not only provide commanders better military options, but will foster and cultivate a new competitive space for force development and production.

For most of the last century, military requirements led technical innovation, and provided daring challenges for industry and research laboratories to meet. However, it is now clear that military innovation lags significantly behind industry in exploiting rapidly evolving technological opportunities. Naval force development has progressed with linear improvements, while industry has clearly demonstrated that technological opportunity is *both exponential and emergent*. The *inside* force will be more effective sooner if we break this trend and design EABO capability requirements that *anticipate* where technology will be in five years. Industry and research laboratories are capable of generating new capabilities with ever increasing speed that have the characteristics needed for the *inside* force. To remain competitive, current military competencies must be constantly rejuvenated, or even displaced, by new capabilities and methods. By anticipating the trajectory of technology as we identify EABO requirements we might steal a march in force development, and better invest in more relevant future force requirements.

The *exponential rate of technological change* is well reflected in common items, such as cell phones. To remain competitive with the rate of change in technology, today's phones are designed to be replaceable sooner. No one is willing to pay for long durability in a communications platform that both manufacturers and customers expect to be archaic in but a few years—or months. This accelerated pace of change must be anticipated in military hardware and *platforms* as well. Many low cost, technologically advanced, relatively inexpensive, and adequately lethal platforms, payloads, and systems, can make the integrated maritime tactical defense formidable and disproportionately difficult to reduce in terms of enemy blood and treasure. The opportunity to lead the next revolution in military advantage is ripe now.

Computer-aided design (CAD), combined with additive manufacturing, enables new methods of rapid prototyping. Developers can 'fail faster' and learn faster with cheaper prototypes than ever before. The relative value of large, durable, expensive, multi-mission platforms versus small, replaceable, and mission-optimized platforms is clearly moving toward the latter, and this reality will contribute to creating EABO capabilities that are not only better optimized to persist and fight, but to be more affordable as well. Autonomous and semi-autonomous systems will greatly extend the range and duration of ever smaller and more capable systems that withstand temperatures, pressures, and g-forces that far exceed the tolerances of the human body. Autonomy will promote greater risk acceptance and enable new lethal capabilities, such as swarms amid an unlimited variety of UXX platforms. Autonomous capabilities will facilitate man-unmanned teaming of platforms and sensors to multiply the combat power of warriors forward. The ability of AI to aid distributed forces to effectively plan and coordinate without large staffs will make EABO achievable sooner. Augmented reality (AR) will provide remote control of both reconnaissance and lethality systems and make economical

use of personnel resources to assist distributed forces. When combined with ongoing advances in material science and integrated in novel ways, these and other new technological trends assure a future battlespace rife with new threats and opportunities. The next paradigm of warfare will be characterized by exponential change and emergent capabilities that offer unlimited potential for technical surprise.

The legacy force is dependent upon large platforms with long design, development and life cycles. Even legacy platforms that are not necessarily large, like airplanes and submarines, share increasingly lengthy development processes, and their exquisite nature makes them remarkably expensive. What was innovative on the drawing board is archaic upon delivery. In contrast, the types of risk-worthy capabilities required for EABO are best when simple, cheaper, more numerous, adequately lethal, and, in many cases, expendable. Rather than concentrating risk in a few high-signature platforms, EABO capabilities should distribute risk over many smaller, less expensive, and adequately lethal platforms that degrade gracefully, accept obsolescence and depreciation in lieu of more expensive manpower intense maintenance, and promote force resilience.

Nothing promotes coherent force development better than a cogent shared vision of how to advantageously shape the future character of war. What is increasingly apparent is that the tactical maritime defense is the far stronger form of contemporary battle, and US forces have few capabilities designed to exploit this growing asymmetry. Rapid investment and innovation in the development of offensive and defensive EABO capabilities will provide disproportionate advantage and return on investment in terms of both deterrence and warfighting potential. The science and technology (S&T) community and innovative American industries are poised and ready to design and deliver EABO force requirements. National military advantage lies in a cogent vision of a future *inside* force that capitalizes on the vast potential of America's innovation base.

4.4 EABO Conceptual Requirements By Function

EABO is an operational concept that will require new functional support concepts and capabilities to be viable. Among the purposes of the base EABO concept is the intention to guide the development of future concepts of functional support with fundamental tenets, principles, and a common understanding that promotes effective collaboration between functional force developers of both naval services. The actual EABO functional concepts will be written by functional experts, but this EABO Handbook is designed to be a living document that furthers cross-functional integration.

Effective concepts anticipate future operational conditions to generate new opportunities for advantage. The better we can envision how the concept would be applied against particular adversaries, the better we might discern new opportunity. For example, if we believe that EABO might be particularly effective in archipelagic environments among volcanic islands we might discern unique opportunities for new and creative aquatic and subterranean capabilities.

Or, equally significant, we might recall historic lessons that can be updated to serve in a modern EABO context.

For example, during WWII, the Japanese Army provided ample evidence of how porous volcanic rock can be easily tunneled to provide superb cover, concealment, and deception opportunities. Precedent suggests that boring capabilities ought to be added to EABO engineering requirements. Likewise, 'flying boats,' such as the US Navy PBY, British Sunderland, and Japanese Kawanishi H8K, were used throughout the Pacific theater throughout WWII to conduct a wide variety of critical missions, from search and rescue (SAR), reconnaissance, and movement of key personnel to ASW, logistics, and medical evacuation. The logistics advantage of flying boats diminished after WWII when more efficient land runways were built virtually everywhere. However, now that runways are pinpoint targets for long-range precision weapons, the resilience afforded by large capacity aircraft that can land ashore, or afloat on '*self-healing'* runways in a theater where water is ubiquitous makes their utility an obvious and compelling requirement.

The dispersion of critical capabilities on EABs can reduce the vulnerability of *inside* forces and their assets, but solving the resiliency challenge by distributing the combatants creates an inelegant trade-off with every support function, which lose efficiency and economy of scale found on traditional bases. Resolving the resiliency/efficiency dilemma is a problem common to all areas of functional support. Current force organizational structures promote efficiency by sharing critical functional assets. For example, the battalion aid station concentrates physician level medical care at the battalion level, making wider distribution of forces below that level problematic in terms of medical risk. Future functional support planners must understand this inherent dilemma and devise new means to ameliorate the risks currently associated with single source support.

New means of moving or associating parts, tools, personnel, and information can provide distinct advantage in future war. Journeyman skills can be leveraged to produce craftsman-level work when maintenance personnel are mentored in real-time by maintenance video libraries and reach-back expertise. Single-skill warriors are a relic of an industrial age approach to personnel management that produces vast inefficiencies, and contributes to a cognitively brittle force. Instead of assigning defined and narrow MOS skills for naval personnel, the naval services should devise incentive programs for ambitious Sailors and Marines to broaden their skill sets to provide the wider base of militarily relevant skills that a more distributed force will require. Computer and easily deployed AR trainers can condense the time previously required to create a better trained and educated force.

As we discern the functional support requirements for EABO, we must approach the challenge with the same entrepreneurial mindset that extends the paradigm shift in *how we fight* to include *how we support* the warfighter. Industrial age habits and methods are unlikely to serve well in the information age. Innovations in the means and methods of providing functional support are essential to achieving the full potential of EABO.

4.4.1 Fires

Among the most significant and obvious additions to the future capabilities needed for EABO to be successful is the requirement for Marine forces to acquire all domain, shore-based, *operational-level fires*. The occupation of key maritime terrain by Marines with conventional crew-served infantry and artillery weapons might enable close tactical dominance, but Marines will be operationally irrelevant without the ability to exploit the advantages of the maritime defense, defend EABs, and deny sea and air space. Limited anti-ship and anti-air capability already resides with Marine aviation, but generating redundancy and depth of both offensive and defensive operational-level capabilities reflects prudent military judgment, and makes acquisition of shore-based, long-range fires an immediate imperative. Robust fires capabilities, once an integral part of USMC force structure, atrophied during the years of overwhelming US sea and air control. The end of presumptive US sea control must be understood as a strategic inflection point that demands a critical rethink of operational responsibilities and core capability sets. Acquiring long-range anti-air fires, and developing a shore-based anti-ship capability, will enable Marines to demonstrate that A2AD works both ways, and provide JFMCC with shore-based naval forces to deny sea and air space.

Offensive and defensive sea denial capabilities are critical for the EABO concept to meet its operational potential. By supporting economy-of-force missions, such as closing a strait, EABO enables fleet assets to maneuver elsewhere to accomplish missions better done by ships. The economy-of-force aspects of EABO are critical to surmounting the capacity challenges the joint force faces against likely competitors. To serve this role, EABs must host credible sea control / denial capabilities—capabilities similar to those of the forces they free up to fight elsewhere. Hosted offensive fires capabilities should be optimized to the mission and might include anti-submarine assets. New, lethal, shore-based capabilities must be included among naval fires requirements, as they will be critical capabilities in creating an integrated maritime defense.

EABs cannot replicate the operational maneuver capabilities of ships. However, by hosting risk-worthy sensor platforms and operational fires capabilities appropriate to mission, EABs can assist in freeing other high demand assets, like ships and aircraft, to mass and maneuver opportunistically. Several mutually-supporting EABs astride a strait should provide sufficient combat capability to interdict a critical sea lane, greatly constrain enemy commerce and naval maneuver, generate coercive military conditions, or free US and partner ships to better support the JFMCC main effort.

The EABO concept broadens our current understanding of ‘fires’ to include new innovations in lethality from numerous, low-signature, low cost, expendable platforms with advanced payloads. Flotillas of manned and unmanned platforms with new lethal and disabling capabilities will be launched, serviced, directed, and supported from EABs. Some platforms, designed to extend range and duration will unleash traditional missiles and torpedoes, others will distribute lethal swarms, disable props, or seed mines. The forward position of EABs may

provide unique opportunities to interdict and attrite enemy aviation with ground-based missiles, UASs, or forward based aviation assets.

Broadening our understanding of fires capabilities, to include low-signature lethal platforms, will generate greater dependency on a wider C4ISR infrastructure for target detection and engagement, and much of that infrastructure may also be hosted on, or supported by, EABs. Usually, the employment and integration of EAB-hosted capabilities into the wider operational scheme will be at the direction of JFMCC, who has overall responsibility for sea control and denial operations. Developing the Fleet Tactical Grid that will enable the integration of land-based fires and ISR assets into the wider JFMCC and JTF C2 structure is crux to maximizing the potential of EABO.

The aforementioned naval warfighter challenge to '*win the hider / finder competition'* is not intended to imply that the shore-based missile systems on EABs need necessarily be small and short-ranged. Unconstrained by the inherent size limitations of ship-borne missile systems with defined numbers of VLS tubes of fixed diameter, EABO fires can be optimized in size, location, and terrain, to hide long-range missile systems using a wide variety of schemes to conceal their location and minimize vulnerability. The ability to support the fleet and augment afloat missile salvo density with long-range land-based capabilities is well within the envisioned capabilities and mission profile of EABO.

To maintain the many advantages of a low-signature and austere expeditionary posture, more optimum fires systems will be characterized by:

4.4.1.1 Horizontal Dispersion, Vertical Concentration

To meet the requirements of the first naval warfighter challenge, "*generate the virtues of mass without the vulnerabilities of concentration,*" EABO offers new tactical opportunities. These opportunities are particularly rich for naval forces, which can operate in the air, land, sea surface, and sub-surface. By dispersing low-signature platforms *horizontally* and concentrating them *vertically,* naval forces can generate sufficient mass to detect, close with, overwhelm, and destroy adversary forces.

4.4.1.2 Mobility

Fires systems must be sufficiently mobile to be moved/emplaced and maintained without revealing targetable information. Some hosted fires systems will be capable of routinely displacing to confound enemy targeting. Longer-ranged systems might benefit from creative concealment and hardening. Traditional transporters, erectors, and launchers (TELs) might be less preferred than innovative systems built into truck-mobile shipping containers that can hide in plain sight and defy specific identification by overhead ISR amid the ubiquity of containers in the littorals. Although land-basing offers far more opportunities for concealment than the open ocean, many fires capabilities can take advantage of the complexity of the littorals and archipelagos to store, transport, and fire munitions from afloat platforms. New forms of

lethality, such as swarming, will require new means of delivery that can take advantage of the proximity of EABs to unleash overwhelming surface, sub-surface, and airborne swarms.

4.4.1.3 Passive Defense

As mentioned above, fires systems that can avoid or confound detection are preferred. System decoys are desirable, as are camouflage, concealment, and signature-minimizing capabilities that allow for EMS emissions to be reduced or narrowly focused. Physical cover, in the form of bunkers, tunnels, or revetments, which can provide protection but avoid detection are useful, particularly if they can be built in sufficient quantity to create a 'pea under the cup' dilemma for enemy targeting.

4.4.1.4 Dual Use

When practical, the tenet of *dual use* makes preferable those systems that can be used for both power projection and sea control missions. However, other considerations might include commonality of naval ammo and weapons across air, surface, and shore-launch platforms. Proposals include adapting the current HIMARS launchers for anti-ship / air missiles, or alternatively adapting Navy missiles for ground launchers in order to have commonality of munitions for air, surface, and land launchers. Because of the cost and inevitable demand for these weapons, alternatives are well worthy of focused analysis.

4.4.1.5 Naval And Joint Fires integration

As discussed above, EABs host assets for JFMCC and JFC tasking. Integral to the fires requirement is the ability for all 'sensor and shooter' assets to contribute to the situational awareness and fires solutions of the joint force. *Inside* forces will be numerically disadvantaged and dispersed; close integration of all capabilities will be essential to gain comparative advantage.

4.4.1.6 Aviation Fires

Aviation will be discussed as a separate topic, but air and missile defense (AMD) fires are ready today to be hosted by EABs. Land-based missiles can augment, or serve as economy-of-force assets to free aviation assets for other missions. The integration of all fires, to include aviation, in achieving the JFFMCC missions is necessary to maximize the combat potential of EABO.

4.4.1.7 Unmanned Platforms

UAV, USS, and UUV development is proceeding at a very rapid pace. Many of these capabilities are currently directed at ISR, but the advent of 'killer drones' is indicative of the lethal fires capabilities these platforms can support on land, air, sea, and sub-surface. EABs are optimized to host and service unmanned platforms from a forward stance that will enable them to form an integrated maritime defense of critical straits, or support fleet actions at the leading edge of the joint campaign. The ability to launch, recover, and sustain these risk-worthy and relatively

inexpensive platforms from forward positions without elaborate and readily identifiable infrastructure is an important EABO/*inside* force capability.

4.4.1.8 Distributing operational-level fires and low-signature fire support platforms on EABs to exploit key naval terrain will mark a distinct addition to the JFMCC operational tool kit, and be a critical resource to exercise advantageous naval operational art to control or deny close and confined seas. Not only can EABO help rectify the capacity mismatch central to the A2AD dilemma, but it can serve as an economy-of-force effort that will enable JFMCC to fix adversary forces while allowing JFC to concentrate other naval and joint capabilities at the decisive time and place. Without operational-level fires, EAB-hosted forward capabilities would need to be defended by fleet assets. With shore-based operational-level fires and hosted navy fires platforms, EABs become sea control / denial strongpoints that can be advanced to support the joint campaign, free other afloat fleet assets to maneuver, and take advantage of the strength of the maritime defense to maintain persistent presence and assure allies and partners.

4.4.2 Logistics

The proliferation of long-range precision fires in the future battlespace will significantly impact logistics as well as operations. WW I metaphors of an extended 'no man's land' are worthy descriptions of what should be anticipated. Forces that remain within the enemy long-range weapons engagement zone (WEZ) will have to actively plan passive defenses to remain effective, and will be dependent upon logistics service support and supply systems that are equally active and resilient. A fully integrated, active maritime defense-in-depth will be able to inflict disproportionate result on adversary forces, but that defense will consume vast quantities of ordnance in intense battles of indeterminate duration. In effect, a race will take place between a willful adversary attempting to mass forces at the point he chooses as decisive, and the ability of defensive forces to supply munitions, relieve forces, and support services to the defenders.

4.4.2.1 Precluding Culmination

In short, we must recognize that *logistical culmination is a defeat mechanism*, and that *precluding culmination* in the future battlespace will require significantly different logistical means and methods than in the recent past. There is a case to be made that our military fascination with lethality at the muzzle end of our effort, often obscures how we will continue to feed the breech. The nature of expeditionary operations—fighting *'over there'*—places far greater logistical onus on the force fighting the away game. When dealing with adversaries that willfully make a virtue of capacity, any inattention to the dangers of culmination are potentially disastrous, and any new concept of how to fight naval forces not complemented by an equally innovative new concept for how to sustain the force is fatuous.

4.4.2.2 Deployment, Distribution, And Delivery

The current paradigm for deploying naval forces involves ships—big ships, with Marines deployed from ships, and Sailors fighting from them. Large ships will create heroic but short battle histories in future war, and of necessity, sea control and denial capabilities will shift to smaller and more persistent and survivable platforms tactically dispersed throughout the *inside* battle space. These platforms will be arrayed in depth around key maritime terrain, covered by land-based fires, and supported from EABs. *Optimally*, equipment, platforms, munitions, and other hard to transport items will be *prepositioned,* and the rapid transportation of troops into the area of operations will enable US and allied forces to quickly seize the strategic initiative and field integrated naval and joint forces forward. Less optimally, US forces will have to use littoral maneuver from cooperative partners to laterally maneuver force to achieve positional advantage. Should success in future war against a peer competitor with ample A2AD capabilities be predicated on the 'transportation of things' from CONUS under combat conditions, then the US must devise an entirely new method of deploying them, as the use of deep water ports and large runways will be highly problematic.

A resilient distribution of forces will compel a robust and equally resilient logistics distribution and support system. It is here that the revolution in military logistics will be most profound, as linear concepts of singular lines of operations and communications evolve into far more dynamic means and methods to sustain widely distributed forces. Logistical distribution centers and intermodal transportation hubs are potential *single point of failure* facilities that will operate best *outside* of the range of enemy long-range fires. Moving commodities from distribution hubs, be they afloat or ashore, across contested seas directly to EABs supporting distributed naval forces, is the crux of the new logistics challenge. Many smaller autonomous platforms moving to shallow water marinas or piers in close proximity to the EAB-supported units will help meet the challenge. Many smaller craft are less efficient than single large ships in moving commodities, but much of the loss in efficiency in crossing the sea is ameliorated by greatly reducing the delivery problem once ashore, since in an archipelagic environment, no unit is far from water. Once autonomous small craft arrive at their destination, designated EAB logistics personnel from using units can take delivery.

By moving common commodities by smaller platforms, such as semi-submersibles, barges, Pipe-fish, etc., the logistics train becomes far more resilient, and inefficiencies in transit due to reduced cargo size are compensated for by reduced requirements for final overland delivery, since the many shallow water piers or marinas where the commodities are delivered are in closer proximity to the unit of issue. By placing and delivering commodities, like fuel, on slow energy conserving autonomous platforms afloat, logisticians can create a supply chain that also serves as an i*n-route storage* facility. By loitering commodities in transit, or diverting and accelerating their delivery to critical points, we can use the *information* we know about the location and category of supply to replace the classic *iron mountain* ashore. Sea planes can secure the entire afloat logistics train from the air—especially when they move into littoral

regions, and flying boats can be used to move time sensitive parts, personnel, casualties, and munitions. Flying boats, such as the Japanese US-2, will prove to be as versatile in employment and ubiquitous in demand as the WWII PBY.

In a near-term *fight tonight* scenario, the greatest demand on the logistics and supply chain is likely to be aviation fuel, parts, and maintenance. As we develop more optimized EABO platforms, we can expect that ordnance and parts will become the most challenging commodity, since other classes of supply can be readily contracted or foraged. Platforms that were developed under the assumption that their fuel and maintenance would be provided by large ships or fixed infrastructure will disproportionately burden EABO operations until they can be replaced with more economical capabilities that have far greater endurance with less maintenance requirements than current platforms. EABO capabilities and concepts of operations and logistics must be fully integrated.

4.4.2.3 Trade-offs: Resiliency And Efficiency

Advantage in war is often achieved by making opportunistic trade-offs. Most of the trade-offs that advantage dispersed basing operations come at the expense of functional logistics support. Traditional bases offer efficiencies by maximizing economy of scale, so that a single functional capability can serve many dissimilar organizations. Mess halls and medical facilities offer obvious examples, but similar economies are found among all logistics and combat service support functions hosted on traditional bases. Logistical lines of communications are consolidated and security is concentrated on legacy bases, freeing most functional support personal to focus on primary responsibilities, vice auxiliary tasks such as route and perimeter security. Distributed basing will significantly challenge logistics and other support functions to deliver adequate functional support without the benefits of classic economy of scale. Loss of economy of scale, and the inefficiency associated with a far wider distribution of effort, is an inevitable consequence of dispersed basing, further exacerbated by the distribution of forces and functional support on EABs themselves. In choosing to elevate the relative importance of resiliency to achieve operational advantage, there is a necessary and inevitable decrease in the fundamental efficiency of logistical sustainment and support. Force distribution introduces new frictions to operations, or viewed more optimistically, offers new opportunities and compelling necessity for innovative solutions.

4.4.2.4 Austere Vs. Exquisite

EABO attempts to ameliorate this additional friction by making a virtue of a necessity and *embracing austerity* as a vital mission enabler for expeditionary operations. Chow halls are obviated by MREs, buildings with tents, generators with energy harvesting, and local security with indigenous forces and the 'every Marine & Sailor a rifleman' ethos. While these austerity measures are practical and prudent, they do not fully account for the many functional challenges of EABs.

The logistical challenges associated with EABO functional support will demand critical thinking and innovation to achieve traditional ends by new and creative means. Solutions to resolving some of the myriad logistical challenges of EABs may be found in the nature of the environment itself. When much of the area of operations is composed of littoral and archeologic waters, the ability to exploit the sea for transport, storage, and dispersal of capabilities and resources cannot be overlooked. Indeed, creative use of the sea, lagoons, and inland waterways as part of EABs and their logistical support network will enable naval forces to enjoy the traditional logistical advantages of sea-basing at the tactical / retail level.

The large signature of L-class shipping, and the need to conserve amphibious forces for other operations, make the use of these platforms and associated ship-to-shore connectors highly problematic for transporting, storing, and sustaining EABs. Preferably, EABO should use forward-procured commercial shipping, boats, ferries, and barges to serve as intra-theater transport, weapon and sensor platforms, fuel and ordnance storage, and asset dispersal. By not tasking traditional assets necessary for fleet and MAGTF operations, EABO can provide an economy-of-force effort that enables limited fleet and MAGTF assets to maneuver elsewhere.

Sea and river barges offer particular advantages as components for transporting EAB forces, and for hosting the capabilities and commodities required to operate and support them. Barges are relatively inexpensive platforms capable of moving or hosting large quantities of fuel, ordnance, or particularly heavy capabilities—like rail guns and future directed-energy weapons that require significant logistics support to sustain them. Barges are inherently mobile, and can be locally moved inside the enemy long-range targeting cycle even if detected. Barges are not the sort of target to draw the attention of enemy cruise and ballistic missiles. Should they be targeted, we have significantly inverted the cost-imposition adversaries previously placed on us.

It is advantageous to expand options and minimize predictability by developing diverse means and methods of achieving all aspects of logistical sustainment and support. For example, it is prudent to explore the use of indigenous fast ferries and other shallow draft commercial craft that can rapidly load and unload combat and logistics vehicles that can support EAB capabilities, such as missile TELS, mobile aviation logistics support, fuel trucks, and maintenance teams. Expanding logistical options is fundamental to enhancing resiliency.

Supporting distributed naval forces over vast ocean distances despite observed enemy fire capabilities necessitates fundamental and significant changes to naval logistics. Water is a remarkably economical and efficient medium for the movement of commodities. However, since large ships are optimal targets for long-range precision strike systems, innovating new ways to move materials on smaller or reduced signature platforms becomes a naval logistics imperative. Options for how to create a harder to target and more inherently resilient logistics train are many, and it is far too early in the research and experimentation process to down select any single method. Indeed, it is likely to be the combination of different methods that will produce the most viable and resilient all round solution. Current ideas under consideration

include the use of cheaper platforms, such as towed barges, dracones, and indigenous shipping. Also worthy of consideration are smaller platforms, such as reduced-size prepositioning ships; and faster platforms, such as high speed vessels. Options to reduce signature include submersible and semi-submersible vessels. The latter have proven to be agile contenders for drug cartels moving contraband across the Gulf of Mexico, and hold great promise for infiltrating logistics to distributed forces operating within the arc of adversary long-range fires.

4.4.2.5 Logistics Infiltration

The metaphor of *infiltrating* logistics may prove apt. The exquisite, large signature, fuel gulping, maintenance intensive platforms of the legacy force are poor candidates for *infiltrated* logistics, but if forces are to persist inside the WEZ of future adversaries, a new concept supporting *infiltrated* logistics combined with 21st century foraging and contracting may well serve an operational force that is more focused on economically proliferating many resilient and lethal payloads than resource intense platforms.

In all cases, our new logistics concepts must support forces that are distributed throughout the battlespace, avoid single points of failure, operate in an EMS-contested environment, and preclude culmination at the decisive time and place that may well be of the enemy's choosing. Once specific EABO logistics requirements are determined, the innovation base of America's military research and development (R&D) facilities and leading industries are ready to deliver creative solutions that take advantage of the fast advancing technical revolution in power generation and storage, additive manufacturing, autonomy, AI, electric engines, energy harvesting, and a host of other new technical and scientific endeavors that can be focused on innovation in the field of military logistics. Success belongs to the nation that has the national will, innovative creativity, and clarity of vision to capture and field the next generation of logistics capability sets.

4.4.3 Command And Control (C2)

4.4.3.1 EAB C2

An EAB commander is primarily concerned with providing hosted units with services and support functions necessary to sustain warriors and their weapons systems. Additional responsibilities would include developing and enforcing a signature management plan that would preserve security from long-range fires, as well as the local security plan for force preservation and protection. Hosted forces and capabilities supported by the EAB can expect to answer to external naval and joint functional commanders coordinating other *inside* force assets in support of the naval scheme of maneuver. When an EAB might need to fight to defend itself, the EAB commander may need to coordinate all local and adjacent EAB capabilities to mount a coordinated defense. *Agile command relationships* will enable EABO to flex and adapt in accord with fluid mission requirements.

Like any base, the ability of EABs to effectively host myriad and dissimilar capabilities is critical to success. However, the manner in which the hosted functions perform their missions can be critical to the resiliency of the EAB. The EAB commander may be required to enforce standards of camouflage, signature reduction, and local security to ensure overall success, as well as provide base support for distributed functions, such as water purification and power generation.

EABs must be capable of supporting all necessary naval logistical functions, albeit under austere and minimalist conditions. The need to distribute basing functions over a wider area will challenge logisticians and functional support units, so it is important that alternative means of achieving functional support are developed that will reinforce resiliency. It will be the responsibility of the EAB commander to creatively design and continuously improve on the security, resiliency, redundancy, and signature management components of the EAB. By developing close relations with host nation forces and people, the EAB commander can broaden the network of support activities to preclude establishing exploitable patterns or being limited to single sources of support.

EABs will support forces ashore, afloat, airborne, sub-surface, and those designed to exploit the EMS. Most of these capabilities will be naval, but many will be joint. Consequently, EABs will require inter-service task organization. As new *inside* forces are developed and proliferated, new capabilities and requirements for support will be discerned, and new opportunities for creative and effective C2 will arise. How EABs are commanded will be dependent upon the missions and capabilities of hosted units. Consideration for how to command and control EABs should follow from understanding how to fight from them.

4.4.3.2 EABO C2

EABO can support many different naval missions from forward EABs, but, in the future, the most likely and strategically important mission will be the ability to control key maritime terrain, particularly straits, with an integrated maritime defense-in-depth. The commander for such a mission is likely to be ashore in the vicinity of the strait and have command of interdiction assets from multiple EABs. His task will be to integrate diverse, all-domain capabilities into a coordinated and lethal defense-in-depth that will preclude a determined enemy from transiting the strait, thus creating military coercive conditions, or shaping the operational battlespace in support of the fleet scheme of maneuver. EABO capabilities that should support this mission include: Mines, fixed and mobile sensors, minimally manned and unmanned surface flotilla forces, unmanned UUS and UAS sensors and shooters, rotary-wing pouncers, non-lethal capabilities for engaging uncertain targets, EW and cyber support systems, decoy and deception capabilities to *'win the hider/finder competition,'* and land-based missile systems to cover all of the above with ample shore-based fires.

All the platforms, manned, semi-autonomous, and autonomous, are deemed risk-worthy, and are arrayed in depth on, below, and above the sea to enable a *vertical concentration* of

platforms at predetermined time-on-target (TOT), assigned by the first platform or sensor to detect the target. Platforms are networked, both to the common headquarters and to each other, enabling *network optional* systems that take advantage of centralized networks when available, and form *opportunistic networks* among available platforms at the edge of battle when cut off from higher authority. Trans-modal communications *buoys* (either actual or metaphoric) will enable surface and aerial platforms to communicate and coordinate with sub-surface systems as they vertically mass and simultaneously engage enemy platforms with numerous payloads to overwhelm their defenses.

Hypersonic weapons and autonomous systems will demand decisions made at *machine speed,* and commanders will rely on AI and sophisticated algorithms to reduce cognitive burden and accelerate human decision-making. Electronic warfare assets and deception efforts will work to generate uncertainty among enemy decision-makers, slow their decision cycles, and cause a misappreciation of the situation. Clearly, the combined Navy, Marine, and likely joint assets required to fulfill these mission requirements will require an innovative *inside* force task organization not found in traditional command arrangements. Battlespace decision-making will itself undergo a profound change as human-machine interfaces expand options and compress decision time. *Tempo will be profoundly consequential*, and the need to hide better, see first, mass faster, and engage first with sufficient munitions to overwhelm the target's defenses will be central to future naval C2.

Integral to the Fleet Tactical Grid must be a common C2 communications architecture that enables all systems to interoperate. This system should be *network optional,* and service agnostic. All *inside* force EABO systems and units must be interoperable and utilize low probability of detection and intercept communications. Emerging technologies, such as free-space optics, hold great promise of creating a new spectrum for secure, high bandwidth communications. New systems to ensure timely communications with sub-surface platforms will allow them to be integrated into the scheme of maneuver vice merely de-conflicted by battlespace.

4.4.4 Aviation

Mobile EABs can support expeditionary airfields and FARPS, and consequently support all functions of naval aviation. Mobile EABs persist forward and are capable of providing continuous mission support from different locations. Because mobile EABs are associated with high-signature forces or capabilities, they must accomplish assigned missions and begin movement within the adversary detection, targeting, and engagement cycle. Movement can be facilitated by vehicles ashore or vessels afloat, or some combination of both. To maintain continuity of support, some critical support capabilities may require dual sets of equipment, so that while one team is providing operational support, the other is moving. The large size, signature, runway, fuel, and maintenance requirements of conventional manned aircraft makes their support from EABs problematic. The shorter runway requirements of V/STOVL aircraft

makes them better optimized as *inside* forces, but in all cases the risk of attracting enemy long-range precision fires will be a persistent threat.

The more minimalist airfield requirements for launching and retrieving UAVs can greatly contribute to signature reduction and passive defense while providing the *inside* force with critical aviation functions. By exploiting the distributed posture, low-signature, and variable locations of EABs, manned and unmanned aircraft can maximize the range, reach, and dispersal of naval and joint aviation assets without providing a lucrative target for enemy long-range fires. *'Tail sitter'* UAVs take off vertically from small landing and launch pads and greatly reduce ground signature and support requirements. Most importantly, they enable US forces to disassociate with the long, hardened runways that readily identify traditional air bases and restore a crucial degree of uncertainty to enemy calculations.

Rotary-wing platforms do not have the predictable runway restrictions and requirements of fixed-wing assets, and consequently are more optimized *inside* force assets. Keeping in mind how the Doppler effect from rotary-wings lights-up long-range sky wave radar, ground tow vehicles and heavy equipment transporters can be used to move, disperse, and hide helicopters and tail-sitters once they have landed.

The most innovative and operationally significant *inside* force aviation capability involves the re-introduction of amphibious aircraft--seaplanes and flying boats, which can take advantage of both conventional land and 'self-healing' water runways, the littoral battlespace. By breaking the 'fixed runway' paradigm, amphibious aircraft greatly expand the aviation functions that can be performed by *inside* forces. SAR, ASW, aerial refueling, medical evacuation, mass casualty and survivor rescue, ordnance delivery, movement of critical parts, and delivery of mail, personnel, and maintenance teams could all be performed in more places with significantly reduced risk by amphibious aircraft. Larger UAS can also use water vice runways, greatly expanding their utility without the risks associated with landing on easily identified airfields. Breaking the runway paradigm is critical to winning the *hider/finder* competition and to the continued utility of manned aviation as an *inside* force capability. The need for amphibious aircraft is as urgent as it is obvious.

4.4.4.1 Offensive Air Support (OAS)

When close air support (CAS) is forward-based, response time is reduced, and time on station is significantly increased, by the ability to reload and refuel much closer to the tactical edge. Proximity increases sortie rates and on station time, and keeps aircraft from burning time and fuel flying back to mother ships or permanent bases. Expeditionary airfields with FARPs can make turnaround times even faster. The two missions underneath the umbrella of deep air support (DAS), air interdiction and armed recce, are both well supported by the extended operational reach afforded by expeditionary airfields and FARPS. Other missions, not currently associated with Marine aviation, but integral to naval aviation, such as ASW and maritime patrol, can be facilitated forward or in closer proximity to objective areas when supported and

sustained by expeditionary airfields. Of course, not all expeditionary airfields are necessarily designed to persist forward within the ballistic and cruise missile range of peer and near-peer competitors. For EABO to support offensive air support missions with current platforms, considerable force development will be required to ensure a persistent, resilient, sustainable, and survivable offensive capability.

4.4.4.2 Anti-Air Warfare (AAW)

In the near term, forward-based F-35Bs supported by FARPs can facilitate offensive anti-air warfare (OAAW) by providing more resilient platforms in closer proximity to objectives. Other joint commanders may be provided with air interdiction assets to target enemy airborne C2, tanker and bomber capabilities from forward EABs.

4.4.4.3 Aerial Reconnaissance

Every aviation asset provides sensor opportunities. EABO pushes those sensors further forward and brings tactical UAVs and other sensors closer to the fight. Since EABO capabilities are designed to be more risk-worthy and expendable, commanders can be more aggressive in their reconnaissance activities.

4.4.4.4 Electronic Warfare

When conducting electronic reconnaissance, persistence and proximity matters. EABs may host *inside* force EW capabilities to both push and pull information and intelligence from forward locations. Forward-basing traditional electronic attack (EA) assets, and newer UAS payloads to exploit the EMS, will support JFMCC efforts to wage electronic maneuver warfare. Cyber payloads that require proximity to be delivered can take advantage of the proximity of EABs and to the degree authorities allow, cyber capabilities should be incorporated into EABO force development.

Of note, many current characteristics of naval aviation do not meet the *inside* force requirements for reduced signature, minimal infrastructure support, and cost inversion. Sunk costs in legacy aviation platforms must not inhibit the development and acquisition of the more optimized aviation capabilities that *inside* forces will require.

5.0 Conclusion

For EABO to achieve its potential as a future operational concept that provides new and better options to future decision makers, there must be significant force development guided by a cogent operational *vision* for how EABO can be employed in support of future naval strategy. How we answer the question, “EABO to do what?” is critical to creating the compelling vision necessary to guide naval force development—both Navy and Marine Corps-- towards a common operational purpose with distinct, but integrated, tactical capabilities.

The low-hanging fruit, and most compelling operational requirement, for such a vision involves the ability to exploit EABO to create an integrated maritime defense-in-depth at key maritime terrain. This capability will enable US naval forces to turn close and confined seas to geographic advantage, reap the disproportionate advantages of the maritime defense, and enable persistent forward presence and partnering anywhere US interests are threatened.

Advancing the common naval vision, are the four EABO naval warfighting challenges, as well as new tactical concepts of employment, such as vertical concentration, that will both guide requirements, and dare innovators to create the next paradigm of naval warfare and the new opportunities it will unleash. The future naval force will be focused on payloads more than platforms, resiliency more than efficiency, signature more than size, and the requirement to fight and win in close and confined seas where the United States is increasingly challenged.

EABO enables the next paradigm of joint and naval expeditionary operations that will permit naval forces to survive and thrive within the arc of enemy long-range fires to preclude adversary fait accompli gambits, partner with allies, and win the future fight for sea control. The EABO concept challenges the Marine Corps to develop another line of operations, complementary to, but distinct from, power projection, devoted to supporting JFMCC and fleet commanders in the fight for sea control. Likewise, it challenges Navy leadership to incorporate landward-based naval capabilities into the fleet scheme of maneuver to support sea control and denial missions in close and confined seas. Consequently, EABO requires new organizational and functional concepts, and should uncork the opportunity for broad innovation and greater integration throughout the naval services. EABO challenges the operator, the innovator, and the force developer to regain and maintain operational advantage. Nimitz's admonition to abide by "the principle of calculated risk" will be essential to success, as there should be no sea where US naval forces cannot operate to defend American interests and those of our allies.