

REPORT DOCUMENTATION PAGE

*Form Approved
OMB No. 0704-0188*

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1. REPORT DATE (DD-MM-YYYY) 15-05-2018	2. REPORT TYPE Master's Thesis	3. DATES COVERED (From - To) Dec 2017 - May 2018
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4. TITLE AND SUBTITLE The Floating Expeditionary Advanced Base: Supplementing Land-Based Expeditionary Advanced Bases	5a. CONTRACT NUMBER N/A
	5b. GRANT NUMBER N/A
	5c. PROGRAM ELEMENT NUMBER N/A

6. AUTHOR(S) Tierney, Christopher T. (USMC)	5d. PROJECT NUMBER N/A
	5e. TASK NUMBER N/A
	5f. WORK UNIT NUMBER N/A

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) United States Marine Corps Marine Corps University, School of Advanced Warfighting 2076 South St, Quantico, VA 22134	8. PERFORMING ORGANIZATION REPORT NUMBER N/A
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9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S) N/A
	11. SPONSOR/MONITOR'S REPORT NUMBER(S) N/A

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release, distribution unlimited.

13. SUPPLEMENTARY NOTES

14. ABSTRACT
As the Marine Corps reinvigorates the old concept of Expeditionary Advanced Base (EAB) operations its focus remains largely centered on the seizure of islands from which to project power. Interestingly, from my research, numerous nations throughout history, to include the United States, developed floating expeditionary advanced bases (FEAB) to offset the limitations inherent in relying solely on land-based EAB. Additionally, by leveraging current technology, future FEAB can be more cost effective, more capable, and ultimately more lethal than those of the past; providing the Joint Task Force Commander a supplemental option from which to project power in a contested maritime and air environment.

15. SUBJECT TERMS
Expeditionary Advanced Base Operations, EABO, Floating Expeditionary Advanced Base Operations, FEAB, Operation Ernest Will, Anit-Access, Area Denial, A2/AD, recon/strike complex, dual-postured force, SEAMOD, Floating concrete, hider/finder competition.

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 24	19a. NAME OF RESPONSIBLE PERSON MCU, School of Advanced Warfighting
a. REPORT Unclas	b. ABSTRACT Unclas	c. THIS PAGE Unclas			19b. TELEPHONE NUMBER (Include area code) (703)432-5318 (Admin Office)

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FUTURE WAR PAPER

*The Floating Expeditionary Advanced Base:
Supplementing Land-Based Expeditionary Advanced Bases*

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF OPERATIONAL STUDIES

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AY 17-18

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14 May 2018

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THE OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE SCHOOL OF ADVANCED WARFIGHTING OR ANY OTHER GOVERNMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT.

Preface

The following thesis reflects my interest in developing supplemental alternatives to land-based Expeditionary Advanced Bases (EAB) – namely Floating Expeditionary Advanced Bases (FEAB). As the Marine Corps reinvigorates the old concept of EAB operations its focus is largely centered solely on the seizure of islands from which to project power. Interestingly, from my research, numerous nations throughout history, to include the United States, developed floating bases to offset the limitations inherent in relying solely on land-based EAB. Additionally, by leveraging current technology, future FEAB can be more cost effective, more capable, and ultimately more lethal than those of the past; providing the Joint Task Force Commander an additional option from which to project power.

I want to thank my mentor, Dr. Brad Meyer, for his sage counsel, and most importantly his patience throughout this process. He is a man dedicated to his profession, and I know I am better officer and student for having worked with him.

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Introduction

In the Pacific during World War II the U.S. military, using Lieutenant Colonel Earl “Pete” Ellis’s 1921 *Operation Plan 712 -Advanced Base Operations in Micronesia* as a foundational document, conducted an extensive “island hopping” campaign. This campaign was designed to wrest sea control and air superiority away from the Japanese by progressively seizing islands to establish airfields and ports to extend the operational reach of the U.S military. It was a stunning success, and ultimately led to the defeat of Japan after B-29s flying from the advanced base of Tinian dropped the atomic bombs on Hiroshima and Nagasaki. In the aftermath of World War II advanced base operations was no longer required as the U.S. fought several limited wars where sea control and localized air superiority were not contested – with one notable exception.

In September 1986, Iranian patrol boats, helicopters, sea mines, and attack aircraft wreaked havoc in the congested sea lanes of the Persian Gulf, conducting 43 attacks on international shipping, one of which resulted in the sinking of the bulk carrier *Norman Atlantic*.¹ Despite the presence of the world’s most powerful navy, the Iranians with their limited means effectively contested the waters within the Gulf. As a result the U.S. agreed to protect eleven Kuwaiti tankers by reflagging them, and placing them under the protection of the U.S. Navy.² The U.S. Middle East Force and Central Command determined that the only way to prevent further attacks was through constant patrolling using helicopters and small boats, reinforced with Marines and Navy SEALs. Complicating planning considerations for the U.S. was Saudi Arabia’s and Kuwait’s refusal to grant basing rights, from where it was hoped this offensive patrolling effort would operate from.

To overcome the geo-political limitations of the region General George Crist, USMC, Commander in Chief, Central Command, his staff, the Navy and the Marine Corps developed a

mobile seabase concept.³ This concept called for two large oil platform construction barges, located in Bahrain to be used as tenders for Navy patrol boats and Army helicopter. These mobile seabases would move randomly every couple of days, and have the ability to project combat power out to 50 nautical miles, and operate 24-hours a day.⁴ Initially, this sea-base concept was not warmly received by much of the DOD; however General Crist countered these arguments by asking, “Would you rather risk losing two oil barges or a billion dollar ship?”⁵ Indeed, the Chairman of the Joint Chiefs of Staff, Admiral William Crowe, agreed with General Crist that operating expensive naval ships was too risky in the dangerous waters of the Persian Gulf, and threw his full support behind the concept.

Taking just sixty days from initial concept to deployment, and after 21 months of operations, this unconventional mobile seabase force “succeeded in shutting down Iranian operations in the northern Gulf.”⁶ This mobile seabase force, despite its many critics, was incredibly innovative and ultimately successful in wresting sea control away from the Iranians. It was a concept that attained sea control not through expensive, low-density U.S. naval platforms, but through the use of two large, relatively inexpensive civilian oil platform construction barges. Indeed it was a paradigm shift to the way the U.S. military thought about attaining sea control given the political, geographic, and enemy situation. Unfortunately, after the Tanker War came to a close the mobile seabase concept, much like the advanced base operations of World War II, fell by the wayside – that is until recently.

The Marine Corps, to include the Navy, are once again interested in reinvigorating the advanced base operations concept, now labeling it Expeditionary Advanced Base Operations (EABO). Much of the new focus on EABO is centered on seizing and operating from islands, which harkens back to the advanced base operations of the Pacific Campaign during World War

II. However, at a recent innovation symposium held at Marine Corps University, Mr. Arthur Corbett, the Marine Corps' leading expert in the EABO field was quoted as saying that "there is a desperate need of a paradigm shift about how we think about EABO."⁷ This desperation for innovation with respect to EABO stems from future adversaries ability to attack the U.S. joint force's time-honored assumptions of presumptive sea control, air superiority, and assured communications using anti-access/aerial denial capabilities.⁸ If the U.S. military is to heed Mr. Corbett's call for an EABO paradigm shift, perhaps part of the answer is to be found by looking to the past; where an 'inside force,' projecting power from a persistent Floating Expeditionary Advanced Bases (FEAB), offsets the risks associated with operating expensive platforms in the restrictive waters of the Persian Gulf.

Thus, the purpose of this paper is to reinvigorate the FEAB concept in order to bring about the necessary paradigm shift in how the U.S. conducts EABO, by answering the following question: What are the operational benefits of FEAB to the joint force? Before answering this question it is first necessary to provide the technical characteristics of the FEAB as envisioned in this paper. This will be followed by enumerating FEAB operational benefits using Mr. Corbett's imperatives for developing a persistent force that include: 1) generating the virtues of mass without the vulnerabilities of concentration; 2) winning the hider/finder competition; and 3) creating a more resilient sustainment infrastructure capable of supporting distributed operations.⁹ These operational imperatives will underpin the central argument of this paper that the development of the FEAB concept provides the Marine Corps and the Navy with a persistent, resilient, and a low-cost alternative platform that can supplement land-based expeditionary advanced bases in a complex anti-access/area denial (A2/AD) environment.

Technical Characteristics of the Floating Expeditionary Advanced Bases

The 2016 *Expeditionary Advance Base Operations: Wargame Toolkit and Future Options* produced by the Marine Corps' Combat Development Command (MCCDC) was largely a wish list of advanced technologies and future capabilities that have the potential to enhance future EAB operations. Within its pages a concept titled SEAMOD (Expeditionary Concrete Fabrication) foresees the potential requirement to operate from a seabased EAB. It envisions using pre-fabricated concrete hexes that could be “prepositioned, submerged, re-inflated, and inter-connected to make a variety of floating EAB node platforms (Figure 1).”¹⁰ Unfortunately, in subsequent and as yet unpublished EABO Wargame Toolkits, the SEAMOD concept was scrapped due to the need for further testing and evaluation.¹¹ However, one only needs to be reminded of the mobile seabase efforts within the Persian Gulf, or the floating oil platforms on the North Sea, to understand that the engineering expertise for FEAB has been and is available.

Making concrete is a relatively simple process. The vast preponderance of materials (sand, aggregate, and water) are found in abundance in the areas where FEAB would potentially operate in. The final ingredient, Portland cement, accounts for 11% of the mixture, and could be potentially dredged on site, using the ancient Roman method of volcanic ash and lime, or brought in on ship from elsewhere.¹² Conveniently, the Philippines has a robust cement industry. Its fifteen Portland cement manufacturers in 2015 produced 24 million metric tons.¹³ Theoretically, at sea concrete fabrication is possible, but due to its complexities it is understandable why MCCDC chose not to develop further this concept. Then again, the author contends that at-sea fabrication is a nice to have and not necessarily a need to have. At-sea fabrication requirements can be overcome by constructing the pre-fabricated concrete hexagons in Hawaii, Guam, Australia, Bahrain, or Norway. These prefabricated hexagons can be stored at

these locations, floated and towed using oceangoing tugs or barges to forward land-based depots, or sunk at secret locations to be refloated when needed.

The overall characteristics of the concrete hexagons were catalogued in a short piece located on the Innovation in Military Affairs website and posted by the Boyington Group. They describe these hexagon columns as being hollow, measuring 10 meters long on each side, standing 10 meters tall, and weighing 1,055 metric tons.¹⁴ Thus, the dimension for one hex provides enough buoyancy to bear a load weighing 1,600 metric tons, or 145 HIMARS vehicles, if space allowed.¹⁵ Due to the modularity of the hexes, the FEAB can also be tailored to specific mission-sets. Ultimately, the size, configuration, and location of the FEAB is driven by operational requirements, not the other way around.

Advanced coupling or mating devices are required to connect the individual hexes to each other. The coupling devices would be built into the hexes during the concrete curing process. After the curing process is complete, the hexes could be mated together to create the desired configuration depending on its mission profile. The larger the FEAB the more buoyant and the less susceptible to wave action it would be. Additionally, flexible and durable matting laid over the top of the hexes would mitigate the potential wave action and the propensity for ocean water to flow up from between the hexes. This matting would also add to the rigidity of the structure. Perhaps the greatest benefit to this hex configuration is the ability to quickly regenerate itself in the event a hex is damaged as result of enemy fire. Much like the tail of salamander, should a hex or multiple hexes for that matter sustain any damage, the damaged hex could be decoupled, allowed to sink, and then another hex submerged just below the waterline would be moved into the void left by the damaged one.

Moving FEAB into a desired location is the next challenge to be surmounted. It is envisioned that ocean going tugs could transport the FEAB to desired locations. Currently the U.S. Army has six oceangoing tugs, the LT-80 class, capable of “towing up to five 120-foot barges loaded to their maximum weight of 733 long tons per barge, or a 567 foot-long guided missile cruiser with a displacement 9,600 long tons.”¹⁶ The Navy also has a small fleet of oceangoing tugs. Obviously, more tugs will be required, but the cost of building a tug boat compared to an Aegis-class destroyer is decidedly cheaper. Further, these hexes may not need to rely solely on oceangoing tugs to make a meaningful contribution to EABO.

If building ocean-going tugs is not an option, perhaps the concrete FEAB could be given the ability to self-propel itself with the aid of a small engine. Granted its speed will be limited given its large size and hydrodynamic shortcomings, but given an ability to self-propel the FEAB can remain a hard target. Additionally, FEAB may not need an inherent capability to move. As will be discussed in more detail later, FEAB could be located close to an island, or in shallow depths, moored to the seabed, and remain in-place until it was needed. In this case its resiliency is not tied to its ability to maneuver, but rather its ability to submerge, remain largely undetected when not in use, and only resurface only when needed.

Since future FEAB will operate at and from the sea there remains a requirement for a redundant and timely capability centered on sustainment and maintenance concerns for FEAB, to include land-based EAB – enter the sea plane. The sea plane, a relic of a bygone era, could once again return to its place of prominence that it had during World War II in the Pacific – the Chinese seem to think so. In December 2017, the massive Chinese AG600 seaplane had its maiden flight. It is about the size of a Boeing 737, has a range of 4,000 kilometers, and is capable of carrying 50 passengers.¹⁷ Although the verdict is still out for its future military role, it

is not hard to imagine the Chinese using these seaplanes as a redundant means to shuttle men and material to its own expeditionary advanced bases in the South China Sea. Obviously the U.S. is not going to purchase a Chinese-made seaplane, however our close ally the Japanese has a very capable seaplane that could be purchased if the U.S. military did not want to incur production costs. One could envision a sea plane landing close to a FEAB, taxiing to the FEAB, resupplying additional missiles and other classes of supply, or picking up personnel on these FEAB and quickly transferring them to another FEAB. Essentially, the sea plane is the glue that holds the FEAB concept together.

In 1987 the U.S. military converted two oil construction barges into mobile sea bases in less than two months. Today the technology and the urgency to operate from FEAB are similarly present. Indeed, the technical characteristics and designs of the floating concrete, hexagonal, FEAB as described above have an innate ability to fortify Mr. Corbett's three imperatives for a persistent force by supplementing land-based EAB.

Generating the Virtues of Mass without the Vulnerabilities of Concentration

The ability to generate mass while mitigating the vulnerabilities of concentration is paradoxical. However, the FEAB, as a supplementary capability to land-based EAB, can bridge this seemingly contradictory imperative. Mr. Corbett implores the U.S. military to “rethink our force posture, structure, *platforms* (italics mine), *capabilities* (italics mine) and operational concepts in light of new vulnerabilities and a realistic appraisal of current and anticipated adversary capability, capacity, activities, and intentions.”¹⁸ These new vulnerabilities stem from potential adversaries' ability to leverage advanced technologies to attack the U.S.'s operational assumptions of presumptive sea control, air superiority, and the ability to project power from large forward deployed bases. These large forward bases, according to Mr. Corbett are the

“Achilles Heel” of the joint force, and can longer be relied on given the current threats.¹⁹ Mass then is not entirely derived through non-resilient/high capability platforms, but through capacity. Capacity, and subsequently mass, is achieved by developing “operationally significant numbers of risk worthy, less expensive, adequately capable but lethal platforms and payloads.”²⁰ Thus, all of these characteristics, specifically risk worthiness at a relative low-cost, implicitly speak to the strengths and benefits inherent in FEAB.

Mr. Corbett also discussed a “dual-postured” force comprised of an ‘inside force’ and an ‘outside force.’²¹ The inside force is where expeditionary advanced bases, and by extension FEAB, play a significant operational shaping role. The outside force, composed of high-capability/low-capacity platforms (i.e. aircraft carriers), operates outside the enemy threat ring, and “exploits opportunities generated by the inside force.”²² Granted, the inside force will continue to leverage the strengths and relative ease of operating EAB from islands. However, FEAB can provide a “more dispersed, resilient, and hard to target forward basing infrastructure,” and therefore negates the “vulnerabilities of concentration” associated with operating from fixed locations, while still “generating the virtues of mass” inherent in the high-capabilities of the outside force.²³

Before delving into FEAB’s benefits with respect to attaining mass, it is first necessary to discuss how FEAB can mitigate the vulnerabilities associated with operating EAB from islands. Much of the current thinking on EABO focuses on operating from islands as a means to attain localized sea control and air superiority – not unlike World War II in the Pacific. However, if the central idea driving the development of EABO is persistency and resiliency it may be necessary to operate from EAB not tethered to terra firma; as was the case when the U.S. was denied basing rights from its longtime partners Saudi Arabia and Kuwait during the Tanker War. The

mobile seabase concept planners, specifically General Crist, understood the negative implications of operating within and around the Persian Gulf. They also understood that persistence and resiliency in a contested maritime environment is hard to achieve given the risk averse nature of strategic and operational decision makers. Accordingly, he and his planners developed a concept that overcame geo-political vulnerabilities associated with having to rely on foreign nations to achieve operational success.

The Pacific Ocean is ideally suited for island-based EAB. However, there are other parts of the globe where using land-based EAB may not be feasible. General Crist found that FEAB give you to the ability to obviate the need for basing rights. The Persian Gulf, the Red Sea, the Baltic Sea, the Mediterranean Sea, to name just a few, are all areas where FEAB may be the primary means of projecting persistent and resilient combat power from the sea vice an alternative means. Scenarios abound where the U.S. may want to avoid placing large naval vessels close to shore, and in the absence of any viable land-based EABs, will choose to rely instead on FEAB.

Land-based EAB or 'zero-speed' air craft carries, like the actual aircraft carriers they are designed to protect and augment, are still incredibly vulnerable. Even the Chinese see the disadvantages of relying solely on land-based EAB, this despite all the time, effort, and resources spent constructing dual use islands in the South Pacific. In 2015, the Chinese military began working with two Chinese companies to develop large, semi-submersible floating platforms capable of performing a range of military operations.²⁴ China's interest in FEAB may come from the realization that their land-based EAB, like the Japanese army during World War II, are vulnerable to attack, and are consequently looking for more resilient and supplemental options.

Admittedly, land-based EAB will remain the mainstay of EABO; but it is here where the FEAB really contributes to mitigating the inherent vulnerabilities associated with operating from land. For example, a rather large EAB, manned by 350 personnel, is operating in the South Pacific. It contains an expeditionary airfield, long-range ISR capabilities, and several long-range anti-ship cruise missile (ASCM) batteries. Located not far offshore are several FEABs moored to the ocean floor. Each FEAB has a different function. One FEAB contains living quarters, another contains an ammunition supply point that houses additional long-range missiles for the firing batteries, yet another provides a redundant ISR capability to the one found on land, still another provides bulk fuel, and finally there is one large enough to act as an auxiliary airfield should the main airfield become damaged. With the ability to submerge when not in use and move daily, FEAB in this sense act as supplementary fighting positions should the primary land-based EAB fighting positions be knocked out – decreasing vulnerability of the land-based EAB through redundancy and resiliency.

Mitigating vulnerabilities is tied directly to the “virtues” of generating mass. Gone are the days of large fleet engagements. Today, the effect of mass is not entirely designed to overwhelm the enemy physically, but cognitively. Mass now infers presenting the enemy with a vast array of targets, some real, some not; and attacking him from different vectors in order to overwhelm his ability to react. In this manner FEAB, dozens of them, can contribute by swarming. Again due to their low cost, numerous FEAB, floating in the ocean, each containing an ASMC pod, linked to a high-flying aircraft with a targeting pod could launch salvoes of massed long-range precision fires. In this instance mass is not achieved by building a better quiver, but by building more and cheaper quivers that can hold a wide-range of arrows. The ability to mass then is derived from what has been termed “winning the hider/finder competition.” The hider finder/competition is

where the FEAB provides its most substantial benefits because it can essentially do both – hide and find. All from a high-capacity, low cost platform.

Winning the Hider/Finder Competition

In order to find enemy targets one must have the ability to first hide. Subsequently, FEAB's ability to hide will be discussed first. It is incredibly difficult to hide an island, or for that matter large aircraft carriers; although the same could be said for floating concrete FEAB. But what's makes FEAB different are their ubiquity and ability to quickly regenerate. Of all the benefits inherent in FEAB, perhaps its role in deception operations is its most promising.

Deception in this instance is tied to FEAB's ability to complicate the enemy's ability to simultaneously find numerous shore-based EAB and FEAB. The ocean is a large place and the enemy will presumably have an idea where the U.S. may want to operate EAB from. However, by their sheer presence and numbers FEAB will obfuscate the enemy's operational picture and retard his decision-making ability. FEAB could be used as platforms to mimic high-value, low-density platforms by emitting false electro-magnetic signatures. These electro-magnetic signatures would resemble a cruiser, destroyer or MPS ship. Given a self-propulsion capability, FEAB is the inside - "inside force," like chaff used to confuse radars, numerous unmanned FEAB can jam enemy radars, enabling other outside platforms to attack. At the very least the FEAB's presence, acting as decoys, will make the enemy commit precious assets to identify what it actually is or perhaps cause it to fire equally precious missiles to destroy it. Essentially, the FEAB contributes to the hider competition by hiding in plain sight. Its survivability is enhanced by its constant relative movement and dispersion. Instead of one land-based target, the

FEAB presents the enemy with multiple lethal, low-cost targets, which are ostensibly unknown to the enemy initially. Indeed, the FEAB are EAB “in being.”

The hider/finder competition is inextricably linked to the recon/strike competition. The ability to tailor FEAB based on the mission makes them an ideal platform for winning reconnaissance competition, and subsequently the strike competition as well. The recon/strike complex is at the heart of the FEAB concept; while according to the U.S. Army’s Mad Scientist Initiative the recon/strike complex is “essential to the tactical fight, whereby winning it may not assure an operation’s success; but losing it will ensure failure.”²⁵ Indeed the multi-role FEAB has the capability to do both – reconnaissance and strike, at a decidedly cheaper price.

In truth, the U.S. maintains numerous assets capable of providing long-range ISR, however due to the dangers of operating within the enemy’s threat ring it is dangerous to employ them, at least initially, there. Instead FEAB with an inherent long-range ISR capability would operate at the forward edge. One option for placing an ISR capability aboard a FEAB could come from unmanned aerial systems (UAV). The Marine Corps is currently developing a Vertical Take Off and Landing (VTOL) UAS platform – the MAGTF Unmanned Expeditionary (MUX) Capability. The MUX “will be a multi-sensor, electronic warfare, C4 bridge, anti-air warfare strike capability at ranges complementary to MV-22 and F-35.”²⁶ Thus, FEAB are ideally suited to accommodate the MUX by providing an additive or redundant platform from which the MUX can operate from. Operating from the FEAB, the future MUX will extend anti-aircraft warfare coverage and deep surveillance capability from a persistent and relatively cheap platform; severing not only the Marine Corps’ reliance on naval shipping, but reliance on land as well.

Another option for a long-range ISR capability, not requiring the advanced technology associated with MUX, is the use of helium-filled balloons tethered to FEAB; balloons similar to the Army's Aerostat that operates from an altitude of 1500 meters with the ability to see well beyond 160 kilometers, and stay airborne for 20 days.²⁷ A FEAB with a tethered Aerostat balloon gives a whole new meaning to persistence at a relative low-cost. A FEAB dedicated to ISR could be linked to other FEAB acting as ASCM or anti-air fire bases. Further supplementation provided by FEAB is its potential ability to vector high-capability outside platforms onto enemy targets using its inherent ISR strengths. This self-contained, low-cost, floating forward observer and fire base network compresses the recon/strike targeting cycle and extends the operational reach of the JFC, while enabling him protect other high value, low-density strike platforms.

By extending the range and persistence, FEAB make it not only an ideal finder, but an ideal picket. Obviously, you do not place your commanding general on picket duty. The same thing could be said today with naval pickets. A screen of FEAB, acting as pickets, can accomplish two things. First, a screen of FEAB operating forward of land-based EAB, can provide early warning. Second, the multi-role capabilities of FEAB make them hard to avoid by the enemy. Just their mere existence, requires an enemy to waste time, effort, and resources on high-capacity targets, which causes the enemy to deploy and unmask their high-capability assets before they are ready.

All of these capabilities associated within hider/finder competition and EAB operations writ large cannot take place without sustainment. Up this point much of the discussion has centered on the operational benefits as it relates to the enemy. However, FEAB also supports Mr.

Corbett's final imperative for a persistent force: to create a more resilient sustainment infrastructure capable of supporting distributed operations.

Creating a More Resilient Sustainment Infrastructure

In 1986, the floating oil barge construction platforms of General Crist's mobile sea base concept did not have any inherent long-range fires capabilities. Instead these barges were used as mother ships, whereby they supported and maintained the helicopters and patrol boats whose job was to maintain sea control. In one picture obtained by the author one of the barges had three MK-III patrol boats on its deck. Similarly, FEAB can significantly contribute to sustaining platforms in an A2/AD environment. As has been briefly mentioned, FEAB located close to shore-based EAB can act as floating dumps for fuel, ammunition, food, and maintenance parts. If properly waterproofed, these floating dumps can submerge to either hide from the enemy's long-range fires or mitigate their effects.

Further, FEAB can provide resilient and forward postured sustainment even when not located in close proximity to land-based EAB. FEAB could act as logistical forward-arming and refueling points for MV-22s, UAVs, patrol boats, and Unmanned Underwater Vehicles (UUV). The relative small size and its ability to submerge when not in use makes FEAB ideal UUV sub tenders, capable of maintaining and refueling UUVs. UUVs are designed to remain undetected, much like the F-35. Unfortunately, the F-35's biggest weakness is the fact that it is tethered to non-stealth tanker aircraft. During World War II, the Allies were more successful at finding German U-boats when they came to the surface to get resupplied than trying to locate them while they were submerged. Likewise, resupplying a UUV with fuel and additional missiles/torpedoes could be its biggest weakness and can be mitigated through the use of FEAB capable of remaining submerged, allowing UUVs to remain undetected even while being serviced.

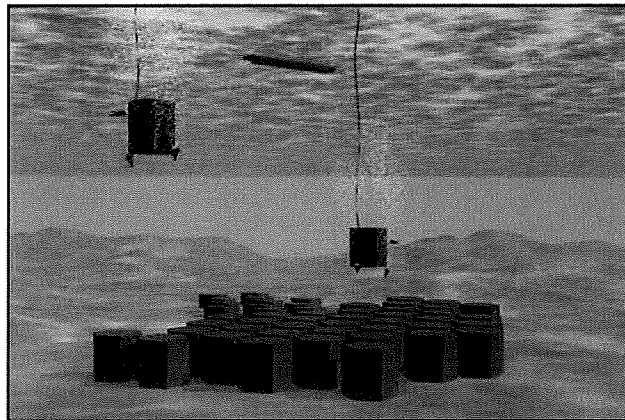
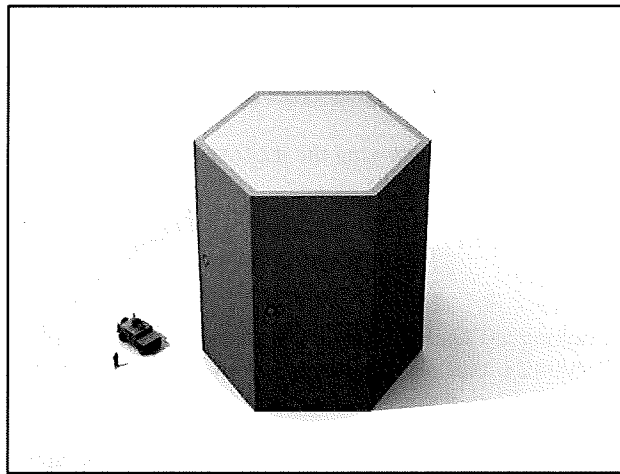
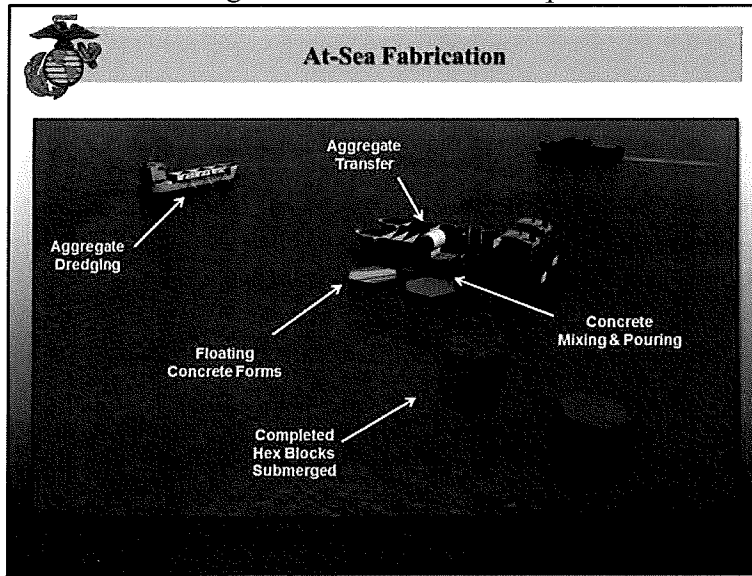
Granted, the U.S. will continue to rely on other sustainment platforms, but the resilience of FEAB as floating dumps protects the high value sustainment platforms until the inside force has achieved sea control and air superiority.

Conclusion

The FEAB concept is not a panacea, but is designed to supplement the inherent strengths associated with shore-based EAB and provide the JFC with alternatives in an A2/AD environment. If, as Mr. Corbett suggests, persistence is the key to attaining and preserving sea control and air superiority, then FEAB can make substantial contributions to this effort. It contributes by providing “a more amorphous forward basing infrastructure that clouds rather than clarifies enemy situational awareness, expands capacity, and supports distributed expeditionary capabilities forward.”²⁸ FEAB can contribute to this amorphousness, expand joint force capacity, and support distributed operations in every respect. Ultimately, FEAB ensure that the JFC can “better distribute [his] sophisticated but vulnerable capabilities and support and sustain less costly and more distributed weapon and sensor platforms that can survive an initial strike due to their inherent resiliency.”²⁹

For the Marine Corps and Navy further development and investment in the FEAB concept is warranted. Of course, traditionally, the Marine Corps’ *raison d'être* was seizing shore-based EAB through amphibious assaults, however operating and fighting from FEAB may in the future be a close second.

Figure 1. SEAMOD Concept



¹ David B. Crist, "Joint Special Operations in Support of Earnest Will," *Joint Forces Quarterly*, (Autumn/Winter 2001-2002)16.

² *Ibid.*

³ *Ibid.*

⁴ *Ibid.*

⁵ *Ibid.*, 18.

⁶ *Ibid.*, 22.

⁷ Arthur Corbett, *Innovation and Future War: Confronting the A2AD Challenge* (MCCDC, Marine and Naval Concepts, Quantico, VA, April 24, 2018) PowerPoint presentation.

⁸ *Ibid.*

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