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New Ideas in Gaining Military Access

by

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

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

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Abstract of

New Ideas in Gaining Military Access

Presence and access have long been operational goals of the United States in areas of strategic interest. Yet, access is by no means assured, and may be markedly hindered by the degradation of major ports due to chemical attack, mining, or destruction of port facilities. Further, access to satellite launch facilities may also become problematic because of potential launch site backlogs during a crisis. Solutions to these problems might include using some of the methods and technologies that have been developed outside of the Department of Defense (DOD). Therefore, the thesis of this paper is that through an examination of alternative maritime technologies and methods, the researcher may be able to present options to the combatant commander that can improve access ahead of time. Operations including devices such as multi-purpose buoy systems, fixed ocean stations, oil industry support vessels and semi-submersibles are examined and debated with regard to their feasibility in performing or aiding in future missions. Specifically, tasks such as: improving entrée into emergency ports; facilitating logistics over the shore operations; area control over oceanic oil fields; and network centric operations (e.g., real time weather information, early warning, and emergency satellite launch) are addressed. Secondary benefits are also considered including: increased confidence building with host nations; and hands-on experience for U.S. forces working in foreign waters. The conclusion provides a final assessment of the investigation and answers the question: are there feasible alternative maritime technologies available that can aid the combatant commander in gaining access in today's operations?

New Ideas in Gaining Military Access

1. Introduction

Access, or the ability to project American military power into a region during a crisis, has long been a strategic interest of the United States. Unfortunately, during times of crisis, critical access points, including major port areas may not be available to U.S. forces due to chemical and biological attack, heavy mining, or destruction of port cargo handling facilities. Further, access to satellite launch facilities may also become problematic because of potential launch site backlogs during a crisis. Therefore, the thesis of this paper is that through an examination of alternative maritime technologies and methods, the researcher may be able to present options to the combatant commander that can improve access ahead of time. With regard to this exploration, several case studies are examined which illustrate potentially useful future operations. The conclusion provides a final assessment of the investigation and answers the question: are there feasible alternative maritime technologies available that can aid the combatant commander in gaining access in today's operations?

2. General Benefit Of Buoys For Gaining Access

One idea for increasing access to a region ahead of time would be to install navigational buoys in emergency port areas. For example, an aggressive "aids to navigation" program in places such as Korea, Taiwan, and the Persian Gulf might substantially increase the safety of navigation into primary, secondary, and emergency port approaches. An "aids to navigation" buoy installation operation can also encourage host nation cooperation from the safety and economic development[1] standpoint, and may even facilitate cost sharing.

A buoy operation from a more militarily applicable standpoint might involve the pre-positioning of large navigational / mooring buoys. Large navigational buoys in peacetime can be used as anchoring stations in a contingency, therefore expanding options in the Joint Logistics Over The Shore (JLOTS) environment if a primary port is lost. The current JLOTS doctrine (Joint Pub.4-01.6) envisions the movement of military cargo from anchored vessels to shore without the use of conventional port facilities. In fact, the current concept requires U.S. vessels to anchor and discharge cargo to floating causeways or smaller landing craft for the transportation of equipment ashore[2]. Prepositioned buoys can assist the JLOTS process by stabilizing the Assault Follow-on Echelon Ships (AFES) during inclement weather. For example, two buoys well anchored and properly spaced could provide the dual use function of acting as navigational aids in peace, and as storm-secure mooring points for surge and sustainment vessels in war. Also, because of their generally inexpensive nature, buoy tactics and placement can also be a source of nation-to-nation cooperation and confidence building.

It is interesting to note that the U.S. Maritime Administration, in a cooperative program with other federal agencies and local governments, recently installed the first of two experimental mooring buoys in the Mississippi river. The purpose of these buoys is to act as way stations for vessels transiting through the Mississippi lock and dam system[3]. The operation was a success because it acted as a federal - local confidence building measure, while facilitating access to the lock system. It is reasonable to expect that a similar U.S.-Korea or U.S.-Kuwaiti buoy project could also build confidence and demonstrate friendship.

Another benefit of installing a navigational / military buoy network in a tertiary or emergency port area would be mission related work experience for our naval forces. U.S. Navy minesweepers could do excellent work in light navigational buoy installation, while gaining valuable on the job training in approaches that they may, someday, have to sweep. Additionally, recent news reports indicate that destroyers may also soon have the capability to work in the mine warfare field,[4] further expanding the number of vessels and naval personnel that might gain experience in this area.

3. Access Advantages Of Smart Buoys and Small Fixed Ocean Monitors

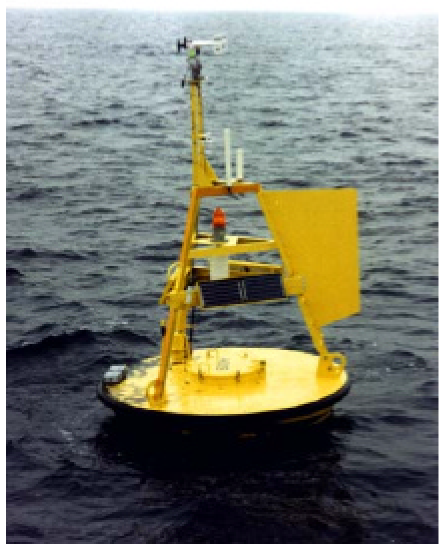

Figure 1. Long range, real time sensing. This is a NOAA, 3-meter weather buoy moored off the coast of Delaware Bay. To see real time weather information from this buoy and others in the U.S. see: http://www.ndbc.noaa.gov/. Photo: Courtesy of NOAA.

The National Oceanographic and Atmospheric Administration (NOAA) and the U.S. Coast Guard (USCG, or Coast Guard) are utilizing buoys and small fixed sensing stations in a wide number of ways that can also "help open the door", or pick "which door to open" when applied to gaining U.S. access overseas.

If the United States gains host nation support for an improved system of navigational buoys, these buoys can be packaged with off the shelf monitoring systems with "room" left over for state of the art electronics as time progresses. The thought of unmanned fixed intelligence gathering devices in the inshore regions of the Persian Gulf, Korea, and Taiwan is a promising operational concept.

There is a long history in the use of ocean sensing devices, and the field is still growing. As background, electronic devices for recording and transmitting ocean weather data have been used since the early 1970s by NOAA,[5] and could be expanded for military application. Specifically, NOAA uses a series of electronic "Nomad" buoys that drift in the Pacific Ocean, and relay weather data to passing satellites[6]. Innovation in remote station devices is also increasing, as this type of ocean sensing can also be conducted from fixed locations. NOAA shore side ocean-monitoring sites include offshore drill rigs, and remote locations in the Pacific Ocean and the Sea of Alaska.

Technology is also advancing. For example, still camera photos can be transmitted in real time from small shore sensors, via the Internet[7]. Even the Environmental Protection Agency is getting on board with ocean sensing. Currently, the EPA uses monitoring buoys for oil pollution detection and water quality monitoring.[8] For the military, these elements can be used in operations to improve weather forecasting and intelligence, surveillance, and reconnaissance (ISR) in combination with existing methods. In sum, with current technology and low off the shelf cost, an operation could be conducted to upgrade navigation, mooring, and / or sensing buoys at potential JLOTS locations. From an operational standpoint, if one of the sites monitored is clearly above sea state 3 (i.e., wave heights above 5 feet), a commonly defined limiting condition of over the shore operations, the commander may want to seek other landing sites. In any case, the immediate results of any pre-landing sensor installation operation will be real time weather data at a place of the commander's choice.

Existing methodology for tracking sensing buoys makes buoy operations even more capable and feasible. For example, with a laptop PC, over 100 buoys can be monitored simultaneously to ensure they are positioned correctly, are operating, and have not been tampered with[9]. In the future, these newly installed or upgraded buoys could be used for other network centric missions as well, including microwave transmission relay (facilitating cell phone usage offshore), radar, and sonar reconnaissance. Yet, even with today's technology, the use of buoys and unmanned fixed sites as sensor stations is intriguing.

An example of an unmanned fixed sensor in use today, with a potential for military utility, is NOAA's "Coastal Marine Monitoring" or "C-man" station. C-man technology is a proven provider of distant weather data, and is rugged enough for the most extreme climates. For instance, during the summer and early fall months of 1999, NOAA's buoy branch, the National Data Buoy Center (NDBC), installed three new C-MAN stations in areas surrounding the Kenai Peninsula of southern Alaska[10]. This was done in order to provide weather observations where a lack of access, and the harshness of local conditions precluded human monitoring. The data from this operation is now available in real time via the Internet. Interestingly, it is now possible to call up real time weather conditions in almost all offshore regions of the U.S. by accessing the NDBC on the Internet[11].

Figure 2. Weather monitoring in difficult places. This fixed sensor was installed on an offshore platform 90 miles Southwest of Anchorage, Alaska on 31 Aug 1999. Photo: courtesy of NOAA.

Therefore, one potential electronic buoy operation, in addition to the installation of physical buoys previously discussed, would be to place sensing aids in strategic locations. The Kuwaiti coast is one location where weather and visual sensing equipment could be used to monitor the coastline for general activity, and real time sea conditions. Data monitoring could be done from some distance away.

4. Counter Argument to The Use of Reconnaissance Buoys and Small Fixed Sensors

There are several counters to the use of buoys in sensitive areas. NOAA has reported that some of its buoys have been vandalized,[12] and at least one buoy has been effectively destroyed by collision with surface vessels. Another problem is that of host nation support. Buoys require host nation concurrence for placement and, while they are typically solar powered, do require maintenance. Upkeep will require a long-term commitment by either the host or sponsor. Lastly, contemporary civil marine electronics are basically limited to: weather condition monitoring; radar reflection enhancement (e.g., RACON, a device which triggers a distinctive radar signal on a passing ships radar signal); and environmental monitoring. In sum, non-DOD sensors are somewhat deficient for military purposes. Therefore, significant technological developments would have to be forthcoming in order for buoys or shore based ocean sensors to do more than act as mooring positions, navigational aids, weather recorders, or pollution monitors.

5. Response to Counter Argument on Sensing Devices and Buoys

Once buoys or sensors are introduced cooperatively into a region, they can be improved as technology progresses. Some of the first improvements would surely include upgraded visual devices (web cameras), sonar, and radar sensing devices. Upgraded buoys may even have the capability of directing missiles onto targets. Even with today's basic non-DOD technology, buoys can help with weather forecasting and navigation.

6. The Use of Fixed Offshore Structures to Facilitate Access

In order to conduct an objective analysis of the potential use of near-coastal fixed structures for gaining military access, the researcher took a close look at the experiences of one agency in actually working with this type of equipment. Research indicated that even though a system appears to be operating successfully, this does not mean it is without significant problems.

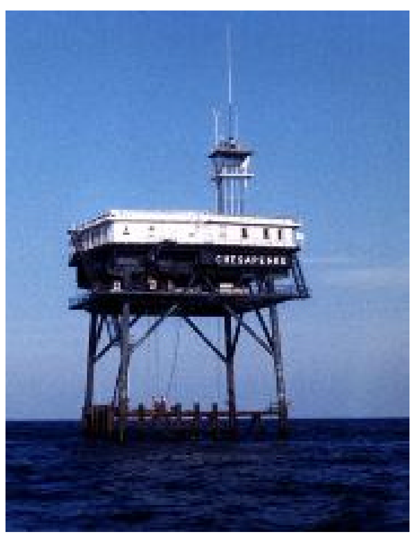

Figure 3. Chesapeake Light. Similar to the Ambrose Light station (in existence from 1967 - 1996), Chesapeake Light is a fixed station located at the mouth of Chesapeake Bay. Real time

weather and photo capabilities can be accessed at: http://www.ndbc.noaa.gov/station_page.phtml?$station=chlv2. Photo: courtesy NOAA.

This is the story of the Ambrose Light Station, located approximately 8 miles off the approaches to New York harbor. In 1823, the predecessor agency of the U.S. Coast Guard sponsored the first “Lightship" to be permanently anchored outside of a major harbor. This vessel came to be known as SANDY HOOK LIGHTSHIP, and later AMBROSE LIGHTSHIP[13]. Through the mid-1900's commercial traffic vessels hit several of these ships. On 30 March 1950, AMBROSE LIGHTSHIP was actually rammed by the Grace Lines vessel SANTA MONICA. Fortunately, there were no casualties to the lightship crew, but the vessel had to be towed to port.[14] Consequently, in order to better secure a fixed navigation station at one of the busiest shipping channels in the world, the Coast Guard decided to replace the lightship with a fixed tower in 1967.

Before the new Coast Guard tower was built, engineers were able to review the lessons learned from the ill-fated U.S. Air Force oceanic air defense tower operations of the 1950's and 1960's. These towers were built off of the Northeast coast of the U.S., and for a time provided the North American air defense system with an additional 30 minutes of warning on potential air attacks coming from the North Atlantic. Each tripod base held three levels of steel decking covering approximately on half acre. The structures were distinguishable from oil rigs because of their large protective radar domes that rose from the base element. This operation was effectively halted when the badly constructed "Texas Tower #4", located 75 miles south of Nova Scotia, collapsed in a North Atlantic storm in 1961 resulting in the loss of 27 men.[15] In summary, problems with the Air Force system included: under engineering for the extreme sea states in the North Atlantic;

faulty installation of the tower; and the unanticipated action of ocean currents in scouring away platform leg supports.

With the Air Force experience in mind, the new (1967) Coast Guard light station was prefabricated and made much more compact than the almost half acre sized "Texas Towers." To conserve space, the platform was designed to be two decks high with the roof also serving as an effective heliport. The lower deck housed the fuel and water tanks while the upper deck provided living quarters for the 6 assigned Coast Guardsmen. Four crewmembers were on duty at all times, and served two weeks on and one week off. The 1967 cost of design and installation of the fixed system was $2.4 million, a good value to the taxpayer as the light-tower performed well for almost 30 years. With the advent of modern electronics, the crew was permanently removed from the station on 15 March 1988, and control over the tower transitioned to electronic means via the Coast Guard station on Governor's Island.[16]

Unfortunately, the Ambrose Light Station of 1967, a familiar beacon to mariners throughout the 1970's and 1980's, was struck by a tanker and damaged beyond repair on 5 October 1996. The most serious damage to the tower included the loss of a 15-foot section in one of its four legs. Temporary repairs were performed to stabilize the structure until the $4.5 million funding was secured for the tower's replacement. The new Ambrose Light is now a fully automated "aid-to-navigation," operating on solar power and nickel - cadmium (NICAD) batteries, and is still capable of sending a beacon of light out to a range of 18 miles.

Sadly, the pattern of damage seems to continue. For the third time in 50 years, on 24 January 2001, a bulk freighter struck the new (1996) Ambrose Tower. Due to the incident, the solar battery system that provided power to the main light, the sound signal, and the RACON was disabled. An emergency backup light and the NOAA meteorological C-man station were also severely damaged during the accident.[17]

7. Benefits of the Military Use of Fixed Offshore Structures

While the history of the Ambrose light station bears many disappointments, the above case also illustrates some positive aspects of near coastal fixed towers. First, the story highlights the incredible long-term success of a fixed navigation station in one of the busiest ocean traffic patterns in the world. Second, information derived from this case reveals that the structures themselves are relatively inexpensive and can be pre-fabricated and installed when and where necessary. There are specific operational benefits as well.

The secure nature of offshore structures makes them excellent candidates for becoming emergency sealift offload platforms. A small dock extension can be added onto an existing ocean tower structure to facilitate the offload ramp of a surge or sustainment ship. The new docking structure could also assist or replace weather dependent floating causeways in the JLOTS environment as the first point of contact for a RORO. With additional complementary mooring buoys, a light station (modified with a small dock) can also provide a place for the ship to tie up. Moreover, the U.S. Navy is already utilizing related Cargo Offload and Discharge System (COLD) techniques, including the newest elevated systems, built from the shore outwards to facilitate the over the shore process.[18] An improved light station could expedite the process with a seaward docking position to work from, or the structure could act independently as a transition station from the ocean-going vessel to the landing craft.

Modern light stations such as Chesapeake and Ambrose Light make excellent helicopter platforms. Potential future military helicopter operations from these devices could include: the use of a tower platform as a base for oil production security; as a vertical replenishment (VERTREP) base of operations; or as a relay point for special operations.

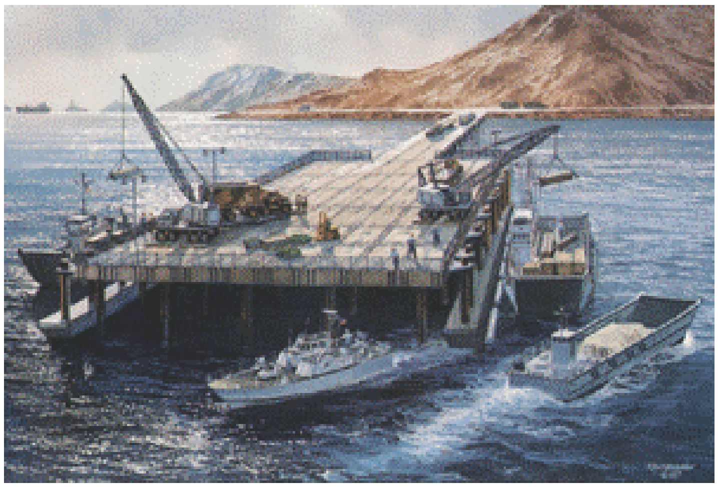

Figure 4. ELCAS: The Navy's new logistics causeway. Part of the Navy's Cargo Offload and Discharge System, the 3000' ELevated Causeway System (ELCAS) was delivered in 1998. Photo: U.S. Navy, Chief of Naval Information[19].

Most intriguingly, modern platform designs from the oil industry make tower installation possible in parts of the ocean once thought of as too deep for fixed operations. Recently, a fixed oil rig tower was installed in over 1,130 feet of water.[20] This is important because if a fixed structure can be built outside of the 200 nautical mile economic exclusion zone of a country, host nation permission is not required for installation and operation.

Lastly, some options for increasing access in various regions, with proposed purposes in parentheses, could include a series of operations to upgrade oil rigs and light stations: in the Persian Gulf (for ocean monitoring); the Taiwan Straits (for air warning and missile defense); and along the approaches to the major South Korean ports (for antiinfiltration and as alternate sealift offload points). These operations could be carried out by Construction Battalion (SEEBEE) personnel, or host nation support forces with U.S. supervision. In the absence of the upgrade option because of the denial of access to existing oil rigs or light stations, new construction could be an option.

8. Counter-Argument to the Military Use of Fixed Offshore Structures

There are several risks regarding the use of fixed offshore structures in military operations. First, platform structures are immobile and are vulnerable to oncoming vessels, bad weather or enemy attack. Further, fixed rigs cannot act as self-sustaining operating platforms for long periods of time because of their isolated state. There are other disadvantages to the offshore structure as well.

Ocean towers are vulnerable to attack. Further, while attempts have been made to provide a military defense from fixed platforms, these defenses are often ineffective. For example, armed ocean platforms have been defeated in several engagements in recent years including: the successful U.S. Naval operation against two Iranian oil rigs by surface ships and helicopters in 1988[21]; the successful assault on Iraqi oil rigs and support craft by American special forces helicopters in 1991[22]; and the infiltration of CHEVRON oil platforms by protesters off the coast of Nigeria in 1999.[23] In the latter case, the oil platform was eventually secured by helicopter borne infantry. In counter argument summary then, fixed marine platforms, because of their immobility, are vulnerable to damage, attack, and infiltration.

9. Response to Counter Argument to the Construction of Fixed Offshore Structures

The potential vulnerability of ocean towers has not negated their usefulness in the 21st century. These facilities should not be seen as independent "forts" or static structures, easily overcome by the elements or hostile forces. Rather, offshore platforms should be seen as nodes in a network of sensing and access improvement devices whose individual destruction or debasement would not be the critical vulnerability in a future operation. Fixed structures can facilitate military investment even if some of the elements have been destroyed.

10. Final note on the Construction of Fixed Offshore Structures for Military Purposes.

In the 21st century, marine platforms are providing access for foreign countries beyond the concept of the "watch tower" or "navigational aid". For example, nations are now using armed artificial islands to stake out territory in contested areas of potential oil exploitation. The case in point in this regard is that of the Spratly Islands. In the Spratlys (and Paracels), several nations including China, Taiwan, Vietnam, the Philippines, Malaysia, and Brunei make some claim of ownership over some or the entire archipelago. In order to validate these claims, the contestants have built fortified artificial islands where only reefs or in some cases only shallows existed before. These operations are being pursued because the occupation of territory often carries greater weight in international courts than concepts such as historical use. Therefore, in order to prove occupation and in exercise of sovereignty, China, Vietnam, Taiwan, and Malaysia have built artificial structures on the smallest of atolls to prove sovereignty, and exercise defense.

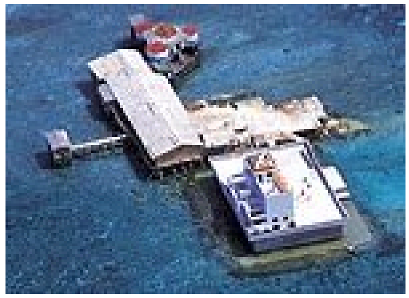

Figure 5. <u>An example of a fixed ocean defensive structure</u>. This Chinese complex was recently constructed in a shallow area of the Spratly Islands known as "Mischief Reef." Photo: Phillipine Government, 1998.

The situation was recently summarized by the Taiwan Times newspaper:

> "Over the last two decades, there have been several military conflicts in the South China Sea -- the PRC versus Vietnam in the Paracel Islands in 1974, the PRC versus Vietnam on Johnson Reef in 1988, the PRC versus the Philippines on Mischief Shoal in 1995 and fishing clashes between the PRC and the Philippines in 1999 and between the Philippines, Malaysia and Vietnam. Malaysia's occupation of Investigator Shoal and Erica Reef in June 1999 prompted protests from the ROC and the PRC. Later, Vietnam's expansion and construction of structures on Oct.13, 1999 on Tennent Reef, Cornwallis South Reef and Alison Reef (all in the Spratlys and all first occupied by Hanoi in 1992) triggered protests from the Philippines and the ROC government."[24]

The hottest of these conflicts was probably the confrontation of 1988 in which China began construction on Fiery Cross Reef, also claimed by Vietnam. Vietnam then engaged the Chinese in a battle near the reef in which three Vietnamese ships were sunk and 72-75 Vietnamese were killed. However, the issue has recently abated somewhat with the signing of an agreement that no nation with facilities, platforms or artificial islands will seek further improvement.[25]

From the operational standpoint, if the United States wanted to "stake a claim" in a disputed area or show that we are "here to stay", the fixed ocean platform is one means of doing so. The operational lesson from the Spratly Islands case, and especially the Peoples Republic of China-Vietnam naval engagement of 1988, is that if the United

States ever chooses to stake a claim with a fixed structure, it must also be willing to commit a substantial naval presence to defend it.

11. Offshore Vessel Technology in Improving Access

There are alternative maritime technologies that can be exploited for gaining access based on developments in the offshore oil industry. One concept, and the subject of millions of dollars in research, is the Joint Mobile Operating Base (JMOB). The JMOB idea is to use existing commercially developed offshore semi-submersible technology in the construction of a large floating airbase that can be assembled in the theater. The theory driving this idea is based on the phenomenon that a submerged submarine at periscope depth acts as a very stable platform. At depth, the submarine is effectively immune from the wave action above it, providing a steady periscope view. The offshore oil industry has capitalized on this anomaly by constructing a series of self-propelled offshore semi-submersible vessels (SSVs) for a multitude of purposes. While en route to the oilfield, the vessels transit in an unballasted mode and with a draft of approximately 22'. On arrival, the twin submarine like hulls are filled with water, ballasting the vessels down to a new draft of over 120' in some cases. The increased draft, in combination with the previously mentioned undersea phenomenon, creates a platform stable enough to drill for oil in several hundred feet of water.

12. Military Application of Offshore Technology

The military applications of the semi-submersible JMOB system, which will eventually involve the assembly of as many as six vessels for the construct of a mile long floating runway, will be quite broad. Yet, JMOB is more than a floating runway concept. In reality it will someday be a self-contained mega base of operations. For example, besides acting as a runway, the vessel will also be able to dock and handle cargo from several full sized ships simultaneously. In addition, there will also be quarters for thousands of transiting troops.

JMOB is certainly on its way, but all indications are that it will be expensive. Thus far, the navy has spent over $60 million in research, development and tank testing to see if the concept will work. However, with a modern C-17 requiring a minimum of 3,000 feet of runway[26] and each 1,000 ft section of the JMOB, estimated to cost over $750 million[27], the final cost of the system will certainly be in the billions of dollars.

So what is the impact of this technology on naval operations today and how can this help military access? First, the navy can put existing SSVs to use in current military operations fairly quickly through charter arrangements. SSVs can be especially helpful in long-term area presence operations because of their stability, and design for long term stationing. Additionally, most semi-submersibles are also helicopter qualified. In addition to supporting helicopters, small vessels such as Rigid Inflatable Boats (RIBs) and Patrol Coastal (PC) vessels can utilize the SSV as a refueling stop or supply depot. SSVs could be used in the Persian Gulf to monitor U.N. Security Council Resolutions against Iraq, or in the Caribbean as anti-drug enforcement platforms. The advantages of the SSV include: low overhead cost; small crew size; greater physical stability for aviation and small vessel operations; ability to relocate; innocuous outside appearance; and the turn-on, turn-off capability of a vessel charter, which can provide great flexibility and versatility.

An excellent SSV choice of platforms for one of these operations, for example, would be MCDERMOTT DERRICK BARGE 101 (DB 101). The DB 101 is 480' long, is capable of supporting a force of over 960 men (four to a room), and has a crane with a lifting capacity of over 150 tons[28]. Already rated for helicopter operations, the vessel transits at speed of 10 knots with a 22' draft, but quickly transition to a stable support platform by incorporating eight anchors and a 77' draft in the submersible mode. While it may seem odd to use civilian oil industry equipment in military operations, the concept is not a new one. Oil production vessels have been used in combat operations in recent history. Operation PRIME CHANCE I is an excellent example.

13. Offshore Support Vessels in Combat: Operation PRIME CHANCE I

In 1987, during operation EARNEST WILL, The Commander of the Middle East Force requested joint special warfare assets in order to assist in defending newly reflagged tankers against Iranian aggression. In support of this operation, the Middle East Force decided to convert two oil servicing barges, HERCULES and WIMBROWN VII, into mobile sea bases. A summary account of the operation, which became known as PRIME CHANCE I is provided below:

> "HERCULES and WIMBROWN VII began operations geographically in the northern Persian Gulf. From these floating bases of operation, U.S. patrol craft [10 small boats each] and helicopters [3 helicopters each] monitored Iranian patrol craft in the northern gulf, and deterred their attacks. Within a few days, patrol boat and AH/MH-6 helicopter personnel had determined the Iranian pattern of activity-the Iranians hid during the day near oil and gas separation platforms in Iranian waters and at night they headed toward the Middle Shoals Buoy, a navigation aid for the tankers. With this knowledge, SOF sent three of their helicopters and two patrol craft toward the buoy on the night of 8 October. The AHIMH-6 helicopters arrived first and were fired upon by three Iranian boats anchored near the buoy. After a short but intense firefight, the helicopters sank all three boats. The US patrol boats moved in and picked up five Iranian survivors who were subsequently repatriated to Iran. HERCULES and WIMBROWN VII continued to operate near Kbaran Island, within 15 miles of each other, and sent patrol boats and helicopters on regular patrols. In November 1987, the floating bases were reinforced with two MH-60 Blackhawk helicopters, which were provided

> for nighttime combat search and rescue. As EARNEST WILL (general protection of tanker traffic) continued, U.S. forces wreaked havoc on Iranian vessels, sinking two and damaging five others. In the northern Persian Gulf, Iranian forces fired two Silkworm missiles at the mobile sea barges, but chaff fired by the frigate USS GARY decoyed the missiles. Later that day Iranian F-4 jet fighters and patrol boats approached the mobile sea bases, but fled when the USS GARY locked its fire control radars on them. After subsequent action in which the U.S. shelled two Iranian oilrigs from naval destroyers and frigates, Iranian attacks on neutral ships dropped drastically. On 18 July, Iran accepted the United Nations cease-fire; on 20 August 1988, the Iran-Iraq War ended. In December 1988, the WIMBROWN VII entered a Bahraini shipyard for reconversion to civilian use. The mobile sea base HERCULES was not withdrawn until June 1989. The remaining SEAL teams, patrol boats, and helicopters then returned to the United States.
>
> - "Operation Earnest Will", Special Operations.com[29]

The bottom line is that non-combatant offshore service vessels, including SSVs, can perform a valuable role in certain operations with minimal conversion time. Activation time for WIMBROWN VII, for example, was approximately 90 days.

14. Alternative Military Uses for SSV's

Because of its steady sea keeping and mobility, one former oil industry SSV is now being used as a platform for satellite launches. The semi-submersible drill rig ODYSSEY, which once drilled for oil in the North Sea, was converted in 1997 into the first floating launch pad in support of space operations. Built by the Sea Launch consortium, an investor group made up of Boeing, Kvarner Masa Shipyard, and the Ukrainian and Russian governments, the self-propelled 46,000-tonne structure was designed specifically to seize some of the lucrative satellite-launch market.[30] Truly an international effort, the Ukrainian (Zenit) rocket is loaded at the Sea-Launch base of operations in Los Angeles, CA and then transported to the target launch area in the vicinity of Christmas Island in the Pacific. NEW WAVE I, The first commercial satellite to be launched from such a modified oilrig (for American broadcaster DIRECTV) reached orbit on 16 October 1999. In combination with its control ship, LAUNCH COMMANDER, the Sea-Launch consortium has had at least six successful launches by early in 2001.[31] Prior to the Odyssey, there were only a few places in the world where one could place commercial satellites into orbit. In 1999, the market was distributed among the Americans at NASA's Cape Canaveral, the European consortium (Ariane rockets) in French Guiana, the Chinese at Long March, and the Russians at Baikonur.

Yet, why would anyone want to launch an expensive satellite in a risky sea-going expedition? The *Odyssey* has a couple of valid technical advantages. By sailing to a launch site position on the equator the launched rocket receives a 1,000-mph boost because of the earth's greater rotational momentum there; also, by launching from the sea, there is no danger of a mishap raining lethal debris onto a town or city.

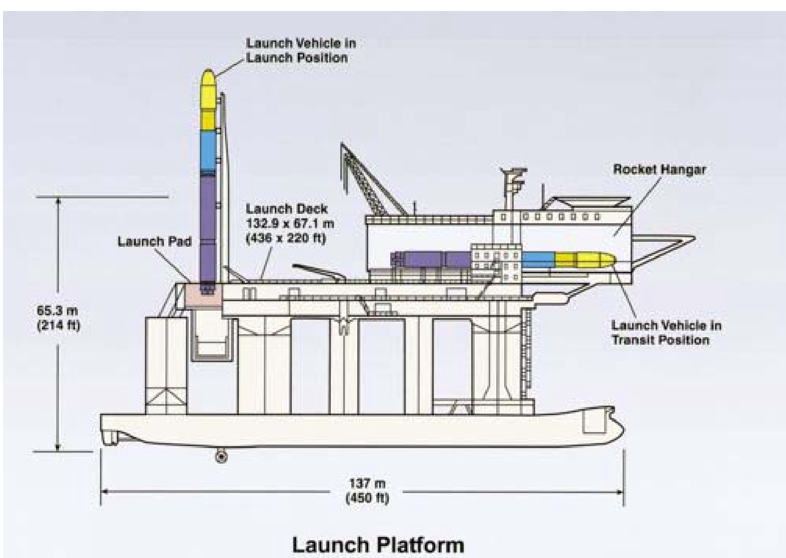

Figure 6. <u>The Self-Propelled ODYSSEY</u>. Side view of the Rocket Launch Platform. Photo: S.P. Korolev Rocket and Space Corporation.[32]

The value of this case is that ODYSSEY is available in the event that access to space becomes a problem. While it has the drawback that it may take two to three months to reconfigure a satellite to the Zenit rocket system, there is a great likelihood that ODYSSEY can be made available in an emergency if other launch facilities are booked up or are overwhelmed with commitments during a contingency.

16. Conclusion

In conclusion, the purpose of this paper has been to answer the question: are there feasible alternative maritime technologies available that can aid the combatant commander in gaining access in today's operations? The thesis of the paper is that through an examination of alternative maritime technologies and methods, the researcher may be able to present options to the combatant commander that can improve access ahead of time. While I have cast a fairly wide net in looking at alternate sources for operations in gaining access for the near term, research in this regard has led to some interesting conclusions and opportunities.

First, from the positive perspective, buoys and small fixed sensors can be used successfully to increase access as aids to navigation, mooring devices, and as monitoring elements. In the future they may do much more. Yet, for today, the confidence building character of international buoy and sensor placing operations, the hands on practice for U.S. servicemen, and the access preparation benefits for emergency JLOTS are strong arguments for these devices in a potential theater of operations.

Second, from the cautionary standpoint, an examination of the experiences of an existing fixed site (e.g., Ambrose Light) indicates that the construction of ocean platforms in a potentially hostile, or busy maritime environment is a tenuous venture at best. In the final analysis, the most pragmatic approach to ocean platforms for military access would be to modify existing structures with sensor elements or docking facilities. Argument and counter argument indicates that fixed offshore facilities provide their best utility in rear areas, or in numbers sufficient to counteract their vulnerabilities. Marine towers are not good bases to defend from, though the Chinese are attempting to use them to gain territory in the South China Sea.

There are other promising technologies available as well. Oil industry equipment including floating repair barges and SSVs can be leased in the short term to help out in military area monitoring operations or in other missions in which control over an oceanic oil field may be required. Lastly, SSVs make excellent staging areas when operations from a stable platform are important. In the end, alternative maritime technologies can help the combatant commander gain access, and should be investigated and exercised as operational opportunities.

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