NAVY NEWS WEEK 9-5

28 February 2019

World Court Says U.K. Should Cede Control Of Islands Surrounding Diego Garcia

February 25, 2019
by Bloomberg

An aerial view of Naval Station Diego Garcia. (U.S. Air Force photo/Sarah E. Shaw)

by Kamlesh Bhuckory (Bloomberg)
The International Court of Justice said the U.K. should hand back to Mauritius control of an Indian Ocean archipelago where a key U.S. naval base is located. "The U.K.'s continued administration of the Chagos archipelago "*is an unlawful act of a continuing character*," court President Abdulqawi Ahmed Yusuf said in The Hague. "*Accordingly the U.K. is under an obligation to bring an end to its administration of the Chagos archipelago as rapidly as possible*," Yusuf said. The United Nations in 2017 sought an advisory opinion from the ICJ, its principal judicial organ, on the legal status of the archipelago. Chagos is part of the British Indian Ocean Territory, which has been administered by the U.K. since 1965, when it paid the then self-governing colony of Mauritius 3 million pounds ($3.9 million) for control of the islands. Between 1967 and 1973, hundreds of inhabitants were removed to make way for the Diego Garcia U.S. military base, which has been used to launch bomber jets for wars in Iraq and Afghanistan. Mauritian Prime Minister Pravind Jugnauth in August obtained the backing of the African Union and about 30 other countries in his bid to have control of the archipelago returned to Mauritius. The request to the ICJ excludes Diego Garcia, he said. **Source: https://gcaptain.com**

This verdict is only advisory, but will exert big pressure on the UK (aswell as the US for whom it is a very important strategic base). Interesting is that the inhabitants were not asked, and they do not think that Mauritius is the right move for them.

PACIFIC OCEAN (Feb. 24, 2019) Sailors assigned to the guided-missile destroyer **USS *Preble* (DDG 88)** observe the approach of the aircraft carrier **USS *John C. Stennis* (CVN 74)** and the ***Preble*** to the fleet replenishment oiler **USNS *Walter S. Diehl* (T-AO 193)** during a replenishment-at-sea in the Pacific Ocean, Feb. 24, 2019. The John C. Stennis Carrier Strike Group is deployed to the U.S. 7th Fleet area of operations in support of security and stability in the Indo-Pacific region. (U.S. Navy photo by Mass Communication Specialist 1st Class Bryan Niegel/Released)

Britain unveils HMS *Warspite* as third in BIGGEST ever nuclear-armed submarines

BRITAIN has unveiled its latest nuclear submarine HMS *Warspite* as the third in class of the Royal Navy's biggest ever subs.

By Henry Holloway / Published 25th February 2019

HMS *Warspite* was unveiled by First Sea Lord Admiral Philip Jones with a series on posts on Twitter. The boat is the third of four new Royal Navy submarines set to be built in Britain to be armed with the Trident nuclear missiles. It will be part of the £31billion project to replace the vessels currently carrying the UK's nuclear deterrent. Royal Navy bosses had already announced the first two in class – with ***HMS Dreadnought*** and **HMS *Valiant***. Known as the Dreadnought-class, the submarines will be biggest ships over their kind ever constructed for the UK. Admiral Jones wrote: "*There can be no doubt that the name **Warspite** is a highly distinguished capital ship name, and entirely befitting one of our future SSBNs. "Submarines that for generations to come will maintain our solemn duty as the ultimate guarantor of our nation's security."*

He added: *"Like her sister submarines, the name **Warspite** has a highly distinguished lineage*." Seven ships in the Royal navy have previously been named ***Warspite*** – with the first being in 1596 which served as Sir Walter Raleigh's flagship in the Battle of Cadiz. The most famous was the seventh the bear the name, the Queen Elizabeth-class battleship that sailed during World War 1 and World War 2. She earned the most battle honours of any Royal Navy ship, and also fought at the Battle of Jutland in 1916 – earning the nickname the Grand Old Lady. ***Warspite*** was also a submarine of the Valiant-class that sailed during the Cold War until 1991. And the latest ***Warspite*** is expected to enter service in the early 2030s, while the first in her class ***Dreadnought*** will join the Royal Navy in 2028.

Source: https://www.dailystar.co.uk

USS *Donald Cook* ties up in Odesa port in show of support for Ukraine

By **Illia Ponomarenko**.

Published Feb. 25. Updated Feb. 25 at 1:17 pm

The Arleigh Burke-class guided-missile destroyer **USS *Donald Cook* (DDG 75)** transits the Dardanelles Strait, on Feb. 19, 2019.
Photo by **U.S. Navy**

The **USS *Donald Cook*** moored in Odesa early on Feb. 25, the latest port of call for the U.S. Navy guided missile destroyer during its multipurpose security mission to the Black Sea region. The warship is expected to spend nearly three days at the commercial port of Odessa, demonstrating U.S. support for Ukraine in the wake of Russia's increasingly aggressive behavior in the Black and Azov seas.

Source: https://www.kyivpost.com

Commentary: Meet the Republic of Singapore Navy's new poison shrimp. They even call it *'Invincible'*

By Koh Swee Lean Collin

25 Feb 2019 06:28AM (Updated: 25 Feb 2019 12:22PM)

The 70-metre long vessel, christened the ***Invincible***, will soon be in operation in Singapore waters. (Photo: Jeremy Koh)

SINGAPORE:
With the launch of **RSS *Invincible*** in Kiel, Singapore is the latest Asia-Pacific country to introduce new-generation submarines, riding on a persistent trend observed amongst regional navies in acquiring undersea capabilities. Notably, just last year alone South Korea launched its first 3,000-ton KSS-III submarine that has enhanced long-range missile strike capabilities. Japan too has introduced the world's first submarine equipped with lithium-ion batteries for enhanced underwater performance. Further south, Australia just last week inked a strategic partnering agreement with France, committing to the 12-boat, US$50-billion Future Submarine programme. But it is in Southeast Asia that Singapore's latest addition to its navy becomes significant. Customised to the navy's requirements, the new Type-218SG with its in-built air independent propulsion (AIP) and larger weapons load is arguably the most sophisticated submarine introduced by far in the region.

The 3,000-tonne diesel-electric submarine, ***Dosan Ahn Chang-ho***, is seen during a launching ceremony at a shipyard on the southern island of Geoje. (Photo: AFP/YONHAP)

Justifying the expense?
Singapore began operating submarines in the 1990s, purchasing second-hand boats from Sweden. The first four boats, the ***Sjoormen*** (renamed Challenger) class, seeded the navy's initial undersea operational and training capacity. They were built in the 1960s, and progressively retired as the pair of 1980s-vintage newer ***Vastergotland*** (renamed "Archer") class entered service after 2005. Usually a warship can serve up to 30 years, maybe 40 years with careful maintenance. But aged platforms are generally less cost-effective to upgrade for extended service, and is less safe to operate. Acquiring a submarine capability is time-consuming and resource-intensive. Without timely replacement, a pre-existing submarine capacity may be lost over time. Not many people know that Thailand was in fact Southeast Asia's first submarine user, operating four Japanese-built boats from 1938 to 1951. Since then, without replacement, the Royal Thai Navy saw the erosion and eventual loss of its submarine capacity, which had to be built from scratch again at huge expense with its recent decision to purchase three boats from China. Putting aside the practical issue of sustaining a painstakingly built military capability, the question is why pursue a submarine capability of all naval platforms?

Source: https://www.channelnewsasia.com

Submarines: Reality Kills Another Promising Idea

February 25, 2019:
The U.S. Navy has ordered the Anti-Torpedo Torpedo Defense System (ATTDS) removed from the five CVN (nuclear-powered aircraft carriers) it had been installed on for testing and development. The problem was that ATTDS did not perform reliably and while the performance was slowly improving further testing revealed additional problems that made it unlikely that the system would eventually become effective enough to justify installing on all major warships. It was another case of developer assurances that initial deficiencies would be fixed were overly optimistic when put to the test when examined closely. ATTDS proved unable to reliably detect incoming torpedoes, especially when the defending ship (like a CVN) was surrounded by escorts. The interceptor torpedo that was designed to destroy the incoming torpedo was not only undependable but given that there was little knowledge of how enemy (Russian or Chinese) torpedoes actually operated there was no way to realistically test the interceptor torpedo. Even against modified American torpedoes used as "enemy torpedoes" during tests, ATTDS performed poorly. The actual decision to cancel ATTDS was made in late 2018 and the ATTDS systems won't be removed from all five CVNs until 2023. Back in 2013, the U.S. Navy installed ATTDS, its promising new torpedo warning and countermeasures system, on an aircraft carrier (**USS *Bush*, CVN 77**) for testing, data collection, and fine-tuning. At that point, ATTDS was called TWS/CAT (Torpedo Warning System/Countermeasures Anti-Torpedo) and the plan was for it to enter service on destroyers, cruisers, carriers, and large amphibious ships by 2015. That never happened because of the technology not performing as effectively as required. Worse there were new problems discovered during the "*fine tuning*" that ultimately indicated ATTDS was unlikely to achieve sufficient effectiveness to justify installing it on any ships. The ATTDS concepts were sound but the existing ATTDS technology was not capable enough. The unreliability and ineffectiveness of ATTDS was supposed to be secret but since the tests were often conducted on a CVN at sea with its escorts it was impossible to hide the fact that ATTDS didn't work. The ATTDS developer, or any competitor, would have made some fundamental improvements in the detection and destruction technologies that successful use of ATTDS depended on. None of those breakthroughs were forthcoming in the near future so the Navy cut its losses.
ATTDS (TWS/CAT) consists of a towed sonar array (TWS) that can detect and identify torpedoes so that anti-torpedo torpedoes that intercept the incoming torpedo (CAT) can be launched to destroy the approaching torpedo. While operating

on the **USS *Bush*** TWS/CAT was tested against various types of torpedo attack under very realistic conditions (at sea when moving with the CVN escort ships nearby). The tests also provided an opportunity to train sonar operators and collect acoustic data so that the system software can be improved. The 2015 deadline for deploying TWS/CAT was missed mainly because the CAT anti-torpedo torpedo was not working reliably. The TWS was also encountering a lot of false torpedo detection situations. Then new intel on Russian and Chinese wake homing torpedoes indicated that these did not provide a similar "sound signature" that the current American test attack torpedo was generating. This would further delay readiness of the detection portion of ATTDS as well as the accuracy of the interceptor torpedo. There were no quick fixes for either of these problems and Department of Defense support for the project was halted until a developer could create a more promising prototype. The concept behind ATTDS has been kicking around in the West for decades. Until recently the main problem was sensors the ship could use to detect an approaching wake homing torpedo and then guide a small anti-torpedo torpedo to intercept. That detection problem appeared to have been solved until the question of what exactly an enemy wake homer would sound like to ATTDS detection systems was raised. That also created problems for the Countermeasures Anti-Torpedo Torpedo, which proved unreliable even when used against the American wake homing torpedo during tests. Few details of CAT have been released other than that it is a small 165mm (6.5 inch) torpedo launched from a storage container. This launch container has been seen installed in the rear of a warship and launching a 165mm torpedo. The main reason for TWS/CAT was to provide a defense against torpedoes that home on the wake of a surface ship. Most wake homers look like standard 533mm (21 inch) torpedoes but they are launched in the general direction of the target and then stalk it. For that reason, it was always known that while CAT may have worked in theory it would be much less effective in practice. Details of how CAT operates and what the problems are will not be revealed because that would give users (like Russia, China, Iran and North Korea) of wake-homing torpedoes help in modifying their wake homing torpedoes to defeat CAT. Apparently Chinese and Russian wake homing torpedoes had already developed new characteristics that were generally known but would require the development of new test attack torpedoes to provide realistic testing for ATTDS. This all began towards the end of World War II when "*smart torpedoes*" first appeared. These weapons had sensors that homed in on the sound of surface ships. The Germans pioneered this approach in their acoustic and wake homing designs. The first such acoustic homing torpedoes followed the sound of the target until the magnetic fuze detected that the torpedo was underneath the ship and detonated the warhead. The acoustic homing torpedoes saw use before the war ended. The even deadlier wake homing torpedoes were perfected and put into service (by Russia) in the 1960s and upgraded regularly ever since. The "*wake homing*" torpedoes detected the wake of a ship and followed the wake to where the ship currently was and detonated. Other nations also developed wake homing designs so the United States has them available to test TWS/CAT. Allied nations also provided information indicating that ATTDS needed far better detection and interception capabilities to be reliably useful. Russia and China have been exporting wake homing torpedoes so there was a lot more information out there about how they performed and that meant it was easier to obtain detailed information on how these wake homers actually operated. In other words, a closer examination of the potential threat from actual enemy weapons indicated that the problems ATTDS already have would be much worse against the real wake homing torpedo threats. **Source: https://www.strategypage.com**

IN PICTURES: Israeli navy drills for war in north

With the IDF apparently engaged in multiple strikes aimed at preventing Hezbollah from acquiring advanced weaponry and stopping Iranian entrenchment in Syria, the navy drills for tense encounters off the Israeli coast.

Yoav Zitun|Published: 02.24.19 , 19:02

Photo: IDF Spokesperson's Unit

The Israeli Navy's entire fleet of missile boats and submarines and all of its naval commandos last week took part in a large-scale exercise in the northern arena. The drill's scenario began with an undercover operation at sea, continued with discovery by the enemy — including the involvement of the elusive, elite Shayetet 13 unit, and ended in an exchange of fire that lasted until the targets were destroyed. This is the second time in recent years that the IDF has drilled for a scenario in which an activity spirals into an escalation. The exercise is part of plans to increase the IDF's preparedness for a situation in which a secret operation is exposed or elicits a counter-attack, which leads to an escalation. The exercise comes following multiple IDF attacks in the northern arena over the last 12 months, as Israel

moved to stop Hezbollah receiving advanced weapons and prevent an Iranian military buildup in Syria, incidents that resulted in return rocket fire into Israel. The most recent incident of this nature came about a month ago, when Israel shot down an Iranian missile over the Golan Heights, following an attack on an advanced weapons shipment at Damascus Airport, which was attributed to Israel.

Photo: IDF Spokesperson's Unit

A similar training scenario was used two weeks ago at annual exercises by the Israel Air Force and the US Army air defense forces, which are intended to help Israel in real time.

Photo: IDF Spokesperson's Unit

During the two-day exercise, the two forces trained in a wide swath of the Mediterranean Sea running parallel to the Israeli coast from Haifa to Ashdod. According to foreign reports in recent years, including the Sunday Times, Israeli naval submarines have carried out secret strikes on targets in Lebanon. "*In response to enemy fire, we operated several platforms, including the Air Force, to simulate causing maximum damage to enemy targets*," said Israeli naval officer Lt. Col. Simeon Gamburg. *It was a mixed scenario, using various forces operating from a number of locations and controlled by one command post. A naval force pretended to be the enemy and acted against us in a coordinated manner that challenged us during the decision-making process.*"

Source: https://www.ynetnews.com

President hands over SS *Mendi* bell to Navy

Written by Dean Wingrin -

26th Feb 2019

Handover of the **SS *Mendi*** bell by President Cyril Ramaphosa on 21 February 2019.

South African President Cyril Ramaphosa has handed over the brass bell belonging to the **SS *Mendi*** to the South African National Defence Force (SANDF) for safekeeping. The **SS *Mendi*** served as a troop carrier during World War I. Carrying 823 members of the South African Native Labour Contingent from Cape Town to England and on their way to France, she collided with the cargo steamship Darro in the English Channel on 21 February 1917. Sinking within 25 minutes, over 600 SA Native Labour Corps members and 33 crew members perished and the disaster remains the worst maritime disaster suffered by South Africa. To commemorate the sinking of the Mendi, Armed Forces Day is observed and commemorated annually on 21 February to celebrate and honour members of the SANDF. So it was that on the morning of 21 February this year, Ramaphosa attended a wreath laying ceremony at the site on the University of Cape Town Lower Campus where the SA Native Labour Corps members spent their last night in South Africa before boarding the Mendi for France. Ramaphosa thereafter presided over the main Armed Forces Day Parade along the Table View beachfront. It was at the commencement of this Parade that Ramaphosa handed over Mendi's brass bell to General Solly Shoke, Chief of the South African Defence Force for safekeeping. Shoke in turn handed over the bell SA Navy Chief Vice-Admiral Mosiwa Hlongwane. "*The 21st of February holds deep significance for us as South Africans*," Ramaphosa said, "*It marks the day of the sinking of the troop carrier vessel the **SS Mendi.***" "*The soldiers aboard the **SS Mendi** were volunteers in the then South African Native Labour Corps. They were among 25,000 others who joined the corps during a war that began in Europe but soon became a global conflict affecting people on nearly every continent*," he remarked. Ramaphosa explained that the troops "*did not enlist to further the advance of imperialism, but rather volunteered at a time when the 1913 Land Act had cut a devastating swathe across black communities in this country, and they hoped with their service to get a chance to provide for their families. They also saw it as a chance to play their part in defence of the freedom and preservation of humankind*." "*They are our heroes, and it is our duty to impart to our children the story of their bravery and courage,*" he continued. The SS Mendi bell was believed to have been taken from the wreck of the Mendi 19 km south of the Isle of *Wight* in the 1980s. It was anonymously handed over to UK authorities in 2017 and British Prime Minister, Theresa May, handed it over to Ramaphosa in August 2018.

Source: https://www.defenceweb.co.za

The five-domains update

26 Feb 2019

Rhys De Wilde, Luke Courtois, Mali Walker and Genevieve Feely

Image courtesy of Commander Australian Fleet on Twitter.

Sea state

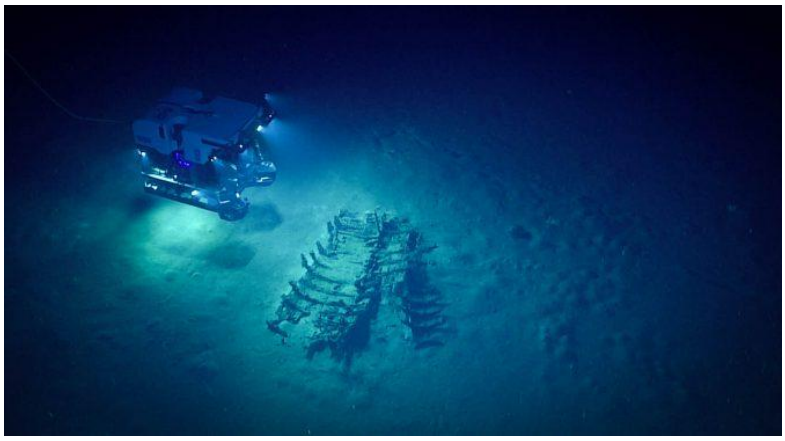
The nuclear-attack submarine **USS *Santa Fe*** sailed with four of Australia's Collins-class submarines during **Exercise Ocean Explorer** last week. This is the third year for the training exercise, which is held in the Indian Ocean off Australia's west coast. The US and Australia were joined by New Zealand and the UK in practising maritime security, war-fighting and humanitarian relief. The exercise followed statements by Royal Australian Navy chief Vice Admiral Mike Noonan during Senate estimates that the Collins submarines will require substantial upgrades before the first of the Attack class arrives in the 2030s. Iranian media has reported a successful test-launch of a cruise missile from Iran's Ghadir-class submarine during three days of naval games in the Strait of Hormuz. Iran also asserts that its new Fateh-class submarines have the same anti-ship capability. The naval exercise, dubbed **Vilayat 97**, is aimed at strengthening the Iranian presence in the Gulf and the Indian Ocean amid heightened tensions with the US and Saudi Arabia. Australia has deployed the landing ship **HMAS *Choules***, with 210 naval personnel and soldiers on board, on a month-long training voyage to Papua New Guinea, Solomon Islands and Vanuatu to boost the navy's presence in the southwestern Pacific. Defence Minister Christopher Pyne said the exercise is part of Australia's enhanced engagement with its Pacific neighbours and its commitment to build the capacity of regional partners.

Author: *Rhys De Wilde, Luke Courtois, Mali Walker and Genevieve Feely are research interns at ASPI.*

Source: https://www.aspistrategist.org.au

The Deep Ocean: Seabed Warfare and the Defense of Undersea Infrastructure, Pt. 1

February 4, 2019



By Bill Glenney

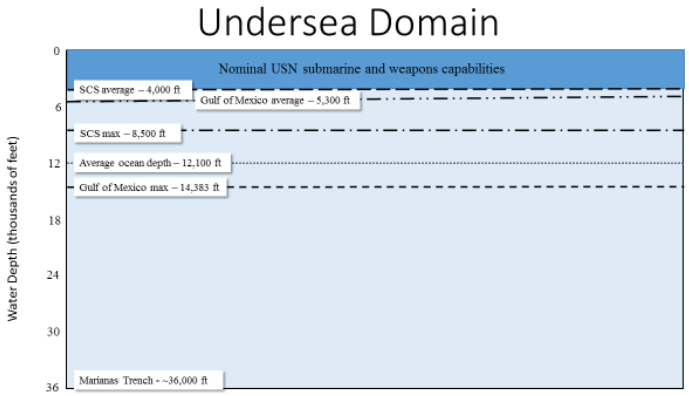
Deep Discoverer, a remotely operated vehicle, explores a cultural heritage site during Dive 02 of the Gulf of Mexico 2018 expedition. (Image courtesy of the NOAA/OER)

Introduction

Given recent activities by the PLA(N) and the Russian Navy, the matters of seabed warfare and the defense of undersea infrastructure have emerged as topics of interest to the U. S. Navy.[1,2] Part One of this paper presents several significant considerations, arguably contrary to common thinking, that highlight the challenges of bringing the deep sea and benthic realm into cross-domain warfighting in the maritime environment. Part Two presents three warfighting concepts drawn from the body of work done by the CNO Strategic Studies Group (SSG) that would give the Navy capabilities of value for the potential battlespace.

The Deep Ocean Environment

For clarity the term "*deep ocean*" will be used to cover the ocean bottom, beneath the ocean bottom to some unspecified depth, and the ocean water column deeper than about 3,000 feet.[3] The deep ocean is where the U.S. Navy and the submarine force are *not*. Undersea infrastructures are in the deep ocean and on or under the seabed for various purposes. How does the maritime fight on the ocean surface change when there must be a comparable fight for the deep ocean? In the maritime environment, it is long past time for the U.S. Navy to be mindful of and develop capabilities that account for effects in, from, and into the deep ocean, including effects on the ocean floor. Cross-domain warfighting demands this kind of completeness and specificity. As the Army had to learn about and embrace the air domain for its Air-Land battle in the 1980s, the Navy must do the same with the deep ocean for maritime warfare today and for the future. However, the current frameworks of mine warfare, undersea warfare, and anti-submarine warfare as practiced by the Navy today are by no means sufficient to even deny the deep ocean to an adversary let alone control the deep ocean. To "*own*" a domain, a force must have the capability to sense and understand what is in and what is happening in that domain. The force must also have the capability to act in a timely manner throughout that domain. Today, the Navy and many nations around the world have radars and other sensors that can detect, track, and classify most of anything and everything that exists and happens in the atmosphere from the surface of the ocean and land up to an altitude of 90,000 feet altitude or higher, even into outer space. The Navy and many nations also have weapons – on the surface and on land, and in the air – that can act anywhere within the atmosphere. Some nations even have weapons that can act in the atmosphere from below the ocean surface. In short, with regard to the air domain, relevant maritime capabilities abound, including fixed or mobile, unmanned or manned, precise or area. Naval forces can readily affect the air domain with capabilities that can cover the entire atmosphere.
But the same cannot be said for the deep ocean. Figure 1 below is based on information drawn from unclassified sources.

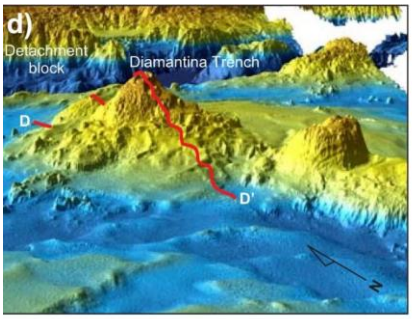


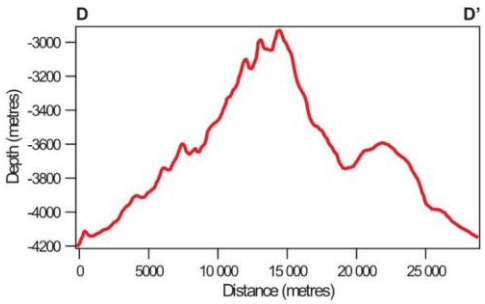
Consider this depiction of the undersea in comparison with the air domain. Notice that there is a lot of light blue space – space where the Navy apparently does not have any capability to sense, understand, and act.

Figure 1 – The Deep Ocean

The Navy's capability to effect in, from, and into the deep ocean is at best extremely limited, but for the most part non-existent. Capabilities specifically relative to the seabed are even less, and with the Navy's mine countermeasures capabilities also being very limited. What systems does the Navy have to detect unmanned underwater vehicles at very deep depths? What systems does the Navy have to surveil large ocean areas and the resident seabed infrastructure? What systems does the Navy have to act, defend, or attack, in the deep ocean? Arguably, the Navy has built an approach to maritime warfighting that dismisses the deep ocean, and done

so based on the assumption that dominating the top 3,000 feet of the waterspace is sufficient to dominating the entire waterspace – ocean floor to ocean surface. Undersea infrastructure is presumably safe and protected because the ceiling over it is locked up. However, the force must have the capabilities to sense, understand, and act in the deep ocean. While the assumption for dominating the deep ocean by dominating the ceiling may have been useful in the past, it clearly is no longer valid. In the past, it was very expensive to do anything in the deep ocean. The technology was not readily available, residing only in the hands of two or three nations or big oil companies. This no longer holds true. The cost of undersea technology for even the deepest known parts of the ocean has dropped dramatically, and also widely proliferated.
If one has a couple hundred million dollars or maybe a billion dollars, they can sense, understand, and act in the deep ocean without any help from a nation or military. Unlike the U.S. government-funded search for the **SS *Titanic*** by Robert Ballard, Microsoft co-founder Paul Allen independently found USS *Indianapolis* in over 15,000 feet of water in the Philippine Sea.

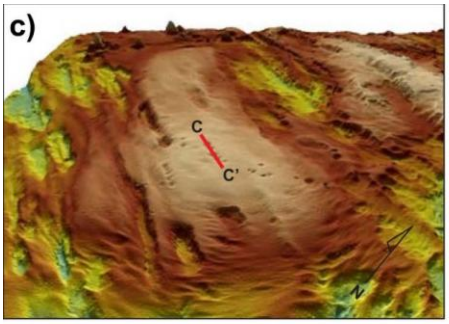




The capabilities to sense, understand, and act in the deep ocean are available to anyone with a reasonable amount of money to buy them. Figure 1 is misleading in one perspective. At the level of scale in figure 1, the ocean floor looks flat and smooth.

Figure 2 – Diamantina Trench

If something is placed on the ocean bottom, such as a towed payload module, a logistics cache, sensors, or a weapon system, could it be easily found? Figure 2 is a picture of survey results from the vicinity of the Diamantina Trench approximately 700 miles west of Perth, Australia in the Indian Ocean. The red line over the undersea mountain is about 17 miles in length. The water depth on the red line varies from 13,800 feet to 9,500 feet as shown on the right.[4] Consider figure 3. The red line is just under three miles in length. The depth variation ranges from 12,100 feet to 11,900 feet.[5] These figures provide examples of evidence that the abyssal is not featureless. The assumption of a flat and smooth ocean floor is simply wrong, and severely understates the challenge of sensing and acting in the deep sea.



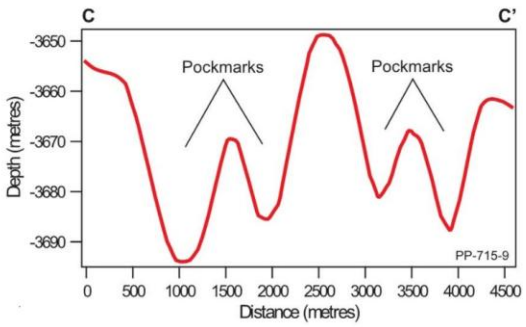


Figure 3 – A Closer View in the Diamantina Trench

How hard would it be to find a standard-sized shipping container (8ft x 8ft x 20ft or even 40ft) on this floor? It could be incredibly difficult, requiring days or weeks or even months with many survey vehicles, especially if the area had not been previously surveyed.

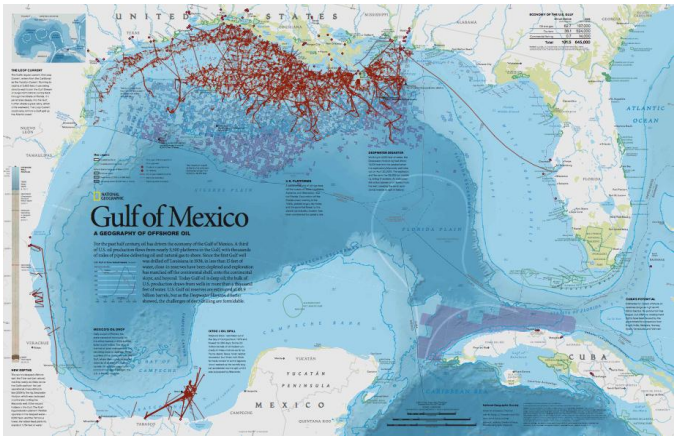


Figure 4. – The Gulf of Mexico (National Geographic)

This is a lesson the U. S. Navy learned in the Cold War and has long since forgotten from its "*Q routes*" for port access. And it would be harder still if one were purposefully trying to hide whatever they placed on the ocean floor, such as in the pockmarks of figure 3. Based on reported results from a two-year search for Malaysian Airlines flight MH-370, approximately 1.8 million square miles of the ocean floor were searched and mapped to a horizontal resolution on the order of 100 meters and vertical resolution of less than one meter.[6] Yet, the plane remains unlocated.

Hiding things on the seabed is fairly easy, while finding things on the seabed is incredibly difficult. Unless one is looking all the time, and has an accurate baseline from which to start the search and compare the results, sensing in the deep sea is significant challenge. The next consideration is that of the matter of scale of the geographic area and what resides within it. This is what makes numbers matter. Figure 4 provides a view of the Gulf of Mexico covering about 600,000 square miles in area and with waters as deep as 14,000 feet. There are about 3,500 platforms and rigs, and approximately 43,000 miles of pipeline spread across the Gulf. Of note, the global economy and worldwide demands for energy have caused the emergence of a strategic asymmetry exemplified by this figure. China gets most of its energy imports by surface shipping which is vulnerable to traditional anti-shipping campaigns. The U. S. gets much of its energy from undersea systems in the Gulf of Mexico. While immune from anti-shipping, this infrastructure is vulnerable to seabed attack. In late 2017, the Mexican government leased part of their Gulf of Mexico Exclusive Economic Zone seafloor to the Chinese for oil exploration.

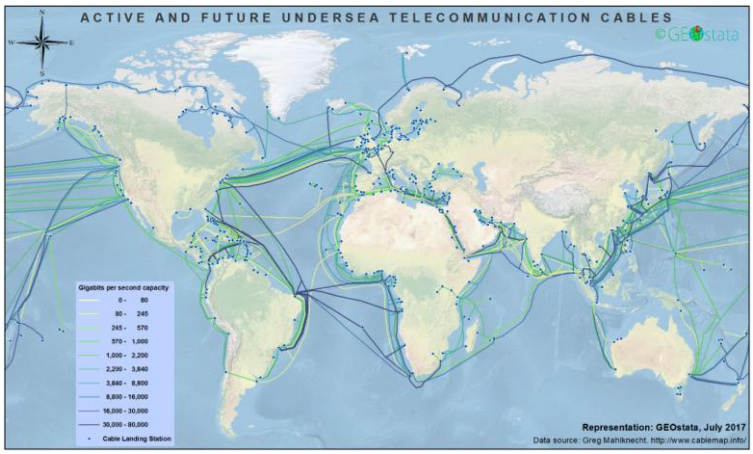


Figure 5 provides a depiction of global undersea communication cables with some 300 cables and about 550,000 miles of cabling.

The deep ocean demands that a maritime force be capable of surveilling and acting in and over large geographic areas just like the ocean surface above it. Undersea infrastructure is already dispersed throughout those large areas. In addition, because the components of undersea infrastructure are finite in size, the deep ocean also demands that a maritime force be capable of surveilling and acting in discrete places. While it is arguable that defense in the deep ocean is a wide-area challenge and offense is a discrete challenge, the deep ocean demands that a maritime force be capable of doing both as part of the maritime battle.

Figure 6 – The South China Sea

Therefore, the deep ocean presents an "area" challenge and a "*point*" challenge simultaneously, and both must be addressed by maritime forces. In addition, the size of the area and the number of points of interest means that a dozen UUVs or a couple of nuclear submarines are not in any way sufficient to address the maritime warfighting challenge of defending the deep ocean and undersea infrastructure of this scale. Furthermore, the situation is exacerbated by systems and vehicles in the deep ocean above the seabed. The threat is not a few, large, manned platforms, but many small unmanned vehicles and weapons. The historical demarcation among torpedoes, mines, and vehicles is no longer productive except maybe for purposes of international law and OPNAV programmatics. Operationally and tactically, the differentiation is arbitrary and a distraction from operational thinking. The Navy should be talking in terms of unmanned systems – some armed or weaponized, and some not; some mobile and some not; some intelligent and some not. Torpedoes can easily become mobile, armed UUVs with limited intelligence. Mines can also become mobile or fixed UUVs with very limited intelligence. In the course of the author's research and in research conducted by the CNO SSG, there were no situations or considerations where reclassifying mines and torpedoes as UUVs was problematic with regard to envisioning war at sea. Doing so eliminated a significant tactical and operational seam and opened up operational thinking. The systems for the detection and neutralization of UUVs are the same as those needed to

detect and neutralize torpedoes and mines, and the same for surveilling or attacking undersea infrastructure. Figure 6 provides a view of the South China Sea near Natuna Besar. This area is about 1.35 million square miles with waters as deep as 8,500 feet. Recall that in the two-year search for Malaysian Air flight MH 370 they surveyed only 1.8 million square miles, and did so in a militarily-benign environment.

Conclusion

Ultimately, understanding the deep ocean and warfare in the deep ocean is a matter of numbers and time – requiring plenty of sensors, and plenty of time. Part Two will present three warfighting concepts drawn from the body of work done by the CNO Strategic Studies Group (SSG) that would give the Navy capabilities for the deep sea battlespace.

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Source: http://cimsec.org

Workhorses of the sea

Jan de Nul's JUV ***Taillevent*** on a sunny Sunday in Oostend.

Photo : Joran Buijk Chief Engineer JUV "*Vole Au Vent*" Jan De Nul Group ©