

American Submariners Inc.
4370 Twain Ave.
San Diego, CA 92120-3404



The Silent Sentinel *July 2019*



Our Creed and Purpose

To perpetuate the memory of our shipmates who gave their lives in the pursuit of their duties while serving their country. That their dedication, deeds, and supreme sacrifice be a constant source of motivation toward greater accomplishments. Pledge loyalty and patriotism to the United States of America and its Constitution.

In addition to perpetuating the memory of departed shipmates, we shall provide a way for all Submariners to gather for the mutual benefit and enjoyment. Our common heritage as Submariners shall be Strengthened by camaraderie. We support a strong U.S. Submarine Force.

The organization will engage in various projects and deeds that will bring about the perpetual remembrance of those shipmates who have given the supreme sacrifice. The organization will also endeavor to educate all third parties it comes in contact with about the services our submarine brothers performed and how their sacrifices made possible the freedom and lifestyle we enjoy today.



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The Silent Sentinel via Email

To all of my Shipmates and families who currently receive our Great newsletter via the mail who would like it sent via email or continue to receive it via mail, please fill out the form and mail it to the base or myself. We are trying to cut the cost of the newsletter down from \$3700 to about \$1900 a year. By receiving the Silent Sentinel via email will cut down the printing and mailing cost. The other plus to receiving it via email is you can save it on your computer and not have the paper lying around the house.

A subscription to the Silent Sentinel newsletter will be available to surviving family members via internet email, at no charge, upon notification of the Membership Chairman. If a printed hard-copy is preferred, via US Post Office delivery, an annual donation of \$5.00 will be requested to cover costs.

NAME: _____

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Would like the SILENT SENTINEL emailed: YES _____ NO _____

USSVI Base Commander
c/o VFW Post 3787
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DUE TO LOGISTICS CONSTRAINTS, ALL INPUTS FOR THE SILENT SENTINEL MUST BE IN MY HAND NO LATER THAN ONE WEEK AFTER THE MONTHLY MEETING. IF I DO NOT RECEIVE IT BY THIS TIME, THE ITEM WILL NOT GET IN. NO EXCEPTIONS! MIKE

Our Next Meeting

Our monthly meeting is held on the second Tuesday of the month at VFW Post 3787, 4370 Twain Ave., San Diego. Our next meeting will be on *July 9th*. The post is located one-half block West of Mission Gorge Road, just north of I-8. The meeting begins at 7 p.m. The E-Board meets one hour earlier at 6 p.m.

*Check us out on the World Wide Web
www.ussvisandiego.org*

BINNACLE LIST

Len Heiselt, Sergio Frost, Mike Hyman, David Martinez, Tom Polan and Tony Dack

Submarine Losses in July

Originally Compiled by C J Glassford



USS S-28 (SS-133)

Lost on July 4, 1944 with the loss of 49 crew members. She was conducting training exercises off Hawaii with the US Coast Guard Cutter Reliance. After S-28 dove for a practice torpedo approach, Reliance lost contact. No distress signal or explosion was heard. Two days later, an oil slick was found near where S-28. The exact cause of her loss remains a mystery.

USS Robalo (SS-273)

Lost on July 26, 1944 with the loss of 81 crew members while on her 3rd war patrol. She struck a mine about 2 miles off the coast of Palawan. Four men survived and swam ashore, then were imprisoned by the Japanese. Unfortunately, they were put on a Japanese destroyer and lost when that destroyer was sunk.

USS Grunion (SS-216)

Lost on July 30, 1942 with the loss of 70 crew members while on her first war patrol near Kiska Harbor. She radioed that she sank two sub-chasers and damaged a third, but was never heard from again. Grunion's mangled remains were found in the Bering Sea in 2006 off the Aleutian Island of Kiska.



San Diego Base, United States Submarine Veterans Inc.
Minutes of Meeting – 11 June 2019
At VFW Hall, 4370 Twain Avenue, San Diego CA 92120

1906 - Base Commander Warren Branges called the meeting to order.

Conducted Opening Exercises - Pledge of Allegiance lead by Past Commander Fred Fomby

Base Commander Warren Branges lead the opening prayer. A moment of silence was observed for TM1(SS) Melvin Britain and ENC(SS) Martin Frazee who commenced Eternal Patrol in May. TM1(SS) Britian on 8 May 2019 and ENC(SS) Frazee on 13 May 2019. TM1(SS) Britain qualified on USS SPINAX SS-489 in 1957. ENC(SS) Frazee qualified on USS S-11 (SS-116) in 1946.

Shipmate JJ LYNCH conducted Tolling of the Boats for boats lost in the month of June.

Base Senior Vice Commander Manny Burciaga recognized Past Commanders, dignitaries and guests.

Base Secretary Jack Kane announced 22 members and 2 Guests present.

Base Commander Warren Branges presented the Treasurer's report. A copy of the Report will be filed with these minutes. Minutes of the May/June 2019 meeting were published in the Sentinel. The Sentinel was sent electronically on 11 June 2019. Copies were distributed before the meeting. If no changes or corrections are heard by next meeting the minutes will be accepted then.

Base Commander Warren Branges called for Committee Reports

Binnacle List - Len Heiselt, Sergio Frost, Mike Hyman, David Martinez, Tom Polan and Tony Dack are on Binnacle.

Parade Committee - Chairman Jack Kane announced the next parade is Julian on Thursday, 4 July 2019. Parade at Noon. Muster at 1030. Maps and further information will be sent via e-mail upon receipt from the Julian Parade. The Julian American Legion Post will have their customary BBQ sales after the Parade. We participated in the La Mesa Flag Day Parade on 1 June. Our Float was judged "Best in Show" and we were awarded the "Jewel of the Hills Float Award".

Membership Committee - **Chairman Ray Febrache** reported we have 241 members.

Scholarship Committee - **Committee Chairman Paul Hitchcock**. Scholarship packages are being evaluated by Scholarship Committee members. The Chairman will tally results and have the results ready for the next meeting.

Storekeeper - **Chairman Paul Hitchcock**. Calendars are available for \$10 each. Paul is working on getting vests and a embroidery shop to do the sewing.

Breakfast Committee - **Chairman Base Commander Warren Branges**. Next breakfast is 30 June. We need volunteers for the kitchen and to run coffee. The VFW Kitchen Supervisor will hold a certification/re-cert class for Food Handlers at 0700 that morning. Check the list on the bulletin board for your status.

52 Boat Memorial - **Chairman Base Commander Warren Branges**. - The next All Flags Day will be Friday, 14 June 2019 (Flag Day) and then again on 4 July 2019 (Independence Day). We will put up flags at 0700 and take them down at 1730 both days. The 52 Boat Memorial Board is working with San Diego Parks and Recreation about changing the markers to a Polished Concrete vice Granite. Parks and Recreation has okayed the change. The Memorial Board will work with City to finalize this change. Once implemented a fund drive will be undertaken to finance the changeover.

Float Committee - Chairmanship open. No Report.

Eagle Scout Program - **Co Chairs Nihil Smith and Glenn Gerbrand**. Co-Chair Nihil Smith reported that 3 Scouts have passed Board of Review and will be awarded Eagle Rank soon. Nihil will let us know the dates for the Honor Court(s). He also reported that he was able to facilitate 38 Scouts on a campout at Naval Base Point Loma. The scouts also toured USS Alexandria.

Presentations. None

1930 - Base Commander called for a break. 50/50 Raffle held.

2014 - Unfinished Business

FLOAT STORAGE STATUS - Naval Base San Diego will be opening a new RV storage lot adjacent to the Mini Mart at Rosecrans and Nimitz. We will be moving the float to that lot when it opens. When we make the move we will obtain and install a new float cover. The Base anticipates opening the lot in July.

BASE ROSTER AND EMAIL VERIFICATIONS are continuing. If you a verification email please respond. We are still reconciling the Base List with National List.

MEMBERSHIP DUES. If your dues are lapsed please see the Base Commander.

VFW STORAGE AREA. We will help the VFW rehab the storage garage after the Solar Parking Area is completed.

DISTRICT COMMANDERS NEEDED. We currently have District Commander positions open for Districts 2 and 7. District 6 will soon be vacant also. Anyone interested see the Base Commander.

ANNUAL SUBMARINE VETERANS FAMILY PICNIC will be held at Smugglers Cove, Naval Base Point Loma on Saturday, 13 July 2019 - 0900 tll ????. Two Submarine Tours will be held that day. Please contact the Base Commander with names of attendees. The earlier the better. These tours fill up quick. We will also have a "Holland Club" Induction Ceremony at the picnic. All preliminary paperwork is done for the picnic, coolers, sound system, etc are ordered. Base Commander will send out a list of asks to members this month. Plans and assignments will be finalized at the next Base Meeting.

SCAMP BASE is holding their yearly raffle. This year's First Prize is a \$750 Gift Certificate to Turner's Outdoorsman. The winner will be drawn at the SCAMP Base's August Meeting. See the Base Commander for tickets.

2024 - NEW BUSINESS

WESTERN REGION DISTRICT SIX Electronic Ballot will be distributed this month. You will be able vote paper ballot at the July meeting.
SAN DIEGO BASE SCHOLARSHIP PROGRAM. The Base Scholarship Program is quickly becoming dysfunctional. Several factors are contributing. Some of which are: A much smaller pool of applicants is available to apply - member interest seems to be waning - changes to our National Organization Status affect our ability to solicit tax free funds - etc. We need to have a discussion about how we want to move forward with the program. Two avenues of approach seem to be most prevalent going forward. One - Scholarship Monies can be raised under the umbrella of National Scholarship Program and all scholarship candidates would be required to apply to National for Scholarships Two - Our Local Program can be continued, but with a revamped application process. This subject will be the first item under Unfinished Business next meeting. Please come ready to express your opinions.

2041 - Good of the Order

2019 National Convention is 14-20 August in Austin TX. Details are at: <http://ussvconvention.org/2019/>. So far 261 people are attending.

OUTYEAR CONVENTIONS - 2020 will be in Tucson and 2021 will be in Orlando at Rosen Shingle Creek.

SILENT SERVICE TV SHOW is available at olgoat.com

DEEP SUBMERGENCE REUNION will be held in San Diego 25-27 2020 in San Diego

OUR KLAXON. Stolen from Warren's truck after the Linda Vista Parade and recovered by San Diego County Sheriff's is still being held as evidence at the County Court House. We should get it back soon. Several members volunteered to be on the jury if the accused thief goes to trial.

A MODEL OF A MK-48 Torpedo donated by Kip Casper will be auctioned at the next meeting.

SHIPMATE JJ LYNCH noted that Tom Polan sends his regards. Tom hopes his recovery is speed so he can resume attending our meetings.

SHIPMATE BOB FARRELL announced the upcoming Cable TV "John Wayne Movie Marathon", including "The Fighting Seabees", Sands Of Iwo Jima and Operation Pacific (Submarine Movie).

The Meeting was adjourned at 2047.

/s/ **Jack E. Kane**

Jack Kane, Secretary

Sailing List for 11 June 2019

Members

Matt Baumann
Pete Berg
Manny Burciaga
Warren Branges
Kip Casper
Joel Eikam
Ed Farley
Bob Farrell

Ray Febrache
Fred Fomby
Jim Harer
Paul Hitchcock
Jack Kane
J.J. Lynch
William Pickering
Jim Pope
Phillip J. Richeson

Chris Stafford
Nihil D. Smith
Russ Stoddard
Mert Weltzien
Greg Vechinski

Guests

Jessie Chang Farley
SKC(AW/SW) Sonja Lynch

Silent Sentinel **EXCLUSIVE!**



Judith and Gary Murphy have graciously consented to allow the Silent Sentinel to republish their collection of USS Whale, SS-239, ship's newspaper, "THE RAG," from the WW-II era! Gary's father, Rex Murphy, served as Whale's Engineering Officer. The Silent Sentinel will now include a copy of The Rag in each issue. The Murphy's and I hope that you will find it an interesting reading experience.

On the evening of 19 March, *Whale* sighted two large freighters and one torpedo boat or destroyer as escort. Just after daylight the next morning, the submarine finally worked into a favorable attack position; she fired spreads of three torpedoes at each freighter, and hit both. The first target, tentatively identified as *Mogamigawa Maru*, sank rapidly by the stern. The second, a cargo ship resembling *Arizona Maru*, was plagued by several heavy internal explosions following a second torpedo hit. *Whale*, mistaking these secondary explosions for bombs, went deep. Upon discovering her mistake, she started to surface but was greeted by a barrage of depth charges from the escort. *Whale* dove again but again came under attack – this time from the air – when she attempted to return to examine the wreckage. The submarine suffered extensive damage during this attack. This was by far *Whale's* closest escape.. It is now 24 March. *Whale* is still sailing in the Marianas: "The Rag" No. 10.

EIGHTEENTH EDITION

MARCH 26, 1943

I have no doubt at all the devil
grins, as seas of ink I spatter.
Ye Gods, forgive my literary sins--
The other kind don't matter.

It is not without a good deal of apprehension that I have watched the Rag struggling, fighting and gnawing its way thru the seas of journalism. I've noted the expansion from eight to twelve sheets, knowing sooner or later that ye gallant Rag would have to dip into the cesspool of yellow journalism to convey its messages to the reading public.

It is not without some computation that I see the appearance of vulgar, profane and obscene language in the Rag. Vulgarity being a means of expression very often reverted to by the lower class of peoples, has no place in proper journalism. It is a known fact that one must possess at least one year of high school to be eligible for entry into the U.S. Navy, this excludes the DUMMIES, CHARLIE M. CARTHYS and the WOODEN HEADS to a 99th degree, admitting that we do have some of these creatures in our midst. As the percentage of ignorance is so small, we do not deem it necessary to bring the Rag down to the level of that small minority. It has been noted that the axioms of the Rag have been carefully chosen from the foremost authorities and often times going so far as to quote the good book. So-----
Mr. Editor, why do you persist in using these authorities to head your sheet and smearing the rest of your columns with profanity? The axioms we need, the profanity we can do without.

I'M scared of it all, God's truth so I am---It's too big and brutal for me---My nerves on the raw and I don't give a damn for the fear in me that others may see.

The shot and shell that fell all around,---that rattle over roof and hull, "Battle stations surface did you say?"---

They scratched and clawed like beasts of prey... Then as everybody swarmed and everybody swore, that man in the after engine house swooned to the floor... Nothing more... Just swooned to the engine house floor.

NOTICE: To all you little girls in the after engine room, "Please don't worry, we'll get you home safe and sound. Trucked in your little trundle beds. Surely you don't expect the Sons of Nippon to allow us to sink their ships when and if we can, without some form of retaliation. Have no fear of the scuttlebut and propaganda that might cause you worry and unguarded anxiety. Without a doubt yours is the same policy of all other worry warts. You believe only the worst and only what you want to believe of any rumor or propaganda that may be floating around. In the future stop trying to get any last minute information from people who have been standing around you in the same compartment for the same length of time that you have. Worry not, if in the event of a battle station surface, the word will be passed to you over the loud speaking system.

WATER...WATER...FRESH WATER...WATER.

No doubt you know and if you don't know it's about time that you found out, that a good deal of time labor and K.W.'s are involved in making one gallon of fresh water.

If this is understood or as it should be understood by all hands, why is it that every time the showers are turned on, that wooden head Charly M. Carthy that dottering old woman that minority we have aboard has to in some way or another devise various means and contraptions to waste as much fresh water as possible?

No doubt all hands are now familiar with what happened the other night. This seemingly small catastrophe has cost some of your shipmates the loss of various articles of clothing, and flooded locker and a lot of extra work. Not to forget the cleaning up after you methods that Mother used to have to go thru.

The person or persons, who are guilty of this menial offense are aware by now of the trouble they have directly or indirectly caused.

This should not be allowed to happen again. If worst comes to worst a watch can, and will be maintained.

Continued from page one.....

Page two.

This watch will be stationed in the wash room and heads to supervise the taking of showers and the general usage of fresh water.

Has anyone, repeat anyone, seen another Martini with any member of the opposite sex, regardless of size and weight, other than herself..... We were just wondering.....H-mmmmmmm

LOST...LOST...LOST...LOST...LOST....

One bundle of muscles from the after engine room. Finder please return to one, B.J. Small reward is offered. (damn small)

Two keys on a ring with two tags bearing the no's. 32 and 22. Finder please return to Hanson.....

One hair out, size seven and a half, curly, brown. Finder please give to Skipper Dan Bones Duckham. Either that, or please contribute a dog license or fiddle.....

One complete set of nerves (with brains) finder please return to what a man CARBON.....

CONGRATULATIONS are hereby in order for one SPARK ROBERTS the senior but yet the youngest Westinst Mate aboard the Mighty Whale on this his 30th year of continuous service on Terra-firma. From the entire staff of the Rag, we wish you many happy returns of the day and may the blessings you receive be ever bountiful.

For the general information of the girls in the forward torpedo room, there is no doubt in the Editors' mind, as to what damage a depth charge or series of depth charges will do to the positive buoyancy of the Whale if exploding close enough to the outer periphery of the Mighty Whale.

Yes it could even happen to us.....

CONGRATULATIONS are extended to our ships cook (and we do have a ship's cook) HUCKLE, for the splendid job in preparing the Stacy, Stoker birthday cake. It's little things like this that keeps bigger things going.

The way some people believe in themselves is very refreshing in these athletic days when so many believe in no God at all.

That is more enchanting than the voices of young people when you can't hear what they say.....

Logan Smith.....

MINUTE BIOGRAPHIES OF WHO'S WHO ON THE WHALE By Bundy

No. 2---Bones Duckham.....

Duck is the original California prune picker. He's a native son from a whistle stop called Sas Robles. When in the States he makes all his liberties in Pershing square, up in L.A.

The lack of Rags is a firm believer in sleep being wonderful for ones complexion. But something must be wrong, because as yet Duck wouldn't win first, second, or third prize in a third rate dog show.

His major loves are liquor and little boys. He tries to entice tender sailors like Shotty Stoker and little Stoker, to the pump room with a couple of bars of pogy bait.

Duck has his bad points too, such as keeping junior ex-men down in the bilges all day, especially if they should beat him in a game of acey-ducey or dominoes (no str. in).

When he's wanted in the control room any time of the day, he will be seen gliding thru the crew's mess looking like the Ghout of sleepy hollow, and screeching Englen so bad that he can't cook a thing the rest of the day. (Englen must be scared all of the time.)

As the serenade of depth charges is the only thing that does not get him up and about, let us hope he has a nice restful voyage until P.M.T.R. is again in sight.

TONGUES: COX (the coox)

Did you know that the Japanese were the first to mount 16" guns on their man-o-war vessels?

Yea, let me live my life, its meaning seem; Bear myself fitly in the ringin' fight; Strive to be strong that I may aid the weak; Sure to be true--O God! Thy light, the light! Cometh the Dawn so soon. I've looked thy word, yet do I know Thy love: Have mercy, Lord....

No man is lonely while eating spaghetti-----it requires so much attention. Cox please note.

A Recollection - Flooding in the Engine Room

by David Kauppinen



After completing some Mark 48 torpedo development testing in ~1970, the USS Pargo (SSN-650) was transiting from the Caribbean back to New London. At that time submarines could discharge the Waste Oil Tank to sea when outside the 12 mile limit, either by blowing it or pumping it. Since blowing it could cause air to enter the Main Sea Water intake and lower Condenser vacuum, an order was issued to pump the Waste Oil Tank. This required hooking up a 4 inch flexible jumper hose between two ball valves in the forward port side of the Upper Level Engine Room which was just outboard of an electrical panel. I had previously performed this evolution myself, and it had been done many times by other shipmates without incident. However, it had never been attempted

while transiting at a depth of 400 feet which is equivalent to ~190 psig. Since the jumper hose was rated for only 100 psig (but not marked as such), it immediately blew out of the fittings when the valves were opened. The resultant high pressure seawater spray grounded the nearby electrical panel and caused loss of a Main Feedwater Pump along with other bus electrical loads. The Throttleman left his station in Maneuvering and ran to the Upper Level AMR2 to open some breakers, however, before leaving he failed to close the Main Turbine Throttle Valves. This action resulted in a Steam Generator Water Level Low Low alarm and associated Reactor trip. "Flooding in the Engine Room- Surface - Surface - Surface" went over the IMC, and we took a fast ride up compliments of emergency blow. I was in my rack at the time; what a way to wake up! We spent the next 24 hours on the surface getting all equipment back on line. I remember that in addition to running the diesel generator, we actually used the retractable outboard motor in the lower level AMR2 to maintain heading in the ocean currents. Since I had been to Lithium Bromide Air Conditioning School, my job was to get the AC unit back in operation; it did get quite warm inside the boat. For those who don't know, Lithium Bromide rocks up when it cools. Fortunately, the USS Pargo was "sub safe" and the boat was properly trimmed for our depth making it easier to deal with the emergency. After we got back into port, a caution label was affixed to a new jumper hose and procedures were updated.



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It was powerful...

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victory possible during World
War Two!*

It was the mighty

FAIRBANKS – MORSE

DIESEL SUBMARINE

ENGINE *an Article by Wayne T. Nelson*

If an electrician likes his batteries and motors and a torpedo man adores his torpedoes and shiny brass tubes then it stands to reason an engineman would just love his engines. And in the case of a World War 2 submarinethe mighty Fairbanks-Morse 38D-8 1/8 opposed piston diesel engines. And so it for me.



Above is the forward engine room of the USS Pampanito (SS-383) which is identical to that of my boat the USS Medregal (SS-480).

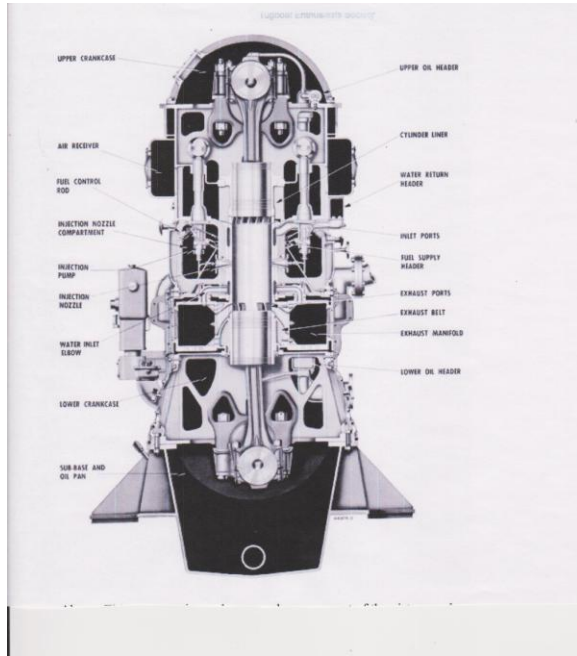
The first time I saw one I had no idea how it worked. I had a limited experience with car engines and knew a little about tools. Senior engine room personnel (which was everyone) were impressed I knew the identity of a few tools when one PO called out for a 9/16ths open end/box end wrench. If you didn't know you might find yourself going boat to boat trying to locate that elusive "left handed monkey wrench" and being left handed it would make perfect sense. Or your wild

goose chase might see you looking for 10 feet of "shoreline". Although we didn't use that much "shoreline". Ha ha! But they got me for something one time as I recall. No wait.....that was Summer Camp up in Wisconsin where I spent an afternoon looking for "shoreline". New people are so wanting to please and oh so gullible. Like taking candy from a baby.

So let us get back to those big engines. They were designed to incorporate the minimum number of moving parts and the most reliable and efficient fuel system with the most output.

That must have been the goal of the designers for that is what was achieved. The opposed firing timing was achieved by a timing chain that synchronized the fuel pump and injector activation with rotation of the crankshafts that turned the

camshafts for the left and right fuel pump banks. If the



The above diagram is typical of opposed piston engines and shows the basic 2 piston two crankshafts configuration.

That must have been the goal of the designers for that is what was achieved. The opposed piston design with intake and exhaust ports and a fuel pump and injector system eliminates the need for intake and exhaust valves and rocker arms and cam shafts to activate them. Movement of the pistons alone

creates the opportunities for air intake, fuel injection and combustion and exhaust. Engine crankshaft was removed for repairs the chain would have to be reinstalled with the engine pistons in the correct position. Only a broken or worn out chain could change the timing. And that never happened.

Another simple design idea was to connect the upper and lower crankshafts employing a vertical drive that directed the horsepower to the lower crankshaft which turned the massive flywheel and attached DC generator that powered the submarine.

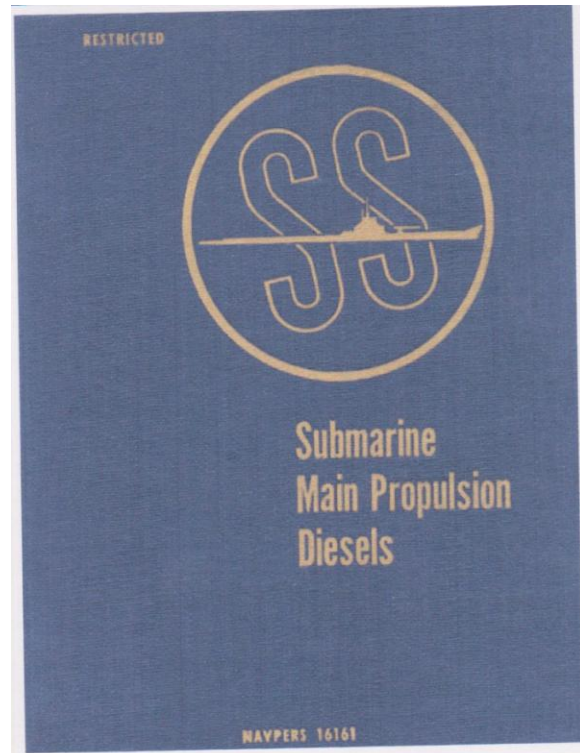
These diesel engines were living entities to an engineman and as enginemen we were damn proud every time we fired one up and put her on line. All four running meant we were caring for those engines and had spent days and days making repairs or testing equipment.

The History of the 38d

The history is short or long depending on how you look at it, but one that transcends submarine use to use in other Navy vessels and marine craft to even train locomotives for a time.

The Brass Manufacturer plaques from the Fairbanks-Morse engine identify the factory location as CHICAGO. But the actual location is in Beloit, Wisconsin basically on the Wisconsin/Illinois state lines.

The design for the 38D was based on German engineering ideas and design. Once the design was approved and tested in a smaller version engine incorporating 5 ¼ inch diameter pistons, the 38D using 8 1/8 inch diameter pistons went into production in 1938.



Above is the cover of the introduction and operation manual for Submarine diesel engines produced in the 1940s for World War 2 submarines.

I will continue the history in a moment but it would be important to tell you that the Fairbanks-Morse company had been making various engines for a long time. Some were one cylinder models used in the mining industry and other applications and in later years they even made a line of radios.

The basic design of the 38D was of a welded steel frame that housed 10 vertical cylinder liners and the components described in the paragraphs above. The engine was of course water cooled.

During the mid-1930's submarine designers and builders were in the market for a large diesel engine that could be adapted to submarine design and function. History doesn't leave behind a list of those who submitted designs, but of those who did only the Fairbanks-Morse 38D and an engine submitted by General Motors qualified. The GM engine was built by a company they owned called the Winton Engine Company and later Winton in 1937 became the Cleveland Diesel Engine Division of General Motors. Engines produced by Cleveland Diesel passed the submarine application test. These GM engines became

known as "Gemmiess" and just a few negative reports have circulated among engine rooms about them. Don't blame me for the mentioning of these reports I never ran or worked on those GM engines. But oil leaks seems to top the list. If the Fairbanks – Morse engines were better than the GMs it made little difference as the Navy submarine contract was split 50/50. That said the reputation of the reliability of the Fairbanks-Morse engine made it a strong contender in marine engine sales after the World War 2. Marine applications such as submarines are much different than land applications such as railroad locomotives so they were not as popular as they were in the Navy. The reason there might be the cooling of the engine. On a submarine or other Navy vessel you have access to the entire ocean or body of water for that purpose. Whereas on a train you

would have to have water tanks and a heat exchanger and other fans and so on, much in the order of the cooling system of a car engine. Whatever the reason they didn't have a long run with the railroads.

The Fairbanks-Morse 38D was used during the war and after on small Navy craft such as destroyers. In fact we used a mothballed tin can for spare parts on time. The engines were also used as auxiliary engines on nuclear submarines and on aircraft carriers. In the civilian marine sector the 38D was very popular with tug boats. In fact the tug boats enthusiasts try to lay claim to our beloved engines.

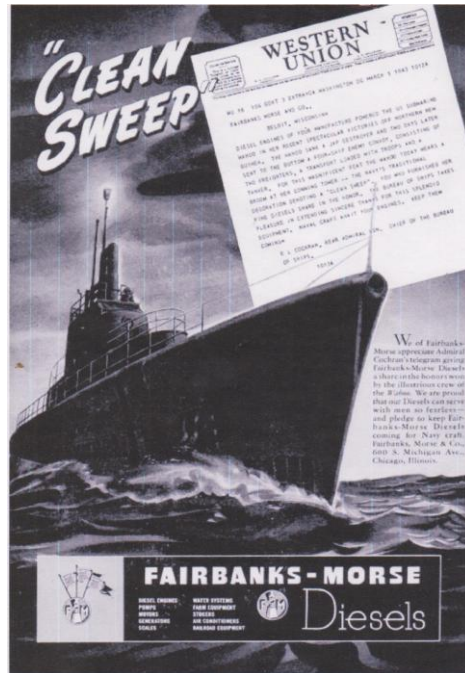
Well the popularity of the 38D has never waned for marine application and even to this day many old engines still run and the US Navy is still Fairbanks-Morse's biggest marine engine purchaser. Having worked on and lived with the 38D for over 3

years I am not at all surprised with their continuing popularity. Given correct and scheduled maintenance using the PMS (preventative maintenance system) you can count on continued service from a 38D. For the most part all of the engine components can be serviced or replaced fairly easily. For example if you were to overheat a car and crack the block on a small bore engine block it is pretty much trash. But were you to crack a cylinder liner on the 38D you would only need to replace the liner. It takes some hard work and a few hours but once the repair is made the engine is as good as new. That was the beauty of the simplicity of the Fairbanks-Morse 38D- 8 1/8th opposed piston diesel submarine engine.

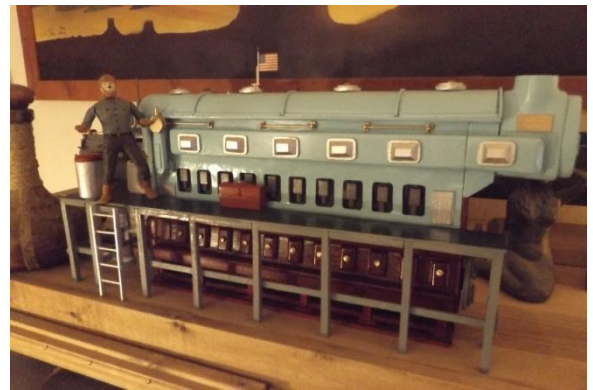
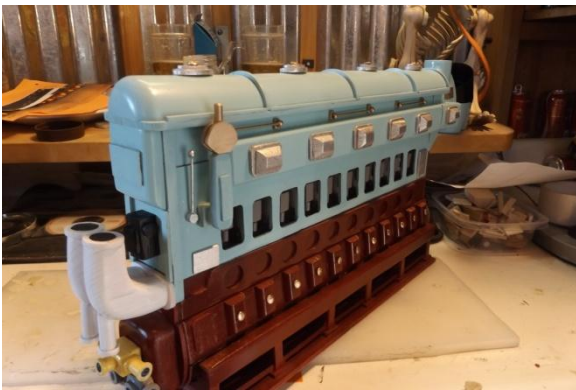
I loved those engines and the submarines that come with them. In my case the USS Medregal (SS-480). Can't you

just hear the rumble of those old
“rock crushers” and smell the

diesel oil and smoke fumes?



The above is a magazine or trade advertisement for the Fairbanks Diesel engines using a telegram message from the USS Wahoo and her naval success to further promote their diesel engines.



Above are two shots of the author's model of a Fairbanks Morse submarine engine. The first still on the author's work bench and the second with a figure of the Wolfman to show the scale of 1 inch equals 1 foot. Of course at sea for a few weeks we looked about the same. Note: the American flag is on another model behind the engine.

Current News

*“Plataginet, I will; and like thee, Nero,
Play on the lute, beholding the towns burn” (Henry VI, Shakespeare)*

Russian Navy to get two advanced Yasen-M subs under new state contract

Not Attributed, TASS, June 27

The Russian Navy will get two advanced Yasen-M multipurpose nuclear-powered submarines under a state contract concluded at the Army-2019 international military and technical forum, Deputy Defense Minister Alexei Krivoruchko said on Thursday.

"Today is a large-scale event both for the Russian Armed Forces and for our defense industry. Today we have signed a number of large-scale deals. These are firm contracts to be more exact. They relate to the Su-57 [fifth-generation fighter jet] and modern air-launched weapons for this plane. These deals also cover two new Yasen-class submarines. These are substantial volumes and a very significant contract," the deputy defense minister said.

It was earlier reported that 46 state contracts worth over 1 trillion rubles (\$15.9 billion) had been concluded at the Army-2019 international military and technical forum in the presence of Russian President Vladimir Putin.

Yasen Project

Russia's Sevماش Shipyard has built and delivered the baseline Project 885 Yasen-class submarine Severodvinsk to the Navy. It has entered service with Russia's Northern Fleet. The improved Project 885M Yasen-M lead submarine Kazan is currently undergoing trials. Five more Project 885M submarines are at various stages of their construction.

The Project 885 and Project 885M submarines have been developed by the St. Petersburg-based Malakhit Marine Engineering Bureau.

The Army-2019 military and technical forum runs at the Patriot Congress and Exhibition Center outside Moscow on June 25-30. According to preliminary estimates, more than 1,500 enterprises and organizations are taking part in the form to feature over 27,000 products and technologies.

Congress wants the US military to challenge Russia with a new Arctic port

David B. Larter, Defense News, June 22

WASHINGTON — The U.S. military's annual authorization working its way through the Senate directs the armed services and the Maritime Administration to identify and designate a new strategic port in the Arctic, a move meant to counter Russia's presence at the top of the world.

The 2020 National Defense Authorization Act that emerged from the Senate Armed Services Committee directs the defense secretary to work with the chairman of the Joint Chiefs of Staff, the Army Corps of Engineers, the Coast Guard and the Maritime Administration to submit a report to Congress that evaluates potential sites for the port. It then requires the defense secretary designate one or more of the sites as "Department of Defense Strategic Arctic Ports" within 90 days.

The Senate is expected to vote on the NDAA next week.

A U.S. port in the Arctic would serve as a counter to recent Russian activity in the region, including the construction of its "Northern Clover" military base which features missiles, radars and military personnel.

Congress has been increasingly concerned over melting ice caps opening the potential for new northern trade routes, highlighting the U.S. shortfalls in, among other things, icebreakers. The U.S. has two icebreakers, but only one that barely works while the other serves as a parts locker. Meanwhile Russia has dozens of icebreakers including nuclear-powered ones.

Russia, with 7,000 miles of Arctic coast, sees the region as both a security liability and a key to its long-term economic success. Russian President Vladimir Putin in 2017 put estimates of the mineral wealth in the region at \$30 trillion.

The U.S. Coast Guard in April awarded VT Halter a \$750 million contract for detailed design and long-lead materials for a new icebreaker, the first of what the Coast Guard aims to be a small fleet of six icebreakers to meet rising needs in the high north.

Some see an American Arctic base as essential to addressing the melting ice and the potential for new trade routes there, but others see it as a throwback to Cold War-era symmetry policies that don't take Russia's vastly different security and economic needs fully into account.

Dan Goure, a former Bush administration defense official and analyst at the Lexington Institute, said that if the U.S. sees Russia as a competitor, as the former claims, then it has no choice but to start offsetting Russian activity in the Arctic. Furthermore, even a modest investment can have big yields, he said.

"They [the Russian government] see the Arctic as a vulnerable long flank — potentially the most vulnerable flank for air and missiles," Goure said. "The plus side of putting a port up in [the Arctic] is that you don't have to do a whole hell of a lot to force the Russians to put a lot of resources up there to counter it. The cost of maintaining, say, an airbase in the Arctic is enormous. And those are resources that could be used otherwise to threaten, for example, countries in Europe."

Warmed-over Cold War?

Bryan Clark, a retired submarine officer and analyst with the Center for Strategic and Budgetary Assessments, said thinking of Arctic bases the way people thought about missiles in the Cold War is unrealistic.

"We [the U.S.] have a coastline on the Arctic, but it's not exactly the sea route that the northern sea route is," Clark said, referring to a trade route that runs along Russia's Arctic coast.

"We don't use the Arctic the same way the Russians do. We don't have the same exposure as the Russians do. They've got 7,000 miles of coastline, it's difficult to patrol and they're somewhat neurotic about homeland defense anyway. It's a perceived vulnerability on the part of Russia and has been for a long time, so they've always put a lot of money into the ability to break ice, maintain access."

For all those reasons, one-for-one comparisons with Russia's Arctic capabilities are misguided, he said. "Comparing our Arctic capabilities to theirs, it's kind of off base because you are comparing two very different countries on things that they need in different amounts."

'The far end of the logistics chain'

Still, operating in the high north, given the changing conditions, is a good idea, Clark said, and having the military study it is worthwhile.

The problem, however, is when the fleet in the high north needs repair. Coast Guard ships would need to travel to somewhere like Kodiak, Alaska, and the Navy might need to transit back to Puget Sound off the coast of Washington state to get help.

Alternatively, the Navy could set up a forward way station of sorts somewhere like Nome, Alaska, which is along the state's central-western coastline near the Bering Strait, where the fleet could receive support during months when the area is accessible. But putting something in a place on Alaska's north slope, like Prudhoe Bay, could be ill-suited because melting permafrost will turn that area into a marshland.

"I think the idea of putting a base up in the far north is a bad idea," Clark said. "It's too expensive, and then you'll build it and not be able to use it for a large part of the year. It becomes a white elephant. What might be a better idea would be to make a waypoint in Nome and use your afloat forward staging base for operations in the far north during the times of year when that is viable."

Supporting ships in the Arctic from a logistics standpoint was identified as a risk area by U.S. Sixth Fleet Commander Vice Adm. Lisa Franchetti in a January interview with Defense News.

The Harry S. Truman Carrier Strike Group operated in the Norwegian Sea during the Trident Juncture exercise in October, and working through logistics challenges was a key takeaway from the drill, Franchetti said.

"Operating at the far end of the logistics chain, it was really important for us to see how we could do that, how it would work, and we took a lot of lessons from that," she said.

Submarine-launched missile meets national security needs – Defense Ministry

Guo Yuandan and Liu Xuanzun, Global Times, June 16

The scheduled test was normal, China's Ministry of National Defense said on Thursday, when asked about the alleged test launch of a JL-3 submarine-launched ballistic missile (SLBM) on June 2.

"These tests are not targeted at any country or objective," Defense Ministry spokesperson Ren Guoqiang said at a routine press conference.

Ren was responding to a question from the Global Times on reports that residents claimed to have seen an unidentified flying object (UFO) on June 2.

Just as media and netizens speculated on the true nature of the UFO, relating it to a naval exercise that took place in the Bohai Sea and Bohai Straits at the same time, the People's Liberation Army Rocket Force and Navy hinted on June 3 that the "UFOs" could be missiles launched.

Chinese and foreign reports then speculated that the missile could be China's new SLBM, the JL-3.

During the press conference, Ren did not explain what weapon was used in the test, however, if the information provided in the question was wrong and it was not the JL-3, the spokesperson would have denied it, as in many previous cases, military analysts said.

Military experts told the *Global Times* that the JL-3 is China's latest SLBM under development that is expected to reach targets farther away with higher accuracy and capable of carrying more warheads than China's current SLBMs.

The SLBM might have a range of up to 14,000 kilometers and be equipped with 10 independent guided nuclear warheads, Russia's state TV channel *Russia Today* reported.

China always pursues a defensive national defense policy and active defense military strategy, Ren said, noting that developing weapons and equipment meets the basic needs of safeguarding national security of China.

China's Hidden Navy

Gregory Poling, *Foreign Policy*, June 25

The Spratly Islands, occupied by five different claimants, are the most hotly contested part of the South China Sea. Thanks to the harbors and supporting infrastructure Beijing constructed on its outposts there over the last five years, most vessels operating around the Spratlys are Chinese. And most of those are at least part-time members of China's official maritime militia, an organization whose role Beijing frequently downplays but that is playing an increasingly visible role in its assertion of maritime claims.

A small cohort of analysts continue to cast doubt on the existence and activities of the maritime militia. The best-intentioned offer alternative explanations for the curious behaviors of the Chinese fishing fleets, though those don't stand up to scrutiny. Other writers, especially those affiliated with Chinese institutions and state media, seek to present an alternate version of reality by artfully cropping satellite imagery, cherry-picking data, or simply ignoring the facts and attacking the motives of those presenting evidence of militia activities.

This is unsurprising—the purpose of employing a maritime militia is to keep aggression below the level of military force and complicate the responses of other parties, in this case chiefly the other claimants (Vietnam, the Philippines, Malaysia, and Taiwan) as well as the United States, by hiding behind a civilian facade. Without deniability, the militia loses much of its value. That gives China a strong incentive to dissemble and deny evidence of its actions. But that evidence speaks for itself.

The People's Armed Forces Maritime Militia is not a secret. Article 36 of the China Military Service Law of 1984, revised in 1998, calls for the militia “to undertake the duties related to preparations against war, defend the frontiers and maintain public order; and be always ready to join the armed forces to take part in war, resist aggression and defend the motherland.” China's 2013 defense white paper enhanced the maritime militia's role in asserting sovereignty and backing up military operations. This is the naval analogue to China's larger and better-known land-based militia forces, which operate in all Chinese theater commands, supporting and under the command of the People's Liberation Army (PLA).

In 2013, Chinese President Xi Jinping visited the maritime militia in Tanmen township on Hainan, China's southernmost province, and labeled it a model for others to follow. Andrew Erickson, Conor Kennedy, and Ryan Martinson at the China Maritime Studies Institute at the U.S. Naval War College have spent years documenting the activities of the maritime militia, including extensive acknowledgment by Chinese authorities and many instances in which militia members have publicly discussed their activities.

A review of available remote sensing data by the Center for Strategic and International Studies and Vulcan Inc.'s SkyLight Maritime Initiative, including infrared imaging, synthetic aperture radar, and high-resolution satellite imagery, shows that the largest number of vessels operating in the Spratly Islands belongs to the Chinese fishing fleet, which frequently numbers between 200 and 300 boats at Subi and Mischief Reefs alone. This is not by itself peculiar: China maintains the world's largest fishing fleet, and its distant water vessels operate around the globe due to overfishing and pollution of Chinese coastal waters. But the vessels operating in the Spratlys are not part of that distant water fleet—those boats are larger and head farther afield in the hunt for high-value migratory species. And at 800 nautical miles (about 920 miles) from the mainland, the Spratlys are too far for small and medium-sized Chinese fishing vessels to operate productively without being heavily subsidized.

But even China's two-decade-old policy of subsidizing fishing as an assertion of sovereignty can't explain the behavior of most Chinese vessels in the Spratlys in recent years. Chinese fishing boats in the islands average more than 500 tons, well over the size legally required for boats undertaking international voyages to use Automatic Identification System (AIS) transceivers, which broadcast identifying information, headings, and other data about oceangoing vessels. But fewer than 5 percent of them actually broadcast AIS signals at any given time. This suggests a fleet intent on hiding its numbers and actions.

These large, modern vessels represent a stunning level of sunk capital costs but do not engage in much commercial activity. Frequent satellite imagery shows that the vessels spend nearly all of their time anchored, often in large clusters. This is true whether they are inside the lagoons at Subi and Mischief Reefs or loitering elsewhere in the Spratlys. Operating in such close quarters is highly unusual and certainly not the way commercial fishing vessels usually operate.

Light falling net vessels, which account for the largest number of Chinese fishing boats in satellite imagery of the Spratlys, very rarely have their fishing gear deployed. China's trawlers, meanwhile, almost never actually trawl; instead, satellite imagery and the AIS signals of those few trawlers regularly broadcasting both show that they spend most of their time at anchor. These unusual, and highly unprofitable, behaviors suggest that most of these supposed fishing boats are not making a living from fish.

When Chinese fishing vessels are not at Subi or Mischief Reefs, they are most often seen in satellite imagery anchored near Philippine- and Vietnamese-held outposts in the Spratlys. This is corroborated by the small number of AIS signals detected from Chinese ships. The most spectacular example of this behavior was the swarm of vessels from Subi Reef that dropped anchor between 2 and 5 nautical miles from Philippines-held Thitu Island as soon as Manila began modest upgrade work on that feature in December 2018. The number of vessels seen in satellite imagery peaked at 95 on Dec. 20, 2018, before dropping to 42 by Jan. 26. That presence continued into early June, when reports suggested that China had begun to pull back the vessels. The exact number of ships fluctuated from day to day, but almost none broadcast AIS or deployed fishing gear, and they operated in much closer quarters than any commercial fishing vessels would.

The Armed Forces of the Philippines confirmed that it had monitored 275 individual Chinese vessels swarming near Thitu between January and March, and Manila filed protests with Beijing over their presence. Meanwhile satellite imagery from March to April showed another cluster of Chinese vessels displaying the same puzzling behavior around two other Philippine-held features: Loaita Cay and Loaita Island. In that case, some dropped anchor just half a nautical mile from the isolated Philippine facility on Loaita Cay.

The only explanation that can make sense of all of these behaviors is that most of these vessels engage, at least part-time, in the work of China's maritime militia. The job of that militia force has been well documented by sources as diverse as the U.S. Naval War College, reports from the Philippine military, and China's own official documents outlining the militia's role. On a day-to-day basis it serves as a logistics and surveillance arm of the PLA, ferrying supplies to Chinese outposts, monitoring and reporting on the activities of other claimants, and engaging in joint training exercises with the military and law enforcement. But they also move into more direct harassment of other nations' vessels when called up—maneuvering dangerously close to foreign naval, law enforcement, and civilian vessels, sometimes shouldering and ramming them, and in general making it unsafe for other parties to operate in areas contested by Beijing, all while the PLA and China Coast Guard are kept in reserve as an implicit threat with a level of deniability.

Some analysts have offered alternative explanations for the curious, unproductive behavior of these ships. But none of the theories stand up well to scrutiny.

One suggestion is that these vessels never have gear in the water because they are actually reef fishers engaged in harvesting high-value species such as sea cucumbers and giant clams. Relatedly, theorists posit that they don't broadcast AIS because they are too small, or too old, or because they know that harvesting endangered species is illegal under Chinese law and they want to hide their activities. Some have even argued that the flood of vessels around Thitu was due to a surge in demand for seafood ahead of China's Spring Festival.

But these explanations make little sense. The sizes and types of vessels are easily determined from satellite imagery. These fleets consist of large (over 160-foot) modern trawlers and falling net vessels, not the smaller (80- to 115-foot) motherships that accompany Chinese reef fishers around the Spratlys and other disputed features such as the Paracels and Scarborough Shoal, and certainly not the reef fishing boats themselves. And while reef fishing vessels average just 15 feet, they can be seen in satellite imagery; it would be immediately obvious if hundreds were operating around Thitu Island. There is plenty of sea cucumber harvesting in the Paracels—at Antelope Reef, for instance—and giant clam poaching has been well documented across the South China Sea. This is not that.

Another theory is that these vessels don't appear to be fishing because they are involved in transshipment, serving in a support role by purchasing catch from and providing supplies to other fishing boats in the area. That might fit if it was just some small percentage of the Chinese fleet involved. But the opposite is true: Most Chinese ships observed in the Spratlys don't appear to be commercially fishing. They can't all be support vessels; what would they be supporting?

A third hypothesis is that some of these vessels are simply passing through the Spratlys to fraudulently collect the fuel subsidies China offers for ships that operate in the contested waters. After securing their subsidy, the theory goes, these boats likely head for more productive fishing grounds beyond the region. This could be true for some small number of ships; it would be impossible to prove either way. But this cannot explain the long-term presence of hundreds of vessels anchored around Thitu and other features. And while only a small percentage of Chinese ships broadcast AIS in the Spratlys, those that do tend to spend months at a time there, mostly anchored.

The evidence that China is using hundreds of fishing vessels under the aegis of its publicly acknowledged maritime militia to assert claims and harass its neighbors in the Spratlys is considerable. By contrast, the alternative theories are severely lacking. No other convincing explanation has been offered for why so many fishing vessels are engaged for months at a time in activities that make little or no commercial sense, or why they are so intent on hiding their actions.

The maritime militia is the vanguard of China's assertion of claims to the waters of the South China Sea. It is the largest fleet operating in the area and is the most frequent aggressor toward both China's neighbors and outside parties like the United States when asserting international rights in waters claimed by Beijing. It operates as a nonuniformed, unprofessional force without proper training and outside of the frameworks of international maritime law, the military rules of engagement, or the multilateral mechanisms set up to prevent unsafe incidents at sea. The next violent incident to take place in the South China Sea is far more likely to involve the Chinese militia than the PLA or China Coast Guard, and it will lack the mechanisms for communication and de-escalation that exist between those professional services and their counterparts in other nations.

The only way to avoid an eventual crisis triggered by these paramilitary vessels is to convince Beijing to take them off the board. And the first step is to pull back the curtain of deniability, acknowledge that the evidence for their numbers and activities is overwhelming, and insist that the Chinese government be held accountable for their bad behavior.

China Hopes To Beat America's Armed Forces By Copying Them

Not Attributed, *The Economist*, June 26

OVER THE PAST decade, the People's Liberation Army (PLA) has been lavished with money and weaponry. Chinese military spending rose by 83% between 2009 and 2018, by far the largest growth spurt of any big country. This splurge has enabled China to deploy precision missiles and anti-satellite weapons that challenge America's supremacy in the western Pacific. China's leader, Xi Jinping, says his "Chinese dream" includes a "dream of a strong armed forces". That, he says, involves "modernising" the PLA by 2035 and making it "world-class"—in other words, America-beating—by mid-century. He has been making considerable progress.

Organisational reforms may be less eye-catching than missiles that fly at Mach 5, unmanned cargo planes and electromagnetically powered superguns (all of which China has tested in the past year). Yet Mr Xi has realised that there is little point in grafting fancy weapons onto an old-fashioned force. During the cold war the PLA evolved to repel the Soviet Union and America in big land wars on Chinese soil. Massed infantry would grind down the enemy in attritional battles. In the 1990s Chinese leaders, alarmed by American prowess in the Gulf war of 1991, decided to focus on enhancing the PLA's ability to fight "local wars under high-technology conditions". They were thinking of short, sharp conflicts on China's periphery, such as over Taiwan, in which air and naval power would be as important as ground forces. Mr Xi decided that winning such wars required changing the armed forces' structure. He has done more in the past three years to reform the PLA than any leader since Deng Xiaoping.

Mr Xi's principal aim is to increase "jointness". This term, borrowed from Western military jargon, refers to the ability of different services—army, navy and air force—to co-operate on the battlefield quickly and seamlessly. Jointness is especially important for fighting wars that break out abroad. It can be difficult for commanders at national headquarters to choreograph soldiers, sailors and pilots from a great distance. The different services must be able to work together without instruction from on high.

China's model is the United States, which—under the Goldwater-Nichols Act of 1986—drastically reformed its own armed forces in order to achieve this goal. The Pentagon carved up the globe into “combatant commands”. No longer would services squabble among themselves. All soldiers, sailors and pilots in a given area, such as the Persian Gulf or the Pacific, would take orders from a single officer.

Mr Xi has followed suit. Before his reforms, army and navy commanders in the country's seven military regions would report to their respective service headquarters, with little or no co-ordination. In February 2016 Mr Xi replaced the regions with five “theatres”, each under a single commander (see map). The eastern one based in Nanjing would prepare for war with Taiwan and Japan, for instance. The sprawling western theatre, in Chengdu, would handle India. The southern one in Guangzhou would manage the South China Sea.

As well as these geographic commands, two others were formed in 2015, each aimed at an American vulnerability. American forces depend on communications via satellites, computer networks and other high-tech channels. So Mr Xi created a new Strategic Support Force to target these systems. It directs space, cyber, electronic and psychological warfare. In 2018 it conducted exercises against five PLA units in what the Pentagon called a “a complex electronic warfare environment”. American military power in Asia also depends on a network of bases and aircraft carriers. Mr Xi took aim at these by establishing a new service called the PLA Rocket Force—an upgrade of what was previously known less rousingly as the Second Artillery Corps.

He has also been trimming the armed forces' bloated ranks, though they remain over 2m-strong. Since 2015 the PLA has shed 300,000 men, most of them from the land forces, which have lost one-third of their commissioned officers and shrunk from 70% of the PLA's total strength to less than half (though happily the army has kept its dance troupes, which it had been told it would lose). By contrast, the marines are tripling in size. Navy and air-force officers have gained more powerful posts, including leadership of two theatre commands. This reflects the PLA's tilt towards the seas—and the skies above them.

It is hard to tell whether the new PLA is more proficient on the battlefield. China has not fought a war in four decades. The last Chinese soldiers with experience of a large-scale conflict—a war with Vietnam in 1979—will retire shortly.

But there is evidence that the PLA is getting better at jointness. Some of China's growing number of forays beyond its borders, notably bomber flights around Taiwan and over the South China Sea, indicate increasing co-ordination between air and naval forces. “We see a lot of joint exercises to work out kinks in the system and get the services used to working with each other,” says Phillip Saunders of the National Defence University in Washington. Chinese war games were once highly scripted affairs. Now officers are assessed on the realism of their training, says Meia Nouwens of the International Institute for Strategic Studies in London. Before Mr Xi's reforms the “blue team”, which simulates an adversary, would always ritually lose large-scale annual exercises known as “Stride” in Inner Mongolia. Now they usually win.

But China's troops may still be ill-prepared for complex warfare. In America promotions depend on officers' ability to work with other services. Their Chinese counterparts often spend their entire careers in one service, in one region and even doing the same job. Political culture is another problem. “The structures that China is trying to emulate are based on openness, on delegation of authority and collaboration,” notes Admiral Scott Swift of MIT, who retired last year as commander of America's Pacific Fleet. He says modern warfare requires decentralised decision-making because cyber and electronic warfare can sever communications between commanders and units. “Militaries that are founded on democratic principles are going to be much more adept at adapting to that environment,” Admiral Swift suggests.

Mr Xi is an authoritarian who strives for centralised control. His predecessor, Hu Jintao, did not have a tight grip on the PLA, says Mr Saunders. That is because Mr Hu's own predecessor, Jiang Zemin, had appointed the two vice-chairmen of the Central Military Commission, a powerful body that oversees the armed forces. They stayed throughout Mr Hu's tenure, frustrating any efforts to reform the PLA and curb its endemic corruption and ill-discipline.

Mr Xi is determined not to suffer the same fate. His anti-corruption purges have ensnared more than 13,000 officers (three serving generals were demoted in June, according to the South China Morning Post, a newspaper in Hong Kong). Mr Xi slimmed down the military commission from 11 to seven members, kicking off the service chiefs and adding an anti-graft officer. The body was also given control of the paramilitary People's Armed Police, which in turn absorbed the coast guard.

Predictably, the restructuring has generated resentment. Senior officers are irked at losing privileges. Demobilised soldiers sometimes take their grievances to the streets—one reason why Mr Xi founded a ministry of veterans' affairs in 2016. But, says Ms Nouwens, younger ranks benefit from merit-based promotion, take

pride in the growing prominence of the PLA in Chinese film and television, and admire Mr Xi's "great rejuvenation of the Chinese nation".

They will have an opportunity to show off on October 1st when a huge military parade will be staged in Beijing to mark the 70th anniversary of Communist rule. It will be the first such show in the capital since Mr Xi launched his reforms. Expect a world-class performance.

Navy Culture Must Be Adapted To Fit The Information Age

Lt. Cmdr. Travis D. Howard, USN, CIMSEC, June 18

A recent independent review of the Navy's cybersecurity posture, completed in March 2019, was predictably harsh on our Navy's current culture, people, structure, processes, and resourcing to address cybersecurity.¹ For many of us within the Information Warfare discipline, much of this report does not come as a shock, but it does lay bare our cultural, structural, and procedural problems that the Navy has been struggling with since the turn of the century.

The 76th Secretary of the Navy, Richard V. Spencer, should be applauded for enabling open and honest dialogue on the key issues of this report by releasing it for public comment and professional discourse. The review found that the Navy was not "optimally focused, organized, [nor] resourced" for cyberwar.² Such transparency has been the hallmark of the naval service for centuries, and is largely the reason why such robust professional forums such as the United States Naval Institute (USNI) and the Center for International Maritime Security (CIMSEC) continue to thrive.

The report was particularly critical of the Navy's culture, stating that the Navy is "preparing to win some future kinetic battle, while it is losing the current global, counter-force, counter-value, cyberwar."³ The report goes on to recommend that the highest levels of Navy leadership adjust the service's cultural landscape to become more information-centric, rather than platform-centric. This excerpt is particularly vexing:

"Navies must become information enterprises who happen to operate on, over, under, and from the sea; a vast difference from a 355 ship mindset."⁴

In truth, the Navy that acts as an information enterprise and the Navy that pursues the tenants of traditional naval warfare as laid out by naval doctrine are not mutually exclusive. Our drive toward a bigger, better, and more ready Navy, aligned to the National Defense Strategy, requires a naval culture ready for high-end conflict but active and engaged in all levels of conflict below lethal combat. The adoption of information enterprise core principles certainly has a place in our doctrine; in fact, it's already there but lacks proper execution and widespread cultural adoption as a core competency across all warfare communities. Navy culture can be adapted to better fit the information age, but it will take the entire Navy to do it and not just a single community of effort.

Information is Already in our Doctrine, but Prioritization Must Improve

The 31st Chief of Naval Operations (CNO), Admiral John Richardson, released a Design for Maintaining Maritime Superiority shortly after assuming his role, and recently released an update (Design 2.0) to compliment the 2018 National Defense Strategy. The CNO put information warfare at the center of his strategic thinking, and challenged the Navy's operational and resourcing arms to "adapt to this reality and respond with urgency."⁵ But this change in the security environment wasn't new to this CNO, in fact, it was foreseen decades ago by thinkers like CAPT (ret.) Wayne P. Hughes, a venerated naval tactician and professor emeritus at the Graduate School of Operations and Information Sciences of the Naval Postgraduate School. Early versions of Hughes' Fleet Tactics and Coastal Combat, required reading in graduate-level naval officer training, placed information, rapid adoption of technology, and intelligence at the forefront of effective maritime operations in the modern age.⁶

If we've valued information in warfighting all along, then why are we failing to adapt our naval culture to the Information Age? The Cybersecurity Readiness Review cuts straight to the point: "... cybersecurity continues to be seen largely as an 'IT issue' or 'someone else's problem.'"⁷ In our haste to stand up a community of practice to do all the cyber things we, as a Navy, failed to make the necessary cultural changes that should have accompanied it.

Why hasn't the growth of the Information Warfare Community focused the Navy's culture appropriately? After all, creating such specialized warfare communities has always worked well in the past, as any aviator can attest to. Truthfully, the problem is bigger than just one community; the subsequent decades saw the rise of global information technology as central to nearly everything we do, and every Sailor now uses the network as a primary on-the-job resource. The loss of email, web browsing, and support systems that handle tasks from

personnel to logistics can and does result in work stoppage; any assertions to the contrary, that workarounds or manual methods still exist, do not accept the reality of the situation.

Cultural change is long overdue, and just like a Marine or Soldier learns how to handle their weapon safely and effectively from day one, we must now train and mentor our Sailors to use the network in the same vein. No more can we flippantly say “we have people for that” when faced with information management and cybersecurity problems, putting effort into modernizing complex systems and enhancing Information Warfare’s lethality, while ignoring the power a single negligent user could wield to bring it all down. It’s all hands on deck now, or the Navy faces the very real possibility of fumbling the opening stages of the next kinetic fight.

Security is Already an Inherent Part of Navy Culture

The good news is that information security is already an intrinsic part of being a member of the armed forces, uniformed or civil service. Security clearances, safe handling procedures for classified information, and cryptography practices like two-person integrity have been trained into the workforce for decades. Protecting information is as much a part of our culture as operating weapons systems or driving warships.

The Navy’s training machine should find ways to leverage this existing culture of compliance to incorporate dynamic and repetitive ways to reach all Sailors at all stages of development – from boot camp to C school, from initial officer training to graduate school, focused on making each Sailor a harder target for information exploitation. Each engagement should be tailored to fit the environment and to complement subject matter: initial user training should teach how to report spear-phishing, practice OPSEC on social media (and how to spot adversarial attempts to collect against them), and recognizing unusual activity on a network workstation. A more senior Sailor in C-school might learn how to look at cybersecurity from a supervisory perspective, managing a work center and a group of network assets, and how to spot and report insider threats both malicious and negligent. An officer in a naval graduate program, such as at NPS or the Naval War College, would take advanced threat briefings on adversarial activity targeting rank-and-file users on the network, and how to incorporate such threat information into wargaming to inform the strategic and operational levels of war.

Some of these actions are already in the works, but the emphasis should be on how to engage Sailors in multi-faceted, multi-media ways, and repetition is critical. Seeing the same concept in different ways, in different case studies, reinforces better behavior. The Navy is no stranger to this training method: we are masters at repetitive drills to train crews to accomplish complex actions in combat. Reinforcement of this behavior cannot come fast enough. Incidents attributed to negligent network users are on the rise, and cost organizations millions of dollars a year.⁸ The Navy is no exception: category-4 incidents (improper usage) are too common.

Ultimately, the objective should be a Sailor who understands cyber hygiene and proper use of the network as a primary on-the-job tool, just as well as any Soldier or Marine knows his or her rifle. Sailors go to sea aboard complex warships with integrated networked systems that run everything from Hull, Mechanical, and Electrical (HM&E) systems to combat systems and weapons employment. The computer is our rifle, why shouldn’t we learn how to use it more safely and effectively?

Keys to Success

Cultural change is hard, but lessons learned from our past, best practices from the private sector, and good old fashioned invasive leadership (the kind the Navy does very well) can adjust the ship’s rudder and speed before we find ourselves much further in shoal water.

Top level leadership must set the conditions for success, but they have to believe in it themselves. Our Sailors can easily tell when a leader doesn’t fully commit to action, paying lip service but nothing beyond it. They are also hungry to follow a leader who has a passion for what they do. To effect change, passionate leaders need to take center stage with the authority and resources necessary to translate change into action at the deckplate level. When a Sailor sees a top-level message about a desired change, then sees that change actually happening in their workspace, it becomes real for them. Let’s also trust them to understand the threats, rather than keeping the “scary” threat briefs at the senior levels.

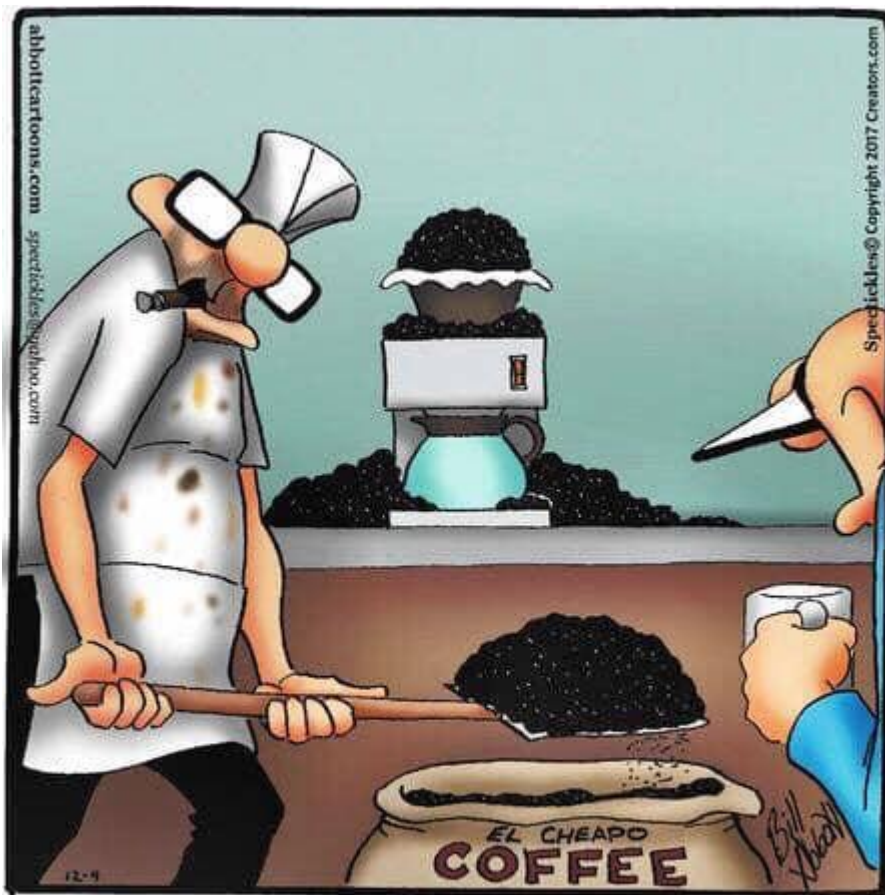
Successes must be celebrated, but failures must have real consequences. It’s time to get serious about stopping insider threats, specifically negligent insiders. Too often the conversation about insider threats goes to the criminal and malicious insiders, ignoring the most common root of user-based attack vectors. Our Sailors must be better informed through regular threat briefings, training on how to spot abnormal activity on the network, and clear, standardized reporting procedures when faced with phishing and other types of user-targeted attacks. Those who report suspicious activity resulting in corrective action should be rewarded. Likewise, those who blatantly ignore established cyber hygiene practices and procedures must face real consequences on a scale similar to cryptographic incidents or unattended secure spaces. This will be painful, but necessary to set our user culture right.

Effective training begets cultural change. We must take advantage of new and innovative training methods to enrich our schoolhouses with multimedia experiences that will reshape the force and resonate with our new generation of Sailors. The annual Cybersecurity Challenge should be retired, its effectiveness has been questionable at best, and replaced with the same level of rigor that we used to attack no-fail topics like sexual assault prevention. With the stand-up of a Director of Warfighting Development (N7), and the lines of effort within the CNO's Design 2.0 rife with high-velocity learning concepts, the near-future landscape to make this sea change looks promising.⁹

Conclusion

The Navy has spent the better part of 30 years struggling to adopt an information-centric mindset, and the good news is that operational forces have come a long way in embracing the importance of information in warfare, and how it permeates all other warfare areas. Yet our culture still has a long way to go to break the now dangerously misguided notion that information management and cybersecurity are something that “we have people for” and doesn't concern every non-IW Sailor. The IW Community has come a long way and can do a lot to further the Navy's lethality in space, cyberspace, and the electromagnetic spectrum, but it can't fix an entire Navy's cultural resistance to change without strong assistance.

Secretary Spencer, in his letter introducing the public release of the 2019 Cybersecurity Readiness Review, noted that “the report highlights the value of data and the need to modify our business and data hygiene processes in order to protect data as a resource.”¹⁰ He highlighted that cross-functional groups were already underway to address the findings in the report, and surely the machinations of the Navy Headquarters are more than capable of making the necessary changes to the Navy's “policy, processes, and resources needed to enhance cyber defense and increase resiliency.”¹¹ But culture, that's all of us, and we must be biased toward change and improvement. We are the generation of naval professionals who must adapt to this reality and respond with urgency.



"Where'd I learn to make coffee? Navy. Why?"