

MINUTES OF THE USSVI NORTHERN VIRGINIA BASE MEETING HELD ON SATURDAY, November 9, 2019

The Base CDR, Chuck Martin, called the meeting to order at 1106 on November 9, 2019 at American Legion Post 364 in Woodbridge, VA and welcomed all members and guests. Richard Hamly, Norman Polmar (well-known author), and John and Cindy Lindstedt (guest speaker and wife) from Sullivan, WI introduced themselves. John qualified on the USS Kamehameha (SSBN 642) and served as MPA, and shared a stateroom with VCDR Brian Haller (Supply Corps) some 45 years ago.

MEMBERS AND GUESTS IN ATTENDANCE

Steve Bishop, Debbie Bishop, Cathy Chatham, Howard Chatham, Bill Douglas, Mickey Garverick, Bob Glover, Dominic Grimaldi (Groton Base visitor), Brian Haller, Pat Haller, John Lindstedt (NOVA Base, Great Lakes Base and guest speaker), Cindy Lindstedt, Chuck Martin, Ed Mattran, Paul Nelson, Terry Nelson, Norman Polmar, Mark Riethmeier, Mike Varone, George Wallace, Penny Wallace, and Woody Woodworth (22 total)

 Holland Club Member

 Associate Member

 Guest

The VCDR led all hands in the Pledge of Allegiance.

The Base CDR, Chuck Martin, delivered the Invocation.

After a moment of silence, the Base Secretary, Steve Bishop, read the list of boats lost in the month of November. These were:

USS Albacore (SS-218)	Nov 7, 1944
USS Growler (SS-215)	Nov 8, 1944
USS Scamp (SS-277)	Nov 16, 1944
USS Corvina (SS-226)	Nov 16, 1943
USS Sculpin (SS-191)	Nov 19, 1943

The VCDR then tolled the ship's bell twice in Remembrance of the 25 USSVI NOVA Base members on Eternal Patrol.

IN MEMORIAM:

CAPT Frank A. Walker, Jr, USN, Ret. – 8/7/19

CAPT Jerry John Nuss, USN, Ret.- 10/17/19

BASE HISTORIAN

Woody Woodworth prepared this article on USS Growler (SS-215), as read by the Base Secretary, as Woody was on a Best Buy run to purchase the electronics hardware for our projector to computer interface to support today's guest speaker:

**EXTRACTED FROM THE NARRATIVE SECTION OF THE U.S.S. GROWLER SS-215
DECLASSIFIED 4TH PATROL REPORT (AVAILABLE AT
“[HTTPS://ISSUU.COM/HNSA/DOCS/SS-215_GROWLER](https://issuu.com/hnsa/docs/ss-215_growler)”)**

GROWLER was just about lost on her fourth patrol due to collision with an enemy warship. As this incident evolved, GROWLER did lose the Commanding Officer, a young Ensign, and a young lookout.

On February 7, 1943, GROWLER was on the surface during poor visibility conditions when at 0110 a ship was sighted on the starboard bow, on an opposite course, at a range of 2000 yards. GROWLER turned away, made tubes ready, and swung around to close for attack. When in a position with radar range 2000 yards and a track angle 130° starboard, the target sighted GROWLER and reversed course to attack. At 0134 the target range was too close to fire. The bridge gave the order "left full rudder" and sounded the collision alarm. At 0135 GROWLER hit the enemy vessel head on, swinging with left rudder, at 17 knots, striking the target halfway between the target's bow and bridge. The impact was terrific, knocking everyone down. GROWLER heeled over about 50°. The enemy opened fire with several machine guns (.50 cal.) at point blank range. The order was given "Clear the bridge". The O.O.D. and quartermaster descended and pulled two wounded lookouts through the conning tower hatch. After about 30 seconds when no one else appeared at the hatch; the diving alarm was activated, the conning tower hatch was closed, and GROWLER submerged.

The Commanding Officer; Commander HOWARD WALTER GILMORE, the Assistant O.O.D.; Ensign WILLIAM WADSWORTH WILLIAMS, and Lookout; Fireman WILBERT FLETCHER KELLEY were left on the bridge. It is believed they were killed by enemy gunfire and washed overboard.

The enemy continued spraying the bridge with machine gun fire until it was underwater. The conning tower hatch had a bullet hole about ½ inch across and ¾ inch long. No other serious leaks were observed immediately. The water entering the conning tower could not be stemmed. All gyro, IC, lighting, and heater circuits flooded out. The cables to the bridge gyro repeater, TBT's and IMC speaker were shot away and the cables flooded through into the ship. The conning tower was not abandoned as every effort was being made to plug the leaks. Depth was maintained at 150' and no attention was paid to two depth charge explosions that were not close.

Lieutenant L. L. DAVIS, U.S.N. is deserving of much credit for cool and able handling of the ship during the dive under extremely adverse conditions. Water in the control room was about 6 inches deep and in the pump room several feet deep, with both drain and trim pump running continuously.

At 0145 the JK-QC sound gear was back in commission and no contacts were heard. At 0201 GROWLER made a battle surface. Nothing was in sight so GROWLER cleared the area to westward. The enemy ship rammed by GROWLER was a large converted patrol boat of about 2500 tons. The enemy ship's bow was ripped wide open and it is believed he sank.

Examination of the damages sustained by GROWLER, revealed the following: About 18 feet of the bow is bent at right angles to port. Outer doors to #3-4 tubes cannot be closed. About 35 feet

of the bow including the bow buoyancy tank is crumpled. Underwater damage to the tubes was undetermined. Many holes in the bridge superstructure but the only bad leak is through the conning tower hatch. This leak was plugged with a bolt and lead washers. All pump room auxiliaries grounded out. All conning tower circuits grounded out. The SJ radar flooded. Many small hydraulic and service air leaks were identified. #1 and #2 periscopes were out of commission. A fire broke out in #2 auxiliary power panel in the maneuvering room. This fire was smothered. All circuits were pulled, leaving field circuits in for the main generators. Temporary repairs were completed and GROWLER submerged at dawn. Leaks in conning tower still very bad, but under control. Lieutenant Commander A.F. SCHADE assumed command.

GROWLER surfaced at 1848 and sent report to Commander Task Force 42 stating that the GROWLER was proceeding via emergency routing. GROWLER received Commander Task Force's dispatch directing return at 0007 of 8 February, 1943. During the transit to base, much of the equipment was made operative including #2 periscope, one air compressor, one L.P. air compressor, refrigeration, and air conditioning units. Leaks were effectively patched. Surface speed was reduced about 30% and diving control is extremely difficult.

GROWLER's 4th patrol ended on 17 February 1943 upon docking at Brisbane.

MEETING MINUTES

The minutes of the October 2019 meeting were previously distributed by e-mail. There were no comments or corrections and they were accepted as presented.

TREASURER'S REPORT

The Base Treasurer, Steve Jaeger, reported, as presented by Base CDR :

• Beginning Cash on Hand	\$ 7,932.84
• Receipts:	\$ 1,460.33
- Dues-Annual, Base	
- Dues-Annual, National	
- Dues-Life, Base	
- Dues-Life, National	
- Donations-Base	
- Donations-Charitable Foundation	
- Interest/Dividends	
- Revenue-Events (Pirate Auction)	
- Revenue-Sale of Items	
- Revenue-Raffles	
• Expenditures:	\$ 400.00
- Other-Other (Mark Shafer Reimbursement for National Life Dues (L-1517)	
• Ending Sub-Total	\$ 8,993.17
- Minus Remaining Walmart Grant rest. use funds	(\$1,169.40)
• Grand Total (Discretionary)	\$ 7,823.77
• NOVA USSVICF K4K Total:	\$ 2,054.10

The Treasurer's report was accepted as presented.

COMMITTEE REPORTS

EXECUTIVE BOARD The Board of Directors met on October 30th. The meeting agenda included committee reports, discussion of meeting-related items, old business items, new business items, and meeting/event planning

VCDR Nothing to Report (NTR)

CHIEF OF THE BOAT (NTR)

PUBLIC AFFAIRS OFFICER (PAO)

The COB presented:

- As you are able, participate in your local Veterans Day activities this Monday and on behalf of USSVI Northern Virginia Base Officers and myself, we hope you and yours have an enjoyable Veterans Day.
 - Remember there are lots of free and discounted items/services available, check out the offers on google.
- USS Torsk 75th anniversary Commissioning Ceremony will be on December 14th hosted by Historic Ships in Baltimore
 - Brian Auer, Operations Director, invites you to attend a small-scale celebration of the 75th anniversary of USS Torsk commissioning. Boat tours, discussion on current restoration efforts, Tolling of the Boats for WWII boats lost, Keynote speaker, and reading of the original commissioning orders. Visit their website at <http://usstorsk.org/> for additional and updated information on the event.

MEMBERSHIP

Base CDR reported for Steve Jaeger that the NOVA Base has 83 members, consisting of:

43 Holland Club members, of which 3 are WW II Veterans,

30 Regular members

- Fortier, Thomas A (new member)
- Castell, Sean (new active duty member)

9 Associate members.

The Base CDR reminded all that both 2020 Base and National dues are due by December 31, 2019. Base dues are \$15 per year, and National dues are now \$25 per year for members and associates.

CHAPLAIN

The Base CDR reported that one of our base's previous CDRs, Ray Stone, has been diagnosed with an inoperable medical condition at Walter Reed, and is now at home. His contact info is: 6211 Duntley Ct, Springfield, VA 22152-1906 and 703 913-9843.

K4K

Steve Bishop reported that:

- Our most recent visit was to UVA in Charlottesville, VA.
- We visited Walter Reed in late Oct, but there were no patients to be seen; that is a good thing!!
- Our next hospital visit will be in February, 2020

- Ms. Marilyn Poling retired as an UVA pediatric oncology nurse after 43 years of service. We saw the announcement of her retirement party on the bulletin board during our recent visit and left an "Honorary Submariner" certificate and a pink ball cap for her with the pediatric oncology ward Charge Nurse for day shift. Marilyn works the evening shift and comes in at 11 PM. She wrote a wonderful letter to Chuck Martin thanking the base for making her an Honorary Submariner. Steve read the letter to all.

VETERANS AFFAIRS

Base CDR reported:

TRICARE Health Benefits and Federal Employees Dental and Vision Insurance Program (FEDVIP) open season for enrolling is from Nov 11 through Dec 9.

STOREKEEPER

Howard Chatham reported that:

- He is taking orders for 2020 USSVI Calendars. The calendar theme for 2020 is "Shipbuilding" and the price is \$10.00.
- The storekeeper has a SS qualified retired SCPO ball cap, USSVI NOVA challenge coins, submarine stickers, and USSVI NOVA Base patches available for purchase.
- Contact Howard Chatham, SK, if interested in any items

SCOUTING COORDINATOR

Chuck Martin reported that:

The recent Eagle Scout recognized was Eagle Scout Joey Keating on October 12, 2019.

NAVAL SUBMARINE LEAGU

George Wallace reported that:

- Upcoming Naval Submarine League (NSL) and Related Events
 - DC Area Submarine Fall Social (aka the Fall Cocktail Party) is 15 November from 1800-2100 at the US Navy Museum on the Washington Navy Yard.
 - Cold War Gallery will be open during the first hour, then the party moves to the US Navy Museum across the street..
 - Tickets are \$25 per guest. Heavy hors d'oeuvres and a cash bar will be provided. Parking will be available to all guests with base access, and the Washington Navy Yard is easily accessible via Metro. Attire for all hands will be business casual. Please note that the floor of the Navy Museum is cobblestone, which may influence your choice of footwear.
 - To RSVP for the 2019 DC Submarine Fall Social and pay for your tickets please visit: <https://dcsubmarinefallsocial.app.rsvpify.com/>
 - Event POCs are LT Quent Dickmann (john.q.dickmann@navy.mil) and LCDR Keith Bierman (keith.bierman@navy.mil). If you require base access or have any additional questions about the event, then please contact them.
 - NSL Capitol Chapter will be hosting a Special Winter Meeting on December 17th with Admiral Fogo as guest speaker.

- 2019 Annual Symposium and Industry was held on November 6-7, 2019. Our Thanks for all the volunteers who helped in making the event a huge success!
- Other Events
 - USS Virginia (SSN 774) Commanding Officer (CO) and Chief of the Boat (COB) plan to make a namesake visit to Virginia on November 10-14. Cathy Chatham has contacted NSL, Ginger, with the Child Life Specialists at our K4K hospitals.

Upcoming Submarine Reunions

- No known scheduled reunions for the remaining of 2019. They should restart in March/April of 2020.

OLD BUSINESS

- Submarine sweaters – if interested in obtaining one, LCDR Powell ordered a few extras or he can place you on the next order. See the CDR for more information.
- USSVI Charitable Foundation has established a USS Batfish Memorial Fund to assist with the recovery efforts from damage that the USS Batfish received from recent flooding in the area.

NEW BUSINESS

- The CDR has been trained in uploading photos into the USSVI profile. If you have a photo that you wish to have placed on your USSVI profile, contact the CDR.
- USS Clamagore (SS-343) Update
 - USS Clamagore SS-343 Restoration and Maintenance Association, Inc held a meeting on Sep 26
 - Status of the law suit given
 - Received an e-mail that Patriots Point was going to turn over control of USS Clamagore next month to the activity that would be reefing the submarine
- Howard Chatham reported on two Veterans Day ceremonies he will be attending: Falls Church celebration at 1100 where he is an active participant, and the George C. Marshall High School flag planting ceremony on campus
- The COB reported that the USSVI on line base for spook riders (The Casper Society) has withdrawn the relinquishment of its charter- it lives on! The principle reason that Bases leave the USSVI is that the four mandatory officer roles can't be filled from the membership.

2020 USSVI NOVA Base Election The Base CDR reported:

- Election Master for the 2020 Base election is Howard Chatham.
- Ballots will be distributed shortly after this meeting.
- Ballots must be received by the Election Master:
 - By email by 2359 on December 13, 2019,

- By mail by 2359 on December 13, 2019, and
- In person by 1115 on December 14, 2019.
- Paper ballots will also be available at the December meeting.
- The following positions will be on the ballot:
 - Base Commander
 - Base Vice Commander
 - Base Secretary
 - Base Treasurer
- Current Nominees are:
 - Base Commander – Chuck Martin
 - Base Vice Commander – Brian Haller
 - Base Secretary – Joe Castell
 - Base Treasurer – Steve Jaeger

BINNACLE LIST

“PLEASE KEEP THE FOLLOWING IN YOUR PRAYERS.”

Steve Bishop, Brian Haller, Barbara Harmody, Tony Poblete, Ray Stone, Tom Perrault, and Lorraine Sargent.

“FOR THE GOOD OF THE ORDER.”

BIRTHDAYS FOR THE MONTH ARE: Rodey Batiza, Art Bivens, Francis McNamara, Dennis Mohr, Eva Waylett, and the United States Marine Corps.”

The 50/50 raffle winning ticket was drawn by the wife of our guest speaker, Cindy Lindstedt . The winner was Chuck Martin, who donated his winnings back to the base treasury. **THANK YOU, Chuck!**

THE NEXT REGULARLY SCHEDULED MEETING WILL BE ON DECEMBER 14TH AT AMERICAN LEGION POST 364. FOLLOWING THE MEETING, WE WILL HAVE OUR 2019 ANNUAL HOLIDAY LUNCHEON AT A PLACE TBD.

The meeting was adjourned at 1147. We broke for ten minutes before VCDR Brian Haller introduced our guest speaker.

Biography of John S. Lindstedt, LT, USNR

John Lindstedt is a former nuclear-trained submarine officer. He “Qualified in Submarines” in 1974, on the Fleet Ballistic Missile Submarine, USS Kamehameha (SSBN-642). He served during the Cold War, making 3 deterrent patrols, all in the Mediterranean Sea, as deployed by Submarine Squadron 16 out of Rota, Spain. His duties were to operate and maintain the S5W nuclear reactor plant and all associated propulsion equipment as the ship’s Main Propulsion Assistant.

John also had two years of sea service in the Merchant Marine as a marine engineer. During this time, he sailed to Northern Europe and South America.

John is a Wisconsin native, born in Milwaukee. He attended the United States Merchant Marine Academy and then the University of Wisconsin-Milwaukee from which he received his degree in chemistry (1969). He did his graduate work at Arizona State University in electroanalytical chemistry. Following his military service, he has worked and studied in the Metal Finishing Industry for the last 45 years. John is currently the Chief Executive Officer of Advanced Plating Technologies.

John is married to Cindy, his lovely bride of 50 years. Yes, 50 years!!! She is a very special lady. They have 3 children: Jennifer, Matthew (U.S. Air Force Veteran) and James (U.S. Navy Veteran). He enjoys hunting, hiking and studying history, particularly history of World War II and history of the U.S. Submarine Force.

Before he spoke on Admiral Hyman G Rickover, John briefed us on **CAPT Brian Haller – the Man, the Mystery, the Legend.....**

John and Brian met at submarine school, then they were detailed to the same crew of the USS Kamehameha (SSBN 642). There they shared a stateroom with another JO for three patrols. Their wives, Cindy and Pat, were young wardroom wives and all four have been friends for about 47 years. They have attended the other couples childrens' weddings, they have travelled the world on tours and cruises together. And, later in life, part of the deal was that Brian and John would join the other's USSVI home base – NOVA and Great Lakes Bases.

John then spoke on Admiral Hyman G. Rickover.

His first words were that Admiral Rickover was the biggest Patriot he has ever met. The man was on active duty for 63 years!

Some takeaways from the wonderful and colorful briefing are:

1. Born circa 1900, he was a Polish immigrant who was raised in Chicago, IL
2. He was a very detail-oriented and skilled engineer
3. He used sarcasm as a tool and he hated management systems
4. He was a man who created several industries in this country, all of which were focused on making and supporting quality products for Naval nuclear reactors. The automobile industry of today looks to the Japanese and Mr. W. Edwards Deming as their quality guru, but **Admiral Rickover was about 30 years ahead of the auto industry and Mr. Deming. He demanded quality from all contractors, shipyards, and vendors, or your contract was soon cancelled.**

5. **The good looking submarine skipper on the bridge in the presentation was CDR George Wallace as CO of the USS Houston**
6. Three items were sacrosanct in all products, companies and people in Naval Reactors:
 - a. **Reactor Safety** is paramount and is not negotiable
 - b. **Quality** must be uncompromising in all we do
 - c. **Personal accountability and responsibility** 24/7/365
7. John said that he has tried to use the same Rickover leadership qualities discussed above as CEO in the daily running of his electroplating business

After the presentation, Brian, John and Norman Polmar spoke to each other. Norman told John he got most everything right and that this was a wonderful presentation. John acknowledged that he had read Norman's book on Rickover three times and that it was one of his sources for the briefing.



John Lindstedt

Norman Polmar

Brian Haller

Base CDR Chuck Martin presented John with the NOVA Base challenge coin and thanked him for this presentation.



Base CDR Chuck Martin

John Lindstedt

Both photos above by Cindy Lindstedt.

Meeting Minutes Respectfully Submitted by

Stephen C Bishop
Secretary, USSVI Northern Virginia Base

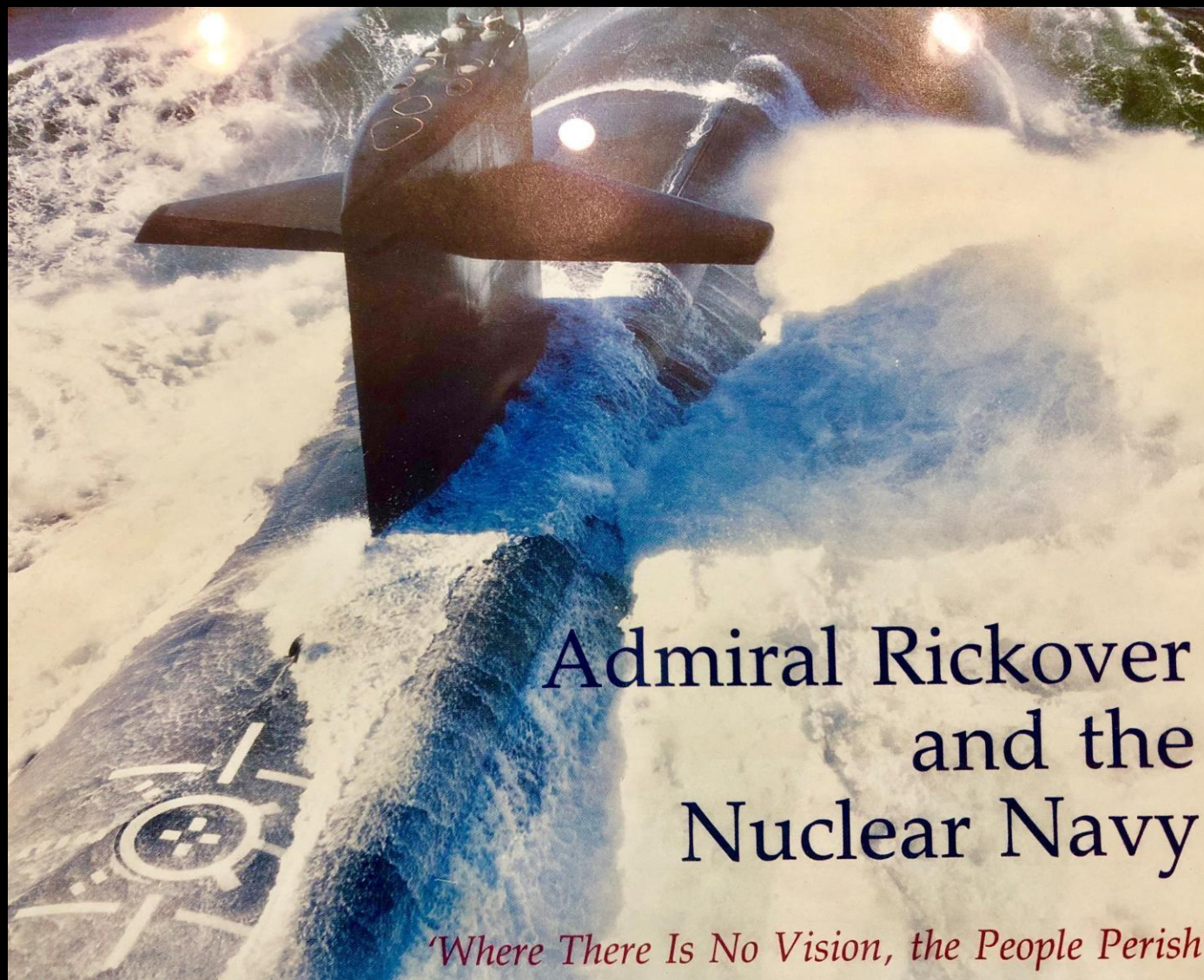
Father of the Nuclear Navy

Rickover

Rickover

Father of the Nuclear Navy





Admiral Rickover and the Nuclear Navy

'Where There Is No Vision, the People Perish'

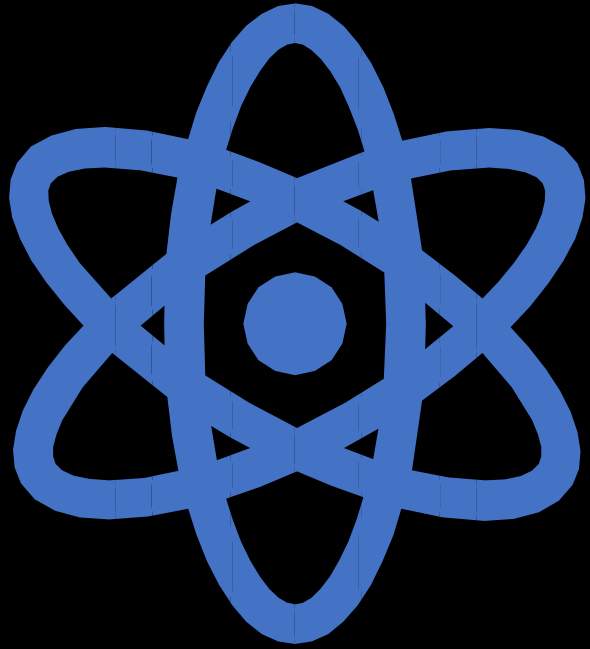
Crucial Transitions in Naval History

Wood to Steel

Sail to Steam

Placement of Aircraft at Sea

Fossil Fuel to Nuclear Power



The Most
Important
Transition??

- Transition to
Nuclear Nuclear
Power!!

Affect of Nuclear Power



- **Changed Naval Tactics and Strategy**
- **Changed Naval Training**
- **Changed Naval Engineering and Effected Career Advancement**
- **Changed Naval Quality Systems**
- **Developed Specification and Acceptance Protocols**

Who Was HGR?

He Was Not.....

- A Tactician
- A Great Battle Leader
- A Great Humanitarian
- Not Even a Line Officer!

He Was.....

- An Engineer
- An EDO
- An Innovator
- Quality Systems Promoter
- Politician
- Bureaucrat
- Administrator
- Shrewd Judge of Personnel
- **Patriot & Visionary**

Admiral Hyman G. Rickover



Quotations Re: Rickover

- “He was the greatest engineer who ever lived”
- Jimmy Carter....US President
- “He was totally motivated, totally dedicated to the program. It would not have happened without him.”
- Eugene Wilkinson CO USS Nautilus ,SSN 571

Quotations Re: Rickover

“Rickover was a genius
and a son-of-a-bitch!
Rickover helped the Navy;
Rickover hurt the Navy.”

Norman Polmar, Naval
Historian

“The Navy couldn’t have
stood more than one of him, but thank God we had him!”

Patrick Hannifin, Vice-
Admiral, USN

Setting the Stage for Nuclear Power

○Legendary Submarine Force of WW II

- * First to Strike Japanese Post Pearl Harbor
- * Sunk 55% of Merchant Fleet
- * Sunk 33% of Japanese Man-o-War.
- * Sub Force is Only 2% of Naval Manpower
- * Highest Casualty Rate of Any Branch of US Forces, 20%

At End of WW II, US Submarine Force

- Rich in Honors
- Has an Uncertain Future
- Downsizing
- Still a Surface Craft

The background image is a dark, grainy photograph of a ship's deck, likely a Soviet submarine. On the left, a large, dark, cylindrical structure, possibly a conning tower or part of the hull, is visible. A sailor in a dark uniform and cap stands on the right, holding a large red flag with a white hammer and sickle emblem. Several smaller flags are flying from a mast on the left. The overall tone is somber and historical.

Challenger Arises, Soviet Union

- Does not leave Eastern Europe
- Builds a Blue Water Navy
- Challenges US For Control of Seas
- Develop and Detonate Nuclear Weapons



The Cold War

Ahead lay 50 years of surrogate wars and a volatile peace.

In this time the US Submarine Force would enter into an arms and technology battle fought with the intensity and tension of full blown war.



Nuclear Power Inception: Post WW II

- 1939, Ross Gunn , Senior Physicist at Naval Research Lab, testifies Before US Senate
- Manhattan Project – 7 Years
- Army Reaches Out to Other Branches to Evaluate Uses of Atomic Energy
- HGR and 5 Other Naval Officers Sent to Oak Ridge, TN – 1946
- HGR Takes Lead

Creation of Nuclear Power Program 1947

Creation of Program

Obstacles to be Overcome

- Recognition
- Funding
- Program Leadership
- Get on Construction Schedule
- Obtain Congressional Approval

Rickover circa 1947

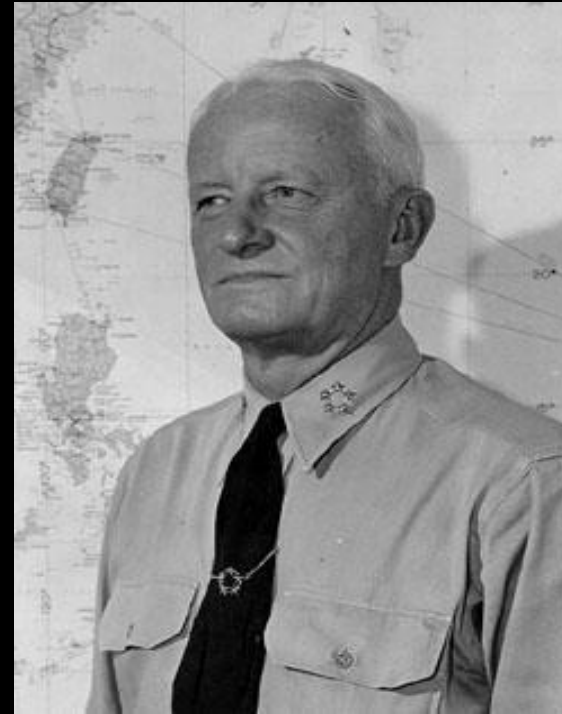


Creation of Naval Reactors: Key Requirement: Nimitz Approval

Captain Ned Beach



Admiral Nimitz, CNO



Decision for Nuclear Power



Nimitz Approves Construction of
Nuclear Powered Submarine –
5Dec1947



Submarine Selected as Vessel
for Nuclear Propulsion; The
Obvious Choice



HGR Appointed to Head Nuclear
Propulsion Program; Known as
Naval Reactors(NR)

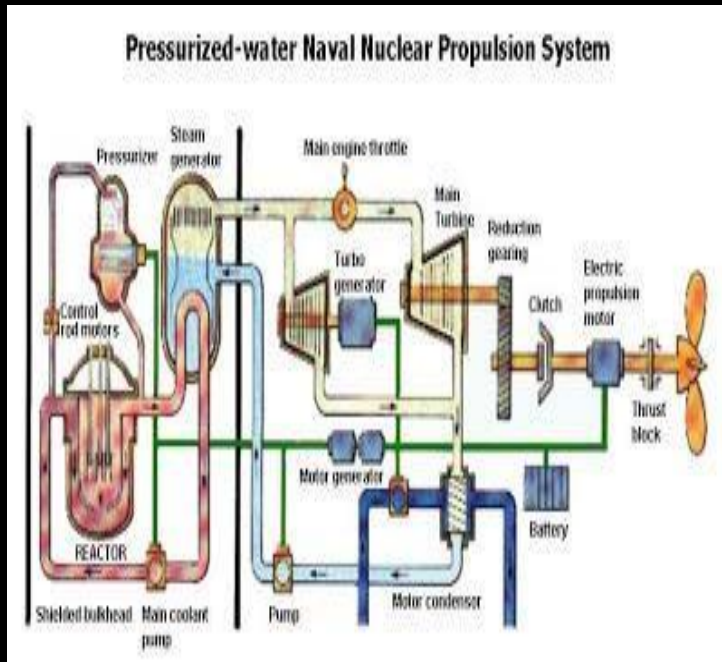


Genius of Rickover

Realization Of Need Cultural Change

- Technology Demanded Less Daring Rogues
- People Must Master The Technology
- Dedication to Work to Insure Engineering Reliability
- People NOT Management Systems – Key to Success
 - * Since WW II, Navy Depended on Management Systems; Systems Analysis

“Devil is in the Details”



**“The Devil is in the details,
but so is salvation.”**

— Admiral H.G. Rickover, USN

Admiral H.G. Rickover, USN



People Are The Key!!!!

- Since WW II, CO **NOT** Required To Have Engineering Experience – **Anathema** To HGR

- Rickover Requires All Personnel Who Had Responsibility for the Nuclear Plant (**CO, XO, EO and EOOW**) of Any Nuclear Ship To **Qualify On The Propulsion Plant**

- Results In “The Interview”

Drivers for the Rickover Selection System

- Selection of Bright Men Capable of Mastering the Technology; **People Were Key**
- Need for a Large Number of Men
 - * Initially to Man the Nuclear Submarine Fleet – 1954 to 1959
 - * Man the Rapid Build-up of the SSBN and SSN Fleet – 1960 – 1970
- Trained in Reactor Operation & Safety



- Conducted in Washington, DC at “Old Main” on the Mall
- Young Officers From Fleet—Trainable or
- College Graduates in Top 10% of Class
- Review of Academic/Personnel Life In Detail By 3 Staff(PCO)
- Rickover Concluded the Selection Process With His Personnel Interview
- Intent to Pressure Applicants

Interview Process— Rickover
Personally Interviews > 10,000

Rickover's Selectivity

- **Not** Used By Rest of Navy
- **Not** Controlled By Bureau of Personnel
- **Not** Used In American Industry
- **Not** Altered to Select Sons of Important Men
- **Not** Altered to Select Applicants With Political Connections



Typical Interviews

Wm. Crowe, Chairman JCS



J. Lindstedt, LT, SSBN 642



A photograph of a submarine, likely a US Navy ballistic missile submarine, sailing on the surface of the ocean. The submarine is dark grey or black, with its conning tower and various masts visible. The ocean is a deep blue with white foam from the wake. A large, dark, semi-transparent circle is overlaid on the left side of the image, containing the title and list.

Laws of Naval Nuclear Propulsion

- RX Safety
- Uncompromising Quality
- Personnel Responsibility

Primary Goal No. 1 Reactor Safety

○Reactor Safety Was Non-negotiable

○Realization Nuclear Power Was Vastly Different Than Any Other Energy Source

○First Safety Requirement Was Rx Shielding

- * Selected Human Exposure Levels at 100X More Stringent Than Recommended!!

- * More Shielding Meant Slower Boats

○Continued Funding Demanded Safe Platforms

○Safety = Training and Training and Training Etc.!!!

Primary Goal No. 2 Uncompromising Quality

HGR Recognized the Failure of
American Manufacturing System to
Supply Nuclear Grade Components



HGR Recognized the Need to
**Control Each Step in the
Manufacturing Process**



HGR **Created and Enforced Quality
Systems**



HGR Recognized the Need for
Innovation and New Materials

Primary Goal No. 3
Individual
Acceptance of
Responsibility

Compartmentalization of
Responsibility
Unacceptable

HGR Assigned
Responsibility of Key
Systems to One Individual

“Unless You Can Point
your Finger....”



Unless you can point the
finger at the man who is
responsible when
something goes wrong
then you never had
anyone really
responsible.".

Hyman George Rickover

American Admiral

A photograph of the USS Nautilus SSN 571, a nuclear-powered submarine, sailing on the surface of the ocean. The submarine's conning tower is visible, with the number 571 painted on its side. The ship is moving through the water, creating a white wake. A large, dark, semi-transparent circle is overlaid on the left side of the image, containing text.

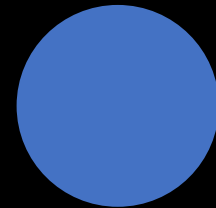
USS Nautilus SSN 571

**Building The Nautilus: No
Ordinary Construction !!!!!**

Rickover was totally motivated and totally dedicated to building a nuclear submarine. He foresaw how this technology would alter naval warfare. It would be critical in the defense of the United States in the ever expanding Cold War.

He never forgot what America had given to him.

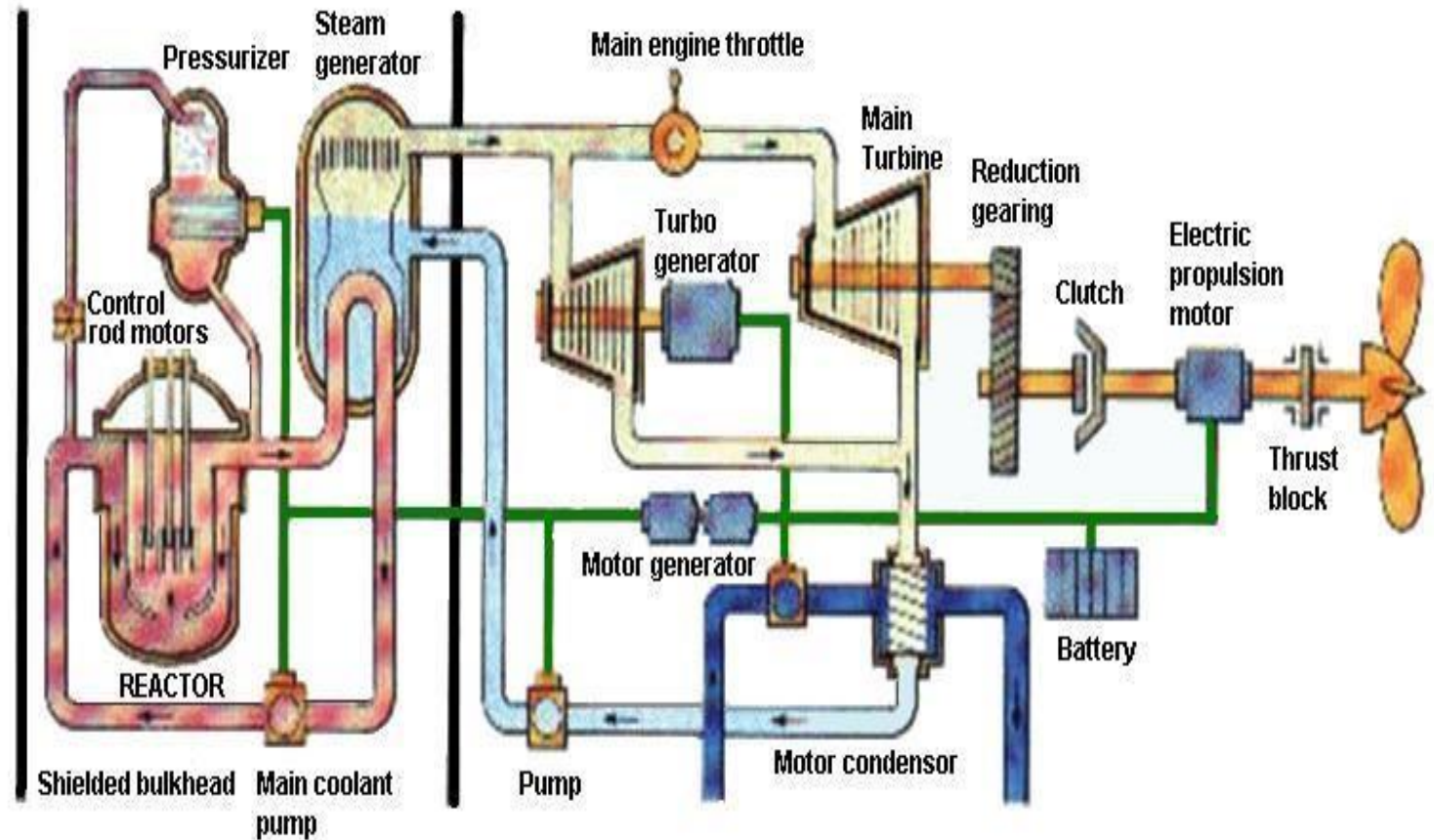
Determination and Patriotism



What Is A Nuclear Propulsion Plant?



Pressurized-water Naval Nuclear Propulsion System



Monumental Engineering Issues



Reactor Size Compaction From 75' x 50' x 30' to Within a Submarine Hull(27' dia): Apprx 90% reduction!



S1W(Nautilus Prototype) Would be World's First Hi-Temp RX



Basic Physics Data for Rx Design Did Not Exist



Rx Design Methods Not Developed

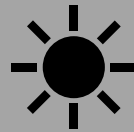


No Corrosion Data on High Temperature, High Radiation Exposure for Metals

Monumental Engineering Issues



No Rx had ever Been Designed to Produce Steam



No Steam Propulsion Plant Had Ever Been Built In a Submarine. Varying Sea Pressures and Temperatures



Need to Use Exotic Metals, Zr and Hf, which Had Never Been Produced in Any Quantity



Chemical Separation of Zr From Hf. Zr Transparent to n; Hf Opaque to n

Monumental Engineering Issues



No Specifications Existed to Quantify Acceptable Material from Inferior



No Testing Protocols Existed for Chemical or Physical Evaluation of Materials. All Had to Be Developed !!!!!

Formidable Political and Cultural Issues

- Alteration of the Culture of the Navy :
Management System Operational Control vs
Engineering Knowledge of Rx System
- Many Enemies: Not Accepting Senior Officers
Into The Program
- Not In Admiral's Club
- Required Large Budget During a Period of
Naval Cut Backs
- Selling a New Technology Viewed with
Skepticism
- Seen as Disrespectful of Submarine Heroes



Historical Backdrop

Threat of Cold War

- A state of geopolitical tension after World War II between the Soviet Union and its satellite states and the United States and its NATO allies.
- The Cold War split the World War II alliance of the United States and the Soviet Union leaving the two super powers with profound economic and political differences

“The World in Early 1950s”



**Military Size Reductions Post WW II;
Difficult Funding for Military Hardware**



Technology Race US vs USSR



**President Eisenhower Supports a Nuclear
Submarine; Many in Navy Do Not**



Nautilus Built Under a Microscope



HGR Personality Helped and Hindered

Rickover- Dynamics of Success

- **World Dynamics, The Threat of the Cold War, Supports Construction**
- **Superior Leadership - Technical, Administrative and Political**
- **Demanding Work Ethic : Built Nautilus on Time & Underbudget**
- **Eisenhower's Strong Support – Sees Nautilus as a Counter to Soviet Technology**
- **Skilled Lobbyist Who Manipulates Congress**
- **Uses Private Shipyard (Electric Boat) not Navy Yard**



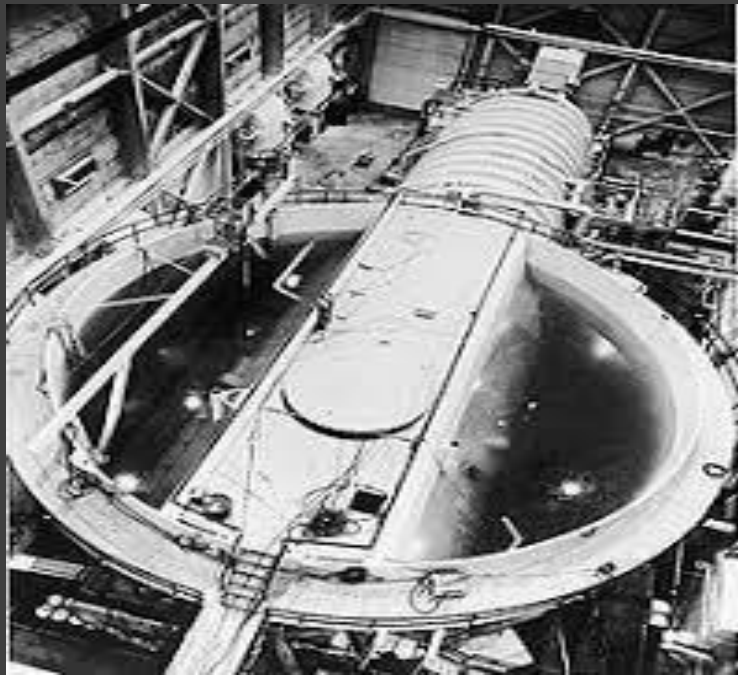
- † Builds 2 Reactors, Prototype, S1W, at Arco, ID and S2W in Nautilus
- † In Hull Construction of S1W Improved Delivery of Actual S2W... "See and Correct Problems"
- † Selects Zr as Structural Material for Nuclear Fuel, U-235
 - * Structurally Sound at High Temperature
 - * Withstand Corrosion at High Temperature and High Neutron Flux

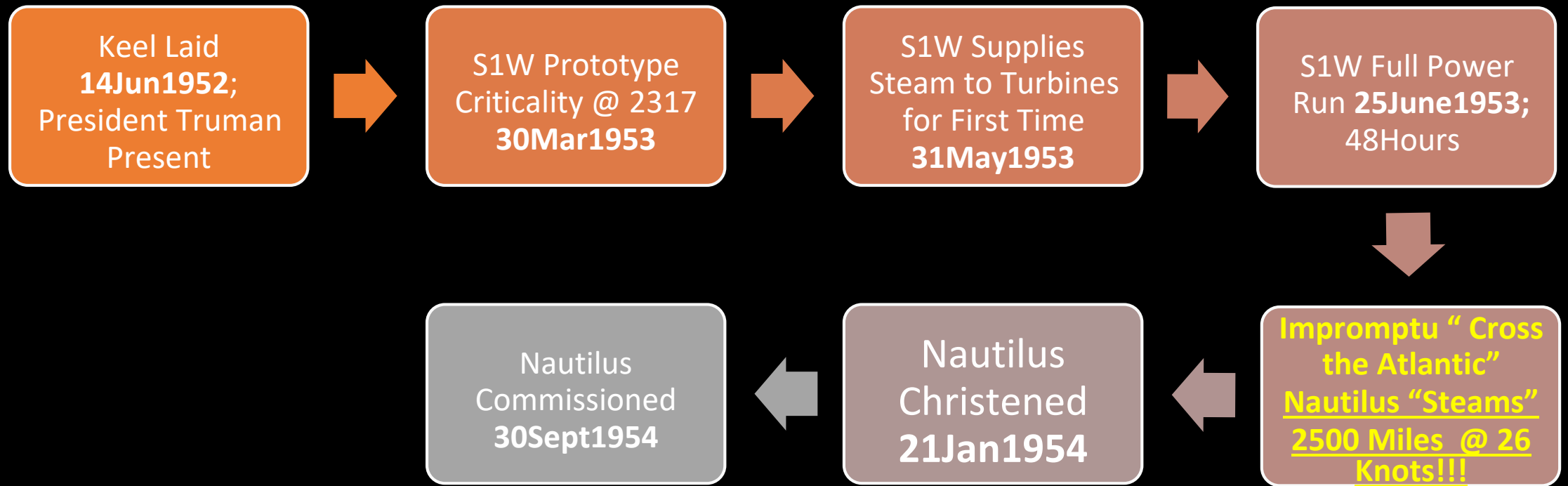
Engineering Brilliance in Action

- † Develops the Zirconium Industry... 300 lbs. US
Output in 1951; Needs 60,000 lbs. for SSN571
- † Develops Rx Shielding; Poly(neutrons) and
Lead(Gamma Rays)
- † Develops “Quality Systems” to Evaluate and
Specify Materials and Components for
Nuclear Power Plant

Engineering Brilliance in Action

Naval RX Site; Idaho High Desert





Construction Milestones

Who Was to Command Nautilus??

- Command of Decade; Key to Flag Rank
- HGR Controls CO Selection per AEC
- Selects Dennis Wilkinson
- *USC Graduate
- * WW2 Sub Service
- * Brilliant Engineer



- **Most Famous Message of Nuclear Age**
- **Nautilus Sets Numerous Speed Records**
- **Nautilus Dives at Will without Battery Concerns**

- **Most Famous Message of Nuclear Age**
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01010.6 (571)

Rickover Becomes a National Figure

Hyman Rickover



USS Nautilus SSN 571



“Latitude 90 North”

US Response to Sputnik



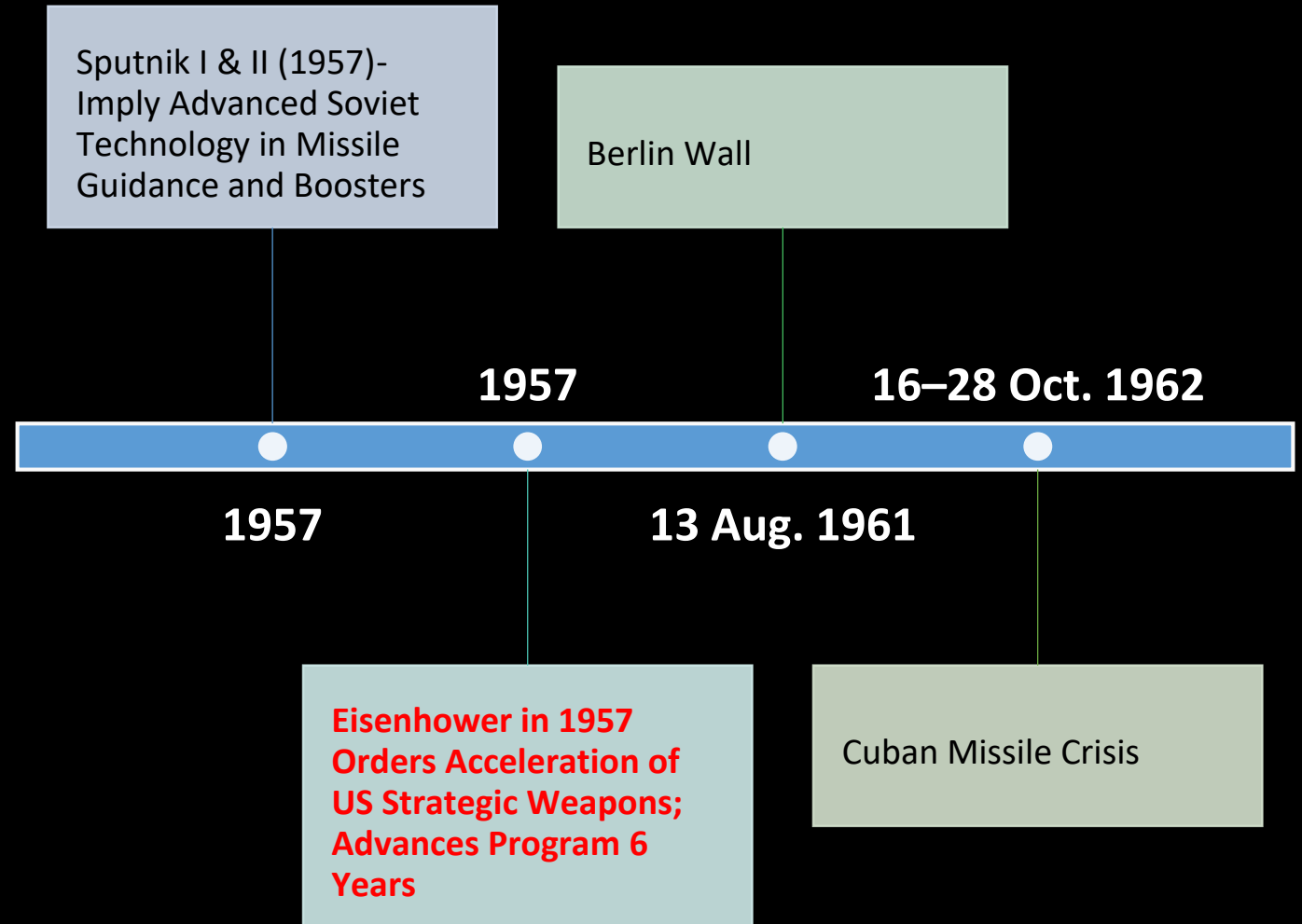
- ✚ Eisenhower Orders Nautilus to Sail West to East Via North Pole**
- ✚ New Technology Demonstration**
- ✚ Navigation Problems**
- ✚ Nautilus Lost; Follows Deepest Water**

Famous Message... Number 2

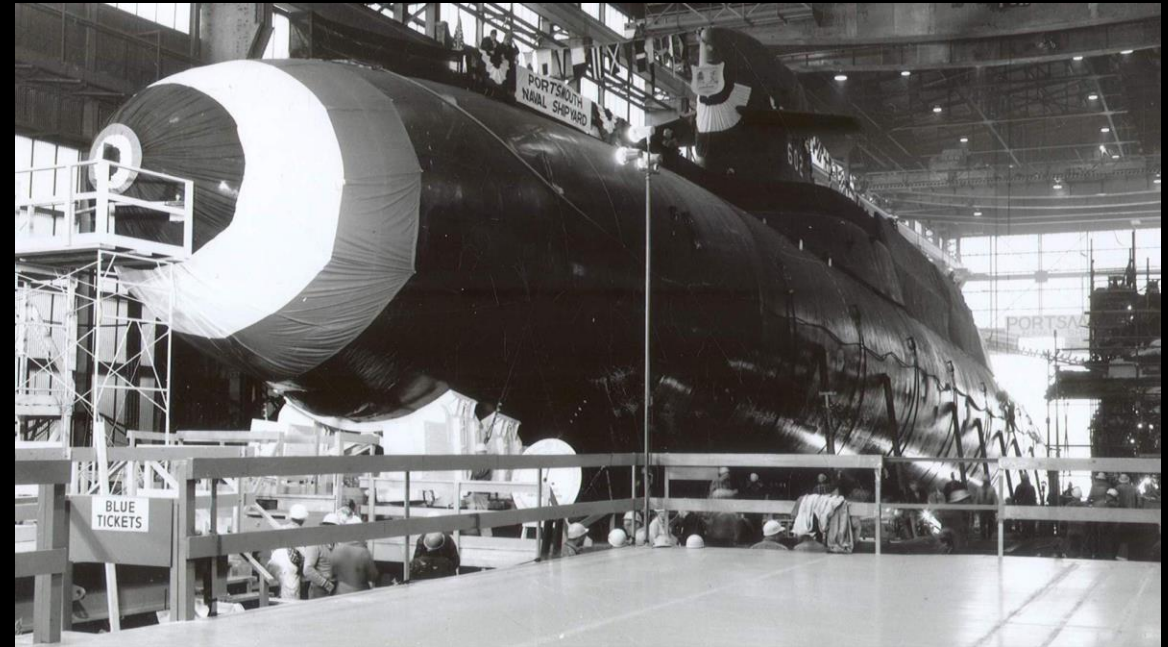


SHIP'S POSITION			
U. S. S. <u>NAUTILUS</u>			
TO: COMMANDING OFFICER			
(Time of day) <u>1915 U</u>		DATE <u>3 August 1958</u>	
LATITUDE <u>90° 00.0' N</u>	LONGITUDE <u>Indefinite</u>	DETERMINED AT <u>—</u>	
BY (Indicate by check in box)			
<input checked="" type="checkbox"/> <u>N6A</u>	<input checked="" type="checkbox"/> U. R.	<input checked="" type="checkbox"/> <u>MK19</u>	<input type="checkbox"/> RADAR <input type="checkbox"/> VISUAL
SET <u>—</u>	DRIFT <u>—</u>	DISTANCE MADE GOOD SINCE (time) (miles) <u>Honolulu 4844</u>	
DISTANCE TO <u>North Pole</u>		MILES <u>Zero</u>	ETA <u>—</u>
TRUE HDG. <u>180°</u>	ERROR <u>MK19 GYRO 3° E MK23 GYRO 0°</u>	VARIATION <u>170° E</u>	
MAGNETIC COMPASS HEADING (Check one)			
<input type="checkbox"/> STD	<input type="checkbox"/> STEERING	<input checked="" type="checkbox"/> REMOTE IND	<input type="checkbox"/> OTHER <u>M 244 G 359</u>
DEVIATION <u>126 E</u>	1104 TABLE DEVIATION <u>3° W</u>	DG: (Indicate by check in box) <input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF	
REMARKS <u>NGA DR</u> <u>σ = 0</u> <u>N = 0</u> <u>NGA</u> <u>κ_x = 0</u> <u>κ_y = 0</u> <u>κ_z = 1</u>			
RESPECTFULLY SUBMITTED (Signature) <u>LT Shepherd M. Gendy, USN</u>			

Cold War Accelerates



The Next Challenge- Building the Nuclear Fleet



Convergence of Three Men To Develop The FBM System

Arleigh Burke : CNO, Leadership

**William Raborn, Jr.: Develops the Ballistic Missile
Launched from a Submarine(Polaris System)**

**Hyman Rickover: Develops the Propulsion
to Transport the Weapon System**

Adm. Arliegh Burke: Visionary Leadership

- † **Selected Over 92 More Senior Men by Eisenhower**
- † **Strategic Expert - Saw Land-only Missile Systems as a Plan for Disaster**
- † **Supportive of the Submarine as the Delivery Platform**
- † **Supportive of Rickover but Only for Propulsion**



Adm. William Raborn Under-sea Missile Development

- † **Polaris Missile Development**
- † **Reports Directly to CNO**
- † **Burke gave Raborn Unprecedented Control**
- † **Developed Polaris in 3 Years!!**
- † **Receives DSC**



Adm. Hyman Rickover Engineering Visionary

- † **First Exposure to Polaris Was Submarine Design Requirements From Buships - 1957**
- † **Requirements:**
 - * **Nuclear Powered**
 - * **Advanced Hull Design**
 - * **Single Screw**
 - * **Speed > 20 Knots**
 - * **S5W Reactor**
- † **Burke Kept HGR Out of Weapons Program**



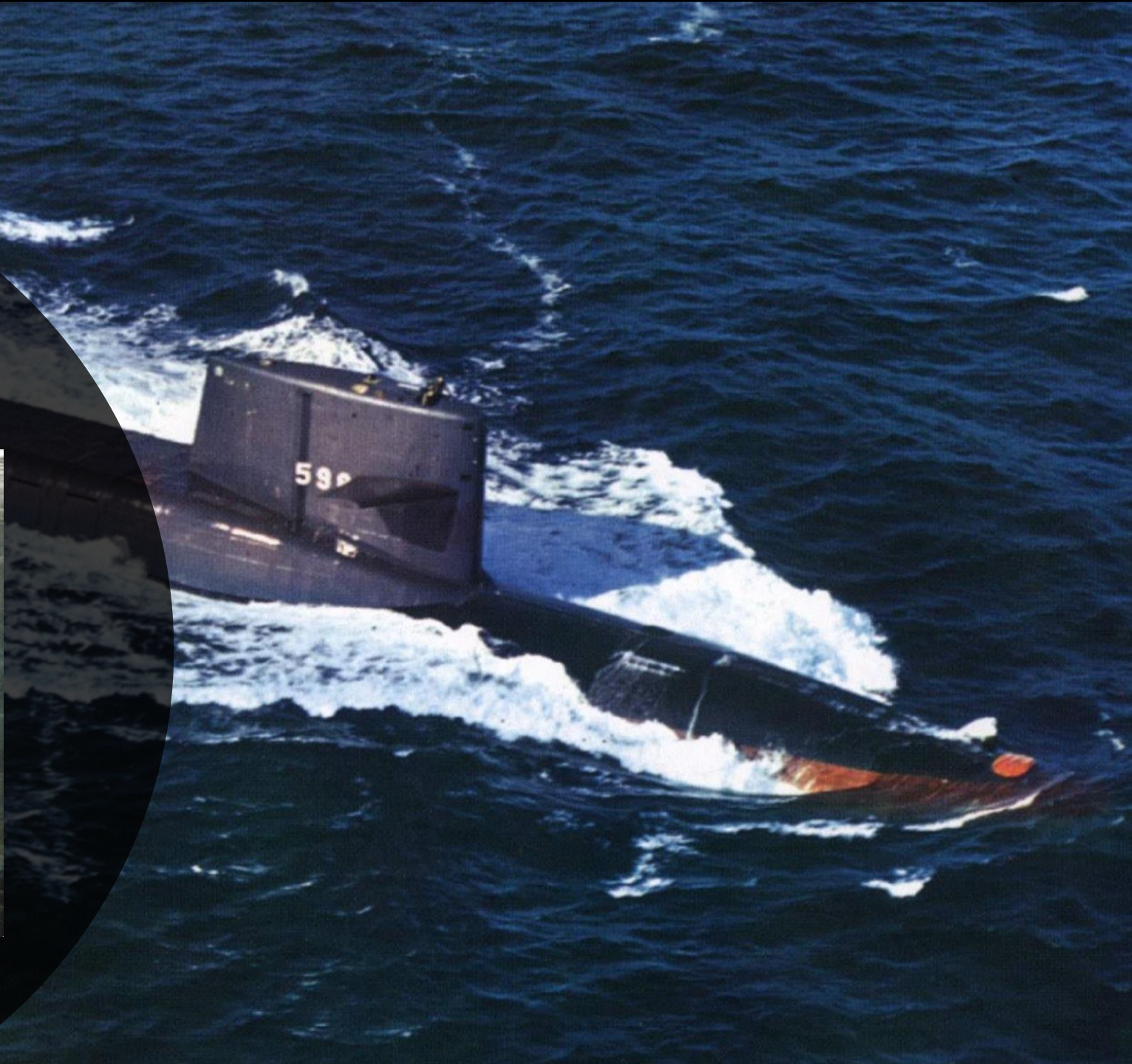
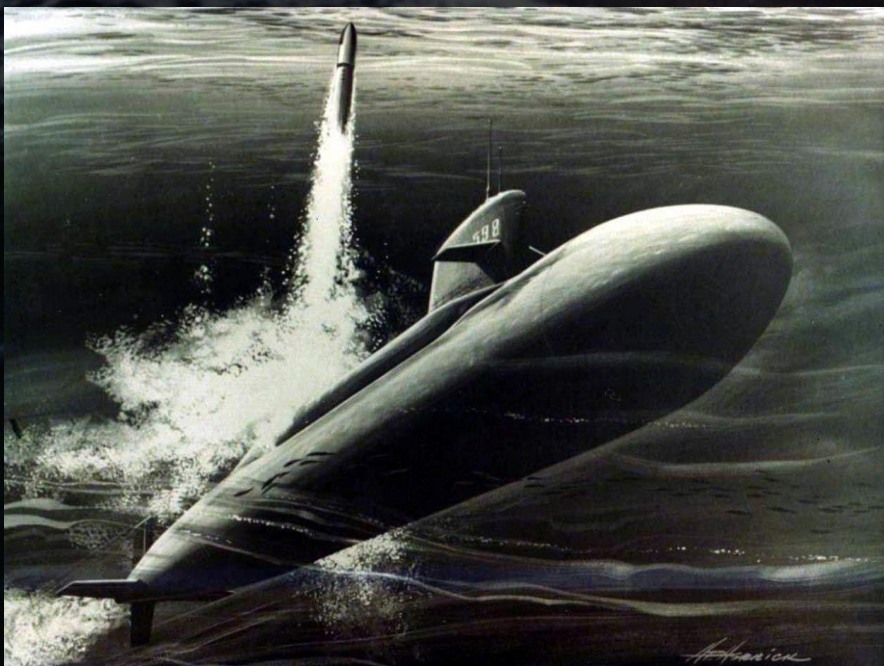
Dilemma of Weapons System Development Circa 1958

- † Missile **Too Large** for Submarine – 44' x 10' and 80 Tons!!
- † Only **Liquid Fuel** – **Too Dangerous**
- † Warheads **Too Heavy** – 1600 lbs
- † Submarine of Apprx. 8500 Tons **Twice Size of Nautilus!**; Nautilus only 3 Years Old!
- † Burke Sets System **Operational Date of Platform as December 1960!!!!**

Weapon System Solutions

- † Missile Size Decreased to 28' x 4.5' x 15 Tons
- † AEC Develops a 600 lb. warhead@ 1megaton
- † Solid Propellant Replaces Liquid Fuel
- † HGR With Only 2 Years to Build Takes Existing Sub, USS Scorpion, Cuts in Half and Adds 130' Missile and Navigation Section
- † **USS George Washington, SSBN 598, Departs for First Deterrent Patrol on 15Nov1960; Within 5 years of inception!!!**

USS George Washington
SSBN 598



Mission of the FBM Submarine

- To provide a credible retaliatory nuclear response to a potential or actual nuclear attack on the United States and by their presence force No Action.
- Strategic Deterrence



**Highest
National
Priority**

**In 6.5 Years, 41 FBM Submarines Where Built;
Ultimately Conducted 2500 Deterrent Patrols**

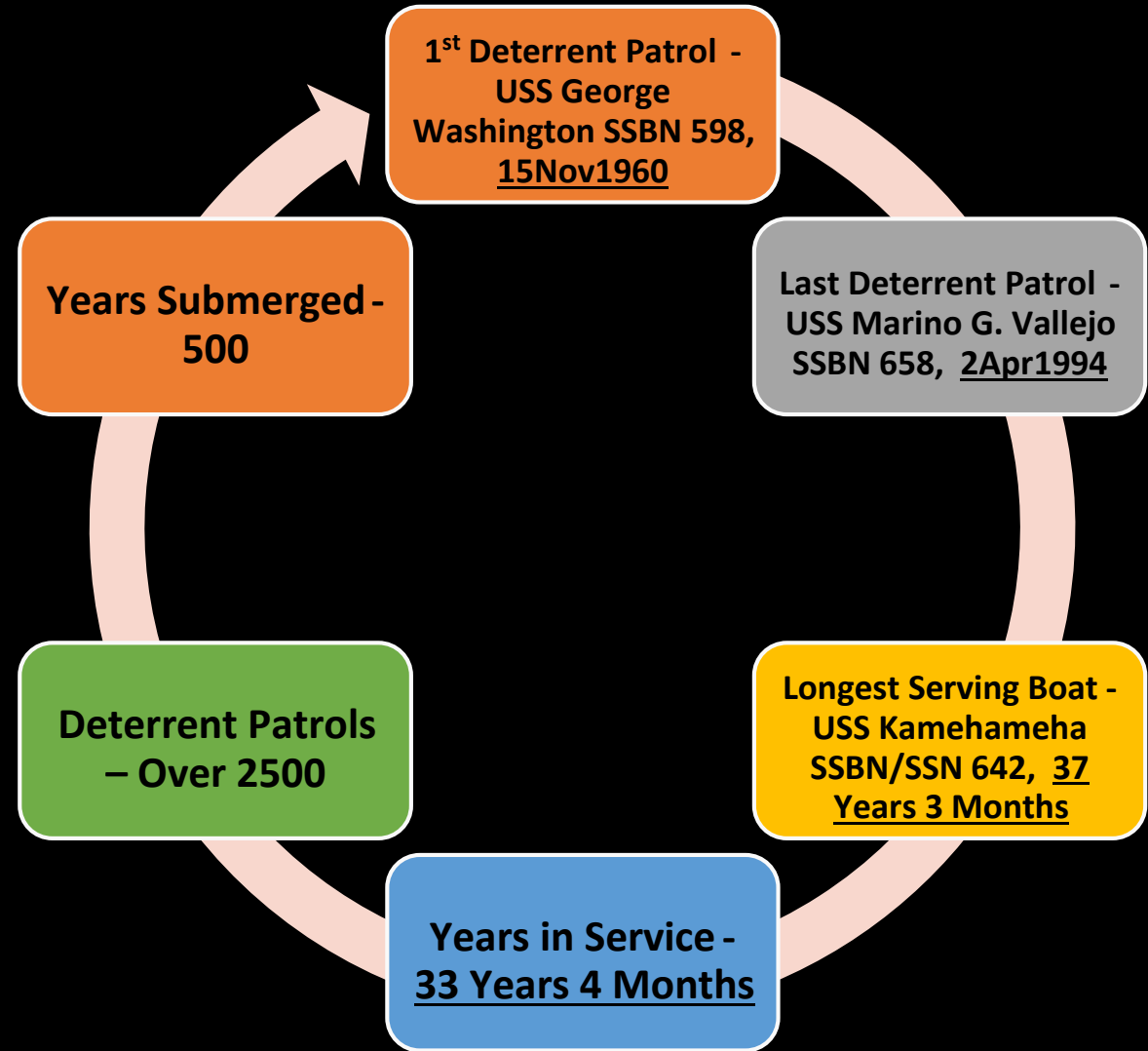
**Within 10 Years of USS George Washington, 74
Submarines Were Built; 7 per Year!!!**

Built in 4 Shipyards, EB, MI, NNS, PNS

**Required 115 Crews – 1 Complete Crew Every
Month for 10 Years !!!**

All within 5 Years of Nautilus

Service Record— 41 for Freedom



Service Record— 41 for Freedom

Average Patrol Days per Year: 7000

Ave. Number of Patrols per Year: 100

Days on Station per Year: 365

Men Served Aboard: > 25,000

Weapons Fired in Anger: 0

Reactor Accidents: 0



Technical Accomplishmnets of Rickover

Technical Accomplishments: *Cultural Change of USN*

**“ Good ideas are not adopted automatically. They must be driven into practice with courageous impatience”
HGR**

- Engineering competence required for command
- Insistence on personnel selection
- Selection of individuals who would learn the technology
- Strict adherence to procedures and training



Technical Accomplishments: Individual Responsibility

**“Responsibility is a unique concept.....
If responsibility is rightfully yours, no
evasion, or ignorance or passing the
blame can shift the burden to someone
else.” HGR**

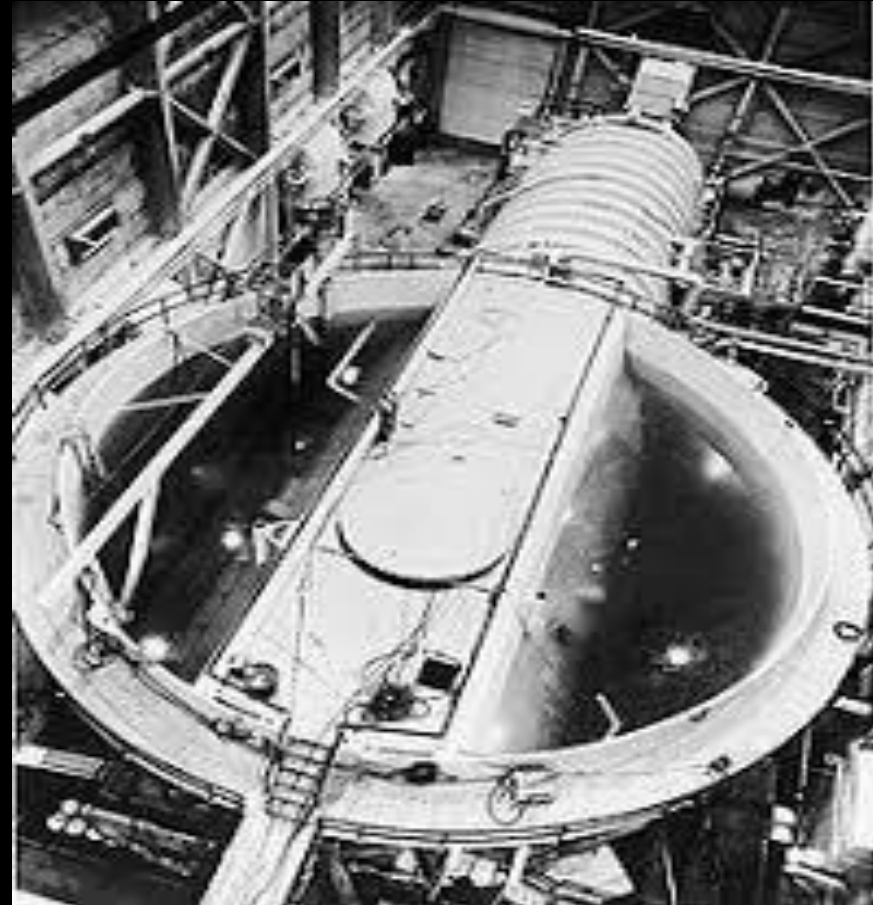
- Abhorrence of management systems
- One man assigned responsibility for nuclear systems or portions thereof
- To be responsible for a technology one had to understand how it operated not delegate this task elsewhere.



Technical Accomplishments: Innovation

“One must create the ability in staff to generate clear forcefull arguments for opposing view points as well as for their own. Open discussion and disagreements must be encouraged” HGR

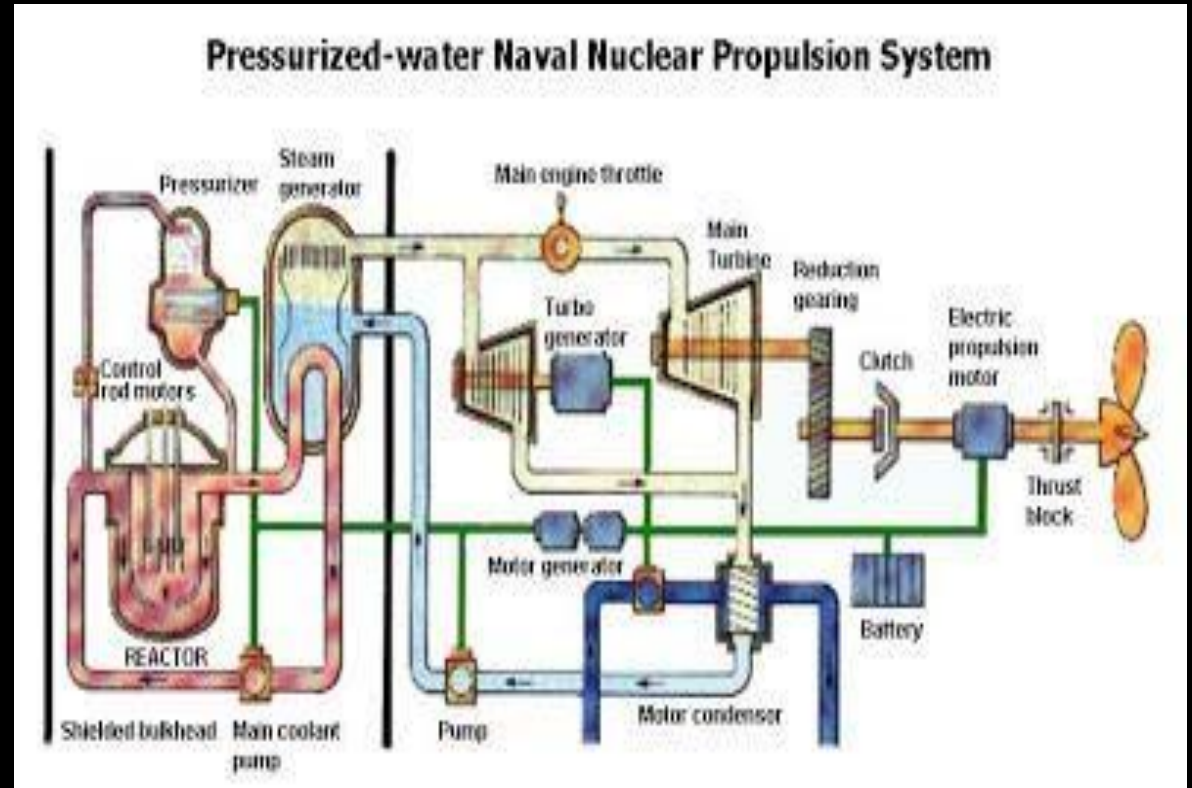
- Development of material selection and testing protocols
- Quality specification development
- Controlled selection and training of men to operate nuclear reactors
- Use of “prototype construction” to allow for failure repair to be made before installation
- Superior Rx shielding construction



Technical Accomplishments: Quality

“The devil is in the details but so is salvation” HGR

- Nuclear power required extraordinary material of exceptional quality
- Required supporting industries adopt more exacting manufacturing standards than thought possible
- Developed quality standard for nuclear industry..... ultimately codified in 10CFR50 Appendix B
- Inspected/tested components for conformance to specification; audited manufactures; on-sight inspectors



Technical Accomplishments: Safety

“ I have a son. I love my son. I want every thing that I do to be so safe that I would be happy to have my son operating it. That is my fundamental rule.” HGR

- Reactor shielding; extremely conservative; major advantage of US Sub Force over Soviets
- Rickover understood the direct correlation between quality and safety
- Safety was the most important aspect of the US Navy's nuclear power program





Historical Significance of Rickover





Rickover In Summation

“In reviewing the professional accomplishments of Admiral Rickover, one should consider two overlapping connections. The first is the *threat to U.S. survival* during his lifetime. The second is the spectacular *effect his efforts had on our contemporary history*”

Rear Admiral David Oliver

Cold War: East vs West

Communist Bloc: USSR and China

- Overwhelming advantage in size of armies
- Overwhelming advantage in armor and aircraft
- Strategic advantage their armies massed on borders of Allies

West: United States and Britain

- Larger and more capable navies
- Limited utility against large land nations; large Soviet submarine force to counter navy
- Nuclear weapons deployed by quite nuclear submarines altered the equation to advantage West

Rickover Effect

- The technical breakthrough Rickover oversaw was so vast that within 5 years of USS Nautilus a stealth platform was developed that unbalanced the Cold War.
- The US Submarine Force was technically superior to the Soviet counterpart.
- US Submarine Force could do the bidding of the president of the United States anywhere in the world that there was water to sail in. • With nuclear power the submarine became the “Tip of the Spear” of the Cold War.
- The Soviets despite desperate efforts never caught up.



Epilogue.....

One name will always be associated with the history of nuclear power. Over the entire life of the Navy nuclear propulsion program Admiral Hyman G. Rickover has been its single, continuous thread of genius.





Final Honor.....

On August 27, 1983, Mrs. Eleonore Rickover broke a bottle of champagne across the bow of a nuclear-powered submarine, and the Hyman G. Rickover SSN 709 slid down the building ways. The ship's motto.... "Committed to Excellence".



Postscript, April 7, 2018

Arlington, VA

Meeting Mrs. Rickover was a very special occasion for myself. She is a gracious and interesting lady with a warm personality. As I first met her, and said, "Hello Mrs. Rickover", she replied, **"Please call me Eleonore!"**.





H.G. RICKOVER

ADMIRAL
UNITED STATES NAVY

"FATHER OF THE NUCLEAR NAVY"
63 YEARS ACTIVE DUTY

JANUARY 27, 1900

JULY 8, 1986

Thank you!!!!



“Pride Runs Deep”

Postscript.....

- Visit With Eleonore Rickover
- April 7, 2018, Arlington, Virginia



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