



US Naval Bearings



Michell Bearings



History and Experience

The inventor of the hydrodynamic bearing over 100 years ago, we have continued to meet the changing needs of the Naval industry and we are proud to have installations inclusive of the USA and over 41 World Navies with over 500 vessels.

A unique reference list that demonstrates our long proven history in Naval propulsion systems, supplied to NATO countries, as well as other strategic countries such as Japan, Taiwan, South Korea, Singapore, Australia, New Zealand, and Saudi Arabia.

Our focus is continuing to be a world leader in hydrodynamic bearing technology to support future generation propulsion systems for both surface and underwater vessels, working in some of the harshest environments, providing stealth, efficiency and reliability.

Originally founded in 1920 in the UK, we have facilities in Newcastle upon Tyne (UK), MB Inc founded in 2021 in Sioux Falls, South Dakota and Philadelphia, Pennsylvania, and facilities founded in 1995 in Bangalore, India.

As a world leading designer and manufacturer of hydrodynamic whitmetal (or babbitt), PEEK and PTFE lined bearings, we produce Naval products for ship propulsion systems:

- Thrust Blocks
- Lineshaft Bearings
- Propulsion Motor & Generator Bearings
- Gearbox Bearings
- Bulkhead Seals

Our long history dates back to the 1920s, starting with the UK Navy. Key examples of recent major UK naval references include:

- Type 26 City Class Frigates
- Astute Class Submarines
- Dreadnought Class Submarines
- Queen Elizabeth Class Aircraft Carriers

With a long history with the USA Navy dating back to 1966, we are a leading supplier of thrust blocks, line shaft bearings and propulsion motor bearings

for USA Naval vessels which has resulted in the following major recent successes:

- Oceanographic Research Ships for NOAA (T-AGS)
- USNS Howard Lorenzen Missile Compliance Ship (T-AGM)
- Legend Class National Security Cutter (NSC)
- Freedom Class Littoral Combat Ship (LCS)
- Polar Security Cutter (PSC)
- Constellation Class Frigate (FFG 62)

Our technology and experience will lead us into future worldwide collaborations such as the AUKUS program, a trilateral partnership with the United States, the UK and Australia, helping Australia to acquire nuclear-powered submarines.

MB Inc operates from a sales and engineering office in Fort Washington, Pennsylvania, and provides product integration and assembly from our manufacturing facility in Sioux Falls, South Dakota. Our strategically located facilities enable us to support bearing customers across the USA.

The MB Inc. office, based in Philadelphia, holds the International Traffic in Arms Regulations (ITAR) registration by the US Department of State and is fully compliant with US export control laws and regulations.

We have developed a capable supply chain in the USA for raw materials and subcontract machining. Our supply chain has been extensively involved since 2019 in support of the FFG62 Constellation Class Frigate program.

Bearing Technology

We are committed to supporting future generation propulsion systems for both surface and underwater vessels to provide stealth, efficiency and reliability.

Michell Bearings thrust blocks and propeller shaft bearings are designed to suit the requirements of each project based on years of proven experience. The products are available with various oil cooling solutions, a unique edge being the supply of self-contained water cooled bearings giving significant advantage in terms of uptime of Naval vessels.

We use advanced bearing materials which can significantly reduce the size and mass of bearing products and allow unlimited slow speed journal

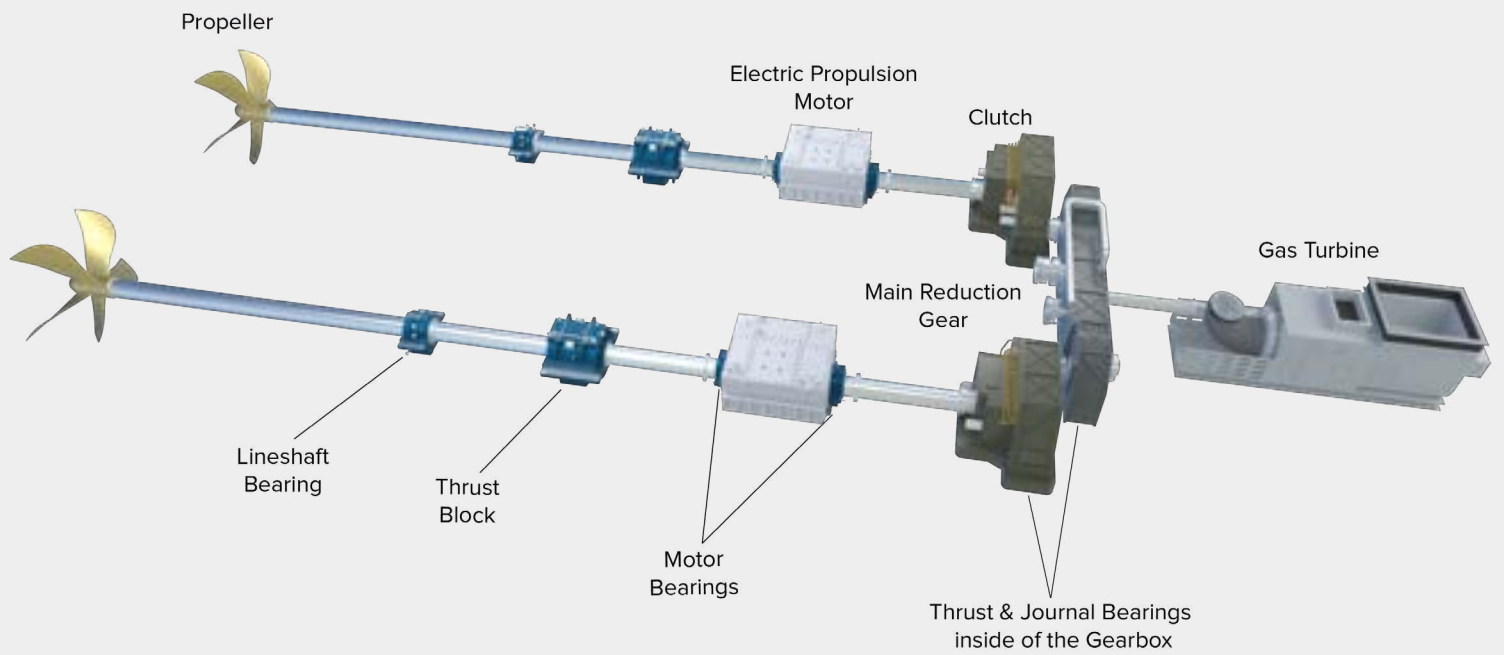
bearing operation. This is particularly relevant for submarine propulsion systems where noise reduction (signature), size reduction and slow speed operation are key. This technology allows for increased loading, allowing for bearings to be smaller and lighter, coupled with a higher factor of safety.

Introducing new and exciting technologies to the US Navy assisting our vision is at the heart of who we are.





Michell Bearings Thrust Block and Line Shaft Bearings



Representation of a Ships' Propulsion System

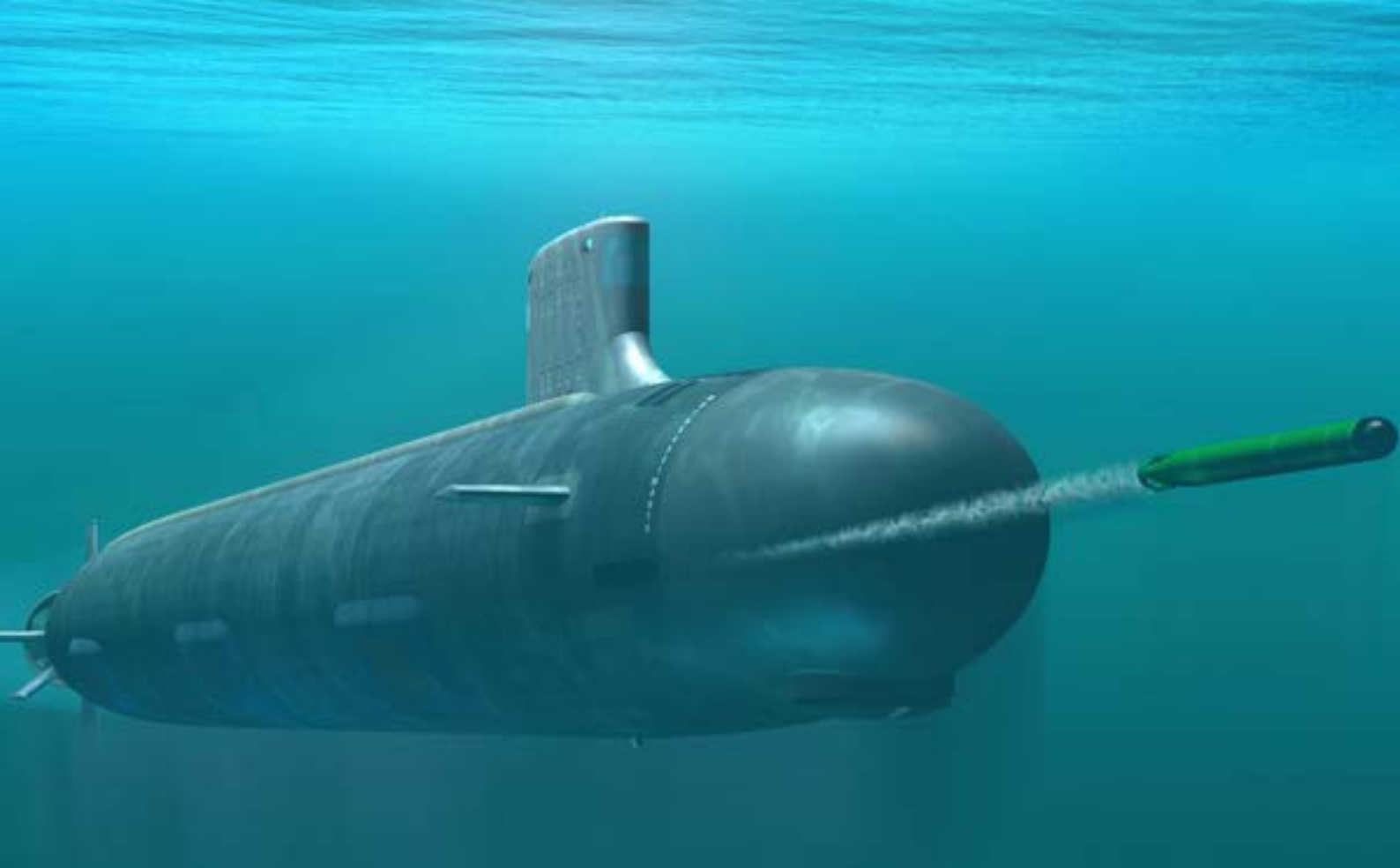
USA Successes and Future Targets

USA Naval & Coastguard Successes

Ship Class	Hulls	Ship #1 Commissioning Date
Sirius Class (T-AFS) Combat Stores Ship	1	December 1966
Henry J Kaiser Class (AOH) Fleet Oilers	15	December 1966
Avenger Class (MCM) Mine Counter Measures Ships	14	September 1987
Osprey Class (MHC) Mine Hunter Ships	12	November 1993
Shughart Class (T-AKR) Fast Sealift Ships	2	February 1997
Impeccable Class (T-AGOS) Ocean Surveillance Ship	1	March 2001
Kilo Moana Class (AGOR) Oceanographic Ship	1	September 2002
Oscar Dyson Class (FSV) Oceanographic Ship	5	May 2005
Sea Jet Class Electric Ship Demonstrator	1	November 2005
Legend Class (PSOH/WMSL) National Security Cutters	11	August 2008
Freedom Class (LCS) Littoral Combat Ships	16	November 2008
Howard Lorenzen Class (AGM) Missile Range Ship	1	August 2014
Sentinel Class (WMSP) Polar Security Cutter	3	Under Construction
Constellation Class (FFG) Frigate	2	Under Construction
T-AGOS(X) Explorer Class Surveillance Ships	7	Under Construction

USA Naval & Coastguard Future Targets

Ship Class	Hulls	Estimated Vessel #1 Launch Year
Future Frigate FF(X)	50	2028
Next Generation Destroyer DDG(X)	40	2036
Guided Missile Battleship BBG(X)	25	2035
Future Attack Submarine SSN(X)	33	2046
Future Large Payload Submarine SSGN	6	2047



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