



The Coastguard Submarine: Covert Maritime Security

Session: Submarine Design

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Contents & Biography



Alex Walchester, AMRINA,

Alex joined BMT as a Naval Architect in 2015 and has since undertaken a broad range of tasks from concept design to design changes on existing platforms. Alex has been heavily involved in the BMT WYVERN SSK design that has been the subject of several previous UDT papers.

Introduction

The Coastguard's Role & Operations

Protect those on the sea;

- Migrant Crisis;



Protect the Nation against threats delivered by sea;

- Illegal drugs and items;

Protect the sea itself;

- Marine environment and living marine resources.



Introduction

Naval Submarines used for Maritime Security

Naval submarines are often used in a maritime security mode.



Introduction

Evolving Threats

South American drug-traffickers exemplify how a Coastguard's adversaries continue to evolve.



Investigating the Design of a Coastguard Submarine

Concept of Operations (CONOPS)

The Role of a Coastguard Submarine

Main operations:

- Anti-piracy;
- Anti-trafficking (humans, drugs and illicit items);
- EEZ and Fisheries Protection;
- SAR (including downed aircraft and ships lost at sea).

A submarine can provide a deterrent capability



Ministero della Difesa

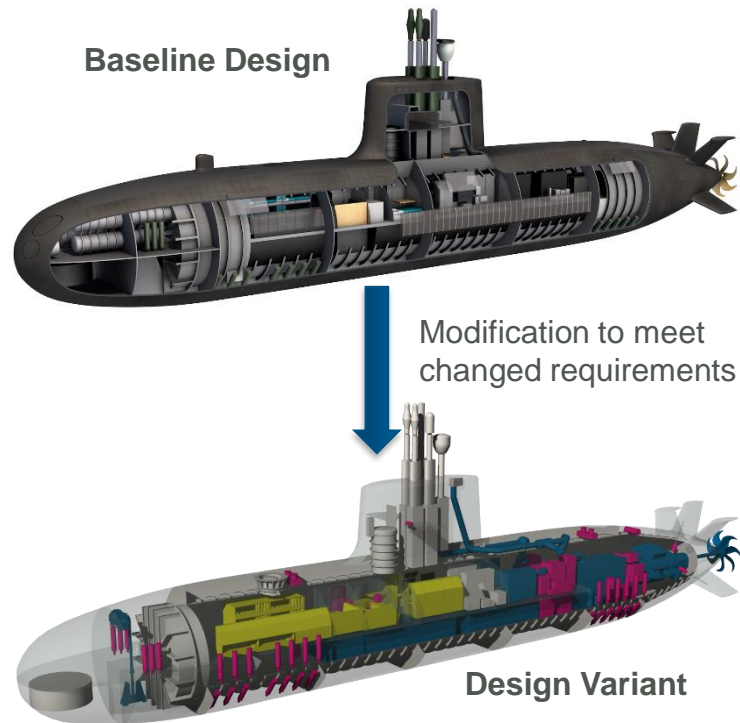
Baseline Design

Use of a Baseline Design

The purpose of a baseline design:

- A starting point for measuring the technical feasibility;
- Measuring the impact of varying requirements.

Once the solution space has been bounded then the solution characteristics can support capability assessments and be evaluated against programme constraints



Requirements Change

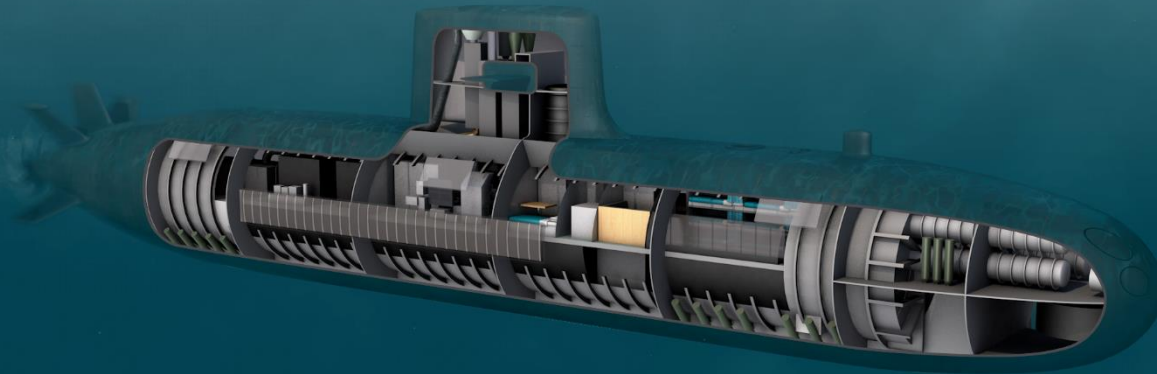
Key User Requirements Change:

- Reduced submerged endurance;
- Reduced signatures requirement;
- Reduced lethality;
- Reduced survivability;
- Reduced diving depth;
- Option for reduced underwater detection ability;
- Increased operation time on the surface;
- Increased ability to enforce and coerce;
- Increased launch, recovery and stowage of small boats;
- Option for increased communications.

As equipment is removed from the design it can be traded for new items and other benefits to the design such as increased stability, maintenance envelopes, and habitability.

BMT Wyvern

The baseline design



WYVERN Coastguard Variant

Design Changes



Added:

- 25mm Deck Gun;
- Space for Small Inflatable Boats;
- Flared bow.

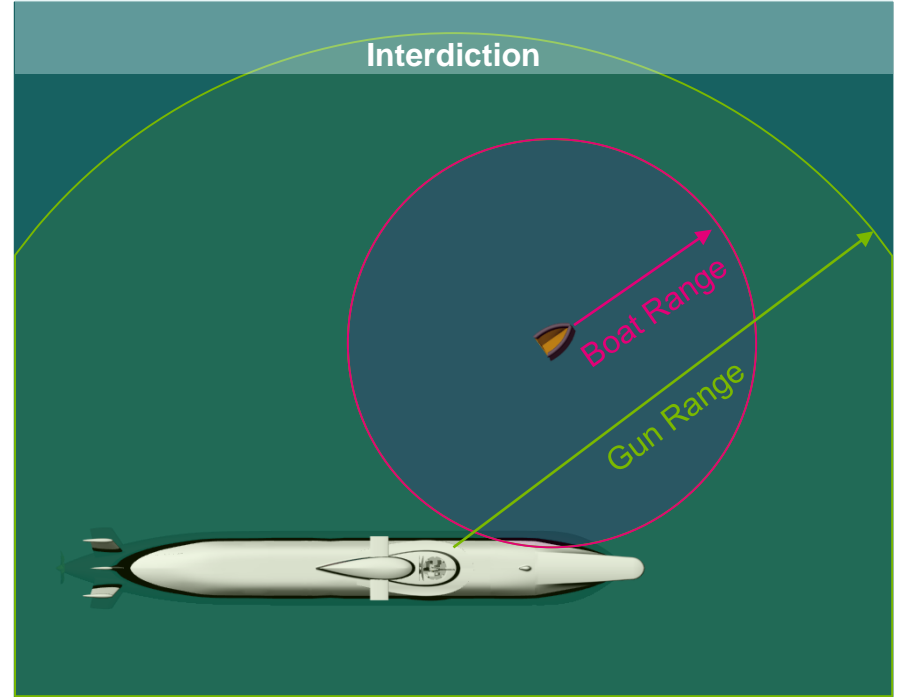
Removed:

- AIP;
- Torpedo Tubes.



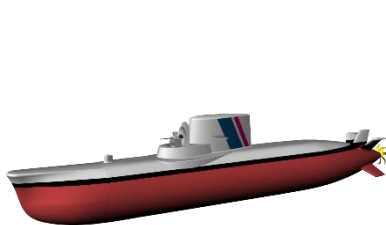
WYVERN Coastguard Variant

Concept of Employment (CONEMP)



WYVERN Coastguard Variant

Comparison with Common Assets



	WYVERN Coastguard Variant	127m Cutter ^[1]	42m Cutter ^[2]	MPA ^[3]
Covert ISR	Yes	No ^[4]	No	Yes
Ability to Interdict	Yes	Yes	Yes	No
Crew	15-21	128	18	5-7
Endurance	22 days	55 days	14 days	>20 hours
Speed	17 knots	28 knots	26.5 knots	320 knots
Range	3,000 nautical miles	12,000 nautical miles	1,500 nautical miles	4,900 nautical miles

Opportunities & Observations

Opportunities & Observations

The impact of...

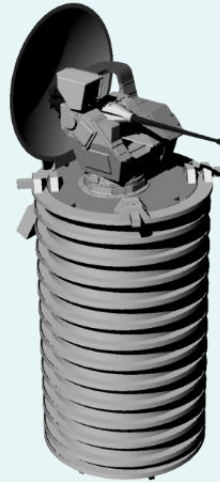
Deck Guns

- Low-level force



Modular Stowages

- Flexibility but at a cost



Naval Requirements

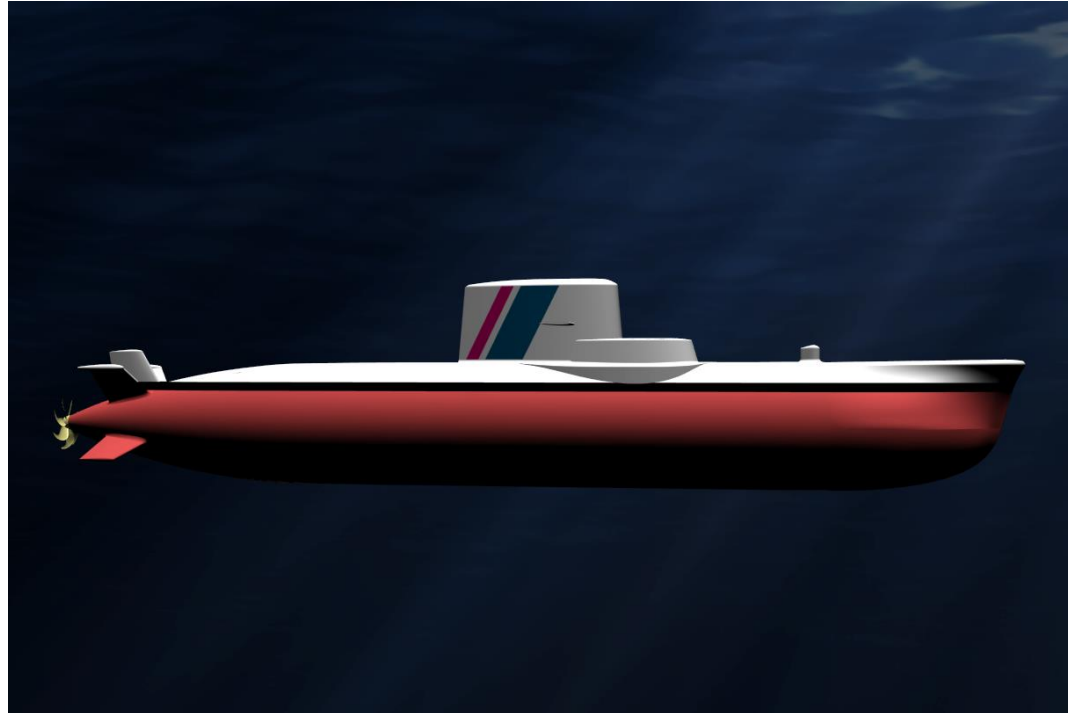
- Relaxing naval requirements is beneficial



Conclusions

BMT WYVERN Coastguard Variant

- **Baseline Design to Design Variant**
- **Technical Feasibility Understood**
- **Observations from the Design Investigation**



Thank You

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