Towards Acquisition of Underwater Superiority

Capabilities Required for Future Submarines

ATLA
Acquisition,Technology & Logistics Agency

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Agenda

Ⅰ Maritime Defense Capability
(A2/AD Environment)

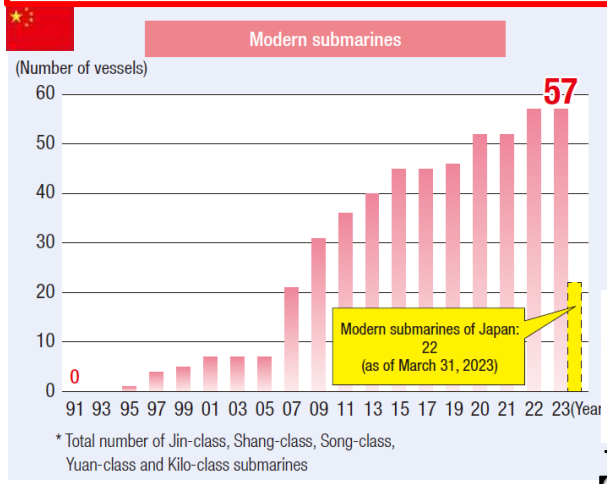
Ⅱ Future Warfare
(Acquisition of underwater superiority)

Ⅲ Capabilities Required for Future Submarines

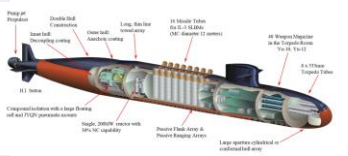
Ⅵ Towards Construction of Future Submarines

I Maritime Defense Capability (A2/AD Environment)

Modernization of underwater forces (submarines)

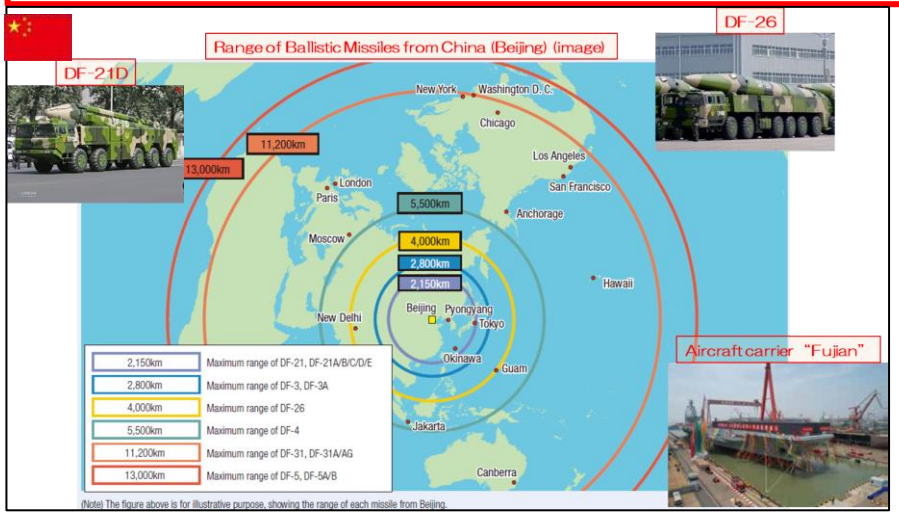


Type 093A SSN
【 CMSI China Maritime Report※1 】

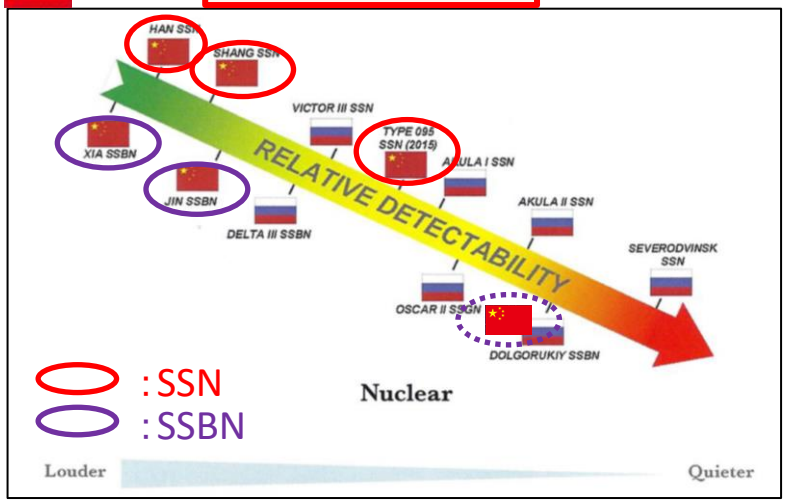


Type 096 SSBN Estimated design
【 CMSI China Maritime Report※1 】

Strengthening Surface Forces / Nuclear and Missile Forces



Quietness of SSN



Submarine Quieting Trends (ONI※2, 2009).【 CMSI China Maritime Report 】

Priorities for Building a Maritime Defense Capability

※1: China Maritime Studies Institute China Maritime Report No. 30 : Christopher P. Carlson, Howard Wang, A Brief Technical History of PLAN Nuclear Submarines, 8-17-2023
※2: The U.S. Navy's Office of Naval Intelligence

Ⅱ Future Warfare (Acquisition of Underwater Superiority)

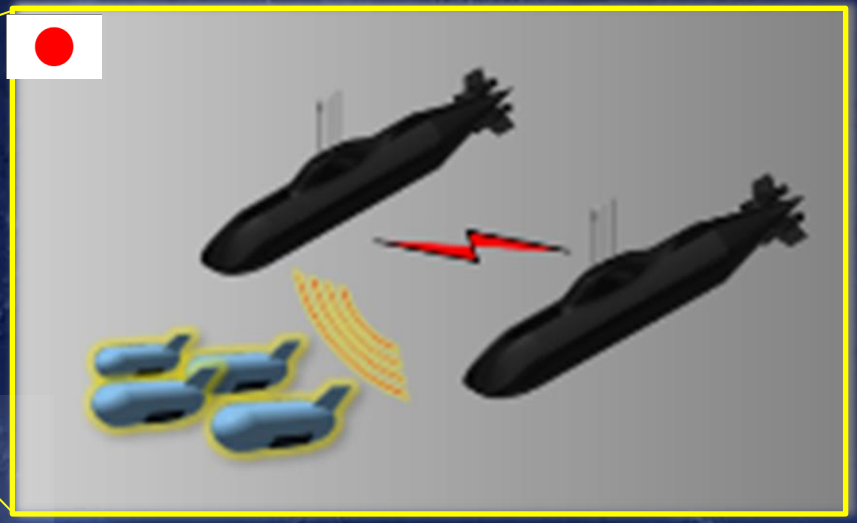
Japan is facing strengthening of military capabilities and intensification of military activities of countries surrounding Japan: China, North Korea, and Russia.

2023 Defense White Paper, Japan

- Broad and rapid military buildup
- Rapid progress in nuclear and missile development
- Modernization of various military equipment and intensification of joint activities with China

⇒ Strengthening A2/AD Capabilities

Air and Maritime supremacy
⇒ Improving air defense and EW capabilities



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Acquisition of underwater superiority
⇒ Submarine + UUV

°N

Source: Google Earth

Ⅲ Capabilities Required for Future Submarines (1/2)

Future Goals for JMSDF

To win and maintain underwater superiority
in cross-domain operations,

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- Maintaining persistent and multilayered ISR posture
- Maintaining reinforced submarine unit
  - new sonar system
  - highly efficient power storage and supply system
  - quiet torpedo tube
- Introducing unmanned underwater vehicles (UUVs)

Required Capabilities

To respond to emerging new ways of warfare

- Large-Scale missile strike
- Asymmetric attacks
- Hybrid Warfare

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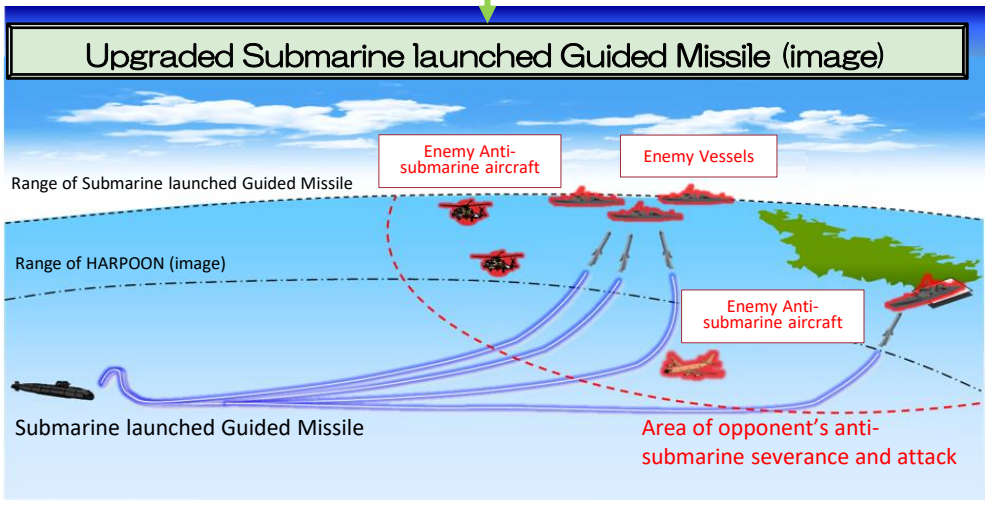
- Stand-off defense capabilities
  - Upgraded Submarine launched Guided Missile
  - Submarine – type stand – off defense capabilities
- Cross-domain operations capability, sustainability and resiliency
- Manpower saving / Unmanned systems

Upgraded Submarine launched Guided Missile (image)



Submarine – type stand – off defense capabilities (image)

Ⅲ Capabilities Required for Future Submarines (2/2)

Attack/Defense Capabilities

- Quiet torpedo tube
- Stand-Off missiles for TTL/ VLS
- New heavy torpedo TTL:Torpedo Tube Launch
- Torpedo protection system

➢ Stand-off defense capabilities
➢ Cross-domain operations capability

Long-term Sustainability

- Highly Efficient Power Storage and Supply System
- Response to High Sea Water Temperature, Improvement of Shipboard Environment
- Manpower saving, Attractiveness (Habitability)

➢ Cross-domain operations capability
➢ Sustainability and Resiliency

Detection Capability

- New Sonar system(integrated processing)
- Application of AI to Identification / TMA
- Active Sonar (Avoidance)
- Self-noise reduction
- ES and Optical Sensors

➢ Cross-domain operations capability
➢ C5ISRT and IW capability

Collaboration Capabilities

- Hybrid Opto-acoustic Underwater Wireless Communication
- Submarine Combat Management System
- Coordination and Collaboration with UxVs
- Sharing AI education data with UUV

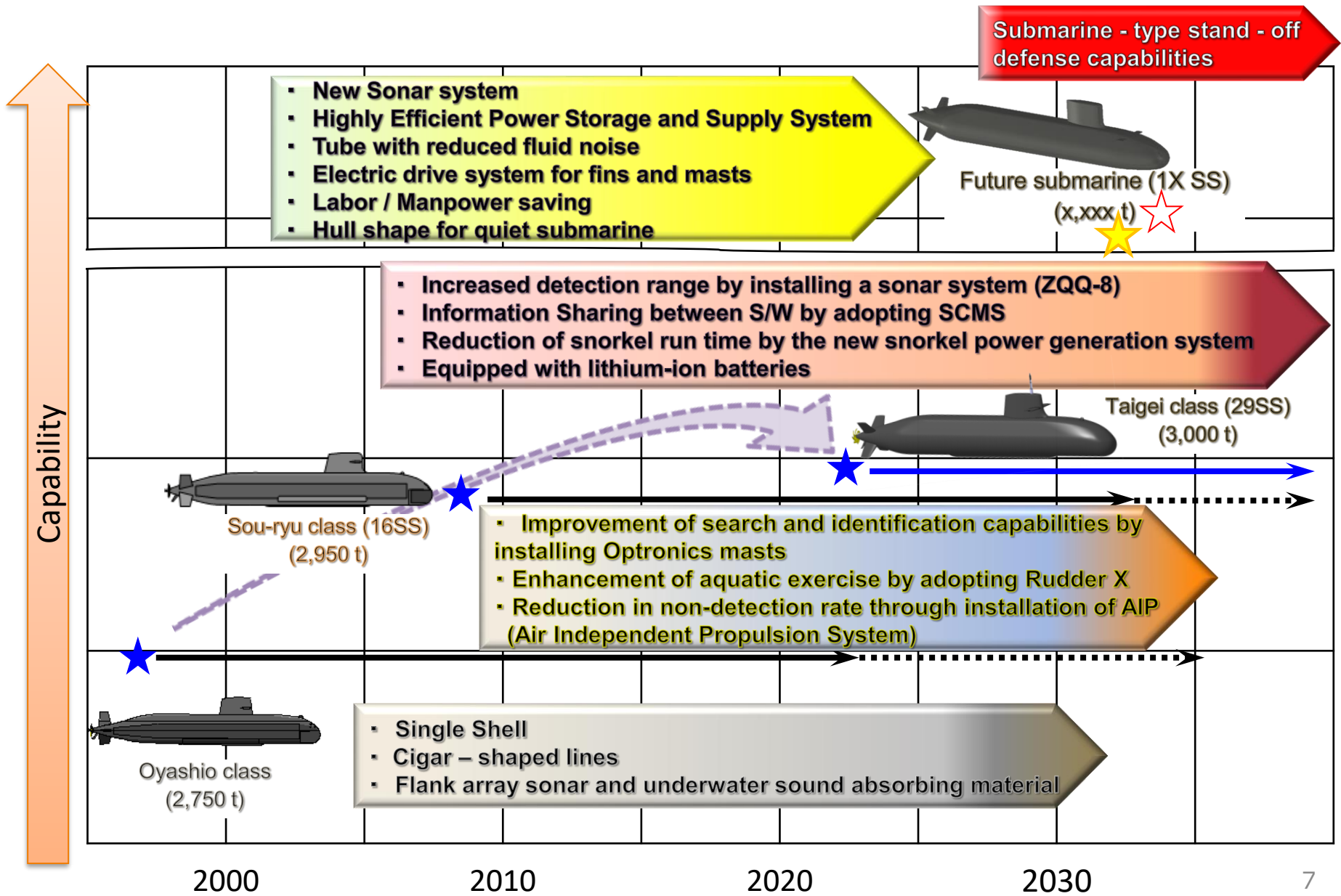
➢ C5ISRT and IW capability
➢ Sustainability and Resiliency

Detection Prevention Capability

- Quiet torpedo tube
- Hull shape for quiet submarine
- TS reduction through performance enhancement of sound absorbing materials
- Reduction in RCS by Downsizing Masts
- Electric drive system for fins and masts
- New heavy torpedo(Quietness)
- Magnetic reduction

➢ Cross-domain operations capability
➢ Signature Reduction

Ⅵ Towards Construction of Future Submarines



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