

OPTIMIZATION OF THE DOMESTIC DEFENSE INDUSTRY TO ENCOUNTER THREATS IN THE NORTH NATUNA SEA USING A LIMITED BUDGET

Cahya Kusuma

Sekolah Tinggi Teknologi Angkatan Laut
Sekolah Staf dan Komando TNI Angkatan Laut
kusumacahya99@gmail.com

ABSTRACT

The development of weapons technology is very dynamic in the North Natuna Sea region. The development of China's power with the fleet with the largest quantity in the world with 3 aircraft carriers and their supporting fleet. As the largest country in the Southeast Asian region, Indonesia must balance forces so that a regional balance of power is achieved. This research analyzes what weapons power can be increased to be able to balance forces using a limited budget. The first strategy is to increase the budget for weapons procurement and research. The weakness of this strategy is that it requires a lot of budget and a lot of time because weapons research takes a long time. In addition, Indonesia is still a developing country and still really needs a budget for infrastructure development and economic growth stimulus. The second strategy is the development of anti-weapon weapons. According to the author, this strategy is very appropriate to be developed in Indonesia because anti-weapon weapons require a smaller budget compared to the weapons they are fighting and their development requires a faster time than their opponent's weapons. This research focuses on discussing the appropriate anti-weapons used by Indonesia in order to achieve a balance of power in the North Natuna Sea. There are 3 types of anti-weapons that Indonesia deserves to consider, namely armed mini-submarines or midgets, coastal defense missiles and maritime kamikaze drones. It is hoped that this analysis can provide alternative choices in selecting weapons technology to balance forces in the North Natuna Sea region.

Keywords: Attack AUV, Budgets, Cruise Missile, Midget, National Defense Industry.

A. INTRODUCTION

The collapse of the Soviet Union or the Union of Soviet Socialist Republics made the United States no longer have a balance of power. September 11 attacks on the World Trade Center Building made America focus on the Middle East with the goal of war against

terrorism. China experienced extraordinary economic progress followed by an increase in the military budget. China's economic development is equivalent to the development of its military power. After feeling that its military strength was formidable, the Chinese Communist Government made a nine dash line claim covering 1.4 million square kilometers of sea area that intersects with Indonesian Territory in the North Natuna Sea[1]. Since China made the nine dash line claim and began to demonstrate its massively advanced military capabilities, America and its allies have focused their attention on the Asia Pacific. The two powers met in the Pacific and especially in the South China Sea where there is Taiwan is considered to be a defective Chinese province and China maintains the nine dash line claim. The rapid development of the People's Liberation Army Navy, supported by a very large budget from the Chinese government, forced the Indonesian government to formulate a strategy to be able to balance China's military strength. This is because Indonesia is dealing with the Chinese military directly in the North Natuna Sea.

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under China's military developments and shifting US interests in Asia Pacific, Indonesia must take anticipatory steps against all possibilities that could occur, especially in the next 5 years. The North Natuna Sea as the spearhead of the outer border of the Republic of Indonesia which directly intersects with China's Nine Dash Line is the focus of the Government's attention. At present the government has strengthened the forces on the island of Natuna, but this is still lacking considering China's enormous strength. It is estimated that in the next 5 years, China will have at least 4 aircraft carriers with 2 of them being heavy aircraft carriers with a displacement of up to 100,000 tons (Type 003 and Type 004)[2]. The People's Liberation Army Navy will also be equipped with several the Type 075 landing helicopter dock to carry out amphibious assaults and capable of power projection operations far from Chinese shores[3]. The development of the TNI AL defense equipment in the next 5 years is also estimated to have been completed. However, the completion of the construction of the frigate is not expected to be able to match the military might of the People's Liberation Army Navy.

B. ACADEMIC PERSPECTIVE

This study uses a qualitative method. The subjects in this study are the government, in this case, the Navy, and the domestic defense industry, in this case, defend.id, which

consists of several State-Owned Enterprises, namely Pindad, Dirgantara Indonesia, PAL Indonesia, Dahana, and LEN Industri as the parent of the holding[4]. This holding was founded in 2020 by the Indonesian government to strengthen the national defense industry and increase global competitiveness[5]. The SOEs that are members of this holding have specialties in various fields, such as the production of weapons, aircraft, ships, and explosives. The Indonesian Defense Industry aims to increase the independence and capacity of the Indonesian defense industry and help meet national and international defense needs.

C. RESULTS AND DISCUSSION

Based on global firepower data in 2023, Indonesia has a total of 250 warships with the following details: are as follows: 4 submarines, 10 frigates, 21 corvettes, 202 patrol boats, and 13 mine sweepers and minehunters. Then the State of China has a sizeable combat power, several defense equipment owned by China, the total number of warships is 422 ships with the following details: 3 aircraft carriers, 72 submarines, 45 destroyers, 44 frigates, corvettes 71 ships, 127 patrol boats and 49 ships sweepers and mine hunters (global firepower, 2023).

Indonesia's defense budget is US\$ 8.8 million or ranks 25th in the world, while China has a defense budget of US\$ 230 million or ranks 2nd in the world. China's military budget can only be beaten by the United States with a military budget of US \$ 761,681. Based on data on military strength and differences in budget, there are 2 strategies that Indonesia can implement in order to achieve a balance of power in the North Natuna Sea:

- a. Increased budget for weapons procurement and research. The first weakness of this strategy is that this strategy requires a lot of budgets and a lot of time because weapons research takes a long time. The second weakness is that Indonesia is still a developing country that really needs a budget for infrastructure development and increasing economic growth.
- b. Development of anti-weapon weapons. According to the author, this strategy is very appropriate to be developed in Indonesia because anti-weapon weapons require a smaller budget compared to the weapons they are fighting and their development requires a faster time than their opponent's weapons. This research focuses on discussing the appropriate

anti-weapons used by Indonesia in order to achieve a balance of power in the North Natuna Sea.

There are 3 types of anti-weapons that Indonesia deserves to consider, namely armed mini or midget submarines, coastal defense missiles, and maritime kamikaze drones.

1. Mini submarines or midgets for anti-surface and anti-submarine warfare.

Indonesia is the biggest archipelago country in the world. Indonesia is bordered by two continents, namely Asia and Australia. The eastern part of Indonesia which has a very deep sea is the Australian Plate. Meanwhile, the western part of Indonesia is one plate with the Asian continent with shallower seas. The Malacca Strait is one of the busiest straits in the world because it is the vein of world trade traffic. The Malacca Strait has an average depth of under 200 meters[6]. Against the background of the shallow waters of the West Indonesia Sea and the busy trade traffic in the Malacca Straits, this is very suitable for the underwater guerrilla model when war broke out. The concept of mini-submarines is the right choice because mini-submarines have the following characteristics[7]:

a. Agility in maneuvering.

With a shallow draft, mini-submarines are very maneuverable compared to larger submarines.

b. It is suitable for operation in shallow waters and narrow straits.

Midget submarines are capable of operating at depths of 30-60 meters.

c. The capability of armed with torpedoes.

With an overall length of 29 meters, this midget submarine is capable of carrying 2 torpedoes with a size of 533 mm.

d. As a mine spreader.

This midget submarine is also capable of carrying sea mines so that it can be used for mine spreaders.

e. As a commando troop transport ship to be infiltrated into enemy areas.

f. Reconnaissance mission.

Thanks to their small size, mini-submarines are also suitable for reconnaissance missions behind enemy lines.

g. Coastal area patrols.

Due to its shallow draft, the mini-submarine is well suited for patrolling coastal areas at depths of 30-60 meters.

h. Mini submarine tactics, namely by operating under commercial ships. The very busy Malacca Strait is very suitable for mini-submarine operations because the mini-submarine will be protected from enemy sonars because the vibrations of their propellers are masked by the vibrations of much larger merchant ships. Commercial ships with a large size so that mini-submarines will be protected from the reach of anti-submarine helicopters because they hide or sail under commercial ships at the same speed as commercial ships above them, so mini-submarines will be protected. In addition, midget submarines can also hide on small islands to carry out hit-and-run tactics.

Development of mini-submarines will be less expensive than larger diesel-electric submarines[8]. The technical data of the expected 29-meter-long mini-submarine are as follows[7]:

- ❖ Cruising Speed : 8.00 [knots]
- ❖ LoA : 29 meters
- ❖ Hull Diameter : 3 [meters]
- ❖ Displacement : 150700 [kg]
- ❖ RPM Engine : 270.0 [1/Min]

2. **Attack AUV or drone kamikaze.**

Drones have been widely used in reconnaissance missions and some are equipped with weapons[9][10][2]. Kamikaze drones have been battle proven in various battles[11][9][12][13][14]. Kamikaze ship applications have also been battle proven as in the wars of Sri Lanka and the LTTE[15][16]. Maritime kamikaze drones are a technology that fills the gap between underwater torpedo technology and surface weapons such as missiles and drones that operate in the air. The advantages of this drone are its greater lift capability than airplanes and the ability to fly over water or land making it difficult to be detected by enemy radars. This Kamikaze drone is designed to attack enemies with high suddenness tactics. A key component of the drone is the explosive charge, which is designed to damage enemy surface ships up to 10 mm thick by hitting the waterline against the ship. With drone hits, the ship will have holes and leaks, so the damaging effect on drones will be even greater. Some of the considerations in the development of maritime kamikaze drones are:

- a. Indonesia has many narrow straits, river mouths, and bays that make it ideal for waging guerrilla warfare at sea.
- b. The 6th generation war will be waged against drones.
- c. Drones have been used in ground warfare, but have not been used in naval and amphibious guerrilla warfare. Drones have been used in the wars between Russia and Ukraine and Azerbaijan vs Armenia but have not been battle proven to be applied in guerrilla warfare at sea[17][18][19]. Currently, several warships have been attacked using drones, but the drones used are ground attack drones where the direction of attack is on the superstructures of warships.
- d. The concept of a guerrilla war strategy is needed at sea to fight enemy surface ships.
- e. To offset the forces in a region that has limited time and budget, one of the strategies that can be implemented is to create an anti-defense weapon system.

3. Cruise missile for coastal defense.

[20]Development of anti-ship missiles as Coastal Defense on Natuna Island with consideration[21]:

- a. Anti-ship missiles for coastal defense are urgently needed on Natuna Island because operational costs are much cheaper than operating a warship.
- b. ALKI I Choke Points in the North Natuna Sea are still not equipped with anti-ship missiles as coastal protection.
- c. Mobile missiles can move easily, making it difficult for the enemy to detect.
- d. Procurement of coastal defense missiles is far more cost-effective than purchasing a warship.

Some of the criteria that can be used in the analysis of the procurement of coastal defense missiles are:

- a. Transfer of technology.

This requirement is absolutely the first condition so that after procuring missiles, Defend.id can gain knowledge about missiles so it is hoped that in the future Defend.id will be able to make indigenous missiles for coastal defense. If there is no Tot then the automatic procurement fails.

b. Technical and Operational Criteria. Technical and operational criteria are used as a basis for consideration in the selection of coastal defense missile weapons concerning the design and technical specifications of the required coastal defense missiles. In terms of technical and operational criteria, several sub-criteria used as the basis for consideration are as follows:

- 1) The flight speed of the missile in reaching the target.
- 2) The range of the missile to the target.
- 3) Ease of operation by the operator.
- 4) Propulsion System: A system as well as a means that generates power to provide thrust to reach the desired speed and maintain that speed to reach the target.
- 5) The ability of the missile sensor to detect a predetermined target until it reaches it.
- 6) Homing Head: The missile's electronic device reaches the target.
- 7) Control Chain: Liaison between the computer system and the missile fins in the missile's motion.
- 8) Guidance and Control: Guidance is the part of the missile that gives direction to the target. Control is the part that functions to ensure the stability of the missile and carry out signals from guidance to be able to control the missile towards the target.
- 9) Survivability: Missile capability in facing resistance from targets or enemies, in the form of decoys and anti-missile defense.
- 10) Interoperability: The ability to unite various activities and operations in a different organizational system and defense equipment to be integrated and work together to achieve the desired goals effectively and efficiently.
- 11) Destructivability: The parameter of how much damage that will be caused by the impact of a missile, is influenced by the amount of explosives carried by the missile.
- 12) Anti-Jamming: The ability of the missile to deal with jamming that interferes with tracking the missile on the target.
- 13) Accuracy: This is a measure of the accuracy of the firing that is owned by the missile after being given the target data needed following the guidance device.
- 14) Trajectory and Waypoint: The ability to fly the missile high and low after being fired until it reaches the target to avoid detection by enemy radar.
- 15) Fire rate: Ability The number of missiles that can be fired in a unit of time.

16) Number of missiles in 1 launcher truck: The maximum number of missiles that can be transported by a launcher truck vehicle.

c. Economic Criteria.

The economic criteria are closely related to the administrative conditions for the procurement of the Indonesian Navy's main defense equipment, which are available both at the time of procuring the coastal defense missile weapon system and for future maintenance. Includes sub-criteria, among others:

- 1) Lifetime: The length of time the weapon system can operate based on the manufacturer's recommendations.
- 2) Maintenance: The amount of the budget that must be spent to maintain technical conditions either in the form of planned maintenance or repairs.
- 3) Logic Support: Availability of materials, spare parts, and services that are easy to obtain from the factory if needed for maintenance, as well as the availability of equipment to support maintenance and maintenance.
- 4) After-Sales Service: Services offered by producers to their consumers after a sales transaction are made as a quality guarantee for the products they offer.
- 5) Inventory: The capability of missiles to be stored within a certain time or period as well as the availability of maintenance equipment handed over to the user for completeness in the storage area.
- 6) Warranty: A warranty is a service guarantee from the manufacturing company if there is damage.

d. Policy Criteria.

Policy criteria relate to policies taken by stakeholders, in this case, decision-makers in the process of selecting the type of missile in coastal defense, including several sub-criteria:

- 1) Strategic: Policies taken by decision makers by taking into account strategic factors.
- 2) Budget: Procurement capability is influenced by budget oriented rather than mission-oriented.
- 3) Regulations and Rules: This criterion relates to regulations and legal rules that can influence decision-makers in the procurement of this coastal defense missile.

4) Risk: Risk is something that has a negative impact, such as the availability of spare parts, misfire, and security for missile operators during firing.

e. Political Criteria.

This political criterion is related to the political conditions that occur and influences stakeholder decision-making regarding decisions in the process of selecting the type of missile in coastal defense, which includes several sub-criteria as follows:

- 1) Diplomatic Relations: This criterion relates to bilateral relations between the two countries which can influence decision-makers in the procurement of this coastal defense missile.
- 2) Development of the Strategic Environment: Policies taken by taking into account developments in the global, regional, and national strategic environment
- 3) Embargo: Policy has taken by taking into account if there is an embargo from the country selling missiles that will have an impact on the Indonesian Navy.
- 4) Support from institutions: Support from parliamentary institutions of countries that produce missiles (missiles) in the Coastal Defense Operation which will be held by the Indonesian Navy.

D. CONCLUSION

Based on the data and analysis that has been done, it is concluded that based on the data and analysis, 3 technologies can be developed by Indonesia in dealing with threats amidst budget constraints:

- a. Mini submarine for anti-surface and anti-submarine warfare
- b. Attack AUV or maritime kamikaze drone
- c. Cruise missile for coastal defense.

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Her Master's and a Ph.D. in marine engineering, especially in ship hydrodynamics and powering propulsion. He is an Indonesian Navy Officer, with more than 16 years of experience servicing various classes of Indonesian Navy warships.