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THE STATE DEFENSE RELATED TO THE OPERATION OF UNMANNED AERIAL VEHICLE (UAV) BY THE INDONESIAN NAVY

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ABSTRACT

Indonesia as an archipelagic state with its geostrategic location which at the same time has the potential for economic, cultural, security and defense threats. Defense for a country is a fundamental need since independence and its existence against the struggles of the international world. The need for national defense occurs because of a threat that comes from a foreign country or certain organization against the existence of the state, territorial sovereignty and national safety. It is stated that the nature of national defense is all defense efforts that are universal in nature, carried out with awareness of the rights and obligations of the state and belief in one's own strength. This research is a descriptive study using qualitative methods, where data and information related to research problems obtained through literature studies and field interviews are analyzed qualitatively, and then interpreted according to the meaning contained in the data and information. The operation of UAVs by the Indonesian Navy in carrying out national defense uses several principles, namely the pilotless principle, the principle of state sovereignty, the principle of aviation security and safety, the principle of responsibility and the principle of the right to human privacy, but do not yet have the power and legal certainty to regulate their use for the benefit of the Indonesian Armed Forces. Sea. So that's why In order to increase the strength and capability of the Marine Defense Weapon System Main Tool, it is necessary to disseminate and master international and national legal aspects to the crew so that in operation they do not violate the law and do not harm other people and flight safety.

Keywords: *Indonesian Navy, Unmanned Aerial Vehicle (UAV), and Marine Defense.*

1. INTRODUCTION

1.1 Background

Indonesia is an archipelagic state characterized by an archipelago with territories whose boundaries and rights are determined by law. Indonesia as the largest archipelagic country in the world, has an area of marine waters that reaches approximately 5.8 million square kilometers consisting of 3.1 million kilometers in the form of territorial waters and 2.7 million kilometers in the form of ZEEI seas. The sea area stretches at a position of 94º to 141º East Longitude and between 6º North Latitude and 11 South Latitude. The archipelago of the archipelago has recorded more than 17,506 islands and 92 islands and of which are located in border areas with several neighboring countries. From the area and potential contained therein.

Considering Indonesia as an archipelagic state with its geostrategic location which at the same time has the potential for economic, cultural, security and defense threats. These Indonesian waters have the potential to pose a vulnerability to national security and defense. Losses from exploitation of marine resources from year to year continue to increase by illegal foreign vessels. Therefore, Indonesia needs to secure the waters of national jurisdiction by deploying the potential for marine defense by the Indonesian Navy in an efficient and effective manner on the territorial dimension very wide.

Defense for a country is a fundamental need since independence and its existence against the struggles of the international world. The need for national defense occurs because of a threat that comes from a foreign country or certain organization against the existence of the state, territorial sovereignty and national safety. It is stated that the nature of national defense is all defense efforts that are universal in nature, carried out with awareness of the rights and obligations of the state and belief in one's own strength.

To carry out defense tasks in Indonesia's maritime territory, the Navy's strength and capabilities are developed through the Integrated Fleet Weapon System (SSAT) which consists of Indonesian Naval warships, aircraft, Marines and Bases. All these

strengths and abilities are built and developed according to their respective basic functions.

The history of naval battles has shown that navies around the world have become a combat tool capable of destroying the enemy. The use of aircraft in naval battles is an important moment in the use of aircraft technology as a tool of war. The naval battle strategy using aircraft as a warship weapon system has demonstrated the ability that naval battle tactics will be more effective in destroying the enemy if carried out with aircraft power according to their function. The destruction of the forces of warships and submarines is very effective when carried out by aircraft. This naval battle situation has inspired a strategy to build Indonesia's sea power, which is the main task of the Indonesian Air Force, which is adapted to technological advances.

Several problems that develop in the field of security and law enforcement as well as the territorial sovereignty of the Republic of Indonesia are not only related to neighboring countries related to regional borders, but certain crimes at sea also need special attention by the Government. Certain crimes at sea during peacetime include immigration, fisheries, forestry, drugs, shipping, ancient property and relics, customs, research, mining, shipping, trade, piracy, piracy and so on.

Therefore, the development of aircraft capabilities with tactical reconnaissance and sea observation functions that are able to cover all waters of national jurisdiction effectively and efficiently and minimize safety risks. marine operations carried out by the Navy universally cannot escape the concept of its role as police, defense and diplomacy. The development of aircraft with tactical reconnaissance and sea observation functions has been developed from conventional aircraft (pilot on board) to unconventional (pilot not on board). From manned aircraft to unmanned aerial vehicles (UAV).

The use of the latest aviation technology used or newly designed for the benefit of war, including cyber, remote-control systems and robotic weapon systems. Unmanned Aerial Vehicle (UAV) is an aircraft that was originally created to be used for war and is a development of aircraft technology without a pilot in it (on board) but using remote control technology. UAV capabilities have evolved rapidly and can be used for various aerial photography purposes, such as aerial mapping, plantations, forestry, traffic, forest fires, freight transport/POS, SAR, marine fisheries surveillance, intelligence, security and defense.

The existence of Puspenerbal as a center for the development of aviation units under the ranks of Puspenerbal to be more efficient and effective. The development of the strength of aircraft and UAVs operated by the Indonesian Navy is carried out by the Aviation Center. In accordance with the Strategy Document and Naval Planning Document, the need for unmanned aircraft (PUTA) has been determined as part of the SSAT which is operated in an integrated manner with Warships (KRI). In addition, what is no less important is the aspect of flight safety.

2 LITERATURE REVIEW

2.1 Unmanned Aerial Vehicle/UAV

Ontologically, unmanned aircraft or so-called unmanned aerial vehicles that have the ability to operate without a pilot in it. Unmanned aircraft also known as Unmanned Aerial Vehicle (UAV) is a flying machine whose operation is controlled remotely by the pilot or able to control itself (autopilot) using the laws of aerodynamics to lift itself, which can be reused, capable of being loaded either cargo and weapons (air weapons) as well as navigation, sensing and radio equipment. Unmanned aircraft can be in the form of fixed wing or rotary wing using a self-contained navigation system.

At the beginning of its creation, UAVs were dangerous tools because they were first used for military purposes in warfare in the first World War in 1889. However, UAVs developed along with advances in information technology, radio and satellite, so that their uses are not only for military purposes but civilians can also use them for military purposes. photo shoot and plantation supervision, mapping, meteorology and so on. UAV as a flight tool also still contains dangers or has flight safety risks that must be considered for users. In addition, the function of the UAV as sensing must also be complied with in accordance with applicable laws both internationally and nationally. UAV development has also become a symbol of changes in aviation technology; therefore, users must be truly responsible. UAV engagements have been used for military purposes and were directly used for battles between Austria against Venice and Italy.

2.2 State Sovereignty Theory

A country may be born and its existence is recognized by the international community, but that does not mean that the country has sovereignty. For an independent country, sovereignty is the highest power possessed by a country to freely carry out various activities according to its interests as long as the activities do not conflict with international law.

At first the sovereignty of a State was seen as a form of capacity in relation to relations with other countries as regulated in Article 1 of the Montevideo Convention dated December 27, 1933 concerning the rights and obligations of the State which states that the 4th Constitutive element for the formation of the State is Capacity to enter into relations with other states. Along with the times, this element of capacity is no longer used, but sovereignty is seen as constitutive which has a broader meaning that involves an area, land, sea, and air.

2.3 The Navy's Universal Role Theory

The Navy as part of the national force, throughout its service life, has mostly carried out operations other than war, this is possible because of the Navy's Universal role which includes Military, Diplomacy and Police roles which can be described as follows:

The role of the Military (Military/Defense) is carried out in order to uphold the sovereignty of the state at sea by means of state defense and deterrence: preparing forces for war preparation, warding off any military threats by sea, maintaining the stability of the maritime area, protecting and guarding maritime borders with neighboring countries.

The role of the Police (Constabulary) is carried out in the context of enforcing the law at sea, protecting national marine resources and wealth, maintaining order at sea, and supporting national development in this regard contributing to national stability and development. Enforcing the law and maintaining order at sea is carried out in an effort to protect the legal use of marine resources, prevent smuggling and illegal immigrants and prevent other violations at sea.

The role of Diplomacy (Diplomacy Supporting) is the use of sea power as a means of diplomacy in supporting the government's foreign policy, which is designed to influence the leadership of a country or several countries in peaceful or hostile situations. The presence at sea is not based on a threat, but rather as an ambassador for the nation whose role is to form opinions and build trust between countries.

2.4 Sea Power Theory

There are six components that are universally important in building a country that has great sea power, namely; components of geography (geographical position), the earth's surface (physical conformation), the area and length of the area, the character of the population (character of the people), the number of population (number of population) and the character of the government (character of government). A strong maritime vision from the community is also an important part as a direction in building a strength that can prosper the nation.

2.5 National and International Law of the Sea

United Nations Convention on the Law of the Sea (UNCLOS 1982) which has been ratified by Indonesia through Law Number 17 of 1985 contains the principles of international law of the sea which were applied to complement the regimes of the law of the sea during the 1958 Geneva Convention which regulates the Territorial Sea, Additional Zone, Exclusive Economic Zone and High seas. In part IV of UNCLOS 1982, it regulates an archipelagic state in which this conception unites the territory of Indonesia.

Overlapping claims between countries against sea areas often occur because this international law of the sea gives the coastal state the right to own a territorial sea as far as 12 nautical miles measured from its baseline. Even the continental shelf is determined to reach 350 nautical miles by proving the natural extension of the coastal state's landmass. This has caused many countries to claim their maritime territory in accordance with the rights granted by the law of the sea. Therefore, the problem of maritime boundaries between adjacent countries is not only seen from the legal aspect but must also be seen from the point of view of cooperation and make it a good and mutually beneficial way.

2.6 International Air Law

The High Contracting Parties recognize that every Power has complete and exclusive sovereignty over air space above its territory. For the purpose the present Convention, the territory of a State shall be understood as including the national territory, both that of the mother country and of the colonies, and the territorial waters adjacent.

Considering that this international provision is incomplete because ICAO's regulatory power is limited to civil aviation and does not apply to public aircraft, although the Assembly of ICAO has suggested to state parties to include in their respective national delegations' provisions that also apply to public aircraft (Rules of the Air) as provided for in Annex 2 of the 1944 Chicago Convention.

The arrangement of UAVs according to international law is based on the 1944 Chicago Convention as the primary legal material as a guide in this research. This convention regulates the

classification of civil aircraft and state aircraft. The 1944 Chicago Convention does not regulate the operation of State aircraft because it is regulated through the national laws of each State. However, on the other hand, the operation of state aircraft must pay attention to the security and safety aspects of civil aviation as regulated in this convention. In setting up UAVs, the 1944 Chicago convention accommodates the category of pilotless aircraft classification.

3. RESEARCH METHODS

This research is a descriptive study using qualitative methods, where data and information related to research problems obtained through literature studies and field interviews are analyzed qualitatively, and then interpreted according to the meaning contained in the data and information. Data collection techniques are carried out through library research and in-depth interviews with parties who are considered competent and have information and data related to research problems.

4. RESULTS AND DISCUSSION

4.1 UAV Development

The idea of making a pilotless aircraft (pilotless) has developed before the onset of World War I since the 19th century. The paper from the Center for Telecommunications and Information Engineering (CTIE) Monash University is one of the important information about the idea and concept of UAV flight for the first time in 22 August 1849. Austria, who was in control of most of Italy at the time, launched about 200 hot air balloons loaded with unmanned bombs into Venice. The hot air balloon is equipped with an electrical fuse that can be turned on by a signal via a copper wire around the balloon. Nicolas Tesla, an American inventor of Serbian descent patented an invention in the form of a remote control or remote control on November 8, 1898. Then make ships and balloons that can be controlled by remote control from a distance. On progress, unmanned appeared for the first time with the invention of the airplane by the Write brothers in 1930. Prior to this flight, a miniature aircraft was created which is now known as aeromodelling and developed into a type of unmanned aerial rover robot.

Unmanned Aerial Vehicles (UAVs)at LAPAN known as Unmanned, in the Air Force it is known as Unmanned Aircraft (PTTA) while in the Navy it is known as Unmanned Aircraft (PUTA).*Unmanned Aerial Vehicles (*UAV*)*is an unmanned aerial vehicle (pilot control) in it as a controller. For not having a crew, UAV must be controlled remotely using a remote control from outside the vehicle or so-called Remotely Piloted Vehicle (RPV). In addition, the UAV can also move automatically based on programs that have been integrated into the computer system.

4.2 UAV Arrangement According to International Law

Article 8 of the Chicago Convention on 1944 clearly states ontologically related to the Unmanned Aerial Vehicle (UAV) as follows:

No aircraft capable of being flown without a pilot shall be flown without a pilot over the territory of a contracting State without special authorization by that State and in accordance with the terms of such authorization. Each contracting State undertakes to ensure that the flight of such aircraft without a pilot in region open to civil aircraft should be controlled as to obviate here to civil aircraft.

Article 8 shows the world that these international flight arrangements do not only cover ordinary flights but also apply to flights for unmanned aircraft. Unmanned aircraft flights are treated the same when passing in the airspace of foreign countries, the provisions of special permits from the countries under which they are passed apply. This article also does not discriminate between manned aircraft and unmanned aircraft in their operations in the air.

The International Civil Aviation Organization (ICAO) or the International Civil Aviation Organization is a United Nations specialized agency established in 1944 to manage the administration and governance of the International Civil Aviation Convention (Chicago Convention 1944). ICAO together with Contracted States and several industries agreed to reach a consensus on international civil aviation standards and recommended aviation practices with Standards and Recommended Practices (SARPs) as well as policies that support a safe, efficient, economical, and economical civil aviation sector. sustainable and environmentally friendly.

Broadly speaking, the regulation of aircraft, including UAVs, is contained in the 1944 Chicago Convention. The regulations that clearly refer to UAVs are Article 8 which stipulates that pilotless aircraft (Pilotless) cannot traverse the territory of a participating country without special permission from that country. Pilotless aircraft must also be controlled in such a way that they are not dangerous to the civilian population of the country. In addition, other regulations in this Convention that must be complied with in the operation of UAVs are, Article 1 (regarding

full and exclusive air sovereignty, Article 3 point c (regarding flights between territorial borders without permission), Article 12 (regarding the rules that apply above) the high seas) (ICAO, 2011). Then, several ICAO Annexes can also be a reference for other aviation interests.

ICAO's efforts to regulate UAVs are detailed in the form of Standard and Recommended Practices (SARPs). The first meeting to discuss UAVs was held in May 2006 in Montreal, with the aim of determining ICAO's potential role in the development of UAV regulation. Then, at a meeting in January 2007, a research group was formed on this subject Unmanned Aircraft within the Systems Study Group with the aim of assisting ICAO in developing a framework for regulatory development, guiding the process of developing SARPs for ICAO, and to support the integration of UAVs into airspace and airports and airspaces served by integrated navigation.

4.3 Legal Principles of UAV Operation According to National and International Law

From some of the explanations above, the researchers found several legal principles for operating Unmaned Aerial Vehicles according to international and national law as follows:
Pilotless Principle.

This principle distinguishes as well as regulates unmanned aircraft that are different from the characteristics of conventional manned aircraft. This principle regulates the equality of treatment as with conventional aircraft in the flight system in general, both in operation, air space services served by a country's navigation, aviation security and safety, UAV registration, airworthiness certification, operator certification and so on.
Principle of State Sovereignty (Sovereignty)

The 1944 Chicago Convention in principle highly upholds the sovereignty of the state, including over its airspace. However, for the common interest of the international community, the convention at length regulates in detail the rules related to aviation and aviation traffic in the world, especially civil aviation, but in its annex, it also regulates flight coordination for military aircraft.

In relation to civil aviation, comprehensive protection and security of airspace and regulation of international routes has been regulated in the 1944 Chicago Convention. According to this convention, civil aviation cannot carry military missions or certain missions that are not friendly to the country whose air space is passed. The decree also states that a country has the authority to land, intercept and inspect aircraft from other countries that pass through its airspace. In addition, civil aircraft from a country also have an obligation not to fly in an area or area that is prohibited by a certain country. Civilian aircraft and other air power cannot be used to attack civilian targets such as churches, hospitals and so on.

Operational UAVs used by the military are clearly not used in scheduled but unscheduled flights considering the mission carried out. In principle, it is the same as operating a manned aircraft, so the legal treatment is the same. The operation of the UAV which covers the air space of a country also applies sovereign rights in the air. Therefore, the airspace used for UAV flights is also the same as regulated in the principles of international air law.

4.4 Posture of the Indonesian Navy's Integrated Fleet Weapon System

As the main component of national defense at sea, the Navy is tasked with implementing state defense policies, namely defending the country's sovereignty and territorial integrity, protecting the honor and safety of the nation, carrying out military operations other than war and actively participating in regional and international peacekeeping tasks. In an effort to implement national defense at sea, the Indonesian Navy carries out tasks that are the embodiment of three universal roles, namely the Military Role, the Police Role and the Diplomacy Role. The success of the implementation of the tasks of the Navy will greatly depend on the posture of the Navy.

The development of the TNI AL's strength posture which includes the level of capability, strength and pattern of strength titles, is essentially oriented to the achievement of the TNI AL's tasks in order to support the national interest. Therefore, it is necessary to build a strength posture of the Indonesian Navy that is always anticipatory to various forms of threats, realistic to the ability to support budgets and pay attention to the linkage of political aspects with the National Defense Strategy and the Archipelago Sea Defense Strategy.

In determining the development of strength based on capability (capability based) faced with the available budget limitations, the strength calculation approach refers to the most likely and most dangerous threat scenarios. Based on the analysis of the development of the strategic environment, it can be concluded that the potential threats that can be predicted to become real threats are the potential for territorial boundary conflicts in the Ambalat waters, the potential conflicts in the Papua region that allow the involvement of other countries to enter into the conflict, and the potential impacts of existing conflicts

in Papua. territorial waters of the South China Sea. Of the three potential conflicts, the potential conflict in Papua involving other countries is a conflict with the most dangerous category, while the potential impact of the South China Sea conflict is a conflict with the most likely category.

4.5 Development of UAV Strength as Weapon System Main Tool for the Indonesian Navy

The development of science and technology, especially those applied to the military weapon system, led to the birth of Revolution in Military Affairs (RMA). The concept of operation, organization, doctrine and military strategy has been dominated by the latest technology that triggers arms races that create potential conflicts that affect regional and global security.

The development of military weapons technology also includes the development of unmanned aircraft equipped with a series of computer systems and radio links. In practice, of course, the operation is more complicated because an Unmanned Aerial Vehical (UAV) must be designed carefully from the start, considering that the UAV must do what humans have been doing all this time.

Indonesian Navy aviation in carrying out tactical reconnaissance and sea observation functions continues to develop weapon systems, both with conventional human-manned aircraft (Aircrew) and unmanned aircraft, known as Unmaned Aerial Vehical (UAV). The advantages of operating the UAV can be carried out without involving crew personnel directly, the accuracy of tactical maneuvers is controlled remotely by the operator (remote), the accuracy of hitting the target is more effective and efficient, and can be mobilized on board a warship (on board).

To carry out the construction of a UAV as a Navy Aviation Weapon System Main Tool, it is necessary to determine the operational requirements (Operational Requirements) that describe the operating concept as follows:

a. Unmanned aircraft have the ability to carry out sea observations that can carry out sea observations and are operated from land or aboard the KRI.
b. Unmanned aircraft must be equipped with sensor equipment both day and night (infra red or light camera).
c. Unmanned aircraft must have the ability to fly up to an altitude of 10,000 ft to 15,000 ft at a speed of 40-60 miles per hour.
d. Unmanned aircraft have the ability to fly (endurance) of at least 9-15 hours.
e. Unmanned aircraft have the convenience of using the fuel available in the Indonesian market.

Unmanned aircraft have mission system capabilities which include: maritime domain awareness, data link components, automatic identification system, multi sensors, high magnification optical telescope, maritime interception operations, presence, search and confiscation, humanitarian assistance or natural disasters, transportation and propaganda.

Unmanned aircraft can be easily operated, especially take off and landing with a compact launcher on the KRI or narrow land areas and are equipped with a simple ground control station system. Unmanned aircraft must be easily mobilized in all areas of operation.

Unmanned aircraft have a cruise speed of 50-60 kts. Unmanned aircraft must be practical, portable and to be operated by taking off and landing from the mainland or on board the KRI

In the airframe/fuselage of the UAV there is an instrument section, therefore a large lift is needed, so use an unsymmetrical aerofoi wing with the wing positioned above the airframe (upper wing) and use an engine power that is not too large.
Unmanned aircraft are equipped with video and camera systems with minimum TV characteristics, namely 420 lines, telemetry line of sight (LOS) with safe frequencies.

5. CONCLUSIONS AND SUGGESTIONS

5.1 Conclusions

Based on a series of data processing, scenario preparation and analysis of research results, some conclusions can be drawn as follows:

a. The operation of UAVs by the Indonesian Navy in carrying out national defense uses several principles, namely the pilotless principle, the principle of state sovereignty, the principle of aviation security and safety, the principle of responsibility and the principle of the right to human privacy, but do not yet have the power and legal certainty to regulate their use for the benefit of the Indonesian Armed Forces. sea.

b. The existence of the UAV is important because it can be integrated with the KRI as an extension of the eye (sensing) and the hand (weapons) which are operated on board on the combatant KRI on the front lines of naval battles as an effort to increase efficiency and effectiveness of operational costs and reduce the risk of human casualties in securing and defending.

Sovereignty of the Unitary State of the Republic of Indonesia.

5.2 Suggestions

Based on the results of the research that the author has done, there are several inputs in improving and developing this research in the future, namely:

a. Aircraft operations require strict supervision and control by the Government regarding the design, registration, ownership, use, operation, flight safety and legal status.

b. In order to increase the strength and capability of the Marine Defense Weapon System Main Tool, it is necessary to disseminate and master international and national legal aspects to the crew so that in operation they do not violate the law and do not harm other people and flight safety.

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