

The Analysis of Fighter Aircraft Requirement and Pilot Training for Indonesia's Air Area Security

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Abstract

The purpose of this study to determine the Combat Air Patrol (CAP) Aircraft to take care of security and sovereignty in region of national air jurisdiction. Sovereignty is something important for every nation. In nation defence system one of the sovereignty territory is the national air area. Additionally to secure the air area, we need to improve the air force strength, like credible combat aircraft. In this limited condition of nation power, we should see the need to compute acurate for choosing combat aircraft as minimal, that can control the national air area. This activity used with the CAP Aircraft, as limited effort in secure air area. This study used qualitative approach with grounded theory method and the data obtained from literature and respondents which were selected through purposive sampling method. Data collection techniques used documentation studies, interviews, observations and been analyzed using inductive analysis technique. To compute a number of CAP Aircraft to control the national air area, we could used the mathematic formula application (cosines). According to conditions of military weapon right now, we need 45 aircrafts in minimal term, and all another resources compute for support that aircraft. In the future, this power can develop based on capability government support.

Keywords : *sovereignty, air area, CAP aircraft, resources, defence system.*

1. Introduction

Maintaining state sovereignty can be done through preserving peace, such as by preparing the war power structure for the sake of peace. This principle is relevant to the axiom stating "Si Pacem Parabellum", if you want peace, then prepare for war (Peter, 1996). In other words, to be prepared for war is one of the most effectual means of preserving peace. The state defence is any attempt to maintain state sovereignty, the territorial integrity of the Republic of Indonesia, and the safety of the whole people of Indonesia from threats and disruptions (Indonesian Laws 34, 2004). The Indonesian defense is arranged based on its geographical condition as an archipelagic state. The geostrategic factors in directing the policymaker for the defense to create a credible defense system are done based on the concept of a unified approach with a comprehensive strategy including all of the Indonesian archipelagos. The outside geostrategic factors require the policy maker for the defense to develop a strong deterrence capability, namely by developing the diplomacy competence, reconnaissance, and early warning system.

Generally, deterrence consists of credible capabilities, a clear communicated threat, and a credible willingness to carry out the threats. The state defense system should pay close attention to international changes. The main change that should be noted is the rapid development in the communication and technology sector that stimulates the changes in character and the type of threats, as well as the change in the war character. As has been frequently stated by the experts, the enemy of yesterday were static, predictable, homogeneous, rigid, hierarchical and resistance to change. The enemies of today are dynamic, unpredictable, diverse, fluid, networked, and constantly evolving (Evans, 2009).

Therefore, the state defense system should be presented optimally in various forms of operation to alleviate a war. The integration of each armed force characteristic should become a basic consideration to apply the stratified defense system through the defense area command by applying the integrated armed forces. To perform the Joint Military Operations on Exclusive Economic Zone (EEZ), Indonesia needs a modern military capability, such as the long-range and middle-range strike bombers, aircraft carriers, large-scale and long-range amphibious assault, and medium-range attack submarines. On the other hand, the development of state power has not been supported by sufficient resources. The decision to perform the development of state power will not inextricably link with the way to use the available resources effectively and efficiently.

Based on the duty in the institution in the defense sector, a strategy is formulated to overcome threats. The strategy is arranged by considering the threat prediction, the development of military power in the neighborhood countries, and the sovereignty area of Indonesia that should be protected. Further, the analysis on the level of an enemy's capability, where it comes, and where the enemy should be destroyed through an effective operation.

One of the sovereignty areas that should be protected is the national air area. Selecting suitable military power for airspace security is not an easy task, because it needs consideration from various factors and a comprehensive methodology. Conventionally, the development of airpower starts from consideration to protect the national safety from all forms of threat. The perception of threat can be assessed from the airpower and the intensity of a certain country affected by the dynamics of global and regional safety.

Some countries around Indonesia, lately, have been significantly constructing modern airpower. A step should be viewed as a threat to Indonesia, even though it does not directly disrupt state sovereignty and honour. The imbalance of airpower in a certain area will certainly damage the country due to the weak airpower. Thus, there is a belief that by reliable airpower, an area in a country will be safe and calculated by other countries. So, it is not a surprise that in constructing strong armed forces as the deterrence capability and a destroyer, each country puts an effort to purchase several modern combat aircraft.

By considering the limited ability of a country to build quite expensive airpower, the approach used here is preparing the power based on the duties to protect the state territory efficiently. The concept prioritizes the arrangement of the needs for minimum essential forces along with the development of a deterrence strategy. The main activity is to control the area as one of the realizations of state sovereignty. This power is not considered as ideal power yet. Power is designed as it is with limited resources, yet it is expected to be able to protect the territory of state sovereignty as a part of performing duties.

In general, the air weapons system consists of aircraft, radar, missiles, and airbase. The weapon system is built to obtain airpower potency including air control, airstrike, and air support. With all limitations and considerations in arranging the power, this concept will only discuss the general foundation in answering the questions about the foundation in determining the specifications of aircraft and the total fighter aircraft, so that the power for the air control can be obtained. Therefore, the basic initial estimation that will be formulated is determining the total Combat Air Patrol (CAP) Aircraft.

The needs of other powers and the required supporting apparatus of an organization can be calculated through the elaboration of combat power as a part of the airpower system. Calculating the needs for CAP Aircraft that can be used for the control of national air areas is adjusted to the available air defense system. Hence, the approach used here is the air defense region consisting of air defense point, air defense terminal, and air defense area. The need for CAP Aircraft that will be calculated is to preserve the air defense area (outer air battles). Firstly, the defense point (ZZ) or something is determined as an initial point of defense, such as a vital object or airbase. Further, the air defense terminal and the air defense area are illustrated by placing the missiles, AEW, and CAP, as the figure below (Wagner, 1999).

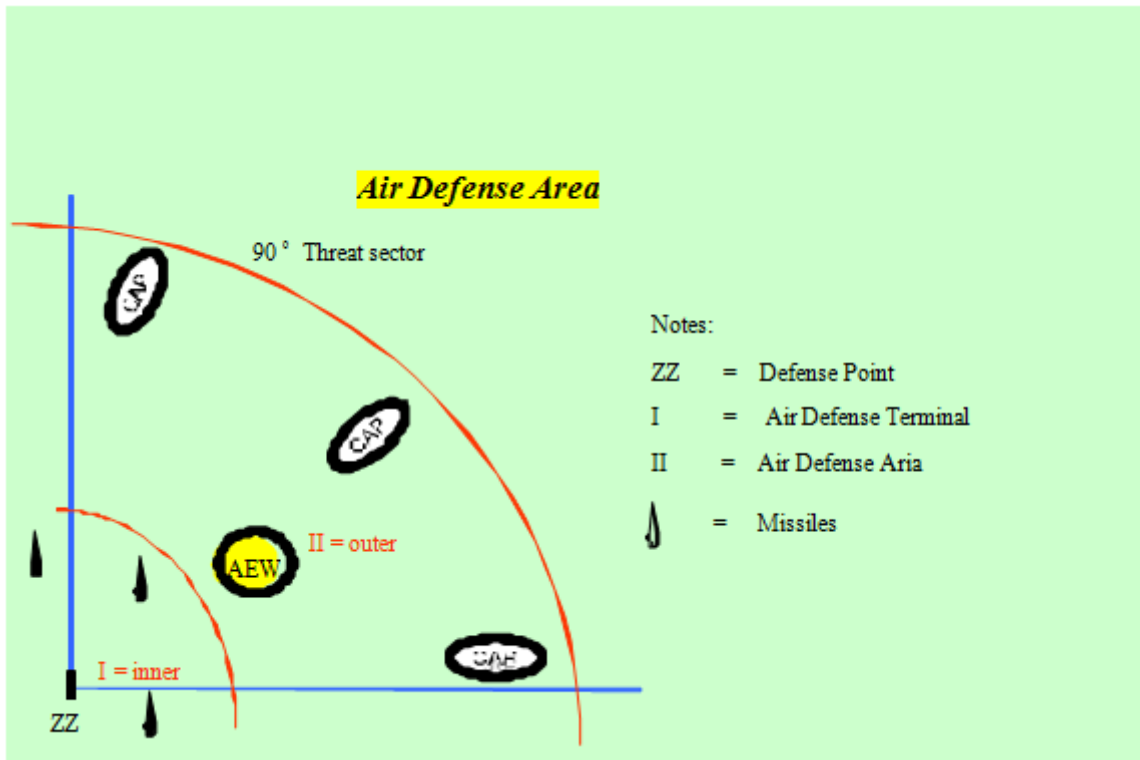


Fig. 1: Air Defense Area

This brief analysis is aimed to provide an alternative to determine the needs for airpower, especially the total and the types of fighter aircraft in securing and protecting all air area of Indonesia by using the CAP Aircraft.

2. The Specifications of Fighter Aircraft:

Entering the 2000 era, the power of the Indonesian Air Forces starts to decrease. It is because of no additional aircraft and the available aircraft have already been old. Besides, the US embargo towards Indonesia strongly influences the readiness of F-16 Fighting Falcon aircraft and the supporting equipment (Wikipedia, 2019).

Based on the condition above and the urgent needs, Indonesia tries to find an alternative, one of them is the fighter aircraft made by Russia. With several considerations, the choice falls on Sukhoi, the modern multirole fighter aircraft that becomes the Russian mainstay air force. In fact, there is another alternative, such as Mirage 2000 made by France or JAS Gripen made by Sweden. However, Sukhoi is away cheaper, having a warranty for spare part, technology transfer, and the sophisticated aircraft can be paid mostly through barter with Indonesia's crops (Kompasiana, 2020).

In 2007, the Indonesian air forces (*TNI Angkatan Udara*) started to use Russian aircraft technology by purchasing two Sukhoi-27 aircraft and two Sukhoi-30 aircraft (Wikipedia, 2020). The next order for Sukhoi was done step by step until it reached 12 units completed with the weapons to equip the power of one Sukhoi Squadron that was based in Makasar.

Sukhoi with NATO Flanker code is one of the masterpieces in the Russian fighter aircraft industry (Jawa Janes, 2011). It is designed as a versatile aircraft, the ferocious part as an Interceptor, the agile part for a dogfight, and it can be the air support land attacker. It can fly in any season and is reliable even though it is flown in the frozen air or humid temperature and the warmth of tropical areas, even passing through a storm. Also, it is not comparable due to its high maneuverability and dogfighting.

Over the past few years, Russian developed Sukhoi into SU-35 Flanker-E (Air Forces Monthly #379, 2019), with several changes such as improved quality engine and radar as well as the control system of fly-by-wire digital. Other

changes are glass cockpit, refueling in the air, twin-wheel, the more sophisticated radar, two additional supports below the wing, big capacity for fuel with endurance up to 3,600 kilometers, and the speed up to 2,300 kilometers per hour, as well as the wide tail fin with its carbon fiber horizontal tip (Wikipedia, 2020).

Sukhoi SU-35 is the multirole fighter aircraft, heavy class, a long cruise range, and a single seat (Air Forces Monthly #378, 2019). This aircraft is developed to compete with F-15 Eagle and F-16 Fighting Falcon. The last Flanker series fills the vacuum between the fourth generation and the fifth generation, or the 4++ generation (Santani, 2019). The other features are the aircraft body is strengthened using the composite materials and the aircraft datum line is modified, thereby it can decrease the radar reflection plane (radar cross-section). It will be difficult to be detected by radar, even though it has not been as fully stealth as F22 and F35.

Flanker can carry the 10 arsenal missiles with a total weight of 6,000 kilograms, including the air-to-air missile and the R-27 type radar with a range of 500 meters to 60 kilometers. Besides, the R-73 type is useful for short-range combat and it is able to destroy the enemy from a distance of 300 meters to 20 kilometers. The other weapons are air-to-ground missiles, all kinds of freefall bombs, type-C rockets, and 30mm cannon that can emit 150 bullets for each spin. The shooting system and the target locking are integrated with the pilot helmet. The helmet glass can display the view finder screen (head-up display) with lock-down and shot down systems and it can lock 10 targets at once. The range of the radar can detect and track the target of 3-meter squares at 100 kilometers in front of the aircraft and 40 kilometers behind the aircraft.

In the body of Sukhoi SU-35, there is Irbis-E Radar, the control system of new radar with an antenna array. This sophisticated radar can detect the target approaching from a distance of 350 kilometers to 400 kilometers and at that distance, Sukhoi SU-35 can also see the aircraft carrier. At the distance of 100 kilometers to 120 kilometers, it can see the motorboat, and at the distance of 60 kilometers to 70 kilometers, it can see several armors and tanks. Irbis-E can also detect and track up to 30 air targets as well as maintain the continuity of the observation up to eight targets. At the beginning of 2016, all potencies of the SU-35 have been tested in the first combat operation in Syria to protect the Hmeimim Latakia airbase (Wikipedia, 2020).

From the analysis above, the specification SU-35 is strongly suitable for controlling Indonesia's air areas as CAP aircraft. In 2019, Indonesia and Russia agree to use SU-35, even though it still needs a process (Combat Aircraft #20/11, 2019).

3. Pilot Training:

Indonesian Air Forces Aviation School (*Sekolah Penerbangan TNI AU*) is the educational center for the candidate of young pilot at Adisutjipto Airport, Yogyakarta. This school is an important institution for branch-specific basic education aiming at producing reliable pilot officers. Looking at how important this education makes it often known as "At the heart of any first-class air force is its training system" (Air Forces Monthly # 379, 2019).

An aviation school with the input of alumnus from Air Force Academy Cadet is conducted for 17 months. Before carrying out aviation education, several theories are given first at ground school and survival training in the actual field, such as mountains and reservoirs for 2.5 months.

Further, the students carry out the basic training of flight education using the B-120 TP Grob aircraft for 3.5 months. After having the basic flight competency, the students carry out the advanced training of aviation education using the K-T 1B aircraft for 8 months. Also, the students receive a course to get the Civil Pilot License (CPL), Communication Skills, and personality for 2 weeks. After the students complete the step-by-step process, they will gain a pilot's flying badge through the 'Pilot Wingday' ceremony.

Furthermore, to be a fighter pilot, it can be started from fulfilling the wing man qualification after completing the conversion in the aircraft type that has been determined. During the process of carrying out the training cycle until reaching the certain total flight hours, the pilot receives the written test and flight testing, consisting of Normal Procedure, Emergency Procedure, General Flight, Instrument Flight, Aerobatic, Formation Flight, Night Flight, Air

to Ground (Bomb and Rocket), Low-Level Navigation, and Surface Attack Tactic. After passing all those activities, the pilot is declared to have the qualifications as a wingman.

Next, after having a flightover 100 hours as a wingman, the pilot is trained to be an element leader. An element leader should be able to drive a small flight consisting of two or three aircraft. After performing the training, the written test and a flight-testing are held by leading the flight in several missions, such as Air to Ground, Air to Air, and Surface Attack Tactic. After passing the tests, the relevant student is assigned in a certain period as an element leader. Then, fighter pilots are required to participate in the Pilot Instructor School, either domestic or abroad. After graduating as an Instructor, a pilot has to teach first at an aviation school.

In the aviation school, the teaching competence is improved before being back to the operational squadron. Further, in the operation squadron, the pilot will have a refreshing activity for some time to restore the flight skill as a wingman and element leader. The next training is to be an instructor in a certain fighter aircraft. The pilot should be able to give instructions from the seat back or from another aircraft as mentioned in the training material when having the qualifications as a wingman. After passing the tests as an instructor, the pilot will participate in the training for being a leader. The leader should have the capability to lead a flight consisting of two or more *flight elements* in all missions.

After graduating with a qualification as a leader, the next phase is participating in the course for Fighter Weapon Instructor. This course is aimed at training the students to identify the capability of an aircraft and the weapons, to analyze the tactics, and the opponent's capability, either independent or join flight. With the qualification, it can make the pilot become a Master in Air Combat Art & Science that can increase the squadron of combat capability as a whole. Thus, it is expected that it can create a reliable fighter pilot to fly the modern combat aircraft, such as Sukhoi and other same types of fighter aircraft.

4. Method:

This study used an analysis using a qualitative approach with a grounded theory method. Qualitative methodology as a research procedure could result in descriptive data by observing the behaviors (Bogdan and Sari Knopp, 1982). In a qualitative research, the researchers and the analyzed objects had a very close relationship (Denzin and Lincoln, 2005). A qualitative research is often known as a naturalistic research, because the real situation of the study is natural, and it existed without being manipulated or regulated by an experiment or a test. The use of the grounded theory method in the study was because the data was descriptive, aiming to describe the reality of the research object, and tried to find the basic theory of the data. Using this method in the study was expected to find a theory that would have a link with other theories in the same field cumulatively, so the implications of the theory would bring benefits (Straus and Corbin, 2009).

The sources of data were obtained from: *first*, the source of printed materials (literature) including textbooks, journals, papers, newspapers, and others related to the defense system. *Second*, the information from the respondents (human resources) collected, using a purposive sampling method. The respondents consisted of political experts, Indonesian Armed Forces (TNI) experts, and historians. Data collection techniques used in this study included documentary studies, interviews, and observation. This study used an inductive analysis with a process of discussion based on the categories of the data. The data analysis in this study used the steps developed by Miles and Huberman (1992) consisting of three activities done simultaneously, namely data reduction, data presentation, and conclusion withdrawal. Meanwhile, to calculate the total need for fighter aircraft, the mathematical formulation was used here.

5. Result and Discussion:

The Calculation Results for the Needs of Fighter Aircraft

To calculate the areas that can be controlled by each CAP Aircraft, it can be seen using the visualization illustrated in the figure below (Wagner, 1999):

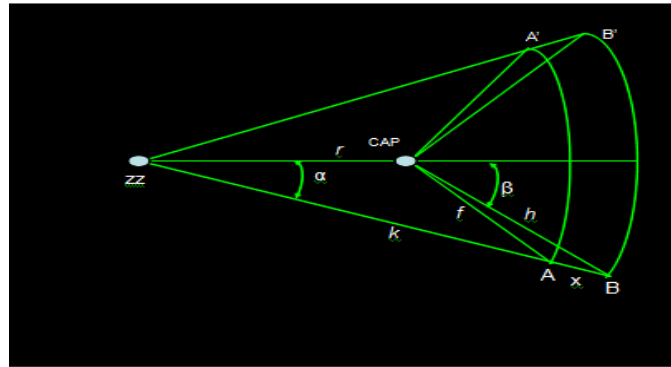


Fig. 2: Optimum CAP Stationing

Notes:

ZZ: defense point, v: threat a/c speed, μ : CAP intercepted speed.

α : The largest angle having vertex, β_{max} : CAP radar coverage angle.

r: CAP (stationed) a distance from ZZ.

k: the keep-out range.

h: the radar range with an angle β_{max} (one-half azimuth).

x: the distance from the first detected (threat aircraft) to reach the keep-out range.

f: the distance from CAP to reach the keep-out range.

AA': the segment to reach the keep-out threat aircraft.

BB': the segment detects the threat aircraft for the first time.

First, the point where CAP Aircraft started to operate was determined with a distance r from the defense point (ZZ). The area that could be covered was the area made by the 2α angle, where α was the biggest angle between an line of the axis for predicting an enemy's arrival and line k, as a distance that determined the enemy location that should be expelled or intercepted. Furthermore, the steps for calculating the area that can be controlled by each CAP Aircraft are as follows:

- Make a straight line from the defense point (ZZ), as the direction of predicted an enemy's arrival.
- Determine the distance of k from the ZZ point as the radius of the circle segment that borders the area that cannot be passed by the enemy; k can be determined by the estimated keep-out range of enemy's shooting (weapon release point).
- Place the CAP Aircraft with an r distance from ZZ point as the simulation point so that the CAP can perform the duty by controlling the area as wide as possible (the angle of α).
- Calculate α that is an angle between the line of the enemy's arrival and line k that will determine the area that can be controlled.
- In using the formula, it requires several parameters that have been established, namely 1) the speed of CAP aircraft (v), 2) the distance of CAP Aircraft radar detection (h), 3) the speed of enemy's aircraft (u), 4) the point of CAP location to the ambush limit (AA' segment) with a distance of f, 5) the cover angle of CAP aircraft radar (β), 6) the distance of enemy's aircraft detected by CAP at BB' segment, 7) the time needed by CAP starting from the initial point to the placement point (t_d), the time to the AA' segment (t_1), and the time needed by the enemy's aircraft from the BB' segment to AA' segment (t_2).
- The Cosines formula used in this study was:

$$x = -k + \sqrt{r^2 + h^2 - 2rh \cos(180^\circ - \beta)}$$

$$\alpha = \cos^{-1} \left[\frac{r^2 + (x+k)^2 - h^2}{2r(x+k)} \right]$$

$$f = \sqrt{r^2 + k^2 - 2rh \cos \alpha}$$

$f\mu = xv$, so the enemy's aircraft can be expelled (intercepted).

The calculation of the minimum requirement for aircraft to protect the national air area based on the available condition of Main Equipment and Weapon Systems:

- a. The speed of CAP aircraft, $v = 2,000$ kilometers/hour (the minimum capacity of Sukhoi aircraft).
- b. The coverage range capability of CAP radar, $h = 100$ kilometers, with angle $\beta = 60^\circ$ (max).
- c. The distance between ZZ with CAP, $r = 100$ km (that can be simulated).
- d. The distance from ZZ to AA's segment, $k = 125$ kilometers (the shooting keep-out range of enemy's aircraft).
- e. By using the cosines formula, it was collected $\alpha = 30^\circ$, the angle that formed the area than could be controlled,

$2\alpha = 60^\circ$, and radius of 173.2 kilometers ($x+k$), and it was collected the circle segment of around 181 kilometers ($\mu = 1,600-2,000$ kilometers/hour). For Indonesia that has territorial air area of 5,300,000 kilometers² (Telaah Strategis, 2017), with a circling approach the circumference, collected for the area was around 8,168 kilometers (radius of 1,300 kilometers). By arranging such a defense point where each CAP aircraft could control the segment of 181 kilometers, it required around **45 CAP Aircraft**.

6. Discussion:

The Indonesian national goal as mentioned in the preamble of the 1945 constitution of the Republic of Indonesia is to protect the whole people of Indonesia and the entire homeland of Indonesia, and to advance general prosperity, to develop the nation's intellectual life, and to contribute to the implementation of a world order based on freedom, lasting peace and social justice. The national goal was explained as the national security and national prosperity. To protect the national interest, the defense attempt and safety were performed for maintaining state sovereignty.

In the national scope, Indonesia faced several national safety issues with a complex threat characteristic and various problems. Archipelagic State of the Indonesian Republic has a unique characteristic, namely an archipelago with the sea, land, and the air, that needs an effective state defense posture with a high deterrence capability. The state defense supported by an accurate policy will be able to maximize the efficiency of all national resources to protect all areas of the country. One of the state defense attempts was to control the air area to deter and to deal with any kind of threat towards state sovereignty. Based on the state sovereignty point of view, the role of airspace over its territory was very important and strategic. It was, not only for the economy, but also for politics, society, culture, defense, and the security of the country. No state in the world that had no air area territory, but there some states had no waters (sea) territories.

The sovereignty of a state over its airspace territory had been recognized by the International Convention, namely the Chicago Convention on International Civil Aviation (Chicago Convention 1944). This recognition was not only for the contracting parties but also for all states even though they were not included as the members of the convention. Surprisingly, Indonesia is an archipelagic state with more than 17,000 islands, and airspace territory 5,300,000 km². Airspace is the easiest medium to be used by the enemy as the approaching line so that it has a high vulnerability level. A new dimension using airpower had been thrived and symbolized by nearly all combats involving the airpower. Airpower could destroy the military and the economy completely through a concept of bombing strategy that compels the enemy to lose the will power and resources. The concept of air defense in Indonesia needed professional Air Forces equipped with sufficient Main Equipment and Weapon Systems. According to Huntington, cited by Prayitno (2007), a professional is a person who has specific knowledge and skills, obtained from a high education and wide experience in performing several tasks. Performing the tasks according to the concept of air defense, needed a sufficient fighter aircraft, radar that can control all national airspaces and missiles that can defend at the enemy's air attack. It is in line with the opinion by Dunnigan (1988) that the best air defense is air superiority.

The Indonesian Air Force as a part of the Indonesian Armed Forces is the main state defense component that always refers to the applicable laws. Besides, the Air Forces Strategic was used as the concept in performing the duties and roles for the state defense. The execution of duties should be based on the intrinsic values of national struggle and theories, both conceptual and operational. A concept that had been arranged should be based on the mindset, attitude, and action in developing the skills and the use of Indonesian Air Force power (Kemenko Polhukam, 2008).

Indonesians faced a dilemma in determining the priority. Prioritizing the attempt to build strong airpower to guarantee the security of resources that could support the economy required too much cost, while the capability of the state budget was strongly limited. However, prioritizing economic development without building airpower could result in unsafe resources and the country had no power to increase the bargaining position in the global economic competition. This required an accurate strategy and idea from all components of the nation. One of the attempts that had been done was that building the minimum essential force, with the development and the modernity of Main Equipment and Weapon Systems based on the capability of the national economy. Also, it could gradually increase the use of the domestic strategic industry to avoid dependency and foreign embargo (Suara Angkasa, 2019).

In 2008, Russia offered SU-35 to be sold to India, Malaysia, Algeria, and Indonesia. With several considerations, in 2019, Indonesia ordered 11 units of fighter aircraft, namely Sukhoi SU-35 Flanker E, with a complete weaponry configuration. The purchasing process was done through a mechanism of counter purchase (Laws No. 16, 2012), based on the concept of Defense Industry Development, namely 35 percents of the transaction were in the form of offset and the 50 percents are in the form of counter purchase. Thus, Indonesia received an exporting value of 570 million US dollars from the total provision value of 1.14 billion US dollars (Kompasiana, 2020).

Many military people and netizens who are aviation lovers consider SU-35 as the answer towards the presence of the stealth fighter aircraft, namely the US F-22 Raptor. The presence of Sukhoi fighter aircraft with its various excellences is feared by the western countries due to the cruise range, the total rocket hooks, and the excellence of technology. It will be Indonesia's bargaining power in the world (at an international scale). The fantastic maneuver capability of SU-35, on one side, can attract the competitor's admiration and make them envy. Nonetheless, another opinion reveals that especially in the group of American pilots, the maneuverability is not useful in the era of the modern air war, which mainly relies on a long-range attack with missiles chasing the target accurately. In other words, "you may wriggle, let alone we still can jam and shoot you in a long-range".

In this case, it certainly proves the different philosophies of the air war between western block and Russia. The western party who prioritizes the pilot's security and safety tends to develop an aircraft that has the capability of detecting, jamming, and shooting the target in a long-range. The hit and run tactics or "Fire and Forget", are done by releasing the missiles to find a target, while the pilot directly stays a way to avoid the dogfight. On the other hand, Russian philosophy develops the jets that can combat in a short-range, such as Flanker. Meanwhile, Indonesia uses the philosophy just for expelling the enemy's aircraft not for shooting it. So, it is better to use SU-35. The findings of this study showed that using SU-35 strongly supported the control of national air area. The required total for SU-35 aircraft was 45 units.

7. Conclusion:

The development of state power is a process of an activity based on the evaluation of national security and a selection towards the kind of power required for the support that can be prepared. The problem in selecting the power is how it relates the goals, facilities, and the risks with limited resources.

The nature of national security is to protect the whole people of Indonesia and the entire homeland of Indonesia and to maintain the freedom, unity, and the national state sovereignty. One of the national security functions is the state defense including air area security. To preserve and use the air area that involves all national potencies, it requires air capability and power. The airpower is prepared and can be projected to all Indonesian archipelagos for national interest, people's mission, and participates in actualizing the world peace. The new dimension in using the airpower has thrived and it is symbolized by nearly all combats involve the airpower as the destroyer, scout, partition, or as the logistic aid and personnel transportation.

In a condition where the country has a limited capability, the national air area security can be done using the CAP aircraft. With an angle of 60° and a radius of 173.2 kilometers, each aircraft can secure an segment of 181 kilometers in length. To secure the territorial air area of 5,300,000 kilometers² with a circumference of 8,168 kilometers, it requires 45 aircraft. The need for aircraft as the basis of a calculation means that all aircraft fly simultaneously, even though in the operation, the sortie and the flight hour of an aircraft every day will be calculated based on the strategy, the annual program, and the circulation of aircraft. Meanwhile, other aircraft and the supporting facilities are

elaborated based on the calculation of fighter aircraft.

The total aircraft explained above can be developed based on the capability of the government supporting resources, the technology advance of fighter aircraft, and the capability improvement of the parties that will disrupt the national air area. This calculation can be simulated further to obtain the needs for ideal power. It is expected that the country will be able to support the improvement of airpower, as a part of building the nation's deterrence capability in the future.

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