

## CHAPTER II

### *INDONESIAN AVIATION*

This chapter is going to discuss about aviation in Indonesia. From the history of Indonesian aviation from the beginning until recent day. This chapter will also discuss how KOHANUDNAS identify the flights that pass Indonesia, how KOHANUDNAS distinguish where is the allowed flight and black flight and if there is a black flight, how is the process of intercepting this flight by TNI AU, and the reasons why TNI AU places its fighters aircraft in Pekanbaru, Pontianak, Madiun, and Makassar.

#### **A. Indonesian Aviation History**

Talking about flying in the air, Indonesia has very long history of it. Even before Wright Brothers made their plane in 1903, Indonesian people already had a dream that people could be flying in the air. There are so many folktales that describe people can fly in Indonesia from Gatotkaca, the story of Ramayana, and other folktales. The other prove is the existence of Kraton Palace seal which is wings. This shows that Indonesian people already dreamt that people can fly long time ago.

The history of Indonesian aviation can be found in pre-independence era. Indonesia started it since it was occupied by Netherland in 1904, about one year after Wright Brother made their flight experiment in 1903. A Dutch engineer named Ir. Onnen made a plane from bamboo. Then he continued his experiment by making glider with the design of Octave Chanute.<sup>1</sup>

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<sup>1</sup> PT. Kompas Gramedia. Majalah Angkasa: Sejarah Penerbangan Indonesia. Jakarta: Kompas Gramedia, 2013.

Next, in February, 19 1913, a Dutch pilot named J.W.E.R Hilger successfully piloted a Fokker in an exhibition in Surabaya. This was the first flight that occurred in Indonesia. The plane crashed but luckily the pilot survived<sup>2</sup>.

A year after the flying test in Surabaya, in May, 30 1914, Dutch government established an institution which had a job to test an European plane to be able to fly in tropic condition. This institution had an authority also to change the specification of a plane to be suitably used in Asia to strengthen the Dutch Airforce in Asia. As the time went by, this institution grew into an aero sport club for glider in Solo, Madiun, Bandung, and Palembang.

In 1923, Dutch government established an institution named Technische Dienst Luchtvaart Afdeling in Bandung. This was the first airplane manufacture in Indonesia. This institution was moved to Husein Sastranegara Airport (the previous name was Andir Airport) in 1924 to facilitate the research and make bomber airplanes to counter the Japanese Bomber plane. This facility also used native Indonesian as its employee.

In Bandung also, the first training plane was built. PW1 was the first single-engine plane that was made by Akhmad Taslim and Tosin with the assistance of Ir. M. V. Pattist and L. W. Walraven. PW 1 first flight was on September 1933. Next year, they built two more planes named PW2 and PW3. PW2 firstly flew in January 1934. PW2 was registered as PK-KKH. This airplane was the first Indonesian made double-engine airplane which could fly to Netherland although it was not piloted by Indonesian<sup>3</sup>.

In struggle to defend Indonesia's Independence, airplanes were used to attack some Dutch Depot. In November 1945, Agustinus Adisutjipto established air force academy in Yogyakarta. Using ex Japanese airplane, this academy taught Indonesian pilots. Using ex

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<sup>2</sup> Ibid

<sup>3</sup> Ibid

Japanese planes also, Indonesian pilots tried to defend Indonesia Independence. Unfortunately, Adisutjipto with Abdurrachman Saleh were killed in Bantul, Yogyakarta after their plane was shot by Dutch when they brought medicines from India.

After Independence, Indonesia tried to establish a bigger airplane industry. In 1946, three Indonesian Air Force officers, wiwiek Soepono, Nurtanio Pringgoadisurjo, and, Sumarsono established an airplane workshop in Madiun. In this airplane workshop, they made a glider airplane named NWG-1. This airplane was meant to attract Indonesian people to join air force and as a preparation before going to India for training. They also made a plane called WEL-1 and registered as RI-X.<sup>4</sup>

Nurtanio was really a hero in airplane manufacture. As an Air Force officer, he invented so many planes during his era. In April 1954, he invented *Si Kumbang*, the first full-metal airplane in Indonesia. Four years later, he led a research group and made *Belalang* as the first training plane in Indonesia. Nurtanio also invented airplane industry in Indonesia, the bureau he led became IPTN (Now PT.DI). Unfortunately, Nurtanio died on a plane crash<sup>5</sup>.

During that era also, Indonesia still could not supervise the airspace area that Indonesia had. As a newly developing state, Indonesia still had a problem with infrastructure. It was been worse when there were so many rebellions in Indonesia. Indonesian government was busy to fight against those rebellions. The government, at that time, thought that it was not necessary yet to buy a radar. There were so many infrastructures that became government's attentions. Whereas, the location of Indonesia is quite strategic.

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<sup>4</sup> Ibid

<sup>5</sup> Ibid

British colonial in Singapore, at that time wanted to control this area since Indonesia could not control this area. Indonesian Air Force was born on April 9 1946. Indonesian Air Force also only used the former Japanese armament. There was no radar that was left by Japan<sup>6</sup>.

Singapore has taken control of ATC above Riau and Natuna Islands since 1946. At that time, the air traffic in that area was quite massive. Unfortunately, Indonesia was not ready yet to control area above Indonesia itself. It became worse since the territory of Indonesia was changing due to some negotiation with Dutch. At that time, ICAO, as the international flight regulator commanded that that area was needed to be controlled. ICAO conducted the negotiation between Indonesia's representation and Singapore's representation which was represented by British Colony. This negotiation was meant to talk about which state had the authority to control this area. Unfortunately, Indonesia could not come due to defending the independence. Finally, this area was controlled by Singapore.

Riau and Natuna Islands was clear to be a part of Indonesia after 4 December 1949. At the final negotiation in Netherland, it was clear that Indonesia's territory was all territory ex Dutch occupation. Since that time, Riau and Natuna Islands belonged to Indonesia.

According to Chicago Convention 1944, Part 1, Article 1, it was said that every state has complete and exclusive sovereignty above its territory.<sup>7</sup> While in article 2 about territory, it is said for the purpose of this convention the territory of a state shall be deemed to be the land areas and territorial waters adjacent thereto under the sovereignty, suzerainty, protection or mandate of such State.<sup>8</sup>

Based from those articles, Indonesia should take over those area whenever Indonesia wanted to do it. Unfortunately, during that era, Indonesia did not have a good radar to control

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<sup>6</sup> Op Cit p.2

<sup>7</sup> Chicago Convention, 1944

<sup>8</sup> Ibid

those airspaces. Air navigation was controlled by Transport Department. After 1964, air navigation was given to PT. Angkasa Pura. Unfortunately, At the first time it was established, PT. Angkasa Pura was not meant to control air navigation. Angkasa Pura was established to control the airports in Indonesia, not the navigation. Automatically, there was different SOP between Angkasa Pura in Jakarta as the central ATC in western side of Indonesia and Angkasa Pura in Makassar as the central ATC in eastern side of Indonesia. Indonesia established an independent ATC institution called LPPNPI<sup>9</sup> or commonly known as Airnav Indonesia that was just established in 2013.

Airnav divided Indonesian airspace into two FIR sections. Jakarta FIR and Ujung Pandang FIR, continuing what Angkasa Pura did before. Jakarta FIR serves western Indonesia and Ujung Pandang FIR serves eastern Indonesia. Airnav Surabaya sector becomes the border between Jakarta FIR and Ujung Pandang FIR.

Figure 2. 1 Airnav Airspace Division

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<sup>9</sup> Lembaga Penyelenggara Pelayanan Navigasi Penerbangan Indonesia



Source: <http://www.airnavindonesia.co.id/id/page/about/type/airspace>

## **B. Indonesian Airspace Defense**

In airspace defense, Indonesia, especially TNI AU, counts on KOHANUDNAS to watch over Indonesian airspace. KOHANUDNAS was established in 1962. KOHANUDNAS has a duty to enforce the law and authority over Indonesian airspace. Using radar, KOHANUDNAS tries to watch every flight in Indonesia and try to prevent black flights come to Indonesia. About 80% work of TNI AU is held by KOHANUDNAS.

To ease the work of KOHANUDNAS, KOHANUDNAS divides Indonesian area into 4 sectors. The command sectors of KOHANUDNAS are located in Jakarta, Makassar, Medan, and Biak, while the acting command sector is located in Jakarta, near Halim Perdana Kusuma.

Unfortunately, with this wide range of Indonesia, KOHANUDNAS only has 20 military radars. In 2024, TNI AU plans to have 32 military radars over Indonesia. It becomes worse since

military radar in TNI AU cannot work for 24 hours. Military radars belong to KOHANUDNAS in each sector can only work for 18 hours a day. In 2017, TNI AU will upgrade those radars to be able to work 24 hours a day. While, Australia, which has smaller area, has satellite to watch all over Australia.

Figure 2. 2 Military Radar in Indonesia



In fact, spectrum of threat that faces by KOHANUDNAS can come from various aspects. Some of them are satellite, solid matter in airspace, UAV,<sup>10</sup> airborne, laser, missile or ICBM, black flight, low speed black flight, and one of the most dangerous is AWACS<sup>11</sup> plane from another country like Boeing E-3 Sentry. AWACS plane is known to be able to jam radar on land.

Actually, Indonesian airspace defense is so hard to be defended. Not only in lack of military radar, TNI AU must be aware any threat that comes from ALKI.<sup>12</sup> As in UNCLOS 1982, that rules about archipelagic state, archipelagic states have an opportunity to determine the border from the most outside sea shore. As the biggest archipelagic state in the world, Indonesia needs to determine ALKI which will be assumed as international water. As in international water, any ship or plane which passes through ALKI does not need to ask permission to Indonesia.

This is the consequence that Indonesia has to face as the biggest archipelagic state. As people know that Indonesia is located between Asia and Australia continent. Any ship or plane that flies from Asia to Australia and vice versa has to pass through Indonesia. To ease the permission in Indonesia bureaucracy, any international ship or plane which flies from Asia to Australia or vice versa does not need to ask permission to Indonesian government as long as it passes ALKI and it is not allowed to land or close in Indonesian seashore unless in a *force majeure* condition.

There are three slots of ALKIs all over Indonesia to connect Asian continent and Australia continent. The first ALKI lies along South China Sea, Sunda Strait, until Indian Ocean. The second ALKI lies along North of Sulawesi Sea until Indian Ocean. The third ALKI lies along North Maluku, Arafuru Sea, until Indian Ocean.

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<sup>10</sup> Unmanned Aerial Vehicle

<sup>11</sup> Air Warning And Control System

<sup>12</sup> Alur Laut Kepulauan Indonesia or Indonesian Archipelagic Sea Lanes



Figure 2. 3 Indonesian Archipelagic Sea Lanes



It is different with what happen in navy, KOHANUDNAS is the only institution which protects and watch over Indonesian airspace. If in navy or sea protection, there are at least 12 institutions which has the duty to watch over sea lane. Some examples of the institutions are Ministry of Sea and Fishery, Air and Water Police (POLAIRUD), TNI AL/Indonesian Navy, and Custom. It can be imagined how hard the work of KOHANUDNAS in watching Indonesian airspace with limited sources.

Based on the record and seeing the news, KOHANUDNAS recorded black flights pass through from the ALKI. The most shocking moment occurred in 2001 in Bawean Gulf, near the second ALKI. When US Navy held a military training above that area. It was disturbing that so many domestic flights that passed there. It was reported by civil pilots who passed there and was confirmed by ATC in Surabaya. There were 5 F/A-18 Hornets US Navy conducted military training there. US Navy claimed that they were in International Sea. Indeed, the carrier was in International Sea, but their fighters were above Bawean Gulf, whereas Bawean Gulf belongs to Indonesia and the term of condition of ALKI says that ALKI cannot become a military training area by any state.

KOHANUDNAS also made some notable identification and interception in defending Indonesian airspace. KOHANUDNAS forced down Pakistani civil airplane on 2012 in Makassar.

The process of aircraft identification in KOHANUDNAS is also very complex. If an unidentified aircraft is detected in military radar in one of KOHANUDNAS radar sector, the aircraft will be labeled as LASA U<sup>13</sup>. After that, the LASA U is reported to KOHANUDNAS main base by each sector. KOHANUDNAS main base has to check the report to Transportation Department whether Transport Department issued a clearance or not. After that,

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<sup>13</sup> Laporan Sasaran U or Unknown Target Reported

KOHANUDNAS has to check to Foreign Affairs Ministry to check whether it is a diplomatic mission aircraft or not. After that, KOHANUDNAS will check the intelligent data whether it is dangerous or not. If there is no clearance which was issued by those institutions, KOHANUDNAS will change the call sign of the black flight by LASA X. After becoming LASA X, KOHANUDNAS will try to make a contact with the LASA X. If still there is no contact. KOHANUDNAS will ask the nearest fighter aircraft to identify the plane. If it is succeed, KOHANUDNAS has two choices; force the black flight down or drive out the black flight. If it is dangerous, KOHANUDNAS will destroy the target by ground missile or ask the fighter aircraft to engage the target. The decision will be decided by the commander of KOHANUDNAS.

Actually, there are still so many lack that KOHANUDNAS has. Beside in military radar source, KOHANUDNAS still has problem with limited weapon sources. KOHANUDNAS also does not have its own interceptor squadron. KOHANUDNAS still asks the other fighter squadron to intercept any black flight which passes through Indonesian airspace territory. It is necessary that KOHANUDNAS needs its own interceptor squadron that can work fully 24 hours. KOHANUDNAS usually asks for help to the nearest squadron where the black flight happens. The TNI AU fighter squadrons are located in Pekanbaru, Madiun, and Makassar. KOHANUDNAS only relies on air to ground missile which are QW missile and Smart Hunter missile that is operated by PASKHAS AU.

In the future, KOHANUDNAS will add more radars and replace some radar in area which is often passed by black flights. Now, KOHANUDNAS is using radar Thomson TRS-2215/2230 from England, Nysa P-30B/C from Soviet Union, and the latest technology radar Master-T from France which came in 2014. Radar Thomson TRS-2215/2230 and Nysa P-30 B/C

which are very old. They are the early radar of KOHANUDNAS and can display the object in two dimension. While Master-T is very high technology radar which can display the object in three dimension and effective watch over 100.000 feet. Master-T is placed mostly at eastern side of Indonesia and in Riau.

### **C. Indonesian Air Defense Identification Zone**

Air Defense Identification Zone or ADIZ is an airspace over a state in which the identification and control of civil aircraft is performed by the state to maintain national security. ADIZ may extend beyond a state territory to give a state some time to respond to hostile aircraft or possibly hostile aircraft. Although it extends beyond a state territory, ADIZ is not meant to broaden the state territory. ADIZ is also not ruled or written in ICAO or Chicago Convention, it is an initiative of a state to establish the imaginary line over airspace as a fence of a state against threat. ADIZ is the application of customary international law. In certain case, ADIZ in some states are overlapping each other. As example is ADIZ in East China Sea. There are several ADIZs in East China Sea belong to Japan, China, and South Korea. Although, it is not obligatory that every state have ADIZ.

ADIZ itself is different with Flight Information Region or FIR. If FIR is an agreement between two states and have a right to control the air traffic, ADIZ is not an agreement. ADIZ is a state policy to establish an imaginary identification line over its territory. As its name, an imaginary identification line, if there is a plane enter ADIZ, it is necessary that plane to be identified. So, ADIZ is used only for identifying of a plane, not for controlling the air traffic.

One thing that must be understood from ADIZ is that although the purpose of ADIZ is to protect the state's airspace area and it should extend over the border, the Air Force is not allowed to intercept the black flight before it enters the border of a state although it already enters the

ADIZ. As example, there is a plane enters US ADIZ, US Air Force is not allowed to intercept the plane before it reaches the US borders. US Air Force is allowed to identify only and to seek for information whether the plane is dangerous for US or under terrorist control from any resources.

Indonesia also has ADIZ in the territory, beside limited airspace zone and restricted airspace zone. Unfortunately, Indonesian ADIZ is very small. As TNI AU and government have decided, ADIZ in Indonesia is determined only around Jawa Island until Lampung, and Bali Strait, not cover all Indonesian airspace. While, limited airspace zone is determined around Jakarta and restricted airspace zone is determined around Presidential Palace, Central Jakarta.

This is not a proportional ADIZ for Indonesia. As its name, ADIZ is determined to protect the airspace area of a state and it is acceptable that ADIZ is determined extending beyond the state's border as a preparation for intercept support, and in fact, states with ADIZ are usually extend the state's border. It means that if Indonesian area is placed from Sabang to Merauke, it is necessary that ADIZ should have been determined extending some miles over Sabang and in Merauke by Indonesian government, especially by the Ministry of Defense.

By having ADIZ, Indonesia will completely save from any threat in airspace. Of course to gain full protection, ADIZ should be supported by some sufficient equipment from TNI AU like satellite to watch over Indonesian airspace replacing radars and special interception squadron that stand by fully 24 hours a day under KOHANUDNAS coordination. Thus, KOHANUDNAS will not wait for any help from other squadron to intercept any black flight that enters Indonesian Airspace.