



Royal Thai Air Force

White Paper 2020





“Air Power is truly the sole protecting shield that prevents the outbreak of wars into the heart of the country and also yields the benefits in transportation during peacetime.”

His Royal Highness Field Marshal
Prince Chakrabongse Bhuvanadh
Forefather of the Royal Thai Air Force

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Chapter 1

Introduction



Chapter 1 Introduction

1.1 Rationale

The mission of the Royal Thai Air Force (RTAF) is to prepare and employ Air Power in national defence and to support the national development as stated in the Constitution of the Kingdom of Thailand B.E.2560 (2017) and as stipulated in the Thai Law. Relying on complex and advanced technology and high reliability, Air Power requires high cost to maintain and sustain. Therefore, Air Power is not projected only on the basis of quantity, but also quality. Since Thai Defence Industries, nowadays, have limited capability to develop and manufacture aircraft or weapon systems that fully meets RTAF specific requirements, RTAF has to procure materiel from foreign manufacturers by taking required capabilities, military standard, system quality and reliability as well as life cycle cost into considerations. Furthermore, materiel procurement must be cost-efficient and within the government allocated budget scheme, but not obliged to long-term budget requirement.

For many years up till now, RTAF has procured materiel from various foreign manufacturers based on dominant features, limitations and cost of each materiel. It should be noted that countries capable of manufacturing materiel for in-country use and export must possess strong defence industries as well as process and standardization of military materiel certification. However, according to these countries' rules, regulations and laws on military materiel export, use of procured materiel must be fully controlled and strictly limited only for the buyer. Limitations are also applied to third country's excess and end-use of procured materiel. In short, the buyer must use procured materiel only as stated in the end-use agreement between the two parties.

Each year, RTAF informs the Member of the Parliament, the Senate Standing Committee on Armed Forces and Ad Hoc Committee on Draft Annual Budget Expenditure Act, B.E. 2563 (A.D. 2020), to raise awareness and understanding on characteristics of Air Power, limitations of Air Power preparation, materiel specifications, materiel requirements, necessities of specific materiel procurement and rationale of the fiscal year budget proposal that tends to increase annually to cope with not only the higher cost of Air Power technological advancement, but also the cost of capability sustainment and upgrade which are under manufacturers' total control. Software or system upgrade to improve system's capabilities, obsolescence of in-use systems, required replacement or upgrade of LRUs/spare parts, as well as unplanned and unscheduled safety inspection are some of the

examples of the manufacturer's total control of procured materiel. All of these changes, which normally come with additional cost for system operation, demonstrate that the employment and upgrade of any materiel are under total control of the manufacturers or the owners of the in-use technology, some of which may not fit well with RTAF specific requirements.

Due to the limited allocated budget, RTAF is not capable of replacing all end-of-service-life inventory by new procurement. Therefore, RTAF is required to practically manage the technological difference of materiel between legacy systems and modern systems, causing immense technology gap. However, for the past decade, RTAF has determined possible solutions for the issue, enabling RTAF to efficiently use allocated budget, such as aircraft-service-life extension together with upgrade of aircraft systems and capabilities within safety standards, whose cost is lower than new aircraft acquisition.

Under the aforementioned circumstances, RTAF is not capable of coping with the issues alone, but requires cooperation with Thai Defence Industries in terms of education, development and efforts to narrow technology and knowledge gap in evolving defence technology. Previously, RTAF initiated the Purchase and Development (P&D) concept with the F-5TH Capability Enhancement Project and the manufacturing of RTAF UAV U1 Project. The two projects are not traditional direct procurement from manufacturing companies as in the past but apply the concept of P&D to enhance the system development and manufacturing capability of RTAF and Thai Defence Industries, including technological and knowledge improvement in aeronautical engineering, development of Operational Flight Program (OFP) software for RTAF UAV U1, aircraft capability enhancement know-how, RTAF personnel capability enhancement on Maintenance, Repair and Overhaul (MRO), cooperation with Thai Defence Industries in flight test, military standardization and airworthiness certification by RTAF flight test pilots and engineers. Therefore, RTAF decided to publish the RTAF White Paper 2020 to raise awareness and understanding of all





related organizations and stakeholders on the concepts of RTAF modernization and capability enhancement, as well as the RTAF key project requirements in the next 10 years (2020-2030).

1.2 Objectives

The RTAF White Paper 2020 is a public document focusing on raising acknowledgment, awareness and understanding of general public, security organizations, public and private sectors as well as, especially, Thai Defence Industries on the RTAF key capability requirements for various missions and the RTAF modernization process. Furthermore, it also informs defence companies, both foreign and domestic, to be aware of the RTAF key project requirements which will finally lead to transparency in the upcoming procurement and MRO projects under the concepts of P&D.

The objectives of the RTAF White Paper 2020 are as follows:

1) To strategically communicate with Thai general public to raise awareness and understanding on the rationale and necessity of the RTAF modernization for combat readiness and force employment, which provides a clear evidence of the RTAF efficient budgetary management.

2) To present the RTAF key projects which are the 10-year defence materiel requirements, conforming to the 20-year RTAF Strategy (2018 - 2037), and will be used as the guideline for procurement planning and annual budget request.

3) To disseminate the Concept of Project Requirements for the procurement or MRO or capability enhancement of materiel, project timeframe and initial budget planning to allow for transparent competition among potential defence companies to meet the RTAF project requirements.

4) To promote cooperation on defence industry development with public and private sectors, research organizations, academic institutions, state enterprises and other related organizations, as well as to be a platform for foreign defence industries to make connection with potential Thai counterparts, which will help develop and strengthen Thai defence industries and also drive Thai economy.





5) To enable a transparent and efficient procurement which is in accordance with the Government Procurement and Supplies Management Act B.E. 2560 and other related regulations.

1.3 Scope

The scope of the RTAF White Paper 2020 is the RTAF modernization process and the 10-year medium-term key defence materiel requirements. Both issues are the guidelines for the RTAF budget planning to modernize and enhance Air Power capabilities which will finally result in competent and balanced force structure, capable of coping with new challenges in the next 10-year period. The scope is listed as follows:

- Evaluation and analysis of strategic environment
- Roles, duties, missions and employment of Air Power
- Structure, required capabilities and RTAF modernization guidelines
- Concept of project requirements and budget required
- Implementations of the RTAF White Paper 2020

The RTAF White Paper 2020 is a testament of the RTAF's purposes and commitment to public sectors which is in accord with the Constitution of the Kingdom of Thailand B.E.2560 (2017). RTAF is responsible for maintaining combat readiness and employing Air Power to defend the country, supporting the Government in developing the country and overcoming national problems, as well as performing various missions assigned by the Government. Although the Government has been increasing the RTAF budget annually for the past decade based on balancing budgets for all aspects of the national development, the RTAF budget is not sufficient for the maintenance of aircraft and other defence materiel, all of which must be airworthiness, in accordance with international military standards and requires complex and advanced technology. To work within budget constraint, RTAF will determine appropriate guidelines and set up plans for efficient and effective management of Air Power under the allocated budget.







Chapter 2

Situations and Challenges



Chapter 2 Situations and Challenges

2.1 RTAF Context ¹

2.1.1 Air Domain

Non-traditional threats in the Air Domain are the use of small-size Unmanned Aerial Vehicles (UAVs) for illegal acts as well as armed and electronic warfare UAVs. Thus, every country must prepare and enhance its capabilities to cope with these small-size UAVs.

Each and every air force aims to employ Air Power with modern and advanced technology. Therefore, they develop and modernize each component of Air Power including Command and Control system (C2), sensor, aircraft, helicopter, UAV and air defence system, all of which are essential for possessing capabilities to perform all types of missions both in peace time and in crisis.

2.1.2 Cyber Domain

Threats in Cyber Domain are the ones to look for nowadays even in peace time, both in terms of numbers and severity. Most escalating cyber threats are network attack, cyber espionage and network hacking, aiming at the destruction of network stabilization and reliability. In addition, Hybrid Warfare, a combination of traditional and non-traditional warfare, tends to rise in the future. Therefore, cyber operation will play a vital role in military employment and warfare in the future.

With the aims of RTAF to enhance capability, sustain combat readiness and employ Air Power under the concept of Network Centric Operations (NCO), requiring robust network in all aspects, RTAF must emphasize cyber security and enhance its cyber capabilities both defensively and offensively.

2.1.3 Space Domain

Space capability development is important for national security as a whole. Significant capabilities in Space Domain comprise space observation for space objects and satellites via telescope, space surveillance and communication satellites for secured defence missions, all of which allow for the use of space capabilities to support Humanitarian Assistance and Disaster Relief (HADR) missions as well as national development in other areas.

In the near future, the application of space capabilities for military operations will increase substantially, facilitating missions in terms of information gathering, secured

¹ National Strategy 2018-2037 and RTAF Doctrines 2019

network communication and C2 capability reinforcement. Therefore, space observation, space surveillance and space capability development are necessary for national security.

2.2 Maintaining RTAF Capabilities

Logistics and maintenance excellence must be practiced together with the capability enhancement in all three domains to ensure Full Mission Capable (FMC) and combat readiness of all systems in the force employment structure as stated in the RTAF operational requirements. In acquiring additional materiel, commonality with the systems in-use, effective management of LRUs/spare parts for on-time or in-time logistics support, and accurate warehouse management must be important criteria in the consideration process. All three criteria will affect the RTAF logistics system which may require joint development with private sectors in forms of cooperation or outsourcing with proper self-reliance. Therefore, to elevate RTAF logistics and maintenance capabilities, life-cycle cost, up-to-date technology for efficient logistics management and effective system maintenance, and ability to link with logistics and maintenance system of the manufacturer must be taken into consideration when procuring new material.

2.3 Military Technology ²

For the past decade, Air Power technology has developed dramatically, resulting in the highly advanced defence technology. At present, development of future aircraft and weapon systems tends to be smart, precise, survivable using stealth technology and Electronic Warfare (EW), as well as mission effective using Tactical Data Link (TDL) in network centric environment. Even more, the highly advanced system may apply UAV technology in manned aircraft.

The application of Artificial Intelligence (AI), advanced network technology and Cloud in sensor, network and C2 systems enables faster decision-making cycles. Also,



² Research paper on military technology evolution, Defence Technology Institute



cyber operations, especially cyber security and cyber attack, becomes an important aspect of modern warfare. Furthermore, space capability must be developed to exploit advanced satellite's performances in communication, surveillance, reconnaissance and air navigation.

In addition, Simulator training, such as flight simulator and tactical simulation center, helps personnel obtain skills without being in a real and risky scenario. It also saves time and cost for both newcomers and experienced personnel to learn the system, gain experience and practice required skills before performing actual training with the real system, which normally has high operational and maintenance cost.

2.4 Defence Industry ³

Defence Industry development is the main agenda in the 20-year National Strategy and the 12th National Economic and Social Development Plan. Defence Industry is also listed as the new S-Curve 11 under the Eastern Economic Corridor (EEC) and is an issue under the Defence Ministry's policy.

The key elements of Thai Defence Industry are Ministry of Defence, Defence Technology Institute (DTI), armed forces and private sectors. Collaboration between foreign defence companies with international standard certification and competent local private sectors by offsetting investment in various types or outsourcing some parts to be manufactured in Thailand must be required to strengthen Thai Defence Industry and improve its competency in manufacturing military-standard materiel.



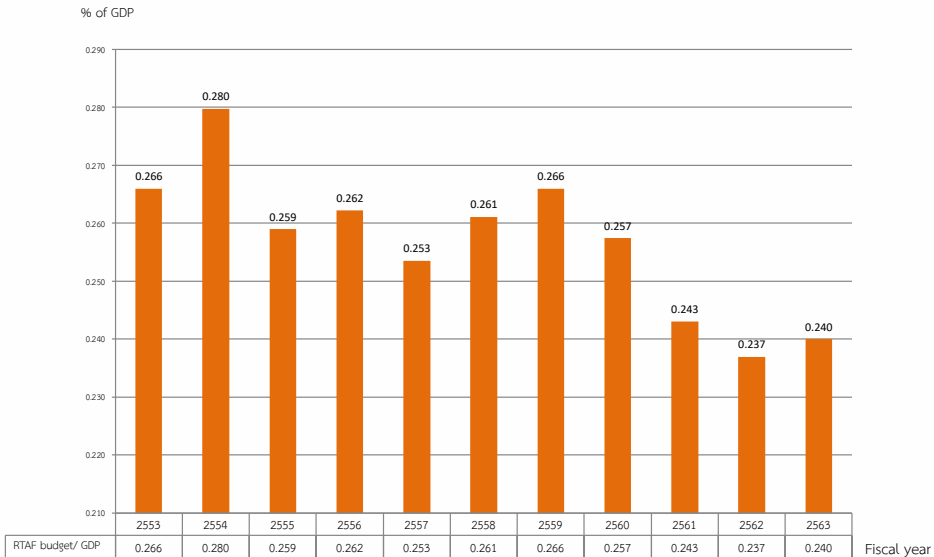
2.5 RTAF Budget

The RTAF budget is analyzed as a percentage of Thai Gross Domestic Product (GDP) during 2010 - 2020. RTAF is allocated 0.266 % of GDP for the fiscal year 2010 and 0.240 % of GDP for the fiscal year 2020. Although the Government has increased the annual

³ Defence Industry Master Plan 2015 – 2020; Science Technology and National Defence Development Strategies, Ministry of Defence 2017-2036; Defence Industry Policy 20117



RTAF budget, in terms of amount of money, in each and every year for the past 10 years, the RTAF budgetary proportion, in terms of % of GDP, has been continuously declining. Illustration 1 shows that the RTAF allocated budget, comparing between 2010 and 2020, is reduced by 0.026 % of GDP. In the fiscal year 2020, it is expected that the Ministry of Defence will be allocated 1.13 % of GDP, which is much lower than the required amount of at least 2% of GDP, determined by the budgetary requirement according to the National Defence Strategy.



Notes: the budget cycle for the fiscal year 2020 has received the initial approval from the Ad Hoc Committee on Draft Annual Budget Expenditure Act, B.E. 2563 (A.D. 2020)

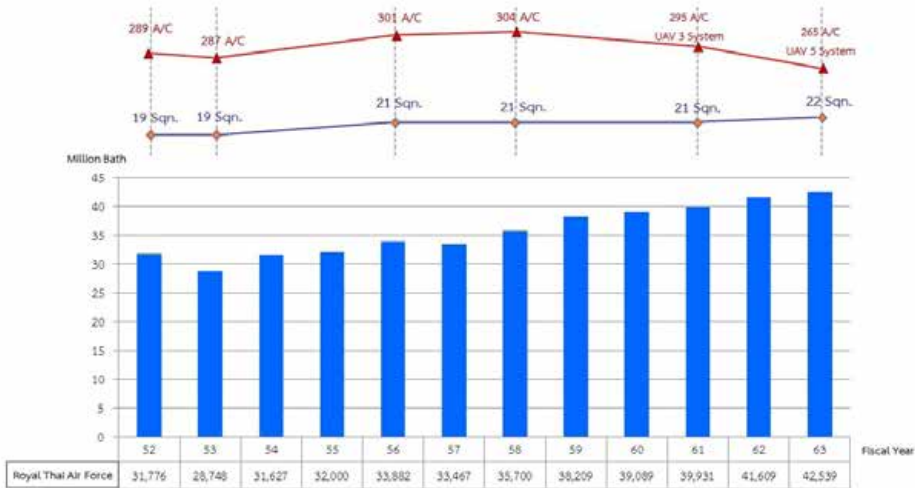
Illustration 1 RTAF Budget per GDP during 2009 – 2020

According to the Ad-Hoc Committee approval on Draft Annual Budget Expenditure Act, B.E. 2563 (A.D. 2020), RTAF will be allocated the annual budget of 42,358 million Baht (updated on 1 January 2020), 2.24 % increase from 2019. For the past 10 years (2010 - 2020), RTAF has been allocated increased annual budget continuously, except for 2014 that the RTAF allocated budget was lower than the previous year. Considering the 10-year period (2010 – 2020), the RTAF allocated budget increases at an average of 4.25 % per year.

Under budget constraint, RTAF shall maximize spending efficiency for combat readiness sustainment and Air Power modernization to cope with new and dynamic challenges. Illustration 2 shows the relation between the quantitative force structure and



and the annual allocated budget. Despite increasing budgets allocated each year, the number of aircraft in RTAF inventory is declining because of high operational and maintenance cost for modern aircraft and rising cost of LRUs/spare parts for legacy aircraft due to obsolescence and hard-to-find LRUs/spare parts. Nonetheless, according to RTAF 20-Year Strategy, the focus of Air Power modernization will be qualitative rather than quantitative, leading to emphasis on capability enhancement of sensor and fire power.



Notes: the budget cycle for the fiscal year 2020 has received the initial approval from the Ad Hoc Committee on Draft Annual Budget Expenditure Act, B.E. 2563 (A.D. 2020)

Illustration 2 RTAF Budget and RTAF Force Structure

RTAF realizes that the annual allocated budget is hard to accurately predict. In case of allocated budget in % of GDP decreases from the previous year, or worse, same amount of budget is allocated as the previous year, RTAF modernization plan will be greatly affected. Nonetheless, RTAF shall maintain combat readiness and force employment capability to perform required mission in both peace time and in crisis regardless of allocated budget.

2.6 Future Challenges

2.6.1 Modern and Legacy Systems

RTAF determines defence materiel service life by considering the following factors: operational requirements, safety, cost efficiency and logistics support. However, limited budget to replace RTAF out-of-date defence materiel results in long service life. For example,

fighter aircraft is in service at the average of 26.05 years, transport aircraft (tactical transport) at the average of 31.75 years, and special operation aircraft at the average of 48.0 years. However, although some type of aircraft, BT-67 and AU-23, are in service for a long time, they are still in need to perform the RTAF specialized missions such as royal rain-making project, smog reduction and forest fire control. Since trying to replace both BT-67 and AU-23 requires large amount of budget, MRO and capability enhancement seem to be more appropriate and will not affect the missions assigned by the Government. Therefore, for any legacy aircraft to perform required missions and sustain operational capability, it may only require structural and system upgrade via MRO and NCO capability enhancement.

Moreover, when reaching service life, RTAF is not able to immediately decommission aircraft from operational service because RTAF still has to fulfill all operational requirements as stated in the National Security Plan. Hence, gradual aircraft decommission with safety consideration is required during the procurement process of new defence materiel. Due to budget constraint, the materiel procurement has to be divided into several phases, resulting in combination of modern and legacy systems in operation together. For example, EC725 and UH-1H has been in service for 1 year and 51 years respectively, or Gripen 39 C/D and F-16 ADF fighter aircraft has been in service for 8 years and 27 years respectively.

Performing required missions with modern and legacy systems in operation together is a big challenge for logistics and maintenance management. The maintenance cost for legacy defence materiel is quite high because of LRUs/spare parts scarcity and system obsolescence. In addition, limitation exists when employing modern and legacy systems together because of technological difference between the two systems.





2.6.2 RTAF Personnel in the Future

RTAF has inadequate mid-level personnel which are middle-level executives and staffs, as well as key players in the force employment cycle. Furthermore, the current RTAF personnel structure comprises of personnel from many generations who are different in thinkings, beliefs, characters and working practices, resulting in generation gap in the RTAF workforce.

New generation personnel, who will be the main workforce for Air Power modernization in the future, are familiar with modern technology, digital system and advanced communication. They are also open-minded and fast learners, but, due to the influence of social media, they are rather impatient while being assigned with complex tasks and lack appropriate judgment. Hence, human resource management and collaboration of personnel from different age groups are required for effective operation and the RTAF modernization in the future.

2.6.3. Technological Monopoly

Most of the RTAF defence materiel are procured from foreign manufacturer, which tend to limit technology transfer to just only general or minor technological issues. Claiming safety, security and trade confidential, RTAF need to follow strictly the manufacturers' policies, rules, regulations and limitations on usage, logistics and maintenance. Otherwise, operation of such defence materiel may be affected. In some cases, RTAF inevitably has to pay annual membership fee for continuation of usage, logistics and maintenance. Moreover, RTAF is unable to modernize, upgrade or enhance capability of defence materiel without permission from foreign manufacturers or the Government of the manufacturing country. Hence, RTAF lacks freedom in employing defence materiel procured from foreign manufacturers and has to rely on technology-monopolized manufacturers or countries.

In the event that Thailand and the manufacturing countries or their alliances are in conflict, RTAF may not receive logistics and maintenance support, resulting in the need to balance force structure on the basis of system commonality and appropriate number of system types to avoid technological monopoly or reliance on single manufacturer. Under the concept of P&D in any future procurement project, RTAF will require technology transfer and cooperation between foreign manufacturers and RTAF/Thai Defence Industries for in-country spare-part manufacturing and capability enhancement on logistics and maintenance.

2.6.4 Evolution of RTAF Military Technology

The evolution of RTAF military technology is listed as follows:

1) Learning Experience as User – Since most of the defence materiel are procured from foreign manufacturers, RTAF sends personnel to learn and train overseas on how to use, operate and maintain the procured system for full-use of system performances and capabilities. However, they, as only system user, operator and maintainer, lack in-depth knowledge and understanding, as well as know-how and system specialty.

2) Learning Experience from Production Line and Upgrade of Defence Materiel - The defence materiel under the RTAF production line are bullets, bombs and UAVs. RTAF has also collaborated with defence companies with international-standard certification on upgrade of defence materiel such as the F-5TH capability enhancement project.

3) Learning from Defence Research and Development - RTAF has been continuously emphasizing on defence research and development, as well as certifying defence materiel and implementing in RTAF operations. Acquiring knowledge and understanding from research and development leads to the RTAF's sustainable self-reliance which can be divided into three levels as follows:

- Maintaining RTAF defence materiel for operational employment with airworthiness and safety standard
- Enhancing capabilities of RTAF defence materiel to be comparable with those of modern ones
- Developing new systems to fully meet RTAF operational requirements

4) Technology Transfer – Recently, RTAF has implemented technology transfer programs with defence materiel procured from foreign manufacturers. Technology transfer is considered to be the highest technological development which leads to RTAF's sustainable self-reliance. The level of technology transfer is called Technology Readiness Levels (TRL)⁴. According to Illustration 3, TRL can be divided into 9 levels;



⁴ Technology Readiness Levels (TRL) are Research and Development Tools (R&D Tools) and innovated by NASA. TRL are applied with other organizations, such as Sandia National Laboratories and National Science and Technology Development Agency (NSTDA) etc. NSTDA applies TRL with its research division/group and promotes TRL with other Thai organizations.



Levels	Technology Readiness
1	Technology transfer of basic or key concept knowledge
2	Technology transfer of applied knowledge
3	Technology transfer of applied knowledge towards primary development
4	Technology transfer of applied knowledge towards advanced development
5	Technology transfer of applied knowledge towards primary self-reliance development
6	Technology transfer applied knowledge towards intermediate self-reliance development
7	Technology transfer of in-depth technology towards advanced self-reliance development
8	Technology transfer of final quality-control evaluation towards complete self-reliance development
9	Completion of technology transfer to accomplish complete self-reliance development

Illustration 3 Technology Readiness Levels

- Level 1 - Technology transfer of basic or key concept knowledge is the initial technology observation and learning which will lead to research and applied development.
- Level 2 - Technology transfer of applied knowledge is the knowledge application to support an assumption which will lead to technological concept development.
- Level 3 - Technology transfer of applied knowledge towards primary development is the analysis, test and proof of the conceptual possibility.
- Level 4 - Technology transfer of applied knowledge towards advanced development is the system development in a laboratory.
- Level 5 - Technology transfer of applied knowledge towards primary self-reliance development is the monitor of the system in related circumstances.
- Level 6 - Technology transfer of applied knowledge towards intermediate self-reliance development is the prototype system test in the related circumstances.
- Level 7 - Technology transfer of In-depth technology towards advanced self-reliance development is the prototype system test in operational environment.
- Level 8 - Technology transfer of final quality-control evaluation towards complete self-reliance development is the test of actual system in operational environment.

- Level 9 - Completion of technology transfer to accomplish complete self-reliance development results in technology patents and ownership, the ability to test, evaluate and progressively follow up the overall system operation and the international-standard certification.

Levels	TRL	TRL in Europe
1	Technology transfer of basic or key concept knowledge	TRL 1 : Basic principles observed and reported
2	Technology transfer of applied knowledge	TRL 2 : Technology concept formulated
3	Technology transfer of applied knowledge towards primary development	TRL 3 : Experimental proof of concept
4	Technology transfer of applied knowledge towards advanced development	TRL 4 : Technology validated in lab
5	Technology transfer of applied knowledge towards primary self-reliance development	TRL 5 : Technology validated in relevant environment
6	Technology transfer of applied knowledge towards intermediate self-reliance development	TRL 6 : Technology demonstrated in relevant environment
7	Technology transfer of In-depth technology towards advanced self-reliance development	TRL 7 : System prototype demonstration
8	Technology transfer of final quality-control evaluation towards complete self-reliance development	TRL 8 : System complete and qualified
9	Completion of technology transfer to accomplish complete self-reliance development	TRL 9 : Actual system proven in operational environment

Illustration 4 Technology Readiness Level Comparison





2.6.5 Sustainable Development

Accelerating Technology and innovation advancement results in overall higher cost for the RTAF modernization process. Also, the longer the procurement process and manufacturing of defence materiel, the lesser effective operational service time, and the sooner the capability enhancement or system replacement. In addition, logistics and maintenance management must be solely rely on foreign manufacturers with technological monopoly.

According to the concept of P&D, RTAF needs to exploit fast evolving technology by determining the project requirements very early in the procurement process to enable appropriate-level participation of RTAF or Thai defence companies in material manufacturing in-country, to evaluate LRUS/spare-parts manufacturing capacity, and to develop domestic logistics management.

To support and strengthen Thai Defence Industries as stated in the Government's national policies, RTAF will implement the concept of P&D in the upcoming procurement projects. The scope of P&D is as follows:

- Using aircraft parts that can be manufactured by domestic defence industry such as electrical harness, structure parts, accessories, mechanical parts, etc.
- Joint development of Operational Flight Program (OFP) and proposal for RTAF to self-develop or self-upgrade OFP software
- Development of Tactical Data Link (TDL) that can share operational and tactical information with the existing RTAF TDL and given right for RTAF to self-develop or self-upgrade developed TDL
- Joint development or technology transfer on weapon systems such as air defence missile, air-to-air missile and air-to-ground glide bomb
- Aircraft procurement with Maintenance, Repair and Overhaul (MRO) support such as airframe MRO, component MRO, engine MRO and aircraft assembly line in Thailand
- Promoting cooperation or joint development of software such as weapon control system, OFP, cyber security system, satellite control and monitor system, UAV system, data integration system for Air Command and Control System (ACCS), etc.







Chapter 3

Strategies and Air Power Requirements



Chapter 3 Strategies and Air Power Requirements

3.1 Roles, Responsibilities and Missions

3.1.1 Roles

According to Section 52, Chapter 5 of the Constitution of Thailand B.E.2560, the Duties of the State “The state shall protect and uphold the Royal Institution, independence, sovereignty, integrity of the territories and the areas under sovereignty of Thailand, dignity, national interests, security of the state, and public order. For these purposes, the state shall provide efficient military, diplomatic, and intelligence services. Armed forces shall also be deployed for the purpose of developing the country.” Hence, RTAF emphasizes its role on employing Air Power for military operations and Military Operations Other Than War (MOOTW) to protect and defend the Kingdom of Thailand against both internal and external threats, to provide national security and to support the need to raise standard of living for general public.

3.1.2 Responsibilities

1) Responsibilities by Laws ⁵

- To protect and defend the sovereignty of the Kingdom of Thailand against both internal and external threats, to provide national security, and to suppress revolts and riots by preparing and employing military forces according to the Constitution of Thailand or as stated by Law.
- To protect and uphold the Royal Institution and support the missions of His Majesty the King, Her Majesty the Queen and the Royal Family
- To protect and maintain national interests and constitutional monarchy, to develop the country, and to support the Government in national development, natural disaster prevention and relief, as well as humanitarian assistance
- To research, develop and carry out defence industry in the aspects of military energy, science and defence technology, space affairs, Information and Communication Technology (ICT) to support the missions of the Ministry of Defence and national security
- To perform MOOTW or other assigned missions for national security by Law or according to the Cabinet Resolution

⁵ Ministry of Defence Reformation Act, B.E. 2551

2) Assigned Responsibilities

- To perform international missions : peacekeeping mission under the United Nations and/or alliance, humanitarian missions, joint HADR missions with international community and/or international organizations
- To be the center of aviation in the region in the following aspects : production of qualified personnel for aviation industry, development of aviation knowledge, civil search and rescue, aviation training center, air route management, air traffic control and the center of aircraft maintenance
- To support in solving major national concerns : drugs, AIDS, insurgency in the South of Thailand, air pollution, forest fire, drought and natural disaster relief
- To integrate military power with other national powers of Thailand : performing missions to support political activities, Cabinet and VIP air transport, air freight to support Thai economic sector, academic and technology cooperation with public and private organizations, developing up-to-date aviation knowledge, confidence and morale booster for Thai general public in the aspects of natural disaster relief, supporting and implementing the Royal Projects, medical operation, environmental conservation, participating with Thai general public in paying homage to His Majesty the King, Her Majesty the Queen and the Royal Family
- To carry out New Public Management (NPM) : providing quality service, promoting participation of Thai general public, improvement of organizational management mechanism, organizational restructure and personnel competency development





3.1.3 Missions

1) Missions by Law ⁶

RTAF is responsible for the preparation and employment of Air Power to protect and defend the Kingdom of Thailand under the authority of the Ministry of Defence

2) Assigned Missions

RTAF maintains combat readiness of personnel and all systems to carry out all missions in joint and combined operations with international community especially in peacekeeping, humanitarian assistance and disaster relief.

3.2 Security Policies and Strategies

According to the Constitution of the Kingdom of Thailand, past and present, the Kingdom of Thailand is one and indivisible kingdom. Security policies and strategies, including related military policies, are developed to maintain the national security, conforming to the Constitution of the Kingdom of Thailand.

3.2.1 Policies and Strategies for National Security

Policies, strategies and plans for national security focus on providing overall security with objectives of managing all security issues for safe and peaceful environment, developing capabilities and readiness to cope with all challenges, threats and natural disasters in all dimensions and severity. Integrated collaboration among public and private sectors, civil society and community, non-state organizations, neighboring countries and international alliances is required to achieve these objectives.

3.2.2 Military Policies

National defence policies of the Ministry of Defence determine national defence and security guidelines, focusing at the strategic concepts of strengthening security cooperation, defence collaboration, and active defence.

3.3 Principles of RTAF Air Power Employment ⁷

3.3.1 Air Warfare Principles

The Principles of War are the truth that military leaders of every era apply for the success of military campaigns. Over time, although the trends of the practice of war have changed due to advancement in military technology, the Principles of War are still applied with the belief that they are the best practices for the success in every campaign for all types and levels of war.

⁶ Section 52, Ministry of Defence Reformation Act, B.E. 2551

⁷ RTAF Doctrines 2019



Air Power, practicing warfare in every domain, is distinctively different from other forces in terms of warfare operation and combat capabilities. Employment of Air Power aims at controlling of the airspace and covering all required targets on ground. Air Power is also capable of joint operations with other services to provide national security in all dimensions.

3.3.2 Air Operations

Air Power is the capability that reflect the application of holistic power for control of the air and exploitation of airspace and space. Air Power can be strategically, operationally and tactically employed for both offensive and defensive missions, combat, non-combat, and also combat support.

Air Power can be employed in all dimensions, from air base to air space, targets on ground or over the sea, and even into space. Hence, the meaning of Air Power is not limited to aircraft, but also applied with air base, materiel, satellite, logistics, fuel, facilities, command and control, communication, personnel, training as well as morale.

1) Tenets of Air Power

The tenets of Air Power are the fundamental employment of Air Power, reflecting on the history of Air Power, its remarkable characteristics, as well as evolution and development of the tenets themselves. In addition, they reflect the awareness and understanding of the growing natures of Air Power, as well as importance of information and intelligence on the success of Air Power employment. The tenets of Air Power are normally used altogether with the Principles of War. While the Principles of War provide general guidelines for the Air Power application and information gathering, the Tenets of Air Power provide specific considerations of Air Power employment.

2) Composition of the Tenets of Air Power

- Centralized control and decentralized execution - Since Air Power is costly and limited in number, demand for the use of Air Power is always higher than supply. To achieve military objectives, the employment of Air Power must be prioritized, which requires understanding on the campaign overview. While centralized control enables campaign commanders to focus on priority, necessity and urgency to plan for the successful employment of Air Power, decentralized execution is employed by assigning tasks and responsibilities to the lower-level commanders and operators to allow for creativity, responsive capability to changed scenarios, and tactical flexibility.



- Flexibility and Versatility - Flexibility and versatility allow Air Power to simultaneously exploit mass and maneuver towards the targets deep in the enemy's area. Air Power is also capable of quickly and decisively shifting from one campaign objective to another. In addition, Air Power can be effectively employed at every level of war.

- Persistence - Persistent operations allow Air Power to attack and reattack enemy's targets at its will to ensure that the enemy cannot conduct any operations against our objectives with ultimate outcome of not allowing enemy any opportunity to initiate and carry on any desired military operations .

- Objective - Successful employment of Air Power requires maintaining of military and campaign objectives. With the principles of Mass and Economy of Force, concentrating superior power at decisive time and place is the key to successful employment of Air Power.

- Prioritization - Demand for the employment of Air Power is always higher than supply. Commanders need to appropriately prioritize Air Power requirements which must be in accordance with strategic objectives. Hence, Prioritization is implemented by close coordination with related units to enable the employment of Air Power at the most critical point for the greatest contribution to the campaign and military objectives.

- Balance – While applying the Principles of War and the Tenets of Air Power, employment of Air Power in any campaign at the right timing and tempo requires balancing between operational opportunity, necessity, worthiness, capability, efficiency and survivability.

- Coordination of Air Power and Intelligence – Combining employment of Air Power properly with intelligence results in synergistic effects towards the enemy's combat power and war-waging capability in the campaign.

3.3.3 Cyber Operations

Developing defence capability and combat readiness under the concept of Network Centric Operations (NCO), which network plays vital role in connecting all components together, requires accurate cyber security against all kinds of cyber threats, especially in the growing nature of cyber warfare both in terms of multiplicity and severity. With board nature of cyber environment, the cyber security needs cooperation of personnel in every level. In case that network is not capable of supporting the need for information sharing at any given time, the efficiency of C2 is negatively affected,



resulting mission ineffectiveness or worse operational failure. Thus, RTAF needs to come up with guidance and procedures to counter any cyber threats. Also, the cyber security operations must be constantly ready, up and running both in time of peace and in crisis during cyber attack to support employment of Air Power for mission efficiently and effectiveness.

Cyber operations employ all kinds of RTAF cyber capabilities to support military operations in all dimensions to gain competitive advantage in cyber domain. RTAF must be capable of conducting cyber operations freely and reliably at decisive time and place without interference. The objectives for RTAF cyber operations are Defensive Cyber Operations (DCOs), Cyber Surveillance and Reconnaissance (CSR), Operational Preparation of the Environment (OPE) and Cyberspace Deterrence.

3.3.4 Space Operations

Space technology is one of the fundamental structures for national development. Thailand has been utilizing satellites for more than 40 years. Nowadays, space technology is critical to national security because it can be applied with military and security affairs, support for HADR readiness and national development. RTAF is aware of rapid growth of space technology as well as space threat, non-traditional threat that is upcoming and gains significance lately. Therefore, for the past decade, RTAF has decided to pave way for space capability development as an essential part of Air Power modernization. To ensure successful employment of Air Power in the future, capability development in Air, Cyber and Space domains must be systematically integrated and synchronized with one another.

The RTAF space operations exploit space for the employment of Air Power, joint operations and national defence operational support. The scope of space operations is as follows :

Support for Air Power - Space operations collect useful information for planning of Air Operations and employment of Air Power.

Support for Joint operations - Space operations provide information such as satellite imagery, particularly those in conflict areas and target areas that are of interest for Air operations, which can efficiently and effectively support joint operations. Other armed forces can also request for satellite imagery, if needed, to support each service's tactical operations.

Support for National defence - Space operations, through the use of surveillance and communication satellites, can support disaster prevention and relief.



Images from surveillance satellites will be very useful in the process of planning and preparation for up-to-date, in-time and efficient HADR missions. In addition, communication satellites can provide network and data connection in the disaster area where all normal communication is completely destroyed. Space surveillance is also performed to monitor, track and ensure that Thai satellites are in appropriate orbits, to track the movement of out-of-service or out-of-concession satellites from their orbits, to monitor and prevent foreign satellites from entering into orbits of Thai satellites, and to warn about space objects that may collide with Thai satellites.

Cooperation in Space Affairs – Cooperation in space affairs with domestic and foreign space-related organizations as well as countries with space capability is vital for space security. Cooperation can be in forms of knowledge and technology transfer as well as personnel development in the fields of space discovery, research and development, space innovation, laws, rules and regulations related to space affairs. Also, information exchange for space information and data should be exploited for the benefits of space defence.

3.4 Conclusion

According to defence strategies and force structure requirements, RTAF must employ Air Power to support aforementioned roles, responsibilities and missions. Also, management of personnel and defence materiel should be utilized to support national development. In the Principles of RTAF Air Power Employment, capabilities in Air, Cyber and Space domains will be further developed, enhanced, systematically integrated and synchronized with one another. RTAF will carry out the missions in all domains to efficiently cope with strategic and tactical challenges by developing force structure and required capabilities under medium-term requirement plan and initial allocated budget, both of which will be further explained in the following chapters.





Chapter 4

RTAF Structure and Key Capability Requirements



Chapter 4 RTAF Structure and Key Capability Requirements

4.1 Key Development Principles

4.1.1 Reorganization and Force Structure Reform

RTAF needs organizational restructure to efficiently perform missions in accordance with roles, responsibilities and security environment. RTAF considers to apply appropriate technology for efficient work, to adjust and reduce organization size, repetitive jobs or unnecessary positions, and to set up new organizations or positions to support roles, responsibilities, technology and new working scheme.

Defence technology advancement has made current defence materiel much more capable and with higher quality. Therefore, RTAF need to reform force structure and the amount of defence materiel to be appropriate with advanced defence technology and new security environment. While procuring defence materiel and preparing Air Power to cope with new challenges, RTAF must focus on capability and quality of materiel rather than excessive quality, but still need to consider possessing adequate force structure to handle all required missions. Also, RTAF has to determine proper guideline and timeframe for force mobilization in case of emergency or in time of crisis.

4.1.2 Prioritization

At present, capability enhancement of Air Power and procurement of defence materiel are costly. Under budget constraint, RTAF must prioritize balanced development and modernization in all dimensions. Since it takes time to build up force structure that is capable of handling all missions efficiently, RTAF needs to thoroughly plan for Air Power modernization such that procured materiel can provide utmost benefit, be employed in full capabilities till the end of service life.

With limited budget, capability enhancement and Air Power modernization must be focused on the RTAF main missions. The enhanced capability can be applied to both military and civil affairs. For example, transport aircrafts can be employed for both tactical airlift and airlift to support national development, perform HADR missions and helping people in-need. Moreover, Combat Search and Rescue (CSAR) helicopter can be used to support civil search and rescue missions, rescue accident aircraft, perform aeromedical evacuation. Furthermore, Intelligence, Surveillance and Reconnaissance (ISR) aircraft can be used for topography survey, disaster situation report and air traffic report.



In addition, RTAF develops other capabilities by cooperating with domestic organizations, private and public, to eliminate repetition and save budget in Air Power development such as integrating air traffic information with the Aeronautical Radio of Thailand Ltd. and linking radar system owned by other services to RTAF Air Control and Command System (ACCS).

4.1.3 Logistics Support Efficiency Improvement

Logistics system is the backbone of RTAF operations. Excellent logistics support results in efficient use of defence materiel. In addition, it is vital to develop efficient warehouse management such that adequate amount of inventory is maintained and LRUs/spare parts optimization is accomplished to prepare for LRUs/spare parts procurement in advance.

RTAF determines the concept of cooperation with domestic private sectors to use capabilities of these potential companies under the conditions and safety standard. With this concept, RTAF need to only sustain required capabilities and outsourcing the followings : contract maintenance service, renting of infrastructure, manufacturing parts of defence materiel and transport of procured materiel. All of these reduce logistics support expenditure and support Thai Defence Industries.

In addition, RTAF develops database for domestic and foreign private defence companies on past procurement process and logistics support. Database, which can be used as supplementary information for considering reliable companies to provide logistics support in the future, comprises process timeline, cost, delivery, quality of service and whether the company abandoned job or failed to perform as stated in contract.

4.1.4 Purchase and Development (P&D)

RTAF operates according to the RTAF doctrine and apply the concept of Purchase and Development (P&D) to procure new materiel or enhance capability of materiel in-use for sustainable development. The concept of P&D focuses on technology transfer, RTAF capability enhancement to allow for further materiel development in-house, and support of domestic defence industry with potential and international -certified standard to participate in materiel development such as production of spare parts, development of Operational Flight Program (OFP) and weapon integration process, as well as promotion of the Center of Maintenance, Repair and Overhaul (MRO) domestically. Furthermore, RTAF needs to consider having ownership right of procured



materiel to allow for future development or capability enhancement as required by RTAF for in-country use by practicing in-house development by RTAF or outsourcing development to defence organizations or domestic defence industries.

4.2 Key Capabilities and Future Air Power

4.2.1 Air Combat Operations

One of the main RTAF roles and responsibilities is to protect and defend national sovereignty and interests, which RTAF must prepare defence materiel and combat personnel to be ready for deterring the enemy from war-waging effort or use of military force to resolve conflicts. In addition, if air combat is necessary and unavoidable in the conflict, RTAF must win. The main materiel of RTAF air combat operations is fighter aircraft and fighter weapon systems.

RTAF has set up a ten-year procurement plan for fighter aircraft in order to replace the decommissioned aircrafts and the determined processes are as follows :

1. Plan for additional procurement to complete force structure.
2. Enhance capability of legacy aircraft such as F-5TH, AU-23 and A-Jet
3. Determine UAV capability enhancement plan to develop Unmanned Combat Aerial Vehicle (UCAV) to be used in tactical combat missions.

In terms of fighter aircraft weapon systems, RTAF, with the P & D concept, defines the scope of procured weapon systems to be smart, precise and beyond visual range (BVR). Moreover, RTAF focuses on quality and system performances rather than quantity in procuring new weapon systems such as IR missile, BVR missile, Precision Bomb and Air-to-Ground Rocket. Also, RTAF plans to decrease the number of war-reserved weapons. In addition, RTAF must be able to integrate procured weapon systems with other types of fighter aircraft in RTAF inventory.



Moreover, RTAF focuses on employment of fighter aircraft and weapon systems freely without any limitations or restrictions. Hence, RTAF has developed plan for OFP development and weapon integration, as well as test and evaluation plan, all of which aims to support and strengthen Thai Defence Industries and overcome restrictions on system usage and logistics support.

4.2.2 Air Defense

RTAF must carry out air defence mission 24 hours a day and 7 days a week in order to secure Thai airspace and detect threatening aircraft, affecting Thai airspace security. RTAF air defence system comprise main components, as follows :

- o Ground-based Air Defence Radar : M/743D, AN/TPS-77, AN/TPS-78, RAT-31DL, AN/FPS-130X, Kronos and Giraff-180 mobile radar systems
- o Airborne Early Warning (AEW) Aircraft with Radar : SAAB-340 AEW
- o Command and Control (C2) System : Air Command and Control (ACCS) developed under the Thailand-Sweden joint cooperation
- o Fighter Aircraft : F-16 MLU, F-16 ADF and Gripen 39 C/D

RTAF defines the scope of ground-based Air Defence Radar development in terms of replacing end-of-service-life radar, maintaining capability to extend service life via MRO, and linking radar information from mobile radar system of other services to RTAF ACCS. At present, RTAF must procure new ground-based Air Defence Radars to replace AN/FPS-130X and AN/TPS-78, enhance capability of AEW Radar, and enhance C2 capability of SAAB-340 AEW.

RTAF also determines plan for Tactical Data Link (TDL) development. The developed TDL must be capable of linking and sharing data not only with RTAF ACCS, but also with aircraft in operation, resulting in full implementation of NCO concept in RTAF air operations. In addition, developed TDL must be installed and fully integrated on new procured aircraft, capability enhancement aircraft and future C2 system or upgraded ACCS.

RTAF draws up the guideline of C2 system development to have communication and data sharing capabilities with communication satellites. Moreover, data and information from sensors in all three domains of Air, Cyber and Space must be linked with RTAF C2 system to enhance C2 capability in all dimensions and allow for efficient employment of Air Power.





4.2.3 Air Lift

RTAF operates airlift missions both in time of peace and in crisis. The airlift missions, with tendency of increasing demand for use, comprise WVIP flight, VIP flight, transport of personnel and defence materiel, aeromedical evacuation, humanitarian evacuation from area of conflict, logistics transport to support national development and help people in-need.

Nowadays, RTAF cooperates with private sectors and domestic airline companies in order to operate airlift mission in case of state of emergency and in crisis. Even with aforementioned cooperation, RTAF still needs to develop and sustain airlift capability due to the fact that capability development takes such a long time and the commercial airliners are not able to carry out all required missions in all areas, for example, tactical airlift, flying in No Fly Zone, as well as taking off and landing on tactical-surface runway or area at risk. To cover all required missions, RTAF needs transport aircraft and helicopter for three operational areas as follows:

- o Short-range operational areas cover domestic and region within South East Asia. Aircraft required for this area is small-sized or medium-sized transport aircraft with operational flexibility and capability to take off and land in limited distance. The main missions are WVIP Flight, VIP flight and humanitarian assistance. The transport aircraft in RTAF inventory for short-range operational area are ATR-72, SSSJ-100, WVIP helicopters and VIP helicopters.
- o Medium-range operational areas cover all regions within Asia. Aircraft required for this area is small-sized or medium-sized transport aircraft with medium range capability and more payload than one for short-range operational areas. The aircraft must also be able to take off and land at all RTAF Air Bases. The main missions are WVIP Flight, VIP flight, air transportation for overseas joint/combined exercises, air transportation for overseas logistics support and tactical airlift. The transport aircraft in RTAF inventory for medium-range operational area are C-130H, A319, A320 and B737-800, all of which are also capable of operating in short-range operational areas, but require airfield with long enough runway and standard support equipment.
- o Long-range operational areas cover all regions in the world. Aircraft required for this area is large-sized transport aircraft with long range capability and maximum payload. The main missions are WVIP Flight, VIP flight, air transportation for overseas joint/combined exercises and air transportation for overseas logistics support. The transport aircraft in RTAF inventory for long-range operational area is A340.



In the next ten years, RTAF plans to procure additional S70i Helicopter and replacement for C-130H, A319 and B737-800, all of which are near the end of their service life, as well as to manage logistics and maintenance to maintain readiness of transport aircraft to efficiently support all required missions.

Apart from aircraft and logistics support, RTAF must procure general and special equipment/tools relevant to the missions such as airlift equipment, Truck Aircraft Loading Unit (TALU), aeromedical evacuation support equipment, Air Delivery System (ADS), forklift and equipment truck.

4.2.4 Search and Rescue

RTAF sustains capability for both military and civil Search And Rescue⁸ (SAR) missions, which cover Combat Search And Rescue (CSAR), SAR in area at risk and for accident aircraft, aeromedical evacuation, Humanitarian Assistance and Disaster Relief (HADR). In addition, overall SAR capabilities will support the concept of establishing ASEAN SAR and HADR Center in Thailand.

At present, RTAF places EC725 and UH-1H at all RTAF air bases to support search and rescue mission. In the near future, RTAF plans to procure additional helicopters to replace UH-1H which is soon to be decommissioned. Additional helicopter equipment and relevant personnel equipment will also be procured to enhance SAR



⁸ Search and Rescue Plans for National Air and Sea Victims



capability for all requirements in RTAF force structure. All previously-mentioned plans support the requirements of the country in terms of national SAR readiness and also enhance national capability for SAR and HADR missions.

4.2.5 Specialized Operations

RTAF has been tasked to support and cooperate with the government organizations in security operations, national development and helping people in need. Furthermore, RTAF also employ Air Power capabilities in special operations including Royal Rainmaking Project, forest fire control, smog reduction, air reconnaissance to provide situation awareness and information on important government missions, natural resources exploration, waterways surveillance, transportation and logistics route surveillance, and aerial broadcasting.

At present, RTAF uses AU-23, BT-67 and C-130H in special operations. Although these aircraft have been in service for a long time, they are well maintained and regularly upgraded such that they can still efficiently perform required missions with airworthiness. However, RTAF will eventually consider procuring suitable replacement for AU-23, BT-67 and C-130H in the near future.

4.2.6 Intelligence, Surveillance and Reconnaissance

For decades, RTAF has developed Intelligence, Surveillance and Reconnaissance (ISR) capabilities systematically to collect and analyze information, news and intelligence for effective decision making and for safe and efficient missions. At present, there are variety of military assets for ISR missions including aircraft, UAV, sensors, satellite and cyber intelligence, all of which are integrated to leverage equipment implementation.

Nowadays, RTAF performs ISR missions with the following equipment :

- o ISR aircraft : AU-23, DA-42 and SAAB-340 E/C
- o Fighter aircraft installed with Targeting Pod : F-16 MLU and Gripen 39 C/D.
- o UAV : Aerostar, U1 and Dominator.
- o Aerial reconnaissance camera : A3, A3 Edge, CA-295, UltraCAM, Star Safire III, Star Safire 380HD, LDH, QUAD1 and TR-Stamp
- o Targeting Pod : Sniper and Litening
- o Satellite : NAPA-1 and NAPA-2

ISR Capabilities are useful for both military and civil operations. RTAF implements these capabilities to support the government organizations in carrying out the missions assigned by the



Government such as ISR for illegal fishing, topography survey for water flowing route analysis, survey and situation report in disaster areas, natural resources exploration, survey and situation report for traffic conditions, “Near Real Time” situation report for decision making during important events.

RTAF is aware of advanced technology in ISR equipment, which has been rapidly developing. Hence, RTAF plans to procure additional equipment as well as manage logistics and maintenance of existing ISR equipment thoroughly. Moreover, RTAF plans to procure additional Targeting Pods and to enhance capabilities of Dominator and U1 UAV.

4.2.7 Air Base and Air Base Defence

Airport and air base are considered key components in Air operations. Thus, RTAF develops and sustains capabilities of main operating bases, forward operating bases and special operations bases to be ready at all time for RTAF operations. To ensure each air base is fully capable of supporting all required missions, RTAF focuses on maintenance and development of airports, standard facilities, basic utilities, equipment and tools for aviation support and special facilities for specific missions of each air base.

In addition, RTAF plans to develop important reserved airports for the best benefits of the nation, for example, Nam Phong Airport as an ASEAN air training center, Chiang Rai Airport as a MRO Center for small-size aircraft with helipad and short runway for small-size aircraft, Watthana Nakhon Airport as RTAF UAV Center. At the moment, RTAF is currently exploring the possibility and determining development guidelines in form of cooperation between government organizations, domestic and foreign private sectors.

RTAF is aware of air base security that must meet international standards, requiring guards on duty, patrols of areas inside and outside the airport, CCTV and electronic fence system. Furthermore, RTAF must proceed to procure additional security materiel



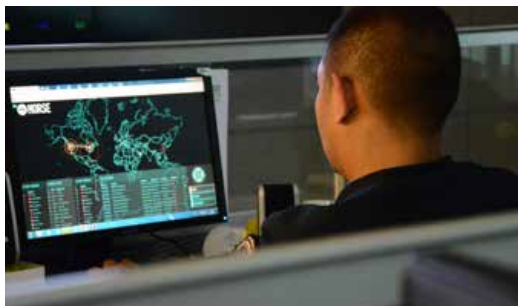
and replace ones that are at the end of service life such as pistol, tactical radio, armor and armored vehicle for patrolling.

To protect air bases from espionage and enemy's attack, RTAF must sustain and further develop capability of air base defence by procuring necessary defence materiel and various air defence systems to cope with new challenges and threats. In addition, RTAF needs to procure anti drone systems to defend and protect each air base and its main resources from UAV performing ISR or attack missions.

4.2.8 Cyber Operations

In Air operations under the NCO concept, network must be stable, secured and robust. Therefore, RTAF must develop cyber capability, especially cyber security, to protect C2 system, network of air defence system and other networks for operation systems. Recently, RTAF has enhanced capability on cyber security and ensured that all connections and data integration with systems of other organizations, internally and externally, must have standards for connectivity and cyber security.

RTAF cyber capability enhancement in the next 10 years will focus on development of cyber personnel, as well as tools and equipment for cyber operations to deter, defend and protect RTAF systems from any cyber attack, especially protection of C2 and air defence system networks as the first priority. In addition, RTAF has set its own objectives of self-development of necessary cyber tools and programs.



4.2.9 Space Operations

For the past years, RTAF has initiated the development of Space domain to lay down the foundation for space security and to support other missions in Air and Cyber domains. Initially, RTAF emphasized capability development of Defensive Space Operations such as space observation, space ISR, space communication and telecommunications.



Developing capability of space observation can be done in many ways, for example, establishing stations and installing additional telescopes in suitable areas, as well as joining the space observation network with other nations to enhance space surveillance capability.

In addition, RTAF determines the scope of the satellite capability development for space intelligence, space ISR, space communication and telecommunications with the objectives of being able to develop and manufacture satellite and its control system in-country. To achieve this objective, RTAF looks for cooperation with Thai industrial sectors to co-develop ground equipment, systems and application for satellite control and satellite operations in accordance with RTAF requirements.

4.2.10 Pilot Training

RTAF is capable of producing qualified military pilots with the same standard as international military standards. While the Undergraduate Pilot Training (UPT), both primary and advanced, is conducted at the Flying Training School, basic and advanced tactical training for fighter/attacker, transport, helicopter and special operations pilots is accomplished at the operational squadrons. In addition, RTAF also supports and conducts civil aviation training.

With advanced training technology including Computer-Based Training (CBT), Cockpit Procedure Trainer (CPT), Simulator and Embedded Tactical Training System (ETTS), pilot training process becomes more efficient. Not only pilot in training is more capable with appropriate skills for his type of aircraft, but RTAF can also reduce the training cost and the number of flying training sorties required by replacing some of the flying sorties with simulator training and getting more training values from the actual flying sorties. Furthermore, pilot training courses in all levels, UPT, basic and advanced tactical training, are improved to meet the requirements for operational pilots in the squadrons to carry out all required missions.

In the next ten years, RTAF plans to procure replacement for CT-4A, CT-4E, T-41D and PC-9 which will soon be decommissioned, and procure additional DA-40, DA-42 and T-50TH to fulfill the number of aircraft required in the squadrons. For all these procurement, complete training systems and training courses, complied with RTAF requirements, must be parts of the projects and RTAF must also be capable of developing and enhancing capabilities of the delivered training systems in the future.





Chapter 5

Medium-Term Plan and Budget Requirements



Chapter 5 Medium-Term Plan and Budget Requirements

5.1 Key Principles

Medium-term plan is the RTAF requirements for Air Power modernization in the 10-year framework (2020-2030) in order to protect and defend the country from any threats or aggressive acts. Therefore, RTAF must prepare Air Power for combat readiness at all time. All materiel, especially aircraft and weapon systems, must be modernized, well-maintained, ready for all required missions, both in number and in quality, and in accordance with the RTAF doctrine. With no intention to threaten or invade other countries, the main objectives of RTAF Air Power preparation are self defence, protection of national interests and deterrence against any aggressive acts.

RTAF sets up plan for Air Power preparation and modernization with budget allocation as one major consideration. According to the RTAF Doctrine, Air Power must be versatile, compact, flexible, combat ready, possessing combat capabilities in all dimensions and efficiently performing all required missions including air defence, deterrence, protection of air route and national economic areas, as well as protection of national interests in all levels of conflicts. Furthermore, Air Power must be utilized to ensure that by the end of any conflict, our side is in advantageous position in the upcoming negotiation between conflicting parties.

At present, due to budget constraint, RTAF has to focus on MRO of existing materiel to maintain and enhance capabilities as well as extend service life. RTAF realizes that some of materiel in service today were procured or acquired from allied countries during the Cold War era. In fact, time in service for more than half of these materiel is between 30 and 50 years, for example, F-5 E/F commissioned in 1978 with 42 years in service, C-130H commissioned in 1980 with 40 years in service, AU-23 commissioned in 1972 with 48 years in service, T-41D and UH-1H commissioned in 1968 with 52 years in service.

Nowadays, for several materiel in service, Original Equipment Manufacturer (OEM) has already stopped production line for LRUs/spare parts manufacturing. Since replacing these materiel requires a lot of budget, RTAF has to continue operating these materiel by extending service life, with international standard of safety and airworthiness, and enhancing capabilities to meet operational requirements via MRO. Since some



materiel became non-missioned capable with no LRUs/spare parts available in the open market, RTAF has to special order these LRUs/spare parts in small number, which normally comes with high price tag. Therefore, after considering and analyzing all related factors in details, RTAF has to eventually procure replacement for these out-of-date materiel to maintain combat readiness in all required missions.

Under current situation, the RTAF's highest priority is national interests and benefits of Thai general public. To protect and defend sovereignty and national interests as well as to support the mechanism for regional and international security cooperation, National Powers of Thailand in all dimensions must be strong, sufficient and suitable for current security environment. With responsibilities to develop, maintain and enhance knowledge and technological capabilities in terms of aviation, aircraft and space affairs, RTAF promises and commits to exploit all potentials and capabilities to support national development, help people in-need and carry out HADR missions, leading to safe and secured living and better quality of life.

For future procurement projects, RTAF focuses on the concept of Purchase and Development (P&D) with emphasis on research and development of science and defence technology together with promoting Thai defence industries. These are in accordance with the concept of the Ministry of Defence, concentrating on not only self-reliance materiel manufacturing to reduce long-term foreign procurement but also the national policy of the Eastern Economic Corridor (EEC) in the development of national defence industry as New S-curve 11. To achieve all these objectives requires planning, development, integration and cooperation among government organizations, public and private sectors in implementing potential research for further development and bringing the outcome into industrial production for commercial benefit with the government's investment support to establish a production base in Thailand. Furthermore, human resources development to enhance personnel's knowledge, skills and capabilities in science and defence technology must be emphasized to support the needs of quality personnel in both public and private sectors. For these reasons, the RTAF concept of P&D will be an important mechanism not only to increase the competitive capability for domestic Aeronautical and Aerospace Industries, but also to maintain self-reliance on sustainable domestic explicit knowledge in defence technology.



5.2 Initial Budget Requirements and Budget Forecast

For Air Power preparation and capability enhancement, RTAF has followed the 20-year RTAF Strategy, the RTAF Doctrine 2020, the RTAF Campaign Plan 2020 and the RTAF force structure requirements. RTAF sets up the medium-term requirement plan and the initial budget requirements which are the framework for the Air Power preparation and capability enhancement for operational completeness and combat readiness in the next 10 years. By considering initial budget requirements and budget forecast, RTAF determines the MRO projects to maintain combat readiness and the procurement projects of modern and advanced materiel to enhance RTAF capabilities as necessary in any certain period. Also, since some materiel take a long time to procure, manufacture and deliver, determining the MRO and procurement plans each year in advance will be best benefit not only for RTAF, but also for other stakeholders including government organizations and defence industries, both foreign and domestic. However, RTAF will carry out these projects only as needed to be capable of coping with upcoming challenges and threats.

5.3 10-Year Requirement Plan

Fiscal Year	The Budget Forecast for the Next 10 Years	
	Increasing 4.25 %	Increasing 6.0 %
2021	44,346	45,090
2022	46,231	47,796
2023	48,195	50,663
2024	50,244	53,703
2025	52,379	56,925
2026	54,605	60,341
2027	56,926	63,961
2028	59,345	67,799
2029	61,867	71,867
2030	64,497	76,179

Illustration 5 10-Year Requirement Plan

RTAF sets up 10-Year Requirement Plan (2020-2030) by considering possibility and appropriateness of budget allocation. Budget data from the past 10 years (2010 – 2020) is analyzed as shown in Illustration 5 and budget forecast is estimated for the next 10 years (2020 - 2030) for 4.25 % and 6.00 % increasing per year as shown in the table.

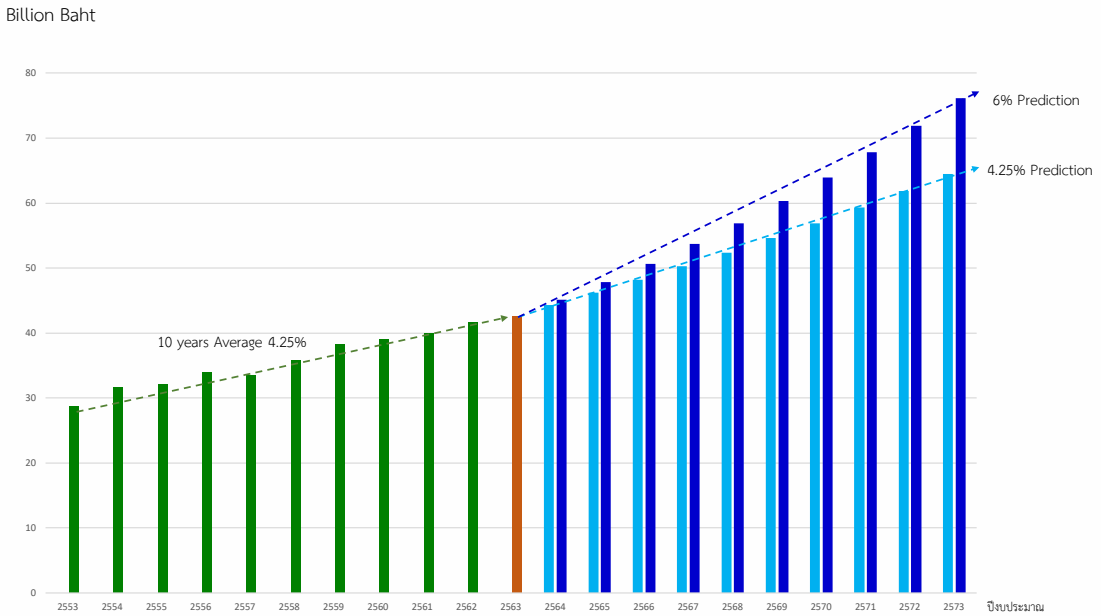


Illustration 6 110-year Budget Forecast (2020 - 2030)





White Paper : Strengthening all domains

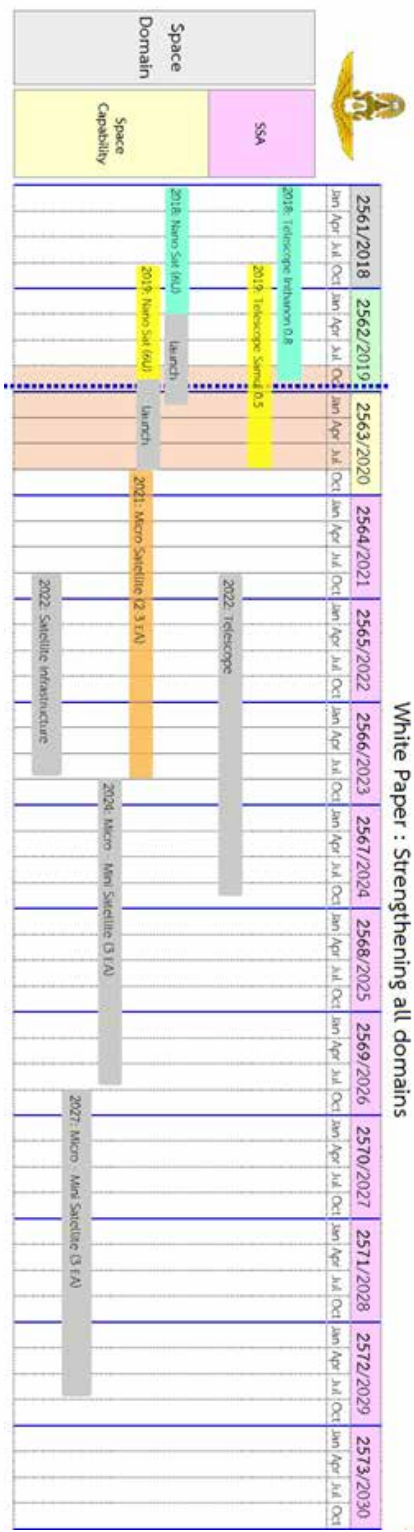


Illustration 8 10-Year Requirement Plan (2020 - 2030) (Continued)



The 10-year Requirement Plan (2020 - 2030) as shown in Illustration 6 and 7 consist of the RTAF significant projects which supports the implementation of RTAF strategy. RTAF draws up the project plan for the next 10 years by creating the project code, example as shown in details in Illustration 8. However, the project carried out each year may be revised or adjusted in accordance with situations at that moment and the budget framework received.

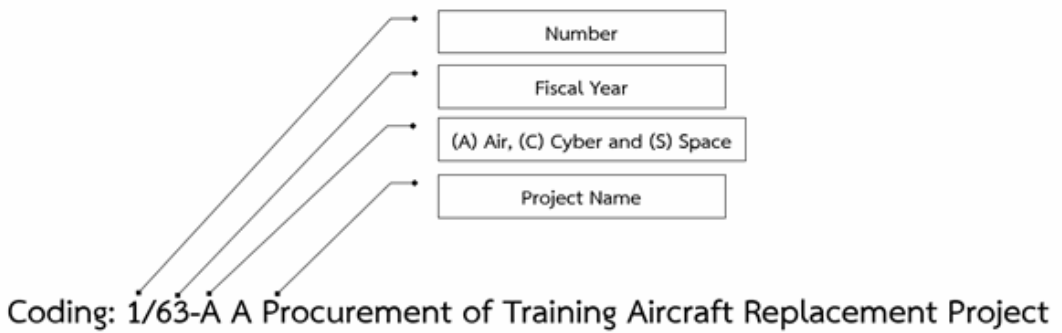


Illustration 9 Project Code Structure

5.3.1 Fiscal Year 2020

- **1/63-A** Procurement of Training Aircraft Replacement Project
- **2/63-A** Procurement of Fighter Lead-in Training Aircraft Project (Phase 4)
- **3/63-A** Procurement of Advanced-Training-Squadron Transport Lead-in Training Aircraft Project
- **4/63-A** Development and Improvement of Air Defence Radar Project (Phase 6)
- **5/63-A** Procurement of Topography Survey for Security Project



5.3.2 Fiscal Year 2021

- 1/64-A SAAB 340 AEW Capability Enhancement Project
- 2/64-A Procurement of Light Attack Aircraft Project (Phase 1)
- 3/64-A Construction of Ammunition Storage Facility and Procurement of Weapon, Ammunition and Explosive Project (Phase 2)
- 4/64-S Space Operations Development Project (Phase 1)
- 5/64-A Manufacturing of RTAF UAV Project (Phase 2)
- 6/64-A Logistics Capability Development Project for Gripen 39 C/D

5.3.3 Fiscal Year 2022

- 1/65-A Procurement of Transport Aircraft Replacement Project (Phase 1)
- 2/65-A Procurement of Light Attack Aircraft Project (Phase 2)
- 3/65-A Establishment and Development of UAV Center Project
- 4/65-A Nam Phong Airport Capability Development Project
- 5/65-A RTAF Base Defence Development Project (Phase 1)
- 6/65-A Procurement of Air Surveillance Radar (ASR) Replacement Project (Phase 2)
- 7/65-S Space Operations Development Project (Phase 2)
- 8/65-S Space Capability Development Project

5.3.4 Fiscal Year 2023

- 1/66-A Procurement of Fighter/Attacker Aircraft Replacement Project (Phase 1)
- 2/66-A Procurement of Multirole Fighter Aircraft Replacement for F-5 B/E Project
- 3/66-A Procurement of Helicopter Replacement Project
- 4/66-A Procurement or Manufacturing of Armed UAV Project (Phase 1)
- 5/66-A Procurement of Ground-Based Air Defence System Project (Phase 1)
- 6/66-A Development and Improvement of Air Defence Radar Project (Phase 7)





5.3.5 Fiscal Year 2024

- 1/67-A Procurement of Transport Aircraft Replacement Project (Phase 2)
- 2/67-A Construction of Ammunition Storage Facility and Procurement of Weapon, Ammunition and Explosive Project (Phase 3)
- 3/67-A RTAF Base Defence Development Project (Phase 2)
- 4/67-A Development and Improvement of Air Defence Radar Project (Phase 8)
- 5/67-A Procurement of Air Surveillance Radar (ASR) Replacement Project (Phase 3)
- 6/67-S Space Operations Development Project (Phase 3)
- 7/67-A Procurement of VVIP Transport Aircraft Project

5.3.6 Fiscal Year 2025

- 1/68-A Procurement of Fighter/Attacker Aircraft Replacement Project (Phase 2)
- 2/68-A Procurement of Squadron 604 Training Aircraft Project (Phase 2)
- 3/68-A Procurement or Manufacturing of Armed UAV Project (Phase 2)
- 4/68-A Development and Improvement of Air Defence Radar Project (Phase 9)

5.3.7 Fiscal Year 2026

- 1/69-A Procurement of Transport Aircraft Replacement Project (Phase 3)
- 2/69-A Procurement of Training Aircraft for CT-4E Replacement Project (Phase 1)
- 3/69-A RTAF Base Defence Development Project (Phase 3)
- 4/69-A Procurement of Ground-based Air Defence System Project (Phase 2)
- 5/69-A Development and Improvement of Air Defence Radar Project (Phase 10)
- 6/69-A Procurement of VVIP Helicopter Project

5.3.8 Fiscal Year 2027

- 1/70-A Procurement of Medium-Sized Transport Aircraft for SAAB 340B Replacement Project
- 2/70-A Procurement of Training Aircraft for CT-4E Replacement Project (Phase 2)
- 3/70-A Procurement of VIP Transport Aircraft Replacement Project



- 4/70-S Space Operations Development Project (Phase 4)

5.3.9 Fiscal Year 2028

- 1/71-A Procurement of Fighter/Attacker Aircraft Replacement Project (Phase 1)
- 2/71-A Procurement or Manufacturing of RTAF UAV for U1 Replacement Project
- 3/71-A Procurement of Medium-Sized Transport Aircraft for BT-67 Replacement Project

5.3.10 Fiscal Year 2029

- 1/72-A Development and Improvement of Air Defence Radar Project (Phase 11)
- 2/72-A Procurement of Ground-based Air Defence System Project (Phase 3)

5.3.11 Fiscal Year 2030

- 1/73-A Procurement of Fighter/Attacker Aircraft Replacement Project (Phase 2)

5.4 Concept of Project Requirements

RTAF develops the Concept of Project Requirements (COPR) which will be used as guidelines to prepare the Scope of Project Requirements (SOPR) for important and complex procurement, MRO and capability enhancement projects. In the past, with the pressure to carry out the procurement processes in limited time to comply with the Government's accelerated budget measure, RTAF did not have enough time to study and clearly understand the objectives and scope of the projects with technical complexity, requiring cooperation and integration between several disciplines, as well as to complete in-detail SOPR.

Stakeholders as specified by COPR can be divided into two groups which are :

- General public will benefit from capability enhancement of Air and Space Power which will be used for national development, helping people in-need and HADR missions, resulting in increasing confidence of general public, safe and secured living, as well as better quality of life.
- People in defence industry sector will benefit from research and development of science and defence technology, as well as from support to Thai defence industries in line with RTAF efforts to develop skilled personnel for self-reliance materiel manufacturing, meeting the needs of both public and private sectors sustainably.





COPR will be prepared for the projects in the medium-term plan with the principles of complying with the objectives and scope of the projects as approved by the Ministry of Defence and with strategic and operational necessity. RTAF will determine the appropriate project timeframe in developing COPR which must provide enough time for preparing in-detail SOPR. COPR should also be prepared with information needed for project preparation and budget framework. Most importantly, there must be no security classification in developing COPR, whose details must be transparently distributed to general public at the appropriate time. The contents of COPR are as follows :

1. Rationale: Project must be in compliance with national strategy, military strategy, the RTAF 20-year strategy and the RTAF Doctrine. It also specifies requirements for force structure (maintain/enhance/expand/fulfill capabilities) in accordance with the development of domestic defence industries and with RTAF Commander-in-Chief's policies as guideline for implementation. In this part of COPR, project necessity, internal and external factors related to the project, and development opportunity factor will be defined to clarify how the project provides positive impact on RTAF capabilities to perform required missions.
2. Objective : The project objective must follow the project's approval form of the Ministry of Defence, specifying only the scope of the budget allocation request.
3. Timeframe : Project timeframe is a guideline for budget allocation plan.
4. Requirements : The project requirements define target groups and key capabilities needed to be achieved in the fields of materiel, aircraft, weapon/ combat system, command and control (C2), network and defence industry. These key capabilities must be in accordance with national or international standards, and should have commonality with RTAF systems in service.
5. Budget : The expected budget must be within the Ministry of Defence's approval framework, specifying the expected amount of money to be received during the project timeframe, as well as the budget binding time.
6. Outcome : The project outcome is the qualitative result that RTAF will receive and also the result that general public will benefit from the completion of the project.



1/63-A Procurement of Training Aircraft Replacement Project

1. Rationale

At present, the requirements to produce qualified military pilots for RTAF operations has continuously increased, resulting in the procurement plan for in-time replacement of PC-9 Training Aircraft, which will be decommissioned in 2023.

2. Objective

To procure 12 Training Aircraft for PC-9 replacement, including ground support equipment, spare parts, training and other necessary expenses for complete support of the RTAF advanced student pilot training.

3. Length of Process

Obligated budget for 4 years (Fiscal Year 2020 – 2023)

4. Requirement

1) Training aircraft, with modern technology and performances that meet all RTAF requirements as well as having support systems according to all training missions as required by RTAF, which can be continuously developed and upgraded in the future

2) Complete integrated training system which can be used to efficiently evaluate and analyze student pilots' performances

3) Simulator for simulated flight and emergency training

4) Training and technology transfer for enhanced capabilities in aircraft maintenance on a basis of self-reliance

5. Budget

5,195,000,000 baht

6. Outcome

The RTAF student pilots will become more efficient, mission-capable and ready for ongoing basic and advanced tactical training for fighter/attacker, helicopter and special operations pilots in the operational squadrons. Also, the RTAF student pilot training will be in accordance with international military standard, airworthy and cost effective.



2/63-A Procurement of Fighter Lead-in Training Aircraft Project (Phase 4)

1. Rationale

RTAF have already acquired 12 T-50TH by the year 2020. To complete RTAF force structure requirements, 2 additional T-50TH must be procured to fulfill operational capability requirements of Squadron 401, Wing 4.

2. Objective

To procure 2 Fighter Lead-in Training Aircraft with spare parts, necessary tools and equipment, additional training to meet required operational needs in supporting RTAF missions of fighter lead-in training, air strike and CSAR.

3. Timeframe

Obligated budget for 3 years (Fiscal Year 2020 – 2022)

4. Requirements

1) High performance 2-seat Fighter Lead-in Training Aircraft equipped with turbofan engine and suitable for fighter lead-in training mission

2) Up-to-date aircraft capabilities as available at time of procurement: all aircraft already in RTAF inventory must be upgraded or capability enhanced to be exactly the same configurations and performances as procured aircraft for fleet commonality

3) Technology transfer to enhance RTAF capability in system installation and integration of RTAF TDL on the aircraft

4) Installation readiness for electronic warfare and modern radar system

5. Budget

2,450,000,000 Baht

6. Outcome

RTAF is capable of producing fighter lead-in pilots with the capability to conduct air strike and CSAR missions efficiently.





3/63-A Procurement of Advanced-Training-Squadron Transport Lead-in Training Aircraft Project

1. Rationale

RTAF needs to produce more transport pilots to support airlift missions. At the moment, 8 Transport Lead-in Training Aircraft are stationed at Advanced Training Squadron, Flight Training Division, Flying Training School. For training efficiency, 4 additional Transport Lead-in Training Aircraft must be procured to fulfill training and operational capability requirements.

2. Objective

To procure 4 Transport Lead-in Training Aircraft together with ground support equipment, spare parts, training and other necessary expenses. The procured aircraft must have the same or exceeding performances and capabilities in transport lead-in training missions as the existing aircraft in the Advanced Training Squadron. The procured aircraft must also be able to perform transport lead-in training missions safely both day and night.

3. Timeframe

Obligated budget for 2 years (Fiscal Year 2020 – 2021)

4. Requirements

- 1) Da-42 Transport Lead-in Training Aircraft
- 2) The National or International Standard and Airworthiness certified by International Aviation Organizations
- 3) Fleet commonality in terms of systems, LRUs, spare parts and aircraft maintenance
- 4) Training and technology transfer for enhanced capabilities in aircraft maintenance on a basis of self-reliance

5. Budget

233,000,000 Baht

6. Outcome

The RTAF student pilots will become more efficient, mission-capable and ready for ongoing basic and advanced tactical training for transport pilots in the operational squadrons. Also, the RTAF student pilot training will be in accordance with international military standard, airworthy and cost effective.

1. Rationale

RTAF has continuously and efficiently sustained air defence radar capabilities by performing capability enhancement or extension of service life to be capable of coping with current and future threats in all dimensions.

2. Objective

To enhance operational capabilities of Air Defence Radar, AN/TPS-78 via Mid-life Refurbishment and Upgrade to allow for at least another 10 years in service.

3. Timeframe

Obligated budget for 3 years (Fiscal Year 2020 – 2022)

4. Requirements

- 1) Survey, evaluation and result report of Air Defence Radar, AN/TPS-78 at 3 radar sites for efficient capability enhancement
- 2) Mid-life Refurbishment and Upgrade of 3 Air Defence Radar, AN/TPS-78 at the manufacturing company or at radar sites
- 3) Cooperation with RTAF in performing capability enhancement of air defence radar to extend service life of at least another 10 years
- 4) Training for RTAF personnel to efficiently operate and maintain radar systems

5. Budget

850,000,000 Baht

6. Outcome

Performances of RTAF radar systems will be enhanced via Mid-life Refurbishment and Upgrade in order to improve detection range and operational capabilities in worthy and cost-effective manner.



5/63-A Procurement of Topography Survey for Security Project

1. Rationale

RTAF requires sensors capable of gathering data efficiently in every dimension. Existing sensor systems used in ISR missions provides only 2-D imagery on basis of Latitude and Longitude, but no sensor system in RTAF inventory can provide Digital Surface Model (DSM).

2. Objective

To procure the system of Topography Survey for Security, which consists of 3 ISR aircraft equipped with Light Detection and Ranging (LiDAR) system, processing system, ground support equipment, spare parts, training and other necessary expenses.

3. Timeframe

Obligated budget for 3 years (Fiscal Year 2020 – 2022)

4. Requirements

1) ISR aircraft with performances and capabilities equivalent to those in existing ISR aircraft in RTAF inventory

2) Light Detection and Ranging (LiDAR) system with support equipment sufficient for operational and tactical requirements

3) Training for pilots, system operators and maintenance technicians for all related systems to allow for effective topography survey missions both in-country or overseas

4) Training and technology transfer for enhanced capabilities in LiDAR processing system and aircraft maintenance on a basis of self-reliance

5. Budget

400,000,000 Baht

6. Outcome

RTAF possesses 3-D sensor capability to be used in generating digital maps for simulator, aircraft and UAV. General public will also benefit from RTAF ISR missions in supporting disaster prevention and relief efforts.

1/64-A SAAB 340 AEW Capability Enhancement Project

1. Rationale

SAAB 340 AEW has been in service for a long time, resulting in several mission limitations. Also, the International Standard Certification for Airworthiness of Erieye Airborne Early Warning Radar, both logistics and maintenance, will be expired in 2021.

2. Objective

To improve performances and capabilities of Erieye Airborne Early Warning Radar and to install and integrate C2 capability on SAAB 340 AEW including spare parts, facilities, basic utilities, support systems and training for RTAF personnel to be ready for missions in accordance with newly enhanced capabilities in aircraft, C2 system and radar.

3. Timeframe

Obligated budget for 4 years (Fiscal Year 2021 – 2024)

4. Requirements

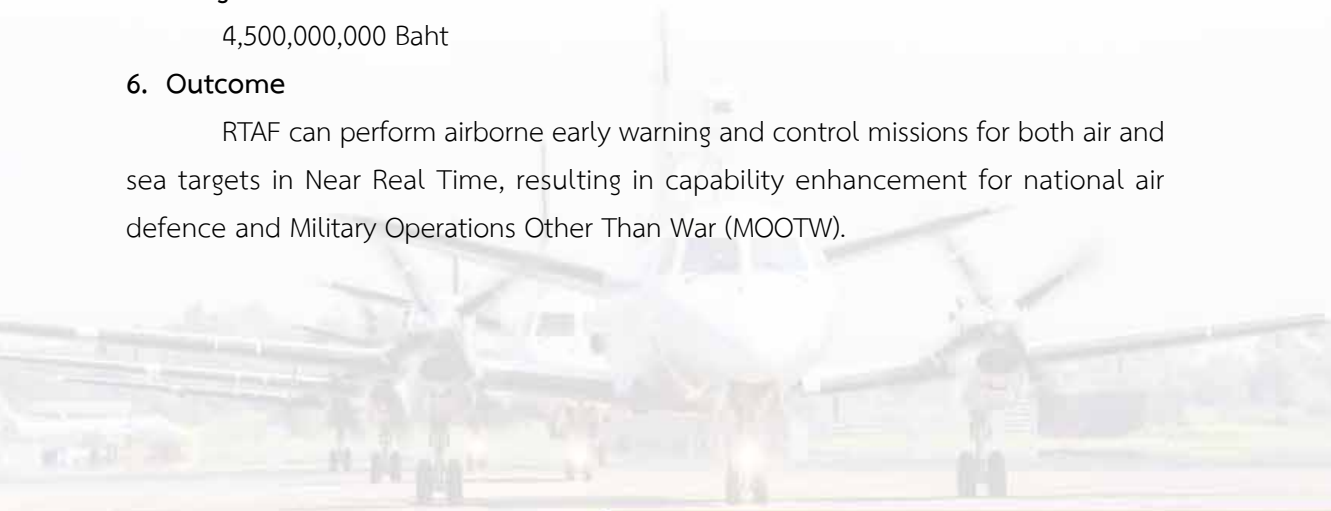
- 1) Capability upgrade of SAAB 340 AEW into SAAB 340 AEW&C with training, in-country or abroad, for pilots, system operators and maintenance technicians
- 2) Capability to analyze, warn and monitor both air and sea targets in Near Real Time as well as to transmit tactical information via TDL network to C2 and shooters
- 3) Technology transfer of Airborne Early Warning Radar and Airborne C2 as well as training for aircraft and system maintenance on a basis of self-reliance
- 4) Right for installing and integrating TDL on other RTAF aircraft

5. Budget

4,500,000,000 Baht

6. Outcome

RTAF can perform airborne early warning and control missions for both air and sea targets in Near Real Time, resulting in capability enhancement for national air defence and Military Operations Other Than War (MOOTW).



2/64-A Procurement of Light Attack Aircraft Project (Phase 1)

2/65-A Procurement of Light Attack Aircraft Project (Phase 2)

1. Rationale

L-39 ZA/ART has been in service since 1994. In the past decade, RTAF has experienced difficulties and limitations in aircraft maintenance and logistics. Since L-39 ZA/ART technology is out-of-date and the aircraft will be decommissioned in 2022, RTAF is required to procure replacement aircraft for air strikes and CSAR missions as well as integrated cooperation on national defence.

2. Objective

To procure 12 Light Attack Aircraft with tools and equipment, LRUs, spare parts, support systems, integrated training support system and training for pilots and maintenance technicians.

3. Timeframe

Phase 1 – Obligated budget for 3 years (Fiscal Year 2021 – 2023)

Phase 2 – Obligated budget for 3 years (Fiscal Year 2022 – 2024)

4. Requirements

1) Light attack aircraft with tools and equipment, LRUs, spare parts, support systems, and integrated training support system (Procurement of 8 aircraft in Phase 1 and 4 aircraft in Phase 2)

2) Training for pilots, system operators and maintenance technicians

3) Technology transfer to enhance capability of RTAF personnel to install and integrate TDL, weapon systems and OFP on a basis of self-reliance

5. Budget

Phase 1 : 4,500,000,000 Baht

Phase 2 : Upon the allocation of the fiscal year budget

6. Outcome

RTAF sustains capabilities to conduct air strikes and CSAR missions as well as to cooperate with other services in national defence and protection of national interests.



3/64-A Construction of Ammunition Storage Facility and Procurement of Weapon, Ammunition and Explosive Project (Phase 2)

2/67-A Construction of Ammunition Storage Facility and Procurement of Weapon, Ammunition and Explosive Project (Phase 3)

1. Rationale

RTAF is required to maintain combat readiness with modernized weapon, ammunition and explosive by replacing or additionally procuring in accordance with security environment and technology advancement.

2. Objective

To procure modernized and effective weapon, ammunition and explosive including support systems for combat readiness in national defence based on RTAF war-reserved requirements.

3. Timeframe

Phase 2 – Obligated budget for 3 years (Fiscal Year 2021 – 2023)

Phase 3 – Obligated budget for 3 years (Fiscal Year 2024 – 2026)

4. Requirements

- 1) IRIS-T Air-to-Air Missile (AAM)
- 2) BVR Air-to-Air Missile (AMM)
- 3) Captive Air Training Missile
- 4) Support systems and training programs
- 5) AAM installation and integration with other RTAF aircraft
- 6) Technology transfer to enhance RTAF capability in installation and integration

of procured AAM on other RTAF aircraft on a basis of self-reliance

5. Budget

Phase 2 : 900,000,000 Baht

Phase 3 : Upon the allocation of the fiscal year budget

6. Outcome

RTAF maintains combat readiness of weapon, ammunition and explosive as well as enhance capability in air combat with AMM and its support systems.



4/64-S Space Operations Development Project (Phase 1)

7/65-S Space Operations Development Project (Phase 2)

6/67-S Space Operations Development Project (Phase 3)

4/70-S Space Operations Development Project (Phase 4)

1. Rationale

RTAF realizes the importance of developing capability in Space domain and space security as well as to support other RTAF operations in Air and Cyber domains.

2. Objective

To enhance capabilities in space operations, space observation, space ISR, space communication and telecommunication via satellite system

3. Timeframe

Phase 1 – Obligated budget for 3 years (Fiscal Year 2021 – 2023)

Phase 2 – Obligated budget for 3 years (Fiscal Year 2022 – 2024)

Phase 3 – Obligated budget for 3 years (Fiscal Year 2024 – 2026)

Phase 4 – Obligated budget for 3 years (Fiscal Year 2027 – 2029)

4. Requirements

1) Phase 1 : Two Micro Satellites with equipment, software, ground station and technology transfer for further development and proper use

2) Phase 2 : One Telescope with ground station and detection system to support RTAF missions

3) Phase 3 and Phase 4 : Micro or Mini Satellite for surveillance, communication and telecommunication via satellite system

5. Budget

Phase 1 : 1,470,000,000 Baht

Phase 2, 3 and 4 : Upon the allocation of the fiscal year budget

6. Outcome

RTAF possesses space operations capabilities to support RTAF NCO operations.

5/64-A Manufacturing of RTAF UAV Project (Phase 2)

1. Rationale

The further development and manufacturing of RTAF UAV system for military and civil purposes leads to capability enhancement in combat operations on a basis of self-reliance.

2. Objective

To enhance RTAF U1 UAV capabilities in surveillance and combat missions including equipment and other related systems.

3. Timeframe

Obligated budget for 2 years (Fiscal Year 2021 – 2022)

4. Requirements

- 1) RTAF U1 UAV with capability enhancement in surveillance and combat missions
- 2) Essential systems and equipment including Ground Control Station (GCS), EO/IR/ LRF Camera, Ground Data Terminal (GDT) and initial spare parts
- 3) Technology transfer for manufacturing, testing, weapon installation and integration as well as development of OFP for UAV system

5. Budget

450,000,000 Baht

6. Outcome

RTAF possesses UAV capabilities in training, combat and surveillance operations, and disaster relief.



1. Rationale

RTAF is required to develop logistics capability for Gripen 39 C/D and upgrade/modernize Operational Flight Program (OFP), Operational Support Systems (OSS) and other related systems in compliance with up-to-date system and software availability in order to maintain combat readiness in national air defence operations.

2. Objective

To upgrade/modernize OFP, OSS and other related systems of Gripen 39 C/D as well as to maintain and develop logistics capability for Gripen 39 C/D

3. Timeframe

Obligated budget for 2 years (Fiscal Year 2021 – 2022)

4. Requirements

- 1) OFP Upgrade for Gripen 39 C/D from version MS 19 to MS 20 and capability enhancement/upgrade for OSS and other related systems
- 2) Training for pilots, system operators and maintenance technicians

5. Budget

510,000,000 Baht

6. Outcome

Gripen 39 C/D with modernized OFP and enhanced combat readiness and capabilities enables RTAF to efficiently conduct air defence missions, deter and counter any aggressive acts, that affect national security in all levels of conflicts, for national defence and protection of national interests.



- 1/65-A Procurement of Transport Aircraft Replacement Project (Phase 1)
 - 1/67-A Procurement of Transport Aircraft Replacement Project (Phase 2)
 - 1/69-A Procurement of Transport Aircraft Replacement Project (Phase 3)
-

1. Rationale

RTAF needs to maintain and enhance capabilities in airlift missions, which has to be efficient and airworthy, for national security and support of all assigned missions.

2. Objective

To procure Transport Aircraft to replace C-130H including all related systems and training required for all airlift missions.

3. Timeframe

Phase 1 - Obligated budget for 4 years (Fiscal Year 2022 – 2025) for 4 Transport Aircraft

Phase 2 - Obligated budget for 4 years (Fiscal Year 2024 – 2026) for 4 Transport Aircraft

Phase 3 - Obligated budget for 4 years (Fiscal Year 2026 – 2029) for 4 Transport Aircraft

4. Requirements

- 1) 12 Transport Aircraft to replace the C-130H
- 2) RTAF Tactical Data Link (TDL) system
- 3) Modern navigation systems with international standard of Airworthiness
- 4) Training for pilots, system operators and maintenance technicians
- 5) Technology transfer for installing and integrating TDL system on Transport Aircraft and for aircraft maintenance on a basis of self-reliance

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

RTAF sustains airlift capabilities for national defence, Military Operations Other Than War (MOOTW), civilian assistance and support.



3/65-A Establishment and Development of UAV Center Project

1. Rationale

UAV is an essential defence materiel in current security environment. Consequently, RTAF initiated the establishment and development of UAV Center with the main operating base at Watthana Nakhon Airport, currently serving as forward and border operating base, in Sa Kaeo province.

2. Objective

To establish and develop UAV Center at Watthana Nakhon Airport in Sa Kaeo province in accordance with the RTAF standards of main operating base.

3. Timeframe

Obligated budget for 3 years (Fiscal Year 2022 – 2024)

4. Requirements

- 1) Development and improvement of buildings and facilities at Watthana Nakhon Airport
- 2) Development of human resources and organization

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

Watthana Nakhon Airport will be developed and improved in accordance with the RTAF standards of main operating base for UAV squadrons and tactical deployment as stated in the National Defence Plan. The development and improvement of the airport will also support the national development under Thailand 4.0 Policy and Thai defence industries development in the area of UAV.

4/65-A Nam Phong Airport Capability Development Project

1. Rationale

RTAF plans to develop the tactical weapon training range at Nam Phong Airport in Khon Kaen province. The airport will also be developed to serve as forward and border operating base.

2. Objective

To develop and standardize Nam Phong Airport with capabilities to efficiently support tactical weapon training with the same standard as RTAF tactical air base.

3. Timeframe

Obligated budget for 5 years (Fiscal Year 2022 - 2026)

4. Requirements

- 1) Development and improvement of buildings and facilities at Nam Phong Airport
- 2) Development of human resources and organization

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

Nam Phong Airport will be developed and standardized in accordance with the RTAF standards of operating base for tactical deployment as stated in the National Defence Plan.



5/65-A RTAF Base Defence Development Project (Phase 1)

3/67-A RTAF Base Defence Development Project (Phase 2)

3/69-A RTAF Base Defence Development Project (Phase 3)

1. Rationale

The RTAF is required to enhance air base defence capabilities to protect and defend air bases from any aggressive act. Also, ground force personnel must be trained to understand modern defence technology in air base defence.

2. Objective

To procure anti-drone system with its equipment in order to support RTAF air base defence missions and defence of other assigned areas of operations

3. Timeframe

Phase 1 – Obligated budget for 2 years (Fiscal Year 2022 – 2023)

Phase 2 – Obligated budget for 2 years (Fiscal Year 2024 – 2025)

Phase 3 – Obligated budget for 2 years (Fiscal Year 2026 – 2027)

4. Requirements

1) Anti-drone system with capabilities to protect RTAF air bases including sub-systems consisting of detection, identification and classification, defeat, command and control systems

2) Control, management and integration of system/equipment as well as data display and status report of system/equipment

3) Training for system operators and maintenance technicians

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

The anti-drone operations enable RTAF to protect and defend each air base from illegal drones and other security threats.

6/65-A Procurement of Air Surveillance Radar (ASR) Replacement Project (Phase 2)

5/67-A Procurement of Air Surveillance Radar (ASR) Replacement Project (Phase 3)

1. Rationale

RTAF is required to maintain capability and continuity in controlling air traffic in the area of responsibility at maximum level of aviation safety.

2. Objective

To procure Air Surveillance Radar (ASR) with equipment, necessary Spare parts and training including installation at Wing 4, Wing 21, Wing 7 and Wing 23.

3. Timeframe

Phase 2 - Obligated budget for 2 years (Fiscal Year 2022 – 2023)

Phase 3 - Obligated budget for 2 years (Fiscal Year 2024 – 2025)

4. Requirements

1) Air Surveillance Radar (ASR) consisting of Primary Surveillance Radar (PSR) and Secondary Surveillance Radar (SSR) for fixed site installation

2) Training for system operators and maintenance technicians

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

RTAF is able to maintain capability in controlling air traffic in accordance with the international standards and to benefit the overall national airspace management.





8/65-S Space Capability Development Project

1. Rationale

RTAF is required to develop space capabilities and space security in terms of system fundamental structure, facilities and related support equipment in order to support RTAF space operations.

2. Objective

To prepare and develop system fundamental structure, facilities, cleanroom and standard support equipment in order to support capability enhancement in space operations.

3. Timeframe

Obligated budget for 2 years (Fiscal Year 2022 – 2023)

4. Requirements

- 1) Cleanroom in accordance with international standards
- 2) Facilities to support satellite system construction
- 3) Facilities for testing equipment/tools for satellite system

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

RTAF is capable of supporting and conducting space operations in the areas of satellite development, satellite manufacturing, satellite construction and satellite testing on a basis of self-reliance, which allows RTAF to develop and sustain own technology of satellite manufacturing.



1/66-A Procurement of Fighter/Attacker Aircraft Replacement Project (Phase 1)

1/68-A Procurement of Fighter/Attacker Aircraft Replacement Project (Phase 2)

1. Rationale

RTAF is required to procure fighter/attacker aircraft to replace F-16 stationed at Squadron 102 due to the end of service life. The replacement fighter/attacker aircraft must have suitable capabilities in conformity with RTAF missions in national defence.

2. Objective

To procure one squadron of fighter/attacker aircraft to replace F-16 with integrated training system, Spare parts, weapon systems, support systems, flight support equipment and related training.

3. Timeframe

Phase 1 – Obligated budget for 2 years (Fiscal Year 2023 – 2026)

Phase 2 – Obligated budget for 2 years (Fiscal Year 2025 – 2028)

4. Requirements

1) One squadron of fighter/attacker aircraft (12 aircraft) with equipment, Spare parts, integrated training system, training, facilities, utilities and support systems (Procurement of 6 aircraft in Phase 1 and 6 aircraft in Phase 2)

2) Training for pilots, system operators and maintenance technicians

3) Technology transfer for capability enhancement in installing and integrating TDL system, weapon system integration and testing, and aircraft maintenance on a basis of self-reliance

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

RTAF is capable of efficiently conducting air defence and air strike missions as well as to cooperate with other services in national defence and protection of national interests.

2/66-A Procurement of Multirole Fighter Aircraft Replacement for F-5 B/E Project

1. Rationale

RTAF is required to procure additional multirole fighter aircraft to be commissioned at Squadron 701, Wing 7, to fulfill operational and tactical requirements as specified in the RTAF force structure.

2. Objective

To procure one Gripen 39 C/D with equipment, Spare parts, weapon systems, support systems, flight support equipment and related training

3. Timeframe

Obligated budget for 3 years (Fiscal Year 2023 – 2025)

4. Requirements

- 1) One Gripen 39 C/D with equipment, Spare parts, weapon systems, support systems, flight support equipment and related training
- 2) Training for pilots, system operators and maintenance technicians
- 3) Technology transfer for capability enhancement in TDL development, installation and integration of TDL system, weapon system integration and testing, and aircraft maintenance on a basis of self-reliance

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

RTAF is able to fulfill operational and tactical requirements of Gripen 39 C/D squadron in conducting air defence and air strike missions as well as in cooperating with other services in national defence and protection of national interests.



1. Rationale

RTAF is required to procure helicopters to replace Bell 412, Bell 412 SP and Bell 412 EP, some of which have been commissioned since 1982. Since technology in Bell helicopters is out-of-date and all helicopters will be decommissioned in 2023, RTAF is required to procure replacement helicopters for airlift, SAR and CSAR missions.

2. Objective

To procure six medium-sized helicopters for SAR and CSAR missions with equipment, spare parts, weapon systems, flight support systems and related training

3. Timeframe

Obligated budget for 3 years (Fiscal Year 2023 – 2025)

4. Requirements

- 1) Six medium-sized helicopters with equipment, spare parts, support system and related training
- 2) Training for pilots, system operators and maintenance technicians
- 3) Technology transfer in the areas specified by RTAF

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

RTAF is able to sustain combat readiness and operational and tactical capabilities in SAR and CSAR missions, which directly benefit general public in civilian assistance support.





4/66-A Procurement or Manufacturing of Armed UAV Project (Phase 1)

3/68-A Procurement or Manufacturing of Armed UAV Project (Phase 2)

1. Rationale

RTAF is required to develop armed UAV system to achieve capabilities in UAV air strike and in conformity with RTAF missions in national defence.

2. Objective

To procure or manufacture UAV system with surveillance, reconnaissance and combat capabilities.

3. Timeframe

Phase 1 - Obligated budget for 3 years (Fiscal Year 2023 – 2025)

Phase 2 - Obligated budget for 3 years (Fiscal Year 2025 – 2027)

4. Requirements

- 1) UAV with surveillance, reconnaissance and combat capabilities
- 2) Essential systems and equipment including Ground Control Station (GCS), EO/IR/LRF Camera, Ground Data Terminal (GDT) and initial spare parts
- 3) Training for system operators and maintenance technicians
- 4) Technology transfer for UAV manufacturing, UAV testing, weapon integration and testing for UAV and OFP system development for UAV

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

RTAF is capable of conducting surveillance, armed reconnaissance and air strike missions with UAV as well as cooperating with other services in national defence and protection of national interests.



5/66-A Procurement of Ground-based Air Defence System Project (Phase 1)

4/69-A Procurement of Ground-based Air Defence System Project (Phase 2)

2/72-A Procurement of Ground-based Air Defence System Project (Phase 3)

1. Rationale

RTAF is required to enhance capabilities in air defence and ground defence for RTAF air bases in order to cope with threats in current security environment and challenges in technology advancement.

2. Objective

To procure medium-range air defence system in order to protect and defend RTAF air bases.

3. Timeframe

Phase 1 - Obligated budget for 3 years (Fiscal Year 2023 – 2025)

Phase 2 - Obligated budget for 3 years (Fiscal Year 2026 – 2028)

Phase 3 - Obligated budget for 3 years (Fiscal Year 2029 – 2031)

4. Requirements

- 1) Medium-range air defence (MEDRAD) system with related support system
- 2) Training for system operators and maintenance technicians
- 3) System development for connecting with RTAF C2 system
- 4) Technology transfer for air defence system, connection between air defence and C2 systems, and air defence system maintenance on a basis of self-reliance concept

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

The important RTAF air bases are secured with modern and advanced air defence capability.



- 6/66-A Development and Improvement of Air Defence System Project (Phase 7)
 - 4/67-A Development and Improvement of Air Defence System Project (Phase 8)
 - 4/68-A Development and Improvement of Air Defence System Project (Phase 9)
 - 5/69-A Development and Improvement of Air Defence System Project (Phase 10)
 - 1/72-A Development and Improvement of Air Defence System Project (Phase 11)
-

1. Rationale

The RTAF is required to maintain air defence radar capabilities in order to cope with current and future threats.

2. Objective

To procure air defence radars, including installation with radome at required reporting centers, with equipment, necessary spare parts and training at radar sites.

3. Timeframe

Phase 7 - Obligated budget for 3 years (Fiscal Year 2023 – 2025)

Phase 8 - Obligated budget for 3 years (Fiscal Year 2024 – 2026)

Phase 9 - Obligated budget for 3 years (Fiscal Year 2025 – 2027)

Phase 10 - Obligated budget for 3 years (Fiscal Year 2026 – 2028)

Phase 11 - Obligated budget for 3 years (Fiscal Year 2029 – 2031)

4. Requirements

1) Air defence radars with capabilities equivalent to or greater than existing RTAF air defence radars

2) Training for system operators and maintenance technicians

3) Connection with RTAF C2 system without any limitation

4) Technology transfer for air defence radar, connection between radars and RTAF C2 system, and air defence radar maintenance on a basis of self-reliance

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

RTAF maintains national air defence capability in all area of responsibilities.

7/67-A Procurement of VVIP Transport Aircraft Project

1. Rationale

RTAF must maintain readiness of Royal Aircraft with appropriate-quality, safety and high-reliability to serve the Royal Family and the Royal Missions with great honor.

2. Objective

To procure Royal Aircraft (one aircraft) with spare parts, equipment, logistics support system and training.

3. Timeframe

Obligated budget for 3 years (Fiscal Year 2024 – 2026)

4. Requirements

1) Royal Aircraft with performances and capabilities equivalent or close to the existing RTAF VVIP transport aircraft

2) Royal cabin equipped with at least 4 seats for VVIPs with appropriate and comfortable interiors, or with aircraft seating arrangement close to that in the existing RTAF VVIP transport aircraft

3) Training for pilots, system operators and maintenance technicians

4) Technology transfer for aircraft and aircraft maintenance on a basis of self-reliance

5. Budget

Upon the allocation of the fiscal year budget (the budget of the Secretariat of the Prime Minister)

6. Outcome

RTAF is able to perform transport missions for the Royal Family with great honor.



2/68-A Procurement of Squadron 604 Training Aircraft Project (Phase 2)

1. Rationale

CT-4B training aircraft will be decommissioned in 2026. RTAF is consequently required to procure replacement aircraft to serve training requirements for RTAF pilots in non-flying units and RTAF Academy cadets, as well as to support activities for the RTAF civilian flying training unit.

2. Objective

To procure additional of six DA-40 training aircraft with ground support equipment, spare parts and training

3. Timeframe

Obligated budget for 2 years (Fiscal Year 2025 - 2026)

4. Requirements

- 1) DA-40 training aircraft
- 2) Basic aircraft instruments for basic flying training
- 3) Reliable logistics support with easy-to-find spare parts in high availability, and maintenance center located in the region
- 4) Training and technology transfer for aircraft and aircraft maintenance on a basis of self-reliance

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

RTAF is able to train RTAF pilots from other non-flying units and RTAF Academy cadets, as well as to support activities for the RTAF civilian flying training unit.

2/69-A Procurement of Training Aircraft for CT-4E Replacement Project (Phase 1)

2/70-A Procurement of Training Aircraft for CT-4E Replacement Project (Phase 2)

1. Rationale

CT-4E training aircraft has been in service since 1999, and will be decommissioned in 2031. RTAF is consequently required to procure replacement aircraft for the flying training missions of basic student pilots at the RTAF Flying Training School.

2. Objective

To procure 24 training aircraft with ground support equipment, spare parts and training to replace CT-4E training aircraft

3. Timeframe

Phase 1 - Obligated budget for 3 years (Fiscal Year 2026 – 2028)

Phase 2 - Obligated budget for 3 years (Fiscal Year 2027 – 2029)

4. Requirements

- 1) Small aircraft equipped with a single engine, capable of training basic student pilots at Basic Training Squadron, the RTAF Flying Training School
- 2) Two-seater cockpit with side-by-side seating arrangement
- 3) Basic aircraft instrument for basic flying training
- 4) Training and technology transfer for aircraft and aircraft maintenance on a basis of self-reliance

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

RTAF is able to sustain training capability for basic student pilots at Basic Training Squadron, the RTAF Flying Training School.





6/69-A Procurement of VVIP Helicopter Project

1. Rationale

RTAF must maintain readiness of Royal Helicopter with appropriate-quality, safety and high-reliability to serve the Royal Family and the Royal Missions with great honor.

2. Objective

To procure three Royal Helicopters with spare parts, equipment, logistics support system and training

3. Timeframe

Obligated budget for 3 years (Fiscal Year 2026 - 2028)

4. Requirements

1) Royal helicopters with capability to serve the Royal Missions, capable of carrying at least five passengers with day and night operations, appropriate cabin for the Royal Family, radio communication system enabling the command directly from the Royal Seat, and self-defence equipment with equivalent quality to the military standards or above

2) Helicopter already in operations, not prototype helicopter

3) Training for pilots, system operators and maintenance technicians

4) Technology transfer for helicopter and helicopter maintenance on a basis of self-reliance

5. Budget

Upon the allocation of the fiscal year budget (budget of the Secretariat of the Prime Minister)

6. Outcome

RTAF is able to perform transport missions for the Royal Family with great honor.

1/70-A Procurement of Medium-Sized Transport Aircraft for SAAB 340B Replacement Project

1. Rationale

RTAF is required to procure transport aircraft to replace SAAB 340B as specified in the RTAF force structure in order to maintain airlift capability for both military and civilian purposes.

2. Objective

To procure additional two medium-sized transport aircraft with spare parts, equipment, logistics support system, training and other related systems

3. Timeframe

Obligated budget for 3 years (Fiscal Year 2027 - 2029)

4. Requirements

- 1) Two medium-sized transport aircraft with spare parts, equipment, logistics support system, training and other related systems
- 2) Training programs for pilots, system operators and maintenance technicians
- 3) Technology transfer in the areas as specified by RTAF

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

RTAF maintain combat readiness in airlift missions which benefit general public in terms of national security and civilian assistance such as air transport and disaster relief missions.



3/70-A Procurement of VIP Transport Aircraft Procurement Project

1. Rationale

RTAF is required to procure one transport aircraft to replace Airbus ACJ 319 due to end of service life. RTAF aims to maintain airlift capability for government VIPs and to provide backup for the Royal Aircraft as appropriate.

2. Objective

To procure one VIP transport aircraft with spare parts, equipment, logistics support system and training

3. Timeframe

Obligated budget for 3 years (Fiscal Year 2027 - 2029)

4. Requirements

1) VIP transport aircraft with performances and capabilities equivalent or close to the existing RTAF VIP transport aircraft, requiring range of at least 3,000 NM for each landing

2) VIP cabin equipped with at least 4 VIP seats with appropriate and comfortable interiors, or with aircraft seating arrangement close to that in the existing RTAF VIP transport aircraft

3) Logistics support that can be used with the existing RTAF VIP transport aircraft for system commonality and cost effectiveness

4) Training for pilots, system operators and maintenance technicians

5) Technology transfer for aircraft and aircraft maintenance on a basis of self-reliance

5. Budgets

Upon the allocation of the fiscal year budget (budget of the Secretariat of the Prime Minister)

6. Outcome

RTAF ensures maximum safety for VIP air transportation and benefit airlift capability to support civilian assistance.

1/71-A Procurement of Fighter/Attacker Aircraft Replacement Project (Phase 1)

1/73-A Procurement of Fighter/Attacker Aircraft Replacement Project (Phase 2)

1. Rationale

RTAF is required to procure fighter/attacker aircraft to replace F-16 A/B at Squadron 103 due to end of service life. The replacement fighter/attacker aircraft must have suitable capabilities in conformity with RTAF missions in national defence.

2. Objective

To procure one squadron of fighter/attacker aircraft to replace F-16 A/B with integrated training system, spare parts, weapon systems, flight support equipment and related training

3. Timeframe

Phase 1 - Obligated budget for 4 years (Fiscal Year 2028 - 2031)

Phase 2 - Obligated budget for 4 years (Fiscal Year 2030 - 2033)

4. Requirements

1) One squadron of fighter/attacker aircraft (12 aircraft) with equipment, spare parts, integrated training system, training support system, training, facilities, utilities, and support system (Procurement of 6 aircraft in Phase 1 and 6 aircraft in Phase 2)

2) Training for pilots, system operators and maintenance technicians

3) Technology transfer for TDL development, weapon system integration and testing, and aircraft maintenance on a basis of self-reliance concept

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

RTAF is capable of efficiently conducting air defence and air strike missions as well as well as cooperating with other services in national defence and protection of national interests.



2/71-A Procurement or Manufacturing of RTAF UAV for U1 Replacement Project

1. Rationale

RTAF is required to procure or manufacture UAV to replace RTAF U1 UAV, which will be decommissioned in 2028, to fulfill operational and tactical requirements as specified in the RTAF force structure.

2. Objective

To procure or manufacture UAV to replace RTAF U1 UAV

3. Timeframe

Obligated budget for 2 years (Fiscal Year 2028 - 2029)

4. Requirements

- 1) UAV with surveillance, reconnaissance and combat capabilities
- 2) Essential systems and equipment including Ground Control Station (GCS), EO/IR/LRF camera, Ground Data Terminal (GDT), and initial spare parts
- 3) Technology transfer for UAV manufacturing, UAV testing, weapon integration and testing for UAV and OFP system development for UAV

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

RTAF is capable of UAV operations in terms of training and conducting missions for both military and civilian purposes including disaster relief mission.

3/71-A Procurement of Medium-Sized Transport Aircraft for BT-67 Replacement Project

1. Rationale

BT-67, medium-sized transport aircraft, has been in service for a long time for airlift, the Royal rain-making project, forest fire control and smog reduction missions. Due to limitations in logistics support, RTAF is required to procure medium-sized transport aircraft to replace BT-67.

2. Objective

To procure four medium-sized transport aircraft to replace BT-67 with equipment, spare parts, logistics support system, training and other related systems

3. Timeframe

Obligated budget for 3 years (Fiscal Year 2028 - 2030)

4. Requirement

- 1) Four medium-sized transport aircraft with equipment, spare parts, logistics support system, training and support system
- 2) Training for pilots, system operators and maintenance technicians
- 3) Technology transfer in the areas specified by RTAF

5. Budget

Upon the allocation of the fiscal year budget

6. Outcome

RTAF ensures readiness in airlift missions which benefit general public in terms of national security and civilian assistance support such as artificial rain making, airlift and disaster relief.







Chapter 6

Implementation



Chapter 6 Implementation

The RTAF White Paper 2020 implementation shall refer to the 20-Year RTAF Strategies (2018 – 2037) as guideline to develop plans, projects and concrete activities. With the aim to achieve the aforementioned objectives as described in the previous chapters, organizations and stakeholders related to the implementation of RTAF White Paper 2020 and the implementation process must be clearly defined. In addition, to keep it up-to-date, the RTAF White Paper 2020 shall be evaluated and reviewed biannually.

Organizations and Stakeholders Related to RTAF White Paper 2020 Implementation

Organizations and Stakeholders related to RTAF White Paper 2020 implementation comprise elected officials, government organizations, National Anti-Corruption Commission (NACC), specialized organizations, educational and research institutions, general public and private sectors, both foreign and domestic, as follows:

1. Elected officials shall be informed of the commitment to protect and uphold the Royal Institution, to enhance capability and sustain combat readiness for national defence, national security and stability as well as protection of national interests in accordance with the Constitution of the Kingdom of Thailand, and to utilize the RTAF materiel in driving the Government’s strategic development plan during peacetime.

2. Government organizations

- 2.1 Budget-related organizations include the Ministry of Defence, the Ministry of Finance, the Royal Thai Armed Forces Headquarters, the Budget Bureau, the Secretariat of the Prime Minister, the State Audit Office of the Kingdom of Thailand and other government budget-related organizations, all of which shall be informed of the RTAF materiel procurement projects’ rationale and outcomes, as well as the RTAF budget framework in the next 10 years.

- 2.2 Security-related organizations include Ministry of Defence, Office of the National Security Council, the Royal Thai Armed Forces Headquarters, the Royal Thai Army, the Royal Thai Navy, the Royal Thai Air Force, the Royal Thai Police and other security-related organizations, all of which shall be informed of the RTAF commitment to maintain combat readiness and enhance capability for national defence and national security.



3. National Anti-Corruption Commission (NACC), responsible for preventing, suppressing and combating corruption with collaboration of all sectors including the Anti-Corruption Organization of Thailand (ACT), shall be informed of the RTAF development plans on the basis of transparency and verification in compliance with the rule of law and good governance.

4. Special organizations, including the Defence Technology Institute (DTI) and the Thai Aviation Industries Co.,Ltd. (TAI), shall be informed of the RTAF material procurement plans and requirements for Air Power modernization.

5. Educational and research institutions shall be informed of the RTAF willingness to seek cooperation framework in research and development of defence materiel, joint development of academic curriculums and personnel development to support Thai defence industries.

6. General public shall perceive and understand the RTAF intention and determination to efficiently spending the national budget to procure defence materiel on the basis of sustainable development, transparency and public verification.

7. Private sectors, both foreign and domestic, shall be informed of the 10-year RTAF Requirement Plan, allowing for the defence industries' preparation to further develop material that meets the RTAF requirements, as well as to plan for cooperation with RTAF in developing and manufacturing of required materiel.

RTAF White Paper 2020 Implementation Process

The implementation process of RTAF White Paper 2020 consists of two important steps which are macro-level step and micro-level step.

1) Macro-level step, referring to the implementation process in national level, will be implemented in accordance with the Government Procurement and Supplies Management Act A.D. 2017 and related administrative orders.

2) Micro-level step, referring to the implementation process in RTAF level, will be implemented in the preparation of materiel procurement as follows :

2.1 Directorate of Operations (DO) develops the Concept of Project Requirement (COPR), which specifies significant information regarding overall requirements of the project according to allocated budget framework.



2.2 DO will submit the appointment of the “Education, Information Gathering and Procurement Preparation Committee” to be approved by the Commander-in-Chief of the Royal Thai Air Force (C-in-C, RTAF) in order to prepare complete and accurate information according to allocated budget framework.

2.3 The Education, Information Gathering and Procurement Preparation Committee is responsible for developing the Scope of Project Requirement (SOPR) as well as determining criteria and weighted score which will be used for evaluation of project proposals in the procurement process. Upon completion, SOPR shall be proposed to DO, which will submit the document to be approved by C-in-C, RTAF. The relevant unit will also be appointed by C-in-C, RTAF to prepare Term of Reference (TOR) of the project.

2.4 The TOR-preparing unit shall propose complete TOR to DO for final accuracy check. If TOR is accurate and complete, estimated budget will be determined according to the government regulations. Furthermore, TOR shall be proposed to Directorate of Logistics (DL) for appointing necessary committees in the procurement process in according with the Government Procurement and Supplies Management Act A.D. 2017 and related administrative orders.

Evaluation and Review of RTAF White Paper 2020

The RTAF White Paper 2020 will be evaluated and reviewed biannually in accordance with the RTAF strategic evaluation. The time period for revising the RTAF White Paper 2020 will be considered based on changing strategic and operational environment as well as budget situations at that time.



Royal Thai Air Force

One of the Best Air Forces in ASEAN

