Philippine Air Force Visiting Fellow Program
Philippine Air Force Air Operations

Arturo Jose G. Orticio Jr
PHILIPPINE AIR FORCE AIR OPERATIONS:

A PROACTIVE APPROACH FOR AN EVOLVING SECURITY SITUATION

Arturo Jose G. Orticio Jr.

Aerospace Centre
RAAF Fairbairn
Canberra
2000
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Major Orticio is happily married to Joyce Ramos Orticio of Blue Ridge, Quezon City. Their blissful union is blessed with Mariel and Sophia.
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The study of doctrine development for the PAF, for some officers, would be a tedious task. However, for the Office of Special Studies (OSS), which is the PAF staff primarily responsible for the formulation and implementation of doctrines, this task is filled with pride and motivation. It is a task where the perpetuation of doctrines requires a high level of competence, dedication and loyalty to duty, which is imbued not with arrogance but with professionalism.

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### Abbreviations and Acronyms

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<th>Description</th>
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<tbody>
<tr>
<td>AFP</td>
<td>Armed Forces of the Philippines</td>
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<tr>
<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
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<tr>
<td>BDA</td>
<td>Battlefield Damage Assessment</td>
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<td>CASF</td>
<td>Composite Air Support Forces</td>
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<td>COIN</td>
<td>Counter-insurgency</td>
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<td>COMINT</td>
<td>Communication Intelligence</td>
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<tr>
<td>CBM</td>
<td>Confidence-Building Measure</td>
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<td>DND</td>
<td>Department of National Defence</td>
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<td>EDO</td>
<td>External Defence Operations</td>
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<td>EEZ</td>
<td>Exclusive Economic Zone</td>
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<td>ELINT</td>
<td>Electronic Intelligence</td>
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<tr>
<td>EMP</td>
<td>Electromagnetic Pulse</td>
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<tr>
<td>EW</td>
<td>Electronic Warfare</td>
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<tr>
<td>FLIR</td>
<td>Forward Looking Infrared</td>
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<tr>
<td>GHQ</td>
<td>General Headquarters</td>
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<tr>
<td>GPS</td>
<td>Global Positioning System</td>
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<td>HERF</td>
<td>High Energy Radio Frequency</td>
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<td>HPAF</td>
<td>Headquarters Philippine Air Force</td>
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<td>IFF</td>
<td>Identification Friend or Foe</td>
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<td>ISO</td>
<td>Internal Security Operations</td>
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<tr>
<td>NATO</td>
<td>North Atlantic Treaty Organisation</td>
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<td>PA</td>
<td>Philippine Army</td>
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<td>PAF</td>
<td>Philippine Air Force</td>
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<tr>
<td>PGM</td>
<td>Precision Guided Munitions</td>
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<td>Php</td>
<td>Philippine Peso</td>
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<tr>
<td>PKO</td>
<td>Peacekeeping Operations</td>
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<tr>
<td>PLO</td>
<td>Palestinian Liberation Organisation</td>
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<tr>
<td>PN</td>
<td>Philippine Navy</td>
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<tr>
<td>PNP</td>
<td>Philippine National Police</td>
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<tr>
<td>PSYOPS</td>
<td>Psychological Operations</td>
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<tr>
<td>RAAF</td>
<td>Royal Australian Air Force</td>
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<tr>
<td>RAF</td>
<td>Royal Air Force</td>
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<tr>
<td>RPV</td>
<td>Remotely Piloted Vehicle</td>
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<td>SIGINT</td>
<td>Signal Intelligence Force</td>
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<tr>
<td>UAV</td>
<td>Unmanned Air Vehicle</td>
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<tr>
<td>UN</td>
<td>United Nations</td>
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<tr>
<td>USAF</td>
<td>United States Air Force</td>
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Introduction

RESEARCH OBJECTIVES

This paper will develop an alternative concept in the Philippine Air Force (PAF) Basic Doctrine as a future basis for a PAF operational doctrine which will be subject to validation and approval by cognisant authorities. The discussions in this paper will identify current PAF concepts and capabilities, the future of air operations, and the proposals for an operational doctrine. This paper will not present the detailed employment of specific weapon system platforms for any particular conflict or war, but will relate the present PAF doctrine to the evolving security situation. The assessment of the relevance of the present PAF doctrine vis-a-vis trends in modern warfare will enable relevant authorities to identify old and new doctrines which apply to the evolving national defence scenario.

SCOPE OF RESEARCH

During the discussions we will be able to understand the essential air force capabilities and the application of air power to a small air force such as the PAF. Although some concepts have been formulated by large air forces, this paper will attempt to identify only those which have relevance to the PAF. However, this paper will not go into the specifics of air power applicable to other branches of services or even disclose the details of operations and proposed combat disposition for operational readiness owing to the difficulty of access to classified information. This paper is primarily based on general information. Although some issues are based on policies, the outcome of this paper is not a set of hard and fast rules and regulations, but rather it will propose some alternative guiding principles for the employment of air power, which will be subject to individual interpretation.

RESEARCH METHODOLOGY

The research method employed in this paper was primarily document study and research. Primary data from this paper were obtained through review of secondary data, direct participant observation and the interview of key informants.

PROBLEM STATEMENT

The Philippine Air Force (PAF) has been in service to the nation for more than 50 years. In the 1960s and 1970s, the PAF was one of the most modern air forces in Southeast Asia.¹ With its scale of professional manpower plus the inventory of F-86D/F Sabres, F-5A/B Freedom Fighters, F-8H Crusaders, C-47 Dakotas, C-123 Providers, C-130 Hercules, RF-27 Maritime, BNI Islanders, N-22B/C Nomads,

AT-28 Trojans, SF-260 Warriors, HU-16B Albatross, UH-1H Hueys, H-34, Ground Control Intercept radars among others, the PAF was a potent force capable of a non-nuclear conflict (conventional warfare) and protracted conflict (unconventional warfare). Despite the internal security problems that beset the countryside, the PAF was a conventional force that was highly capable of addressing the external defence requirements. The security umbrella provided by the mere presence of the United States Air Force (USAF) 13th Air Force at Clark Air Base in the Philippines augmented the PAF external defence capabilities, which deterred incursions from other nations or would be aggressors. 'Creeping assertions' due to territorial claims were unlikely to occur because of our credible air force plus the factor of US presence.

The Armed Forces of the Philippines (AFP) as a disciplined organisation was utilised for political motives during Martial Law (1972-1981) by 'bringing the military closer to the people'. The exploitation of the AFP as the main contingent responsible for the policy implementation of Martial Law, coupled with the growing insurgency and secessionist problem relegated the primordial role of the PAF as a conventional force to a tactical support force. Although the external defence responsibility was a basic concern, the PAF shifted to the internal defence role in support of the AFP surface forces and to support the internal development programs. Included in internal development were programs that required the application of military technical skills to meet civilian requirements (eg. aerial photogrammetry, rainmaking, reforestation, air transport, infrastructure development and others). Tactically, only the USAF presence provided external defence on a very limited basis, and despite their presence it was never for the Philippine national interest.

The basis for the conduct of air operations conducted in the external and internal modes were outlined in the PAF Basic Doctrine of 1978. This manual served as a doctrinal reference for the employment of PAF resources/forces in support of the national objectives. The provisions thereto specifically provided the roles of the PAF in home defence and national development. To be more responsive to the changing environment, the PAF Basic Doctrine was revised in 1981. The later version provided discussions for the context of the PAF employment in the conventional and unconventional warfare, plus internal security operations (ISO). Despite the amendments in the PAF Basic Doctrine, the written doctrine was unable to provide the real response to the evolving national security environment. Even after Martial Law the main concentration of the PAF air operations was centred on ISO. There were several unwritten ISO doctrines that proved to be effective; however, they somehow remained to be practices only rather than doctrinal guidance for the employment of air power. If ever they were written, they were done very late and never reached the relevant authorities. These ISO practices continued to evolve depending on aircrew experience, operational environment, and the current weapon system platform or technology.

With the departure of the USAF tacit deterrence in the Philippines, stimulants, in the form of incursions within the nation's EEZ, tested the PAF

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4 It was not until 1995 that the PAF started writing manuals for employment of weapon systems and aircraft platforms. The detailed experience of seasoned aircrew in relation to the employment remained undocumented even when they left the PAF.
external defence doctrines. It proved that the existing doctrines failed to address the real situation. The worrying state of equipment disrepair and obsolescence of weapon system platforms plus the absence of appropriate technology forced the PAF to be reactive instead of being proactive.

As a result, the present PAF air operations have been primarily geared for counterinsurgency (COIN) warfare. Because the lethal air power of the PAF for external defence operations (EDO) has been grossly lacking, there has been an imbalance of support that favoured the ISO. The planned PAF modernisation is anticipated to reverse the deficiency of air power so it can meet both the internal and external security needs of the PAF. Foregoing considered, there is a need to update the PAF Basic Doctrine so that it can be responsive and proactive to the range of evolving security situations. The update should still consider the diversity of roles the PAF may have to perform, and as such, there may be a need to compromise on the degree of capability required to maintain the suitable balance needed for a credible air force.

SYNOPSIS OF CHAPTERS

Chapter One will discuss the concepts involved in the pursuit of national interests with the intent to present the current Philippine setting in the context of relevant security and defence. Chapter Two will present the developments in modern warfare—how technology has influenced the conduct of warfare, and how the intensity of information on military platforms as a result of rapid innovations in technology has modified the characteristics of warfare. Chapter Three will discuss the present PAF concepts and doctrines on capabilities and employment. Chapter Four will attempt to discuss the relevance of the present PAF concept and doctrines to the current Philippine setting vis-a-vis the regional threat scenario and the requirements in modern warfare. Chapter Five will state the conclusions of this paper.

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5 From 1995 onwards, there were intrusions from neighbouring naval and air forces. The policy of diplomacy did not seem to deter any further intrusions.
6 Adapted from former PAF CG Lieutenant General William K. Hotchkiss III, as quoted in PAF Flight to the Future, Pasay City, Philippines, June 1997, p. 115.
Chapter One

Philippine Strategic Context

While it is true that the Constitution does renounce war as an instrument of national policy, it is also clear that it is our responsibility in the Armed Forces of the Philippines to defend our national territory.¹

Orlando S. Mercado

THE MILITARY AS AN INSTRUMENT OF NATIONAL POWER

The military can never be divorced as an instrument of national power. The military is organised to serve the government and the people in a manner that requires adherence to the duly constituted authority. The military, which is composed of the Armed Forces of the Philippines and the Department of National Defence, provides advice to the Government on military strategic concepts, force structures, weapon systems, capability requirements among others.² To fully understand how the military becomes an instrument of national power first we must understand what are the national guidelines and the military guidelines.

National Guidelines

The national guidelines govern every spectrum of leadership in the country. National interest is considered by the government as most important to the existence of the nation; it refers to the general and continuing end for which the nation exists and is the basis for national strategy. Our basic national interests are to promote the general welfare of our citizens, conserve and develop the patrimony of our nation, and secure for ourselves and our posterity the blessings of democracy under a regime of justice, peace, liberty and equality.³ National objectives should ensure the protection of national interests; national objectives have a profound influence on the nature of national strategy. These objectives are fundamental to supporting our national interest toward which national policies are directed and the nation’s resources are applied. National polices are implemented through the use of the instruments of national power: economic, political, psychosocial, technological, and military,⁴ as shown in Figure 1-1. Formulating a national

¹ Philippine Secretary Orlando S Mercado, ‘The Roles and Functions of the Armed Forces’, Policy Directions for Defense, DND, Quezon City, November 1998.
² PAF Air Power Manual (Draft), p. 8
³ PAFM 0-1, p. 2-1.
⁴ Ibid., p. 2-2.
security strategy will protect the nation’s interests. This strategy must be global in approach, even as a nation is faced with domestic pressures. As President Joseph Estrada said,

For these can flourish and find the expression, only if we enjoy socio-political stability, cultural cohesiveness, moral consensus, economic solidarity, and ecological balance, at home and with our partners in the world.

![Diagram](image)

**Figure 1-1: Government Elements of National Power**

**Military Guidelines and Military Roles**

Military guidelines rule every aspect of the armed forces during the conduct of legal military actions. The military should never be intimidated to take sides that would endanger the nation’s security and peace. If tasked to perform other than their traditional military roles, these tasks should be well defined and resourced. The military is a professional organisation and must be trained for legitimate and approved roles. Poorly or ill-defined roles can be controversial and subsequently open new opportunities for exploitation. The military should maintain institutional boundaries so that its function is basically mandated by the government which may include support to nation-building other than defence and security, while the civilian authority governs society that includes the military component. Every aspect of the military is responsible to the civilian authority to uphold the constitution, respect civilian sovereignty, support the government in nation-building and defend the Philippines against all enemies. Generally, the military diversifies its roles in order to guarantee significant contributions to accomplish the national objectives in harmony with the other instruments of national power. The direction of these roles should be towards a common direction (i.e. to be a potent and credible joint military organisation that will serve and protect the nation). These military roles are shown in Figure 1-1.

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6 Philippine President Joseph Estrada, Speech before the 31st ASEAN Ministerial Meeting, Manila, 24 July 1998.
8 Ibid., p. 54.
MILITARY ROLES

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<tr>
<th>TRADITIONAL</th>
<th>NON-TRADITIONAL</th>
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<td>External defence operations</td>
<td>Support to national development programs</td>
</tr>
<tr>
<td>Internal security operations</td>
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Table 1-1: Military Roles

These military roles find application during peace, crisis and war. While traditional military roles are focused on the employment of military power through the AFP operational capabilities, the non-traditional military roles are hinged on nation-building or internal development activities that involve military support to the national development programs.

Internal development activities include environment protection, infrastructure support, transport of civilian passengers and cargo when civil utilities are incapable, assistance to law enforcement and others are the non-traditional military roles which are focused primarily in supporting civilian agencies. Generally, these non-traditional roles have diplomatic and political connotations because the military, as a legitimate partner in nation-building, should exercise diplomacy through restraint and perseverance in undertaking activities other than fighting conflicts or wars. These roles should never compete with the efforts of other government agencies nor duplicate their efforts. The military must be always mutually interactive with the community and its populace. However, care must be exercised in the use of the military because non-traditional roles are tasks that only aid the other instruments of national power and as such the military should never deviate from its basic mission.

On the other hand, traditional military roles refer generally to the military’s warfighting capabilities. As the government component which applies military power, the AFP must be able to deter attacks against the Philippines and its territories, counter actions that threaten the security of the state and, if deterrence fails, conduct military operations at the level of intensity and duration necessary to achieve the national objectives. The traditional military roles are constituted in the different levels of warfare.

THE LEVELS OF WARFARE\(^9\)

In the implementation of the military guidelines planning for a good strategy involves the knowledge of the different responsibilities at the different levels of warfare. The PAF has to know the doctrines involved in the different levels of warfare so that there will be a good basis as to the level of responsibility in the preparation and employment of forces. Warfare cannot be left to the generals alone. It is a concerted effort of national magnitude that requires the synthesis of careful planning, harmonious cooperation and appropriate coordination from the highest policy-makers to the least ranking military implementors. The doctrines involved in the levels of

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\(^{10}\) Definitions were adapted and quoted from the \textit{British Air Power Doctrine AP 3000 Third Edition}, Ministry of Defence, 1999, p. 1.1.2.
warfare are interrelated. They are not mutually exclusive or inflexible in their level of application. Each level of warfare has decreasing levels of responsibility and they are broken down into four categories, as shown in Figure 1-2.

THE LEVELS OF WAR

[Diagram of levels of war: NATIONAL STRATEGIC, MILITARY STRATEGIC, OPERATIONAL, TACTICAL]

Figure 1-2: The Levels of War

Grand Strategic or National Strategic Level of Warfare

The grand strategic or national strategic level of warfare emanates from the national government represented by the spectrum of the national leadership and top military officials to formulate the conceptual plan using its political, economic, social, and military powers to secure national objectives. It involves the application of national resources. The grand or national strategy governs whether a nation should go to war and suffer the consequences, who will be the allies and enemies, or whether to maintain a nation of peace.

Military Strategic Level of Warfare

The military strategic level of warfare involves the top echelons of the military hierarchy from the Chief of Staff down to the Major Service Commanders. Military strategy prescribes the principles governing the application of military power and military resources to help achieve the grand or national objectives. It concerns the overall conduct of war and the approximate forces that will be made available. This level decides which forces will be made available to the operational level commander.

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14 Ibid., p. 4.
Operational Level of Warfare

Although the operational level of warfare may involve Major Service Commanders, the Chief of Staff is not totally divorced from giving inputs consonant with military preparedness. The operational level of warfare is concerned with the direction of military resources to achieve military strategic objectives. In this level, campaigns and major operations are planned, directed and sequenced. The Commander at this level links the military strategy to the tactical employment of forces through the campaign plan. At this level land, naval, and air forces are used for operational campaigns.

Tactical Level of Warfare

The tactical level of warfare involves the direction of military resources to achieve the operational objectives. It is at this level at which engagements are planned, forces are deployed and battles are fought. The objectives at this level are clearly defined (eg. taking a specific hill, sinking the adversary’s destroyer, or engaging the opposing fighter).

SECURITY ENVIRONMENT

The world is fraught with uncertainty and opportunity. The security environment today is as uncertain and unpredictable as ever. No nation is spared from a certain amount of external or internal threat. Even the world’s superpowers or the least of any third world country is not safe from any type of threat. It is in this light that the nation is compelled to project a security scan of its threat environment. Therefore, it is highly imperative for the nation’s armed forces to know the security environment in which it is going to operate so that there would be valid basis for mapping a war plan that would assure success. The AFP must be highly capable to grasp the initiative against the threatening reality in any environment so that it will be able to plan and structure the development of its forces.

Core Concerns

On the internal fronts, threats from the communist insurgents and the southern secessionist movements remain because their numbers have regenerated. Although the government has restored the democratic process and initiated peace initiatives, the vacillating economy has given impetus to a renewed and distorted idealism for the communists and the secessionists.

16 Warden, p. 3.
On the external front, the occupation of the Spratlys by regional countries is the immediate concern as it may lead to an armed conflict with the other claimant states. China remains as the most aggressive in the area with its recent occupation and subsequent construction of buildings on Mischief Reef. Vietnam and Malaysia have improved its facilities in its occupied areas. External aggression among claimant countries in the South China seas remains a threat and it cannot be discounted. Territorial disputes among claimant countries, enkindled by strong nationalistic sentiments, can lead to political misunderstanding and even military confrontation if not managed well. Likewise, the incidence of intrusion for illegal fishing in the Philippine EEZ needs immediate attention to protect the nation’s marine resources.

Intermediate Concerns

Although the Philippines has reasonably recovered from the 1997 Asian financial crisis and the economy remains relatively stable despite impact of the current restructuring scheme, the threat of another crisis berates the political leadership. 1998 was regarded to be the worst year for the regional economy in recent times. Even globally strong countries have become targets of speculators trying to make quick profits. The slow recovery of heavily affected and poor countries had caused belt-tightening measures which have contributed to economic disparities within the region.

The Philippines is not invulnerable to calamities and disasters. As a tropical country, it is frequently visited by typhoons; an average of about 19 annually. Global meteorological phenomena, such as the El Niño and La Niña, can adversely affect the country by disrupting agricultural production, damaging commercial infrastructures, displacing communities and many more. The Philippines has also quite a number of active volcanoes which if an eruption occurs may cause disastrous damage.

Peripheral Concerns

Transnational crimes are acknowledged as inimical to national security. Drug trafficking remains an international menace and is being addressed. International terrorism knows no boundaries and may be active sporadically. Uncertainties may be perceived with the availability of weapons of mass destruction from countries which can afford it. Other Asian security concerns include the threat caused by China-Taiwan estranged relations, the North-South Korean conflict, the India-Pakistan conflict, and unrest in the Indonesian territories and the series of coup d’état in the South Pacific. The Philippine government needs to address all the foregoing concerns by having an agreed military strategy that is based on the defence thrusts.

18 Ibid.
THE DEFENCE THRUSTS

After having identified the securing concerns the defence thrusts need to be expounded to have a better appreciation of the nation’s military strategy. The defence thrusts are the priority directions which the national government strives for and will focus its efforts on. The six defence thrusts are designed to make the AFP pro-people, indeed an Armed Forces that, true to democratic ideals, is by the people, of the people and for the people. These defence thrusts will serve as strategic guidance for strategic and operational planning of the military establishment.

Resolution of the Internal Security Problem

The AFP will conduct military operations as necessary to protect and defend the communities and the people from harm and violence, and as bounded by government obligations to various peace agreements with domestic dissidents. While the government works for the uplift of economic, political and social conditions through the peace process, the government will address with appropriate measures other terrorist and criminal activities in coordination with law enforcement agencies.

Contribution to Regional Peace and Stability

As a responsible member of the community of nations, the Philippines makes tangible contributions to the effort of preserving and promoting regional peace and stability. Since national security and sustainable development are greatly enhanced by a stable external environment, the military establishment will actively support political and diplomatic initiatives with regard to participation in confidence-building measures (CBM), security and defence dialogues, international peacekeeping operations (PKO) and foreign humanitarian missions.

Rebuilding the AFP into a Modern and Professional Force

In a highly dynamic and fluid security environment, the Philippines is always prepared to protect and defend the people and to advance our national interests. The AFP must have the capability to address a variety of security contingencies. Force preparedness can only be ensured if the AFP is continually into a modern and professional force—ie. by upgrading force capabilities, not only in weapons, equipment, organisation, bases, and doctrine but also in the aspect of professionalism among AFP personnel.

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19 This section was adapted and quoted from Philippine Secretary Orlando S Mercado.
Greater Participation in Nation-Building

Greater participation in nation-building significantly enhances the relevance of the AFP to the society and the populace. It is vital that the AFP supports the national development programs because it enhances the well-being of the populace to trust the government’s actions.

Effective Response to Crisis Situations

The absence of conventional warfare creates a role for the AFP in responding to crisis situations for it is the only organisation with the personnel, equipment and structure that can effectively deal with crisis situations like counter-insurgency operations, disaster relief operations, anti-terrorist and anti-hijacking, support to United Nations (UN) PKO.

Efficient Defence Resource Management

As the AFP moves towards the 21st century, defence concerns and responsibilities are increasing and expanding while resources are diminishing. The military is working out the ways to get the most return from the meagre resources.

THE MILITARY STRATEGIC PROCESS

The military strategic process is based on the defence thrusts that will enable the military to be responsive and proactive in a spectrum of deployment that covers periods of peace, crisis, and war. For common understanding we need to define what is military strategy. A study of several definitions reveal that strategy in general has three main elements: ends, ways and means. Military strategy consists of military elements, those which concern the armed forces only. The elements of a military strategy are military objectives, military strategic concepts and military resources. These elements must be present in a military strategy since objectives cannot be achieved if there are no concepts on how to achieve them, and concepts cannot be executed if there are no resources available.

Figure 1-3, as shown, sets apart the framework of the military strategic process. With the security environment as a backdrop, the identification of ends, ways and means was done. Ends include the military objectives that can be identified in the mission of the AFP. The next step involves identifying the key strategic concepts necessary to address the threats, attain the objectives and accomplish the missions. This then led to the identification of capabilities needed to implement the strategies.

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Militar}y strategy describes the principles governing the application of military power, and provides guidance for the development of military power from where program costs and cost levels are drawn. The development of military strategy is a continuous process involving the alignment of military objectives, methods and means with national objectives. The development of military strategy results in advice to government, contingency plans, strategic concepts, amendments to rules of engagement, and capability development considerations to name a few.

**Ends/Military Objectives**

The military objectives are embodied in the mission of the AFP 'to protect the people and secure the sovereignty of the State and the integrity of the national territory'. The AFP mission generally encompasses the military as the protector of the people by emphatically upholding the constitution and ensuring the civilian governance of democracy. As the nation’s vanguard for defence, the military should zealously defend the national territory against external aggression or external support to internal insurrection. Attendant to this, the military should protect the national border areas by enforcing the protection of the 200-mile exclusive economic zone (EEZ); and preserving the nation’s natural resources and environment. As the people’s partner in nation building, the military should actively support and protect the national aims, goals, policies and interests. Honouring international security commitments, supporting surface forces in internal security operations and the Philippine National Police (PNP) in law enforcement, and responding to disasters and calamities are also integrated in the AFP functions.

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21 Adapted from a presentation by the Office of the Deputy Chief of Staff for Plans, J-5, AFP, GHQ, Quezon City, April 2000.
22 PAFM 0-1, p. 2-3.
Ways/Military Strategic Concepts

Military strategy must be attuned to the current level of military capability. The current capabilities of the AFP should address its military strategic concepts which can be applied during peace, crisis, and war. In peacetime the military will defend the nation against all external and internal threats by adapting the concept of passive defence-in-depth. As shown in Figure 1-4, this type of defence is the layered defence, which is the combination of credible military capabilities that will deter aggression. This will also allow the military to simultaneously perform its mandated internal peacetime roles while performing a passive external defence. The outermost layer would allow strategic sensing that transcends physical boundaries. Strategic sensing activities will include superior maritime surveillance, robust land-base radar monitoring, coordinated intelligence employing electronic warfare and other methods. The next layer calls for air and maritime defence in the nation’s defined air-sea gaps through the employment air and maritime forces. Followed by the next layer of flexible land defence by ground forces in the conventional and unconventional modes of warfare. The innermost layer is the integrated command and control system that orchestrates the accomplishment of military objectives at various levels of operational commands. The deployment of military forces would be strategically located across the whole archipelago in preparation for any escalation of military actions against threat forces or due to any situation arising from a crisis.

Adapted from the paper prepared by the Office of Special Studies, PAF, HPAF, January 1999.
Activities during minor crisis situation may involve counter-insurgency operations, disaster relief operations, anti-terrorist and anti-hijacking, support to United Nations peacekeeping operations to name a few. These crisis situations may happen during peacetime. But if a serious crisis situation exists when the threat of conflict from an external aggressor is highly imminent due to the insistent penetration and violation of our nation's territorial sovereignty, the concept of active defence should be vigorously pursued. Since military forces have been strategically deployed the transition from a passive counter offence to an active counter offence will be rapid. The transition to war should be in an orderly manner. The layered defence will be in an active mode by employing offensive military actions against aggressors. The critical situation due to external aggression demands that the military actively participate since the majority of military forces are already deployed in the critical area. When all efforts have been exhausted through all diplomatic channels and conflict starts, coordinated joint operations will govern all military actions. All threat forces will be engaged by counterattacking and interdicting them as far as possible from our national territory.

In case of war the concept of total defence is adapted. Total defence does not involve the military only but the entire population because the territorial integrity and the survival of its people are threatened. Commerce and industry, plus private and public wherewithal, which have all been placed under the government's total war effort should sustain the disposition of military forces in the national territory.

Ways/Military Policies

In the pursuit of military strategic concepts, the AFP should adhere to the following military policies:

1. A military readiness posture which can be maintained continuously to deter external aggression, defeat internal insurrection, support nation building and provide the rapid response of military forces should war be unavoidable;

2. In the development of military arms, the air, naval and ground forces will be geared to attain a joint defence capability against external and internal threats; and

3. A continuing effort to restructure the AFP functionally and organisationally on the basis of changing situations that will not be constrained by traditional service interests.

Means/Military Resources

Military resources are essential to operationally apply the strategic concepts and the eventual accomplishment of military objectives. Military resources are the materiel, men, and money in the military inventory, as well as the capability requirements indispensable to a military force. These resources should be kept in full mission capable status to assure ready forces during peacetime, crisis, and wartime. For

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25 Adapted from the PAFM 0-1, p. 2-4.
26 Adapted from Captain Jarque, p. 52.
the PAF, the majority of current aircraft and supporting systems are considered obsolete and insufficient to meet the expected near-term tasks. To this end a program of retrofitting, upgrading and supplementation will be required. For the longer term a more comprehensive program of modernisation will be required if the PAF is going to contend with the future internal and external threats. Appropriately skilled military personnel, as the most important component of the military, should operate all equipment in a joint concept. These skills should maintain the essential military capabilities. Committed or ongoing fiscal support and proper management of available funds is essential to sustain a credible military force.

SUMMARY

The strategic environment is ever changing, thus the government and its instruments of national power have to be adaptable to such changes. New strategies have to be formulated to bring about a balance among the nation’s needs. Foremost among these needs are security and defence, which is the fundamental responsibility of the military. Service to the government, protection of its people, securing the national territory, and defending the nation against all its enemies emphatically outline the military responsibility. As the responsible component of the government to effect military powers, the military should be responsive and proactive to all factors that will be affecting the strategic environment. Non-traditional roles should never compete with the efforts of other government agencies nor duplicate their efforts. Traditional military roles should seek the enhancement of the military’s warfighting capabilities. Technology will greatly influence the enhancement of a responsive and proactive military force. Air power is a product of technology, thus advances in technology will inevitably affect the development of air power. The PAF as the technology-based military force is responsible for the employment of air power. The infusion of modern technology to the PAF will reconstitute a credible force highly capable to meet both external and internal threats.
Chapter Two

Developments In Modern Warfare

*The introduction of air power did not change the nature of war, but it did change the way in which war is conducted.*

US Air Force

THE INFLUENCE OF TECHNOLOGY

The world has come a long way in fighting its wars. Technology has had its share in the development of the world’s potent weapons. It all started with a simple rock as a projectile. The introduction of metal led to helmets, shields and armour for protection. Slings, spears, bows and arrows were later used as offensive weapons. Land and naval forces were developed to employ these weapons. With the invention of gunpowder, weapons became more lethal. The ballistics of heavier projectiles gave destruction much greater effect. The exploitation of air as a medium to discharge weapons plus the latent application of nuclear power became omnipotently lethal. The use of chemical and biological means also contributed to the aggregate destructive potential of weapons. Despite the lethality of weapons, the non-lethal aspects of weapons have been explored to subjugate adversaries. Coincident with the development of weapons was the reinforcement of intelligence, strategies, logistics, and operations. The progress of technology has resulted in tremendous advances and breakthroughs in the concept of weapons development and fighting wars.

Land, naval and air forces have been the beneficiaries of military technology advancements. Initially, the brute and mechanised strength of the army projected the concept that land could be conquered by nations so that empires could be created. Complemented by the tremendous firepower from battleships of the navy, the vast open seas were used as a medium by which empires could be stretched across continents. The projection of military power from the air through speed and mobility of the aircraft proved that nations and empires could be devastated. The application of technology provided unprecedented development of new weapons for air power. The introduction of air power modified the methods on how wars were fought.

MODIFIED FORMS OF WARFARE

Technology, combined with the creative genius of military thinkers around the world, is leading to the development and application of new forms of warfare, and the innovative modification of traditional military practices. Modern war will be certainly be different from history’s wars. The world is currently experiencing what may be the most revolutionary period in all human existence. The pace of change is accelerating and shows no sign of slowing down. Attrition warfare belongs to another age, and the days when wars could be won by sheer bravery, brute force and pure grit are gone. Victory will go to those who capitalise on every tool available and apply these tools to new forms of warfare.

Information Warfare

Information about the enemy is intrinsic to war. This information can take many forms and may include force dispositions, structures, organisations and capabilities. Whoever has information may have the power to degrade the enemy’s war fighting capability. Information warfare is about the way humans think and more importantly, the way humans make decisions. This kind of warfare is directed to the enemy’s information systems or communication nets, which are information-intensified platforms. From the strategic perspective, information warfare is the use of information to achieve the nation’s national objectives. From the operational perspective it refers primarily to the ‘command and control warfare’ or ‘battlefield information warfare’ which means the actions to deny, exploit, corrupt and destroy the enemy’s information systems while actively defending one’s own systems. Military operations in command and control warfare will employ all measures for operations security, military deception, psychological operations, electronic warfare, and targeting, which are actually the five pillars of command and control warfare as shown in Figure 2-1. Information warfare includes engaging in an active offence of information suppression and attack, as well as the reactive defence of information counter-reconnaissance, resistance to interference and defence against destruction.

Advances in technology have loaded platforms with an array of information systems. These information-intensified or smart platforms have become targets for adversaries. Different information weapons can be employed against these smart platforms.

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2 The forms of warfare and their succeeding definitions as presented have been adapted and quoted from Lieutenant General Patrick M. Hughes, Global Threats and Challenges: The Decades Ahead, Washington DC, January 1998.
3 Adapted from Colonel John A. Warden III USAF, Air Theory for the Twenty-First Century.
7 Adapted from Lieutenant Colonel Norman Hutcherson USAF, Command and Control Warfare: Putting Another Tool in the War-Fighter’s Data Base, Air University Air Power Research Institute, September 1994.
<table>
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<tr>
<th>Psychological Operations</th>
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<td>- Distract enemy</td>
<td>- Protect friendly command and control system</td>
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<tr>
<td>- Decrease morale of troops</td>
<td>- Disrupt enemy decision-making</td>
<td></td>
<td>- Deny, Deceive, Disrupt, Protect</td>
<td>- Hard kill</td>
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<td>- Disrupt enemy decision-making process</td>
<td></td>
<td></td>
<td>- Dominate electromagnetic spectrum</td>
<td>- Soft kill</td>
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Figure 2-1 The Five Pillars Of Command and Control Warfare

**Information Warfare Weapons**

There are several information weapons that are currently available or potential that can destroy or disrupt information operations systems. These weapons can target the computer programs or software and the computers’ physical components or hardware.

*Computer Viruses* - A computer virus is a code or coded fragment that copies itself into a larger program, modifying that program. A virus executes itself only when its host program begins to run. The virus then replaces itself, infecting other program as it reproduces.

*Worms* - A worm is an independent program. It reproduces by copying itself in full-blown fashion from one computer to another, usually over a network. Unlike a virus it usually does not modify other programs.

*Trojan Horses* - A Trojan horse is a coded fragment that hides a program and performs a disguised function. Its is a popular mechanism for disguising a virus or a worm.

*Logic Bombs* - A logic bomb is a type of Trojan Horse, use to release a virus, a worm or some other system attack. It is either an independent program or a piece of code that has been planted by a system developer or programmer.

*Trap Doors* - A trap door or a back door, is a mechanism that is built into a system by its designer. The function of a trap door is to give the designer a way to sneak back into the system, circumventing normal system protection.

*Chipping* - Just as a software can contain unexpected functions, it is also possible to implement similar functions in hardware. Today’s chips contain millions of integrated circuits that can easily be configured by the manufacturer so that they also contain

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8 Examples of Available (or Possible) IW Weapons, http://angle.seas.gwu.edu/~reto/infowar/examp1.htm.
some unexpected functions. They could be built so that they fail after a certain time, blow up after they receive a signal on a specific frequency, or send radio signals that allow identification of their exact location, to name some possible scenarios.

*Nano Machines and Microbes* - Nano machines and microbes provide the possibility to cause serious harm to a system. Unlike viruses, these can be used to attack not just the software but also the hardware of the computer system. Nano machines are tiny robots (maybe smaller than ants) that could be spread at an information centre of the adversary. They are so small that they enter the computer through slots and subsequently destroy electronic circuits.

*Electronic Jamming* - Electronic jamming is used to block communication channels so that they cannot receive any information. The next step is not to block traffic, but instead overwhelm the system with incorrect information. Comprehensive intelligence coordination from signal (SIGINT), communication (COMINT), and electronics through radar transmissions (ELINT) are vital factors for the success electronic jamming.

*HERF Guns* - HERF stands for High Energy Radio Frequency. HERF guns are able to shoot a high power radio signal at an electronic target and put it out of operation. The damage can be moderate (eg. that a system shuts down, but can be restarted) or severe (eg. the system hardware has been physically damaged). Electronic circuits are more vulnerable to overload that most people would suspect. HERF guns are radio transmitters that send a concentrated radio signal to the target. The target can be a mainframe in a business building, the entire network in the building, and moving military platforms with electronic equipment. Current HERF guns are limited in range and destructive capacity, but these limitations are expected to be overcome with technology’s current rapid development.⁹

*EMP Bombs* - EMP stand for electromagnetic pulse. The source can be nuclear or non-nuclear detonation. EMP bombs can be used by special forces teams to infiltrate the enemy and detonate a device near their electronic devices. It destroys the electronics of all computer and communication systems in a quite large area. EMP bombs can be smaller than a HERF gun yet cause a similar amount of damage. They are typically used to damage not just a single target but to damage all the equipment near the bomb. The current limitations of these weapons is their power generation and capacitor storage capability, which can also be overcome in the future.¹⁰

*Forms of Information Warfare*

Information warfare has different forms and they keep on evolving due to the advances in technology. These different forms of information warfare are directed against both military and civilian information operations systems. Because of the speed of information, which can go beyond physical distance, information warriors are not only computer hackers but also international or domestic terrorists, individual

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¹⁰ Ibid.
or organised criminal elements, disgruntled individuals, enterprising groups, and public or private operations insiders.

**Cybernetic Warfare** - Cybernetic warfare is a distinct form of information warfare involving operations to disrupt, deny, corrupt, or destroy information resident in computers and computer networks. This form of information warfare may also be termed as computer virus warfare. Cybernetic warfare will have greater significance in the future as advances in technology will make new offensive means. Because of the infinite space of cybernetics, cybernetic warfare defies traditional rules of time and distance, speed and tempo, and the conventional or traditional military capabilities of the opposing elements.

**Public Relations Warfare** – Public relations warfare utilises psychological operations. This type of warfare is potentially a more effective form of information warfare in the military context. It is an enemy’s manipulation of the mass media to influence the nation’s public opinion, thereby restricting the government’s ability to employ effective military actions. A clever adversary may profit from the media publicity from any domestic or international media outfit to weaken the government resolve for military action. If not properly checked mass media will be an important tool to vent grievances, publicise destruction due to conflicts or wars, and show horrifying war images to arouse public sentiments against the government’s military action.

**Precision Warfare** - Precision warfare means precision in reconnaissance (spying) and advance warning, in information transmission, in command and control, in mobile positioning, in target strikes, and in damage extent. Precision warfare is characterised by less collateral damage destruction and fewer military casualties, less ‘combat fog’ and fewer troops, less logistics support, better troop mobility, and greater surprise.

**Stealth Warfare** - Stealth warfare refers to the employment of radar invisible technology to seize the advantage against an adversary and by detecting radar invisible weapon systems to protect one’s own forces. Stealth aircraft, ships, tanks, and missiles will be information-intensified platforms that will abound in future battlefields. In future wars target detection will mean immediate and future warfare will involve information confrontations between the ‘stealthy’ and the ‘detectors.’ Stealth and counter stealth warfare will be conducted very intensely.

**Transnational Infrastructure Warfare**

Transnational infrastructure warfare involves attacking a nation’s key industries and utilities – telecommunications, energy and power, transportation, governmental operations and services, emergency services, financial, manufacturing, to name just some examples. These industries have key linkages and

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14 Adapted from Senior Colonel Wang Baucon and Li Fei, ‘Information Warfare’.
15 Ibid.
interdependencies, which could significantly increase the impact of an attack on a single component. This type of warfare targets the civilian or commercial centres of gravity, which are fundamental to the nation’s economy and its national objectives. Threats to critical infrastructure include those from nation-states, state sponsored national groups, international and domestic terrorists, criminal elements, computer hackers, and government or agency insiders.

Asymmetric Warfare

Asymmetric warfare is attacking an adversary’s weaknesses with unexpected or innovative means while avoiding his strengths. Asymmetric warfare has been described as a war between two sides with dissimilar goals or using new technology to defeat the superior with the inferior.\(^{16}\) Though this form of warfare is as old as warfare itself, more modern forms of asymmetric attack aimed at both military and civilian targets are probably now more potent using asymmetric arsenals which are high-tech and low-tech countermeasures against superior and advanced weapon systems, information warfare, cyber-terrorism, guerilla operations, and the use of weapons of mass destruction. Military targets are military weaknesses that may include structured employment of overwhelming offensive capabilities, complex or even a poor strategic culture, negligent information security, absence of defence monitoring facilities, and deficiency in military training to name a few. Civilian targets may include key industries and utilities that are not appropriately secured, urban populace, infrastructures and others. Threats will range from nation-states to criminal elements and from terrorist groups to individuals with a firm resolve for hostility. Fighting asymmetric warfare requires an information system that can rapidly link with intelligence and subsequently respond to the shifting events.

Asynchronous Warfare

Asynchronous warfare involves a preselected or delayed (timed) attacked on an adversary taking advantage of the passage of time to develop a strategic opportunity or exploit a future vulnerability. In a preselected situation, the operation has a latent effect on the enemy. Military forces, to include personnel and equipment, are strategically placed well before — sometimes years before — the actual confrontation. In a delayed attacked — often carried out as an act of retaliation months before or even years later — the operation is conducted after the opponent has lowered his defences. This kind of warfare is symptomatic to asymmetric warfare where the enemy targets the ‘chronological disadvantage’ of a superior force in deployment. Information-intensified platforms will also be targeted so that information systems will malfunction at a certain time.

TECHNOLOGY CHANGES FOR MODERN AIR WEAPONS

Modern warfare is not just the confrontation of modern weapons in the battlefield, but also the confrontation of the technology behind these weapons. Due to the high density of technology present in the modern battlefield, changes in the lethality, speed, precision, manoeuvrability and reach of modern air weapons are highly evident. The unparalleled pace of technology is again changing the ways of conducting warfare. The proliferation of advance technology applies to all air forces. Whether it may be a big or small air force, modern weapons will influence the employment of air force capabilities. While big air forces have the advantage of quantity and quality of high-tech platforms and systems, small air forces should carefully identify essential capability requirements so that quality of air power employment will be systematically accomplished.

Precision Guided Munitions

Precision guided munitions (PGMs) are weapons guided by infrared sensors or by laser designators or global positioning system (GPS) that can be lethal to the nearest metre and, when used, will reduce the number of sorties needed to destroy a target or set of targets. These types of weapons can be launched from various platforms such as land vehicles, aircraft, ships, submarines and even individual soldiers on the ground. Modern precision weapons combine the attributes of accuracy, range, striking power, and portability, and it is that combination that makes it a powerful force multiplier in today’s military scene. Precision munitions are deep-strike and stand-off munitions because they can be launched out of range from enemy defences and strike the deep position of the enemy.

Unmanned Air Vehicles

Unmanned air vehicles (UAVs) are aerial vehicles, which can be expendable or recoverable, without an on-board human operator that uses aerodynamic forces to support its flight in a desired non-ballistic path under autonomous or remote control to carry lethal or non-lethal payloads. UAVs are platforms with brilliant sensors capable of target acquisition, day/night surveillance, electronic warfare (EW), weather reconnaissance, and rapid battlefield damage assessment (BDA). The components of a UAV include the airframe, propulsion system, control system, launch and recovery system, guidance system, mission support system, payload, data link and data storage system, self-protection system, and operating personnel. There are two distinct groups of UAV based on the control system: the remotely piloted vehicle (RPV) and the autonomous UAV. The RPV follows the data link from a remote station and the autonomous UAV is usually programmed to accomplish a specific mission.

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17 The technology changes for modern weapons and their definitions as presented have been quoted from Lieutenant General Hughes, Global Threats and Challenges: The Decades Ahead.
Nanotechnology

Nanotechnology relates to ‘microscale electromechanical systems’. This system refers to controllable and movable microscale electromechanical apparatuses that have exterior dimensions of less than a millimetre and the components of which have dimensions that are in the micron or nanometre range. The system may include packaging advance capabilities and functions in very small and lightweight form using micro and sub-micro manufacturing and machining technology (in particular building weapons, that are smaller, faster, lighter, and yet more destructive). The components of a microscale electromechanical system include sensor system, information-processing and auto-navigation system, manoeuvring system, communication system, destruction system, and drive generators.¹⁹

Non-lethal Weapons

Non-lethal weapons are discriminative weapons that are explicitly designed and employed so as to incapacitate personnel or materiel, while minimising fatalities and undesired damage to property and the environment.²⁰ Such weapons are employed when the use of lethal weapons are not desired. The non-lethality of weapons depends on the intention of the designer who produces the weapons, the trainer who trains people on how to use the weapons, and finally the person who uses the weapons.²¹ However, some proposed non-lethal weapons are not authorised under the international law governing weapons. Additionally, some non-lethal weapons are not truly non-lethal in all employment scenarios.²²

Biotechnology

Biotechnology refers to the ‘bioengineering’ of organisms created for very specific purposes (eg. biological agents that will infect and incapacitate a specific group of people). It may be inferred that biotechnology is a development in biological warfare, which is the intentional use of micro-organisms, and toxins, generally, of microbial, plant or animal origin to produce disease and/or death in humans, livestock and crops. Biological warfare is often confused with chemical warfare because of the agents used.²³ Biological agents are many times deadlier, pound-for-pound than chemical agents.²⁴

EMPLOYMENT CONCEPTS OF AIR POWER\textsuperscript{25}

In the multipolar international framework of the 21st century, a focus of national attention will be on how to cope with local wars and regional crises. In multilevel military operations, in peacetime or in times of neither-war-nor-peace, air power will play a more important role. The employment concepts of air power will become more diversified.

Air Deterrence

In the 21st century, air deterrence will become the first-choice mode of employing air power. High-tech conventional deterrence is a new mode of deterrence developed after nuclear deterrence. High-tech warfare requires deterrence strength capable not only of manoeuvring rapidly in vast battle space, but also moving about freely and quickly within hostile borders. Air deterrence has three advantages:

(1) Air deterrence is highly effective for a fixed period with wide coverage. Modern air forces are capable of carrying out intercontinental missions with great speeds and can cover targets in any part of the world.

(2) There is low political risk. Modern air forces can strike targets with pinpoint accuracy. The employment of precision munitions assures target destruction and lesser or zero collateral damage, thus precluding unfavourable political repercussions.

(3) Air deterrence can operate under a range of conditions. It can function both separately or jointly with the army and navy and in conventional or nuclear conditions.

No-Fly Zones

A ‘no-fly’ zone is forbidden airspace set up in a conflict area, using air power as its main force. In the ‘no-fly’ zone, none of the enemy’s air action is permitted, nor can any opponent install ground-to-air weapons that may threaten one’s own air actions. The coalition forces of US, Britain, France set-up a ‘no-fly’ zone in Iraq to protect the Kurds, and the UN Security Council passed a resolution to set up a ‘no-fly’ zone in Bosnia-Herzegovina.

Limited Air Strikes for Peacekeeping

In accordance with international agreements and at the requests of peacekeeping forces, limited air strikes may be carried out by authorised countries or a group of countries against military targets that violate relevant rules. UN Resolution 958 authorised NATO’s air forces to bomb Udbey airport in Bosnia-Herzegovina, which was controlled by Serbs. Serbian military targets, such as

\textsuperscript{25} This section was entirely quoted from Col Ming Zengfu, 21st Century Air Warfare, ‘New Changes in Air Defence Operations’, Chinese Military Science, Spring 1995.
missile sites and tank formations were attacked by air. These limited air strikes are characterised by the following:

(1) Limited air strikes for peacekeeping is in accordance with the UN resolution.

(2) Limited air strikes for peacekeeping is small scale because it is restricted to attacking military targets directly threatening peacekeeping missions.

(3) Limited air strikes for peacekeeping is restrained by political and diplomatic actions, hence it is strictly controlled.

**Air Blockades at Sea**

The sea-air blockade is one of the basic modes for the application of air power. It is a military action blockading a certain section of the sea, certain coastal area, or a certain country by way of aerial mining in order to blockade seaports and sea-lanes as well as attack targets trying to break the blockade. Having a coordinated aerial blockade invariably effects naval blockades. The naval blockades against Japan in World War II and against important ports of northern Vietnam during the Vietnam War were enforced mainly by aerial blockade. In air battles in the 21st century, air blockades will still be important. The characteristics of air blockades are the following:

(1) Sea blockade and air blockades are inseparable.

(2) Air blockade’s role will increase further.

(3) Struggles between the blockaders and anti-blockaders will be more complex.

**Strategic Airlift**

Strategic airlift is a large-scale operation to transport troops and equipment by air to the conflict regions. With the innovations in air transport, strategic airlift has demonstrated some incomparable advantages that other transport modes do not possess:

(1) Strategic airlift is high speed and covers greater distances.

(2) Strategic airlift is highly manoeuvrable and seldom restricted by geographic conditions. It can transport troops and logistics anywhere in the world.

(3) Strategic airlift has a large freight volume. During Desert Shield, the US used 90 per cent of its strategic transport and commandeered part of the civil aircraft fleet to airlift more than 500,000 tones of materiel and personnel.
Precision Air Strikes

Precision air strikes are a growing aspect of air power employment in high-tech local wars. The strategic objective is obtained by attacking precisely enemy strategic targets. Precision strikes were used extensively by the coalition forces during the Gulf War on 1991, in Boznja-Herzegovina in 1995, and in Kosovo in 1998. In these types of operations, air power is the main strength, and sudden attack is the main operational principle and advantage. Precision air strikes are characterised by the following:

(1) The national or supreme authorities make the decision for precision air strikes to attain strategic objectives directly (i.e. a close political/military linkage).

(2) Comparatively fewer personnel will be employed.

(3) Precision air strikes require a short time to strike. The Israeli Air Force took only two minutes on each occasion to bomb the Iraqi nuclear reactor on 1981 and the PLO headquarters in Tunisia in 1985.

(4) Precision air strikes make it possible to accomplish long-range strikes. Israeli planes made a 2,000-kilometre round trip to bomb the PLO headquarters.

Large-Scale Air Offensives

Recent regional wars like the Gulf War and the War in the Balkans, employed air offensives that begin with massive air strikes in rather long and separate phases. Large-scale air offensives have the following characteristics:

(1) Large-scale air offensives employ a wide-range of manpower and materiel to accomplish the objectives. In the Gulf War, multinational forces used more than 2,700 planes and 2,600 sorties were dispatched each day.

(2) Large-scale air offensive last longer. The four stages of the Gulf War included strategic air strikes, seizing local air dominance, battlefield preparations and ground operations. Missions in the first three stages were done in 38 days, equalling 90 per cent of the total time of the war.

(3) In large-scale air offensive, there is a direct confrontation for victory and domination. In the Gulf War, air operations reduced the Iraqi troops' operating capability by 50 per cent, which ensured that the multinational forces would secure the ultimate victory.

Joint Operation of Various Services

Joint operation of various services mean air power joins in an equal partnership with the army and navy. This symbolises a qualitative change from a subordinate operational role during past large-scale air offensive in World War II to a decisive and dominant role during modern large-scale air offensives such as the Gulf War. The joint operation of various services is characterised as follows:
(1) Having an equal partnership with the army and the navy, air power is mainly used in strategic depth and campaign depth.

(2) In joint operation of various services, air power is able to function in more specialised fields, such as reconnaissance, electronic warfare, precision strike, suppression of enemy air defences, combat air patrol and more.

**SUMMARY**

If air power changed the way in which war was conducted, technology has modified the forms of warfare. This could be exemplified when past wars were heavily on attrition warfare that took large tolls of casualties on both protagonists, while present regional wars have employed precision warfare that has brought great destruction but few military casualties and less collateral damage. The application of technology provided unprecedented development of new weapons for air power. Due to the proliferation of advance technologies, new weapons are readily available to all air forces. The advantage of technology is not left alone to big air forces only. Small air forces, like the PAF, can also obtain the benefits of advance technology. The cost of such technology may be expensive but the PAF need not totally acquire the whole gamut of high-tech weapons. Selective and orderly acquisition based on priority strategic requirements should rule the infusion of modern weapons in the PAF. Air power doctrines should dictate the requirement of the modern weapon system or platform so that advance technology should be appropriately applied to where it is needed.
Chapter Three

The Philippine Air Force Application of Air Power

Air power is a unifying factor that represents the ability to project a force relative above the surface of the earth.\(^1\)

Major General Adelberto Yap PAF

THE PAF AS A BRANCH OF SERVICE

The PAF as a branch of service is commanded by the Commanding General, PAF. It falls under the category of a Major Service of the AFP, which is commanded by the Chief of Staff, AFP.\(^2\) As shown in Figure 3-1, while the AFP’s fundamental responsibility is the application of military power as an element of the government’s national power, the PAF is responsible for the application of air power.

![Diagram of power levels: Government, National Power; A.F.P., Military Power; P.A.F., Air Power.]

Figure 3-1: Levels of Power

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\(^1\) This was quoted from Major General Yap during the 1st Commanding General, Philippine Air Force Annual Air Symposium, Pasay City, Philippines, June 2000.

\(^2\) PAFM 0-1, p. 3-1.
Although air power may encompass the nation's total aviation activity, which includes both military and civilian activities,\(^3\) air power in this paper will refer to the air force aspect only. According to the PAF Air Power Manual (Draft), air power represents the ability to project military force in the third dimension – that includes the environment of space – by or from a platform above the surface of the earth. Further stated, the PAF will use the air not only as a medium for transit, as does a bullet or other projectiles, but also for manoeuvre, concealment and surprise.

While air power is the responsibility of the Commanding General, PAF and, the Office of the Special Studies, its application does not exclusively rest on them but the entire PAF organisation. The organisation constitutes every aspect of its personnel (military and civilian), weapon systems, equipment and facilities necessary to accomplish the PAF mission and functions during peace, crisis, and war. Air power doctrines act as guiding principles to every aspect of PAF activities. As a consequence, every member of the PAF must subscribe to the *PAF Basic Doctrine* which explicitly elaborates the rationale of air power. This rationale will guide all air force activities which are essential to the accomplishment of the PAF mission ‘to conduct prompt and sustained air operations to accomplish the AFP mission’.

**THE PAF BASIC DOCTRINE**

The *PAF Basic Doctrine* is a body of guiding principles governing the missions, organisation, function, operation, and other endeavours of the PAF. It serves as a doctrinal reference authority for all different categories of doctrines required for the wide range of missions and responsibilities assigned to the PAF, and also as a basis for budgetary and procurement programs. These guiding principles are derived from knowledge gained through experience, research, analysis, and evaluation. It evolves from national objectives and policies through the application of air power as a component of military power, and considers the changing security environment, technology, and the continuing evolution in military air operations.\(^4\) The application of air power to the PAF can only be realised when every member of the PAF has a professional mastery not just of the air environment but the set of rules that govern this environment. This set of rules, which is embodied in the *PAF Basic Doctrine*, should be ‘not only readable but also attainable’.

**THE PAF COMPOSITION\(^5\)**

The PAF is composed of four basic elements: personnel, weapon systems, the facilities, and the organisational structure necessary to sustain the personnel, weapon systems, and facilities. These elements are the fibres that bind the PAF into a cohesive and professional organisation.

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\(^4\) PAFM 0-1, p. 1-2.

\(^5\) Ibid, pp. 4-3 – 4-5.
Personnel

PAF personnel, which are composed of active military personnel and civilians, are the most important element of the PAF. Their entry into the PAF must be in accordance with existing policies and recruitment standards. With their individual skills, honed through training and experience, PAF personnel skills must be interrelated and interdependent to collectively accomplish the PAF mission.

Weapon Systems

The PAF weapon systems are used to accomplish PAF missions and tasks. They should meet the needs of national strategy and must be reliable in the operating environment. State-of-the-art technology can be used to gain desired characteristics and capabilities for the upgrade programs of these weapon systems. These systems must be able to survive in battle, carry payloads to target areas, and deliver munitions accurately.

Facilities

The PAF facilities must be properly designed and equipped to support warfare systems. Also, planners must examine national security and defence requirements or commitments, to ensure bases are placed at strategic locations.

Organisational Structure

The PAF organisational structure must constantly adapt to fulfil its assigned functions. The structure must be able to adapt to new technologies, management techniques, and warfare system capabilities. This structure must allow the commanders to perform the following:

a. Project the need for warfare systems that will sustain deterrence, maintain the ability to deploy air power and maintain the capability to conduct war.

b. Train PAF forces so that they are combat ready.

c. Manage assigned resources effectively and efficiently.

THE PAF FUNCTIONS

The accomplishment of the PAF mission is mandatory. The PAFM 0-1 states that the PAF must be able to perform the following functions effectively and efficiently:

a. To organise, train, and equip forces for prompt and sustained operations in the air environment, to defend our country against air attacks, to gain and maintain the required degree of control of the air, and to control vital airspace;
b. To organise, train, and equip forces for the close support of surface forces;

c. To develop doctrines, procedures, tactics and techniques, organisation, and equipment peculiar to the Air Force for joint operations;

d. To develop, in coordination with the other Major Services, doctrines, procedures, tactics and techniques, and equipment of interest to the Air Force for Joint Operations;

e. To provide an organisation capable of furnishing adequate, timely, and reliable intelligence for the Air Force;

f. To furnish aerial photography for cartographic purposes, in coordination with other government agencies concerned;

g. Furnish close combat and logistical air support to ground forces to include; airlift, support and resupply of airborne operations; tactical reconnaissance and aerial photography; and interdiction of enemy lines of communication;

h. To conduct aerial reconnaissance, including maritime reconnaissance; and

i. To perform such other functions as the President may direct.

THE PAF BASIC OPERATIONAL MISSIONS

Operational air missions contribute to the accomplishment of the PAF mission. They are categorised as offensive and defensive operational air missions. Offensive operational air missions limit the enemy as close as possible to its area of operation. Defensive operational air missions nullify or reduce the enemy’s effectiveness to conduct an attack. While air operations are peculiar to the air force, they are not service exclusive but they will be supportive of joint military operations to accomplish the objectives.

Air Defence

To protect the Philippine sovereignty during peacetime, crisis, and war, air defence forces will use various warning and control systems and interceptors. The mission of these forces is to detect, identify, intercept and, if necessary, destroy hostile aggressors in all weather conditions attempting to penetrate the national air space. Successful air defence requires the following:

a. Timely warning of impending attack to higher authorities to facilitate the decision-making process;

b. Effective command and control capable of employing strategic defensive forces to counter the threat;

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6 Ibid, pp. 3-2 – 3-11.
c. Protection of ground facilities to optimise their capabilities; and

d. Flexible and highly responsive weapon systems capable of neutralising the threat.

Tactical Airlift

Tactical military airlift provides the ability to deploy forces to any part of the country and provide ongoing logistic support. Airlift embodies a key facet of a fundamental air force capability – rapid mobility. Airlift can be used to support joint and combined operations, as well as military assistance and civilian relief programs. The ability to resupply friendly forces in a timely manner builds confidence and stability. The PAF must be able to insert forces directly into a combat area and then resupply them. This capability can also be used for evacuation. The following are the tasks of the airlift forces:

a. Tactical deployment of combat forces and equipment;

b. Logistic support; and

c. Aeromedical evacuation.

Close Air Support

Close air support involves air attacks against hostile targets that are in close proximity to friendly surface forces. All pre-planned and immediate close air support missions require detailed integration with the fire and manoeuvre plans of friendly surface forces. These operations provide responsive, flexible, and sustained firepower support to surface forces. Close air support may be used to support offensive or defensive surface operations by friendly forces. Close air support missions require:

a. Access to the battlefield;

b. Accurate weapons delivery;

c. Good information intelligence; and

d. Target coordination between surface and air forces.

The support by the PAF to surface forces provides visible and immediate contribution to the battlefield. Close air support missions enhance surface force operations by providing:

a. A wide range of weapons and greater mass at decisive points;

b. Flexibility, shock, innovation and surprise; and

c. Firepower, manoeuvre, and flank protection.
Air Interdiction

Air interdiction operations are conducted against the enemy’s military before it can be effectively used against friendly surface forces. These operations restrict the combat capability of the enemy by delaying, disrupting and destroying their lines of communications, their forces, and their resources. It is used to disrupt enemy plans and timing. The application of air interdiction prevents the enemy forces from sustaining effective levels of combat and denying them their military objectives. The integration of interdiction operations with the fire and manoeuvre plans of surface forces may be required, if necessary. These offensive air operations are, however, planned and conducted as part of the unified effort of all friendly forces to attain a common objective (ie. to win). As opposing forces move to engage the enemy in combat, the application of air interdiction resources becomes more sensitive to the surface commander’s battle plans. That portion of air interdiction which may have a direct affect upon surface operations—referred to as battlefield air interdiction—requires air and surface commanders to carefully coordinate their respective operations to ensure the most effective support for the combined arms team.

Air interdiction demands precise coordination in timing. It may be part of a composite air strike that is tasked to:

a. Disrupt enemy lines of communication;
b. Destroy enemy supplies;
c. Attack fixed, moving and movable point and area targets; and
d. Destroy unengaged or uncommitted enemy attack formations before they can be brought into battle.

Counter Air Operations

Counter air operations are conducted to achieve and maintain the required degree of control of the air. Only in this way will an enemy’s ability to conduct destructive and demoralising air attacks against friendly military forces and national centres of gravity be minimised, and the mobility of friendly surface forces be exploited to the fullest. The PAF must be capable of both defensive counter air and offensive counter air roles since the required level of control of the air cannot be achieved by the absence of one of these roles.

Offensive Counter Air Operations - Offensive counter air operations are conducted to seek out and destroy enemy forces that compete with us for the required degree of control of the air. We must destroy the enemy’s offensive counter air systems and support facilities. These operations are essential because of the following:

a. Enhances surface forces freedom of movement by increasing close air support effectiveness;
b. Allows friendly forces to take other offensive actions; and
c. Creates a favourable environment for interdiction operations.

Defensive Counter Air Operations - Defensive counter air operations are needed to detect, identify, intercept and, if necessary, destroy enemy forces attempting to penetrate our air space. These forces are directed by a positive control system that relies on air weapons controllers for accurate information and the use of preplanned search procedures. These actions will permit the following:

a. Friendly surface and air forces to carry out offensive operations;

b. Deny the enemy the freedom to carry out offensive operations; and

c. Defend supply lines, protect friendly bases, and support surface forces.

Defence Suppression - Suppressing the enemy’s counter air system is vital to successful air operations. Defence suppression is designed to degrade, neutralise, or destroy the enemy’s surface air defence and command and control systems, so that friendly air operations can be conducted with greater flexibility and reduced losses. These operations will permit the following:

a. Friendly forces to carry out both offensive and defensive air operations;

b. Inhibit the enemy’s capability for defensive actions; and

c. The use of lethal or non-lethal measures.

Surveillance and Reconnaissance

Surveillance and reconnaissance operations provide early warning of enemy actions and other information vital to commanders. They are also significant in identifying enemy capability and force structure. The information derived from surveillance and reconnaissance must be available to a wide variety of users on a timely basis.

Surveillance systems collect information continuously from the air, surface and sub-surface. They provide information on enemy intentions and courses of actions – their sources, nature and size. Together with reconnaissance operations, which are normally directed towards localised and or specific targets, these systems inform friendly forces of the activities and resources of any potential enemy. These missions allow friendly forces to collect varied information such as hydrographic, geographic, electronics and communication characteristics.

Strategic surveillance and reconnaissance operations support the national and strategic intelligence needs. They also help fill the information requirements of the tactical commanders. Through these operations, friendly forces can assess the total capability of the enemy, and can monitor the progress of a war. These operations provide information that is essential to:
a. Identify targets for strategic and tactical attack;
b. Provide indications and warning of hostile intent and actions;
c. Analyse and develop tactics to counter enemy deployment and employment;
d. Assess damage to enemy and friendly targets;
e. Determine force structure; and
f. Determine national requirements for warfighting systems.

Tactical surveillance and reconnaissance operations support the area and the tactical field commander. When these tactical systems are assigned targets, the resulting information may fill both national and strategic intelligence requirements. Tactical systems provide indications of hostile intent, plus information from which intelligence is derived. These surveillance and reconnaissance systems provide information on the following:

a. The disposition, composition, and movement of enemy forces;
b. The location of enemy lines of communication and installations;
c. Battle damage assessment;
d. Conditions in surface battle areas; and
e. Weather and terrain.

Special Operations

Special operations forces support the unified commanders at the direction of higher headquarters. These operations are carried out by specially trained and equipped forces from each major service as a team in support of military objectives. Special operations cover a broad spectrum of actions and are conducted at every level of conflict.

Joint Operations

Joint operations are aimed at achieving synergy through the cooperative actions of two or more services. The joint operation of AFP forces provides a venue for maximising AFP combat power and makes the most efficient and effective use of available air power. The PAF experience in joint operations is limited to COIN warfare only, which integrates and employs mainly assets of the PAF to support units of the Philippine Army (PA). As an archipelagic state, PAF joint operations have been undertaken in pursuit of dissidents both over land and sea. Further interoperability with the Philippine Navy (PN) is also being explored to expand the wide horizons of joint operations. Included in the PAF joint operations are close air support to surface
forces, airborne operations, airmobile operations, and air reconnaissance. The PAF is responsible for:

a. Providing forces for close air support and air mobile operations;

b. Conducting individual training of forces;

c. Developing, in coordination with other Major Services, doctrines, procedures, tactics and techniques employed by the PAF.

d. Participating with other Services in joint training and exercises as mutually agreed by the Services

Command and Control

To accomplish the PAF mission, it is necessary to have an effective command and control system, which must provide the data for decision-making and the means for centralised control system. It must also provide the commander with the communication networks that are reliable, rapid, survivable, and secure. The command and control process depends on a network of intelligence, indications and warning mechanisms and trained personnel.

To employ forces at their full potential, the commander must be able to coordinate the planning, direction, and control of all the command's forces and operations. The command and control system must have the flexibility to meet these requirements through both direct and indirect means. Direct command and control exists through a dedicated communications' network, while indirect command and control is exercised through pre-planned procedures.

To make appropriate decisions, commanders at every level must have a command and control system that is fed by information from many other systems—such as intelligence, indications and warning, and environmental systems. This system also provides commanders the status and capabilities of their forces as well as those of the enemy. An effective command and control system can efficiently direct the impact of firepower and the tactical advantage inherent in shock action and manoeuvre.

Direct communications with the necessary firepower, shock action and manoeuvre enable the commander to manage the flow of battle. To supplement direct contact capabilities, procedures should be formulated to cover battle management and probable events. These procedures can be used to attain surprise, as well as to continue the battle plan, should communication be degraded or fail. To achieve necessary coordination and integration of battle plans, information must flow vertically, horizontally, and diagonally within the command and control system.

Intelligence

The intelligence system collects and evaluates raw data, processes it into useable form, and disseminates it as intelligence for use by commanders. Land-based technical equipment and human resources collect intelligence. Expert and experienced
analysts process collected data into intelligence. Intelligence must be dispatched to all users in time for decision-makers to take effective action. Useful, timely intelligence prevents surprise and allows our forces to seize the initiative.

**Indications and Warning**

To be efficient, aerospace systems require the protection of effective warning procedures. Our warfighting and intelligence systems must be warned of enemy activity or an impending attack. This is done through an indications and warning system which is made up of a network of aircraft warning systems working with ground-based facilities. Both intelligence and operations must work as a team to make sure that warning information is relayed to command centres with correct timing.

**Communications**

Communications are an indispensable part of our total capability. To serve a command and control system effectively, communications must ensure the rapid and secure exchange of information within the chain of command. Depending on the mission requirements, communications must have a combination of accuracy, availability, capacity, flexibility, inter-operability, jam-resistance, mobility, reliability, security and speed.

**Environmental Information**

To be effective, our strategic/tactical operations need accurate and up-to-date environmental information. This is an essential factor in planning and implementing air and surface operations. During peacetime, weather service helps to protect resources, promote flying safety, and increase the effectiveness of weapon systems. During wartime, weather service becomes an integral part of the decision process in the employment of forces, even to the selection of weapon systems, routes, targets, and delivery targets.

**Specialised Tasks**

The successful execution of Air Force missions will depend heavily on the performance of specialised tasks. The PAF should have the capability to perform the following specialised tasks:

*Psychological Operations* - The aim of psychological operations (PSYOPS) is to adjust attitudes and behaviour of hostile groups to favour military initiatives or actions. This adjustment can be the result of planned political, military, economic, and ideological actions. To be effective, these operations must be designed to fit into the cultural environment of the intended audience. Psychological operations concepts must be integrated into all plans and operations. Their impact must be considered before, during, and after every military operation. Commanders must be aware that both our action and inaction communicates information to hostile and friendly
populations and forces about our attitude. Commanders must plan and execute their missions carefully, to make sure that signals transmitted are perceived as we intend.

Psychological warfare is always conducted during conflict and is one element of psychological operations. Psychological warfare programs must be compatible with national policy and other operations and are targeted against hostile forces and populations as well as people in areas under enemy control. They may be conducted by elements within enemy controlled territory with their ultimate objective being to weaken the enemy's will and capability to continue the conflict.

Psychological operations will communicate concepts to reinforce our actions, or to cause others to support our objectives. Depending on the communications medium, national objectives, and planned actions by our forces, we can create various psychological effects to reinforce psychological operations by:

a. A show of force;
b. An attack on a specific significant target;
c. Actions to harass and disrupt enemy operations;
d. A demonstration of superiority;
e. Humanitarian operations;
f. Surprise, shock action, and deception operations; and
g. Tactical, procedural, and operational innovation.

*Air Rescue and Recovery* - Air rescue and recovery forces will enhance the effectiveness of our combat operations in two ways. First, our forces will know that they can be rescued promptly from danger. Second, downed crewmembers can be returned to combat. In addition, our rescue and recovery units can use their resources to help civilians in distress.

*Combat Documentation* - With the use of hand-held still, motion picture, and airborne cameras, documentary evidence of combat operations can be provided. Combat documentation will also aid commanders in assessing weapon system effectiveness and battle damage. Finally, it will provide documentary records for use in training, information, and historical programs. Combat documentation will never be used for media publicity unless authorised by appropriate authorities.

**THE PAF IN PEACE, CRISIS AND WAR**

The PAF as part of the military component is mandated to render the expert service of security and defence by employing air power. The employment of air power should be always consistent with the application of traditional and non-traditional military roles, as shown in Table 1-1 of Chapter One. As military power

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7 Ibid, pp 7-1 - 9-6
significantly contributes to national power, air power does the same with military power. Hence, air power cannot disassociate itself from these military roles. The military uses air power so that the application of air force capabilities in peace, crisis and war is executed with professionalism.

Traditional Roles

As cited in the previous chapter, traditional military roles refer generally to the military’s warfighting capabilities. Whether the scenario may be peace, crisis or war, the traditional role for the PAF is providing external defense. The PAF is charged with the first line of defence because it is attributed with the ability of air power to operate in three dimensions characterised by perspective, speed, reach, maneuverability, flexibility, responsiveness and concentration. Aside from the external defence role, the PAF must be able to perform complementary and supportive roles in internal security operations, which is the primary concern of the Philippine Army (PA).

External Defence Operations - EDO are focused primarily with the definite intention of defending the Philippines. Air defence operations does not only involve the fighter interceptor and ground intercept actions of early detection, identification and interception of hostile or unfriendly aircraft but also the continuous surveillance and reconnaissance by patrol aircraft of the contiguous territories of the entire Philippine archipelago. The deployment of other PAF units supporting the EDO (eg. search and rescue, air base security and others) are strategically located across the whole archipelago. Operational readiness and skills development through exercises are mandatory to assure peacetime efficiency and wartime effectiveness. Air power capabilities employed in EDO are not restricted for EDO use only. Such capabilities can be utilised in other military roles provided that such utilisation is authorised by competent authorities, an example being the PAF F-5 which can be used as a platform to deliver air-to-ground munitions during ISO.

Internal Security Operations - ISO are carried out to identify, cut-off from the local populace, deny external aid, force the surrender, and ultimately destroy the dissident forces. The roles of the PAF as a support force to ISO will include providing air support to surface forces, conducting PSYOPS and civic actions, and contributing to the government efforts of nation building. The PAF has the advantage of firepower to support surface forces but limitations are imposed in conformity with the socio-political objectives of the government. Anticipation and early detection of legitimate grievances, coupled with the government’s economic policy and genuine intention to seek mutually beneficial solutions are the best methods of avoiding a serious dissident problem.

Non-Traditional Roles

The non-traditional roles of the PAF are in conjunction with the civilian and other government requirements. Although these non-traditional roles aid the government to achieve socio-economic objectives and are aimed to win the hearts and minds of the populace, the PAF should never deviate from its basic mission. The PAF has always been a good partner in nation-building but limitations are instituted to preclude any deviation from the PAF mission. Non-traditional roles include but are not limited to the following:
Air Transport - The air transport of supplies and/or personnel will be initiated only when there are no military requirements for such and there is an absence of civilian air transport utilities. PAF air transport assets may be utilised to evacuate displaced civilians in an international conflict. PAF C-130 transports were used to evacuate Filipinos in war-torn Kuwait when it was invaded by Iraq in 1991.

Weather Modification - Weather modification may simply mean rain making operations in drought-stricken areas. During the El Niño phenomenon in 1997 that created dry spells in the Philippines and other parts of Asia, PAF OV-10 aircraft were refitted with special canisters for cloud seeding purposes that resulted in the prevention of horrendous droughts.

Infrastructure Development - Infrastructure development is undertaken by constructing airports, roads and other infrastructures that would hasten economic growth in a particular region. In the late 1970s, PAF engineering units were the first to construct the concrete runway in Palawan that preceded the establishment of the Puerto Princesa airport complex.

Support to Law Enforcement - Support to law enforcement is carried out as requested and coordinated by law enforcement bureaus such as the Philippine National Police (PNP). PAF UH-1H helicopters deployed in the northern Luzon area are utilised to search for marijuana plantations to arrest the drug problem. Information is then relayed to law enforcement units in the area.

Environment Protection - PAF capabilities for surveillance and reconnaissance are constantly used for environment protection that encompasses activities like reforestation, securing wildlife reserves and fishing areas, detecting oil spills and others. Since 1995, PAF N-22 and S-211 in coordination with Philippine Navy (PN) ships on territorial waters have constantly performed surveillance of the status of all Philippine-occupied geographical features in the marine resource-rich Spratlys.

Self-reliance - Self-reliance is an inherent activity in the PAF. It is being undertaken to select, adapt, repair, maintain and develop military equipment and assets to reduce reliance on external sources. The Air Force Research and Development Centre (AFRDC) takes much of the credit for developing this technological capability. In coordination with indigenous defence industries in the Philippines, the PAF has produced a wide range of materials like air-to-ground rockets, personnel flight equipment, aircraft components (e.g. brake linings, carbon brushes, windshields). They have even reengineered the piston-driven trainer aircraft to a turbo-prop trainer aircraft.

THE PAF IN COUNTER INSURGENCY

The re-emergence of the insurgency problem was one of the sequences of events that curtailed the development of the PAF EDO capabilities. From the late 1960s and even up to the early 1990s, the PAF incorporated in its inventory of aircraft a range of counter-insurgency (COIN) platforms. The PAF was also reorganised to curb the

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9 For a detailed discussion on the chain of circumstances see PAF Flight to the Future, pp. 37-40.
communist threat on one front and the Muslim secessionist threat on the other front. Forward operating units referred to as Composite Air Support Forces (CASF) were created throughout the three geographical areas of Luzon, Visayas, and Mindanao. The CASFs were established primarily as specialised units to plan, control, and coordinate the employment of PAF tactical support elements for the AFP units in the area of responsibility. These support forces were collocated with airstrips or inside major military camps and operating air bases. Fixed and rotary air assets in the CASF were so located to be readily available upon request from surface forces.

The longstanding insurgency problem had caused heavy casualties and the depletion of the nation’s resources. From 1995 to 1997, the threat of these dissident forces seemingly declined due to the government’s optimistic three-pronged approach through sincere diplomacy, the potential for economic recovery, and compelling ‘hot pursuit’ military actions. The current state of affairs mandates the PAF to continuously and actively support the resolution of the internal security problem. The PAF approaches the internal security problem by applying internal security operations under the traditional military role and support to national development programs under the non-traditional military role.

PAF Missions in ISO

ISO employs air power that is only particularly suited for counterinsurgency (COIN) warfare because air power is able to deploy weapons that are able to concentrate firepower rapidly at threatened points and are capable of applying selective degrees of force in consonance with the existing threat. Because of the tremendous payload of firepower that the aircraft can carry, air power capabilities in COIN warfare have the real advantage. But the employment of such must take cognisance of the political limitations as mandated by the government. COIN warfare does not require any control of the air because insurgent forces do not have air bases, aircraft, air support and air base defence weapons. Offensive actions against insurgent camps require the approval of responsible authorities, which means that a joint force commander cannot just overrun a major insurgent camp unless authorised or specified in the operational order. The type of air munitions employed for offensive air actions also have certain limitations, for example napalm bombs cannot be indiscriminately dropped by air crew or even requested by surface forces. Applications of air power capabilities include battlefield air interdiction, close air support, airlift, and air reconnaissance.\textsuperscript{10}

\textit{Battlefield Air Interdiction} - Battlefield air interdiction (BAI) is air action directed against enemy forces and resources that are in a position to directly influence and affect the land operation. It is aimed to destroy enemy supply routes or bases of operations. PAF fixed-wing AT-28 and OV-10, and rotary-wing AS-76 and MG-520 are the platforms used for COIN warfare. Destruction of enemy routes and encampments have resulted in crippling effects against the enemy.

\textit{Close Air Support} - Close air support (CAS) is an offensive ground action attack against hostile targets that are in close proximity to friendly forces. It requires detailed integration with the fire and movement of friendly forces. The above-cited fixed and

\textsuperscript{10} Definitions of capabilities were derived from the \textit{PAF Air Power Manual (Draft)}, pp. 98-113.
rotary aircraft are also employed for forward air control, convoy escorts and in aiding the defence of friendly static positions.

_Airlift_ - Airlift provides the military commander with the capability to deploy forces rapidly and over considerable distances. Battlefield airlift for troop insertion and extraction, and resupply during COIN operations are mandatory airlift functions. The PAF UH-1H is the workhorse for battlefield airlift while the PAF N-22 and C-130 carry out tactical airlift of supply and personnel from one air base to another.

_Air Reconnaissance_ - Air reconnaissance is basically conducted by visually observing an area while airborne with the aid of photography or electronics. Aerial photogrammetry finds its use for target identification and BDA. All the above-cited air assets are platforms that can be used for air reconnaissance.

**PAF Organisation in ISO**

The PAF understands the urgency of solving the internal problem. The government peace process has to be supported by a strong socio-economic program that would address the roots of internal strife. Although the PAF has non-traditional roles to complement the socio-economic agenda, the traditional roles specifically in ISO enhance the need to be vigilant for any hostile eventuality. The PAF has learned a great number of lessons in its experiences with COIN warfare over the past decades. Organisation of combat and support units has been instituted to achieve a cohesive reaction to the requirements of resolving the internal security problem. As shown in Figure 3-2, PAF COIN operations were handled geographically by the former Air Divisions (ADs), which were deployed in the three major island groups of the Philippines (ie. Luzon, Visayas and Mindanao).11 Each AD had a number of air assets (fix wing and rotary) which were under the operational control of the CASPs. Eventually, the ADs were replaced by Composite Tactical Wings (CTWs) as part of the PAF restructuring to avoid duplication of functions, effectively supervise the employment of air power capabilities and efficiently manage meagre resources.12 The restructuring improved the situation because tasking orders for COIN air missions or other operational instructions were received directly from the Tactical Operations Command (TOC). The restructuring avoided confusion due to conflicting instructions from different staff and operating units.

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12 See Appendix B for the PAF Restructuring. The charts show the former set-up of the CASF under the AD and the present CTW under the TOC.
CASFs were replaced by Composite Tactical Groups (CTGs), which have practically similar missions and functions as its forerunners but the chain of command as regards to tasking of air operations avoids confusion. Because of PAF restructuring, effective mission accomplishments has been assured through proper coordination, which will be improved by the implementation of any joint operation related to ISO. Despite the PAF support to the peace process, in conjunction with the government's initiative to seek a peaceful resolution, the CTGs will remain alert and maintain a state of readiness for an immediate conduct of air operations, if and when required.

THE PAF REVITALISATION OF EXTERNAL DEFENCE

The external and internal events that transpired in the 1990s led to the growing awareness that the PAF external defence capability was in a dismal state of readiness. The departure of the US bases in 1992 signalled a pressing concern for the PAF to concentrate on the external defence mode. But the obsolescent and insufficient number of equipment and facilities made the PAF incapable of performing the transition to the external mode. The growing concern of protecting the national economic interests at the Philippine EEZ coupled with the optimistic economic trend in 1994 afforded possibilities for the PAF to modernise its equipment and facilities. The declining numbers of insurgents in 1995, and the occupation by China of Mischief Reef at the Spratlys (within the Philippine EEZ) indicated that the PAF modernisation was necessary, and the AFP Modernisation Law was enacted in 1995 in response to the critical need.

The peace process with Muslim secessionists in 1996, the continuous intrusion by other claimant countries in the Spratlys including Malaysia in 1998, and the contribution to regional peacekeeping were some of the events that deepened that dire need to rebuild the PAF as a modern and professional external defence force. The modernisation of the PAF was planned in an orderly manner to assure that the appropriate weapon system and its ancillary equipage will satisfactorily provide the PAF a modest and credible external defence capability. The dormant conventional air
power capability, which the PAF once had, is regarded to be reinvigorated with genuine fervour through the PAF modernisation.

Then President Fidel Ramos made it clear that the mandate to modernise was not dictated solely by security considerations but also for socio-economic development.\textsuperscript{13} The process of modernisation, with all its technological sophistication, has great impact on the economic aspect also. While the government is aggressively pursuing its vision of attaining a stable economy by the next century, the PAF has redefined its goals and objectives to this end.

\textbf{The PAF Modernisation}

The modernisation program was looked upon as a mechanism that would allow technology transfer while granting economic benefits not just to the PAF and the AFP but to the nation. Modernisation is expected to benefit the Philippines in terms of a more effective air defence capability as well as a stimulated economic development. The PAF modernisation is expected to revitalise the PAF and its air power capabilities into the 21\textsuperscript{st} century. Opportunities to transform extant air power capabilities into responsive and proactive ones are aimed to establish the required decisive control of Philippine sovereign air space.

The modernisation of the PAF runs parallel with the modernisation of the AFP, which does not necessarily entail weapon acquisitions only. The PAF Project Management Office, which is under the functional supervision of the PAF Staff Office for Plans, is responsible for all projects related to the PAF modernisation. As shown in Figure 3-3, the modernisation of the PAF is hinged on the five components of the AFP modernisation which are capabilities development, force restructuring, human resource development, bases development, and doctrines development (not necessarily prioritised in that order). The descriptions of the five components basically deal with the PAF aspects only.

![Figure 3-3: Categories of Modernisation](image)

\textsuperscript{13} \textit{PAF Flight to the Future}, p. 117.
Capability, Materiel, and Technology Development - Capability, materiel and technology development is anchored on modifying weak or dormant air power capabilities into strong or competent capabilities like with modern technology through a robust command and control capability, responsive counter-strike capability, improved surveillance/reconnaissance and electronic capability, highly mobile airlift capability and others.

Force Restructuring and Organisational Development - Force restructuring and organisational development will mean ‘right-sizing’ not ‘down-sizing’ the PAF into leaner and more compact and well-trained organisation. Such development will include reserve forces as a responsive and ready formation that will provide for the expansion of the AFP in case of war or national emergencies.

Human Resource Development - Human resource development will be invested on professional military education and technical training of its personnel, which means ‘professional people for a capable air force’.

Bases, Support System Development - Bases, support system development is designed to fulfil the primordial mission of the PAF to secure the sovereign territory by setting up air bases, from which air power capabilities can be effectively employed, across the whole archipelago. These permanent air bases will have adequate support system and facilities.

Doctrines Development - Doctrines development will precede the acquisition schedules of new capabilities so that the employment of human and material resources for air power capabilities will be at its best always.

The AFP Modernisation Law, also referred to as Republic Act (RA) 7898, authorises the development of the AFP into a modern armed force based on the previously-cited categories. The implementation of RA 7898 is covered by Joint Resolution (JR) 28 as approved by the Congress of the Republic of the Philippines. If RA 7898 is about the prioritisation of AFP capabilities essential to become a respectable armed force (a modest but credible external defence force), JR 28 is about the implementation of RA 7898. The Joint Resolution is explicit on the prioritised EDO capabilities and it contains the funding scheme required for such capabilities development. Of the total Php330 billion for the 15-year AFP modernisation program, the PAF will get close to 40 per cent (Php126.7 billion), second only to the PN’s requirements (which are understandably higher because ships are more expensive than aircraft). JR 28 is considered a national policy which regards the enhancement of the AFP external capabilities through modernisation as a priority and, as such, the modernisation program remains indisputable among government agencies that are committed to support the program.

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14 See Appendix B for the PAF Restructuring.
15 PAF Flight to the Future, p. 123.
The PAF Conventional Air Strategy

For a smooth transition of the PAF to the external defence mode, an employment plan in the conduct of a conventional war is needed. This employment plan is constituted in the PAF conventional air strategy.\textsuperscript{16} As shown in Figure 3-4, which is a portion of the Air Power Structure Model in the PAF Air Power Manual (Draft), the air strategy is observed to be concentrated on three air campaigns. These air campaigns are grouped as control of the air, air strike, and air support campaigns. The air strategy is at the apex and it is the product of the combination of the three campaigns. Air campaigns are series of air operations that share a common objective aligned to the overall conduct of war. Air operations are integrated employment of air power to achieve a specific campaign objective. A campaign or a combination of two campaigns can have a significant influence on the conduct of war. But such campaign or campaigns will have limitations in the accomplishment of the objectives of the air strategy if one or two of them are missing. If the air strategy is aimed to achieve maximum effectiveness, the three air campaigns must be combined and clearly related to the strategic objectives.

\begin{center}
\includegraphics{air_power_structure.png}
\end{center}

\textit{Figure 3-4: Air Power Structure}

\textit{Control of the Air} - The control of the air campaign is undertaken for the purpose of gaining freedom in the air, and in turn, gaining freedom of action on the surface. To achieve control of the air, it may be necessary to engage the enemy’s air power in the air and while on the ground. In addition, operations conducted under the air strike and air support campaigns will contribute in gaining control of the air. The objective of achieving control of the air is to seize the advantage so that air strike and air support campaigns will simultaneously deny the enemy the opportunity to gain any advantage. Since total control of the air, which is air supremacy, may not be feasible for a small size air force, control of the air would have to be established for a particular time and place.\textsuperscript{17}

\textsuperscript{16} Majority of this section was adapted from the PAF Air Power Manual (Draft), pp. 50-57.
\textsuperscript{17} Alan Stephens and Gary Waters, ‘Operational Level Doctrine: Planning An Air Campaign’, Paper No. 18, Air Power Studies Centre, Canberra, October 1993, p. 15.
Air Strike - Air strike is principally strategic in nature and takes the air war to the enemy’s centres of gravity, whether at the battlefield or at the homeland. An air strike must be designed to exert maximum pressure on the adversary’s decision-making process in the shortest possible time, thus weaken his capacity and will to fight. An effective targeting process will avoid the problem of poor targeting selection. Hence the objective of the air strike will be readily achieved if the air campaign is focused on the strategic centres of gravity.

Air Support - The air support campaign involves military operations which complement combat power of land, naval, and air forces. Air support contains the lethal aspect (ie. by delivering firepower to the enemy at the critical times and places) and the non-lethal aspect (ie. through airlift, reconnaissance, and others). Manoeuvrability, mobility, and sustainability of friendly forces are enhanced and guaranteed through air support.

SUMMARY

The PAF is responsible for the application of air power. Every member of the PAF must subscribe to the PAF Basic Doctrine which explicitly elaborates the rationale of air power. The PAF Basic Doctrine is a body of guiding principles governing the missions, organisation, function, operation, and other endeavours of the PAF. These guiding principles should be ‘not only readable but also attainable’. The PAF is charged with the first line of defence because it is attributed with the ability of air power to operate in three dimensions characterised by perspective, speed, reach, manoeuvrability, flexibility, responsiveness and concentration. Aside from the external defence role, the PAF must be able to perform complementary and supportive roles in internal security operations and national development. The external and internal events that transpired during the 1990s signalled a pressing concern for the PAF to concentrate on the external defence mode. The dormant conventional air power capability, which the PAF once had, is regarded to be reinvigorated with genuine fervour through the PAF modernisation. To realise the effective transition of the PAF to the external defence mode, the PAF has formulated an air strategy for the conduct of a conventional war. The air strategy, which is based on the combination of control of the air, air strike, and air support, is expected to give relevance to the to future air power applications of the PAF in the face of new technologies and the strategic environment.
Chapter Four

The Philippine Air Force
Into the Future

The key words are fast, complete and decisive. And the key to winning wars right now is air power. That is why there are no major armed forces without a modern air force.¹

Major General Benjamin Defensor
PAF

THE FUTURE TRENDS

In a strategic environment where the regional order is driven by economic necessity and influenced by technological advances, a credible external defence force with a modern air force is essential. In case of any conflict, a credible air force will be able to defend the national territory to a certain extent as mandated by the national objectives. However, a fragile air force will always be susceptible and open to attack and will have no match against those which have strong and capable air forces.

The occupation by China and Malaysia of Philippine-claimed territories (reefs and shoals) within the Philippine EEZ has been protested by the Philippine government through international fora such as ASEAN, which is basically an economic assembly. The Philippines can only resort to diplomacy without the option of military force because the external defence capability of the PAF is a fragile one. A repeat of the same situation may occur in the not too distant future from other claimant countries in the disputed Spratlys if the PAF external defence capabilities are not strengthened.

The assumption that regional disputes or conflicts will be resolved through consultation and consensus (the ASEAN approach) may be a naive belief because Asia is characterised strategically by differences (ideological, territorial and ethnic) and historical animosities, volatile political mixture, strong sense of nationalism, arms build-up and lack of arms control.² This not a pessimistic prognosis of the external environment for the next ten years but these are the realities that must be taken into consideration so that the Philippines is in a position to militarily protect its national security interests.

¹ PAF Flight to the Future, Pasay City, Philippines, June 1997, p. 123.
Internally, the Philippine security environment in terms of political stability, economic development, and social cohesion for the last five years have been generally positive and augurs well for the future. The internal situation remains very fluid and the country will continue to face various threat groups to include communist insurgents, secessionist movements and various criminal elements.

The future of the PAF looks challenging and the present equipment and weapon systems in the inventory may be insufficient to propel the PAF into the future with the essential capabilities of a credible air force. The present force structure may not survive a future conflict. However, the PAF will never succumb to humiliation from external aggressors with superior technology and internal radicals who antagonise the sovereign body politic by using technology. Advances in technology have been given the premium as a prime mover for a modern air force and hence the PAF will take advantage of this. The PAF, having identified its goals to meet those essential capability requirements of an air power that runs concomitant with the defence thrust and national objectives, is now ready to embark on the PAF modernisation program.

The PAF modernisation will effectively address the diversity of roles, both in the external and internal mode. With modernisation, the PAF believes that the technological edge will outweigh numerical superiority in the outcome of future wars or conflicts. A number of specific roles for the PAF will be addressed by the multi-role capabilities of modern weapon systems and platforms. National security interests which are more likely to face an imminent threat, will be given greater priority for equipment acquisition. These philosophies have taken into consideration the compromise that may occur in attaining the level of essential capabilities that is reflective of a credible air force. The former Chief of Staff, AFP General Arnulfo Acquenda, who was previously the Commanding General, PAF viewed that the proposed equipment for the PAF is ‘something that can serve the [very] purpose of modernisation’. The quantity and types of equipment that will be acquired will display the reality that the PAF modernisation will, indeed, enable the PAF to fully perform its role as the country’s first line of defence.

THE ESSENTIAL CAPABILITIES

The PAF modernisation seeks to develop its air power capabilities through the conduct of air operations based on a sound doctrine. Stressing service-specific rather than platform-specific capabilities in the air power doctrines is the trend for modern air forces. Shifting doctrinal emphasis from the ‘how to’ to the ‘what’ and ‘why’ casts a considerably wider and deeper doctrinal net. The shift is not only for big air forces but also for small air forces, hence the PAF (as a small air force) finds no excuse for exemption to this doctrinal shift. The PAF modernisation program should develop essential capabilities or core capabilities that define the fundamental strength generated by the application or employment of air power. While the air

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4 'In Peace, Crisis and War', Philippine Secretary Orlando S. Mercado DND, Makati City, October 1998.
5 PAF Flight to the Future, p. 123.
campaigns in the PAF conventional air strategy outline the operational framework for the application of air power, the essential capabilities recognise the conceptual framework that will make these air campaigns a potent element of military power.

To effectively enhance the air campaigns as embodied in the PAF conventional air strategy, essential capabilities need to be developed and fully understood by the PAF. This understanding must take into consideration that the ‘what’ and ‘why’ should be translated into reforming the PAF into a better, more responsive and proactive organisation. The components of the PAF organisation and the functional systems and sub-systems (like the organisational structure, equipment, operations, training, resource management, fiscal and others) need to be adaptable to the flexible environment, which is influenced by economic, political, technological and security factors. The PAF approaches modernisation with this kind of understanding whereby the modernisation components should progress in an encompassing manner that drives the other services, as well as other government agencies, to participate as a joint team that would support attainment of national objectives.

The core capabilities adapted by the RAAF, a small air force, finds a similar functional application to the PAF because the core capabilities concentrate not on becoming a world superpower but only an air power that is capable for self-defence and deterrence. These five core capabilities (control of the air, precision strike, precision, engagement, rapid force projection and information exploitation) are the essential capabilities that need to be developed and must endure the flexible environment. For this chapter, the discussions on these essential capabilities will try to adhere to the ‘what’ and ‘why’ rather than the ‘how to.’ Information exploitation, as a relatively new capability will be elaborated upon in more detail.

**Control of the Air**

The control of the air is crucial to success in modern conventional warfare. Control of the air is necessary to neutralise enemy air force so that friendly operations on land, sea and air can proceed unhindered, while at the same time one’s own vital centre and military forces remain safe from attack. Control of the air is the capability to defend Philippine sovereign air space, and such control is mandatory for air defence. The PAF, as the first line of defence, needs the ability to synergise the requirements of air defence through an effective weapon systems and well-trained personnel to deter aggressors and prevent any further aggressive initiatives.

**Precision Strike**

Offensive strike capability generates a strategic effect whereby influencing the structure of enemy decision-makers to delay or forego any further attack to our national territory, thus there is a need to use precision weapons. Precision strike is the ability to use air power (through precision weapons) to destroy or neutralise

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targets and to undermine the enemy’s will to fight through the application of firepower with a high degree of lethality, discrimination and accuracy.\textsuperscript{10} PAF precision strikes (pre-emptive in nature) will project air power into another country’s air-sea gap targeting centres of gravity. Also precision strike can be applied for both external and internal operations with the advantage of concentrating firepower accurately and reducing the effects of collateral damage.

**Precision Engagement\textsuperscript{11}**

Precision engagement is the ability to intimidate the enemy without necessarily applying firepower. The outermost layer of strategic sensing needs greater application of precision engagement activities like air and maritime surveillance and reconnaissance, land-base radar monitoring, coordinated intelligence employing electronic warfare and other methods, fighter sweeps, and submarine tracking (if possible).

**Force Projection**

Force projection is the ability to deploy forces in strategic locations across the archipelago. This ability projects territorial presence and rapid reinforcement, thus, possesses defensive and offensive connotation in the sense that the already deployed air component forces, in permanently secured air bases, can respond to perform offensive action against any level of threat by aggressive forces. Having a force projection capability infers to having the other essential capabilities because flexibility, mobility and concentration of forces as key attributes of air power are inherently present.\textsuperscript{12}

**Information Exploitation**

Information exploitation is a capability that uses air power to provide knowledge required for the conduct of successful operations by air, land and sea forces. Information exploitation finds particular application for command and control and inter-operability. The decision/action cycle with respect to information gathering and exploitation can be best explained by the generic model for military decision-making known as the Observe-Orientation-Decision-Action (OODA) loop of Colonel John Boyd, as shown in Figure 4-1.\textsuperscript{13} The essence of the decision model is to observe the enemy’s movement, orient friendly forces to this movement, make a decision on what is to be done, and act before the enemy acts. As a relatively new capability for the PAF, information exploitation capability will involve\textsuperscript{14}:

\textsuperscript{10} AAP1000, RAAF Air Power Manual, p. 39.
\textsuperscript{11} Ibid, p. 40.
\textsuperscript{12} Ibid.
\textsuperscript{13} This was adapted from the discussions about the OODA loop in the AP 3000 British Air Power Doctrine, Third Edition, Ministry of Defence, London, 1999, pp. 2.4.1 – 2.4.2.
\textsuperscript{14} AAP1000, RAAF Air Power Manual, pp. 41-42.
a. Application of air power to gather data using airborne surveillance and reconnaissance systems;

b. Translating that data into information;

c. Integrating that information with the information available from the major services, joint and national sources;

d. Collating, analysing, storing and communicating the total information in forms which provide usable and meaningful, knowledge to combatants, staffs, and commanders involved in the planning and execution of military strategy, operations and tactics; and

e. Using that knowledge in real or near-real time to optimise the effectiveness of the essential capabilities.

![Figure 4-1: Colonel Boyd's OODA Loop](image)

Air power characteristics of reach, perspective, flexibility, and ubiquity are the basis of information exploitation. Using manned and uninhabited platforms, air power can gather data:

a. Overtly and covertly during peace, crisis and war;

b. From the air space, surface, and sub-surface environments;

c. From overhead land and sea battles; and

d. At great distances from the national territory through land, sea and air forces.

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15 Ibid.
JOINT OPERATIONS

Joint operations will find great application of air power's essential capabilities. Although joint operations have been conducted previously by the PAF with the other major services of the AFP, joint operations or military campaigns have to be re-emphasised in future warfare. Former Commanding General, PAF, General William Hotchkiss III, commented that, 'In a modern environment] we need to improve on the joint operations concept'. The participation of the PAF in modern joint operations will more elaborate because the modified essential capabilities (due to modernisation) will find greater application across the three environments of land, sea and air.

Modern joint operations require a predetermined degree of participation among land, naval and air forces but the leading environment should be distinct so that the other two remain supportive to the success of the operations. Joint operations must emphasise the principle of unity of effort so that all elements of military power will be utilised effectively to concentrate on the definite strategic objective. Air power will invariably contribute significantly to the success of joint operations.

Although the concept of defence-in-depth requires a joint defence, the bulk of the military campaign may well rest on the capabilities of air power. The PAF, with its modern equipment, will be the precursor of all military actions against all aggressors. Modern land-based radar and surveillance aircraft will monitor all aggressive actions within the sovereign air space, and any hostile acts will be neutralised by the multi-role fighters. Surface-to-air missiles as point defence systems from strategically located bases would be used to destroy hostile aircraft in case of any breach in the first layer, and multi-role fighters in the attack mode counter attacking enemy centres of gravity in their forward operating bases. Heavy airlift will be mobilised to rapidly deploy reserve forces in the entire archipelago. A digitised air operations centre fed by a reliable data link system will closely control all of these air operations so that the hierarchy of information-receivers has real-time information. This is an example of how future air operations will be for the defence of sovereign Philippine air space. In case air support from the PAF is required by any land or naval components this has to be factored into the joint campaign plan and the operational air campaign plan.

THE JOINT CAMPAIGN PLAN

The joint campaign plan is the instrument by which the joint force commander achieves the strategic objective. Through this plan the joint force commander sets the operational tempo and direction for the conduct of fighting, and coordinates the logistic support necessary to achieve victory. The campaign plan is the basis on which other forces formulate their respective component campaign plans (eg. ground, naval and air campaign plans). The component campaign plans must indicate the component forces agreed level of dominance of their specific battlespace and how to achieve them. As the basis for the component campaign plans, the joint campaign plan should:

17 Stephens and Waters, 'Operational Level Air Doctrine: Planning An Air Campaign'.

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a. Present an orderly schedule of military decisions and make clear the commander’s vision and intent;
b. Focus on the enemy’s centres of gravity;
c. Schedule a series of major operations in an ordered sequence;
d. Provide subordinates with operational direction and specific tasks and responsibilities; and
e. Synchronised land, sea and air activities that will provide synergy and sustain cohesiveness.

**STRATEGIC CONCERNS**

Intent Capability Limitations National Commitment Directives

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**CAMPAIGN PLANS**

Apportionment Sustainment Prioritisation

<table>
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<tr>
<th>Forces Assignment</th>
<th>Resources</th>
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<tr>
<td>Risk Assignment</td>
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<tr>
<td>Coordination</td>
<td>Logistics</td>
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</table>

Combat Forces

Sustainment Forces

**TACTICAL OPERATIONS**

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**Figure 4-2: Campaign Guidance**

Figure 4-2 illustrates the impact of strategic concerns to the joint operations commander in the process of deriving the key results of the operational campaign plan, which is subsequently handed down to the to the tactical level headquarters.\(^{18}\)

The key results of the joint campaign plan are the military strategy for the area of operations, the concept of operations, and the campaign priorities. Embedded in these outcomes will be apportionment, sustainment and establishment of priority. Apportionment decides the assignment of forces, the level of control, and the assignment of risk levels while retaining the coordination aspects at high level. Sustainment directs the distribution of human, technical and logistical resources. The establishment of priorities will comprise targets lists in the air task directives and timeframes for the different phases of the campaign.

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THE OPERATIONAL AIR CAMPAIGN PLAN

The employment of essential capabilities for joint operations is embodied in the operational level of war. While the strategic level decides which forces to allocate to the operational level commander, the operational level decides the direction of assigned forces to achieve the objective. The plan for the employment or direction of air power capabilities at this level is incorporated in the air campaign plan. The term 'air campaign' is used here to define the systematic application of air power, as part of the joint campaign plan, as opposed to the strategic level definition of the three air campaigns, namely, the control of the air, air strike and air support.

Critical Considerations

In the employment of air power against the enemy (external or internal), the air campaign plan should be explicit in describing the employment concept for allocated forces. The development of the campaign plan should be guided by critical considerations so that the appropriate air operations will attain the required degree of dominance in the area of operation as dictated by the situation. These critical considerations are the following:

*The Nature of the Enemy.* The nature of the enemy must be understood. The air component commander must know the enemy’s strength and weaknesses, what resources he has, and how he is likely to respond to a range of contingencies. A prudent commander will have an assessment of his capabilities relative to his opponent. From that, it follows that the air component commander must know best how to use his intelligence resources.

*Initiative Advantage.* Initiative is vital. The side which takes the offensive in the war in the air has a distinct advantage. If the opposing forces are fairly equal, the side that moves first will gain the tactical and operational initiative. Although the air component commander may have to assume the defence initially, he should be ready to go on the attack as soon as conditions are favourable. Once he goes onto the offensive, targeting priorities assume vital importance.

*Centres of Gravity.* Centres of gravity are the key to targeting. A centre of gravity is that point where the enemy is most vulnerable, which if successfully attacked is most likely to bring about his defeat. If there are numerous centres of gravity, they may all have to be successfully attacked for the objective to be achieved. Correctly identifying centres of gravity in relation either to the overall strategic objective or to immediate tactical objective (depending on the state of the conflict), and then determining how best to attack them, is crucial to the air campaign plan.

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20 Ibid, pp. 16-17.
The Air Component Commander

The operational air campaign plan is the responsibility of the joint force air component commander or simply air component commander. He is also the coordinating authority for interdiction, air space control authority and the area air defence commander, and is responsible for coordinating and integrating the air defence system in the airspace defined area. The operational air campaign plan, as his responsibility, defines or identifies the activities that should link any gap between the joint campaign plan and the tactical air operations. This means that the tactical air operations, explicit in the air campaign plan, should be able to complement and support military operations of the land and naval components. The air component commander should clearly understand the strategic setting and make his own estimate of the situation to avoid neglecting any of the following important elements of the air campaign plan:

a. Concept of operations (phasing of the air operations) of the air campaign;

b. Identification of specific military objectives (description of centres of gravity) and target systems in a Master Attack Plan; and

c. Allocating specific tasks to specific units (resourced tactical units) in a detailed Air Tasking Order.

The air component commander should never fail to examine the following planning considerations prior to formulating the operational air campaign plan:

a. What should be the extent of the operational air campaign plan for a small air force, in which the number of assets will always be limited?

b. What is the relative effort that should be assigned to strategic attacks against centres of gravity and during close air support?

c. How much priority should be given to the primary campaign, control of the air, or during an emergency (e.g. a rapidly moving enemy ground offensive)?

The Organisation for an Operational Air Campaign

Command and control becomes effective when a functional organisation is in place. Sound organisation provides for a concentration of effort, coordinated joint operations, and the ability to function effectively in the operational scenario or the environment of the area of operation. The reorganisation of the PAF has been ongoing to meet the requirements of modernisation and to address security concerns in both the external and internal mode. The Tactical Operations Command (TOC) was created primarily to address the internal security problem (which may be considered as an unconventional warfare mode) while the Air Defence Command (ADC) was for the defence against external threat forces (which are in the conventional warfare mode). These Commands are composed of personnel, weapon systems, facilities and

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21 Refer to Appendix C for the Air Campaign Plan Format.
22 See Appendix B for the PAF Restructuring.
organisations that make up the PAF as part of the joint force and will find its application during peacetime. However, during an escalation of crisis, which may lead to war, the combined resources of these Commands may be integrated into a single air component subordinate to a designated unified command (which may be an existing joint command or a new command). A balance air force with a sound air power doctrine will be able to perform air operations in the unconventional or conventional warfare at any given situation.

The employment of air force components in a joint operation during conventional warfare involves primarily air defence operations (active and passive) across the entire archipelago where detection, identification, engagement and neutralisation of enemy forces are mandatory to deny, disrupt and destroy his decision process and will to conduct further aggressive actions. In unconventional warfare, where enemy forces are fighting in non-traditional means of warfare (eg. guerilla tactics), the employment of air force components will deny, disrupt and destroy concentration of enemy forces, as well as their opportunities for sanctuary and force escalation.

THE FUTURE AIR FORCE

The PAF is anticipated to receive the preponderance of technology during the forthcoming modernisation program. New capabilities will have to be coordinated so that the joint operations will be enhanced. Joint military operations will have to be planned carefully because planning will afford the effective and efficient use of modern resources to achieve the strategic objectives. Coordination through interoperability of modern equipment will be a key factor for future joint operations. The victory at Kosovo is a good example of interoperability during which the Commander of the Allied Forces in Central Europe, General John Jumper, commented that, 'Interoperability will not mean having the same piece of equipment (that is standardisation) but enabling different equipment to operate in the same battlespace. It is achieved through common operating procedures, common training and common commitment to the same goals.' The modernised PAF, with all its high tech equipment, will be a determinant for the success of joint operations as long as coordination through interoperability is systematically structured and exercised regularly. An air campaign will work best when parallel effects required from the different component forces are planned and executed to ensure true synergy.

Secure Command and Control Functions

Unity of the joint effort will be accomplished through an effective nationwide command, control, computer and intelligence (C3I) facility. This will include a communications net that is integrated by the employment of satellite technology with troposcatter and landline back-up. Through this there will be an improved and reliable communication between the outlying radar sites and the nearest node of the air defence control centre with a real-time picture situation being presented to command

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23 Adapted from the PAFM 0-1, p. 5-8.
24 'Aiming Skywards', PAF Flight to the Future, pp. 115-142.
26 Ibid.
authorities and decision makers. Future operations need to be able to run on the basis of a secure and jam-resistant communication net.

Smart Sensors

Long range patrol aircraft, with highly capable electronic sensors and data links to the operations centre, will provide the base for building up the PAF electronic warfare and air intelligence capability. Remote sensing through the use of these smart electronic sensors will be the mechanism to generate an electronic library of the enemy's order of battle. Patrolling the EEZ and the sea gaps of the archipelago for any maritime intruders and unauthorised surface or sub-surface presence of would be aggressors will also be performed by these aircraft. Long range patrol may complement the monitoring of air traffic within the territorial air space by land based surveillance radars. In any conflict situation, the long range patrol aircraft may be tasked to act as an airborne coordinator limited to the maritime environment only.

Smart Weapons

Surface-to-air missiles will augment ground base air defence against possible air attackers, thus, protecting vital installations and weapon systems, particularly the expensive and valuable aircraft while on the ground. Multi-role fighters and surface attack aircraft will be used for quick response against intruders through counter strike, combat air patrol, fighter sweeps, coastal interdiction, close air support and others. Precision weapons, superior intelligence and identification friend or foe (IFF) systems will give better information for targeting.

Mobility

Transport using heavy, medium, and light-lift aircraft will be a great boost for overall AFP mobility while heavy lift helicopters will certainly complement search and rescue, and relief and rehabilitation operations. With navigational aids and sensors (eg. radar, FLIR, etc.) that allow round-the-clock all-weather air operations, resulting improved mobility in warfare will create and then exploit the advantages of surprise, concentration of force and position.27

Training

Proficiency and training to acquire these high tech capabilities will have to be supported by simulators. Theories are not just practiced but a cost-effective approach to develop competency of skills is required. With the acquired modern equipment, the real essence of interoperability must be constantly practiced through cross training with other services.

THE MODERN AIR POWER

For the PAF, the future air force will mean a modern air power with renewed fervour for security and defence. The modernisation of the PAF was never meant to provide an air power asset that would project hegemony in the region nor would it be used to aggressively pursue objectives other than maintaining national security requirements. The focus of PAF modernisation is to support the initiative of military power for self-defence and deterrence, and by doing so it projects a national atmosphere which will assist political stability, economic prosperity, and social unity.

Strategic Force

Air power as an inherently strategic force is dictated by strategic objectives that need to be accomplished during peace, crisis, and war. Political and military leadership should utilise air power as both a lethal and non-lethal force. As a lethal force, the wide range of firepower that the PAF will acquire can be used against the enemies of the state (external and internal aggressors) who may threaten the Philippines with hostilities through conflict or war. As an example, air power can be employed tactically against insurgents during COIN operations. If these insurgents receive external support, air power can reinforce diplomatic pressure on its source as external sponsors will be vulnerable to air power’s long reach. Although Operation El Dorado Canyon against General Ghadafi is a good case in point, the PAF cannot perform a similar action considering the adverse effect to regional peace but the lethal force of a modern and credible air power will counter insurgents and discourage external sponsors, as well as deter external aggressive intruders.

The future PAF weapon systems and platforms will continue to support national development with a range of air force capabilities that will be able to assist other government agencies; only a few examples are discussed. Land-based radar in joint use with civilian agencies will generate revenues by monitoring airline overflights inside our sovereign air space. Long range patrol aircraft will perform surveillance of environmentally protected areas and illegal maritime activities including transit of illegal migrants, unauthorised merchandise (eg. drugs) and others. Heavy airlift will support transport of relief goods to calamity-ravaged areas and evacuate overseas workers from war-torn states. Search and rescue will always be ready to respond to distress and disaster situations.

An Offensive Weapon

Air power does not fit to the axiom by surface theorists that defence is the stronger form of war. The air space environment where the modern PAF will be operating has no highways and road signs which dictate directions or avenues of the probable air attack. Interception through radar is the primary factor here, but available technologies like terrain masking, electronic measures, careful routing and stealth technology make it extremely difficult for radar to anticipate and prepare for

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an air assault. There are no flanks or fronts in the sky, so a defender has little opportunity to channel an enemy into a predictable path so his defences can be more effective. It is virtually impossible to stop an air attack completely – some planes will get through, however, early warning by radar, intelligence and naval ships will assist greatly in preventing surprise air attack by an aggressor.

If the PAF is to assume a defensive stance only, there is a great risk of defeat. The strategy of adapting only to passive defence is self-defeating. Modern air power must adopt a degree of offensive capability to project a credible air power. The devastating effects of air power as an offensive weapon were demonstrated during the attack at Pearl Harbor, the Arab-Israeli War of 1967 and Desert Storm. If an intruder breaches the first layer of defence, the speed, range and flexibility of modern air power will grant the PAF ubiquity at the required time to counter the enemy onslaught and reverse the advantage in favour of the PAF. Coordinated joint efforts of the multi-role fighter equipped with precision munitions, and jam-resistant radar offer an offensive capability. Air power as an offensive weapon also projects a deterrent effect by its very nature.

Effective Targeting

As an offensive weapon, modern air power carries with it an effective targeting capability. Precision munitions or smart bombs will be able to accurately destroy enemy targets and avoid great collateral damage. Effective targeting precludes the employment of greater sorties to deliver countless dumb bombs and will also reduce the amount of collateral damage. The elements of effective targeting will include selecting the required target sets to attack, determining the strategic importance of the targets, and what will be the effects of the damage on the targets.

Several theorists have different beliefs as regards to the identification of the best targets to attack. Guillio Douhet singled out the popular will. The US Army Air Corps Tactical School devised a doctrine concentrating on enemy industry. RAF’s Jack Slessor emphasised the vulnerability of a country’s transportation structure. John Warden stressed leadership and Billy Mitchell’s early writings proposed the enemy army as the primary target of strategic power. These theorists regarded the centres of gravity as the main targets, but they diverged on singling out the most important one.

The strategic importance of the target is usually an outcome of the intelligence process. Air power will be ineffective if the attacking force does not know the location of the target. Therefore, intelligence must be reliable so that the importance of the target will be related to the overall strategic objectives. Intelligence through electronic and information warfare must have a secure communication system to guarantee the dominance of information for effective targeting.

The effectiveness of targeting will be determined through battle damage assessment (BDA) which is also part of the intelligence function. The simplest way of determining BDA is through post-attack reconnaissance. However, BDA may not be that complex at the tactical level as long as the designated target is destroyed. The importance of BDA will be quite complex in the strategic level because there may be some insufficient indicators of the effectiveness of the strategic air strikes.

31 Ibid, pp. 13-16.
SUMMARY

The essential capabilities of the PAF need to be responsive and proactive in a security environment influenced by technology. The PAF modernisation program, though modest in numbers but certainly credible (in terms of capabilities), will enable the PAF to deter and repel external and internal aggressors. The future essential capabilities of the PAF will aptly address the security concerns in the external and internal environment in a unified effort through joint operations. Improving the joint operations concept will stimulate awareness of effectively achieving the strategic objectives with modern weapon systems. The component forces in the joint operations environment are expected to gain much from the application of air power because the PAF operational doctrines will ensure that the PAF resources will be used accordingly. To be an effective component of the joint operations team, the PAF operational air power doctrine will involve the direction of air forces having the focus of achieving the required strategic objectives.
Chapter Five

Conclusion

You should not linger in desolate grounds.¹

Sun Tzu

THE PHILIPPINES ONWARD

Having identified the intricacies of the strategic context vis-à-vis the trends in modern technology, the Philippines is at the crossroads of shaping up the AFP into a credible defence force that would truly live up to its mandate as the vanguard of the sovereign territorial integrity and the protector of the people. Internal and external factors within the AFP have curtailed the implementation of the AFP modernisation program, and to an extent some sectors in government have fomented the notion that fiscal resources for defence modernisation be fanned out to the countryside for equitable economic distribution. However, national policies have been promulgated to address the persistent concerns of economic improvement and urgent defence requirements. The fact is, economics and defence are mutually allied, and they complement each other as contributors to the overall security structure of the country. National security remains not a total function of the AFP and other economic bureaus, but all the government agencies. Therefore, all government agencies should harmonise all their efforts towards the attainment of the national security objectives. The AFP modernisation is the military’s contribution to effect the plans for national security.

As expressed in the rationale behind the AFP modernisation, there is a need for the AFP to focus its efforts on building up a capability suited to the changing scenarios of the international security community. Recent years have witnessed how countries in the region have exerted efforts in projecting credible military power to instil regional balance of power. While the Philippines does not intend to join any perceived arms race in the region, the AFP needs to make its present military capabilities credible. This is to ensure that the AFP, as a coordinated and cohesive defence force, would be able to effectively and efficiently interplay and operate with other armed forces in whatever security alliance. A modest modernisation is the first step necessary to ensure Philippine national security to gain respect from our neighbours and be a worthy partner in any security alliance. Once the Philippines is able to project a credible defence force, our nation could then work in coordination with other defence forces to deter regional military adventurism and preserve peace in the international community. Although the AFP modernisation is geared up primarily

for defence, national development programs will also be ably complemented and supported (in terms of capabilities, as appropriate). Diplomacy as the best policy for addressing security concerns will certainly be reinforced by a credible AFP.

THE REALITY

The rationale of the AFP modernisation presents an optimistic perspective and it projects a credible external defence force capability. Therefore it is essential that the AFP modernisation should be accurately reflected in the modernisation of the different major services army (PA), navy (PN) and air force (PAF).

The philosophies of the AFP modernisation have taken into consideration the compromise that may occur in attaining the level of essential capabilities that is reflective of a credible air force. Although the modernisation is equipment-intensive, PAF modernisation does not seek to be competitive with the air power build up in the region. The main focus of PAF modernisation is anchored on self-defence and credible deterrence; it never focused on attaining an air force that projects an image with hegemonic tendency.

Self-defence is the ability to respond immediately to any sort of unfriendly action, thus, preventing further escalation to any sort of aggressive activity and ensuring Filipinos have safe access to our sovereign maritime and air space. If a credible air defence system (replete with all the weapon systems and monitoring platforms) was present during China’s occupation of Mischief Reef in 1995, the Reef may still be Philippine-claimed today. Deterrence is basically the threat of the use of military action against an external military force (not necessarily an enemy) whose intention is unfriendly in nature. Likewise, the presence of a credible air defence capability would have discouraged Malaysia to occupy Philippine-claimed Erica Reef and Investigator Shoal, and China would also have been discouraged from persistently claiming Scarborough Shoal (very close to Manila), all of which are within the Philippine EEZ.

In the present situation with China aggressively pursuing its claims on the entire Spratlys, it is expected that other claimants may assert their respective claims. If that happens, with their new baselines extended well within Philippine territory, how can the Filipinos have free and secured access to its precious resources within the EEZ?

The Philippine economy continues to experience some unnecessary losses partly due to the current lack of effective enforcement by PAF resources. The PAF modernisation program aims to provide military equipment which will assist in reducing these economic losses. Take for instance the loss of PhP 40 billion annually due to illegal maritime activities and the uncharged or unseen aircraft overflights which translates into losses of millions of pesos. Although some aspects of these events may be in the realm of other government agencies, measures have already been undertaken to address these economic concerns by the procurement of modern technologies. These measures are those which the PAF modernisation seeks to complement and support only in terms of capability. There are certain air and sea gaps which need to be addressed by modernised PAF equipment.

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Credible external defence capabilities will help prevent external problems threatening Philippine national sovereignty. The problems of territorial extension by other countries are not necessarily the problem of the Philippines; however, it becomes a problem when it breaches our defined territories. To protect our defined territories, we need capable air power. Capable air power will not only involve ‘teething’ but also ‘thinking’ to be able to reinforce diplomacy during the settling of disputes. In the legal forum of settling disputes, diplomacy is an essential expertise and superior intelligence information is an underpinning factor against the enemy. Modern equipment can build up an information library against an enemy and this information can be used against him in a litigation forum. When resolving the external situation air power applies both the lethal and non-lethal capabilities.

If these air power capabilities find an important application in the external environment, they will also be able to assist in combating threats in the internal environment. Internally, the government’s three-pronged approach (through sincere diplomacy, the potential for economic recovery, and compelling ‘hot pursuit’ military actions) has been an effective mechanism against insurgency. Previous military actions (employing the above-cited approach) have been successful against all insurgent forces (communists and secessionists). It is still possible to employ the same approach, however certain factors have to be taken into account (like political will, demography, technology, economy, foreign assistance, time, fiscal well-being, and others). The fact is the Philippines has resolved its internal problems in the past and only the Philippines can resolve the internal problems now and in the future. There must be enduring diligence and resilience among all government agencies in the internal endeavours to subdue and subsequently eliminate insurgency.

NEW CONCEPT

The previous discussions in this paper have identified new approaches on how the existing PAF Basic Doctrine will be responsive to the evolving security situations. These approaches may become instruments for the PAF to further enhance its strategic thinking and cultivate a proactive strategic culture to effectively utilise the present and future equipment. Basically, the PAF will be an air force that conforms to the capabilities required for self-defence and deterrence. Much has still to be written on other details of the air defence concept to effect a fully responsive and proactive air power. The subjects of organisation, command and control, information warfare, targeting, intelligence, training, strategic strike, mobility and others will need more attention and further researches. These further researches will present a better and clearer perspective so that a sound doctrine will cause present and future air operations to be responsive and proactive.

FUTURE EQUIPMENT

The procurement of equipment for the PAF is based on cost, capability requirement and the political factor. Although the PAF can identify the weapon systems and the logistic packages essential for the self-defence and deterrent capability that fits into the overall security structure, the political bureaucracy dominates the decision making process of procurement. This is quite understandable
as fiscal resources are the driving factor and there are many competing demands on the finances available.

In the levels of warfare, politics may determine when to go to war, but they should never dictate to the military on how to conduct war. The military has identified how to compromise with the modest equipment necessary to effectively carry out the defence concept. Political bureaucracy should not dictate or prioritise the equipment required for defence or even delay the procurement of this essential equipment.

A LESSON TO REMEMBER

One lesson that can be learned from the PAF history regarding equipment,

Most of the P-26s that had been stationed in the archipelago had been sold to the Philippines by the time of the Japanese attack in Pearl Harbor. The government acquired 12 P-26A Peashooters beginning July 1941. Despite their total obsolescence, the Filipino P-26A succeeded in scoring some victories. The best-known action took place on December 12, 1942 when Captain Jesus Villamor brought down a Mitsubishi G3M2 Zero of the 1st Kokutai over Batangas. Lieutenant Jose Kare even managed to shoot down a Mitsubishi A6M2 with his obsolete Boeing P-26A on December 23. The last surviving P-26s were burned down on Christmas Eve to prevent falling into enemy hands.\(^4\)

In the absence of any modern equipment, the PAF must survive the future with its true strength, (ie. the immeasurable stock of courage and ingenuity) as it has done throughout its glorious history. However, in modern warfare the value of effective and capable air power should never be underestimated at any level.

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\(^4\) ‘The Philippine Army Air Corps with their P-26s,’ http://www.esd.uwo.ca/~pettypi/elevon/.
# Appendix A

## Biological and Chemical Warfare Characteristics

<table>
<thead>
<tr>
<th>Biological</th>
<th>Chemical</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Natural odourless</td>
<td>- Obtained synthetically with characteristic odour.</td>
</tr>
<tr>
<td>- Invisible particles normally dispersed through aerosol spray</td>
<td>- Normally volatile in nature and dispersed either through mist or aerosol.</td>
</tr>
<tr>
<td>- Entry through inhalation or ingestion.</td>
<td>- Entry through inhalation or dermal absorption.</td>
</tr>
<tr>
<td>- Pre-exposure treatment confers or enhances immunity through toxoids, vaccines, antibacterial protective clothing, biosensors and smoke-detectors</td>
<td>- Pre-exposure treatment relies on use of gas masks, antichemical protective clothing and use of chemosensors for toxic substances.</td>
</tr>
<tr>
<td>- Post-exposure treatment relies on antibiotics or combinations with vaccines.</td>
<td>- Post-exposure treatment relies on use of antidotes and neutralising agents.</td>
</tr>
<tr>
<td>- Effects of biological agents and toxins are diverse resulting in incapacitation or death occurring after contraction of disease resulting from infection by a specific biological agent (e.g. anthrax caused by <em>Bacillus anthracis</em> and plague caused by <em>Yersinia pestis</em>).</td>
<td>- Effects of chemical agents are either instantaneous or delayed for a few hours, with the onset of symptoms such as allergy, respiratory discomfort, intense irritation of mucous membranes, manifestations of physiological processes, resulting in dose dependent death or incapacitation.</td>
</tr>
<tr>
<td>- Can be weaponised into artillery rounds, cluster bombs, ad missile warheads.</td>
<td>- Long history of use as poison bombs, in artillery rounds, and in missile warheads.</td>
</tr>
<tr>
<td>- Production methods are simple and cheap relying on non-sophisticated technology and easily obtainable knowledge in biology, genetics engineering, medicine and agriculture.</td>
<td>- Simple and complex production methods needing appropriate corresponding equipment and technology for simple and sophisticated chemical synthesis, purification and development of lethal doses.</td>
</tr>
<tr>
<td>- Not easily detected in export control and searches by routine detection system (e.g. X-ray).</td>
<td>- Detection facilitated through odour escape, and packaging in inert metallic containers showing up on X-ray screens.</td>
</tr>
</tbody>
</table>

Appendix B

PAF Organisational Chart Until 1997

TACTICAL DIVISIONS

1ST AD
- CASF

2ND AD
- ABW
- CASF

3RD AD
- ABW
- CASF

SUPPORT WINGS

ARW
ARC
RATSG

TACTICAL WINGS

FW
- STW
- TOW

SPow

AW
- PAW
- CTW

SUPPORT WINGS

TW
- AEW
- MW
- ACWW

SW

ABW

ABW
Air Base Wing
ACWW
Aircraft Control & Warning Wing
AD
Air Division
AEW
Air Engineering Wing
ARC
Air Reserve Command
ARW
Air Reserve Wing
AW
Airlift Wing
CASF
Composite Support Force
CTW
Composite Tactical Wing
FW
Fighter Wing

HPAF
Headquarters Philippine Air Force
MW
Maintenance Wing
PAW
Presidential Airlift Wing
RATSG
Reserve Air Transport Support Group
SPOW
Special Operations Wing
SW
Supply Wing
STW
Strike Wing
TOW
Tactical Operations Wing
TW
Training Wing

Source: PAF Flight to the Future, p. 135.
Appendix B

PAF Organisational Chart 1999 and Beyond

TACTICAL COMMANDS

- ADC
  - FW
  - ACWW
  - SAWW
- TOC
  - CTW

SUPPORT COMMANDS

- ALSC
  - MW
  - SW
- ATC
  - AFFS
  - ACSC
  - AFTC
  - NCOA
- ARC
  - ARCs
  - RATG
  - ARW

ADC  Air Defence Command
ACSC  Air Command Staff College
ACWW  Aircraft Control & Warning Wing
AFFS  Air Force Flying School
AFTC  Air Force Training Centre
ALSC  Air Logistic & Support Command
ARC  Air Reserve Command
ARCs  Air Reserve Centres
ARW  Air Reserve Wing
ATC  Air Training Command
AW  Airlift Wing
CTW  Composite Tactical Wing
FW  Fighter Wing
HPAF  Headquarters Philippine Air Force
MW  Maintenance Wing
NCOA  Non-commissioned Officers Academy
RATSG  Reserve Air Transport Support Group
SPOW  Special Operations Wing
SW  Supply Wing
TOC  Tactical Operations Command

Appendix C

Air Campaign Plan Format

JOINT AIR CAMPAIGN PLAN:  (Number or Code Name)

REFERENCES:  (Maps, charts, other relevant documents)

COMMAND RELATIONSHIP:  Briefly describe the command organisation (composition and relationships) for the campaign. Detailed information may be included in a command relationship annex.

1. SITUATION:
   Briefly describe the situation that the plan addresses (see joint force commander’s estimate)
   
   a. STRATEGIC GUIDANCE: Provide a summary of directives, letters of instructions, memorandums, treaties and strategic plans including any other joint campaigns (national or international in scope) received from higher authority, that apply to the plan.
      
      (i) Relate the strategic to the joint requirements in its global, regional and space elements.
      
      (ii) List the strategic objectives and tasks assigned to the command.
      
      (iii) Constraints: list actions that are prohibited or required by higher authority ROE, etc.)
   
   b. ENEMY FORCES: Provide a summary of pertinent intelligence data including information on the following:
      
      (i) Composition, location, disposition, movements, and strengths of major enemy forces that can influence action in the theatre of war.
      
      (ii) Strategic concept (if known) including the enemy’s perception of friendly vulnerabilities and enemy’s intentions regarding those vulnerabilities.
      
      (iii) Major objectives (strategic and operational).
      
      (iv) Commander’s idiosyncrasies and doctrinal patterns.
      
      (v) Operational and sustainment capabilities.
      
      (vi) Vulnerabilities.
(vii) Strategic centres of gravity.

NOTE: Assumed information should be identified as such. Reference may be made to an intelligence annex for more detailed information.

c. FRIENDLY FORCES: state here the information on friendly forces not assigned that may directly affect the command.

(i) Intent of higher, adjacent, and supporting Commands.

(ii) Intent of higher, adjacent, and supporting allied or coalition forces.

d. ASSUMPTIONS: State here the assumptions applicable to the plans as a whole. Include both specified and implied assumptions.

2. MISSIONS:
State the task(s) of the air component command and the purpose(s) and relationship(s) to achieving the strategic objectives.

3. AIR OPERATIONS:

a. STRATEGIC CONCEPT: (based on the relevant major elements of the theatre strategy). State the broad concept for the deployment, employment and sustainment of major aerospace forces in the command including the concepts of deception and psychological warfare during the campaign as a whole. (This section is a summary of details found in annexes).

(i) Operational air organisation. Subordinate to the joint force air component commander.

(ii) The air objectives in the joint campaign.

(iii) Deployment airfields.

(iv) Operational missions. Consider force multiplication.

(v) Phases of air campaign in relation to the joint campaign.

(vi) Timing and duration of phases.

b. PHASE I: (NOTE: Provide a phase directive for each phase).

(i) Operational concept: Include operational objectives, attack plan, and timing.

(ii) General missions and guidance to subordinates and components. Ensure that missions are complementary.

(iii) Forces required by role or capability, aerospace and surface. Should consider airforce, army and navy, and allies.
(iv) Tasks for subordinate commands and components.

(v) Reserve Forces: Location and composition. State the most likely missions. Include guidance on surge sorties if used as reserve capability.

(vi) Mobility: Consider transportation, ports, lines of communication, transit and overflight rights, reinforcement, reception and onward movement and host nation arrangements.

(vii) Deception.

(viii) Psychological.

c. PHASE II: (and other phases if there are more than two). Present information as stated in sub-paragraph 3b above for each subsequent phase. Provide a separate phase for each step in the campaign at the end of which a major reorganisation of forces may be required or another significant action is initiated.

d. COORDINATING INSTRUCTIONS: If desired, instructions applicable to two or more phases or multiple elements of the command may be placed in here.

4. LOGISTICS: Brief, broad statement of the sustainment concept applicable to the campaign by phase. Logistic phases must be concurrent with the operational phases. This operation may be listed separately and referenced here. This paragraph should address:

a. Assumptions (including joint requirements).

b. Supply aspects

c. Maintenance and modifications.

d. Medical services.

e. Transportation.

f. Base development.

g. Personnel.

h. Foreign military assistance.

i. Administrative management.

j. Line(s) of communication

k. Reconstitution of forces.

l. Joint and combined responsibilities.
m. Sustainment priorities and resources.

n. Inter-service responsibilities.

o. Host nation consideration.

5. COMMAND, CONTROL AND COMMUNICATIONS:

a. COMMAND:

(i) Command relationships: State generally the command relationships for the entire campaign or portions thereof. Indicate any shifts of command contemplated during the campaign, indicating time of expected shift. These changes should be consistent with the operational phasing in paragraph 3. Give location of commander, operation centre and command posts.

(ii) Delegation of authority.

b. COMMUNICATIONS:

(i) Communications: Plans of communications. (may refer to a standard plan or be contained in an annex). Include time zone to be used; rendezvous, recognition and identification instructions; code; liaison instructions; and axis of signal communication as appropriate.

(ii) Electronics: Plans of electronic systems. (may refer to a standard plan or be contained in an annex). Include electronic policy and such other information as may be appropriate.

Source: Planning an Air Campaign, Air Power Studies Centre, Canberra, October 1993, pp. 24-29.
Glossary

Air Space – of or pertaining to the earth’s envelope of atmosphere and the space above it.

Air Tasking Order – the product of campaign process which will give unit commanders the direction and authority to conduct air operations.

Attrition Warfare – a style of warfare characterised by the application of substantial combat power that reduces the enemy’s ability to fight through loss of personnel and equipment.

Battlespace – all aspects of air, surface, sub-surface, land, space and the electromagnetic spectrum that encompasses the area of operations.

Battlespace Dominance – the degree of control over the dimensions of the battlespace that enhances friendly freedom of action and denies the enemy freedom of action.

Campaign – a series of military operations within a definite area, or with one specific objective; an organised course of military action.

Centre of Gravity – elements of a nation or military force that are vital to continuing and effective operation.

Component – an organised element in a specified environment (land, maritime and air) of a joint force.

Digitised battlespace – a composite network of system covering the whole operational space; it is made up of a network of system, command and control system, an intelligence transmission system, a computerised battlefield database, and user terminals, all of which can provide users with large amount of operation-related information in real-time.

Doctrine – a body of principles based on history, technology and theory that governs an activity; a philosophical framework that guides or directs the employment of forces.

Insurgency – the actions of a military group within a state (or in some instances a majority of group which lacks power) intent on forcing political change by means of a mixture of subversion, propaganda and military pressure.

Joint – activities, operations and organisations in which elements of more than one service of the same nation are participating.

Master Attack Plan – is the end result of centre of gravity analysis, target selection and current intelligence.
**Operational** – occurring at, or derived from the operational level of war.

**Real-time** – the time of dealing with a certain event being almost the same as the real time of the occurrence of the event.

**Strategic** – occurring at, or derived from the strategic level of war.

**Troposscatter** – the propagation of radio waves by scattering as a result of the irregularities or discontinuities in the physical properties of the troposphere; a method of transhorizon communications using frequencies from approximately 350MHz to approximately 8400MHz.
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