

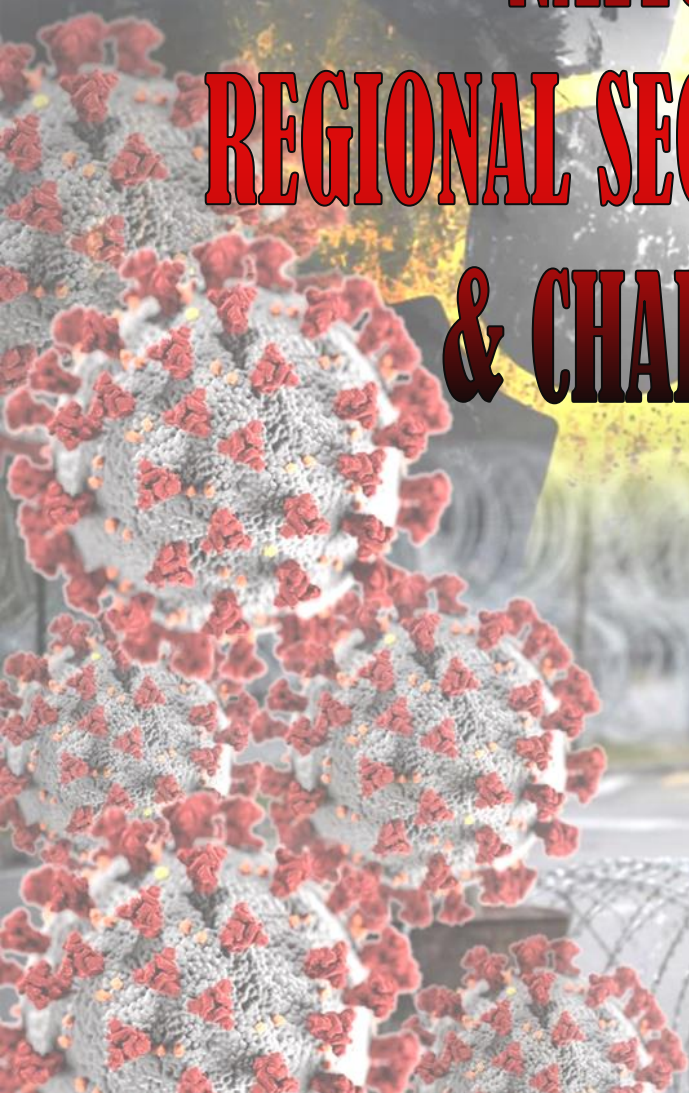
Sorotan DARAT



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NATIONAL, REGIONAL SECURITY ISSUES & CHALLENGES





SOROTAN DARAT
JURNAL TENTERA DARAT MALAYSIA
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KETERANGAN

Sorotan Darat ialah Jurnal Tentera Darat (TD) yang diterbitkan sejak 1 Mac 1983 bagi mempertingkatkan budaya ilmu di kalangan warga TD. Jangkamasa pengeluaran ialah setiap 6 bulan iaitu pada bulan Jun dan Disember. Segala isi kandungannya termasuk sebarang ilustrasi, gambar, jadual dan rajah tidak dibenarkan dicetak semula dalam apa corak sekalipun tanpa mendapat kebenaran Kementerian Pertahanan melalui MK PLDTD terlebih dahulu.

Selaku sebuah Jurnal TD, Sorotan Darat adalah bertujuan mewujudkan satu forum bagi perbincangan perkara yang boleh menimbulkan minat professional terhadap seorang perajurit. Artikel pelbagai isu dan tema adalah dipelawa dari segi peringkat dan sesiapa sahaja yang mempunyai pengetahuan khas atau minat terhadap hal ehwal ketenteraan. Isu-isu kontroversi biasanya menjadi nadi penggerak sesebuah jurnal profesional yang mana ia dapat menimbulkan pemikiran dan perbincangan yang sihat. Artikel-artikel seperti ini akan diberi keutamaan, manakala artikel-artikel mengenai operasi-operasi, idea-idea latihan atau kegunaan peralatan adalah antara topik-topik yang dialu-alukan.

Semua pertanyaan mengenai Sorotan Darat hendaklah dikemukakan kepada Ketua Editor iaitu Kol Doktrin, MK PLDTD.

Semua idea yang dikemukakan oleh penulis melalui artikelnya dalam jurnal ini, sama ada sebahagian atau seluruhnya adalah pendapatnya sendiri. Ianya bukanlah pendapat oleh Kementerian Pertahanan Malaysia atau pihak-pihak lain yang berkaitan.

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FROM CHIEF EDITOR'S DESK

Assalamualaikum Warahmatullahi Wabarakatuh. With the name of Allah, Most Gracious and Most Merciful.

May peace be upon you,

Praise to Allah, the second journal for year 2020 edition is successfully published to acknowledge the writer's effort in enhancing the readers' mind with informative, useful and meaningful articles. The Editorial Council would like to express their appreciation to the writers who have contributed to the articles. The commitments given from the thriving writers are certainly a precious aptitude in producing a well-published journal.

Nuggets of golden wisdom in thinking and actions come in many forms as they can be extracted from various sources. Therefore, SOROTAN DARAT provides such platform for the readers to extract the ideas shared by the writers to gain knowledge.

In a complex environment where National and Regional Security Challenges are accelerating at an unprecedented rate, the Editorial Council aims to divert readers' attentions to the capabilities of Malaysian Army to face current challenges and threats. Moreover, we should take initiatives to improvise by understanding the pursuit of the consolidation of national sovereignty.

The Editorial Council welcomes and encourages more new aspiring writers to contribute articles for future publications. Constructive opinions, dynamics comments, and potential ideas as well as feedbacks from the readers are highly encouraged to improve the quality of the journal publication in the future. Thank you.

Reading brings knowledge to inspire.

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FORCE PROTECTION: FIGHTING AGAINST COVID-19 PANDEMIC IN OP PENAWAR

**By BRIG GEN IR ABDUL HAMID BIN MOHD ISA
ROYAL ENGINEER REGIMENT**

INTRODUCTION

The Novel Coronavirus initially strikes our life at the end of 2019 which caused a massive public health issues around the globe. It was later named by World Health Organization (WHO) as COVID-19. On 12 March 2020, WHO declared that COVID-19 a pandemic, a global outbreak of a disease. In many countries, including Malaysia, pandemic actions plans were already taken place and have been activated by the government. But as of 1st July 2020, over 10 million cases have been reported around the world with sadly over 500 thousand deaths occurred. For Malaysia, over 8,600 total cases reported with up to 121 total deaths around the country. These are tragic numbers and it will continue to rise if drastic measures are not taken in order to cut the chain of infection.

Force protection or survivability is a concept consists of preventive measures taken to mitigate hostile actions and the ability to remain as a mission capable force during the course of an operation. Based on The Army, the ability of the Army to survive in the battlespace is a crucial factor. Maximum efforts and attention must be awarded to employ force protection of deployed combat, combat support and combat service support forces, including their command, control, communications and logistics installations. Above all, the Army's ability to survive and strike will be highly dependent on force protection and comprehensive communication systems. Therefore, the Field Engineer is the major contributing force to the mobility and survivability of the operating system at the Corps level. The survivability aspects include the chemical reconnaissance, decontamination and smoke elements. Based on MP 4.1.1 TD, the Royal Engineer Regiment (RER) role in survivability and sustainability tasks are to provide engineer services such as water supply, temporary accommodation, camp structures and decontamination facilities. Therefore, it is predominantly important in ensuring the sustainment of the force for the continuity of any operation without any hindrance. Thus it is imperative in order to achieve momentum of the effort and consequently accomplishing the overall mission.

Pandemic History

Plagues and epidemics have ravaged humanity throughout our existence. COVID-19 began as an epidemic in China before becoming a pandemic, as declared by WHO because of its rapid infection around the world in a matter of weeks. It is an infectious disease caused by a newly discovered coronavirus. The deadliest pandemic in history was the Spanish Flu (1918 – 1920). The virus infected an estimated one-third of the world's population and was responsible for causing between 20 million and 50 million deaths.

The H1N1 swine flu pandemic (2009 – 2010) that originated in Mexico was caused by a new strain of the same virus that caused the Spanish flu which is the H1N1 virus. In one year, the swine flu virus infected as many as 1.4 billion people globally and killed between 151,700 and 575,400 people. The 2009 flu pandemic primarily affected children and young adults, and 80% of the deaths were in people younger than 65. That was unusual, considering that most strains of flu viruses, including those that cause seasonal flu, cause the highest percentage of deaths in people ages 65 and older. But in the case of the swine flu, older people seemed to have already built up enough immunity to the group of viruses that H1N1 belongs to, so weren't affected as much. A vaccine for the H1N1 virus that caused the swine flu is now included in the annual flu vaccine.

These are just a few of the notable pandemics in the history of mankind. It seems that this dark history has been repeating itself from time to time and unfortunately now we must battle it again with this new kind of virus, COVID-19. COVID-19 is highly contagious because it spreads easily from human to human. People who have the virus are most contagious when they are showing symptoms of COVID-19. Someone who is infected also has the possibility to transmit the virus even if they are not showing such symptoms of infection. The virus is possible to be transmitted via touching virus-contaminated surfaces and may enter the body through mouth, eyes or nose. COVID-19 symptoms start as mild symptoms for many people, and gradually get worse over a few days.

Thus, the best way to prevent from contracting the COVID-19 virus is to stay at least 6 feet away from each other. This is the main purpose of MCO to be implemented in which is to instill social distancing people apart from anyone who seems sick and avoid gathering of large groups of people. Other ways of prevention are by avoiding sharing personal items with others and doing decontamination or disinfection

process on frequently touched surfaces like doorknobs and stair rails with household cleaners or a diluted bleach solution. The Malaysian Government has initiated the Movement Control Order (MCO) on 18 March 2020 in order to cope with the widespread disease. The main aim of MCO is to break the chain of infection and to protect all citizens, thus as responsible leaders in MAF, we offer our service and contribution to the nation.

Malaysian Army Role in MCO

The MCO is a special first of its kind operation in our country. For the Malaysian Armed Forces (MAF), we have been tasked to assist the Royal Malaysia Police (PDRM) in upholding this order in the so called OPERATION PENAWAR beginning from 22 March 20 under the Section 5 Act 342 of the constitutional law. It is truly an unprecedented event which is never been done before and give another new meaning in the context of Military Operation Other Than War (MOOTW). We are facing a new kind of threat; in this case it is a biological threat that we must combat.

Based on the Initiating Directive (ID) issued by the Chief of Army (PTD), the Army Field Command West (PMBTD) has been given the Operational Command in the deployment of Army troops and assets in Peninsular Malaysia. Its task is to assist PDRM in upholding MCO in Peninsular region in helping the government to contain the COVID-19 virus. The primary task is to assist in conducting road blocks (SJR), mobile patrol vehicle (MPV) and area control for Enhanced MCO (EMCO) at various designated locations around the country. This is to control the movement of people in order to minimise and stop from further spreading of the virus. It was based on what China has done where entire cities were placed in lockdown and schools and work suspended, thus prompted draconian clampdowns on civil life. The result of that drastic action shows a positive outcome which where WHO even credited the Chinese response and hence followed by other affected countries around the world. For us at the operational level, we must win the battle as we can't afford to lay off any unit when there are positive cases continue to appear in a particular unit.

The West Royal Engineer Regiment Head Quarters (MK RAJD PMBTD) was tasked to provide monitory and advisory roles on Chemical, Biological, Radiological and Nuclear (CBRN) matters to PMBTD Commander. Past occurrence on the chemical incident at Sungai Kim Kim, Pasir Gudang last year, has exposed real experience for MK RAJD PMBTD with regards to combating CBRN threat.

Although last years' incident was at the district and state level, but the response and action taken was similar. The difference now is only at the federal level and the threat, from chemical to biological. The West Field Engineer Commander (KJMB) as the Subject Matter Expert (SME) in engineering matters, provide direct advisory assistance to PMBTD Commander in the troop's survivability and force protection during the operation.

MK RAJD PMBTD has the capability to deal with CBRN environments with the expertise of 12 Sqn RER (CBRNe) in monitoring and advise all the units involved in Op PENAWAR. In fact, 12 Sqn RER (CBRNe) is the only combat engineering squadron trained and equipped to deal with situation in CBRN environment. Among its task is to provide training and readiness to respond to CBRN threat to enhance the survivability of friendly forces and public authorities. 12 Sqn RER (CBRNe) has been frequently involved in exercises and trainings on CBRN topics regarding CBRN weapons and agents, in both military and public sphere. Hence, to be involved in real operation such as OP PENAWAR is a great opportunity to further enhance their expertise.

Significance of 12 SQN RER (CBRNe)

The capability to defend against CBRN agent and sustain combat operations in CBRN environments requires forewarning by properly trained and equipped forces. Therefore, 12 Sqn RER (CBRNe) is always prepared to conduct and sustain operations in CBRN environments with minimal degradation. 12 Sqn RER (CBRNe) deployment in assisting civilian agencies in the Toxic Industrial Chemical (TIC) pollution incident in the Sungai Kim Kim that affects over 6,000 people at Pasir Gudang, Johor on 7 March 2019. The Humanitarian Aid and Disaster Relief (HADR) operation named *Operasi Bantuan Kemanusiaan TD Sungai Kim Kim*. The unit was deployed for 12 days and successfully conducted chemical detection, identification, marking, reporting and decontamination. Their success was mainly due to the training they received over the years. Among the trainings are as shown at **Table 1**.

No.	Type of Training	Title	Venue/Place	Year	Training Partners
(a)	(b)	(c)	(d)	(e)	(f)
1.	Bilateral Exercise	EX MANTIS	Malaysia & Canada	2015-2020	Canada
2.	Bilateral Training	CBRN Defense Unit Course and Life Agent Training	Canada	2015-2020	Canada
3.	SME Exchange	Kiwi Resolve	New Zealand	2019	New Zealand, Australia, US, Thailand, Philippines & Malaysia
4.	Bilateral Exercise	EX KERIS STRIKE	Malaysia	2019	US & Malaysia
5.	Multilateral Exercise	EX EASTERN ENDEAVOR	South Korea	2019	US, South Korea, Japan, Thailand & Malaysia
6.	SME Exchange	ASEAN Armies CBRN SMEE	Singapore	2019	21 participating nations
7.	Local Exercise	Capability and Readiness Exercise (CAREX)	Malaysia	2019	Royal Medical Corp (KKD) and Ministry of Health (KKM)
8.	Demonstration and Seminar	Non-Conventional Threats (NCT)	UPNM	2019	MAF CBRNe C-IED

Table 1: 12 Sqn RER (CBRNe) notable involvements

Recently, 12 Sqn RER (CBRNe) received the Armoured Engineer Nuclear, Biological and Chemical Reconnaissance Vehicle (AENBCRV) version of the AV-8 Wheeled Armoured Vehicle (WAV) developed by DRB HICOM Defence Technologies Sdn Bhd (DEFTECH). The AV-8 AENBCRV is fitted with CBRN equipment and systems to detect and identify any type of CBRN agents. The vehicle can determine and classify the hazard zone and alert other military units and civilians of potential dangers and take the necessary countermeasures. This is the new long term effort of MAF to ensure our nation's shield is capable to react with CBRN environment in the near future.

OP PENAWAR: Force Protection

Concept. The CBRN threats and hazards are constantly present and have its own potential effects on operations. These effects can be created through the intentional or unintentional release of CBRN materials in an operation area. By employing specific policies and procedures in CBRN operation, we can minimize or negate CBRN threats and hazards. Thus, the operations may require the employment of strategic and operational capabilities. According to the TD CBRNE Defense Concept, as what was done in this operation, we focus on the protection capability at the unit level. The capability to improve the survivability in the CBRN environment depends on the self aid and first aid ability and skill of every personnel and unit as a whole. Other than that, for more effective protection, the CBRN defense system depends on the individual and collective protection, warning and detection system, disinfection procedure, therapeutic action and a continuous training.

PPE. For individual protection, every personnel were equipped with a complete personal protection equipment (PPE) whether for field or disinfection duties. During OP PENAWAR, in order to protect themselves, the soldiers are wearing minimum level of PPE which consists of 3-ply surgical mask, rubber glove and together with their combat camouflage uniform and also carry a hand sanitizer.

Decontamination. Personnel decontamination is vital so that our soldier's positive state of mind is crucial as they head back to their barrack or family after finishing their operation for that day, they must be thoroughly cleaned so they will not bring back the virus back home. That is why a proper guideline for decontamination process was issued for all the units involved hence the cleaning process is properly done and the soldier are confident and high spirited to continue any new tasks later. The high morale must be maintained so that our soldiers are not easily burnt out. Another key factor to be considered in the biological threat environment is that if there are over five personnel have been infected in a unit, the outcome is that the whole unit will be temporary withdrawn. This is something the Army can't afford to bear.

Contamination control is vital to prevent such disaster from happening to the operating units. This is why decontamination stations must be properly established. These are preventive measures that have to be taken in order to avoid cross contamination and secondary airborne contamination in deterring the virus from entering the body. The appropriate and safe usage of disinfectant solution is also

something to be considered during the course of this operation. The disinfectant solution must not be hazardous to human body such as skin, eyes and lung if accidentally inhaled.

As the advisor in CBRN aspects for PMBTD, MK RAJD PMBTD has produced a guideline for decontamination process for the troops when they come back from the operation based on the Procedure in CBRNE Environment doctrine. The guideline has been distributed to all the formation including to the formation in East Malaysia. This is to make sure that all units adhere to the decontamination guidelines and the solution used for disinfection.

Monitoring. Apart from producing the guidelines, 12th Sqn RER (CBRNe) have been tasked to established monitoring teams to monitor and observe the decontamination stations at designated camps and locations within the West Command. They will give advice and conduct training on the appropriate decontamination process and methods. Since the commencement of OP PENAWAR, over 25 decontamination stations and sites in various Army camps and Police stations have been monitored and observed. Although during the first phase of MCO was a bit uncoordinated in terms of decontamination process, it can be seen from the monitoring teams reports that units gradually understands the process and adhere to the strict safety procedures in dealing with biohazard.

These have been a good training platform and exercises for all operating units to conduct decontamination process on CBRN environment. The effectiveness of this measure taken in conducting decontamination for our troops can be seen from the fact that there's no direct COVID-19 related case to our men conducting operation even in Red Zone or in EMCO areas.

Training. Based on a survey conducted by MK PMBTD with 6,200 correspondents, the outcome shows that our soldiers who are involved in OP PENAWAR are well prepared in terms of morale and their psychological emotions are in good state with over 85% gave positive response. This shows that the training in the Army is not just to train physically, but mentally as well, to always be prepared for the worst case scenario and be in any kind of condition, regardless of weather and environment.

Disinfection Teams

Continuous survivability or force protection plays a major part during any operation and it is among Army Engineer main role and task to safeguard and provide such duties. Apart from establishing decontamination monitoring teams, MK RAJD PMBTD has also formed disinfection teams that can be deployed when called upon in all Area of Operation (AO). The focus is on the Army camps and also family quarters (RKAT) because the main objective was not only for the protection of the personnel but also for their families. As mentioned by PTD from his tagline, "*Stay Healthy and Protect Yourself*", it can also be suggested that RER do answer the call of the tagline by keeping the men and families to stay healthy by protecting them.

In performing their duties as disinfection teams, they are provided with sufficient training by 12 Sqn RER (CBRNe) particularly during EX MANTIS Serial 6/2020. They are also being provided with PPE, sprayer pumps and disinfectant solutions for example bleach and anolyte (hypochlorous acid) which are used in this operation. However, the types of PPE used vary depends on the levels of the case or condition. Depending on the case scenarios, the level of PPE applied by the teams varies as follows (refer **Table 2**).

No.	Level	Condition/ Case	PPE
(a)	(b)	(c)	(d)
1.	1	PUS	Surgical mask, rubber glove
2.	2	PUI	N95 mask, rubber glove, goggle, disposable boot
3.	3	+VE	CBRN mask, CBRN glove and CBRN Overboot, Tyvex

Table 2: Levels of PPE for Disinfection Teams

The teams consist of combat engineers with a minimum strength of 1 Officer and 4 Other Ranks per team. Strategic placement of all the teams involved in the whole of West Command for fast deployment response. The main focus of the deployment is to disinfect facilities or areas that have a confirmed case of either in contact with PUS or PUI and even positive case of COVID-19.

As the country facing positive outcome in fighting COVID-19, the government introduced Recovery MCO (RMCO). During this phase,

the teams collaborated with KKD to advice, train and monitor other units within the formations HQ and brigades to facilitate the sanitization and disinfection operations of their own camps and facilities. This so called OP SANITASI PMBTD is the step taken to ensure the post COVID-19 life can be carried on with the new normal way of living as to avoid new infection within the military communities. Thus far the teams have conducted the following tasks (refer Table 3).

No.	Units	AO	Deployments
(a)	(b)	(c)	(d)
1.	12 Sqn RER (CBRNe)	Kedah, Perlis, Kuala Lumpur, Melaka, Negeri Sembilan	MK PMBTD, Kem Perdana Sg Besi (29 March 20)
			Officers' MQ Block C5, Kem Perdana Sg Besi (9 Apr 20)
			MALBATT Village, Port Dickson (29 May 20, 3-4 June 20, 8-9 June 20)
2.	21 Sqn RER (TA)	Kuala Lumpur, Selangor	MK PMBTD, Kem Perdana Sg Besi (14 Apr 20)
			ALK, UPNM (Jun 20)
3.	22 Sqn RER (TA)	Johor	Kem Mahkota, Kluang (15-16 Apr 20)
4.	23 Sqn RER (TA)	Kelantan, Terengganu	-
5.	24 Sqn RER (TA)	Perak, Pulau Pinang	Kerian, Taiping (20-21 Apr 20)
6.	4 Sqn RER (Bridging)	Pahang	94 DPP, Kem Syed Sirajuddin (16 Apr 20)
			Garrison Officers' Mess, Kem Syed Sirajuddin (30 Apr 20)
			KOMTA, Kem Syed Sirajuddin (2 June 20)

**Table 3: Task conducted by the Disinfection Teams
(at the time of writing)**

CBRN Logistic

Continuous logistics support in CBRN environments is a vital factor for successful operation. Logistics are particularly vulnerable in CBRN incidents as to what happen during this operation. Movement of supplies and maintenance of equipment slows in CBRN environments. The resources needed for recovery from CBRN incidents can severely strain the logistic system and cause unanticipated effects on combat

operations. Since this is a pandemic issue, countries all over the world have the same logistics setback. Other logistics considerations may include increased water requirements for personnel and equipment decontamination operations, large amounts of contaminated waste and inventory shortages of low-density CBRN protective equipment such as PPE may require unplanned movement of these critical supplies.

As this was a never before seen operation, we should take this opportunity to look back at our logistics methods and planning its sustainment to the force and avoid overstretch. The main items are the PPE, as all other CBRN communities in the whole country or world are looking for PPE and became in short supply due to high demand. During this pandemic, PPE have become scarce, thus the employment or usage of PPE must be diligently planned. The planning factors should consider the duration of such operation, which is in this case, a continuous of 14 days' operation per phase. The disinfectant solutions that were used to disinfect and decontaminate the affected areas and also personnel are also a key item in CBRN logistics planning. This is important because such inventory has various and limited life expectancy based upon numerous factors such as packaging, operation and storage.

Way Forward in Force Protection

As we can see the silver lining from this COVID-19 pandemic, our men have the understanding and capabilities in dealing with this incident. This is due to the ability of the men to adapt and adopt quickly. This operation also gives the opportunity for all units other than RER to understand the CBRN theater, which in this case, the biological environment. This operation cum training marks a new beginning of the new perspective for the Army to conduct any operation in that environment.

Currently, there is only one squadron of CBRN unit in RER to cover the whole of Peninsular Malaysia. None so exist at East Malaysia. It is vital to have at least a regiment strength of CBRN unit under the Army. We may not know what's in store in the coming years in term of CBRN threats. The best way is to always be prepared with the proper personnel, equipment, knowledge and skill. Other foreign Army Engineer around the world were deliberately engaged during this pandemic, the US Army Corps of Engineers converted a New York convention centre into a temporary field hospital with 1,000 beds in the space of a week. The Taiwan Chemical Corps Division has been involved in several disinfection tasks and also took charge of

preventative disinfection work in military bases around the country. These are just some examples of the deployment of engineers from the largest to the smaller country. We should learn and take the positive notes from other countries in order to strengthen our force.

Reviewing CBRN Doctrines

Based on the doctrine, it is time to look into this matter to revise according to the current threat and environment. As mention by PTD, it's about time the Malaysian Army review and reevaluates its doctrine of training after COVID-19. This is important to look back at our preparedness and capability in dealing with such operation if it occurs again. Apart from that, new guideline should also be updated from time to time and must be based according to the current standard based on guidelines given by WHO, KKM and also our KKD. This is to ensure the best practice will be upheld during the occurrence of any operation in CBRN environment in the future.

The current doctrine for the procedure in CBRN environment only focuses on wartime environment. The biological threat that is mentioned in Chapter 4 indicates more towards biological attacks consists of bombs, artillery, missile and mines within a designated area or place. Not like from what we have experienced now which is a natural and uncontrolled widespread disease. Thus it is time to revise either the current CBRN doctrine or update the MOOTW HADR doctrine. Since it is a non-military threat, we should revise the deployment, mobilization, logistics, force protection and also the training concept so that the Army can be prepared if such disaster reoccurs. It is time for the nation to look at the CBRN scenario as a one of the main threat to the defense of our country and be prepared to face it

CONCLUSION

The CBRN threat which in this case the biological threat is always present and exist. History teaches us to always be vigilant and be prepared because such pandemic may strike again and tends to repeat itself with a new and evolved kind of virus. We should face the fact that the biological threat is here to stay. The COVID-19 pandemic gives a whole new perspective of force protection. This is because the issue of a soldier's life being put in somehow harm's way by being involved in any operation should never come to pass. All military operation conducted must proceed with detail planning, appreciation and thorough risk assessment. Doctrinal review and logistic

procurement must also be parallel with the ever growing demand of the fast changing dynamics of the operations to come in the future. The action taken after all the risks and appreciation have been factored in and deemed acceptable will be based upon the steps that the protection of the force has been taken. That is why force protection or the survivability of a soldier embarking on such duties will be looked into in every possible precaution in order to ensure that their life is not in danger. Maintenance of morale of the soldiers and families is a matter of utmost importance. This is to ensure that all of our men are mentally and physically ready for the task at hand.

Based on the experience in this operation, it is believed that the public view towards the role and tasks of MAF have rather changed in a positive direction and of high regards. The role of the RER with regards to force protection to maintain operational troops in the ability and capacity for continuous operation is very relevant. This is why MK RAJD PMBTD and 12 Sqn RER (CBRNe) are significant throughout this operation in terms of planning, maintaining and executing the force protection activities in the operation.

BIBLIOGRAPHY

Centers for Disease Control and Prevention.
<https://www.cdc.gov/flu/pandemic-resources/1918-pandemic-h1n1.html>

Corps Operation (Provisional), 2009. MD 3.0.2 TD.

Kajian Moral OP PENAWAR, Cawangan Bantuan Tempur, MK PMBTD conducted on 2 April 2020 by Lt Col Looi Chin Beng.

Malaymail. 15 May 2020.

Prosedur Dalam Persekitaran Chemical Biological Radiological Nuclear and Explosive (Sementara), 2013. MP 4.2.9A TD.

Royal Engineer Regiment (Provisional), 2007. MP 4.1.1 TD.

The Army (Revised Edition), 2010. M 1 TD.

United States Environmental Protection Agency.

ASEAN DEFENCE SECURITY FORESIGHTING IN THE NEXT DECADES

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INTRODUCTION

In the era of 21st century, globalisation has made significant changes global political, social and cultural environment. Being the process that integrates the world into one comprehensive system, globalisation has impelled inexorable unification of economic, political and cultural activities beyond borders which has profusely brought prosperity to ASEAN. Fortuitously, globalisation has also created a heavy baggage of risks to the region where the security threats have evolved and become more complex.

The current geo-politic landscape of Asia is transforming, good or bad are very subjective argument. These are some parting words of concern about our region: firstly, its home to half of humanity, the region remains a very promising one politically, strategically and economically; however, we also believe that our region is a very dangerous one, with the most intractable maritime and land border disputes and with largest number of nuclear armed countries. In this regard, some existing platforms to construct tangible conflict management mechanism remained as talk shops.

Let's look at some serious security challenges in our region: Nuclear proliferation, the volatile Korean Peninsula, South China Sea, India-Pakistan stand-off over disputed Kashmir, land disputes between China and India, the continuing wars ravaging Afghanistan and Pakistan, the escalating ethnic and religious conflict in Myanmar threatening to spread and inviting extremist external involvement, the unresolved insurgencies in Southern Thailand and the Philippines, and the ever presence and threat of ISIS-inspired sympathizers and militants across Asia. There are also some salient non-traditional security challenges our region faces such as water scarcity, food security and forced migration.

Asean Defence and Security Foresighting

Two years after its gold jubilee, ASEAN must also be very concerned about the growing security challenges and divisions that may undermine ASEAN unity and progress. Hence, lack of political will and collectivism would be very damaging for ASEAN. With the geopolitical shift from unipolar to multipolar world the ASEAN defence and security scenario is unlikely to change in the near future; where rivalries between major powers are set to dominate the scene with other formidable security challenges confronted by the region such as overlapping claims of the SCS, ever-growing terrorism, humanitarian crisis and transnational crimes.

Geo-Political Shift (Unipolar to Multi Polar World & Major Power Rivalries)

With the rise of new powerhouses (China, Russia, India etc.), the hegemon in the US potentially becoming world and war weary. It is projected this emergence would relegate the US status from unipolar to multipolar, coupled with domestic constraints that may erode the US expansionist capabilities. Currently ASEAN is facing growing competition between US and China where the geostrategic significance serves as an attractive venue for these major powers equation. China's aggressive militarization at the SCS has lured the US into the scene. Being the world's largest economic powerhouse who manages enormous military budgets as well as permanent member of the UN Security Council, these two major powers portray an iconic bilateral relationship that will influence and characterize other nation's relations with them either bilateral or multilateral. This represents as one of major challenges of ASEAN as it cannot accommodate any crises between these major powers in the region. Besides that, the influence of these major powers also have engrossed middle power such as UK, Australia, India, Japan and Korea into the region and this will definitely provide significant impact on broader regional strategic dynamics.

South China Sea Territorial Dispute

A topmost issue that strongly influences ASEAN's maritime security today and in the future, is the issue related to the South China Sea (SCS) conflict. China is seen by many in the region as being on the path to become a hegemonic power in the region and the continuous aggression at this water can create a situation that, if not managed prudently, could spiral into trouble. China's nine dash line has

sparked controversy among the claimant states in the region. Land reclamation activities and infrastructure construction by China in the strategic area of SCS are seen as the starting point for developing their active defense strategy to preserve its maritime territorial claims.

Terrorism

With the recent military defeat of ISIS in Iraq and Syria there could be magnetic effect and dramatic shift on the ISIS operations towards the Southeast Asia region. There are fears that the returning fighters may pursue their objectives in their homelands and within the region. The Armed Forces of the Philippines military operations in Marawi have shown how the militants have established their presence in that city. Besides that, suicide bombing in Surabaya and church bombing in Jolo shows that this threat is continuously-evolving with the involvement of home-grown ISIS/DAESH-inspired sympathizers which eventually may turn this region as their new footholds in the future.

Geo-Climate Shift (Global Warming)

'Global warming', a new form of 'Non-Traditional Security (NTS)' threat has emerged in this 21st Century, which enters into the expansion of security agenda of present world order. Myriad of researches have been carried out in order to understand the diversified impacts of global warming in ASEAN. It is seen that; the country is likely to face a temperature increase from 1.35 to 6.33°C within next 100 years. Alongside environmental degradation, such temperature rise would also create diversified security issues in the form of food security, health security, economic security, political society and societal security to the safety and survival of the state and its people. This makes 'global warming' a serious NTS threat to the region.

Technology Shift

In the past decade, the swift and remarkable developments and innovations in technology, the pervasiveness of the internet and education and knowledge dissemination through online learning have outpaced most projections. As the world and its people shifts away from the archaic processes and structures that shaped our bygone, the drivers of transformation change could be from but not limited to areas such as quantum supercomputing, genomics, nanotechnology, space technology, chaos theories, etc. The countless changes in the fields of technology, innovation and science alter the future environment we will operate in. According to a report recently released by the World

Economic Forum (WEF), nations would fight over weather manipulation tools, food supply chains, space and effective computing. Would in the next twenty years foresee ASEAN countries embracing much more the fruits of the Fourth Industrial Revolution or Internet of Things (IoT) such as automation, cloud computing, robotics and artificial intelligence in their economic and security domains. Wouldn't these technological advances be the very thing that attract and expose them to the threats of cyber politics and warfare?

Challenges

Since 2016, the ASEAN Defense Ministers Meeting (ADMM) has been a platform for actively pursuing security cooperation in the region as the highest consultative defence cooperative platform for the organisation. In addition, since 2011, ADMM member states have worked with non-ASEAN countries in defence and other areas of common interest, leading to the formation of ADMM Plus in a spirit of inclusiveness. A major challenge in such an arrangement is the evolving regional power distribution and how it influences leadership with independent policies in shaping geo-strategic directions. Thus far, through the spirit of ASEAN centrality these challenges have been well-managed.

The objectives of ADMM Plus are similar to ADMM. Like ADMM, it aims at building capacity to address shared security challenges, promoting mutual trust and confidence, enhancing regional peace and stability, contributing to the realisation of an ASEAN Security Community, facilitating implementation of the Vientiane Action Programme, and adopting a greater outward-looking approach in external relations strategies with friends and Dialogue Partners. Since its formation, ADMM Plus has secured major achievements such as cooperation on Humanitarian Assistance and Disaster Relief, and counter-terrorism. In addition, there is the presence of extra-regional players actively involved in influencing the direction and shape of security issues in Asia. These new shifts and evolving changes are a challenge to members aiming to pursue a common, shared, and unified approach in achieving regional peace and stability. Moving forward, ASEAN will have to play a more proactive and independent role in ensuring that the ASEAN security community remains relevant for the continued peace and stability of the region.

Nevertheless, it is important that periodic strategic assessments be conducted on the overall vision, objectives, and deliverables of ADMM and ADMM Plus to ensure that we remain on track with the

overall objectives and for effective follow-through purposes. The previous work plan for ADMM covering the period 2014-16 focused on strengthening regional defence and security cooperation, enhancing existing practical cooperation, and promote enhanced ties with Plus countries. The current agenda for the next three-year-work programme running through 2017-20 is primarily also aimed at developing a framework for the long-term shared and unified approach towards regional peace and stability.

In this aspect ASEAN through ADMM can be instrumental in providing sound opinions on regional security defense challenges in particular on the following areas:

- ❖ First, new shifts that are reshaping security priorities in the Asia Pacific involving rising powers such as China and the emergence of middle powers with huge populations, have strong potential to influence the geo-economics of the Asia Pacific. In addition, the evolving regional power distributions and influences will impact Asia including the ability of countries, and ASEAN, to shape independent policies that take into account multilateral geo-strategic directions.
- ❖ Secondly, ASEAN diversity is a challenge for decision making and in managing multilateral platforms, like ADMM and ADMM Plus. The challenges faced by ASEAN, for instance, include South China Sea issues and involve multiple parties with varying degrees of interest vis-a-vis regional interests. Other issues, such as refugees and humanitarian assistance, also require different approaches.
- ❖ Thirdly, there is uneven capacity for peacekeeping and peace building activities among ASEAN members, although there are many mechanisms and platforms like HADR, search and rescue, peacekeeping, etc. This is a gradual process that can't be embraced at one point, but strategies and mechanisms can evolve to meet the needs that have to be addressed.
- ❖ The fourth facet is that defence and security cooperation is faced with new challenges involving maritime territorial disputes, terrorism, cyber security, and conflict prevention. Although not new, the challenges are getting more urgent and it's now the right time to explore all strategic considerations.

In this regard, Malaysia remains committed to the seven Expert Working Groups (EWGs). Malaysia may, from time to time, encourage the member countries involved to do a stock-take of ADMM-Plus activities, exploring gaps in the processes, directions to take, and provide a road map that will accommodate the interests of ASEAN and its Plus members. Besides, it will be useful for ADMM and ADMM Plus members to commence addressing strategic and new challenges on regional security issues and analyse the role of ADMM in advancing security and strategic directions.

Way Forward

Having covered most of the issues above, the road map forward for sustainable security in ASEAN that can be considered are:

- ❖ ADMM should assume leadership rather than follow extra-regional powers in shaping and charting the ASEAN path in particular on defence and strategic cooperation. This includes the importance of adopting a neutral stance in members' foreign policies rather than taking sides in conducting ADMM and ADMM Plus activities.
- ❖ In the context of ADMM and ADMM Plus, while HADR has been the focus for 2017, maritime security should remain as our all-time priority because major geo-strategic and geo-political issues in this century will centre on the maritime domain. Since Southeast countries are mainly maritime nations, maritime security should remain top priority. To narrow the focus of the Expert Working Group on maritime security, the priority on maritime security should be to enhance maritime cooperation, identify risks in the maritime domain especially non-traditional security threats, and promote wider information sharing.
- ❖ There hasn't been much attention on addressing re-emerging traditional issues on the maritime domain. There have been 18 types of exercises held in the past 5 years for maritime security or maritime issues. However, maritime security issues still need addressing in both traditional and non-traditional areas, including South China Sea, militarization and military operations, and crime at sea (kidnapping, illegal use of sea routes). Southeast Asia issues are seen as a potential flash point and require a Crisis Management Mechanism. Perhaps, ADMM and ADMM Plus, being the strategic platform, can discuss critical issues on militarisation or military operations at

sea. These issues must not be avoided, especially when conducting military operations and exercises in territorial waters.

- ❖ The South China Sea and operational issues on military activities within and beyond our exclusive economic zone (EEZ) also need addressing. In this regard, there may be a need for an operational definition to guide the military in their exercises in line with the positions of governments and being aware of the sensitivities involved.
- ❖ Inter-agency cooperation, in particular coordination will be a challenge for ASEAN countries in addressing the cross-pillar issues. In this aspect there is an urgent need for stakeholders to regroup and discuss holistically ADMM and ADMM Plus activities and its operations that go beyond the “comfort zone” for better governance. ADMM should explore further potential cooperation in the future involving not only the military but encompass the wider domain of civilian agencies to address emerging threats effectively and holistically.
- ❖ ADMM will, without doubt, face obstacles in reaching consensus on aligning national interests with that of regional and multilateral issues - in this regard, ASEAN Track II organisation can encourage members to give equal weightage to regional interests (regionalism) since no nation can work alone especially in dealings with regional and PLUS members.
- ❖ While ASEAN centrality and interest should remain in the forefront it is now the right time to forge a clear vision of ADMM and ADMM Plus priorities in line with the principles of ASEAN's existence. In this regard, ASEAN Track II organisation should produce a strategic plan covering short, medium and long term goals and, most important, one for 2030 to lead the discourse on ADMM and ADMM Plus.
- ❖ The ASEAN Defence Senior Official Meeting (ADSOM) and ADSOM WG should encourage ASEAN Track II organisation to undertake policy research on current issues and identify areas of cooperation involving ADMM and ADMM Plus.
- ❖ ASEAN may consider exploring issues relating to space security since it is one of the areas of interest for the whole world. Malaysia was once very advanced in space security in the region and at par with South Korea but has now lagged due to

a loss of focus. ASEAN should also focus on cyber security in particular cyber defence and cyber offence capabilities.

CONCLUSION

Within the its framework, ASEAN has to acknowledge the next decades in the horizon will foresee much more complex and transnational security challenges which will be beyond the capacity and capability of anyone ASEAN partner to manage the risk alone. These challenges may even create risks which would severely test the cohesiveness of the ASEAN Community resilience and perseverance.

Over the last decade, ASEAN has successfully enhanced defence security cooperation through its many confidence-building measures (CBMs) and/or confidence and security building measures (CSBMs). Should we now move the CBMs and CSBMs to the next higher plane of Trust-Building Measures (TBMs) with the publication of Defence White Papers by ASEAN member states? Malaysia is currently in the process of developing her 1st Defence White Paper this year. Malaysia will share in a transparent manner its strategic outlook of the global and regional security environment; state its strategies and capabilities needed to address the opportunities and challenges identified; elucidate how it would modernise its force-in-being to become a future force and cost it and endeavour to explain how it intends to develop its defence and security industries within the next decade.

In conclusion, ASEAN has to remain vigilant of big power influences and must never be perceived as being a client state of any of them as this may impact the centrality of ASEAN which took many years to be forged and strengthened. On the other hand, ASEAN must continuously reflect on its agency plus “activisms” capacity and capability to be recognised as a “middle power” which is able to influence and shape the global and regional defence security environment in order to sustain and maintain peace, prosperity, unity, good governance and stability in the next two decades.

REFERENCES

AFP News (2017). *US Commander warns of more IS attacks in Asia-Pacific*. AFP News 19 January 2017. www.sg.news.yahoo.com (assessed 19 Jan 17, 0927H)

- Botkin, D.B. & Keller, E.A. (2005), *Environmental Science*. John Wiley & Sons Publication, USA.
- Chang, Peter T.C. (2017). *Civilizational Fault Lines Could Unravel Grand Vision*. New Straits Times 31 Jan 17, pg 19.
- Jazlan, M (2014). Malaysian Defence Policy and Defence Budgeting. Notes prepared for MSc Engineering Business Management, University of Warwick, UK.
- Kavi, Chongkittavorn (2017). ASEAN secrets Trump Must Know. The Star 27 Jan 17, pg 31.
- Kelvin, Capt Fu Wen Hao (2015). *Globalization and Its Impact on Military Intelligence*. Pointer, Journal of the Singapore Armed Forces Vol 41 No.2 16 Jun 2015. www.mindeg.gov.sg (Accessed 19 Jun 16: 1510H).
- Kushairi, (2017). *Cybersecurity*. New Straits Times (NST) 2 Nov 2017, pg 14-15.
- Layne, C. (2009). *The Waning of U.S. Hegemony – Myth or Reality?* Journal International Security. Summer 2009. Vol 34. No: 1. Belfer Centre for Science and International Affairs. Harvard University.
- Lee, Dr Hoon (2013). *Economic Globalization and Territorial Disputes* by, Texas Tech University (posted on 6 December 2013). www.guleninstitute.org (Accessed 15 Apr 16: 1134H).
- Mak, J.N, (1997). *The Modernisation of the Malaysian Armed Forces*, Contemporary Southeast Asia; June 1997; Number 1; ABI/INFORM Global.
- Mohamad, Dr Mahathir (2002). *Globalisation and the New Realities*. Pelanduk Publications (M) SdnBhd, Selangoe DE, Malaysia.
- Murphy, Martin N (2007). *Contemporary Piracy and Maritime Terrorism: The threat to international security*. International Institute of Strategic Studies, (ADELPHI PAPER 388). Arunder House, London, WC2R 3 DX.
- Noor, Elina (2017). *At 50, ASEAN cannot afford a mid-life crisis*. New Straits Times 10 January 2017 pg 22-23.

- NST (2012). *Code of Conduct in the South China Sea*, New Straits Times (NST) 7 Feb 12, pg 22-23.
- NST (2016). *Bloc should be united in sea dispute*. New Straits Times (NST) 19 Dec 16, pg 12.
- NST (2017). *Cybersecurity centre to be fully operational by September, says Hisham*. New Straits Times (NST) 18 January 2017, pg 15.
- Pfaller, Alfred & Lerch, Marika (2005). *Challenges of Globalization: New Trends in International Politics and Society*. Transaction Publishers, New Brunswick (USA) & London (UK).
- Samuel P. Huntington (1996). *The Clash of Civilizations and the Remaking of World Order*. Simon & Schuster, London.
- Schell, Orville & Shirk, Susan L (2017). *Policy Towards China: Recommendations for a new Administration*. Task Force Report by Asia Society Centre US-China Relations, New York (UC San Diego School of Global Policy and Strategy).
- Schirato, Tony & Web, Jen (2003). *Understanding Globalization*. Sage Publications, London & California.
- Soloman, Hussien (2008). *Challenges to Global Security: Geopolitics and Power in an Age of Transition*. I.B. Tauris & Co Ltd, New York & London.
- Webb, Graham Gerard Ong (2006). *Piracy, Maritime Terrorism and Securing the Malacca Straits*. International Institute for Asian Studies, Singapore.

COVID-19: THE CHALLENGES AND NEW TRENDS IN THE DENTAL SERVICES OF THE MALAYSIAN ARMED FORCES

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INTRODUCTION

Working in a dental healthcare setting carries an inherent risk of exposure to communicable diseases, most commonly blood borne diseases, such as Hepatitis B and HIV. Dental healthcare personnel (DHCP) are trained to adhere to the Standard Precautions designed to reduce or prevent the potential for disease transmission (Malaysian Dental Council [MDC], 2017). The adherence to the Standard Precautions allows dental services to be accessible by people of all walks of life, regardless of their disease status, known or unknown. However, the sudden emergence of COVID-19 the potentially fatal respiratory infection caused by a new virus has challenged the conventions of dental practices, resulting in a new view of infection control strategies and new trends in service delivery.

The Global Spread

Discovered in Wuhan, China in December 2019, COVID-19 is caused by SARS-CoV-2, a novel strain of the coronavirus which primarily infects the lower respiratory tract in humans (Li et al., 2020). Within three months from its first reported case, the infection has spread across the globe to more than half of the world's nations and had claimed over 4000 lives, compelling the World Health Organization (WHO) to declare COVID-19 as a pandemic on 11th March 2020 (World Health Organization [WHO], 2020a). By the end of September 2020, the number of COVID-19 infection has risen to a staggering 33 million people, with the global death toll crossing the one million mark (WHO, 2020b). While countries worldwide have implemented containment and mitigation strategies which have controlled the pandemic to some degree, those measures were yet inadequate to halt its transmission. The key to eliminating this infectious disease is believed to lie within a vaccine (Heywood & Macintyre, 2020). Researchers are racing against time working at an unprecedented speed to produce a safe and effective vaccine within only a few months, which historically had taken years to produce. Until then, every aspect of livelihood will continue to be detrimentally affected by this disease.

COVID-19 in Malaysia

Malaysia reported its first COVID-19 case on 25th January 2020, followed by acquiescent phase throughout February before the number of cases grew exponentially in early March 2020 (WHO, 2020c). The spike of new cases had the Malaysian government enforced a nationwide partial lockdown, known as the Movement Control Order (MCO) on 18th March 2020, as part of the effort famously hailed as "to flatten the pandemic curve" (Povera & Teoh, 2020).

Malaysia has gone through three main phases of the MCO since it came into effect. The phases were rolled out depending on the current national COVID-19 situation, with the strictest form of the MCO having taken place from 18th March to 31st March. Following a persistent downward trend of new COVID-19 cases, the government finally gazetted the Conditional MCO (CMCO) from 4th May 2020 which saw significant relaxation of the previous restrictive MCO rules (Povera & Chan, 2020). From 10th June to date, Malaysia has entered its latest and most lenient phase yet: The Recovery MCO (RMCO). The RMCO allows further ease of the restrictions which translates to the resumption of almost all business, social, religious, and educational activities while still subject to strict standard operating procedures (SOPs) (Povera & Chan, 2020).

Transmission Mode of COVID-19

As a respiratory illness, the SARS-CoV-2 virus enters the human body through the mouth, nose, and the eyes from direct exposure to the virus via saliva and respiratory droplets of an infected person. These potentially infective particles are generated when an infected person coughs, sneezes or talks and is termed as droplet transmission. Additionally, the virus may spread indirectly via contact transmission where a person touches a contaminated surface such as a doorknob, then touching their mouth, nose, and eyes without washing their hands (WHO, 2020d).

Earlier epidemiological studies indicated that airborne transmission of COVID-19 is unlikely (Centers for Disease Control and Prevention [CDC], 2020a). Airborne transmission typically involves infectious agents within particles that are smaller than respiratory droplets. These particles, namely aerosols, can remain infectious while being suspended in the air for long periods and can travel over greater distances (WHO, 2020d). The unlikelihood of COVID-19 to disseminate via the airborne route is rather fortunate as an airborne transmission

would have had a more devastating impact globally and a more significant public health challenge. However, in a healthcare setting, an airborne spread of COVID-19 is possible where aerosol-generating procedures (AGPs) are performed (WHO, 2020d).

In the context of dentistry, AGPs are common procedures that involve the use of water spray in combination with instruments rotating at high speed, such as drilling with a high-speed hand piece and ultrasonic cleaning of teeth, better known as scaling. During an AGP, a large amount of visible aerosols and droplets (Figure 1) which may constitute the patient's saliva, blood, tooth particles and microorganisms originating from the patient's mouth and airway is expelled into the immediate environment (Zemouri et al., 2020). As they are much smaller and lighter, aerosols could stay airborne for hours and can travel a distance greater than one meter. Respiratory droplets, on the other hand, are heavier and larger and thus tend to settle quickly onto surfaces within a meter range (WHO, 2020d). Because SARS CoV-2 are found in saliva and in the airways of infected patients (Iwasaki et al., 2020), aerosols and droplets generated during dental AGPs may contain the virus, thus placing DHCP and patients at an elevated risk of contracting COVID-19.



Figure 1. Aerosols emitting from a high-speed hand piece

Effects of COVID-19 On Dental Services

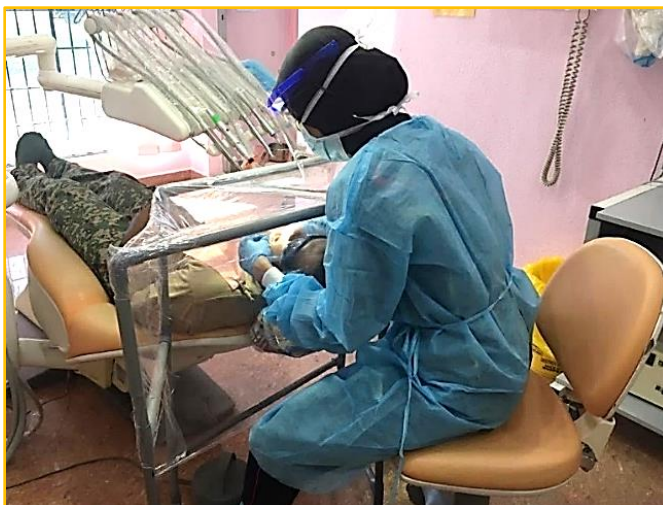
As the new virus began to spread widely, concerns grew among the dental fraternity regarding the transmissibility of the virus between DHCP and patients during the provision of dental treatment. In times before COVID-19, the Standard Precautions routinely observed in dental settings are adequate to protect DHCP against blood borne disease transmission. A supplementary of the Standard Precautions, namely the Airborne Precautions, are additional measures prescribed to prevent the transmission of airborne diseases in a hospital setting. However, dental clinics are usually not designed to cater for cross infection control against airborne diseases (CDC, 2020b)— which in the wake of COVID-19, had attributed to the initial confusion and apprehension among dental practitioners regarding personnel and patient safety. To be working near a patient's mouth, which harbours the virus in infected individuals, it would be understandable if any dental practice had either reduced or ceased its operation altogether at the beginning of the outbreak. However, in a positive light, COVID-19 has triggered the development of innovations on aerosol reduction and room disinfection and a new approach to service delivery through tele dentistry (CDC, 2020b).

Although there has been no evidence of COVID-19 transmission from dental aerosols (Epstein et al., 2020), the possibility of COVID-19 to spread via the three modes of transmission in a dental clinic cannot be ruled out. The three immanent attributes of dentistry that contribute to this possibility: the proximity of DHCP to a patient's mouth, the inevitable spatters and sprays that accompany dental procedures and the design of a dental setting. Therefore, in addition to the routine application of Standard Precautions, preventing COVID-19 in a dental setting requires a new approach to disrupt the chain of transmission at every possible route.

The Dental Services of the Malaysian Armed Forces (DSMAF) being inclusive of the defence and health sector is considered as an essential service and continued to operate during the MCO, albeit within restrictions. By the guideline issued by the *Perkhidmatan Pergigian Angkatan Tentera Malaysia* (PPATM, 2020), the Armed Forces Dental Clinics (AFDCs) were to limit service provision to patients presenting with dental emergency and to restrict treatment to non-AGPs only while the MCO was in effect. In other words, all routine and elective dental treatments, whether or not involving AGP were suspended. A drawback of non-AGPs in managing dental emergencies is that, often than not, it only provides temporary pain relief which might

likely require the patient to rely on pain medication or repeat an emergency visit, until definitive treatment can be delivered. In a more drastic measure, some patients would opt for an extraction of a painful but salvageable tooth to avoid the relapse of pain and prolonged waiting for definitive treatment.

The apparent limitations of non-AGPs had set off attempts among DHCP of DSMAF to design and improvise a protective barrier that would physically contain the spread of dental aerosols. The makeshift barrier, known as the aerosol box, is strategically placed over a patient's head and chest. At the same time, a dental officer manipulates his instruments through two small openings on the box (Figure 2). While the advent of the aerosol box had facilitated the resumption of AGPs during the MCO, it incurred considerable restrictions on hand manoeuvrability, visibility and ergonomic body positioning of the dental officer. The resultant which, not every dental officer was keen on using an aerosol box routinely. Even though there has been no research on the effectiveness of an aerosol box in the prevention of COVID-19 in a dental setting, the box has shown to significantly reduce the area of aerosol dispersal in a treatment room compared with a wider area of dispersal when none was used (Teichert-Filho et al., 2020). Given the possibility that COVID-19 may become aerosolised during AGPs, this finding suggests that the use of an aerosol box may confer some protection against COVID-19.



**Figure 2. Delivering treatment through an aerosol box
at Sungai Petani AFDC**

Under normal circumstances, AGPs generally account between 50%-80% of the dental services rendered in AFDCs (*Penyata Rawatan Bulanan* [Return], 2017; Return, 2018; Return, 2019). Following the suspension of AGPs, dental services in AFDCs were severely hampered as even the most basic of treatment, such as routine fillings and scaling had to be deferred. Additionally, all routine dental examinations, including for PULHEEMS renewal, had to be postponed, except for mission deployment and service continuation (*Cawangan Pergigian-Bahagian Perkhidmatan Kesihatan* [Cwg Pergigian-BPK], 2020a). A pronounced decrease of 80%-92% in patient attendance to AFDCs from April through May 2020 reflected the negative effect of COVID-19 on the dental service (Return, 2020). Upon the enforcement of the CMCO and the reception of adequate PPE supplies, AFDCs began to reinstitute its service to a broader scope of treatment.

Reformation of The Delivery of Dental Services in The Face of Covid-19

The necessity of dental services even in times of crisis cannot be understated as 90% of patient attendance to AFDCs during the MCO was due to dental emergencies (*Cwg Pergigian-BPK*, 2020b). Especially when the country is at war against a biological enemy nonetheless the maintenance of oral health amongst the Malaysia Armed Forces (MAF) troops through continued dental care is of great importance to ensure maximum deployment capacity of the troops. Despite the ongoing threat of COVID-19, DSMAF needed to adapt quickly to the new situation for its service to resume while minimising the risk of COVID-19 to patients and DHCP. The following risk-reducing measures are implemented in AFDCs in light of the COVID-19 situation to ensure the delivery of dental care without compromising the safety of everyone involved.

Patient Screening and Triage

Patient screening was implemented as the first step in COVID-19 prevention in all AFDCs since the MCO was enforced. Because COVID-19 has an incubation period of 2-14 days during which an infected person may be highly infectious while remaining symptom-free (Tang, 2020) it is crucial to assess the risk of COVID-19 in every patient entering a dental premise. In addition to measuring body temperature for fever, screening involves a health survey that includes questions on the presence of symptoms consistent with COVID-19, recent travel history and possible exposure to COVID-19 infection. In the absence

of an emergency condition, patients deemed as 'High Risk' will be required to postpone all non-emergent treatment (PPATM, 2020).

The term 'dental emergency' may carry a wide range of meaning from a patient's point of view. To identify and prioritise real emergency requiring immediate treatment, AFDCs implemented patient triage during the MCO which would classify a patient as either a 'high priority' or a 'low priority' depending on the severity and urgency of the condition. AFDCs were strongly advised to defer all 'low priority' conditions until the MCO was lifted. In essence, the provision of dental care should only proceed after careful consideration of risk at two-tier: the risk of harm to the patient should treatment is delayed, and the risk of COVID-19 transmission to DHCP and other patients should treatment takes place (PPATM, 2020; *Cwg Pergigian-BPK*, 2020b).

Measures to Support Physical Distancing in AFDC

Recent studies have suggested the possibility of airborne spread when people are confined in crowded and poorly ventilated spaces that allows aerosolised SARS-CoV-2 (generated from coughing or sneezing) to accumulate in sufficient amount to cause an infection (WHO, 2020d). A similar setting may apply to the waiting area of a dental premise. AFDCs employed various measures to encourage physical distancing and prevent crowding, such as rearranging the seating in the waiting area, blocking alternating seats and discouraging patients from bringing a companion to the clinic, except for child patient (Figure 3).

Following the enforcement of CMCO, AFDCs began to reopen its door to a broader range of services not limited to emergency care. To avoid patients crowding the waiting area, AFDCs are encouraged to schedule appointments for patients seeking routine and elective treatment (*Cwg Pergigian-BPK*, 2020b).



Figure 3. Seating arrangements to promote physical distancing

Utilisation of The Personal Protective Equipment (PPE)

PPE is the protective clothing for the protection of DHCP against exposure to blood borne microorganisms from sprays and spatters produced during dental treatment (MDC,2017). However, the standard PPE commonly worn by DHCP are inadequate to protect against the inhalation of infectious agents, such as the SARS-CoV-2 virus (CDC, 2020b). This inadequacy warrants the modification of the standard PPE to expand its protection against COVID-19, particularly during AGPs. These modifications include the use of an N95 mask along with the standard 3-ply surgical mask, double-layered gloves, water-resistant surgical gown, head cover and shoe cover (Cwg Pergigian-BPK, 2020b) (Figure 4). Patrons of AFDCs are required to wear a face mask as well while in the premise.

Designation of A Treatment Room for AGPs

Aerosols ejected from a patient's mouth during AGPs can scatter up to 150 cm away before falling onto surfaces (Zemouri et al., 2020). They may also spread even further into a non-treatment area as a result of human movement (Grenier, 1995). The spatial distribution of dental aerosols necessitates a separate, well-ventilated, closed treatment room specifically for AGPs to limit the aerosol spread. To reduce the risk of contact transmission from aerosols settling onto surfaces, non-essential items such as stationeries, and personal items like mobile phones are to be kept in covered storage or removed from the room entirely (Cwg Pergigian-BPK, 2020b).



Figure 4. DHCP in modified PPE while performing AGP

Room Decontamination Post-AGPs

Following every AGP, the treatment room is required to undergo a decontamination process to disinfect every exposed surface in the room that may have become contaminated with aerosols and droplet particles during treatment (Figure 5). In addition to the routine disinfection of the dental chair, decontamination entails the extra steps of disinfecting the room walls, floor and sometimes the ceiling as well, thus rendering the process a laborious work.



Figure 5. Decontamination process at Port Dickson AFDC

Implications of the COVID-19 Prevention Protocol on Service Delivery

The implementation of COVID-19 prevention strategies has a profound bearing on the workflow of a dental clinic. To optimise and economise the utilisation of each PPE, DHCP may attempt to accommodate as many treatments as needed by a patient in a single appointment. The time for treatment, along with the extended time required by DHCP to properly decontaminate a room after AGP, effectively increases the time spent for each patient. Consequently, an AFDC may only be able to cater less patient volume per day than usual. This may potentially create a back log of MAF personnel in need of dental treat meant to fulfil the prerequisite for PULHEEMS renewal. Considering the end of COVID-19 is still uncertain, there would not be a better time for every soldier of MAF to begin to meticulously care for one's dental health to reduce the need for treatment.

The task of decontaminating treatment room is demanding on DHCP. It can be especially taxing when staff members are inadequate to rotate between the task, potentially leading to fatigue and burnout among DHCP or even a build-up of indifference for the decontamination process.

As the country continues to grapple with COVID-19, the accessibility to a dental service will be determined by the local COVID-19 situation where the AFDC is located. AFDCs in areas identified as red zone are required to restrict all routine and elective treatment except emergency care. Currently, the resurging cases in Sabah, Selangor, Kuala Lumpur, and Putrajaya have warranted the local AFDCs to revert to emergency-care-only restriction mode. Meanwhile, AFDCs in green and yellow zones may continue to provide routine treatment as per prevention protocol. This risk-based approach promotes a dynamic shift between service restriction and accessibility by continuously assessing the risk of COVID-19 transmission in a given community. Albeit for the safety of every party involved, prolonged treatment restriction may cause undue stress or annoyance on patients, especially by those in need of treatment due to recurring pain.

CONCLUSION

COVID-19 not only has affected the way dental services is being delivered but patient's accessibility to the service as well. The challenges to ensure MAF troops are dentally fit through continued dental care has never been greater in recent years. The key to minimising the risk of COVID-19 transmission in AFDCs is by observing the new stringent preventive measures. These measures are now the new normal of dentistry as long as the threat of COVID-19 perpetuates and it may even stimulate permanent changes in the delivery of dental care. Achieving a balance between safe and effective dental care will continue to be the number one priority of DSMAF.

REFERENCES

- Centers For Disease Control and Prevention. (2020b). Guidance for Dental Settings: Interim Infection Prevention and Control Guidance for Dental Settings During the Coronavirus Disease 2019 (COVID-19) Pandemic. Retrieved September 15, 2020, from Centers For Disease Control and Prevention: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html>
- Dental aerosols [Online image]. (2020). Light Progress. Retrieved from https://www.lightprogress.it/en/blog/covid-19-and-aerosol-management-in-dental-practices_10.html
- Epstein, J. B., Chow, K., & Mathias, R. (2020). Dental procedure aerosols and COVID-19. *The Lancet Infectious Disease*. doi:[https://doi.org/10.1016/S1473-3099\(20\)30636-8](https://doi.org/10.1016/S1473-3099(20)30636-8)
- Grenier, D. (1995). Quantitative analysis of bacterial aerosols in two different dental clinic environments. *Applied and Environmental Microbiology*, 61(8), 3165-3168.
- Heywood, A. E., & Macintyre, C. R. (2020). Elimination of COVID-19: What would it look like and is it possible? *The Lancet*, 20, 1005-1007.
- Malaysian Dental Council. (2017). Guidelines on infection control in dental practice. Malaysian Dental Council.
- Penyata Rawatan Bulanan [Return]. (2017). Perkhidmatan Pergigian Angkatan Tentera Malaysia.

- Penyata Rawatan Bulanan [Return].(2018). Perkhidmatan Pergigian Angkatan Tentera Malaysia.
- Penyata Rawatan Bulanan [Return].(2019). Perkhidmatan Pergigian Angkatan Tentera Malaysia.
- Penyata Rawatan Bulanan [Return].(2020). Perkhidmatan Pergigian Angkatan Tentera Malaysia.
- Perkhidmatan Pergigian Angkatan Tentera Malaysia. (2020). Panduan Rawatan Pergigian Semasa Penularan Wabak COVID-19 [Infographic]. PPATM.
- Povera, A., & Chan, D. (2020). CMCO to end, replaced with RMCO until Aug 31. Retrieved September 28, 2020, from New Straits Times:<https://www.nst.com.my/news/nation/2020/06/598700/cmco-end%C2%A0replaced-rmco-until-aug-31-nsttv>
- Teichert-Filho, R., Baldasso, C. N., Campos, M. M., & Gomes, M. S. (2020). Protective device to reduce aerosol dispersion in dental clinics during the COVID-19 pandemic. *International Endodontic Journal*, 1588-1597.
- World Health Organization. (2020b). WHO Coronavirus Disease (COVID-19) Dashboard. Retrieved September 30, 2020, from World Health Organization: <https://covid19.who.int/>
- World Health Organization. (2002c). Global> Malaysia Dashboard. Retrieved September 28, 2020, from World Health Organization: <https://covid19.who.int/region/wpro/country/my>

NORTH KOREA NUCLEAR PROLIFERATION AND ITS IMPACT TOWARDS NORTHEAST ASIA REGION

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ROYAL ARMOURED CORP**

INTRODUCTION

The development of North Korea's nuclear proliferation in the Northeast Asia Region is often related to the historical relationship with both Japan and China and the anti-American sentiments. The Democratic People's Republic of Korea (DPRK)'s nuclear development began in 1950's when Kim Jung Il decided to build military prowess especially nuclear to gain a bargaining chip for its weak economy in the country (Mansourov, 1995). The United States (U.S.) military presence in the region and its security umbrella for its allies; Japan and South Korea has caused huge resentment for North Korea. From the historical perspective, Japan's invasion of Korea from 1910 till the end of World War 2 (WW2) has constrained the relationship between both countries (Castro, 1999). Rapprochement efforts between the two had failed due to the negative impacts both physical and mental during the period of Japan's colonization in Korea. This led to an anti-Japan sentiment amongst the Korean.

After the war ended, Japan tried to improve its relationships with North Korea but met with failures. In fact, North Korea has intended to threaten Japan's position in the region by dropping the Nodong ballistic missile in 1993 adjacent to Noto Peninsula in Japan (Cumings, 2003). The U.S. being a close ally to Japan, negotiated with North Korea to end all form of nuclear activities, which have the capabilities of reaching up to 500 kilometers but was ignored by Pyongyang. Instead in 1998, Pyongyang launched its second ballistic missile, called the Taepodong (Audra, 2005). This symbolizes North Korea's ambitions to be a nuclear power in the region. Japan's failure to end North Korea's nuclear program had led Japan to be a great supporter of the U.S. policy. In the case of China, the security dilemma is more internally driven especially in ensuring the survivability of the Kim's regime in North Korea, which will directly give stability to China in the region (Shiping, 2009). This is because, North Korea acts as a buffer state for China in the vicinity and to ensure the region remains stable for its own national interest as well as for its internal stability. China's concern is more in encouraging

multilateralism and persuasive negotiation to find an end to the North Korea's nuclear program in the region.

The DPRK's ambition is driven by three major factors. Firstly, DPRK aims to be a major power in the Asia Pacific Region by shaping deterrence against the U.S. and its strong allies, Japan and South Korea (Lee, 2005). Secondly, it aims to achieve a bargaining chip against the international community in terms of economy and finally is to implant the Juche and Songun Chong'e ideology of its great leader Kim Jung Il (Blaine, 2009). This scenario has brought threat and instability to both China and Japan and the region as whole. This shows that the North Korea's nuclear proliferation is a big concern for both Japan and China as it has direct implication to the region as well to their internal stability. Therefore, this paper will discuss on the repercussion of North Korea's nuclear proliferation towards China and Japan and the overall stability of the Northeast Asia Region.

North Korea nuclear program

DPRK began its nuclear program during the Korean War but did not use it for any purposes. The official development took place under Kim Il Sung when he shaped cooperation with Union of Soviet Socialist Republics (USSR). This can be noticed when USSR conducted an inspection on DPRK's monazite landmine in 1947 which led to export activities from North Korea (Habib, 2010). The relationship between USSR and DPRK grew stronger and several agreements were signed such as the Agreement between the Government of the USSR and the Government of DPRK on the Education of Citizens of the DPRK in the USSR Civil Higher Education Establishments in 1952 and at the same year bought radioactive items from DPRK (Choi, 2007).

In 1970s, the Korea Workers Party (KWP) suggested Pyongyang to develop a big scale nuclear plant to generate electric power. As a result, in 1973, DPRK were asked to sign the International Atomic Energy Agency (IAEA) agreement in order to conduct inspection on the IRT-2000 research Centre after which a visit by the Chief Director of IAEA Hans Martin Blix found that Yonbyon was running a nuclear processing factory (Carlisle, 2007). The U.S. also releases a report that vehicles were used to transfer nuclear equipment from Pyongyang to Yonbyon to confuse the IAEA inspection. In 1980, North Korea created a reactor, which is similar with the gas-graphite moderated reactor Calder Hall created by the British in 1950 (Sagan, 1997). The developments were so intense that the U.S. began spying on this particular area. As a result, the U.S. found a cooling tower and

nuclear reactor, which kept two different types of mineral; raw uranium and graphite that are vital for building nuclear weapons. In the mid of 1980s, Kim Il Sung seek permission from the General Secretary of Politburo USSR, Konstantin Chernenko to build some reactors (ISIS, 2012). Due to this, U.S. immediately seek USSR to force DPRK to sign the Non-Proliferation Treaty (NPT). Although USSR followed the U.S.'s demand, Moscow gave four more light water reactors as a bribe to North Korea.

Although DPRK became a NPT member in 1985, it did not allow IAEA inspection to be conducted fully in Pyongyang. Nonetheless, with half inspection, IAEA found that there was a nuclear station with the capacity of 50MV in Pyongyang and in the northern part, there was another one with the capacity of 200MV and three more with the capacity of 635MV (Cevik, 2016). One of the DPRK diplomats, Ko Yong-Hwan argued that IAEA would not be able to discover the whole truth because there are other places such as Pakchon. In addition to it, it was argued that without any assistance, North Korea still could develop a plutonium-based fuel cycle system and reach the abilities of big nuclear powers such Israel, Pakistan and India (Lee, 2017). By the end of 1980s, North Korea began building nuclear reactor with 200 MWe in Taechon and in Pyongyang. North Korea was ready with its nuclear cycle and succeeded in conducting several bombing activities for testing purposes in its own country. The level of nuclear capabilities by North Korea became more intense with its collaboration with other countries such as Pakistan.

After getting exposed with nuclear knowledge, North Korea began focusing on increasing its nuclear capabilities by conducting in-depth research on the 8MV capacity reactor by only using local technology. This was proven when the Ministry of Atomic Power Industry built two nuclear reactors without any assistance from external powers (Mary, 2009). This placed North Korea as one of the advanced nuclear powers by 1990s. This also means DPRK succeeded in adopting their nuclear power in line with its Juche ideology which means not accepting or receiving any assistance from others and reach self-sufficient policy (Martin, 2009).

By this time, Pyongyang's ambition to develop nuclear weapon was obvious and could be seen when DPRK began building plutonium with nuclear leads by utilizing the Calder Hall, which produced about 130 - 180 ton nuclear leads enough to build 15kg plutonium (Siegfried, 2006). In addition to this, the 50-200MV reactors operating in Yongbyon were used only to produce plutonium. In short, North Korea's

nuclear program, which began in 1950s, was strengthened in 1960 and began resilient by 1980s. By the end of 1980s, Pyongyang announced that North Korea owned 100-gram plutonium based on its research conducted in 1989, 1990 and 1991 (ISIS, 2012). This active improvement led the U.S. to engage with South Korea and Japan regarding this matter. These three states expressed their concerns and decided to engage a friendly approached with North Korea.

When U.S. administration was taken over by George W. Bush, he attempted to adopt strict regulations and policies in regards to North Korea's nuclear program (Moon & Bae, 2003). This can have been seen when he declared North Korea as axis of evil. Nuclear developments cannot be separated from the developments of ballistic missiles. In this case, North Korea's ballistic missiles abilities are a major concern. This is true because the Bush's policy continues to stress DPRK's ability in this particular aspect. In early 2000, North Korea tested seven ballistic missiles including the Taepodong-2 (Siegfried, 2009). Looking at this development, it is tangible that the DPRK's nuclear program has direct implication towards the security in the Northeast Asia region. Most of the ballistic missiles are either faced towards Japan or have the ability to reach Japan territory. This has indeed threatened Japan's security especially when it has limited abilities to develop its military capabilities (Itoh, 2001). China on the other hand, although gives strong support to DPRK in developing its nuclear missiles, the major driving factor has been because of its concern of ensuring the survivability of Kim's regime which will lead a stable Northeast Asia Region and a peaceful China.

The factors contributing to North Korea's Nuclear ambitions

According to James (2005), a country seeks to develop nuclear power if it feels threaten and has no other alternative to overcome the fear. If that country does not feel threaten, then it shall remain as a free nuclear state. For North Korea, it has a strong reason for developing its nuclear programme due to the factors discussed below.

Deterrence against United States (U.S.)

According to Christopher (2007), power is the ability to prevail in conflict and to overcome obstacles. This is true in the case of DPRK as it has power level of economic capabilities or leverage. Hence, it is normal for any country to seek for it and for a country to achieve this; it should use the deterrence technique and coercive diplomacy wisely. The attempt to achieve deterrence is the ability to convey to the enemy

that it has the capability and on the other hand, the strength to impose coercive diplomacy to a particular state (Christopher, 2007). He further added that for a state to achieve these two, nuclear proliferation is the key and in order for another country to seek balance, it needs to join the nuclear league for competition (Christopher, 2007). DPRK is aware of this fundamental and this can be traced back since Korean War. Although North Korea did not intend to start off a war in the Korean Peninsula, this country believed that it was the alliances between the U.S.-Japan-South Korea that triggered this. At the end of Korean War, South Korea intended to attack North Korea in order to bring the entire Korean Peninsula under the rule of democracy. In addition to this, South Korea also developed its own nuclear power independent of the U.S. and began exporting ballistic missile from Iran and Iraq. The deterrence by the U.S. led Washington not only to be able to reach the needed power but was also to be able to build a strong military deterrence as an extra-regional power and has strong and dominant influence in Japan and South Korea which brought China to balance U.S. in a softer approach in the region (Jonathan, 2006). Looking at this historical lesson, DPRK seeks to take independent steps to achieve its own power and nuclear deterrence against the U.S. Thus, DPRK took the necessary steps to join the nuclear club and it seems to be successful as it managed to challenge U.S.'s power in the region.

Bargaining Chip at the International Level

North Korea believes that the IAEA is manipulated by the U.S. to deter other countries from obtaining nuclear weapons (Hayes & Bruce, 2009). This is what took place in Iraq, which led the U.S. to dictate the country; hence DPRK does not want this to happen again and took Israel as the role model. Israel developed its nuclear weapons before the inspection of IAEA took place. This can help the country to be an in-transparency state such as South Africa, India and Pakistan which have nuclear weapons but other countries do not know the actual status of these weapons, but yet these countries act as if they are the actual nuclear power (Jeffrey, 2006). The decision to build the nuclear weapons is a form of bargaining chip for DPRK whereby the U.S. needs to take all kind of Kim's point of view for negotiation process. This particular bargaining chip adds the advantage of cliff diplomacy, which is the habit of delaying negotiation till the last moment leading of the other party to agree to any kind of outcome of the negotiations (Cha, 2002). The success of cliff diplomacy can be seen through U.S.'s tolerance level towards DPRK, for instance, when IAEA identified DPRK's illegal nuclear activities especially the development of plutonium, North Korea attempted to pull itself from The Treaty on the

Non-Proliferation of Nuclear Weapons (NPT) (Choi, 2007). Nevertheless, U.S. seeks to engage closer with DPRK and as a result, DPRK obtained a special position in the NPT regulations. DPRK could use its nuclear weapon as its bargaining chip with major powers especially the U.S.

Reaffirmation of the Juche and Songun Chongc'i Ideology in North Korea

The dominating behavior of U.S. has affected DPRK strongly leading to the shaping of Juche ideology as the basic fundamental of DPRK's foreign policies. Juche means the ability to take actions independently without the help or assistance of any external power (Xinbo, 2002). In other words, the state has the ability to reach self-reliance. This particular policy was adopted by Kim Il Sung to counter the Team Spirit military training between U.S. and South Korea as well Seoul's nuclear facilities based there (Andrew and John, 2007). DPRK also seek to restrict USSR and China and aims at unifying both Korea's under the administration of Kim's regime in Pyongyang. The self-reliance policy is also driven from the need to reach efficient economy and defense in line with the ambition of North Korea to act independently pertaining to economy and politics (Gerlach and Yook, 2016). On the other hand, Juche also gives greater importance to military capabilities than economy developments like how normally a state would do. Kim Jung Il argues that if a state is fighting against imperialism and seeking independence, then it is vital for it to focus strongly on military development, and then it can naturally achieve economic stability (Cevik, 2016). The reason DPRK gives high priority towards nuclear proliferation is because it wants to seek the U.S.'s attention and this has been achieved by Kim as Washington once gave special treatment towards DPRK in NPT and on top of that seek to unite the Korean Peninsula. Kim presumes that by shaping strong military capabilities, his country could achieve economic aid easily.

After the death of Kim Sung Il, his son adapted another ideology, which is Songun Chongc'i. This idea derived from Juche itself, which argues that the sovereignty of DPRK has been poisoned and dominated by the U.S (Lee, 2017). The U.S. has not only imposed extreme policies but also held on to the principles the westerns are the most dominant and superior power. The Songun idea was implemented in 1995 with the slogan '*let us hold fast the gun to carry, put the revolutionary cause pioneered with the gun*' (Gerlach and Yook, 2016). The military first policy has several reasons to be implemented. It is first to threaten and signal to the U.S. and Republic of Korea (ROK)

that Kim has the ability to deter himself and his people and force the U.S. to leave this region. In 1998, Songun's politics became dominant in Pyongyang and the rest of the cities in North Korea (Habib, 2010). Thus, military activities and development were the major concern in the country. Although one could argue that the people of DPRK suffer tremendously in term of receiving or even enjoying basic needs and shelters and yet DPRK seek for military development and not economy. Based on Songun, gun may not feed the people but it gives more meaning to the country and its sovereignty. It holds on to the strong idea of '*the do or die spirit*' or the spirit of sacrificing oneself without fearing death (Mary, 2009). Kim Jung Il was risen with these ideas during the occupation of Japan and thus felt that holding on to weapon is the ultimate tool for success in DPRK. This led to a strong will power for DPRK to achieve self-reliance and shape deterrence towards U.S. and work towards uniting Korean Peninsula under the administration of Kim's Regime.

The Implication of North Korea Nuclear Program towards Japan

The North Korea's nuclear proliferation has indeed affected Japan in many ways. This can be contemplated when the Prime Minister of Japan formed a secret team to analyze the relevance of Japan going nuclear (Itoh, 2001). Nevertheless, the outcome suggested that it could cause Japan a whole lot of money, which could be otherwise used for the development of its economy. On the other hand, Japan will also lose trust in the region because of its past behavior during WW2. More importantly, Japan needs to ensure it does not upset its strongest ally and its major security umbrella, the U.S. The Japan-U.S. security alliances were signed after WW2 which promises Japan military equipment, weapons, and logistics support. It was shaped based on the concept of '*give and take*' whereby Japan gives the military bases U.S. requires and on the other hand U.S. gives the military support needed by Japan (Lee, 2017). Through this agreement, Japan gains huge benefits in terms of security.

When Japan surrendered in WW2, the Supreme Commander for the Allied Powers (SCAP) Douglas MacArthur was the major person in charge of shaping Japan's constitution through the idea of pacifism (Moon & Bae, 2003). Pacifism in general means that Japan at any situation will not adopt any military actions that will threaten other countries (Carlisle, 2007). Hence, Japan can only adopt a non-coercive military development. The Japan's first Prime Minister, Shigeru Yoshida adopted the idea of pacifism in relation to Article IX and Yoshida's doctrine. In the doctrine, it was emphasized that Japan's

economy should be recovered, and Japan should continue sheltering under the U.S.'s security umbrella (Xinbo, 2002). In addition to these two points, Japan will not send out its Self Defense forces (SDF) out of its country and Japan will not go nuclear including exporting weapons to any countries. Japan will limit its military expenditure to less and not more than one per cent. In sum, the internal policies of Japan especially the strong concept of pacifism and the three non-nuclear principles play an important role in shaping Japan's response towards North Korea nuclear behavior in the region. As much as North Korea's nuclear development is threatening Japan's security, Japan still refuses to adopt an offensive approach because of the bad history of atomic bombing which affected the people of Japan. In addition to this, Japan's defense policy is to ensure no external threat towards its country and this is to be achieved through a strong military relationship with the U.S (Castro, 1999). One of the major factors for Japan status quo in regards to North Korea is because of a strong security umbrella provided by the U.S.

Hypothetically, if North Korea nuclear behavior existed during the WW2, Japan would have attacked Pyongyang without second thought, but the change in the international system has led the rise of U.S. as a hegemonic power and as a result, Japan prefers to remain committed to U.S. for defense assistances (Blaine, 2009). In other words, Japan favors a diplomacy approach in the current context of international system and continue to ensure the stability of the region for its own economic and other internal developments which was ruined during the events of WW2. In terms of nuclear assistance, U.S. guaranteed that in the event of a nuclear strike against Japan, U.S. would not hesitate to conduct the first use to protect Japan (Christopher, 2007). Hence, Japan's security is very much secured. The secret agreement on nuclear between U.S. and Japan signed in 1953 is another example of U.S.'s strong commitment towards Japan. Through this agreement, Japan allows a sea-lane transit for U.S. and this shows that U.S. has sidelined the prior consultation process to gain access at Japan for military operations (Shiping, 2009). This agreement means that Japan gives the U.S. the liberty to bring in weapons to its country freely. Japan has also worked together with U.S. to develop theater missile defense (TMD), which is designed to detect and destroy ballistic missiles.

China's Policy towards North Korea Nuclear Program

China's policy towards North Korea is an interest matter of subject. This is because both countries had strong relationship even

before WW2. In other words, the relationship often called the '*big brother and little brother*'. But, when China moved from the history embedded approach to national interest driven approach and seeking rapprochement process with South Korea and the U.S., DPRK was isolated especially in terms of economic development (Wolfsthal, 2003). A more obvious situation could be perceived towards the end of Cold War when China argued that NPT led by the U.S. is a good move and urged DPRK to follow the NPT rules and regulations. Such situation led DPRK to step up its nuclear development and China was concerned over this action and began showing its relevance to DPRK. Although China has veto power in the United Nation Security Council (UNSC), it remains neutral in the case of DPRK nuclear ambition and only seeks to facilitate dialogue between Washington and Pyongyang (Jeffrey, 2006). Beijing did not support coercive diplomacy as urged by the U.S. because China's main priority was to deter the collapse of DPRK's regime which will give bad implications to its economy. Without the strong leadership of Kim in DPRK, China could possibly face civil war in this area.

In comparison of DPRK's nuclear issue, China is more interested in the Taiwan crisis. U.S.'s exploitation on this matter has caused resentment to China. The Taiwan crisis is relatively more important in order to control the U.S. behavior who is not just attempting to dominate the Taiwan minds but also at the same time trying to collapse the DPRK regime which either way only affects China (Xinbo, 2002). Hence, China is utilizing the DPRK nuclear crisis to balance and win against the U.S.'s power in the region. When DPRK launched its missile, the U.S. urged China to take economic actions against DPRK. However, China rejected the United Nation (UN) resolution and argued that this crisis should be handled with complete care and should reach consensus based on trust and dialogue and not through coercive actions. This was parallel with China's New Security Concept (NSC), which uphold '*mutual trust, mutual security, equality and coordination*' (Audra, 2005). This concept was the backbone of its foreign policy behavior at the international level. China knew that it could not hold on to old sentiments of Cold War and needed to shift back to power politics relevant to the current international structure. The NSC is also to compete with the U.S. who adopts capitalism in the post-cold war era.

As for China, diplomatic approach is the best as it is more interesting in its internal affairs that is to develop its economic conditions and to gain international recognition as a peaceful rising country in the region. For the sake of China's national interest, the stability of Northeast Asia is very much essential. China remain focused

in ensuring U.S. continues to support diplomacy solution and those dialogue, multilateral and persuasive approach is best for China in its ambition to balance its power against the U.S.

CONCLUSION

The North Korea nuclear program is a threat to the Northeast Asia region especially Japan and China. The complexity of the relationship in relation to this issue is due to their long term historically relationship. The complexity was further added with the ramification it could cause towards many countries across the globe especially the U.S.'s position and its relationship with the North Korea. The North Korea and Kim's nuclear ambition have become an important issue to build deterrence against the U.S. With the collapse of USSR, U.S. became the predominant power in the international system. Japan and China's policies are more towards maintaining a status quo to ensure a safe Northeast Asia region which is vital for its own national interest. As for Japan, its interest is ensuring a strong and positive military relationship with the U.S. and reduce the need for its own military development which otherwise can be used for its economic development. Similarly, for China, maintaining a status quo and support diplomatic solution is the main agenda as it is more concern in not allowing the collapse of Kim's regime, which will give direct implication towards its own stability in the country as well as the region.

REFERENCES

- Andrew, Scobell and John, Sanford. (2007). North Korea's Military Threat Pyongyang's Conventional Forces. *Naval Institute Press*, 73–79.
- Audra. (2005). North Korea Agrees to Nuclear Disarmament. *Associated Press*. New York, United States.
- Blaine, Harden. (2009). North Korea Says It Will Start Enriching Uranium. *The Washington Post*, 14 June.
- Carlisle. (2007). Weapons of Mass Destruction and Ballistic Missiles. Strategic Studies Institute, Army War College, 32-38.
- Castro, R, C, D. (1999). The Realist's Puzzle: Japan's Post-Cold War Defense Policy. *Asian Perspective*, 23(1), 25-58.

- Cha, V. (2002). North Korea's Weapons of Mass Destruction: Badges, Shields, or Swords? *Political Science Quarterly*, 117(2), 209–230.
- Choi, J.W. et.al., (2007). A Futuristic Solution to the North Korean Dilemma: An Economic Perspective. *The Journal of Economic Asymmetries*, 4(2).
- Christopher Bodeen, (2007). U.S., North Korea Resolve Macau Bank Dispute as Six-Party Talks Begin. *Associated Press*.
- Cumings, B. (2003). North Korea: The Sequel. *Current History*. 102(663), 147-151.
- Habib, B. (2010). Rouge Proliferator? North Korea's Nuclear Fuel Cycle and Its Relationship to Regime Perpetuation. *Energy Policy*, 38, 2826-2834.
- Hayes, P., & Bruce, S., (2009). Winning, Not Playing the Nuclear Game with North Korea. Nautilus Institute for Security and Sustainable Development. Berkeley, United States.
- Lee, Y.S., (2017). International Isolation and Regional Inequality: Evidence from Sanction in North Korea. *Journal of Urban Economic*, 103, 34-51.
- Mansourov, A. (1995). The Origins, Evolution, & Current Politics of the North Korean Nuclear Program. *The Non-proliferation Review* 2, 25–38.
- Martin Fackler. (2009). North Korea Vows to Produce Nuclear Weapons. *The New York Times*, 14(2), 21-26.

ASEAN FREE TRADE AREA (AFTA)- PROSPECT AND THE CHALLENGES TO MALAYSIAN SECURITY

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ROYAL ARTILLERY REGIMENT

INTRODUCTION

The South East Asian (SEA) region of the larger Asian archipelago is located within the world's fastest growing economic and major trading territory. As such it has brought awareness to the Association of South East Asian Nations (ASEAN), which is the major geo-political and economic grouping, to find measures to increase competitiveness to attract investments and improve the economic condition in the region. For this purpose, ASEAN has undertaken several initiatives to enhance economic cooperation and boost trade relations in the region. At the forefront of these initiatives is the ASEAN Free Trade Area (AFTA), an agreement based on regional grouping involving the member states of ASEAN. It is currently the most significant and important regional economic initiative promoted by ASEAN whereby it has played a catalyst role in boosting regional intra-ASEAN trade and regional cooperation in the transport sector. The planners of AFTA have articulated a vision of providing ASEAN members with a platform for greater trade and economic cooperation with the greater Asia-Pacific region.

AFTA was initiated by ASEAN leaders at the Fourth ASEAN Summit in Singapore in January 1992 with the main objective of increasing the region's manufacturing competitiveness by attracting more FDI and thereby expanding their production base geared for the world market. The Framework Agreement on Enhancing ASEAN Economic Cooperation was conceived with the realization that in an increasingly competitive world, the ASEAN region needs to lower the cost of conducting business in the region to stay competitive against rising economic powers such as China and India. Nonetheless it is crucial to look into the prospects and challenges in the context of Malaysian context.

Background of AFTA

The Association of Southeast Asian Nations (ASEAN), established in 1967 mainly with a political objective of maintaining

peace and stability in the region, has been growing rapidly as one of the important regional organizations of the world. It comprises Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore, Thailand, recently Vietnam, Myanmar, Laos and Cambodia. Some of the ASEAN member countries are known as important world producers of industrial parts and materials, and manufactures goods. Regarding level of development, Singapore has been considered as one of the leading newly industrializing countries (NICs) of Asia and economically most developed country of Asia after Japan. The so-called near-NICs comprising Malaysia, Thailand are followed by Indonesia, Philippines and Vietnam. The remaining countries, Myanmar, Laos and Cambodia are also performing better than the past. Recently, except Myanmar, Laos and Cambodia, the ASEAN member countries have been actively participating in establishing of full-blown ASEAN free trade area (AFTA). However, it has been a long way, because it took about 25 years for ASEAN to reach this practical free trade initiative with an objective of growth in regional investment, production and trade.

AFTA was initiated by ASEAN leaders at the Fourth ASEAN Summit in Singapore in January 1992 with the main objective of increasing the region's manufacturing competitiveness by attracting more FDI and thereby expanding their production base geared for the world market. The Framework Agreement on Enhancing ASEAN Economic Cooperation was conceived with the realization that in an increasingly competitive world, the ASEAN region needs to lower the cost of conducting business in the region to stay competitive against rising economic powers such as China and India. The initiative received a further boost during the ASEAN Summit in Bangkok in December 1995 when ASEAN nations signed various framework agreements for the intra-regional liberalization of trade in services and expressed their commitment to Intellectual Property Rights (IPR) cooperation.

Subsequently, they agreed on a scheme to encourage intra-regional investment, and stepped up discussions to create a free investment area within the ASEAN region. Originally scheduled to be concluded in 2008, the timetable for AFTA had been continuously brought forward and the target of a free trade area in ASEAN moved forward as AFTA saw its completion ahead of schedule. Towards achieving greater economic integration and trade competitiveness, AFTA has laid out a comprehensive program for tariff and non-tariff reductions among the region's nations towards liberalizing trade. The dismantling of technical barriers can pave the way towards stimulating greater efficiency in production and competitiveness among them in the long term. This is what AFTA's architects hoped to achieve by way of

widening the scope of choice for ASEAN consumers and enlarging the size of the market for the region's producers of goods and services.

AFTA is realized through the Common Effective Preferential Tariff (CEPT) Scheme, whose main features are:

- ❖ The reduction of import duties among member countries between 0-5% by the full implementation of AFTA in 2010.
- ❖ The elimination of quantitative restrictions such as import permit and quota and other non-tariff barriers (NTBs) among ASEAN member countries.
- ❖ The progressive transfer of products into the CEPT Scheme based on each ASEAN member's capacity and capability.

The philosophy behind AFTA provides the pillars for the creation of a more ambitious vision espoused by ASEAN leaders to create what is known as the ASEAN Economic Community (AEC) by 2020. AEC is aimed at creating a single seamless regional market that can act as a production base to serve the global market. This is in line with ASEAN's efforts to enhance its attractiveness as an investment location for both domestic and foreign investors.

Issues and Challenges

The application of AFTA policies can bring a few issues to light as it alters the current economic, social and political setting. Although the application takes time, the effect is profound especially among the small scale traders. The first issue is trade liberalisation. Liberalisation may be able to produce higher economic growth, create employment and increase income. With AFTA, the manufacturing sector will have a low tariff regime and has liberalised fully the equity condition where foreigners are allowed full ownership in the manufacturing sector. The remaining few protected industries, namely automotive and steel, will reduce their tariff rates progressively under the AFTA scheme. As a result, Malaysia may be better able to position itself in the regional and global production network. Protection is only for selected agricultural activities such as rice and poultry due to reasons of food security. The agriculture export products such as palm oil and rubber received no protection, incentives or subsidy. Nevertheless, the risk and challenge is when the agricultural sector is left to compete in a larger international

market. This can slowly cause them to lose out on their competitive edge.

At the same time, the AFTA agreement will also have its down side. Too deep or too fast opening up of sensitive sectors will result in serious structural adjustment problems such as higher unemployment and loss of productive capacity. Similarly, rapid liberalisation of the services sector may marginalize local services suppliers who are less competitive as compare to foreign services providers, who operate at a larger scale and with well-established operations. There is a possibility that the dominance of foreign services providers may crowd out the local ones. Services exports also may not be able to expand strongly if the AFTA agreements do very little to address the issues relating to the movement of people. The expected growth may be insufficient to compensate for these losses. For agriculture exports, there may not be significant increase if tariff reduction is not substantially be accompanied by the assistance to meet the health and other technical standards.

From the social perspective, the government primarily has to deal with the potential threat of unemployment. Although some industries may enjoy high growth and improved competitiveness, there are those that experience business closure and rising unemployment. Another consideration is the removal of performance requirements on foreign investment may have the most serious impact of human resources development. Without these requirements such as the transfer of technology, efforts to improve workers' skills may be hampered. If there are no requirements that some senior posts be allocated to locals, there is the likelihood that local managers could never get the experience to improve their management skills. For developing countries like Malaysia with a lower per-capita income, too heavy commitments may increase the costs of goods and services beyond the reach of the general public.

Malaysia's objective in embarking in AFTA is not only to enhance economic efficiency through liberalisation and improvement in market access but also to achieve a more comprehensive and closer socio-economic relationships and to strive for a balanced outcome. The government must ensure that cooperation forms a critical element of the agreement which is essential for human resources development because the main element in cooperation is capacity building, involving training, skills improvement and educational exchanges.

Besides the above mentioned issue, the nature of AFTA that makes the ASEAN nations a borderless community brings about an open concept of labour initiatives. As such, with the existing increase of foreign labour, the saturation of the labour market increases the unemployment rate among Malaysians as companies rather engage cheaper foreign labour. This is not inclusive of the high influx of illegals that enter Malaysia and seek asylum here. Such situation creates more social ills and other issues that slowly brings negative effect on the society at large.

Adding to this, the borderless ASEAN state ironically brings about border issues as the above mentioned influx calls for increased military and enforcement presence. When the intention was to create a mutually benefiting zone of trade, such issues adversely affects the nature of the agreement. It also brings in other issue of defence agreements and efforts, when the intentions were meant to be of trade issues. Nevertheless, such things need to be curbed.

Role and Effect on Malaysia's Security

Malaysia views the context of the AFTA policy in light of the structure of its economy, namely it is a small open economy but with a relatively reasonable size domestic market. Its reliance on trade cannot be over-emphasized and thus it needs to be competitive. At the same time, Malaysia has sensitive sectors as well as important social considerations. The rapidly changing global and regional conditions require Malaysia to response in a timely and strategic manner. The global environment is becoming more competitive and the scope of trade, particularly trade, is expanding rapidly. AFTA, if used strategically, can be a tool to enhance Malaysia's competitiveness and economic growth. Yet, the path should be consistent and complementary with Malaysia's other international commitments.

The security effect can be seen in many aspects as it security encompasses many dimensions of a nation's security. One of the main contributors to the state of security is the economic impact. Generally, the impact of AFTA on the Malaysian economy is expected to be positive because it is a very open economy, with only few sensitive sectors and has benefited from its participation in the global economy.

6. Role of Domestic Consensus The real impact of FTAs will fall on industries, companies, workers and the general public. Therefore, building a domestic consensus is critical if we were to ensure a balanced outcome of an economic integration arrangement that will improve the wellbeing of the society.

The renewed emphasis on economic security is probably best embodied in Paul Kennedy's influential 1987 study on the rise and fall of the great powers. In his study, Kennedy identified the key role played by a great power's underlying economic strength as the determinant of its military strength and therefore, ability to assume a leadership position on the global stage. Sustained military capacity and dominance in international affairs can only be achieved through resilient and strong national economies relative to other competing great powers. In turn, military capacity and ultimately military capabilities have to be developed to protect and secure these all-important national economic interests.

What constitutes economic security? To put it simply, economic security "entails the maintenance of given levels of welfare and state power through access to resources, finance and markets." Whereas in the past, economic competition for scarce resources could lead to, and have led to inter-state conflicts, the post-Second World War world has been marked by the rise of neo-liberalism in the international economic system. Inter-state conflicts over scarce resources, access to finance and markets have become increasingly untenable in an increasingly rules-based international economic system dominated and mediated by international intergovernmental institutions. This positive development was largely overshadowed by the sharp ideological conflict and the over-riding emphasis on military security which governed international relations during the Cold War.

Parallel to the Cold War confrontation between the two superpowers was the ascendancy of globalisation and its effective institutionalisation through various international intergovernmental institutions. Globalisation is not a new phenomenon discovered in the aftermath of the Cold War. Its emergence can be traced to the global expansion of the European powers from the late 15th century in their search for trade opportunities. These early origins heralded the rise of capitalism and marked the development of the modern international trading system. Immanuel Wallenstein's World Systems Theory with its strong critique of capitalism only confirmed the dominant role played by capitalist structures in global economics. The collapse of communism as a distinct rival economic system marked capitalism's triumph as the unrivalled global economic system.

Relating this discussion into the nature of AFTA, the creation of this agreement has got two effects on Malaysia. First, it was a strategic move to cope with the on-going market demands. AFTA created new market access opportunities within ASEAN for exports in a preferential

trading arrangement. Secondly it is to create an effective pressure point. In effect, AFTA's creation was ironically, a mean to help secure a successful conclusion in trade understandings. Thus, Malaysia needs this to stamp a strategic stand in ASEAN as well as secure a trade platform where nation security will fall in. This is also evident in the Strategic Dimension of FTAs.

The first dimension is **Engaging the External Powers**. Bilateral FTAs are important policy instruments to encourage the continued American and Japanese presence in Southeast Asia to balance the rise of China. The advent of the ASEAN-China FTA poses a strategic threat to the primacy of US and Japanese regional trade interests. The competing interests between China, Japan and the US were adroitly utilised to advance Singapore's foreign economic policy. Through skilful use of the China card, Singapore was able to play on Japanese and American fears of Chinese encroachment on Southeast Asia to secure their continued engagement in the region. For China, the ASEAN-China FTA had strategic implications for its relations with the regional states. The ASEAN-China FTA constitutes a re-affirmation of China's commitment to multilateralism. At the same time, it offsets increasing fears among regional states of China's increasing economic strength which is acting increasingly as a 'giant vacuum cleaner' of Foreign Direct Investment (FDI) inflows into Asia. With the ASEAN-China FTA, China is actively engaging in an outreach effort to ensure ASEAN will stand to gain from China's rapid economic expansion which will grow further with China's successful accession into the WTO. China's moves will translate into greater strategic room for manoeuvre and generate regional goodwill while balancing continued US hegemony in East Asia amidst a rising Chinese challenge. For Singapore, Chinese initiatives to win over regional support is a positive development which would allow Singapore to attain first-mover advantage among the ASEAN states to partake in China's economic liberalisation and further diversify its export markets amidst its worst economic recession since independence. In the post-September 11 environment, bilateral FTAs are a means for the US to engage strategically in regions of key importance, act as important rewards to key allies and serve as inducements to wavering states to join the US anti-terrorism campaign. From Singapore's viewpoint, the strategic environment has turned in its favour. The strategic reasons that persuaded the US to launch bilateral FTA negotiations took on added urgency. Strategic objectives now over-ride technical difficulties in the bilateral FTA negotiations. An accelerating momentum has replaced the leisurely pace of negotiations of the pre-September 11 period.

The second dimension is **Overcoming Regional Resistance**. Malaysia's bilateral FTA lead had come under criticism from her regional neighbours, including Singapore. Malaysian concerns centred on the potential circumvention of the AFTA by Singapore's non-ASEAN FTA partners. Singapore was viewed as the potential backdoor, or 'Trojan horse', for preferential entry into AFTA without corresponding market access to Singapore's FTA partners' markets for AFTA members. However, strict rules of origin provisions specific to trade agreements prevent any possibility of circumvention. Fortunately for Singapore, with Thailand and the Philippines also considering the bilateral FTA route to trade liberalisation, it is clear that those ASEAN members who are committed to and comfortable with further liberalisation should strive ahead and lead the way. Their experiences could then be shared with other ASEAN partners. Despite some reservations among ASEAN members on the wisdom of having an ASEAN-China FTA, the decision to embark on the ASEAN-China FTA is a reflection of the great progress made in muting criticisms on the wisdom of further trade liberalisation. Members previously opposed to the FTA have now given their blessings in quiet acquiescence.

The third dimension is **Maintaining Location Competitiveness: Countering the "Hollowing Out" Effect**. ASEAN's dual track economic strategy carries with it an inherent latent danger of the "hollowing out" effect. Heavy dependence on foreign MNC capital inflows had created unprecedented prosperity within one generation. Yet, the transnational nature of MNCs creates a mobility dynamic which makes MNC capital extremely mobile. Newly-emerging markets like China, with strong domestic consumption potential and competitive cost structures will naturally draw MNCs away from the region. Second, ASEAN's regionalisation drive to develop an external wing to its domestic economy similarly carried a potential "hollowing out" effect. The strategy will make sense if all ASEAN nations could reap significant returns from regional operations. But this strategy was hard-hit by the Asian Financial Crisis in 1997 which seriously affected Southeast Asia.

Having seen how AFTA affects the economic security and how it creates a regional platform of strategic alliances, it is also important to look into the external influence that affects the sovereignty of Malaysia in the context of AFTA and other trade agreements. The US is currently in the process of negotiating two landmark multilateral free trade agreements: The Trans-Pacific Partnership (TPP) and the Trans-Atlantic Trade and Investment Partnership (TTIP). Together, these agreements would signal continued US commitment to positive

economic relations with friends and allies in Europe and throughout the Pacific region. The economic benefits that would flow from such encompassing and expansive trade agreements cannot be understated and have been outlined in detail by US Trade Representative Michael Froman. However, an aspect of TPP, TTIP, and free trade agreements in general that is often downplayed and cannot be emphasized strongly enough is their potential to serve the national security interests of the United States. Liberal democracy and free market values go hand in hand and are the foundation on which American influence around the world rests. As the world's largest economy and the home to many of the most resourceful and innovative industries in the world, it is essential that the US take the lead in setting the standard for global trade practices.

Trade agreements, as intended to be explained here, is not merely about business but also security. As such, the recent involvement of the US in the 2015 ASEAN meet is evident of US aim here. The US constantly looks into extending her security dominance through economic means. History has shown us that the world's worst political crises often stem from economic ones, and in an era of increased economic interdependence and globalization, every country has a stake in promoting the values of free market economics – and as the economic leader of the world, this must start with the United States. In order to understand this, Malaysia also realises that trade agreements such as AFTA is a signalling commitment to allies. Modern free trade agreements entail much more than a predictable, open, and economically favourable trading relationship - they send a message of commitment. In a world in which the US cannot and should not resort to military action every time a strategically important ally feels threatened by a hostile neighbour, free trade agreements initiated by the US are low-cost yet effective way to signal commitment.

A free trade agreement with the nations of Southeast Asia would signal US commitment to stability in the South and East China Seas, which have become a testing ground for China to push its limits with its neighbours. Japan and Vietnam, two signatories to TPP, have felt significant pressure from Beijing and need every possible reassurance that the US is committed to maintaining the regional balance of power. Free trade agreements cannot take the place of formal military alliances – but they are much more effective signs of commitment to allies than rhetorical statements by politicians. Studies show a strong empirical tendency for nations to come to the aid of their trading partners in times of crisis. The threatened allies want and need a

demonstrative signal of commitment from the US – and when boots on the ground are simply not an option, free trade agreements are.

In addition, Malaysia's involvement in free trade will secure access to military technology in order to keep costs low and meet budgetary requirements. As for the US, the Department of Defence routinely relies on global markets for military technology. In order to keep pace with the rapid advances in defence technology occurring around the world, it is essential that we have truly global market access. Dependency on any one nation for military technology is dangerous in light of how quickly geopolitical circumstances can change and the US is learning this lesson the hard way. As early as 1999, the Defence Department has acknowledged that it has transitioned away from acquiring technology exclusively from American companies and increasingly relies on the global market. Free trade agreements in place with countries around the world will ensure our military has a constant and secure supply of technology and a diversity of market access will provide a hedge against the risk of crisis in any one country or region.

AFTA will also assist Malaysia in promoting regional stability. Taking example from previous experience, some of the most open and democratic governments around the world have been torn down in the aftermath of economic shocks. From the Great Depression to the oil crises of the 1970s to the recent global financial meltdown and subsequent European debt crisis, history shows us the levels of political instability that arise when nations refuse to work together economically for the benefit of all. After World War II, the US worked tirelessly with the war torn economies of Europe and Asia, which experienced miraculous recoveries within decades and established strong trading and economic relationships that persist to this day. The economic recovery of Europe fed back into the US, enabling it to become the economic giant it is today. In future relations, the US needs to remember the stabilizing tendencies that have historically arisen from inclusive trade practices. Free trade agreements provide predictable trade relations between nations, facilitate cross border investment, and are mutually reinforcing over time. The US has a stake in promoting stability in all regions of the world in order to preserve the status quo, and free market trade practices between nations is one of the keys to preventing the rise of political turmoil and unrest globally.

AFTA will also assist Malaysia in setting a free trade precedent. The spread of the 2008 global financial crisis from the US to every corner of the globe was a perfect example of just how interconnected

the world is financially. Current economic and domestic issues are 21st century problems that require 21st century solutions, and every nation must be able to chart the course for future economic relations between sovereign states. By demonstrating its commitment to tearing down protective trade and investment barriers, AFTA will set in motion a norm that rising states will have no choice but to emulate. As the mutual benefits of free trade accrue to the nations that practice it, there will inevitably be a snowball effect in which it becomes the standardized practice among states. Predictable trade relations and investment opportunities in markets around the world feed back into the strategic goal of promoting stability as discussed earlier.

AFTA will also assist Malaysia and ASEAN to enhance global influence. We live in a world in which nations measure their influence as much by the size of their economy as they do by military strength; the economic expansion, global growth, and investment opportunities that come from free trade agreements would undoubtedly bolster US influence around the world. Politicians and academics regularly talk about the importance of trade agreements soft power – that is the cultural, economic, and social ways in which our values appeal to other nations and give our actions international legitimacy. Free trade agreements will provide nations with greater access to emerging markets, exposing the developing world to the entrepreneurial culture and fostering positive future relations.

CONCLUSION

AFTA has been regarded as a platform for member states to increase their economic potential and advancement. Nevertheless, it is important to note, taking the US as an example, free trade was never about trade and economies alone, but also about security and mutual dependence. It is about survivability in a global arena where a borderless world requires a borderless commitment and mutual understanding. The issues discussed links free trade agreements and national security are undoubtedly mutually reinforcing. Even AFTA, sets a precedent of free trade around the region that serves to simultaneously enhance global influence, promote stability, show commitment to allies, and provide increased military security. Nations around the world feel threatened by increasingly dire geopolitical circumstances from Eastern Europe to the Middle East to Southeast Asia. The US military could not dream of deploying troops in every situation – free trade agreements are able to pick up some of the slack that the military simply cannot. In the public discussions and private negotiations of TPP and TTIP ratification as well as in future free trade

endeavours, that every nation needs to recognize not only the economic benefits, but also the greater national security interests that these deals can serve.

In conclusion, the main security challenge faced by Malaysia in the context of AFTA is to safeguard and defend Malaysia's national interest. However, Malaysia's concept of national security is inseparable from political stability and social harmony of its people. The defence of these interests and the application of the concept of security are pivotal to the nation's sovereignty, territorial integrity and economic well-being. It is also reasonable to conclude that Malaysia also faces a series of security challenges that go beyond the traditional dimensions of security. The non-traditional security challenges include terrorism, illegal immigrants and piracy. These challenges are currently a widespread in the region and moves beyond inter-state conflicts and geopolitical concerns. It is inevitable especially when a borderless agreement is sealed between nations. It focuses on non-military issues and incorporates both states and nonstate actors. To conclude, although the end of Cold War has brought stability to the world and our region, some unresolved issues remain that can cause instability if mismanaged. These unresolved issues demand closer regional cooperation in defusing tensions that might arise. The region's economic prosperity is very much dependent on a conducive and amicable politico-strategic situation. As such, regional cooperation such as AFTA will help to a certain extent, the effort to have a mutual platform of cooperation. With globalisation becoming a catchword for international integration as well as dependence, any threat or potential threat to regional stability, both from afar or in our backyard whether direct or indirect could have ominous and detrimental effects on Malaysia's prosperity and well-being.

REFERENCES

- Bowles, Paul (1997), ASEAN, AFTA and the "New Regionalism", Pacific Affairs, 70(2)
- Chia Siow Yue (1997), "Regionalism and Subregionalism in ASEAN: The Free Trade Area and Growth Triangle Models," in Ito and Krueger (1997)
- Huxley, T. (2000). *Defending the Lion City: The Armed Forces of Singapore*. St. Leonards, NSW: Allen & Unwin.

- Irvin Lim Fang Jau, "Dragon Dance: China's Global Charm Offensive as Grand Strategies of Dalliance and Distraction", *Pointer*, 27, 3 (July-September 2001), pp. 25-55.
- Kennedy, P. (1987). *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000*. New York: Random House, 1987.
- Leifer, M. (2000) *Singapore's Foreign Policy: Coping with Vulnerability*. London: Routledge.
- Lee Chyungly, "On Economic Security". In *An Asia-Pacific Security Crisis? New Challenges to Regional Stability*, pp. 67-83. Edited by Guy Wilson-Roberts. Wellington: Centre for Strategic Studies, 1999.
- Ramesh Thakur, "From National to Human Security". In *Asia-Pacific Security: The Economics-Politics Nexus*, pp. 52-80. Edited by Stuart Harris and Andrew Mack. St. Leonards, NSW: Allen & Unwin Australia Pty Ltd., 1997.
- Tan Khoo Giap & Lee Wee Keong, "Beyond Regionalization, Basis for Sustainable Growth and Potential Sources of Expansion". In *Singapore: Towards A Developed Status*, pp. 87-121. Edited by Linda Low. Singapore: Oxford University Press, 1999.
- Taylor, I. *Multilateralism, Neo-liberalism and Security in Asia: The Role of the Asia Pacific Economic Co-operation Forum*, IDSS Working Paper No. 19. Singapore: Institute of Defence and Strategic Studies, 2011.

THE RISE OF ISLAMIC MILITANT AND ISLAMIC STATE (IS) IDEOLOGY: NEW THREAT IN MALAYSIAN SECURITY

**By LT COL ZAIDI BIN HJ OMAR
ROYAL MALAY REGIMENT**

INTRODUCTION

Detainees of Islamic State in Malaysia had increased tremendously for the last 2 years. Between September and October 2017 alone, 8 were detained including a prisoner in Tapah Prison whom is recruiting other inmates into IS. The situation is worsening and worrying. The essay is developed with the purpose of generally highlighting and summarizing the emergence of Islamic Militant and Islamic State (IS) ideology and their impacts towards security of Malaysia. Other than that, steps and efforts taken by government of Malaysia in handling and controlling the issue of the emergence of this new threat in Malaysia will also be touched.

The essay is developed from various sources of references that mainly focusing on the emergence of Islamic Militant and IS and also their background. Some summary and introduction on linkages of Islamic Militant and IS with other terrorist group, activities, institution sustainment and also their future trends will also be highlighted in the paper. The threat of Islamic Militant and IS to Malaysia security will also be covered as well. In addition, the essay will also discuss on prevention acts that had been taken by Malaysia with the main focus on controlling and eliminating further Islamic State and IS ideology in Malaysia.

Emergence of Islamic Militant and their background

Since the emergence of the so called Islamic Militant and IS, they had become the whole world condemnation and denunciation object. This is due to their ideology of declaration of the caliphate being rebuffed by the Muslim world which without doubt condemning their act of violence and misreading of religious texts. Attacks in the name of Islamic Militant or IS have taken place all around the world which include Canada, Denmark, Egypt, Germany, France, Kuwait, Kazakhstan, Pakistan, Saudi Arabia, Tunisia, Belgium, Australia, Bangladesh, Turkey, Yemen and also United States. Meanwhile, in Southeast Asia, Malaysia and Indonesia also has been the target of the attacks.

The origin of the IS and Islamic Militant was from Afghanistan where the patronage of Al-Qaeda (AQ) existed. The group relocated to Iraq after US intervention in 2001 and after Iraq invasion by US in 2003. Influence of IS was then replaced AQ and had grew at a very fast pace among segment of Muslims and other communities and declared as caliphate in 2014. With the spoke person of IS Abu Mohamed Al Adnani calling for attacks in 2015, the threat still increase even after he had been killed in August 2015. The year 2016 has saw that Islamic Militant and IS in retreat due to the constant military attacks, airstrikes and bombardment by United State led coalition and also from Syrian and Russia forces.

Through the strikes, large area of territory, cities and towns, loss of commanders and strategists and more than 25,000 fighters has been conceded. US leader, Donald Trump has been seeking to expand US cooperation which including other partners to eliminate IS and also to decapitate their leader. In the cooperation between US and Russia to combat Islamic Militant and IS, the militant groups suffered further territory and operational capabilities loss. The losses however will be replenished by growing pool of supporters and sympathizers, which later will allow the militants to recover and fight back.

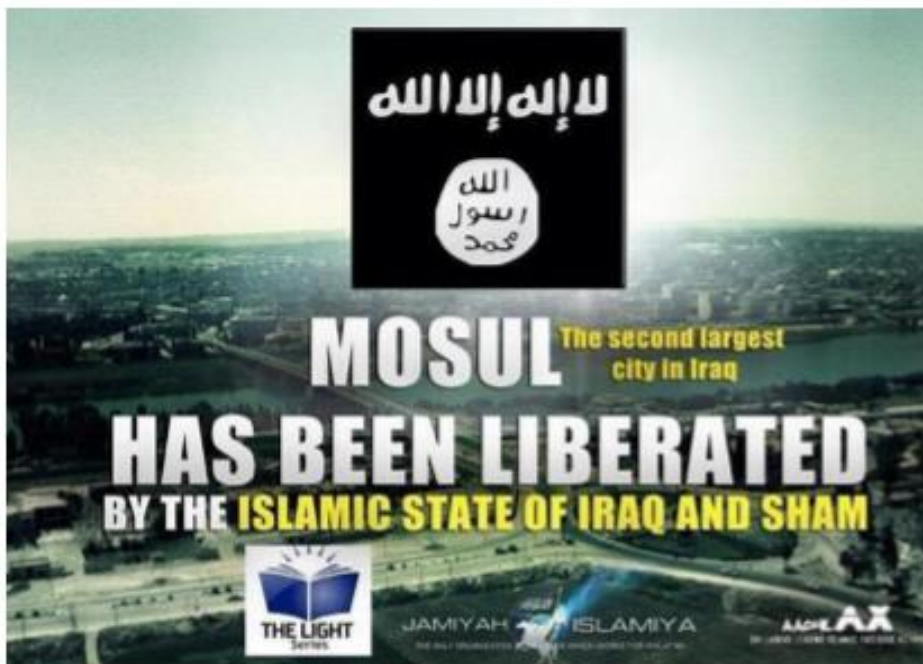


Figure 1: Sample of IS Propaganda Article

Cause and Types of Threats

The active activities of Islamic Militant and IS from 2015 to 2016 was mainly focusing on direct attacks and at the same time influence their operatives and supporters to launch attacks worldwide. Their operatives and supporters that possess communication skill and commitment were hand-picked and trained in Iraq and Syria with the purpose for them to mount attacks in their homeland where technical and financial support are provided. IS and Islamic Militant had also not active in only terrorism but also engaged in bank, cheque and credit card fraud, bank robberies and kidnapping-for-ransom (KFR) or other execution operations as their financial sources.

With the recent attacks on various IS-controlled towns and cities especially in Iraq and Syria, IS has called for the worldwide attack which were proven by their directed and inspired attacks in Paris, Brussels, Nice, Istanbul, Berlin and also Malaysia. Other than that, in Malaysia, the emergence of the Islamic Militant and IS with heavily linked up with the Jemaah Islamiah (JI) in Sulu Archipelago which long had been a major concern of the Malaysia Government. Abu Sayyaf Group (ASG) too which operated on the kidnapped-for-ransom (KFR) modus operandi is the organization's key sustainment in parallel with JI. Malaysia Government had been focusing these threats considering IS, ASG, JI and other Islamic Militants into different factions and major categories. The main threat can fall into categories as follows:

❖ Maritime

Since Malaysia waters had much impact on the KFR activities, the maritime will be the major threat to the Malaysian waters. Migrated foreign fighters especially from the southern part of the Philippines will be under the government spotlight. In such instance, Malaysia too had been aided by the United States Pacific Command (USPACOM). The USPACOM existence may provide some aid to all Southeast Asia nations in combatting the IS, ASG, JI. The value of USPACOM existence may instead be able to be found in such way like suggesting where migrating foreign fighters might create venues for future geopolitical competition especially in the maritime platform or challenges to U.S. influence in one of the war platform in providing maritime security. The IS, ASG, JI is imposing threat to the Malaysia waters in a very dominant approach.

The waters of Malaysia stretching from Borneo up to Kudat had raised the challenges' impact. Kidnapping and trafficking in Sulu waters had got much attention to Malaysia since it is a clear threat to Malaysia water border and should be prevailed from worsened. Kidnapping had been a commonplace in Sulu Sea thus is very alarming. It could be turned to new Somalia if Malaysia and its neighbouring regions did not take any prompt action to counter it. The maritime threats are the major concern since it is the main modus operandi of IS, ASG, JI in gaining fund for its operation in the Sulu Archipelago. Piracy is also another concern and in parallel imposing threat to Malaysia waters. The piracy on merchant trade ships cruising in Southern Mindanao is another chapter of Tran's borders crimes, piracy and terrorism that took place in Malaysia borders waters which remain unsolved. However, some specific counter measures had been discussed multilaterally within nations in reducing the crimes. The counter measures taken will be discussed in later part of the paper.

❖ **National Land Border**

Land border basically did not possess any serious threat to the emergence of the IS, ASG, JI. However, the land border is crucial in insertion of these factions if appropriate measure is not being taken care enough. Although possess lesser risk, the Malaysia land border especially in Kalimantan Indonesia is inside the triangle of the Wilaya promoted by the IS which is to be established if they had the real chance. The Wilaya may in any sense be a great platform for the IS and other militant organization to promote more propaganda in the Southeast Asia region.

It is reported that 23 armed groups in Mindanao, Philippines had fused and formed 'ISIS Philippines' which recently had been declared by US as terrorists. The terrorist's groups are clearly trying to recover through recruitment, reorganization and retrain to rebuild back losses of previous Marawi five months' battle. The suspects are all detained and several leaked IS strategy information had been discovered with several target cities name mentioned. The spark of the emergence had existed back few years ago when the involvement of ASEAN nationals in Syria conflict fighting as jihadist to toppled the existing government. Until 2018, the conflict in Syria involving IS was still prolong without serious solution.



Figure 2: Scene from IS magazine, Dabiq, boasting a mass murder

❖ **Local Governance**

The IS ironically had been possessing great challenge to the state governance of local administration. Local administration especially in Sabah coast part had been critically affected of the threat possess by the IS, ASG, JI and other Islamic Militant. Been radicalized organization, these movement is really harsh on countering any security effort to govern and safekeeping of the locals in Sabah. More kidnapping had been reported to be addressed by the terror group while the government would not adhere to any KFR demand by any organization. Being very productive for tourism, the Sabah East Coast is the perfect place to be visited. However, due to direct emergence of the IS, ASG, JI with link up in parallel with other international militant organization the tourism industry seems to be affected as well.

The local governance on these destinations had been tough especially on promoting sceptical views made by the media of the unrest. KFR by these elements had critically injured the tourism industry and worsened from time to time. Even though there are appropriate measures taken by the Malaysia government to curb the on-going process, the recovery process

was very slow and took real hard time to be properly restored. Threat of IS, ASG, JI to the local's environment affects many elements. The emergence in the region possessing threat in different perspective and affecting the environment of local governance as a whole. In the policing perspective, more and more authorities been addressed to the affected area to control the worsened situation.

More authorities such as the police and forces and military organization had been established to limit any terrorism link activities. It will increase threat level on the security originated personnel where originally were not there for the specified and mentioned purpose. Being ironically terrorism driven, the IS, ASG, JI had been affecting the Malaysia government governance in whole and the Sabah governance in specific. Local policies for the future development had to consider security element critically in order to curb any terrorism link activities and expansion programme in the Malaysia region.

❖ **Economy and Environment**

The IS and Islamic Militant emergence had great impact on Malaysia economy as well. Financial losses of Malaysia government is always expected to increase indirectly due to ASG attacks and KFR activities in the Malaysia waters and what had been a major concern are estimated to run into millions of Malaysia Ringgit. Report estimated that the overall cost of a major terrorist attack on shipping in a strategic location especially in the South East Asia Region would likely be measured in about tens of billions of dollars all over for the last 15 years. Even though Malaysia is indirectly affected by the KFR activities and piracy activities, the effort done by Malaysia required huge amount of financial aid and allocation had been addressed to counter it. It will cause more deficit in the yearly budget tabled in the parliament. Oil accounts for instance are considered half of Asia's energy consumption alone and Malaysia is one of the ASEAN countries affected in it.

The most obvious threat to economy on Malaysia due to the militant kidnapping activities comes from the danger to every foreigner's personnel on business or pleasure that have to travel in the affected area and in regions where these militants are active especially in Sabah Coast area. If the individuals are coming to Malaysia on the company business trip, then it will

immediately had become an issue for the employer responsible who might be expected to help to meet any ransom demand doing the KFR activities. In addition, if the instable region is of particular interest to any company or industry related or concerned, the added additional costs of personnel or group security may slowly diminish the attraction of tourism investment in the region especially Malaysia.

The fact on the aid projects being promoted international and tourists have been the subject of attacks. It also suggests that any major corporation organization which manage to sets up operations in the area would be equally exposed to threat and being very vulnerable. Further making the threat more serious is that these militants have been targeting Malaysian tourist luxury resorts like Sipadan, a remote island off East Coast Sabah which was popular with scuba diving activities.

The IS via ASG, small factions of MILF and MNLF establishment were in Jolo island with their modus operand moving on high speed boat for the KFR activities before diminish in the Sulu Archipelago where there were thousands of island making it hard to detect them.

Organization Development and Trend

The future of IS will be in the operation-based movement which resulted from the renewed focus of global nation to destroy their infrastructure in Iraq and also Syria. However, their main goal which is to form a caliphate will remain and live in the cyber space and resonate among their followers. From Islamic Militant and IS training and ideology, it is belief that their operatives and supporters are capable to mount attacks. In the future, it is not possible for the militant groups to recruit personnel that either have access to weapons storage facilities and target like serving security forces personnel, private security guards and airport personnel. With international cooperation and efforts in totally combating Islamic Militant and IS in Syria and Iraq and also their supported bases like in Afghanistan-Pakistan, Libya and Yemen, the operational focus of them will continuously shift.² With different nationalities and originates militants group, they had been converging into single movement fighting the government forces.

Battle in Marawi in the recent times had worsened the situation for both government and militant parties. The government and the militants are losing men from time to time. Worst case scenario, the

conflict's casualties will continue to increase without any sign of breakpoint. In some research of political situation in the northern part of the Philippines, the suggestion of autonomous offering to Islamic region had raised few great concerns. The concern on the growth of Islamic militant such as IS in such autonomous declared region is more serious. Political milestone and great support offering by the militant factions in many originated organisation will limit the governor power to be in control of their barangays and responsible area. The governor will always need to reconsider these militant Islamic factions in the autonomous regions. More serious conflict will occur if autonomous being awarded to these places since the government had fully transferred its managerial responsibility to the local governance of prominent leaders in place. The ASG factions and the IS are believed to create a wilaya in a triangle comprised of Mindanao, Sulawesi and Borneo which is relatively remote and beyond the reach of nations security services.

Counter Measures

Malaysia is serious on combating the terrorism especially on the national borderline. IS and ASG as such had been some of the key determination for the nation to be highlighting the issue to the national level. Counter action had been discussed broadly and Malaysia idea had been promoted to international level. The efforts of fighting the Islamic Militant and IS are as follow:

❖ **Foreign Affair.** Malaysia through its Foreign Affair Ministry (Wisma Putra) had condemned any acts, activities, method and practices related to terrorist activities. It shows the government full effort and commitment by mobilizing its entire available platform of encountering the 'malady'. The state too had urges other nations especially in the south east Asia countries in identifying root causes and comprehensively fight the so called disease from spreading to other nations. The denounced too had demand international governing through close coordination from worldwide countries. Malaysia also believes that the United Nation (UN) had a unique form of force of coordinating the effective and comprehensive effort. In addition of the holistic approach, Wisma Putra too had coordinating few plan on fighting such terrorism. The strategic plan 2016-2020 as the custodian on international relation and foreign policy had highlighted on establishing of The Southeast Asia Regional Centre for Counter-Terrorism (SEARCCT) that was launched officially in 2003.

❖ **SEARCCT** serves as the main and core centre in the region on training, promoting and collaborating local and international bodies in fighting terrorism. In order to combat terrorism, many other measures had been taken into action. Malaysia has put its best policy against terrorism by passing two related legislations namely The Prevention of Terrorism Act, 2015 (POTA) and the special measures against terrorism in Foreign Countries Act, 2015 (SMATA). Both legislations are in parallel and consistent to support the purpose and objectives of UNSCR focusing in administering monitoring on activities of foreign terrorist fighters (FTF). Both legislations too will deal with the threat they may impose. In order to strengthen the preventive measures, Malaysia had adapted the process and strategy of de-radicalization strategy with collaboration of all government agencies, private sectors and available civil societies to work hand in hand promoting inhibit extremist activities locals and international. Malaysia too in order to support the foreign policy had set up counter messaging centre (CMC) for the purpose of monitoring terrorist narrative via media platform and all available channels that closely related to those extremist proponents.

In addition to that, International Multilateral Partnership against Cyber Terrorism (IMPACT) which is backed by United Nations, International Telecommunication Union and also Interpol also had been one of Malaysia's efforts towards countering Islamic Militant and IS ideology. The main function of IMPACT is to prevent, defend and respond to cyber threats. The headquarters of this council had been launched in Cyberjaya, Malaysia on 20th March 2009. The Headquarter which also called as Cyber Defense Operation Center (CDOC) acts as a centralized intelligence center. Through this headquarter, all 191 member countries will be alerted on cyber-terrorism acts like global financial system attacks or attacks on power grids, nuclear plants, air traffic control systems and others.

❖ **Military and Security Related Agencies of EastCommand.** The Malaysia Army had established the Eastern Field Command (EFC) to cover the security of Sabah and Sarawak in the effort of combating militant ideology. The establishment was as supportive measures to the establishment of Eastern Sabah Security Command (ESSCOM) taken by the Malaysia Army and Navy in promoting stability in the Sabah and

Sarawak Area. The establishment had two major concerns which are tackling security and defense management as well as enforcement and public action.

❖ **Multilateral Networking.** Malaysia and nation members had agreed upon to maintain strong multilateral corporation among themselves. During international conferences, Malaysia is known for its strong advocates fighting international terrorism. The government of Malaysia had agreed to comply and follow the regulations and standards of this cooperation. It includes legislative and administrative measures. The United Nation (UN) and its security council had a prominent role strengthening multilateral effort combating terrorism. The financing of this effort should also be imposed to all of its security members in order to place peaceful condition in the south East Asia region. Malaysia had taken clear stand on the terrorism act and highlighted the war against terrorism should be done comprehensively and not by focusing on force or punitive measures alone. Meeting and conference had been the best platform to deal with security matters which highlight terrorism issues. These meeting and conferences were held regularly and constantly in recent years. Forum and groups were set up in order to promote multilateral corporation within the ASEAN members are as follow:

- ASEAN Senior Officials on Drug Matters (ASOD).
- ASEAN Ministerial Meeting on Drug Matters (AMMD).
- ASEAN Plus Three Senior Officials Meeting on Transnational Crime (SOMTC + 3).
- SOMTC + 3 Working Group on Narcotics.
- ASEAN and China Cooperative Operations in Response to Dangerous Drug (ACCORD).
- Meeting of Heads of National Drug Law Enforcement Agencies (HONLEA).
- Border Management Working Group (BMWG).

❖ **Credible Intelligences.** Five Power Defence Arrangements (FPDA) had agreed to share information gathered from intelligent platform to deal with terrorism threats against Malaysia. FPDA focusing on intelligence networking is a

constructive agreement and be the core of regional architecture focusing on security. The FPDA had been built on trust and enhancing intelligent interoperability and cooperation in promoting appropriate respect for governed law with the specific objective of contributing to peace and security in the south East Asia region. To further improve collaborative intelligent information gathering effort, Malaysia too had worked closely with the Australia government. King Salman Centre for International Peace will be another platform of promoting collaboration between Malaysia and Australia.

The Islamic Militant and IS had also become a threat to the Australia government and Australia has committed in providing substantial information to Malaysia government to curb ideologist from entering Malaysia. Strategic intelligent organization such as *Bahagian Staf Perisikan Pertahanan (BSPP)* and *Bukit Aman Federal Police* had worked closely hand in hand neutralizing potential threat of the terrorist elements. These intelligent platforms and initiatives had been intensifying their effort by establishing Forward Intelligent Coordination Centre (FICC) in Sabah for preparedness, enhanced communication back to headquarters and coordinating intelligent gathering efforts. Islamic Militant and IS had been in intelligence limelight with best regards to technological advancement of these intelligence analysis. Intelligence agencies procurement on technological and state of the art platform had been highlighted to top management and been the national concern. Dependency on technological platform is crucial in monitoring terrorist activities the linked up using the social platform. Gathering reliable intelligent was integral to prevent any terrorist attacks and organization expansion back home in Malaysia. Contact or cooperating with militants from inside or vice versa can now be monitored by manipulating the technological advancement obtained which had been mentioned before. Credible and accurate intelligent information may provide security agencies such as *Polis Di Raja Malaysia (PDRM)* and Malaysia Armed Forces (MAF) to act upon those threats. Suspects can easily be held for further interrogation to curb any terrorist activities before it was conduct in Malaysia. As for the cyber domain, it had been major contributors for intelligence gathering efforts. More and more cyber awareness programs and initiatives being uphold by the MAF and Ministry of Defence (MinDef).

CONCLUSION

Radicalism, extremism either by individual or both had been clearly against Malaysia policy. Preserving peace and security of Malaysia against all terrorism organizations and institutions including IS, DAESH, JI will be highlighted as Malaysia preventive measures. The preventive measures been describing will be the main effort on preserving the nation's interest. However, the effort was not limited to those stated, there were many measures been taken into consideration and translated into action to strengthen the mentioned effort. More efforts were taken into action to boost and catalyse existing cooperation. The affected nation due to the notorious Islamic Militant and IS devious actions had seriously considered many proactive solutions to preserve nation's interest particularly.

Teaching of ideology into Malaysia heart and mind is subjected to POTA and SMATA Acts. The existing act can be translated into strict regulation imposed on the citizen to make sure the ideology and the understanding of DAESH/IS from dominating Malaysian heart and mind. Mind and understanding on the Islamic Militant and IS background plays a vital role in educating the citizen not to be unconsciously affected by their doctrine. The new indoctrination using social media platform should also be closely to be look after. The new social media platform had a great influence on educating this citizen especially the younger generations. Exposure to this kind of social networking will be vulnerable and further create domestic threat to Malaysia security.

Malaysia too will continue its effort to work closely with other countries and international bodies to further improve security measures in order to prevent trans-nation terrorist network. Blending of soft and conventional methods will best be described as Malaysia approach in fighting terrorism. Collaboration and structured approach with effective engagements will be promoted to hinder any terrorist activities in Malaysia responsibility area. International partners with local administrative authorities are closely policing the security of Malaysia citizen and its interest.

The disastrous affect onto Malaysia economy, environment, security, land border and local governance should be controlled. The control measure as describe earlier should be implemented holistically over long term and short term planning with combination and implementation of the *pertahanan menyeluruh* (HANRUH). Decision making process of the government from now on should always take

security measures as its key consideration. Security measures should also be a vital as stated in the scheduled implementation of the *Fourth* Dimension of Malaysian Armed Forces (4D MAF) Version II published in 2016. The 4D MAF had specifically mention conflict in the southern Philippines as one related to IS as one of its Strategic Security Outlook (SO). The SO5 mention the affect to many nations' interest elements including spillover effect that will basically ruin the good relationship between Malaysia and Philippines. The documents too had highlighted the unstable condition at maritime border as discuss earlier in this paper.

The existing MAF operation concept on joint, single service centric, multiple theatres operations platform, multiple launch base and volunteer had basically considered the Islamic Militant and IS threat to national security. Every division and headquarters of all operation domains will have responsibility on addressing the issue. The full optimization and utilization of four dimensions will strengthen the overall process throughout. As highlighted specifically in the SO and proposed military response to the specific SO, the MAF is fully capable of preventing Islamic Militant and IS ideology and understanding from affecting the Malaysia citizen.

REFERENCES

- Cahiles, G. (2018, March 6). Security expert: 23 armed groups fused, forming 'ISIS Philippines', CNN Philippines.
- James Clad et al, The Borderlands of Southeast Asia, Centre of Strategic Research Washington, 2011.
- Jani, M. H., Gunaratna, R., Harrison, J., Ramakrishna, K., Reinares, F. & Sloan, (2017). Counter Terrorist Trends and Analyses. A Journal of the International Centre for Political Violence and Terrorism Research, Volume 9, Issue 1.
- Ministry of Foreign Affair Strategic Plan 2016-2020 Documents, Dec 2015.
- Manap, N. A., & Tehrani, P. M. (2012). Cyber Terrorism: Issues in Its Interpretation and Enforcement. International Journal of Information and Electronics Engineering, 2(3), 409.
- S Narayan, Economic Impact of Terrorism is Southeast Asia Region, ISAS Insights, 25 October 2015.

Statement on Official Portal of Ministry of Foreign Affairs of Malaysia (Wisma Putra), 2016.

Zack Fellman, Fallout: The Future of Foreign Fighters, November 2011.

Zahid Hamidi, Malaysia Policy on Counter Terrorism and De-radicalization Strategy, Feb 2016.

Clarion, (2014). Project Research Fellow Elliot Friedland The Islamic State (ISIS, ISIL).

ENERGY TRANSITION IS A SUBSTANCE TO NATIONAL SECURITY

**By MAJ NORSHAHIDIN BIN LONG
ROYAL MALAY REGIMENT**

INTRODUCTION

Energy and national security inseparably connected, and energy transition has dramatically happened during and post-World War 1. The shifting of woods and hydropower towards coal, as well as petroleum, has imposed a significant impact on the national security. In the late nineteenth century, petroleum is not practical to use; however, the military widely uses petroleum in World War 1, and it became a strategic commodity to the United States (Black, 2019). In the 1970s energy crisis, it worsens the United States economy, especially in the automotive industry, and its effects imposed profound impacts until decades. Energy is a source of economic growth that drives political stability, enhance military power, and decrease the poverty of the population, even though it has contributed to climate change. Buzan (2008) has argued that the elements of national security (political, economic, military, societal, and environment) have interconnected each other, and the nation must take serious consideration of energy security in order to make sure the national security preserved.

The energy transition is a term that broadly discusses, and it refers to fundamental structural transformation in a system of energy as a whole. These changes drive by the energy demand and supply of different types of fuels. Climate change also contributes to the transition in the direction of reducing the global carbon footprint (Fouquet, 2010). In 2015, the United Nations introduced the Paris Agreement, where all the signatories to this agreement should comply with the requirements and guidance to reduce the amount of carbon in the global environment. Historically, the energy system and environmental issue are closely related. Since the seventieth century, the changes in the global energy system have imposed significant impacts on national security pillars.

The Situation of Global Energy Trends

In the 21st century, we have seen the revolution of energy across the globe and the swift transition of the energy system that imposed profound changes in many sectors such as services, manufacturing, and transportation. These trends tremendously impact economic growth as well as national security in the coming decades. The energy system includes electrical demand and supply, gas demand, oil demand, and carbon emission. The study asserted that three main findings on the energy trends would affect the energy landscape in the coming years, where the first finding is that many countries are more concentrates on renewable energy likes solar and wind instead of fuel plants to generate electricity. The cost is lower than fuel plants, and it will see the speeding up of countries invested in renewable energy. The second point is that the transition from combustion engine vehicles to electric vehicles more economical due to oil prices higher than battery. Lastly, it is about carbon emission in the global context, where the dropped of coal demand and flattening oil demand would see the declination of carbon emission in the coming years ahead (Global Energy Perspective, 2019).

According to a study by McKinsey & Company, natural gas is the only fossil fuel that remains growing its number in the energy demands until 2035 as illustrated in Figure 2.1, where the inclination of gas demand up to 2 per cent per annum over the last two decades. In the short run, in year 2025 until mid-term of 2035, gas demand continuously growing in all sectors, especially in the industrial sector. However, gas demand will plateau after 2035 due to high competition with renewable energy. The study also mentioned that the transport sector maintains high inclination rates owing to the marine sector adopted into the gas demand sector. Meanwhile, for the oil and gas industry's use, it has expected that to continue stagnant with gas demand in the coming years. These projections according to reference cases that encompasses the increasing of renewable energy in power; the growth of gas demand in China, where the number is greater than the United States (US) including other ten largest growth countries; and the Middle East gas demand will at the peaks before 2030 due to improvement of renewables in power as well as vast opening of exporting gas (Global Energy Perspective, 2019).

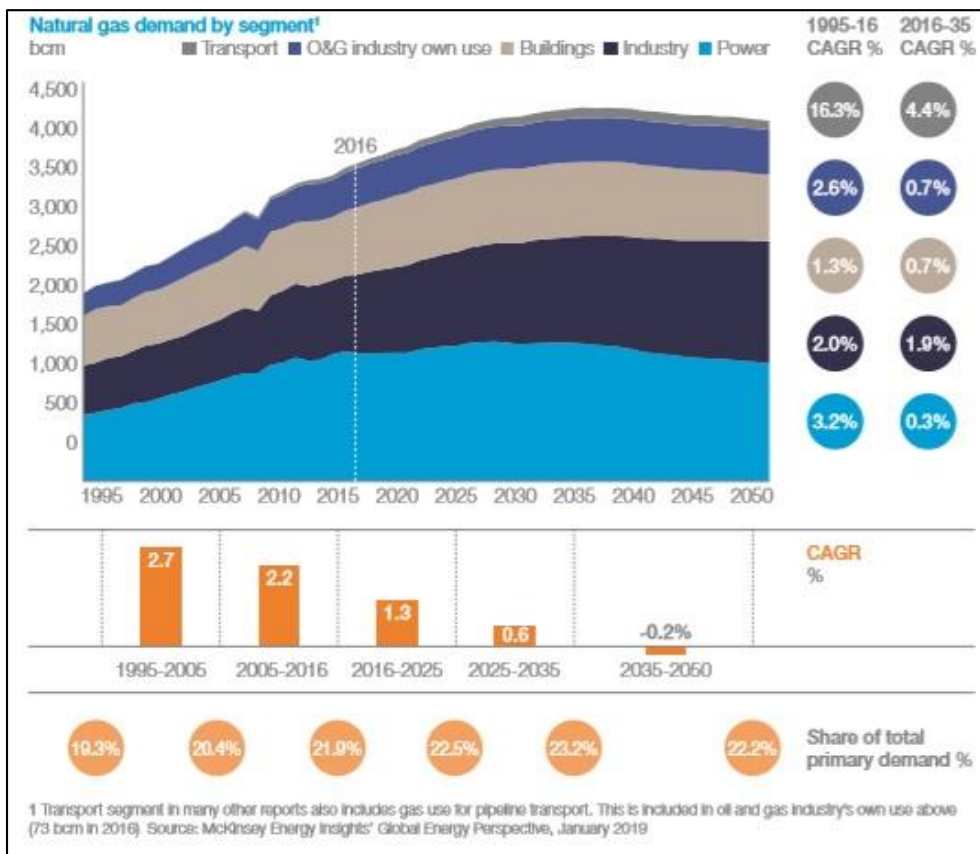


Figure 2. 1: Extracted from Natural Gas Demand by Sector
(Source: Global Energy Perspective, 2019)

Apart from the study, as per illustrated in Figure 2.2, it also highlighted the trends of oil demand in the coming years. Historically, the oil demand has shown stable growth of approximately one per cent per annum, and then it is projected to be slowed in the early of 2030s; however, the acceleration in energy will cause the oil demand to reach a peak before 2025 and then in 2050 it will reach the half amount of today's level. The main driver in the oil demand is the chemicals sector; however, the demand growth of this sector is a predictable decline in the coming 15 years due to the increase in plastic recycling. Besides, the use of oil in power generation is expected decrease because of the tiniest efficiency of fuel in the power generation due to transition to inexpensive renewables, especially the countries in the Middle East that swiftly exchange from oil to gas or renewables. Then, road transportation is also a critical factor of oil demand in global energy trends due to adoption of electric vehicles demand in countries of OECD, and then, the oil demand for this sector is predicted to reach

the peaks in 2025 and it starts decline afterwards, up to the 30 per cent of the demand of oil today (Global Energy Perspective, 2019).

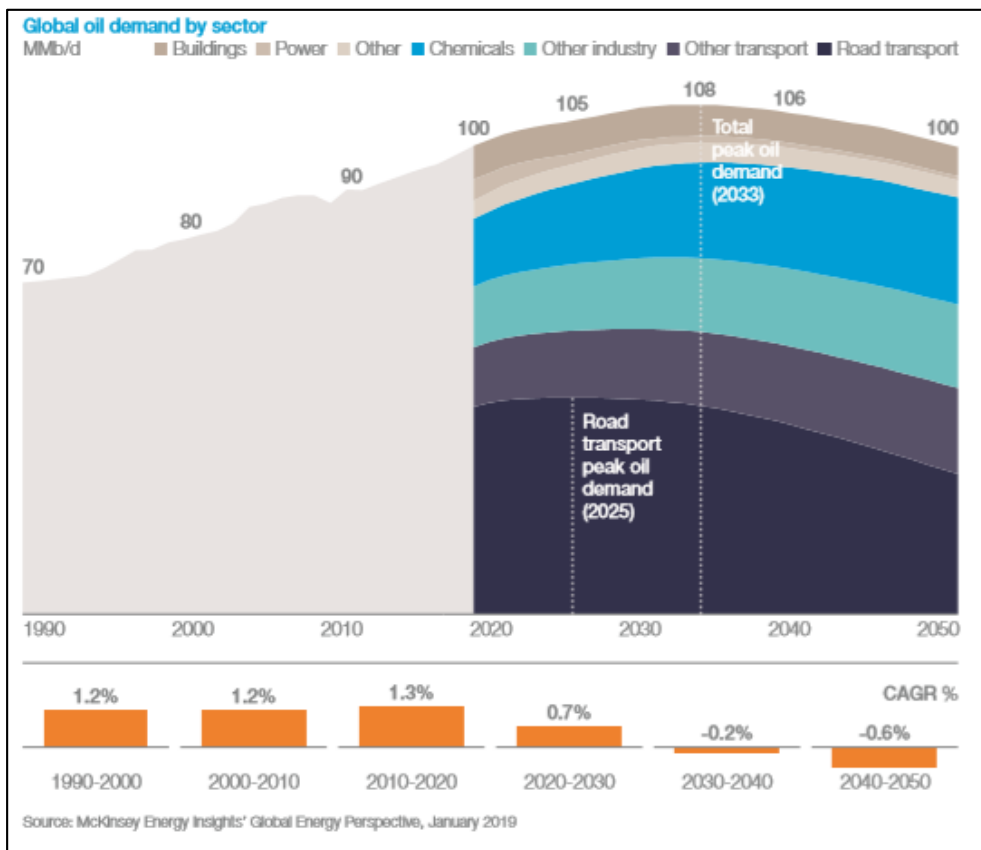


Figure 2.2: Extracted from Global Oil Demand by Sector
(Source: Global Energy Perspective, 2019)

According to the United States Energy Information Administration, Figure 2.3 illustrated the projections of renewable energy tremendously incline as the primary energy consumption in 2050, even though the other fossil fuels continue increasing the demand of the world energy consumption. The volume of renewable energy demand is projected increase three percent every year from 2018 until 2050, and it is affecting the coal, petroleum, and other liquids share in world energy demand. Besides, natural gas and liquids are expected to have a slight increase by 0.4 percent every year, however, nuclear energy shows gradually increase year by year, about 1 percent annually (International Energy Outlook, 2019).

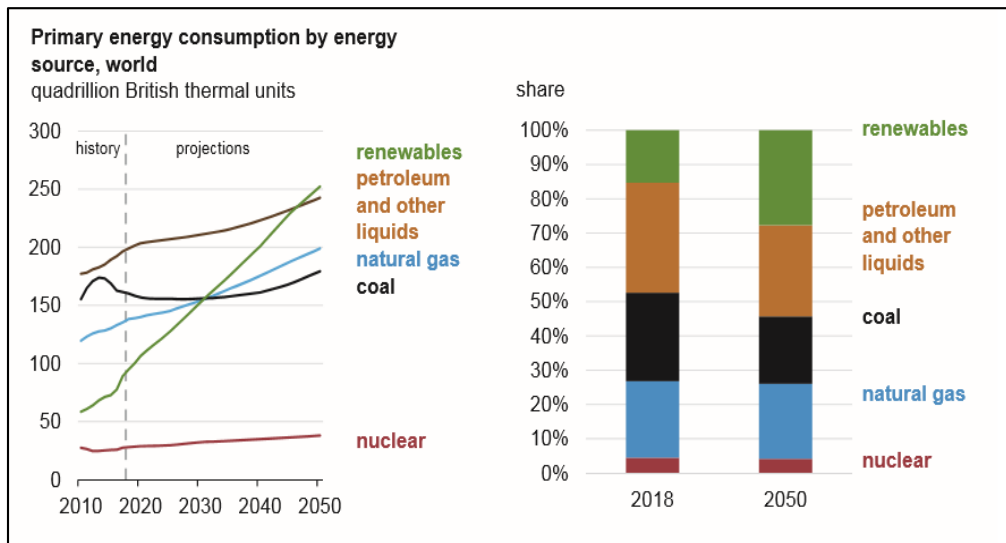


Figure 2.3: Extracted from The Projections of Primary Energy Consumption by Energy Source of the World
(Source: Global Energy Perspective, 2019)

Impact Energy Transition on Political Dimension

The transition of energy from traditional energy to renewable energy imposed important effects on the political dimension, either domestic, regional, and international. The CNA Military Advisor Board (2017) has articulated the acceleration of energy transition to renewable energy affecting the countries' oil exporters production due to various options of energy resources. The United States and European countries have less independent of the traditional energy for their economic growth. On the other side of the same coin, China and India currently increase their energy demand will strengthen the relationship with oil exporter' countries such as Russia and Iran to meet their energy demand. Besides that, China also could increase the pressure of claims at the South China Sea to gain control of the natural energy resources and consequently increase concerns of national security of other countries.

Apart from that, the government faces a crucial role in dealing with energy transition by enabling the act of energy policy framework in considering the long-term effects. The commitment of the government to accelerate the involvement of private sectors in producing renewable energy and creating more green technology is essential (IRENA, 2018). The political masters must invest more in the innovation of green technology, and it must roll now for the

development of an essential foundation as it involves multiple areas and procedures because some of it might take a long time of processes. Instead of investing in technology development, the government could apply the technology transfer approach with this transition. The International Renewables Energy Association (2018) has advocated the solution to this requirement is the government has to address the carbon outflow in industry and creating policies on bunker fuel that been used by aviation and shipping. Then, it is not only focus on the innovation of technology in renewables energy, but it must supplement with new market patterns, new strategies, and enough financial as well as new commercial models.

Goldthau et al. (2019) advocated that energy transition would create a dirty nationalism among the countries. Self-reliance from foreign fuels is the top policy of developed countries like the United States and Europe. This policy drives the countries to increase the oil and other fossil fuel production with ignorance of the market prices and harm the developing countries that rely on energy resources from exporters. The races of gaining enough energy supply undermine the process of decarbonization as well as makes the Paris Agreement 2015 struggle to achieve its goal in reducing the CO₂ emissions in the global environment. As a result of the climate change unresolved, probably the global food supplies disrupted, water and other supplies inadequate over time.

Impact Energy Transition on Economic Dimension

The renewable energy imposed substantial effects on regional economic in various aspects. In the direction of facilitate and accelerate the expansion of renewable energy within region, it acquires the structural modification of the energy arrangement. In geographical perspective, not all location either land or sea that able to generate the renewables energy (for example wind and hydropower). The generation of energy based on decentralised productions at area that needs synchronization between countries in the regions. The structural change to the energy arrangement imposes vital consequences to the region as the economic system is reliable to the energy supply as an engine to run the economic activities like electricity generations, for example. For the countries that produces, and exports traditional energy must adapt the changes due to reduction on investments towards productions. The impact towards job creations, technologies changes and market designs by renewable energy influence countries to shift the economic systems towards the low carbon economy (Jenniches, 2018).

CNA Military Advisory Board (2017) has reported that the economic growth directly relies on energy supply as an engine to keep its rolling as per plan by the political masters, and the energy transition requires countries to adopt changes from traditional energy towards renewable energy. Energy is essential to economic affluence and security; therefore, avoiding energy supply disrupted is a fundamental principle to the nation. Despite influencing the affordable supply of other resources such as water, foods, and goods, the energy transition has changed the market patterns, technology advancement, and revenue of the countries in the future. These precisely impact on GDP level of global, national revenues as well as the movement of goods and services for population satisfaction. Consequently, these changes prompting the economic security concerns that luring to the national security effects.

The transition towards renewable energy offers significant benefits to the macroeconomic perspective. IRENA (2017) through analysis on reference cases have reported that GDP would rise by 0.8 per cent in 2050 by reducing global CO₂ emissions that consistent with Paris Agreement 2015, whereit translates to an accumulative increase of 19 trillion (USD). This is equal with a combination of the capital all companies listed on the New York Stock Exchange. By encouraging the investment on green technology and the energy efficiency as well as policies enforcement including monitoring the carbon prices and salvaging of revenues are enables to increase the economic activities.

Swartenbroekx (2017) has articulated in his study on the measurements of energy efficiency with low carbon emissions are focused on several types of methods and procedures such as taxes, subsidisation on research and development (R&D) investments and governing constraints. The result has shown that introducing the carbon tax or any procedures that integrate with the cost of environmental, low carbon products prices or related products that contain carbon imposed negative relationship with the household's income. The adverse effects increased the growth of competitiveness low-carbon products and perhaps affecting the trade balance. However, the reduction of labour costs in low carbon productions helps these negative consequences, and with net employment, it's will double up the economic activities. The second approach is about the subsidies in R&D investment like Feed-in-Tariffs encourage the adaptation of low carbon technologies and products. The impacts on economic will be smaller by cutting off other government expenditure instead of borrowing. The latter approach is imposing the standard of

policies such as emission standard and other standard associated with low carbon products, goods and technology (Ouvrard et al., 2014).

Besides, the development costs of sustainable renewable energy do not only look into buying a solar panel or wind system to generate energy; however, it shall consider both direct and indirect costs. For example, the direct costs are the expenditures to construct the complexes and development of renewable energy technologies. The traditional energy technologies and complexes perhaps are not integrated with renewable energy, and it would cost substantial factors. The indirect cost that could be foreseen is that the development of distribution stations for renewable energy like electricity, and then, if the government shifts from combustion engine vehicles to electric vehicles widely, the extension of grid to the rural area shall consider as well. Other indirect costs that can be foreseen are the reliability of storage, environment costs, as well as health costs (CNA Military Advisory Board, 2017).

Impact Energy Transition on Military Dimension

CNA Military Advisory Board (2017) has assessed that the factor influences of Chinese military expansion due to energy security in order to preserve China's economic growth. China's energy demand for oil and other fossil fuel still increasing even though China has accelerated transition on renewable energy to be self-reliance on foreign energy supply. China has not only strengthened ties with Russia and Iran, it's probably pushes in obtaining indigenous energy resources and seek the territorial that precious with traditional energy resources such as claimant of nine-dash line territory. This situation was alarming the United States in which created tension in the South China Sea (SCS) and the effects spill over to the neighbouring countries that shared territory of SCS.

Military forces as a primary security element in conducting the operations in a rural and isolated area and its existence sometime in hostile areas caused it vulnerable to energy supply disruption. For example, the American Council on Renewable Energy (ACORE) has argued that the United States troops in the hostile region are vulnerable to the disruption and targets by militants during convoys in supplying the energy and goods. The study conducted by the Department of Defence (DoD) of the United States, every 24 fuel convoys in Afghanistan in 2007, there is one casualty occurred due to attacks by militants. Therefore, the use of renewable energy in Forward Operation Base (FOB) is beneficial to the troops and commanders on the ground

without relying on combustible energy supply in certain of the period. For instance, the portable generator that helps in providing electricity to the FOB due to portable and dependant on wind or solar. By having this kind of technology, it acts as combat multiplier during the war (ACORE, 2018).

In the United States, numerous military leaders confess that energy transition from traditional energy towards renewable energy imposed national and global security threats, but it is impacting more on economic, social and political instability of the countries. In this perspective, the climate change accelerates the international conflicts because the reliance of foreign oil and other fossil fuel would weaken the country due to energy supply disrupted and its effects the military capabilities when the energy insufficient during the conflicts or war. From statistic, the United States military has consumed over 100mn barrels of oil annually in which to places the troops in vulnerable hostile region. Besides, the uncertainty of oil prices and global oil consumptions and demands are primary concerns of the Department of Defense (DoD) regarding oil reliability while accomplishing the military operations. The government also emphasized on the renewable energy technologies and assets procurement as well as the use of renewable energy in electricity generations in military installations and combat zones through National Defense Authorization Act of 2010 and Energy Independence and Security Act 2007 (Saltanat, 2017).

The United Kindom (UK) Military Forces are the first military that uses green electricity in their military installation at Royal Air Force Marham in Norfolk. The programme has collaborated with Future Biogas company that launched on 31 January 2019, and it indicates the transition from traditional energy to renewable energy in generating electricity for the military base in the United Kingdom Armed Forces. Currently, over 95 per cent of the electricity of that military base fuelled by the anaerobic digestion (AD) from the Redstow Renewables plant, nearby military base that runs by company. The Redstow plant is generated electricity for 4.5MW every hour in which, it able to power up 350,000 LED bulbs; therefore, the green energy supply to that military base has resulted the reduction of the electricity bill to £300,000 of annual costs. Also, the UK's Ministry of Defence can reduce the carbon dioxide emissions approximately 14,000 tonnes annually (Future Biogas Powers UK Military's Green Energy Revolution, 2019).

Impact Energy Transition on Environmental Dimension

Improvements in economic, social, political, and military aspects would generate environmental effects instead of focussing on GDP growth. The 20 per cent of decarbonization opportunities recognized as economic viability that does not consider as welfare benefit. The 80 percent remaining of renewable energy is economic influence towards climate change impacts, enhance health among the population, as well as improvement of the conducive and comfortable environment. Nevertheless, many countries remain subsidized in fossil fuel consumption that contributed to the distortion of markets of renewable energy products (IRENA, 2018).

All renewable energy technologies are affecting the environment in many ways. For example, solar energy technology generally giving advantages because the source is from sunlight. Also, the technologies of solar energy are environmentally friendly, require less maintenance as well as self-reliance from foreign oil or other fossil fuels. However, not all locations have direct sunlight, especially locations at the higher locations such as humid areas. Besides, the larger-scale solar energy technology requires a larger land area; therefore, the concerns on habitat loss and land degradation raised by many stakeholders, in which the use of the land area for solar energy very reliance on the intensity of resources and technology. Approximations on Photovoltaic (PV) systems require land area about 3.5 to 10 acres per megawatt, and solar energy unlike wind technology because it cannot share with other sectors (Spellman, 2015).

Apart from that, biomass is one of the renewable energies that contributed in reducing global GHG emissions. This energy is more attractive owing to its low production costs, secure storage, and quickly replaced fossil fuels in very vital products such as power, mobility, and heat. Nevertheless, the development of bioenergy productions imposed numerous impacts such as swelling cropland growth by occupying intact ecosystems. It is increased the carbon dioxide emissions in environments. Therefore, to achieve a net contributor to climate change mitigation, bioenergy cultivation must avoid cropland expansion in intact ecosystems. The reusable of land from the agricultural sector is one of the approaches for bioenergy cultivation (Popp et al., 2014).

Impact Energy Transition on Societal Dimension

The energy transition from traditional towards renewable energy imposed a massive impact on jobs opportunity to countries. The assessment from IRENA, the United States, Brazil, and China are top countries that created job opportunities in the sector of renewable energy. However, in recent years, Asian countries have shown the inclination of employments from 50 percent to 62 percent in the range of 2013 to 2016. Two factors influence the paradigm shift towards Asian countries, firstly the policy on employment that introduced by countries in accelerating on the emerging domestic market and supporting the policy of industrial in the global competition in manufacturing facilities of renewable energy, particularly in the photovoltaic industry. Asian countries leading by China as a more prominent employer has created 3.6 million employments opportunity in renewable energy. In India, both national and state-level have driven the placement of wind and solar capacities where Malaysia is focussing on the photovoltaic panels and modules. These renewable energy industries are creating additional job opportunities in their countries. Biofuels industry also adding jobs opportunity, particularly in the Philippines, Thailand, and Malaysia. However, the biodiesel industry is stimulated by Brazil as a more significant employer from any country, and somehow it is limiting the growth of employment due to sugarcane harvesting automation (IRENA, 2017).

The renewable energy industry incorporates a wide area of skills and occupational requirements, and it is one of the challenges to the renewable energy industry in the countries to fill the gap exists. Lack of talented and skilful staff are reflecting the smooth transition on the low-carbon economy, affecting the development projects as well as increase cost overruns. Therefore, thorough collaboration and discussion with the education ministry and renewable industry in developing a strategic framework to expose and encourage people about renewable energy technology is a paramount approach. Also, sufficient financial or budget of training and education should be contemplated by the government (IRENA,2017d, 2017e). There are works of literatures articulated some of the skills from other industries are transferable in renewable energy technology such as semiconductors, shipbuilding, electrical equipment, and manufacturing. In Germany, the skilled shipyard workers suggested joining the development of bases or towers in offshore for wind farms (Fornahl et al., 2012 and Hulsen, 2012)

The generating of electricity from renewable energy technology either from solar, wind farms, or hydropower, it increases resilience on electric supply from weather events such as typhoon, earthquake, and flood. Electricity disruption or lost would harm the population as well as economic activities, then reflects to the sustainment of economic growth for the countries. Besides, the development of electric power generation complex or infrastructures taking a long-time execution to recover from extreme weather events; therefore, renewable energy electric power generation is proven capability in responding and recovering from events such as hurricanes and cold snaps (ACORE, 2018).

Renewable energy technology installations not documented well that directly harm human health. However, the technology such as wind turbine has contributed to the noise pollution in the surrounding of wind turbine technology complex if it is nearby with resident areas. According to cases reported shown that wind turbines created vibrations and sounds that can be heard and sensed by citizens up to 10 kilometres away. The noise from the wind turbine would cause a syndrome called wind turbine syndrome. Some of the wind turbine syndrome symptoms are sleep problems, nuisances, faintness, fatigue, nervousness, anger, misery, and problems with concentration and learning (Spellman, 2015).

CONCLUSION

From the political dimension perspective, renewable energy promoted self-reliance on foreign oil and other fossil fuel in the future, however with the independent and vary of options in energy supply, the exporter's countries are collapse due to the reduction of traditional energy demand. Power rivalry between superpowers countries such as the United States and China in the South China Sea (SCS) is one of the primary impacts from a military perspective. Also, the developed countries, especially the United States and Europe, have seen advance energy is combat multiplier for the military when conducting operations in rural or isolated areas and the FOB. The electricity supply from renewable energy technology in the United Kingdom shows the reduction of operation costs of military installations by reduction of electricity bill costs. Besides, in the economic dimension perspective, significant changes in the structural system of economic due to investments in technology, market designs, and commercial patterns. Energy transition also benefits the socio-economic of the population because, in the renewable energy, the skilful workers from other industries and sectors were able to transfer their skills, knowledge into

the renewable energy industry. In accelerating the advance energy productions, the countries have to invest and start the development of planning due to some fundamental procedures that would take a long time.

Besides, the environmental aspects also affected the energy transition. The volume of CO₂ emissions has reduced due to advance energy products and goods containing low carbon products. By reducing the CO₂ emissions, the nations would increase population health, and it also contributed to the disadvantages of consequences such as deforestation and loss of habitat in an intact ecosystem. the author would agree with hypothesis in Environmental Kuznet's Curve. In his hypothesis, he highlighted that the solution to the pollution is the development of the countries itself. Therefore, the impacts on national security elements have to be considered seriously without compromise the national objectives.

With the notes that have been discovered above, it can conclude that the energy transition is a focal point for all countries across the globe in upholding and preserving the security of nations as a primary objective. All the elements of national security impacted by the transition of traditional energy to renewable energy by accelerating measurements in renewables energy productions to strengthen their economic, military, as well as to mitigate the climate change effects.

REFERENCES

- American Council on Renewable Energy. (2018). The Roles of Renewable Energy to National Security. Retrieved February 20, https://acore.org/wp-content/uploads/2018/10/ACORE_Issue-Brief_-The-Role-of-Renewable-Energy-in-National-Security.pdf.
- Black, B. C. (2019). How World War I ushered in the century of oil. <https://theconversation.com/how-world-war-i-ushered-in-the-century-of-oil-74585>.
- Buzan, B. (2008). An Agenda for International Security Studies in the Post-Cold War Era. ECPR Press.
- Fouquet, R. (2010). The slow search for solutions: Lessons from historical energy transitions by sector and service. <https://doi.org/10.1016/j.enpol.2010.06.029>

- Future Biogas Powers UK Military's Green Energy Revolution. (2019). <https://www.futurebiogas.com/future-biogas-powers-uk-militarys-green-energy-revolution/>
- Goldthau, A., Westphal, K., Brazilian, M., & Bradshaw, M. (2019). How the energy transition will reshape geopolitics? Retrieved from https://www.researchgate.net/publication/332820332_How_the_energy_transition_will_reshape_geopolitics.pdf
- International Energy Outlook 2019 with Projections to 2050. (2019). <https://www.eia.gov/outlooks/ieo/pdf/ieo2019.pdf>
- IRENA. (2017). Renewable Energy Statistic. Retrieved February 20, <https://www.irena.org/publications/2017/Jul/Renewable-Energy-Statistics-2017>
- IRENA. (2017a). Assessment of The Renewable Energy Components in Nationally Determined Contributions. Retrieved February, 20, https://www.irena.org/media/Files/IRENA/Agency/Publication/2017/Nov/IRENA_NDC_methodology_2018.pdf?la=en&hash=4E6E9173BB306CDD4295F1E7F5FB1CF477CEAAF5
- Ouvrard, J.F., & Scapecchi, P. (2014). An evaluation grid for the assessments of macroeconomic impacts of energy transition, coe-Rexecode – Working paper nr 48.
- Popp, J., Lakner, Z., Harangi-Rákos, M., & Fári, M. (2014). The effect of bioenergy expansion: Food, energy, and environment. *Renewable and Sustainable Energy Reviews*, 32, 559–578. doi: 10.1016/j.rser.2014.01.056
- Saltanat. B. (2017, September 13). The US Military: Winning the renewable war. Retrieved February 20, 2020, from <https://www.energydigital.com/renewable-energy/us-military-winning-renewable-war>
- Spellman, F. (2015). Environmental Impacts of Renewable Energy. Boca Raton: CRC Press, <https://doi.org/10.1201/b17744>.
- Swartenbroekx. C. (n.d). Energy transition: impact and economic stakes for firms. Retrieved February 18, 2020, from https://www.nbb.be/doc/ts/publications/economicreview/2018/corevi2018_h6.pdf

THE CHALLENGES OF CYBER WARFARE(CW) TOWARDS MALAYSIAN ARMY

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INTRODUCTION

Cyberspace has become another critical dimension of warfare, where nations will fight wars without conventional forces and weapon battles. This area enables countries with limited military presence to become as powerful in cyberspace as other nations. Cyber Warfare (CW) is an online conflict that includes the infiltration of the computer systems and networks of another country. CW's main aim is to achieve an advantage over its rivals, whether they nations or competitors. CW offers an economically inexpensive means of asymmetric warfare, unlikely to result in a conventional military response from a much larger power.

In addition, compromised sensitive data could give attackers the ability to blackmail government personnel. The information can allow an attacker to claim they are an authorized user to access sensitive information or equipment. If the government cannot defend itself against cyber-attacks, the people will lose faith in the ability of the government to protect them. CW can destabilize a country, disrupt trade, and affect the confidence of the citizen in its government without ever physically entering the target country.

Based on the current development, the Malaysian Army formed the cyber capability initiative through the restructure of 95 Royal Signal Regiment into 99 Cyber Warfare Signals Regiment (99 CWSR) on 28th November 2018. However, the development is still in the initial phase. Until now, 99 CWSR are still facing difficulties in coping with the top management requirement and fulfilling the purpose of the Malaysian Army cyber capabilities. There are still a lot of areas that need to be refined for 99 CWSR able to deliver cyber capabilities, but it is better late than never.

Currently, there is ambiguity between the cybersecurity (CS) and CW understanding. In general, CS is the preservation of confidentiality, integrity, and information availability in cyberspace. While for the CW, it includes actions by a nation-state or foreign organizations in order to target and undermine the CS means of

another country. In addition, the differences between cybercrime, cyber espionage, and CW are mainly related to different actors, entities, and their motivations or purposes (Jan Trobisch, 2014).

The Critical National Information Infrastructure (CNII) is the systems and functions vital which are essential to the country. If something happens, it would have a detrimental effect on national economic power, national images, national security and stability, government capabilities to function, and public health and safety. The cyber-attacks effect on infrastructure can be seen from the Ukraine power grid attack on 23rd December 2015. The blackout lasted just over an hour and was the first recorded cyber-attack carried out on a power grid. The intruder was able to penetrate and compromise three power distribution company's information systems in Ukraine and briefly interrupt the energy supply for customers (Gazula, 2017).

The Army Cyberspace

Cyberspace is a global domain within the information environment consisting of the interdependent network of information technology infrastructure, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers. Cyberspace can be viewed as three layers, namely physical, logical, and social. This layer consists of five components which are geographic, physical network, logical network, persona, and cyber persona (United States: US Army, 2010).

In order to understand these layers, we can narrow down the elements summarized within these layers. The social, logical, and physical layers' relationship in the Malaysian Army environment is shown in Figure 1.

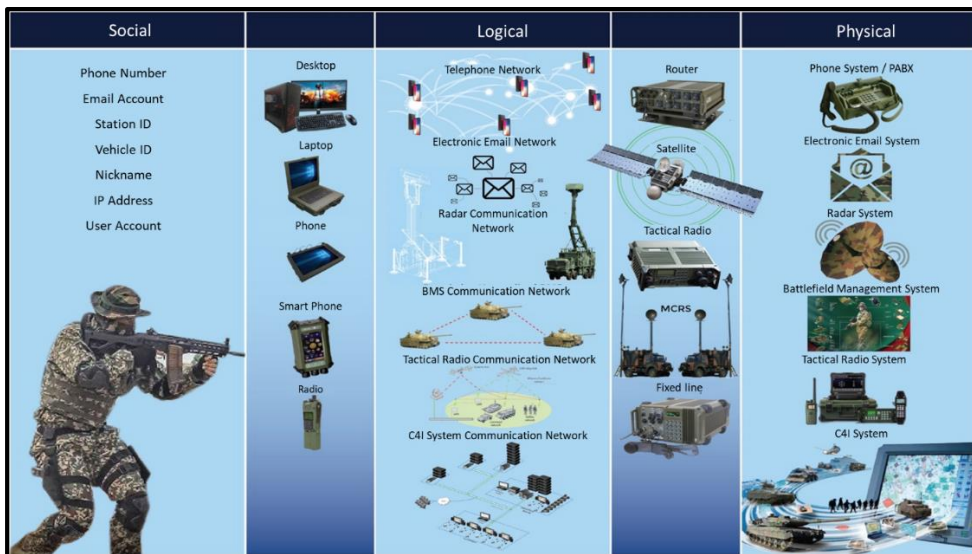


Figure 1: Social, logical and physical layers relationship in the Malaysian Army environment (MP 6.0-3-3.1A TD, 2019)

The social layer comprises the human and cognitive aspects and includes the persona component and the cyber persona component. The persona component is the actual people on the network. The cyber persona component is a person's identification or persona on the network (e-mail address, computer IP address, cell phone number, and others). However, an individual can have multiple cyber personas, such as different e-mail accounts or social media. Therefore, it is a lengthy and tedious process in order to apprehend a responsible target for each case (incident report) or to identify the enemy within the network. Thus, the Malaysian Army will require significant situational awareness (SA), forensic, and intelligence capabilities personnel to retaliate the complex cyber threat.

The logical layer contains the logical network component which is more technical and consists of the logical connections that exist between network nodes. Nodes are any devices connected to a computer network. Nodes can be computers, personal digital assistants, cell phones, or various other network appliances. On an Internet protocol (IP) network, a node is any device with an IP address. For this layer, the Malaysian Army should highlight Multi-Channel Radio System (MCRS) deployment on the battlefield. This because the system will provide data connectivity within the area coverage.

The physical layer includes the geographic component and the physical network component. The geographic component is the

physical location of elements of the network. While geopolitical boundaries can easily be crossed in cyberspace at a rate approaching the speed of light, there is still a physical aspect tied to the other domains. The physical network component includes all the hardware and infrastructure (wired, wireless, and optical) supporting the network and the physical connectors (wires, cables, radio frequency, routers, servers, and computers). In the Malaysian Army scope, the physical layer is significantly intertwined with our Phone System, Radar System, Battlefield Management System (BMS), Combat Net Radio (CNR), Satellite Communication (SATCOM) system and New Command and Control (NC2) system.

Cyberspace is made up of several different networks and nodes. Although not all nodes and networks are linked or available globally, cyberspace continues to interconnect even more. Compared to other communication or travel media, it is indeed easy to cross geographical boundaries using the Internet. However, networks can be isolated using protocols, firewalls, encryption, and physical separation from other networks and are typically grouped into domains (for example, .mil, .gov, .com, and .org). These domains are specific to an organization or mission and are organized by physical proximity or function. While some access is achieved globally or remotely, access to closed and specialized networks may require physical proximity.

The cyber operation is a cyber-capability effort whose primary purpose is to achieve objectives within the cyberspace domain. Operations related to cyberspace are cyber defense, cyber exploitation, and cyber offensive. Cyber capabilities include hardware, computer programs, operator skill crafts, and any combination of software or hardware designed to produce effects within the cyberspace domain.

Generally, one of the elements to determine the success of all operations depends on the effectiveness of Command and Control at all levels. Army's Command and Control element currently using various communication platforms. Currently, the communication platforms that available in the Malaysian Army are SATCOM, MCERS and CNR. These state-of-the-art systems and mediums are still susceptible to be exploited if security procedures, especially those involving cyberspace, are not implemented during the deployment. Malaysian Army performs cyber operations and support activities within this domain as part of Joint Operations or Army operations. Therefore, the Malaysian Army needs to exploit the weaknesses of the adversary's

info structure while at the same time securing our resources from cyber threats.

Cyber Warfare Capability in The Malaysian Army

The chain of command for the 99 CWSR during deployment is under direct order from the Chief of Army. The cyber operation comprises several elements, which are Defensive, Offensive, and Exploitation.

Cyber Defensive should able to contain and neutralize the incoming threats for assuring the Army info structure availability. While the Cyber Exploitation should be able to detect for early warning any incoming threats towards Malaysian Army info structure through passive detection and continuous metadata gathering. Meanwhile, Cyber Offensive should impose an attack on adversary critical info structure or disrupt their command and control effort.

The 99 CWSR operational capability based on the organizational chart can be divided into two, which is defensive and offensive. The primary role for the 99 CWSR is to plan, implement, and provide expertise on technological development, which includes crafts in terms of technical, intelligence, networking, Internet, and digital forensics.

The main task for the 99 CWSR is to advise on the Army Tactical Cyber Warfare. Other functions for the 99 CWSR is as shown below:

- ❖ As a cyber-commander at the tactical level of the Army.
- ❖ To plan on the execution of cyber operation (offensive and defensive) at the Army tactical level.
- ❖ To plan on the implementation of Cyber Warfare Operations covering two theater operations.
- ❖ To plan technical training and cyber expertise development.
- ❖ Technical advisor to the Chief of Signal Officer (CSO) related to Cyber Warfare.
- ❖ Accountability for state-of-the-art assets.

- ❖ To plan on the execution of digital forensics towards adversary ICT equipment.
- ❖ Develop cyber weapons capabilities.

The defensive capability element in the 99 CWSR is to secure critical data and information from being altered, extracted, or destroyed by irresponsible parties through ensuring security compliance on the hardware and equipment used. Also, this element responsible for neutralizing any cyber threats via social media or websites.

The offensive capability element in the 99 CWSR is to perform virtual intelligence tasks and identifying the dissemination of information via wireless equipment. Also, this element responsible for developing cyber weapons unique to our organization for infiltration purposes. Besides, this element must plan and conduct targeted network analysis to obtain critical or strategic information that can give an advantage for the organization. Lastly, they must carry out Cyber Warfare Operations that include hacking, penetration test, and sabotage of target's computer network.

Challenges into Malaysian Army

Firstly, the challenges that Malaysian Army cyber capability initiatives will face throughout the process are budget allocation. Undeniably, we still at the initial stage for the cyber capability initiatives. However, the thought process is not whether who is the finest nor the most advanced and most expensive cyber weapon. Undoubtedly, we will face so many challenges in adopting this new technology and impose the bare minimum of the cyber threat to adversaries. In fact, in this domain, the most important is the one that utilizes or makes use of the weapon of any state-of-the-art technology in the utmost potency. It is proven that cyber capabilities are the ones that most expensive to procure, sustain, and maintain. This type of weapon is also having a concise cycle of usage. The comparison between cyber weapons and the traditional weapon is as shown in Figure 2 below.

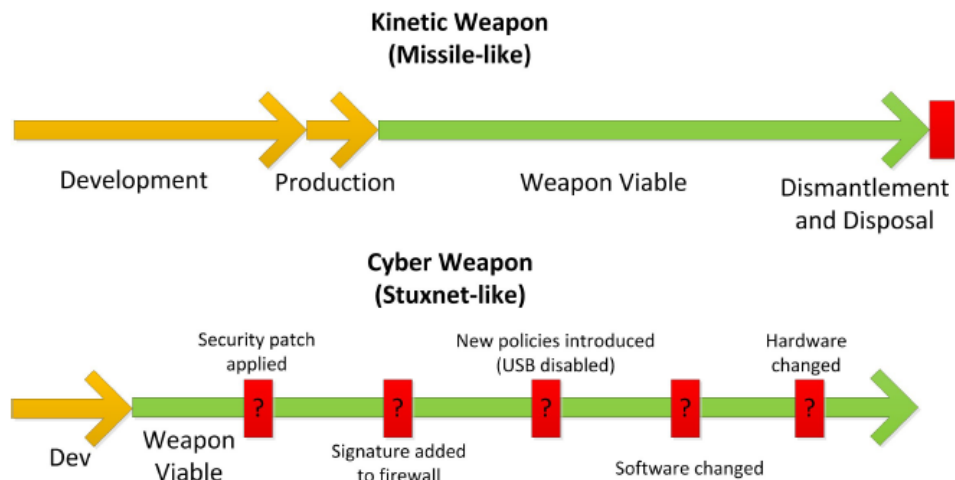


Figure 2:Weapon life cycles (Robinson et al., 2015)

Based on Figure 2 above, we can see that compared to the kinetic weapon that can be easily procured and ready for the mission and has a lethal threat. It also has a longer shelf-life compared to the cyber weapon. Cyber weapon depends on the vulnerabilities that frequently have been patched if discovered by the security practitioner. Besides, the advance of cybersecurity in the industry makes the threat vector for the cyber weapon is very slim. Therefore, the cyber weapon that is ready for the mission itself is costly due to hours of research and development, considering the frequency of patched security vulnerabilities.

Theoretically, the Malaysian Army may not be resourceful enough to sustain this kind of weapon that may be deployable today and may not be useful in just two days due to our normal procurement process that are dragging and tedious process. It really can affect the life span of the cyber weapon that we currently procure.

The second challenges that the Malaysian Army need to overcome are the human resource. Other than the expenses that should be taken consideration for adapting this new kind of weapon in our arsenal, it is an important aspect that should be taken seriously. We must be honest with our organization if we can spare our military personnel to mold as the cyber operators. If our existing organization or units does not stretch enough with the workload and also lack in many areas such as basic welfare. This because to understand how vital human resources, we must understand the cyber kill chain.

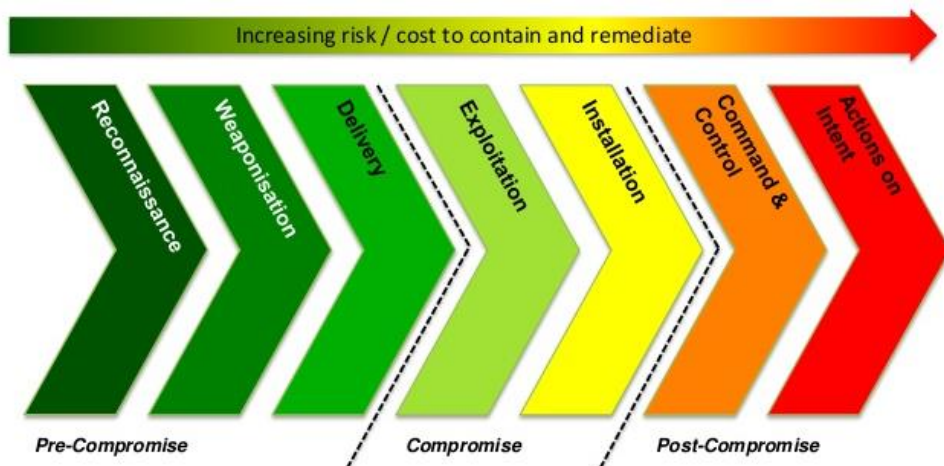


Figure 3: Sequential chain of events for a successful mission
(Wilson, 2014)

Based on Figure 3, we can understand that process from pre-compromise until post-compromise will inflict higher risk. We consider the risk in terms of exposed, back-track, reverse engineering, neutralize, and retaliate. Other than that, we should understand that throughout this process, only the weaponization part that we can procure or develop by vendor assistance.

The personnel chosen to conduct cyber operations must also be screened to ensure his/her background is not potentially a threat to our nation. This mainly because this kind of craftsmen will be effective in either role as ally or adversary. Therefore, the selected officers or other ranks to conduct cyber operation crucially must be trustworthy and have very high integrity morale because they may handle sensitive data or strategic information.

In addition, we should also consider that the career planning for the cyber operators or officers will be different from others because of the amount of time taken for practicing and exposure required for them to be competent or expert in the cyber operation. We must also take care of them as they are an asset to the organization due to the amount of money and time spent to nurture them. It is a significant loss if they left out the organization and join civilian life because we can use their expertise and technical know-how. It will be worst if they make a coalition with the adversary to cripple or jeopardize our organization or nation.

The third challenge that the Malaysian Army needs to handle is training. We must craft our man (human resource) to be skillful and effective in this area. Understand that one man cannot do all of this in a short period. We talk about years of training and exposure in the cyber field. Based on the research, to start the Malaysian Army's cyber capabilities, we must select the correct personnel to be cyber operators or officers. Throughout the cyber kill chain, there is some skillset required for the personnel to hone the competency in this field. Generally, hackers can be divided into three tiers of expertise, as shown in Figure 4.

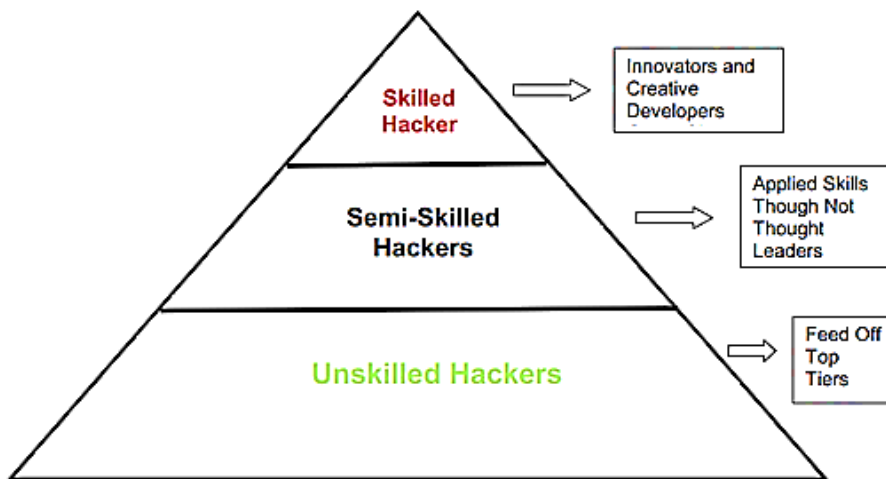


Figure 4: The distribution of skills in the hacker community
(Riley, 2012)

The skilled hacker can be defined by the substantive abilities to identify new vulnerabilities, create exploits, and implement new programs that can be used for various attacks. For semi-skilled hackers, they can recognize and use different tools and exploits, though they often do not have the technical proficiency or interest to generate these tools on their own. Lastly, the unskilled hackers have little understanding of the mechanics of an attack or compromise and depend entirely upon the ingenuity of other hackers to engage in attacks.

All of these can be grasp by the cyber operators if they have all of these listed fundamental skills:

- ❖ Basic skills in computer.

- ❖ Networking Skills.
- ❖ Linux Skills.
- ❖ Wireshark or TCPDUMP.
- ❖ Virtualization.
- ❖ Security Concepts and Technologies.
- ❖ Wireless Technologies.
- ❖ Scripting.
- ❖ Database Skills.
- ❖ Web Applications.
- ❖ Digital Forensics.
- ❖ Advanced TCP/IP.
- ❖ Cryptography.
- ❖ Reverse Engineering.

In order to choose the right candidate for the cyber personnel, the skills mention before can be trained later, but we must understand that ultimately it is the man-machine-method. Importantly, there is no shortcut to becoming a hacker, but it takes dedication and enthusiasm to learn. They must be able to think creatively, have problem-solving skills and persistence to become a decent cyber operator.

CONCLUSION

Cyberspace has become another essential dimension of warfare, where nations can carry out conflicts without traditional troops and machine's clashes. This allows countries with minimal military presence to be as strong as other nations in cyberspace. CW is an Internet-based conflict that involves the penetration of computer systems and networks of other countries. Importantly, it is an economically inexpensive means of asymmetric warfare, unlikely to result in a conventional military response from a much larger power.

Generally, cyber capabilities are not of the shelf weapon that can be procured in one time and be executed the following days. Malaysian Army must able to handle the highlighted challenges before our cyber capability initiative can be effective. The challenges comprise budget allocation, human resources, and training. We must acknowledge that the process for this capability to be grasped by our officers or other ranks will take years of personnel training as it is merely a craftsmen weapon. Our top management also must be educated that it is not a push-button weapon that can be urged the result (fast result, fast action) and hectic decision making in executing the weapon. It takes months of planning (reconnaissance), weeks of execution (delivery), and not necessarily compromise (success). The cyber weapon is like fishing, we can wait for hours and have the best fishing rod, but we cannot ensure that we can catch a fish.

In conclusion, the challenges of CW towards the Malaysian Army is massive. However, we already on the right track to initiate by restructuring our RSR that can take on the cyber tactical operation. It is a long process that has been started by our previous CSO. We should continue on the thinking process in selecting an excellent candidate to undergo cyber training. Also, the strategic challenge faced by the Malaysian Army itself is to keep silent on our cyber capabilities from our neighboring countries as cyber capabilities is a promising threat to others.

REFERENCES

- Gazula, M. B. (2017). *Cyber Warfare Conflict Analysis and Case Studies*. MIT.
- Jan Trobisch. (2014). *Challenges in the Protection of Us Critical Infrastructure in the Cyber Realm*. *School of Advanced Military Studies*.
- MP 6.0-3-3.1A TD. (2019). *Peperangan Siber Taktikal*.
- Paganini, P. (2020). *US administration requests \$9.8B for cyber 2021 budget for the Department of Defense* Security Affairs. Security Affairs. <https://securityaffairs.co/wordpress/97946/cyber-warfare-2/departement-of-defense-budget-2021.html>
- Riley, C. J. (2012). *Hacker Skills – How do you see yourself?* <https://blog.c22.cc/2012/06/06/h/>

- Robinson, M., Jones, K., & Janicke, H. (2015). Cyber warfare: Issues and challenges. *Computers and Security*, 49(November 2017), 70–94. <https://doi.org/10.1016/j.cose.2014.11.007>
- Hatch, B. (2019). The future of strategic information and cyber-enabled information operations. *Journal of Strategic Security*, 12(4), 69–89. <https://doi.org/10.5038/1944-0472.12.4.1735>
- Heatherly, C. J. (2014). The Cyber Defense Review. *The Cyber Defense Review*, 4(1), 43–60.
- Wilson, C. (2007). Information Operations, Electronic Warfare, and Cyberwar. *CRS Report for Congress*, 1–18. <http://www.dtic.mil/dtic/tr/fulltext/u2/a466599.pdf>
- Haig, Z. (2009). Connections between cyber warfare and information operations. *AARMS Security*, 8(2), 329–337.
- Marlatt, G. E., Marlatt, G. E., Library, D. K., & Library, D. K. (2008). Information warfare and information operations (IW/IO): A Bibliography. *Sites The Journal of 20Th Century Contemporary French Studies*, January.
- Hildreth, S. (2001). Cyberwarfare. *CRS Report for Congress*. <https://fas.org/sgp/crs/intel/RL30735.pdf>
- Lupovici, A. (2011). Cyber Warfare and Deterrence: Trends and Challenges in Research. *Military and Strategic Affairs*, 3(3), 49–59.

THE IMPORTANCE OF UNMANNED AERIAL VEHICLES (UAVs)

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INTRODUCTION

Geographically Malaysia is divided into two land masses by South China Sea (SCS), with Peninsular Malaysia on the West while Sabah and Sarawak states in the East. Protecting and defending the national interest has become the ultimate aim for Malaysia and this task mainly carried out by Malaysian Armed Forces (MAF). Territorial incursion has been identified as a new critical threat that could interface with national capacity development in the long run. If the nation fails to address this threat accordingly, it will leave a catastrophic effect on the Malaysian's sovereignty and national interest (Gettinger, 2020). Presently, MAF is taking vigorous action monitoring our national border regardless on land, sea and air. Due to vast coverage, the fastest way of providing Intelligence, Surveillance and Reconnaissance (ISR) to those areas is by conducting maritime patrol from air using Royal Malaysia Air Force (RMAF) existing platform. ISR is defined as all systems and personnel which gain data from the enemy, terrain and environment by reconnaissance and surveillance through visual, aural, electronic, photographic or other means and develop the intelligence that is needed for the planning and conduct of operations (Malaysian Army Doctrine MD 3.0 TD Operations (Provisional), 2005).

Therefore, to minimize the capability gap, MAF should be eyeing for a high impact, low risk to human, low cost and long endurance ISR platform as the solution. The UAV is an acronym for Unmanned Aerial Vehicle also known as UAVs, which is an aircraft with no pilot on board had been used by the military since the World War I (Elizabeth, 2018). UAV is an important part of the Unmanned Aerial System which incorporates UAV, contact link and ground control stations. The emergence of technology not only removed the limits of UAV activities in the military but widened their wings in industrial uses related to agriculture, scientific activities, social activity, servile, delivery of goods, image recognition and much more (Singhal et al., 2018).

History of UAV

Such a conceptual breakthrough in deliberately constructing unmanned vehicles occurred in 19th century. What is more, they were to be the first known UAVs used for the military purposes. It happened in the years of 1848 until 1849, when the Austrians, controlling North-Eastern part of the Italian peninsular, faced the revolt of the Venetians. A gunpowder and shrapnel-filled pear shaped bomb with half-hour timed burning-fuse mechanism specially designed for the mission was attached to each of the aerostats, the very first-to-be Unmanned Aerial Combat Vehicles (UACVs). The operation itself was barely secret and even highly advertised and most probably to frighten the defenders as even before it took place, it had been described in the Scientific American journal (Cyprian Aleksander, 2018). The issue of UAV for MAF has been discussed and demonstrated since 2013.

UAV Categories

UAV categories are imperative for segregation of the roles and UAV acquisition program to ensure standardization for UAV types across throughout MAF. Categories can improve MAF operational training and command and control by providing a common reference for grouping UAV. UAV group in a number of ways based on vehicle features such as aircraft type (fixed wing or rotorcraft), flight altitude (high, medium, low), weight and speed. Essentially larger plane use larger engines that offer higher speed, greater endurance and higher payload power than smaller vehicles. Maintenance and operation cost, and therefore research budgets often scale with size.

The wide variety of UAVs can be classified accordingly based on role, range, weight, endurance, maximum altitude, wing loading and engine type. Classification by role for military shall be:

❖ **Information Surveillance Target Acquisition and Reconnaissance (ISTAR).** ISTAR is a program that uses UAVs to gather enemy data, aim and petrol enemy air space without endangering soldier lives. Recognition UAVs are more effective in collecting these data and the voids that place soldiers' lives at risk.

❖ **Unmanned Combat Aerial Vehicle (UCAV).** This type consists of plane that are highly maneuverable and are manage

to attack in air to air combat and also give accuracy weapon delivery to surface targets.

❖ **Multi-Purpose UAV.** Multi-purpose UAVs are usually reconnaissance UAVs that are modified with weapon. Their main objective is commonly to interdiction and provide armed reconnaissance against crucial and destroyer targets.

❖ **Radar and Communication Relay.** Radar and communication relay UAVs are important an aerodynamic balloon filled with helium and air and are used for low-level surveillance system that uses aerostats as radar platforms, produce low-level trafficking or also emitted television and radio signals.

❖ **Aerial Delivery and Resupply.** The UAV in aerial/supply delivery category are manufactured for pin-point transmission of small cargo items such as ammunition and food supplies to Special Forces. The only UAV in this category is the CQ-10 Snow Goose.

Concept of UAV

According to the National Defence Policy and RMAF National Air Defence System, Malaysia airspace is defined into three main areas. Namely, L3 which covers an area onshore up to 20 nautical miles offshore (also known as national territorial water). The second layers is L2, which includes from national territorial up to 200 nautical miles out and the third layer is L1, which covers anything beyond L2. Although L1 is not under Malaysia jurisdiction to enforce any policing authority, however, this layer is used as a medium to build up initial situational awareness base on any incoming traffic.

The primary role of the UAV is to conduct ISR mission which can produce consistent, relevant and timely intelligence to higher commander. Therefore, in the joint operation environment, the UAV is capable of supporting and providing a valuable contribution at all levels of ISR operation:

❖ **Strategic Level.** Provide intelligence required by senior government and military leader to formulate national strategy, policy and plans. UAV is capable of providing precise, timely and predictive intelligence to enable decision makers to take appropriate action before crisis occur or unfold.

- ❖ **Operational Level.** Produce intelligence important to implement and planning theatre wide operation to fulfill the commander intent. Intelligence analysis helps to detect or discover, identify, locate and describe the vulnerable, vital elements of an adversary's physical and virtual structure.
- ❖ **Tactical Level.** Assist at the tactical level of operations is mainly targeted on tactical threat warning, mission planning, targeting and validation.

Discussion and Analysis

This section will discuss and analyze on the UAV development. It will discuss about the factors that influence the importance of UAV in MAF operation, challenges of UAV and how UAV may contribute in overcoming the problems. In any military operation, precise battlefield intelligence is important to the know the enemy weaknesses at every level of command. This UAV is required to obtain real time and accurate intelligence information especially in area of operation and hostile territories that are difficult to be accessed by troops on the ground. The real time information provided by the UAS is essential for the commander to plan and execute mission effectively, day and night operations. (Akcesme, 2014).

In order to make the UAV operational success, there are several factor that need to be consider:

- ❖ **Airspace Management.** UAV operate in both national and international airspace would be under full military control either under military or civilian control airspace. A well coordinated management by Joint Airspace Management and Coordination Centre (JAMCC) and RMAF Operation Centre is required prior to any UAV mission. The airspace management remains one of the top factor impacting the UAV integration with other airspace users. In peace time, mission planner must consider airspace management conflicts. Therefore, for UAV operation in Malaysian Airspace, JAMCC will work in hand with the RMAF Control Reporting Centre (CRC) and civilian aviation authority to record, coordinate and allocate airspace segments and monitor any UAV flying activities.

❖ **Sector Covered by MAF Services.** The roles are not limited but expected to grow in the future. Hence, the operation must not limit the capability of UAV to a specific role to support the multi-environment tasks.

- **Army Roles.** Malaysian Army Primary Area of Operation (AO) is at core area. The UAV is to produce tactical level imagery and intelligence to tactical and operational commanders in the land environment.
- **Navy Roles.** In naval application, the primary AO is off shore economic interest and core area. The UAV can provide accurate intelligence information in NRT to support the maritime operation and national territorial water.
- **Air Force Roles.** Air Force AO is entire Malaysia's Strategic Area of Interest including airspace, off shore and core area. The UAV should conduct ISTAR role and capable of providing NRT data to commanders and intelligence specialist at tactical, operational and strategic levels.

❖ **Airworthiness.** UAVs operating in Malaysia must obey Department of Civil Aviation, Malaysia (DCA) security and operational standards as those for airplane. Airworthiness certification takes into the account system configuration, usage, vicinity and the hardware and software on the entire system. Therefore, all UAV in MAF inventory will be registered under "State Aircraft" meaning they are subjected to operate according to existing Airworthiness Framework. Existing frameworks available are as follows:

- **Registration.** Class I(a) to I(c) UAV is exempted from Director General of Technical Airworthiness (DGTA) registration, However, for class I(d), II and III UAV, each airframe shall be registered separately.
- **Operational Airworthiness.** To ensure the safety and security of the airspace in maintained through a careful and detail management of all the flying craft in the airspace. The new UAV must be compliance with the operational airworthiness framework, especially when flying in a multi platform environment.

- **Technical Airworthiness.** The UAV must be proven as fit to fly through phases of inspection and receive a Certificate of Airworthiness from DGTA office, which is the leading organization that monitors the standard of the flying aircraft.

❖ **Ground Crew Qualification.** Malaysia took part in International Civil Aviation Organization (ICAO) since 1958 and needs to comply with Chicago Convention 1944. Failure of the UAV can be fail if the operating staff lack of skill to the safety of the UAV during the operation (SZABOLCSI, 2016). Control, Pilot Command, Pilot in Command and second pilot must be certified to fly by Original Equipment Manufacture (OEM) and meet the currency requirements (Interview with SO3 Land Operations, Malaysian Army HQ dated 16 July 2020).

❖ **Data Management.** Nowadays, the requirement of tactical UAS to gather real time information is very critical. The UAS shall provide real time information gathering capability over an area of interest such as Exclusive Economic Zone (EEZ). The UAS shall be an autonomous system and shall capable of performing the following:

- Provide capability to detect, identify, monitor, observe and record events or targets of interest for the purpose of analysis and action.
- Provide targeting information of sufficient accuracy or timeliness to adjust fires of artillery to at least accomplish second round fire-for-effect.
- Conduct Battle Damage Assessment (BDA).
- Perform coastal / maritime surveillance.
- Perform borders surveillance.
- Perform Search and Rescue / Combat Search and Rescue.
- Target detection, recognition and tracking of vehicles.

❖ **System Integration.** The sensor images and data need to be received in real time from the AV to the Global Control System (GCS). The data from imaging and non-imaging sensor shall be collated and disseminated to relevant units or agencies. Modern operations derive from the concept of networked force C2, as well as information and data sharing in MAF operation, demand network-enable capabilities to achieve commanders' desired effects. Therefore, the UAV should be able to communicate seamlessly with NCO through Satellite Communication, X-Band/Internet Protocol Virtual Private Network (IPVPN) and this data will be displayed into any NCO terminal at levels of command, including the joint office.

Limitation and Restriction

Frequency Management

Malaysian Communication and Multimedia Commission (MCMC) informed that the radio communication equipment used by UAV must adhere to specific technical parameter indicated under second Schedule of the Class Assignment. Used of specific technical parameter other than as specified in the table above should require prior written approval from MCMC. The UAV operating under the Class Assignment shall not be operated contrary to Communication and Multimedia Act 1998. Under the Class Assignment, UAV device should be certified by MCMC or its registered certifying agencies in accordance with the Communication and Multimedia (Technical Standard) Regulation 2000 and shall bear a certification label as approved by MCMC (Gambold, 2011).

Malaysian Airspace Limitation

Despite Malaysia's crowded airspace and heavily populated metropolitan climate, a UAV must be operating safely and responsibly. UAV operation can pose a danger to aviation and public safety if not conduct properly. UAV activities must also be protected as manned aircraft insofar as they do not pose or generate a danger greater than that due to the service of manned aircraft of an equal class to a individual or property in the air ground. Many nations have begun the process of creating constructive, optimistic and inclusive legislation such as those proposed introduced by the Australian Competition and Consumer Act (CAA), CASA, which can be viewed as as future templates for complete or partial implementation. The manned aviation

vocabulary should be used at all times, and the presumption that UAV would enter National Airspace (NAS) with impractical technical properties should be resisted and not codified (Akcesme, 2014).

Human Factor in UAV Accident

Although it is sometimes ignored, for this dynamic network, the human factor is the most dominant issue because it is the integral part and is suitable to run the UAV. It is impossible to manage crisis situations without the human aspect, implement safety protocol and explore the UAV to a safe place. Unsafe actions can be divided into two subcategories: errors and violations. Errors are the majority of the fault database and happen because of the users' unintentional mental and physical task that lead the failure of the predetermined results.

❖ **Skill-Based Errors.** Skill-based errors typically arise from malfunctions of focus, memory, and technique. An indication of focus loss is not being aware of notification light on the main board when flying low to the ground. (Shappell et al., 2000).

❖ **Judgment and Decision-Making Errors.** Error in decision taking may genuine failure, even though people try their best. might be honest mistakes, even if individuals are performing their best. Such errors may arise from unintentional lack of proper knowledge and poor decision making of the operator. Better plans can be devised in subsequent trials (Shappell et al., 2000).

❖ **Perception Errors.** Perception errors are the result of misconception or misjudgment of the operator's reliability, rate of ascent, and altitude due to extream environmental conditions (Wiegmann et al., 2005).

Cyber Attack

When UAV were developed, cyber security was not a priority. Cyber attacks targeting flight controller, ground control station and data link by using spoofing to manipulation the signal inputs, visual, physical, jamming, attacking UAV control systems, establish command can take control of the drone, inject false data to mislead the operators and install Maldrone silently. UAV infected with Malware can drop from the sky or be hijacked for surveillance. Cyber security is about managing

the weakest link. Developer must have collaborative efforts from all parties within UAV eco-system to gain self reliance through local UAV technology and security solution

Malaysian Armed Forces Current Operational Context, Challenges and How Uav May Contribute in Overcoming the Problems

Border Patrol Operations

Current Situation and Challenges. Malaysia shares territorial borders with several ASEAN countries namely Thailand, Indonesia and Singapore in Western Peninsular, as well as Brunei, Philippines and Indonesia in Eastern Peninsular. Border patrols are manned to prevent unauthorised access in and out of Malaysia, preventing human trafficking, smuggling of goods and drugs trafficking. The land borders are monitored by the Malaysian Army while the sea borders are guarded by the Malaysian Navy. Even though the operation had been sectorised and prioritised, gaps still exists within the area of operation because of the area vastness that need to be covered. New smuggling routes are discovered in different locations, as these perpetrators will always try to avoid the targeted area by the security forces. By operating in small groups had made these perpetrators hard to be targeted and caught. Soldiers operating in groups can easily be detected and avoided by the perpetrators, reducing the operation effectiveness.

UAVs Ability to Prevent Detection and Cover Wide Operation Area. UAV able to travel long distances and cover wide area of operation in a short amount of time, UAVs can be effectively utilised in border patrol operations in conducting ISR process to spot human trafficking, smuggling of goods and drugs trafficking. The latest UAV sensor technology can map up to 7 million square kilometres in a single flight (Goldman, 2019). These UAV s vary in sizes, while smaller UAV s produce low visual and audible signatures, making them hard to be detected thus increasing operational effectiveness. The smallest UAV size up to date is 6.5 inches, which is really hard to be detected by normal human eyes (Kirve, 2018). UAVs may also be used to inspect border fences for any breach or damages.

Cooperative Operation with Other Government Agencies in Forest and Wildlife Conservation

Current Situation and Challenges. MAF had been cooperating with the Department of Wildlife and National Parks (PERHILITAN) and

Forestry Department in most primary jungles, as a national approach to prevent illegal logging, poaching, preservation of the national parks and landslide. These operations are conducted together with border operation patrol, especially in northern parts of West Peninsular (Malaysia-Thailand) and eastern parts of East Peninsular (Malaysia-Indonesia). Similar to the problems faced in conducting border patrol operations, not all sectors can be covered at the same time as there are shortages of personnel to cover wide area of operation. Perpetrators' tracks can always be found inside the area of operations, several days after the illegal activities took place. Outdated ISR information gathered often hinders the succession of the mission, as difficult terrain conditions such as hilly terrain features contribute to causes of failures.

UAVs Ability to Monitor and Relay Information On Illegal Activities. Even in thick forest conditions, UAVs equipped with thermal imagers can be used to monitor human activities lurking in the area. Equipped with monitoring sensors and video transmitting capabilities, the information gathered can be relayed to the forward operating bases for further actions to be taken and also can be used to impose legal actions towards the perpetrators. This will lead to immediate actions able to be taken by the unit operating in the area.

Strategic Installations Monitoring

Current Situation and Challenges. Several strategic installations such as reservoirs, ammunition depots and transnational bridges are monitored by MAF to prevent any act of sabotage. These installations are crucial to be protected because any attempts to disrupt these installations may bring large scale catastrophes to the nation. As ISR process must be conducted continuously, several installations are too large to be covered by foot soldiers, requiring large number of personnel to safe guard the area, and some even need the usage of additional assets such as boats to patrol the area. Patrols conducted in these locations usually will lead to fatigue and large number of personnel are required for the patrol rotations.

UAVs Ability to Reduce the Number of Personnel Deployed and Transportation Costs. Hard to reach areas can be monitored using UAVs, reducing the number of personnel deployed as well as minimizing fatigue. Less mobilisation of troops is needed which resulting in lesser fuel consumption. Troops concentrated in control centres can focus more on training while remaining on standby, only being deployed if necessary.

Anti-Terrorism and Public Order Operation

Current Situation and Challenges. MAF had co-operated with several government agencies such as the Royal Malaysian Police Force in preventing terrorism and public order operations, under the National Security Council. Intelligence gatherings and disseminations are controlled by this agency, ensuring only reliable sources are used in conducting anti-terrorism and public order operations. Deploying personnel on the ground to conduct close target reconnaissance in ISR process sometimes will jeopardize the mission and exposing the personnel to extra risks. Long duration target monitoring may also result in fatigue to the personnel thus reducing efficiency in ISR process.

UAVs Ability to Operate from Great Distances and Sustain Long Duration Operations. Latest UAV technologies used by modern countries such as the United States are capable to conduct target monitoring from a location far away and withstand long duration operations. These UAVs feed real-time information of targeted individuals or groups to the operation control base, reducing possible casualties while maintaining operational secrecy and security. Undercover personnel deployed can remain in much safer distances and avoid making contact with the target thus increasing mission success rate. In public order maintenance cases, important targets in a rally can easily be identified using UAVs from mid-air, and information gathered can straight away be analysed at the operation control centre for further actions to be taken.

Humanitarian Assistance and Disaster Relief (Hadr) Operations

Current Situation and Challenges. Under the National Security Council, MAF is put together with several government agencies namely the Emergency Medical Services, Fire and Rescue Department, Royal Malaysian Police Force and Special Malaysia Disaster Assistance and Rescue Team, providing assistance during disaster. The most common disaster that often struck the northern part of western peninsular is flood, where thousands of civilians need to be evacuated into allocated relief centres. The most recent disaster in March 2019 that struck Malaysia is in Johor, where MAF had deployed engineers to help with the decontamination process of polluted Kim Kim River and evacuate the citizens of Pasir Gudang (Ibrahim, 2018). As shortages in rescuing equipment and lack of terrain information still exists, it is often hard for rescue mission to be conducted effectively.

Deployment of helicopters to locate victims are expensive and limited in quantity. Fast and accurate information of the operational ground is needed in critical situations, where quick actions need to be taken in evacuating civilians in the affected areas.

UAVs Ability to Assess Damages and Locate Victims in Crisis. Utilising UAVs during HADR operations proven to be beneficial as UAVs can shorten the time spend to locate victims and provide visual imageries of the affected area, guiding rescuers to aid the victims (Cyprian Aleksander, 2018). Compared to using helicopters to get aerial images of the crisis, UAVs are more cost-effective and easier to be deployed. In the case of Kim Kim River pollution, only personnel equipped with chemical suit are allowed to be in the area. UAVs will provide an alternative method where monitoring can be done from a safe location and decision can be made by military commanders, lawyers and intelligence analysts. This will result in more effective rescuing mission and reducing possible casualties inflicted towards personnel involved.

CONCLUSION

The UAV needs to be urgently acquired to fulfil the current capability gap in the MAF. The current UAV employment of the MAF is restricted due to its limited capabilities. The operation performed by the UAV would require them to operate both during peacetime and conflict and able to contain and deny enemy forces to safeguard our national sovereignty, integrity and security. The needs of the UAV in MAF are imperative to support ISTAR mission. Additionally, the information from UAV can complementary to other agencies as deemed fit by MAF. Therefore, the usage of the AUV among the services in the MAF can complement and support each are importance to ensure the effective and efficient MAF operation. UAV change the working system to be more efficient and increase the operation actionable information and intelligence. Risk mitigation approach suitable for threat and challenges surrounding with realistic information distribution near to real time. The most important factor in implementing UAV into military is the ability to reduce possible risks taken by the military personnel itself, which will always be the most important resources in the armed forces. Lastly, this paper also highlighted the factors that need to be considered in adapting UAV technologies into the MAF which is the doctrinal effects, technological advancements and costs. In facing more evolving threats each day, the MAF had to step up into a more technologically advance military approach in order to protect the sovereignty of the nation.

REFERENCES

- Airspace, M. (2008). Unmanned Aerial Vehicle (UAV) Operations in Malaysian Airspace. *Aviation*, 1–7.
- Akcesme, G. (2014). Naval Postgraduate. *Security, september*, 1–47.
- Blyenburgh, P. Van. (2008). *EASA UAS Workshop What is UVS International?*
- Brooke-Holland, L. (2013). Unmanned Aerial Vehicles (drones): An Introduction. *UK House of Commons Library Standard Note*. <https://fas.org/irp/world/uk/drones.pdf>
- Burt, P. (2018). Off the Leash: The Development of Autonomous Military. <https://dronewarsuk.files.wordpress.com/2018/11/dw-leash-web.pdf>
- Centre for Security Studies. (2010). The Military Utility of Drones. *CSS Analysis in Security Policy*, 78, 3.
- Chung, P. H., Ma, D. M., & Shiau, J. K. (2019). Design, manufacturing, and flight testing of an experimental flying wing UAV. *Applied Sciences (Switzerland)*, 9(15).
- Cyprian Aleksander, K. (2018). Military Use of Unmanned Aerial Vehicles – A Historical
- Fladeland, M., Schoenung, S., & Lord, M. (2017). UAS Platforms. *NCAR / EOL Workshop - Unmanned Aircraft Systems for Atmospheric Research – February 2017, February*, 1–12. <https://www.eol.ucar.edu/system/files/Platforms>
- Gettinger, D. (2020). Drone Databook Update: March 2020. *Centre for the Study of the Drone, March*, 1–30. <https://dronecenter.bard.edu/files/2020/03/CSD-Databook-Update-March-2020.pdf>
- Ministry of Defence: Malaysia. (2010). *Dasar Pertahanan Negara* <http://www.mod.gov.my/phocadownload/DASAR-PERTAHANAN/dpn-terbuka.pdf>

THE CHALLENGES OF COMINT CAPABILITIES AND DEPLOYMENT IN MALAYSIAN ARMY PERSPECTIVE

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ROYAL SIGNAL REGIMENT**

INTRODUCTION

Information Operation (IO) is an action taken from commanders at all levels to achieve information superiority and apply it to the various elements of combat power. Military forces of today are constantly being reinforced with the latest computing systems and corresponding speed of information flow which it has significant advantages over the battlespace. Whoever analyses and acts faster on all available information will have the leverage to win the ensuing battle. Thus, effective IO and I-STAR (Intelligence, Surveillance, Targeting and Reconnaissance) will result in the achievement and maintenance of information superiority while dominating the information spectrum is crucial for the success of future military undertakings (TRADOC, Introduction to Information Operation, 2010).

Information Operation comprises offensive IO and defensive IO. These two components important in order to protect its own force and jeopardize enemy force. Electronic Warfare (EW) is one of IO element where it is the important activities in order to support the planning and decision of the higher commander in the operation battlefield. IO and EW are an integrated effort which is a coordination to give a good impact to achieve the specific objectives that set from higher commanders.

Modern military environment is more dependent on wireless network based such as for communication, weapon control, intelligence, surveillance, navigation and force protection used. All of this technology works with information and electromagnetic environment in order to make system well operated. All of this system equipment will tends to element of EW either in term of force protection or exploiting enemy emitter (HAIG Z. , 2015). Upon of EW capabilities and threats, Signal Intelligence (SIGINT) is an action of data gathering of electromagnetic spectrum identity either from communication or electronic equipment (Kovacs, 2009). SIGINT is a process and technique required to intercept and study foreign communications and radar EM emissions during peacetime and in support of military operations before and during hostilities (PESAMA, 2013). SIGINT

comprises two elements which is Communication Intelligence (COMINT) and Electronic Intelligence (ELINT).

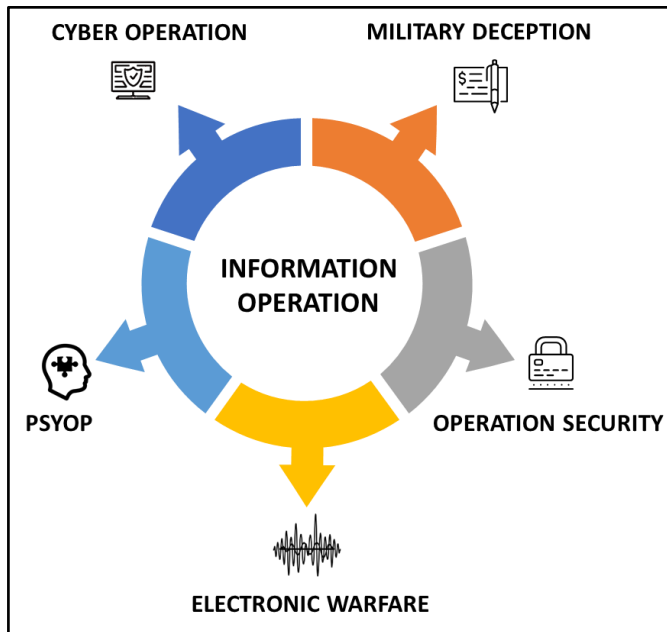


Figure 1: Relationship of EW and IO (TRADOC, Introduction to Information Operation, 2010)

EW is referring to any military action that involving the use of Electromagnetic (EM) spectrum which encompasses the interception, identification and location of EM emissions, the employment of EM energy to reduce or prevent hostile use of the EM spectrum and action to ensure its effective use by friendly forces (PESAMA, 2013). EW is divided into three major subdivisions which are Electronic Support Measure (ESM), Electronic Counter Measure (ECM) and Electronic Protection Measure (EPM). ESM involved with the action tasked by or under the direct control of an operational commander to search, intercept, identify and locate the source emission of EM energy in order to identify threat recognition, targeting, planning, and conduct future operation. The information provided by ESM will be use to conduct ECM operation which use the EM energy to attack personnel, facilities or equipment with the intent to degrading, neutralising or destroying adversary combat capability. EPM will use the information from ESM to protect and ensure the friendly use of the EM Spectrum.

Due to the sophisticated technology development, the execution of the military force operation concerning to electromagnetic environment becomes more complex. In part of that, COMINT and

Communication ESM (CESM) play an important role where both actions required gathering information on the communication EM spectrum. The differences between COMINT operate during peacetime while CESM operates in conflict time (HAIG Z. , 2014).

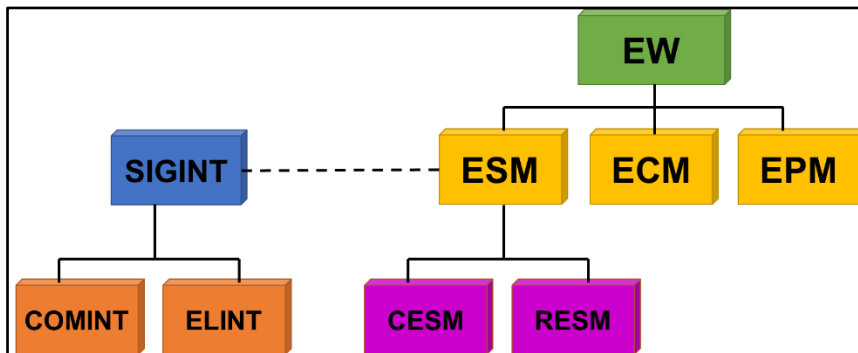


Figure 2: Relationship between SIGINT and EW Division
(TRADOC, Army Tactical Electronic Warfare, 2017)

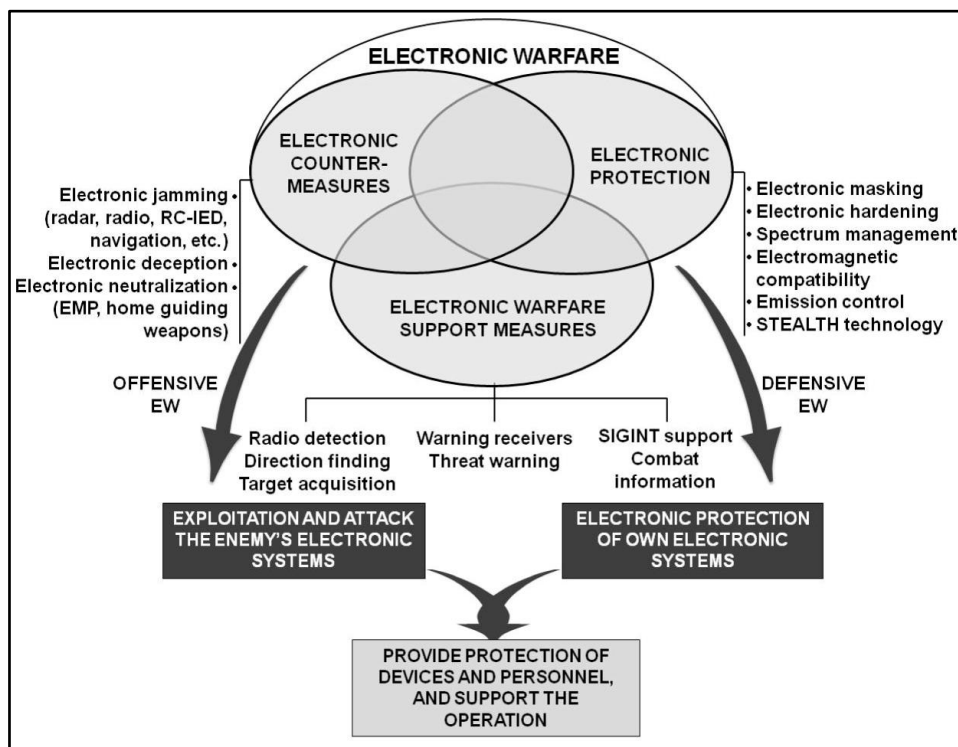


Figure 3: Electronics Warfare: Area and Capabilities

Definition of Comint

Based on the MAF Electronic Warfare Doctrine (PESAMA, 2013), Technical and intelligence information derived from foreign electromagnetic communications by other than the intended recipient. In other words, COMINT is a development of intelligence through intercept and analysis of enemy communication signals (ADAMY, 2011). Generally, COMINT is one of the methods to gather information by utilizing the use of electromagnetic communication. The information can be voice or text or technical data about the intercept transmission. The data information can be intelligence data derive from COMINT activities.

Concept of COMINT Deployment

The involvement of COMINT deployment needs to well prepared and plan in order to support the decision of higher commander. Concept of COMINT deployment involve with several activities which are recce, system readiness, logistic and command and signal. All of these activities start from pre, during and post of operation phase.

All of this deployment is based on the six basic EW principles. All of this principle will support for the whole operation of COMINT in order to achieve requirements from a higher commander. The first element is Reaction. Reaction means the ability of Malaysian Army COMINT able to react accordingly with the enemy action either to conduct offensive action or defensive action. The second element is Flexible. Flexible is the ability to change the technique in order to remain protected over the EM spectrum. The next element is Standby where the ability of the asset being deployed anytime with full blast of the capability. Element of combat endurance needed in order to provide detailed planning, logistic support and integration with other tactical assets. Then, COMINT deployment also needed a continuous element of Research and Development (R&D) in order to remain the asset in line with the current threat. Last but not least, the concept of deployment needs effective individual and collective training in order to enhance the effectiveness and successful conducting operation. Besides that, consideration of COMINT deployment needed to be plan properly in order to produce valuable outcomes. Therefore, the outcome of COMINT activity, the system capable to provide frequency list of enemy, mode of enemy use and reliability of a source and also the accuracy of information (TRADOC, Army Tactical Electronic Warfare, 2017)

Referring to the deployment of 97 EWSR, COMINT will be deployed based on the instruction from Army Headquarters which COMINT squadron responsible to give support regarding the role of COMINT on the specific responsible area. The figure below shows the flow of information dissemination of COMINT in the operation area. In part of that, COMINT asset will be deployed based on the system capability where the system is operated based on frequency range. The COMINT system comes in two variants which are Search and Reconnaissance System (SRS) and Radio Direction Finding System (RDF). V/UHF variant will be deployed far forward near to forward edge battle area in order to provide users of COMINT information. While HF variant will be deployed out of concentration area due to its own capability. Figure 3 shows the concept of COMINT deployment in the operation area.

Evolution of SIGINT

The evolution of SIGINT technology started in the year 1900 where the installation of a wireless set on the ship of UK Royal Navy, but during that time no signal interpretation due British is only country transmitting signal at that time (Lee, 2002). Outcome of the product seen when they able to intercept Russian naval wireless when Russian faced conflict with Japan in 1904. Then, SIGINT technology spread when Japan also able to develop wireless interception.

In the era of World War, I, SIGINT reach to his maturity where the British built up his capability on codebreaking and signal intelligence. The advancement of SIGINT technology shows from France where they install a system of wireless masts on top of Eiffel Tower in order to intercept German communication. Then, French capable of high up their SIGINT capability by captured the new cipher code which give their advantage to deny German force. Contrary with the development of British SIGINT, US introduced their SIGINT capability in 1918 which is used for naval and merchant navigation.

Technique of SIGINT interception changes, when used of undersea communication cable, was introduced. Techniques for intercepting such messages via ground returns have been established, so that all cables running via hostile territories could potentially be intercepted. Then the evolution of SIGINT technology becomes more interesting when the radio receiving unit capable to pinpoint the location of the transmitter. This technology introduced by Captain H.J Round where he carries out an experiment in France Army in 1915 where they used to track German submarines crossing the North Sea

(Scherer, 2018). The significance of the direction finding used is to confirm the analysis that been provided.

During the interwar period, the enhancement of SIGINT technology become more competitive where the introduction of ELINT was developed in year of 1930. Besides that, during the interwar period superpower country like Germany, United State and United Kingdom boost up their SIGINT capability in terms of a cryptosystem, personnel and direction-finding technology. Once comes on era World War II, the need of SIGINT become more critical when all country involved in war used their own code to protect their operation information. Throughout the era of Cold War, General Alfred M.Grey introduce the term of Tactical SIGINT where they deployed in forward edge battlefield area with the reconnaissance force.

When comes to the modern era, value SIGINT information very needed in order to deny threat from terrorism. Besides that, confirmation of SIGINT information many more challenges due to low probability of intercept/detection (LPI/LPD), additional use of frequency band, use of digital communication technology and strong encryption device.

Capabilities of COMINT

The focus of COMINT operations is based on exploiting the adversary use of the EM spectrum and supporting attacks on adversary targets while protecting friendly force use of the EM spectrum for its Command and Control structure. Effective use of COMINT creates a decisive element of combat power that requires coordination and integration in all sorts of operations. Capabilities of COMINT means the ability to achieve a desired information that will give effect in a specific operating environment. Capabilities of Malaysia Army COMINT is based on the three main items which are units, individual and asset. All of this item have their own role and responsibilities in order to provide effective COMINT operation feedback (PESAMA, 2013).

COMINT capabilities comes from their unit itself. 97 EWSR was the pioneer unit in the Malaysian Army where it has good structure of organisation to plan, provide and conduct COMINT operation in order to support the deployment of Army in operation. The organisation is well provided according to the current threat and situation of deployment. The unit also capable to provide exercise in order to produce a valuable assessment of the competency which can provide better outcomes during the operational time.

Then is individual capability where COMINT officers and operators need to well-prepared their own self in order to cope with the advancement of COMINT technology. This is important because all individuals in handling COMINT assets responsible to control, justify and confirm the information before approval from higher formation. Besides that, all COMINT personnel need to focus on their job scope because intelligence job cannot become experts in one week or one month. They need to well known and understand properly each of item that relate to their job scope. In part of that, they also need to set their mental fitness because they need to spent long period to confirm any action before sent to coordination centre.

Main capability of COMINT is system itself. COMINT system is based on technology driven in order to provide reliable result. All of COMINT system should include with certain criteria which are remote intelligence, target detection and identification, near real time reporting and continuous operation (Rhodes, 2004). Therefore, investment on COMINT asset is very important in order to provide quality of processing information operation based on the operation requirement. Capabilities of COMINT plays a vital role in ensuring the effectiveness of information collection that will used for decision making and future planning. Therefore, a valuable asset for an organisation is to meet unpredicted situations in hostile EW domain.

Importance of Comint in Malaysia Army

As mention in the previous paragraph, the capabilities of COMINT will provide valuable output where will affect to the Army deployment. The outcome of this capability shows COMINT is important to Army deployment. Based on the Army4NextG plan, COMINT will act as an important element that is it able to provide surveillance, survival and combat, sustainability, continuous strategy and nation development (Kassim, 2018).

Based on Army4NextG plan, COMINT asset also in part with four main components of military capability which area force structure, modernisation, readiness state and ability. All of these components will tends COMINT as an important capability to operates in the multidomain area. COMINT capable to provide early warning threats from foreign groups were it capable acts as eyes and ears to infantry groups in order to protect national borders and also provide safety and sustainability sovereignty of the nation.

Due to the evolution of the warfare domain, Army also revolves to Land Warfare Strategy (LWS) which current threat is non-traditional. COMINT seems an important asset to reduce the gap where it capable to manipulating the gaps in land defense mechanisms. Besides that, COMINT also capable to provide important points on Information Superiority which COMINT capable to operates 24/7 and also capable to predict the enemy's future plan based updated database collection.



Figure 5: COMINT in Multi Domain Operation Environment
(Kassim, 2018)

Challenges of Comint Capabilities and Deployment in Malaysian Army

In order to produce valuable outcomes and products, there are several challenges that need to be faced by the commanders on the ground. Challenges of Malaysian COMINT deployment will be based on concept 3M which are Man, Machine and Method. This combination is inter-related between each other where if any one of 'M' fails the COMINT deployment cannot overcome the challenges that being faced.

First M is Man. Man is referring to military personnel which responsible to plan, provide, operate and maintain the COMINT system. Man is the first priority in order to produce a valuable outcome where all COMINT personnel needs to undergo special training and

courses on how to handling and operate COMINT system. Besides that, they also need to well knowledgeable in technicality because COMINT always related with theory and understanding of communication area. In addition, an operator with communication educational background is a bonus because they in picture with what is communication all about. Sufficient training also influences to the development of expertise of an operator. Training of COMINT system not only depend on system itself. Each operator also capable to training using web based application such as kiwiSDR software and also practicality using SigintOS tools.

Job concentration also need to be highlight where personnel that operate and analyse the COMINT system will become expert and easy to identify lack of results that produce from the system. In part of job concentration, all personnel need to be able diagnose the condition of the system. In addition, to be a good COMINT interpreter and analyser they need to study for a long duration on the pattern of foreign signal so that they capable to justify each of outcome result. Besides that, EW planning process training should be implement to all of COMINT community where by this training all personnel able to understand and justify the requirement of COMINT asset in any military deployment.



Figure 8: Example of COMINT Training Application

Next M is Machine. Machine or in other word is the system that operate accordingly with the purpose of gathering communication intelligence information. Even though man is well trained and well prepare, machines still need to be up to standard in order to produce valuable results. If an organisation still used outdated technology, the system still cannot interpret the modern technology used. This action will give impact on information collection that will be used in future

planning and decision. Besides that, an effective system capability also depends on threat library of the enemy. This is because COMINT also rely on the existing database information in order to confirm the latest information of the threats.

Tools and auxiliary's equipment that support on machine operation also need to emphasis which all of this equipment will make the operator easy to used and applied during interpreting and analysis. In part of that, the integration of machine between the command and control centre also needed which can facilitate higher commander to make any decision and amendment on the communication intelligence information. In addition, security level of the system should be up to date because COMINT always plays with secrecy information and need to be protect from others.

Last M is Method. This 'M' is a decisive part where method is an important procedure and guidance in order to succeed in all the planning and decision that have been made. Method also includes description regarding the personnel task and role, operational equipment, handling procedure, safety measure, training guidance, maintenance and administrative part. Besides that, method also need to explained the restriction that system faced including terrain environment, technical analysis tools capability and other automotive or mechanical parts so that the planner, user and maintenance part capable to justify each of the faults that been found. Method also needs to be properly documented because it can be referenced for the developing skills each of the personnel that used COMINT system.

Based on 3M model as shown in figure 9, deployment of the Malaysian Army COMINT system also one of the challenges part which there is no exact doctrine or guidance on how the system being deployed with combined armed forces. The ability used of wisdom from the commanders on the ground to decide the system capability will demonstrate the effectiveness of COMINT system in order to provide valuable communication intelligence information. Even if an operator or analyser capable to produce correct information description, the confirmation from other intelligence sensors also become challenges part which a commander responsible to distinguish what is action need to be taken.

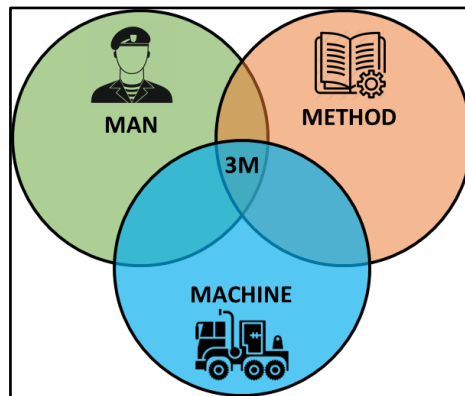


Figure 9: Challenges of COMINT system based on 3M Model

Impacts of Malaysian Army COMINT in Armed Forces Deployment

Based on the discussion regarding on the challenges and comparison of COMINT Malaysian Army. COMINT shows good impacts in order to produce a valuable outcome to the organisation. If all the challenges faced by COMINT system during an operation cannot be solved effectively, the impact of valuable product from COMINT sensors can be argue such as Electronic Order of Battle (e-ORBAT), Early Warning Information, Communication Security (COMSEC) and Future Plan.

e-ORBAT is an information regarding on the characteristics and location of all military electromagnetic equipment which involving type of equipment, list of frequency, mode of operation and other technical parameters. The need of e-ORBAT is to support the data gathering and clustering data from other intelligence sensors. The significance of ORBAT is to easily identify the composition, disposition and strength of the targeted unit in the operation involved. Besides that, e-ORBAT capable to estimate the enemy capabilities, limitation and their course of action taken on operation involved. The unique of e-ORBAT, commanders can easily and properly plan on the future plan where they can estimate on the forces that will be faced according to the operation phase or mission. The outcome of this action, intelligence department capable to sharing technical data within other agencies that required communication specification in order to provide awareness within operation surrounding.

Then, COMINT also capable to produce early warning information. This information is very useful for the infantry group which by that information they can plan properly either to deny or eliminate

the enemy that will be faced. In addition, infantry group can use the information as early information in recon section to provide protection from any uncertainty situation. Besides that, this information can be use by artillery group in order to provide target acquisition to the expected enemy location. Other than that, from the given information commanders able to adjust the plan that already made. Besides that, early information from COMINT system capable to be used by ECM system in order to disable the capabilities of enemy forces and it also can be used to protect friendly forces.

Communication Security (COMSEC) is a safety measure to avoid the occurrence of information leakage either intentionally or not. Capability of COMINT system able to monitor the COMSEC in order to protect its own force communication information from leaking to enemy force. This is an importance measurement in which our friendly force can manipulate the setting from the communication equipment in order to avoid enemy EW capability.

CONCLUSION

Based on the explanation regarding to the Malaysian Army COMINT capabilities, deployment, challenges and also impact it can be concluded that COMINT system is very valuable asset that belongs to the Malaysian Army. There are more pros than cons that COMINT system can produce to the organisation where it capable to provide much more products in order to support the commander's decision making.

The challenges part of COMINT system faced can be slowly solved by time to time where all the human resources, equipment and documentation are properly managed and trained by the expertise. The outcome of these products will give valuable feedback to the organisation in which COMINT system is very important in any of the military operation deployment. So that, top management will involve and give attention to any of COMINT system issues because of its contribution to the organisation.

Last but not least, any deployment of COMINT system needs to plan properly in order to provide effective information regarding on enemy capabilities where it will support on the action taken by the friendly forces to determine the success of operation involved.

REFERENCES

- ADAMY, D. (2011). ES VS SIGINT. ALEXANDRIA: THE JOURNAL OF ELECTRONIC DEFENSE.
- Anderson, R. (2008). Electronic and Information Warfare. In Wiley, Security Engineering (pp. 559-593). Wiley.
- Ball, D. (2015). Japan's SIGINT Ground Stations: A Visual Guide. Melbourne.
- HAIG, Z. (2014). Convergence between Signals Intelligence and Electronic Warfare Support Measure. Budapest: Revista Academiei Fortelor Terestre.
- HAIG, Z. (2015). Electronic Warfare in Cyberspace. 22-35.
- Kassim, Z. (2018). ARMY 4NEXTG . Kuala Lumpur: Depot Ordnance.
- Kjellen, J. (2018). Russian Electronic Warfare.
- Kovacs, L. (2009). Electronic warfare and the asymmetric challenges. in: Bolyai Szemle. 135-151.
- Lee, B. (2002). Radio Spies - Episodes in The Ether Wars. San Francisco : 15 Antique Wireless Association Review.
- PESAMA. (2013). Electronic Warfare. Kuala Lumpur: PESAMA.
- Rhodes, J. (2004). Signals Intelligence. Quantico: Marine Corps Logistics Base.
- Rule, C. (2007). Australian Army. Employment of Signals. Tobruck Barracks.
- Scherer, W. R. (2018). Army History . Washington.
- TRADOC. (2003). Intelligence. Kuala Lumpur: MINDEF.
- TRADOC. (2010). Introduction to Information Operation. Kuala Lumpur: TRADOC.
- TRADOC. (2017). Army Tactical Electronic Warfare. PORT DICKSON: TRADOC.
- Vladimir Brik, S. B. (2008). Wireless Device Identification with Radiometric Signatures. MobiCom, 1-13.

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