AIR COMMAND AND STAFF COLLEGE

AIR UNIVERSITY

AIR FORCE BASING STRATEGIES IN THE WESTERN PACIFIC IN RESPONSE TO CHINESE MILITARY BUILDUP DURING FISCAL AUSTERITY

by

Timothy M. Swierzbin, Major, USAF

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Proposal Adviser: Dr. Kate Ksobiech

Project Advisor: Dr. Andrew Niesiobedzki

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ABSTRACT

Over the last 30 years, the People's Republic of China has been growing at an exceptional rate, both economically and militarily. As a country with over 1.3 billion people, China is a dominant presence in the Pacific and the rest of the World. Their influence has emboldened the country to expand national interests off their coast and throughout the South China Sea, as they have undertaken a campaign of disputed land reclamation and militarization of the region. This poses threats to surrounding nations' own interests and the internationally recognized right to a free economic zone. The United States wishes to preserve the sanctity of a free economic zone and protect the sovereignty of the many allied Asian nations in the region. As a response, the U.S. has progressively stepped up military activity to balance the region. A more permanent U.S. presence is needed in the area to keep the balance from tipping. With the 2008 recession adding uncertainty to long-term U.S. budgets, the U.S. Air Force must decide their roll, in a budgetary conscientious way, to counter China's increasingly threatening posture. This research review uses a scenario planning methodology to explore the history that has contributed to the state of the region and predict likely outcomes. If the U.S. desires to maintain a balance in the region, it will have to be determined where the best locations are to base tactical aircraft within budgetary constraints. The U.S. Air Force should invest in air bases or cooperative security locations in the Philippines to balance the region. The proximity to China and the South China Sea makes the country tactically attractive. Assets in these locations are also more survivable on land and their proximity to bases in Guam, Japan, and Australia allows retrograde options and makes operations more affordable.

INTRODUCTION

Overview of the Study

The so-called 2008 "Great Recession" resulted in the United States (U.S.) Congress allowing across-the-board budget cuts, known as sequestration, to happen to a number of government agencies, including the Department of Defense. With national interests keeping the U.S. Military busy in multiple parts of the world, it is critical to review basing options in strategic locations that can survive budgetary constraints. While the financial crisis occurred, The People's Republic of China experienced accelerated economic, and subsequently military, growth. As a growing regional power, China began to flex their military muscles over disputed territories and throughout the South China Sea. While the U.S. National Security Strategy calls for a pivot to the Pacific Theater, we have found ourselves still deeply involved in Europe, North Africa and the Middle East. During an already fiscally tight era, these theaters of operation divert resources away from the Pacific region. Therefore, this study will examine the costs of expeditionary forces versus a sustained, micro-basing concept for tactical airpower in the South Pacific. If China continues to push the boundaries of influence in the region, the U.S. Government should consider additional, more permanent options in the area as a counter-balance of power.

Nature of the Problem

In 1991, the U.S. officially closed Clark Air Base in the Philippines. With no looming threats at the time, the Philippine Senate voted for American forces to leave the islands. This is because they viewed U.S. bases as a symbol of colonialism that undermined Philippine sovereignty.¹ The eruption of Mount Pinatubo capped off the decision and the U.S. shut down the base. For the next two decades, U.S. military focus increased in Europe, the Middle East,

and Southeast Asia due to multiple conflicts and national interests in the regions. During this same time, China experienced rapid economic and military growth. With their new found global influence, China began exercising a bolder military presence, intimidating many of the countries that are located in the Western Pacific Ocean.^{2,3,4,5} In response to China's growth and an inevitable economic and diplomatic shift in policy, President Barack Obama and his administration confirmed a strategic pivot towards the Asia-Pacific in January 2012.

As China desires the pursuit of a "string of pearls" strategy, where they would control disputed territories in the South China Sea and envision influence over all the nations off their shores, the U.S. has stepped up military and diplomatic involvement with partner nations in the ASEAN (Association of Southeast Asian Nations) Group.^{6,7} With China's growing strength, there is more and more willingness to display their military capabilities in pursuit of their own national interests.⁸ No doubt, some of their presence is in response to a perception the U.S. is surrounding their country through treaties and military support. A strong U.S. naval presence is already beginning to be a cornerstone of military operations in the region with U.S. ships porting in Singapore, Australia, Japan, and the Philippines just to name a few. Additionally, surveillance aircraft, long range bombers, and 5th generation fighter aircraft are routinely sent to the Pacific theater to gather intelligence and conduct theater security operations. To continue the shift in strategic focus, an increasing number of assets and personnel from the other services will also begin to filter into the region. As this occurs, the question will become how to base and operate these forces. A balance between rapid, expeditionary operations and permanent basing of equipment will need to be studied, keeping in mind how China may counter any actions.

Purpose of the Study

The purpose of this research is to propose a basing option for the U.S. Air Force (USAF) in the Pacific that may be economically feasible during periods of government budget cuts. In order to achieve this objective, the research addresses the pros and cons of a permanent or semi-permanent air base in the Philippines. The research also discusses the advantages of land-based aircraft and personnel over littoral carrier-based ones and reviews China's historical actions in the region that may prompt a more permanent response.

Research Question

The recent fluctuating nature of the U.S. defense budget makes it challenging for military leaders to train, equip, and employ forces to support changing National Security Strategies.

President Obama has routinely called for a strategic pivot towards China and the Pacific, despite rising uncertainty across Europe, North Africa, and the Middle East. Therefore, the research question for this study is where should the USAF posture tactical aircraft and personnel in the Pacific to counter China's continuing military growth while remaining within budget constraints?

Definition of Terms

ADIZ. Air Defense Identification Zone. A large area of airspace which sits beyond a sovereign nation's physical territory. Inside this airspace, the country usually requires identification, location, and air traffic control of aircraft in the interest of security.⁹

ASEAN. The Association of Southeast Asian Nations. This group was formed "in 1967 by Indonesia, Malaysia, the Philippines, Singapore, and Thailand to promote political and economic cooperation and regional stability." Brunei, Vietnam, Laos, Burma, and Cambodia also joined after 1984.

Bugout. A military brevity term that means to separate from an engagement or relocate forces to a protected sight with no initial plan to return until deemed safe or acceptable.

Da'esh. The full Arabic name for the Islamic State of Iraq and the Levant is al-Dawla al-Islamiya fi al-Iraq wa al-Sham (DA'ESH). It is also a play on words meaning "to trample down and crush" or "a bigot who imposes his views on others." The use of this term helps to delegitimize the group as a State or Islamic caliphate.¹¹

NATO. North Atlantic Treaty Organization. Created in 1949 by the United States, Canada, and several Western nations for the purpose of collective security against the now defunct Soviet Union.

People's Liberation Army Air Force. Formal designation, translated into English, for the Republic of China's Air Force.

TSP. The Theater Security Package (TSP) refers to routine deployments of additional fighter squadrons, support personnel, and equipment to bolster U.S. Forces in various locations around the world on a rotating basis. Flying training and off-station training with regional allies is usually conducted with a TSP. Currently, squadrons deploy predominantly to Europe and the Pacific as part of the TSP charter.¹²

UNCLOS. The United Nations Convention on the Law of the Sea is an international law agreed upon by 154 states and all of the European community outlining a common agreement on the rules of the Sea and free economic zones.¹³

Research Methodology

The Scenario Planning framework is a format to analyze and form conclusions for this scenario. This is an ideal methodology, since the geo-political situation is dynamic and the "driving forces" of the scenario will need to be identified. Once a course of action is

recommended, the strengths, weaknesses, opportunities, and threats that define the choice will be examined. The selected framework will examine the issue in greater depth and is suited to identify uncertainties in the future of USAF operations in the Asia-Pacific such as drastic military budget austerity and the state of Chinese aggression in the region.

BACKGROUND

China's Rise to Regional Power

Following the collapse of the United Soviet, Socialist Republic (USSR) that ended the Cold War, the U.S. Military has enjoyed the advantage of a nearly unrestricted freedom of maneuver. In particular, the Department of Defense (DoD) established roots in the Western Pacific and the United States Navy and Air Force operated throughout the region with impunity. However, the tides of world powers routinely ebb and flow, and China's turn to exert their own national interests has been rapidly rising over the last 20 years. China has laid out an economic strategy, that began around the year 2000, which called for doubling their Gross Domestic Product (GDP) from 2000-2010, and again from 2010-2020. Finally, by 2050, China's plan is to be on par with the World's advanced nations. ¹⁵ The reality to date is that their economy has accelerated, growing an average of 9.8% annually since 2001, with peak annual GDP growth topping out at 14%. 16 China's current GDP sits over \$10.35 trillion USD and, according to some economic predictions, their economy is set to eventually surpass the United States as the World's largest by 2021.¹⁷ All of this translates into an ability to aggressively pursue their national objectives. A growing economy and population requires resources to sustain, which subsequently means increased military growth and the desire for dominance in their backyard.

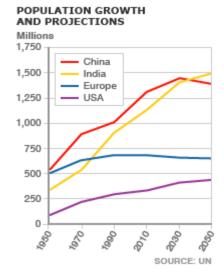


Figure 1. Population Growth for Various Nations

Figure 1 displays that China's population has grown rapidly in the last 20 years, compared to the U.S. and Europe, and has seen an increase of about 300 million people (just shy of the total U.S. population) since 2000. Social practices like the one child rule are expected to cause the population to taper in the future, but the country will still have to provide for 1.4 billion people at its projected peak.

There are already a number of incidents that were designed by the Chinese to test their boundaries. On January 7, 2013 a Chinese Government aircraft flew below Japanese radar into what Japan considers territorial airspace. Additionally, Chinese warships have been spending historically more time near the Senkaku islands, a grouping Japan announced would be nationalized in September 2015. China also lays claim to the islands and has been more assertive after the Japanese announcement.

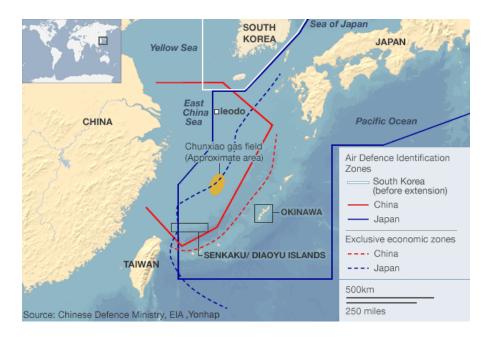


Figure 2. Disputed Waters and Territories Between China, South Korea, and Japan

In the contested Scarborough Shoal, there have been repeated clashes between Philippine fishing vessels and the Chinese Coast Guard. Both this area and the Spratly Islands encompass the outer limits of China's claim to historic rights off of the Philippine shore. Additionally, China has built multiple, artificial islands on the tops of reefs and rocks in order to expand their strategic reach in the region.



Figure 3. Map of Disputed Territories between China and The Philippines in the South China Sea



Figure 4. Island Reef Reclaimed by China in Disputed Waters

Not only does this provide a defensive buffer against U.S. and allied weapons, it also has the potential to expand China's offensive range and stress existing Western and ASEAN forces' survivability. The U.S. has insisted that "Freedom of Navigation" in the South China Sea will be upheld, meaning that these manmade islands will not initially be recognized as sovereign Chinese territory. Therefore, it is likely that U.S. and partner forces will continue to fly and sail near these islands. A sufficient military footprint will need to be maintained as a regional deterrent if this strategy remains relevant.

The Effect of the 2008 Recession

In 2008, the global economy experienced one of the greatest recessions in recent history. This event prompted governments around the world to impart various levels of austerity to tackle their national debts. The U.S. was also susceptible to the crisis and the Government has been under increasing pressure to reduce the amount of national debt that stands at more than \$18 Trillion to date. In order to force legislators to take budgetary action, sequestration was enacted in 2013 which included massive, across-the-board cuts to the DoD. Among those cuts, an estimated \$12.4 Billion top-line budget reduction, and another \$1.8 Billion in overseas contingency operations funding shortfall, were anticipated by Secretary of the Air Force, General Mark Welsh. 22 In those cuts, General Welsh was concerned about, among many other things, long-term effects, including a loss of flight hours that were directed away from Theater Security Cooperation Packages, continuous bomber presence in the Pacific, and interoperability training with key partners and allies in the region.²³ These figures may bolster China's stance on territorial claims and embolden increases in military activity designed to intimidate surrounding nations. A true strategic pivot to counter Chinese interests will require new investment in ports and bases. Initial build-up will likely incur a hefty price-tag, so a close look at long term sustainability of a permanent versus expeditionary base will be necessary.

Due to national deficits and debt, there is always the possibility of large cuts in defense. Therefore, top government and military officials had to decide the best use of funding in support of national strategy and interests.²⁴ The national think tank, The RAND Corporation analyzed three possible strategies for the DoD based on the continued proposition of fiscal austerity. They believed that regardless of the sequestration decision, large cuts in defense spending are inevitable.²⁵

One strategy considered during times of austerity is to focus on China and the Western Pacific, leaving the lead in Europe and the Middle East to NATO partners. Military planners would then have to decide on the best posture and use of resources in the Pacific to support the partnerships in the region and deter potential Chinese aggression. The appropriate, long-term strategy has yet to be fully determined. Some venture that an almost purely expeditionary force can be used to deploy anywhere in the South China Sea in order to send a strong message to China.

The U.S. Military has maintained permanent basing in countries like South Korea and Japan, and the territory of Guam, with great success in deterrence and cooperation. This same concept should be applied throughout the region to secure freedom of trade and freedom of maneuver. Temporary or expeditionary basing does not provide the long-term presence and investment needed as part of a strategic shift and permanent basing with adequate infrastructure may be a better use of restricted funding. Air Bases in ASEAN nations offer the best combination of range and facilities to make permanent basing tactically sound and survivable.

Carrier Strike Groups

The Carrier Strike Group does offer the U.S. an expeditionary option to project airpower in the region. The costs and survivability, however, are beginning to be debated as a logical option. U.S. Naval Captain Henry Hendrix (Ph.D.) addresses in his argument that the Carrier Strike Group is becoming the battleships of the past. This is because the Chinese are able to invest in sophisticated anti-ship missiles for far cheaper than it costs to procure, operate, and support an aircraft carrier. At the higher end of the estimate, a single Chinese DF-21 anti-ship missile costs roughly \$11 Million, while a Carrier Strike Group (factoring in the air wing, surface combatants, a fast-attack submarine, and the 6,700 personnel to crew them) costs \$6.5

Million per day.²⁷ That amounts to an annual \$2.37 Billion operating cost and a significant cost advantage for Chinese anti-ship defenses.²⁸ Considering the costs in lives and new equipment like the Joint Strike Fighter, there is a significant risk to operate in the South China Sea where the impunity to operate, should a conflict arise, is not a guarantee.

National Security Strategy

The most recent National Security Strategy, released in February 2015, still echoes the same goals in the Asia-Pacific: Continue to increase partnerships with Asian nations, including China, while remaining "alert to China's military modernization and [rejecting] any role for intimidation in resolving territorial disputes."29 President Obama outlines the desire to build a capacity to prevent conflicts of the future. Tensions with Japan, Taiwan, and in the South China Sea serve as constant reminders that a risk of escalation is always present. President Obama promises that diplomacy and leadership are the hallmarks of preventing these conflicts, but will be "backed by a strong military to deter future acts of inter-state aggression and provocation." ³⁰ Furthermore, the rebalance to Asia and the pacific will continue to advance. Partnerships with Japan, South Korea, Australia, and the Philippines will continue to be modernized, while new partnerships are being developed with India, Indonesia, Vietnam, and Malaysia. The rise of a stable, peaceful, and prosperous China is welcomed by the administration, but the U.S. defense posture will continue to be diversified, while also "seeking ways to reduce the risk of misunderstanding and miscalculation."31 It is nice to remain optimistic about peaceful relations; however, history dictates that a nation's growing power and influence can easily lead to major conflict. Pragmatically speaking, permanent basing strategies will be the better option to deter aggression in the region.

Philippine Basing

The Philippines offers an intriguing mix of advantages in the region over the myriad of other possibilities. For starters, based on average combat ranges of tactical aircraft and rescue assets, it has an appropriate proximity to China and partner ASEAN nations to help provide collective defense. Additionally, there is the matter of survivability and high value assets. Expeditionary bases in Guam and Australia may be best suited for command and control and aerial refueling aircraft that provide direct support to front-line, combat assets. The Philippines is ideally situated as a prime location between these bases and mainland China and the South China Sea, allowing high-value support assets to remain at range from potential hostilities. Fighter and bomber aircraft can still take advantage of air refueling tracks near the area of operations, and may also be able to execute an Air Tasking Order mission without direct tanker support. In an extreme situation, this allows the ability to retrograde aircraft and personnel if preservation of combat capabilities was required.

Infrastructure at the old Clark Air Base still exists which would reduce cost of construction. It is also in close proximity to multiple port cities and, strategically does not require supply ships to traverse through the South China Sea or near Chinese waters adding a measure of protection during build-up and sustained resupply operations. To an extent, bases in locations such as Taiwan, Vietnam, and Thailand would not be afforded the same luxury. Long-term, the U.S. cannot rely solely on Naval Carrier Groups either, based on China's ever-growing technological sophistication. Short- and medium-range ballistic missiles are improving to the point that basing at the outer limits of these threats will be the only way to protect sea- and land-based soft targets such as aircraft carriers and aircraft parked in the open. Land-based resources are easier to protect with hardened shelters and can be placed at ranges that pose challenges for

Chinese ballistic missile targeting. This strategy effectively allows combat forces to essentially hide in the open.

Costs of continuously operating a carrier group in the region is exorbitant and resupply options are tricky in "hostile" waters. Although an exceptional amount of airpower is available on a single carrier, sustained operations in a conflict with an advanced conventional force is not viable. The mega-bases in Korea, Japan, and Guam are also robust and expensive, so a smaller footprint, within striking distance of strategic targets, is the best alternative for an increased Western Pacific presence.

Micro-basing in the Philippines offers the best combination of viability, sustainability, and survivability. Multi-role, strike fighter and bomber aircraft are well-suited for this location based on relative ranges to the area of operations and retreat and retrograde options, known in the services as a "bugout", to Guam and Australia. This presence will likely create diplomatic tension and opens up more possibility for an international incident. However, it appears China will not cease their expansion and influence. They already dispute a number of territorial claims in the region, have a large economic capacity to expand their military, and are building bases off shore to increase their strategic reach. The ASEAN nations are centered in a growing shadow and if strategic trade and defense agreements are desired to be maintained with these nations, then an appropriate military presence is required.

SIGNIFICANCE OF THE SCENARIO

Budgetary Trade-offs

Based on the recent fiscal decisions by the U.S. government and the inference that military budgets will continue to ebb and flow with a volatile global economy and fluctuation in leadership, the DoD faces challenging choices on where to focus funding based on a broad

National Security Strategy and current events. North Africa and the Middle East continue to be hotbeds of instability and hostile entities towards the West. The rise of Da'esh (popularly known as the Islamic State of Iraq and the Levant) has required immediate and renewed attention to the region, which corresponds to an increase in military forces and money for the operations. The Fiscal Year 2016 (FY16) budget request states that the post-Iraq/Afghanistan defense drawdown was the fifth major defense drawdown since the end of World War II.³² The decline began after 2010. With the rise in global conflicts, the FY16 budget provides base funding that is \$38.2 billion more than in FY15. Therefore, in order to support national interests, Congress, the Executive Branch, and the Service Chiefs and Secretaries must decide on a course of action that balances fluctuating budgets with military strategy.

If national sentiment remains fixated on the defeat of Da'esh and other anti-Western terrorist groups, resources will need to favor these operations and the DoD will be forced to divert attention from the Pacific in the near term. In this scenario, military presence in the Pacific will essentially remain the same or see some sort of reduction based on the other external factors driving the decisions, such as any expansion of forces to defeat Da'esh or a contraction of Chinese military activity. These factors are largely unknowns, but it is safe to say that a contraction in the U.S. military budget will likely result in personnel cuts and little desire to open new bases, as the majority of funding goes to medical care for military personnel and their families, and large procurement programs. If the main effort turns to the Middle East, the Pacific pivot may not happen on a scale that can effect a robust deterrence presence.

Of course, the status quo may remain which includes steady, permanent operations at the existing bases in South Korea, Japan, and Guam, along with Naval and Marine open-water and littoral forces patrolling the vast region. When home to long-range strike aircraft and naval forces, these bases provide broad coverage and allow a mobile response to aggression. Additionally, if the strategic focus was to rapidly shift largely towards the Pacific, there are established footholds there that could be expanded with the right budget and host-nation approval. The problem with this proposal is that it remains a reactionary option. As China's military expands in the South China Sea and along its remaining coastline, they may become increasingly emboldened to test territorial claims knowing that an allied response may be limited or tactically unfeasible. This is all speculative, but in historical context, events similar to this have already occurred across the globe. For instance, Russia has resurged in the wake of massive fiscal austerity across the European continent. Specifically, Russia has increased air and naval activity in vicinity of North Atlantic Treaty Organization (NATO) countries as a show- offorce at a point where all NATO countries continue to freeze or cut funds to their military in the wake of the financial crisis.³³ Add in Russia's covert efforts to annex Crimea and parts of the Ukraine, and it becomes apparent that given the means and little threat of force, these states will forcefully pursue their national interests. In any case, maintaining the status quo over time offers the tradeoff that appropriating funds, building additional facilities, and augmenting these bases with more equipment and personnel will require much time and effort if Chinese provocation increases to the point that a response is warranted.

If a long-standing deterrent for China is going to be taken seriously, a shift in resources towards the Western Pacific is needed. This may come in the form of a bigger U.S. Military budget or the U.S. may have to further withdraw resources and efforts from the Middle East and Afghanistan, leaving the areas to other NATO and Arab League partners or unsupported altogether. This does not come without a price. For one, given the amount of press given to Da'esh, they have certainly overshadowed any discourse about China's rising military influence.

This has also created a growing fear of the group in the American population which ultimately translates into political sentiment. Given the overwhelming majority of forces the U.S. commits to the fight against Da'esh over their partners, a withdrawal would certainly give the group a respite and allow them to grow again relatively unchecked. Currently, there is no indication the American populace would have any appetite for this approach. In early 2015, a CBS news poll showed that 57% of Americans were in favor of sending ground troops to the Middle East to combat Da'esh. The sentiment a few months prior was that 55% of Americans were opposed to this type of measure. Given the string of attacks on Western soil throughout 2015, this sentiment is unlikely to change. However, eventually a careful decision for long-term global security will have to include additional consideration to permanent basing in the Southern and Western Pacific.

Possible Chinese Response and Actions

Since the future has yet to happen, there is no real way of telling what China will ultimately decide to do with its growing influence across the globe. However, looking through a lens with historical context may shine a light on the most probable actions. Despite a recent economic slump in the country, the Chinese economy will still grow. Their population will also continue to grow making competition for territory and resources that much more fierce.

Additionally, the Chinese government will want assurance that their own national interests are secure. Much like events of the past, this inevitably leads to a high probability that conflict over disputed fishing territories, shipping lanes, oil, and other natural resources will occur. If the U.S. shrinks from the region because of budget shortfalls, or lack of will, China could use it as a strategic opportunity to seize territories by force or coercion. It would not be too unreasonable to assume that China could easily police their expanded claims to the South China Sea against the

ASEAN group without the aid of the U.S. It may occur insipiently, but Naval and Coast Guard patrols will continue to increase and they would likely use their manmade islands to increase the range of their Air Force. The surrounding nations would not have the ability to mount any sort of resistance if survivability of their comparably smaller militaries was a consideration.

Relative to the Philippines' claims, China is most interested in the Spratly Islands and the Scarborough Shoal as discussed earlier. The Spratlys are also claimed by Vietnam and Malaysia, making the region hotly contested, even by fellow ASEAN partners. The Shoal sits only 100 miles off of the Philippine's West coast and is 500 miles from China. Both the Shoal and a portion of the Spratlys are well within the economic exclusion zone as outlined by the United Nations Convention on the Law of the Sea (UNCLOS). A number of recent events in these areas have steadily angered the Philippines and Vietnam and raised tensions.³⁵

- Early 2012: China and the Philippines engaged in a maritime stand-off over reciprocal charges of intrusion in the Scarborough Shoal.
- July 2012: China created Sansha City, the headquarters for an administrative body in the Paracel Islands which oversees Chinese territory in the South China Sea.
- January 2013: Manila charged that it was taking China to a UN tribunal under UNCLOS to challenge its claims.
- May 2014: Chinese introduction of a drilling rig into waters near the Paracel
 Islands led to multiple collisions between Vietnamese and Chinese ships.
- April 2015: Satellite imagery showed China building an airstrip on reclaimed land in the Spratlys.

 October 2015: The U.S. sailed a guided missile destroyer to within 12 nautical miles of the artificial islands. A warning followed from China to the U.S. to "not act blindly or make trouble out of nothing."

Countries like the Philippines can continue to raise concerns via United Nations resolutions, but China is not obligated to abide by any rulings at a tribunal.³⁶ Additionally, the ASEAN group is divided on how to specifically resolve these types of conflicts, opening the door for China to continue their pattern of expansion with very little repercussions.

A recent article on the matter quoted Wu Shicun, the former Foreign Affairs Chief of Hainan province as saying "[China] will not initiate military conflict to recover islands illegally occupied by other countries. Our stand is to resort to negotiations [with] countries directly involved, to resolve the territorial and maritime disputes."³⁷ Wu was listed as a sort of "unofficial" spokesman for the Chinese Government but was backed up by other Chinese scholars that agreed China would not "launch unprovoked war." This only implies China will not use brute force in the near-term to seize territory. However, these statements are far from confirming that China will cease their expansion and build-up in the Spratly Islands as long as they are not guarded or otherwise occupied by any other surrounding country. Freedom for the ASEAN group to operate within their economic exclusion zones without having to worry about Chinese occupation will require more U.S. allied military presence across these islands. The U.S. continues to emphasize that no sides will be taken, but that the U.S. will do whatever is necessary to ensure freedom within international waterways remains intact. China's logical moves based on this fact is that they will continue to expand and occupy the Shoal and the Island clusters by building artificial islands and establishing commercial and government facilities on them, as long as they are not already physically occupied. In essence, a massive game of chicken is being played out on an international scale and the potential for conflict will continue to heat up until somebody flinches.

Possible U.S. Courses of Action

The U.S. Government can decide on a number of coercive options as this trend continues. Depending on who controls the Executive and Legislative branches of government, we could see a broad spectrum of soft power, to include strictly economic options like sanctions, all the way to an expansion of standing military forces. Based on recent history, the U.S. tends to find a balance relying on economic sanctions, paired with military partnerships and presence in nearby states and territories. From the focused lens of how the USAF likely fits into the scenario, there are various courses of action to consider that would apply a measure of coercive power towards China.

Open source specifics on budget and costs to deploy and sustain a U.S. fighter squadron are scarce. Therefore, the discussion will be framed in relative terms with an assumption made for a baseline investment in forward basing. Regardless of whether a squadron is permanently based at the forward location in the ASEAN group, a large Pacific Airbase, or a CONUS Air Force Base, the assumption will be that there is an equal investment in an ASEAN base.

Air and Space Expeditionary Posture

The first possible course of action is the U.S. Air Force Air and Space Expeditionary

Force (AEF) posture. In an AEF posture, flying units around the world are designated to a

deployment window. They are typically alerted of their window with sufficient time to prepare

and augment their staff and line personnel for a known area of conflict. In the past fifteen years,

regular rotations have been routinely made to Afghanistan and a number of countries in the

Middle East and Africa. Based on our sustained involvement in these regions, rotations have

become commonplace and somewhat predictable. The modern AEF system is designed to be as predictable as possible for personnel and planners and has evolved from consistent involvement in the same regions of the world. With deployment processes set, this option offers the benefit of familiarity and is easily adaptable to any region of the world. Very little change to the status quo would be necessary to deploy in force to the South China Sea when needed.

AEF and a Chinese Conflict

Since there are no current hostilities off the coast of China, AEF banding would not likely be set until U.S. governmental and DoD leadership have decided that sustained military operations in the Western Pacific were likely or desired. With a definite pivot to the region, the USAF could decide to band fighter and bomber units to an AEF-like state of readiness and deploy them on a set rotation to forward locations in the region. The option also exist to only spin up and act if hostilities arose, rather than pre-emptively occupy the entire region. The pro to this type of system is that it does not require any immediate extra funding and allows planners to continue to support hotbed regions on the Eurasian continent. On the downside, units below the Wing level would have to maintain proficiency in multiple mission sets, train for a wide range of environments and adversaries, and be on the hook to deploy to the Pacific on a short-notice basis. Additionally, short-notice funding would need to be allocated to provide expeditionary facilities and support to new forward operating bases, as well as ensure runways, taxiways, ramps, and existing infrastructure are of adequate quality to safely sustain combat operations for an indeterminate amount of time. This alone would incur large costs to the government, but is usually appropriated through an overseas contingency budget vice the standing annual one. This option would require a concerted effort to secure diplomatic clearances, prepare bases, and deploy forces when needed. Although it is probably the cheapest option in the short-term, it is a

complex plan with many moving parts once the trigger is pulled to deploy. It also implies that deterrence has failed in the first place.

Reduced Number of USAF Aircraft

The largest unknown is response time and ability to deliver significant asset to theater. The number of flying units has been significantly reduced since the War in the Persian Gulf. During that time, the U.S. military was able to phase in up to 619 aircraft over 28 days, with the first wave in place in less than 36 hours. With many more standing, global commitments, a much smaller force, and little practice with short-notice deployments, the ability to stage in the event of a crisis in less than 72 hours comes into question. If immediate, large-scale response to Chinese aggression was required, it could be exceptionally difficult to get combat units in place and flying combat missions in a relatively short amount of time. The USAF and U.S. government would have to be content with a lighter force of fighters in the region and a delay in response to the theater. Quicker response times could be managed by placing stateside units on a type of alert status predicated on accurate intelligence, surveillance, and reconnaissance.

Use of Pre-existing U.S. bases in the Pacific

An option to consider that increases presence in the Pacific without specifically placing direct pressure on China would be to expand the current permanent USAF bases that exist in South Korea, Japan, Hawaii, or Guam. There are seven standing USAF bases in the Pacific (excluding Alaska) that already have USAF aircraft. These are Joint Base Pearl Harbor-Hickam, Anderson Air Force Base, Kadena Air Base, Kunsan Air Base, Misawa Air Base, Osan Air Base, and Yokota Air Base. Together, they cover a vast area of the Pacific and already have permanent infrastructure in place. Increasing any number of aircraft will incur costs since bases would need new or updated facilities for more squadrons, military personnel, and their families,

but their proximity to forward operating locations would reduce the cost of deployment. Additionally, squadrons at these bases would be locked into a rotation to the South China Sea much like an AEF. The USAF does something similar to this under the Theater Security Package (TSP) program, but those assets travel much longer distances, since the aircraft are typically from continental U.S. (CONUS) bases. Those types of aircraft movements require extra support from aerial refuelers and timelines can become complex when tankers and fighter aircraft require maintenance or divert along the way. Being within a one or two-hop range to the area of operations with minimal tanker support significantly reduces the burden of the deployment process. In the absence of any hostile conflict, deterrent presence can be accomplished with short, periodic Temporary Duty Assignments (TDYs). These could be as short as a few months if needed, with no requirements for backfill. Morale for personnel and their families would be significantly better than the status quo, since time away from home could be short and manageable. If hostilities ever surfaced, facilities at forward locations would be adequately equipped to sustain combat operations and deployments would increase to provide continuous combat capabilities. This course of action has merits, but still lacks the benefits of permanent basing near the shores of the South China Sea.

Expeditionary Basing in the ASEAN group

The most aggressive posturing for USAF aircraft in response to China's growing military would be to setup permanent bases in the ASEAN group. Much like assignments in South Korea, a relatively small number of aircraft, operators, and support personnel (say a single squadron's worth) would be a permanent fixture, which could be augmented by additional squadrons if required. Assignments would be one or two-year, fixed remote tours depending on whether they choose to be accompanied or unaccompanied by family. The initial build-up,

however, would take some time. USAF aircraft have not been based in many of these countries for decades and new facilities would need to be built to support newer aircraft like F-15Es, F-22s, and eventually the F-35. Just building a ramp with hardened aircraft shelters and facilities that meet security clearance requirements would pose a significant investment.

As far as the diplomatic costs, countries in this region are already keen to welcome and increase U.S. forces on their soil. The U.S. and Philippine government, for example recently began brokering agreements for the military use of eight or more bases for rotational deployments.³⁹ This already appears to be the U.S.'s opportunity to gain footholds near the South China Sea and set the stage for permanent basing if the governments both desire. Antonio Bautista Air Base, for example, is already located in vicinity of the contested Spratly islands and would be a clear indication of support to counter Chinese claims. The greatest advantage to this course of action is that once infrastructure is in place and the units are established, tactical aircraft have the range and loiter to impose significant pressures on Chinese forces. Operations could be supported by high-valued Command and Control and tanker aircraft, based out of Guam or Australia; a much more efficient use of assets. Since they are also land-based and protected with hardened shelters, aircraft and personnel are much more survivable compared to a carrier group's vulnerability to Chinese cruise missiles. Short of a mass deployment, this would be the option that places the most overt pressure on the Chinese government.

ANALYSIS

The historical context of the region has been laid out and some possible courses of action discussed. Therefore, an analysis of the situation and constraints will be made to attempt to predict likely outcomes and answer the research question. If the U.S. truly desires to deter provocation from the Chinese military, than that is going to require a much more permanent presence in the region. Any

kind of action will have to be within fiscal restraints, but a sustained presence of U.S. strike fighter aircraft in the Philippines is a start to provide the counter that cannot be accomplished from the ASEAN group alone.

Just recently, yet another Chinese expansion of military power was catalogued in the South China Sea. Taiwanese intelligence reports that, in early February 2016, advanced surface-to-air missiles have been deployed on Woody Island, one of the reclaimed islands off the coast of Vietnam.⁴⁰ Additionally, a U.S. think tank has analyzed more recent satellite imagery in the Spratly chain and believe that the Chinese are setting up a high-frequency radar installation.⁴¹ These most recent revelations set a precedent for continued arms build-up throughout the region. Chinese officials vehemently deny that this has any military significance. The Chinese Ministry of Defense mostly claims that the facilities on "relevant islands and reefs" are for navigational and meteorological purposes, but, "at the same time, have deployed necessary defensive facilities on the islands". 42 This adds yet another bold statement to ASEAN partners, and the U.S., that China has no intention of discontinuing their pattern of reclamation and military expansion. This is a chess game and the Chinese are strategically preparing for a regional arms race. They have almost every advantage. Their growing economy has given them the soft and hard power to reclaim disputed islands and develop them under the ruse of purely commercial motivation. In the meantime, China legitimizes their growth of military equipment in the region by citing their rights to self-defense. Whether the U.S. chooses to deploy assets permanently to the South China Sea or not, there is no evidence that the Chinese are going to cease their reclamation and subsequent arming of the contested territories. That said, it is imperative that the U.S. postures advanced fighters in the region, as part of a larger strategy of deterrence, if they are serious about protecting the free economic zone. If given the breathing room, the steady pattern of land reclamation will continue. Clearly, China believes they can creep through the region only receiving hollow diplomatic threats.

It is uncertain how the U.S. will ultimately respond in the short term. For one, 2016 is an election year with an uncertain outlook on which party will control the executive and legislative branches. That certainly has implications on budgets and American involvement with international partners. With the fight centered on Da'esh, there is virtually no American media exposure of the situation in the South China Sea, which can translate into little public and political interest. If the U.S. government's stance to maintain the sanctity of a free economic zone remains, then it can be expected that the U.S. will limp in with a minimum amount of military presence. In order to gain more initiative, defend free trade, and support smaller allies in the area that feel threatened, the U.S. needs to restructure their deployment posture for the existing fighter squadrons and setup a permanent base in the Philippines.

Observing recent actions by Russia in the Ukraine provides relevant historical context. Vladimir Putin made a calculated move to assist the annexation of the Crimean peninsula and Donetsk region, knowing that there was no NATO obligation or appetite to get seriously involved. In the years that followed, NATO, with heavy support from the U.S., stepped up deployments of fighter aircraft and other military forces to Eastern European countries. These efforts intended to show U.S. and NATO resolve to protect the sovereignty of the countries near the Russian border that have virtually no independent defense from an emboldened Russia. In a similar way, China continues to gain confidence that they can take more and more territory without a significant response. They have also calculated that the many other undertakings the U.S. is involved in around the world will water down the response. The status quo has not deterred China's expansion, and much like the U.S. has been doing in Europe, a stronger foothold should be present before China can attain mostly unrestricted freedom of maneuver.

The proximity of U.S. and partnered NATO forces to Russia makes deployment to the Russian border logistically simpler and cheaper compared to the South China Sea. Seeing as how China's resurgence will continue for decades to come, a significant investment would have to be made to equip

air bases in the near future. However, once USAF operations are established, long-term operating costs should be lower than regular deployments from the CONUS and sortie generation from distant bases on Guam and Japan. They will also be more affordable than operating a carrier group. The addition of surface-to-air missiles to a reclaimed island sets a precedent that China will logically continue as they expand. It does not make much sense to require those systems for the protection of commercial structures and shipping, however, there is significant strategic advantage to establish this equipment to defend military vessels, aircraft, and infrastructure. The next logical step will be an increase in air operations associated with forward deployment of People's Liberation Army Air Force (PLAAF) aircraft. If this occurs before U.S. aircraft are established at a cooperative security location or U.S. Air Base, China will make claim to the airspace over the island groups. Subsequent presence of USAF and ASEAN air operations will likely be met with protest from the Chinese government. This would happen regardless of who makes a foothold first, but the ASEAN group would have a much more legitimate argument for their sovereignty if they can partner with USAF aircraft before the PLAAF begins more robust operations.

CONCLUSION

The important takeaway is that Chinese expansion is going to continue to infringe on disputed territory, ever increasing the chances of a misunderstanding or conflict. The pace of expansion and a clear message of deterrence and the support for free trade is entirely dependent on U.S. actions in the region. The status quo diverts blue water assets, which cost exorbitant amounts of money. These assets are also becoming less survivable in the region with the growing parity of Chinese weapon systems. Although Air Bases would still be vulnerable to attack, provocation on the part of the Chinese within the borders of a sovereign country, versus the open water, would carry larger consequences and international scrutiny. Land based aircraft also cost less to operate, have greater ranges in combat configurations, and are more survivable with the appropriate protection.

No matter how the Chinese, ASEAN group, or the U.S. choose to proceed, any addition of arms in the region from the major players will inevitably result in a localized arms race. Boundaries, borders, and wills will be tested, so it is important to take the necessary strategic steps to ensure steady strategic partnerships and defend subversive Chinese aggression that strains local international relationships and threatens the free economic zone.

RECOMMENDATIONS

Observing the events that have been outlined and the expected economic and population growth that will occur in the next 15 years, a long-term, budget conscious decision must be made. Upon comparison of the main courses of action described above, the best suited option, considering long-term budget outlook and an increased strategic presence in the Western Pacific and South China Sea, would be small-scale, permanent basing in the Philippines.

Strengths: Clark Air Base is a good first choice for basing fighter and bomber squadrons in the Philippines. As a prior U.S. Air Base, many support facilities, such as housing, hangar and ramp space, and a hospital, already exist and their renovation and use could be negotiated with the host nation. The field has two runways that are each greater than 10,000 feet in length and should be in good condition since the field is also dual-use as a civilian international airport.

Ample parking apron space exists for multiple squadrons of aircraft (assuming 12-18 aircraft per squadron) and there are at least 40 dispersed, fighter-specific parking locations within the airfield that offer more survivability in the event of an attack. These parking spots can be modified with Hardened Aircraft Shelters (HAS) if necessary and there is open land available around the airfield that can be used to erect additional HASs and secure facilities for generation 4.5 and 5 aircraft.

Logistic support for the airfield is also ideal for the region. The airfield is suitable for large, commercial and military airlift and larger shipments can be delivered to the port city of Manilla, less than 60 statute miles south. The nation forms the east side of the South China Sea meaning shipping vessels can avoid that region altogether, and access the country on the eastern coastline, if the Sea itself was wrought with hostile threats.

Antonio Bautista Air Base is about 450 nautical miles southwest of Clark Air Base, on the Philippine island of Palawan. It also boasts a runway greater than 10,000 feet long and its main benefit is that the Spratly island chain sits just a few hundred miles, directly off the western coast. There is also a protected harbor next to the airfield, making logistic support much more convenient and cost effective. Being so close to the Spratly islands would allow the U.S. and Philippine partners to conduct routine air operations, which would challenge any attempt by the Chinese to establish exclusive rights to the overlying airspace. Allowing time for China to occupy these islands may partly legitimize an eventual establishment of a Chinese Air Defense Identification Zone (ADIZ).

Weaknesses: Although deals are being made with the Philippines as we speak, diplomatic negotiations with host nations can be cumbersome. There is no guarantee that full support for American presence will be shared by the whole Philippine government and citizens. This is always an inherent weakness when structuring a posture in any country. Clark Air Base is relatively sound. The downside to Antonio Bautista Air Base is available space. The limited ramp area is already used for commercial airlines. Some expansion of the apron would increase capacity, but there is currently only room for a couple of squadrons.

Opportunities: The largest payoff would be the proximity for operations themselves. The open-source combat radius for the F-15E is 1,000NM with a 20 minute loiter⁴³ and the

projected radius for the F-35A Standard Takeoff and Landing variant is 590 NM with an internal ordnance combat configuration.⁴⁴ Figure 5. shows the un-refueled combat radius overlays in relation to the area of operations.



Figure 5. Combat Radius Overlay for F-15E and F-35A

For the combination of range and capabilities of the most modern U.S. fighter/bombers, Clark Air Base allows strike aircraft to completely cover the South China Sea and place direct pressure on a large swath of China and the Taiwan Straits. Factoring in air-refuelers out of Japan, Guam, or Australia would significantly increase range and loiter capabilities.

Andersen Air Force Base in Guam sits just 1400 NM to the East of Clark Air Base.

Transit time to a forward location like Clark Air Base would be between two to three hours for

fighters with Tanker support. As far as protection of assets is concerned, the location of the Philippines in relation to Guam adds to the survivability of combat aircraft. Should any base in the nation come under attack, fighter/bomber assets can bugout or retrograde with zero or minimal tanker support, meaning logistical support for this type of action would be simpler than most other options. Guam is much more isolated from most conventional Chinese threats than any base in the Southwest Pacific.

Threats: Being in China's backyard comes with inherent threats. China's most advanced military aircraft, naval ships, and surface-to-surface missiles can range any target in the Philippines, especially if allowed to gain a foothold in any of the disputed island chains.

Therefore, protective measures would have to be made to mitigate those threats.

If invested properly, the weaknesses and threats are easily mitigated and are only factors if hostilities erupted. The intent is to balance the region, call the Chinese bluff, and execute the preventative measures necessary to keep the free economic zone functioning.

¹ Sanger, David E. "Philippines Orders U.S. to Leave Strategic Navy Base at Subic Bay." *The New York Times*. 28 December 1991.

² Beaulieu, Gregory S. "China, Friend or Foe...The Future of East Asia Foreign Policy."

³ Friedberg, Aaron L. *A Contest for Supremacy*. New York, NY: W.W. Norton & Co., 2011.

⁴ Lampton, David M. *The Three Faces of Chinese Power: Might, Money, and Minds*. Berkeley, CA: University of California Press, 2008.

⁵ O'Brien, Timothy J. "China's Deceptive Rise and US Counter Basing Strategy." Air War College, Air University. 5 February 2007.

⁶ Le Miere, Christian. "America's Pivot to East Asia: The Naval Dimension." Survival: Global Politics and Strategy. Vol 54, June-July 2012.

⁷ O'Brien, Timothy J. "China's Deceptive Rise and US Counter Basing Strategy."

⁸ "China and Japan Square Up: The Drums of War." *The Economist*. 19 January 2013, 43.

⁹ Rinehart, Ian E. "China's Air Defense Identification Zone (ADIZ)." Congressional Research Service. Report R43894. 30 January 2015. www.crs.gov.

¹⁰ U.S. Department of State. "Association of Southeast Asian Nations." January 2016. www.state.gov/p/eap/regional/asean/.

- ¹¹ Khan, Zeba. "Words Matter in ISIS war, so use 'Daesh'." *The Boston Globe*. 9 October 2014. https://www.bostonglobe.com/opinion/2014/10/09/words-matter-isis-war-use-daesh/V85GYEuasEEJgrUun0dMUP/story.html.
- ¹² U.S. European Command. "OPERATION ATLANTIC RESOLVE Fact Sheet," August 2015.
- ¹³ Treves, Tullio. "United Nations Convention on the Law of the Sea." *Audiovisual Library of International Law, United Nations*. January 2016. http://legal.un.org/avl/intro/introduction.html?tab=2
- ¹⁴ Zheng, Bijian "China's 'Peaceful Rise' to Great-Power Status," *Foreign Affairs*, Vol 84, Issue 5, September/October 2005, 23.
 - 15 Ibid.
- ¹⁶ The World Bank Group. "GDP growth (annual %)." 2016.
- http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG

 17 "Catching the Eagle: Chinese and American GDP forecasts." *The Economist*. 22

 August 2014, http://www.economist.com/blogs/graphicdetail/2014/08/chinese_and_american
- August 2014. http://www.economist.com/blogs/graphicdetail/2014/08/chinese-and-american-gdp-forecasts
 - ¹⁸ "China and Japan Square Up: The Drums of War."
 - ¹⁹ Ibid.
- ²⁰ De Luce, Dan. "China Fears Bring the U.S. Military Back to the Philippines." *Foreign Policy*. 12 January 2016. http://foreignpolicy.com/2016/01/12/china-fears-bring-the-u-s-military-back-to-the-philippines/.
 - ²¹ Ibid.
- ²² Welsh, Mark A. Department of the Air Force Presentation to the Committee on Armed Services United States Senate: Impact of Sequestration. 12 February 2013.
 - ²³ Ibid.
 - ²⁴ Ibid.
- ²⁵ Johnson, Stuart E. and Irv Blickstein. "Big Defense Cuts are Coming, Regardless of the Fiscal Cliff." *U.S. News & World Report.* 27 December 2012.
- http://www.rand.org/commentary/2012/12/27/USNEWS.html
 - ²⁶ Ibid.
- ²⁷ Hendrix, Henry J., Captain (USN). "At What Cost a Carrier." *Disruptive Defense Papers*. March 2013.
 - ²⁸ Ibid.
- ²⁹ Obama, Barack. *National Security Strategy*. Washington, D.C. Feb 2015. https://www.whitehouse.gov/sites/default/files/docs/2015_national_security_strategy.pdf
 - ³⁰ Ibid.
 - ³¹ Ibid.
- ³² Office of the Under Secretary of Defense Chief Financial Officer. "United States Department of Defense Fiscal Year 2016 Budget Request." February 2015, 1-1.
- ³³ Beale, Jonathan. "NATO Defence Spending Falls Despite Promises to Reverse Cuts." *British Broadcasting Corporation News.* 26 February 2015. www.bbc.com/news/world-31619553.
- ³⁴ Benen, Steve. "ISIS changes Americans' Appetite For War." MSNBC: The Rachel Maddow Show. 20 February 2015. www.msnbc.com/rachel-maddow-show/isis-changes-americans-appetite-war

- ³⁵ "Q&A: South China Sea Dispute." *British Broadcasting Corporation News.* 27 October 2015. www.bbc.com/news/world-asia-pacific-13748349.
 - ³⁶ Ibid.
- ³⁷ Baculinao, Eric. "China 'Will Not Initiate Military Conflict' Over Island Disputes: Expert." National Broadcasting Corporation News. 24 January 2016. www.nbcnews.com/news/china/china-will-not-initiate-military-conflict-over-island-disputes-expert-n501851.
- ³⁸ Davis, Richard G. "The USAF in the Persian Gulf War: On Target, Organizing and Executing the Strategic Air Campaign Against Iraq." *Air Force History and Museums Program*. 2002. 40-42.
- ³⁹ Bacon, Lance M. "U.S. Negotiating to Rotate Troops to 8 Philippine Bases." *Navy Times*. 29 April 2015. www.navytimes.com/story/military/pentagon/2015/04/28/us-negotiating-troop-rotation-philippines-catapang-china-base-troops/26512301/
- ⁴⁰ "China 'Has Deployed Missiles in the South China Sea' Taiwan." British Broadcasting Corporation News. 17 February 2016. http://www.bbc.com/news/world-asia-china-35592988.
- ⁴¹ Brunnstrom, David. "China may be installing radar on disputed South China Sea outposts: think tank." *Reuters*. 23 Feb 2016. http://www.reuters.com/article/us-southchinasea-china-radar-idUSKCN0VW092.
 - ⁴² Ibid.
- ⁴³ Boeing. *F-15 Strike Eagle*. 28 Feb 2016. http://www.boeing.com/defense/f-15-strike-eagle/#/overview.
- ⁴⁴ Gertler, Jeremiah. "F-35 Joint Strike Fighter (JSF) Program." Congressional Research Service. CRS Report RL30563. 29 April 2014. 50. www.crs.gov.