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Because of the immense destructive power of nuclear weapons and the increasing potential for proliferation to antagonistic countries, it is imperative that the United States lead an active campaign of counterproliferation around the world. In order to achieve effective counterproliferation initiatives, all elements of national power must be employed including diplomatic, information, military, and economic resources. Counterproliferation initiatives must include joint military forces, governmental agencies, and international organizations and must be adaptable to regional specific issues due to the widespread differences in ideology and capability. This paper reviews current and past doctrine on counterproliferation as well initiatives used to control the proliferation of nuclear weapons. This paper will review the basic technology behind nuclear weapons and nuclear energy in order to define the difference between the two that can be used to improve existing doctrine. This paper will review three counterproliferation case studies, the former Soviet Union, the Middle East, and North Korea to demonstrate the differences that exist in different counterproliferation scenarios. This paper will then divide proliferation into three stages and discuss actions by Geographic Combatant Commanders in each stage to dissuade, deter, and if necessary, defeat counterproliferation in any scenario.

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THE ROLE OF THE GEOGRAPHIC COMBATANT COMMANDER IN COUNTERPROLIFERATION OF NUCLEAR WEAPONS

by

Bradford W. Baker

Lieutenant Commander United States Navy

A paper submitted to the Faculty of the Joint Advanced Warfighting School in partial satisfaction of the requirements of a Master of Science Degree in Joint Campaign Planning and Strategy.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Joint Forces Staff College or the Department of Defense.

Signature: _____

5 April 2007

Thesis Adviser: William Eliason, Colonel United States Air Force

ABSTRACT

Because of the immense destructive power of nuclear weapons and the increasing potential for proliferation to antagonistic countries, it is imperative that the United States lead an active campaign of counterproliferation around the world. In order to achieve effective counterproliferation initiatives, all elements of national power must be employed including diplomatic, information, military, and economic resources. Counterproliferation initiatives must include joint military forces, governmental agencies, and international organizations and must be adaptable to regional specific issues due to the widespread differences in ideology and capability. This paper reviews current and past doctrine on counterproliferation as well initiatives used to control the proliferation of nuclear weapons. This paper will review the basic technology behind nuclear weapons and nuclear energy in order to define the difference between the two that can be used to improve existing doctrine. This paper will review three counterproliferation case studies, the former Soviet Union, the Middle East, and North Korea to demonstrate the differences that exist in different counterproliferation scenarios. This paper will then divide proliferation into three stages and discuss actions by Geographic Combatant Commanders in each stage to dissuade, deter, and if necessary, defeat counterproliferation in any scenario.

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A special thanks is also extended to Professor Martin Nelson of the United States Naval Academy. His in-depth knowledge of nuclear physics and detection methods was invaluable. His mentorship over the last thirteen years has contributed greatly to my interest and knowledge in the field of nuclear science. I strongly believe that an extensive understanding of the science behind nuclear weapons and nuclear energy, such as that taught by Professor Nelson, is critical to defining the strategic environment around counterproliferation.

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INTRODUCTION

The gravest danger to freedom lies at the perilous crossroads of radicalism and technology. When the spread of chemical and biological and nuclear weapons, along with ballistic missile technology -- when that occurs, even weak states and small groups could attain a catastrophic power to strike great nations. Our enemies have declared this very intention, and have been caught seeking these terrible weapons. They want the capability to blackmail us, or to harm us, or to harm our friends -- and we will oppose them with all our power.[1]

President George W. Bush

During his speech to the graduating class of West Point in 2002, President Bush articulated the commitment of the United States to oppose those who seek chemical, biological, and nuclear weapons. The potential use of nuclear weapons is one of the greatest threats that the United States and all countries of the world face today. To end World War II the United States ushered in the nuclear era and demonstrated to the world the destructive power that possession of nuclear weapons bestows. This era continued through decades of the Cold War as the United States and the former Soviet Union engaged in a deadly game of nuclear escalation. No one can predict who will be the next person to use nuclear weapons, who they will be used upon, or whether it will be part of attack against the world or an attack against a regional enemy. The only solution to this problem of prediction is prevention.

Proliferation of nuclear weapons is a global security risk. As the world's preeminent superpower, the United States must lead and work together with other nations to prevent the proliferation and use of nuclear weapons. Because of the immense destructive power of nuclear weapons and the increasing potential for proliferation to antagonistic countries and terrorist organizations, it is imperative that the United States

[1] George W. Bush, Statement of the President, 1 June 2002, Internet, available from http://www.whitehouse.gov/nsc/nss/2002/nss5.html, accessed on 5 December 2006.

lead an active campaign of counterproliferation. The strategic environment surrounding nuclear weapons has changed substantially since the end of World War II. Today's campaigns of counterproliferation must account for a wider array of adversaries, capabilities, and motives. A successful nuclear strategy must be holistic in its view, but must also allow for adaptations at the operational and tactical levels in order to achieve regional successes. In order to achieve effective counterproliferation initiatives, all elements of national power must be employed including diplomatic, information, military, and economic resources. These initiatives must include joint military forces, governmental agencies, and international organizations. This paper will use three case studies to analyze the effectiveness of counterproliferation in the following thesis: in order to accomplish the nation's strategic objectives on preventing the spread of nuclear weapons, the military power and resources of the Geographic Combatant Commander (GCC) must be fully utilized to achieve effective counterproliferation.

Although nuclear weapons are part of the larger category of Weapons of Mass Destruction (WMD) or Weapons of Mass Destruction or Effect (WMD/E) that includes nuclear, chemical, and biological weapons, nuclear weapons are unique in their destructive power.[2] Because of the absolute catastrophic capability of nuclear weapons within the category of WMD, this paper will focus on nuclear weapons and United States counterproliferation strategies and programs. Many of the initiatives, concepts, and programs are applicable across the spectrum of WMD. When reviewing information on

[2] The definition of WMD or WMD/E varies between references. In a paper for the Center for the Study of Weapons of Mass Destruction, *Defining "Weapons of Mass Destruction"*, author W. Seth Carus cites forty two different definitions from sources including the executive branch of government, national and state laws, and international statements. The definition referenced here, nuclear, chemical, and biological weapons, is from the Weapons of Mass Destruction Control Act of 1992 and the 2002 National Strategy for Combating Weapons of Mass Destruction. Carus' citation of forty two definitions of WMD also supports the premise of the current non-integration of national and military doctrine that is developed in chapter 1 of this paper.

WMD from other areas, this paper will focus on their application for counterproliferation of nuclear weapons.

The nuclear conflict between United States and Soviet Union in the Cold War occurred on a global stage based on the ideological differences between capitalism and communism. Future nuclear conflicts will potentially include disputes between neighboring countries – although their impact will be felt globally – based on much more bitter human emotions. These changes in the evolution of the nuclear age require changes in the way the United States approaches counterproliferation. The premise of this paper is that the involvement of the GCC will help bridge the gap between national strategic objectives and local operational success.

The necessity for control of nuclear weapons is not a new concept, but the actors and methods required to effectively control nuclear weapons has changed since the dawn of the nuclear era due to globalization and the pursuit of nuclear weapons for a disparate array of reasons. These changes require continual re-evaluation and an adaptable regional focus. The United States and the former Soviet Union recognized during the Cold War the need to control their own deployment and production of nuclear weapons during the Strategic Arms Limitation Talks (SALT) and subsequent Strategic Arms Reduction Treaties (START). As other countries obtained or sought to obtain nuclear power, international agreements were started as early as 1968 with the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). All of these examples are positive examples of effective counterproliferation programs. However, today's aspiring nuclear powers include a variety of nations and organizations that have track records of bluff,

denial, and deception that make them unlikely participants in effective diplomatic agreements such as those previously mentioned.

The methods used to control nuclear weapons can be grouped into three major categories: (1) elimination of all nuclear weapons, (2) international control of nuclear weapons and nuclear material, and (3) the deterrence of both the acquisition and use of nuclear weapons. Each of these methods has been analyzed by various authors and strategists and has its own advantages and disadvantages. Elimination of nuclear weapons is admittedly an idealistic goal but even if achievable presents problematic issues with regard to security.[3] Substantial reductions and eventual elimination of nuclear weapons serve to reduce overall stability by increasing the incentives to rogue nations to target fewer nuclear weapons of nuclear capable countries and increasing the incentives for rogue nations to acquire nuclear weapons in order to gain a strategic advantage.[4] While perhaps a more achievable goal, international control of nuclear weapons or nuclear material is also tragically flawed in that it does not consider the motives behind many countries pursuit of nuclear weapons which are often in sharp contrast to the foundations of international control. This approach is taken to its logical extreme by former Central Intelligence Director Admiral Stansfield Turner when he proposes that all nuclear countries place their nuclear arsenal in a "strategic escrow" to be

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[3] Andrew Goodpaster and Brent Scowcroft, "The Feasibility of Eliminating Nuclear Weapons," in *Transforming Nuclear Deterrence*, edited by Hans Binnendijk and James Goodby, (Washington, D.C.: National Defense University Press, 1997), 1. In this 1997 article Goodpaster and Scowcroft take opposing sides to the prospect of eliminating nuclear weapons. In his proposal for elimination, Goodpaster describes this approach as "an ideal goal [that] should not be completely taken for granted as the United States considers and refines its long-range policy for nuclear deterrence."

[4] Goodpaster and Scowcroft, 4. This is the essence of the rebuttal for eliminating nuclear weapons presented by Scowcroft.

controlled by an international organization.[5] This approach, while challenging for the nuclear capable countries of 1997 is all but impossible today with the current list of nuclear capable countries and nuclear aspirants many of whose motives are rooted in nuclear sovereignty and opposition to international influence. Elimination of these two methods leaves deterrence as the most realistic method to control nuclear weapon proliferation. In current United States strategy this method incorporates elements of nonproliferation and counterproliferation.

This paper will start with an analysis of current national policy and international agreements on counterproliferation. The intent will be identify strengths and weaknesses of each and determine how upper echelon strategies produce the framework for operations which will prevent the proliferation of nuclear weapons. This analysis will show that until very recently counterproliferation strategies were not well transferred from national strategies to military doctrine, but with current emphasis on counterproliferation in recent military strategies, an effective strategic base has been made. Additionally as part of this analysis, this paper will show how the role of United States Special Operations Command (USSOCOM) and associated doctrine for the Global War on Terrorism (GWOT) can be applied as model for counterproliferation of nuclear weapons. This is not to suggest that the United States declare a global war on proliferation, but serves as a model for strategic objectives being accomplished by a GCC on a regional level.

This paper will discuss the use of technology in the field of nuclear weapons counterproliferation. The intent of this discussion is to clarify the distinction between

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[5] Stansfield Turner, *Caging the Nuclear Genie: An American Challenge for Global Security* (Boulder, CO: Westview Press, 1997), 65-73.

nuclear energy and nuclear weapons. This distinction will be used to create a new "bright line" between nuclear energy and nuclear weapons.[6] This will serve to discredit countries that unscrupulously veil nuclear weapons programs behind false masks of nuclear energy. Additionally, the use of technology for enforcement of counterproliferation programs and their problematic limitations will be discussed.

This paper will then discuss counterproliferation using three different case studies: the former Soviet Union, the Middle East, and the Democratic Peoples Republic of Korea (North Korea). The Middle East was chosen to represent Iran, Iraq, and terrorist organizations. Iran and Iraq are chosen together based on the similarities of the regimes, their similar pursuits for nuclear technology, their uncooperative nature with international organizations regarding nuclear regulations, and their geographic location. This paper will focus primarily on rogue nations acquiring nuclear weapons through indigenous production, and because of this will not focus heavily on terrorist organizations or theft of nuclear weapons by any organization. This is not to diminish the real threat that terrorists pose with regard to nuclear weapons but is based on the assumption that effective security programs of nuclear capable countries will preclude the transfer of composite nuclear weapons or more importantly, nuclear weapons raw material, to terrorist organizations. Additionally combining terrorist organizations into the Middle East case study is not to imply that all terrorist are Middle Eastern in nature. Terrorist organizations are combined with the study of Iran and Iraq based on the totalitarian nature of their organization and their disposition for uncooperation. Also since much of

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[6] Graham Allison, *Nuclear Terrorism: The Ultimate Preventable Catastrophe* (New York, NY: Times Books, 2004), 141-142. Graham discusses the loophole in the NPT that allows non-nuclear states to build uranium enrichment and plutonium production plants and then proposes that a new "bright line" be established to close this loophole. This loophole and new bright line will be discussed in detail throughout this paper as critical to the successful establishment of an effective counterproliferation program.

the current support for terrorist organizations come from the Middle Eastern area, including terrorist organizations in this area is appropriate.

The basis for selection of the three case studies is multi-dimensional in nature all levels of which support the concept of national strategic planning and local operational execution of counterproliferation initiatives. At the first level, the three case studies represent three different geographic Areas of Responsibility (AOR) for combatant commanders as defined in Appendix B of the Unified Command Plan (UCP).[7] The apparent obviousness of this difference should not be overlooked. The local knowledge, focus, and range of assets of the GCC make them uniquely suited for accomplishing all national counterproliferation objectives not just those with the Department of Defense (DOD).

The three case study examples also differ significantly in the ideological nature of the adversary. In his analysis of why states choose to develop or refrain from developing nuclear weapons, Sagan proposes three models to demonstrate a country's motives.[8] The *security model* proposes that countries pursue nuclear weapons to increase national security against foreign threats. The *domestic policy* model proposes that countries pursue nuclear weapons to advance domestic political and bureaucratic agendas. The *norms model* proposes that countries pursue nuclear weapons as a symbol of their sovereignty, identity, and modernity. These three models will be used in the analysis of the case study examples to help frame the strategic approach for counterproliferation in

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[7] George W. Bush, *Unified Command Plan* (Washington, D.C.: The White House, 5 May 2006), B-1-B-3.

[8] Scott D. Sagan, "Rethinking the Causes of Nuclear Proliferation: Three Models in Search of a Bomb", in *The Coming Crisis*, edited by Victor A. Utgoff (Cambridge, MA: MIT Press, 2000), 18. Sagan is not the only author to propose reasons for the pursuit of nuclear weapons. J. Christian Kessler, in *Verifying Nonproliferation Treaties: Obligation, Process, and Sovereignty* (Washington, D.C.: National Defense University Press, 1995), 8, also proposes three motives. Kessler's motives are very similar to Sagan, but Sagan's approach is used in this paper due to the easier association of his naming convention.

each region. Additionally the supposition of three models supports a regional level approach such as that offered by the appropriate GCC.

Although no adversary can every be expected to be fully cooperative in their engagement, the approaches used by regimes such as Iran, Iraq and North Korea are far different than the former Soviet Union. These regimes employ tactics of bluff, denial, and deceit continuously in efforts to hide their capabilities. They often use dramatic statements regarding nuclear weapons solely for political gain either within their own populous or towards their enemies. This dramatic difference in cooperation and approach to nuclear weapons complicates intelligence efforts and affects peaceful diplomatic resolutions requiring a different mixture of the elements of national power.

There is also a disparity in the capabilities of the case study countries that must be taken into account when determining a counterproliferation operational plan. For the former Soviet Union, the threat of nuclear warfare was known and measurable. The other case studies have capabilities that are far less known. These different capabilities require varying application of the elements of national power.

Lastly, the case study countries present counterproliferation histories with varying degrees of success. The effectiveness of the Cold War is verified in that no nuclear weapons were used or proliferated to other countries during the decades of the Cold War. The effectiveness of counterproliferation in the Middle East, specifically Iran and Iraq, is far less obvious and marred with questions about the existence of nuclear capabilities. Although the decisive point may be quickly approaching, North Korea remains an unresolved issue.

This paper will conclude with a review of the capabilities of the GCC and recommendations on improving counterproliferation objectives. The United States must continue to develop counterproliferation initiatives and practices. The United States must continue to lead multinational efforts and enforce international standards. The United States must "exercise influence over the volatility, manage the uncertainty, simplify the complexity, and resolve the ambiguity" that forms the nuclear strategic environment.[9] In his introduction to the National Security Strategy (NSS), President George W. Bush describes the United States approach to the future:

> America now faces a choice between the path of fear and the path of confidence. The path of fear – isolationism and protectionism, retreat and retrenchment – appeals to those who find our challenges too great and fail to see our opportunities. Yet history teaches that every time American leaders have taken this path, the challenges have only increased and the missed opportunities have left future generations less secure. This Administration has chosen the path of confidence. We choose leadership over isolationism, and the pursuit of free and fair trade and open markets over protectionism. We choose to deal with challenges now rather than leaving them for future generations. We fight our enemies abroad instead of waiting for them to arrive in our country. We seek to shape the world, not merely be shaped by it; to influence events for the better instead of being at their mercy.[10]

President Bush's path of confidence is applicable to counterproliferation. The United States can not afford to rely on past successes in counterproliferation and must use all elements of national power and apply them as situations require in order to prevent the spread of nuclear weapons. The United States can not allow other countries to dictate issues with regard to nuclear weapons and can not allow countries to use strategies of bluff, denial, and deception when it comes to nuclear capabilities.

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[9] Henry R.Yarger, "Strategic Theory for the 21st Century: The Little Book on Big Strategy," February 2006, Internet, available from http://www.strategicstudiesinstitute.army.mil/pdffiles/PUB641.pdf, accessed 1 December 2006, 18.

[10] George W. Bush, *The National Security Strategy of the United States of America*, (Washington, D.C.: The White House, 2002), introduction.

The National Defense Strategy of the Unites States (NDS) discusses *catastrophic* capabilities as challenges that "involve the acquisition, possession, and use of WMD or methods producing WMD-like effects."[11] The NDS then goes on to say "even a single catastrophic attack against the United States or an ally would be unacceptable."[12] This objective requires a comprehensive strategy on counterproliferation and a coordinated deliberate operational execution of that strategy. The GCC is the bridge between strategy and operations for this objective.

[11] Office of the Secretary of Defense, *The National Defense Strategy of the United States of America* (Washington, D.C.: Office of the Secretary of Defense, March 2005), 2.

[12] Ibid., 3.

CHAPTER 1 – COUNTERPROLIFERATION DOCTRINE

Strategy lays down what is important and to be achieved, sets the parameters for the necessary actions, and prescribes what the state is willing to allocate in terms of resources. Thus, strategy, through its hierarchal nature, identifies the objectives to be achieved and defines the box in which detailed planning can be accomplished – it bounds planning.[13]

Harry R. Yarger
Strategic Theory for the 21st Century:
The Little Book on Big Strategy

In his monograph on strategy, Yarger discusses the relationship between strategy and planning and how effective strategy must specify what is important to be achieved, what parameters bound required actions, and what resources are available to those ends.[14] Strategic doctrine forms a pyramid that helps translate national level objectives and concepts into achievable operational tasks. Effective layers of strategy within the pyramid are built from preceding layers and define the basis for subsequent levels. This structure becomes the bridge from the strategic to the operational level and is what defines the box that Yarger describes.

Preventing the proliferation of nuclear weapons throughout the world is a monumental task and requires a holistic approach that addresses the different capabilities, ideologies, and motives that exist across countries with nuclear intentions. Counterproliferation strategy must consider uncertainty and must be adaptable when assumptions are proven incorrect. Perhaps the most difficult aspect of counterproliferation is the efforts many regimes take to hide their nuclear capabilities making assumptions regarding their capabilities problematic. The strategy must not allow loopholes or avenues for exploitation that allow countries to evade the agreements

[13] Yarger, 48.
[14] Ibid., 48-49.

of the global nuclear community. Lastly, the strategy for counterproliferation must be sensitive with respect to time and must evolve. Methods or elements of power that were successful in past eras may not be suited for today's environment. In today's world each counterproliferation scenario is different. Their motives, means, and environment are diverse and require a different application of the elements of national power.

This chapter will review major strategic doctrine related to counterproliferation including national strategic doctrine, DOD doctrine, and international treaties and agreements. The intent of this review is to determine if the strategic doctrine provides the necessary framework for operational success. This chapter will reveal that up until the recent additions of specific WMD military strategies, there was little integration of counterproliferation strategies within DOD doctrine. In the larger scheme of this paper, the doctrine in this chapter serves as the strategic base for the GCC for operationalizing the nation's counterproliferation strategy.

United States National Policies

The United States strategic approach to counterproliferation of nuclear weapons is a mixture of successes and failures. The overall strategic approach is holistic and involves using all the elements of national power and proposes using a variety of means including counterproliferation and nonproliferation to accomplish strategic ends. The strategy also reflects an appropriate change with time and change in the strategic environment from a singular enemy with essentially tactical parity to a variety of adversaries with an equally wide variety of capabilities. However, the United States counterproliferation strategy is limited in its ability handle uncertainty, primarily the uncertainty in other regime's capabilities and motives.

The NSS issued in March 2006 serves as the cornerstone for United States national strategy. In President Bush's introduction, the foundational pillars of the NSS are defined and discussed. The first pillar, "promoting freedom, justice, and human dignity – working to end tyranny, to promote effective democracies, and to extend prosperity through free and fair trade and wise development policies," is based on the ideology from which the United States was created.[15] Promoting this pillar serves to spread freedom throughout the world, to promote peace, and to create international stability. The second pillar, "confronting the challenges of our time by leading a growing community of democracies," is a statement that the United States must continue to be a global leader.[16] This pillar goes on to state that multinational efforts are essential to solve these challenges. The message is clear, the United States will not resort to isolationism to deal with global problems but will face challenges now and seek to influence the outcome as problems develop.

In order to meet the challenges that the United States faces and in order to promote freedom and end tyranny, the NSS lists nine essential tasks. The task to "prevent our enemies from threatening us, our allies, and our friends with weapons of mass destruction" is explicit with its objectives with regard to nuclear proliferation.[17] Closing the "loophole" in the NPT that allows regimes to create fissile material under the false pretense of nuclear energy is critical to the success of the nation's counterproliferation program and is aptly titled as the first objective underneath the task of counterproliferation. This "loophole" is recognized by many nonproliferation experts including the current head of the International Atomic Energy Agency (IAEA), Dr.

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[15] Bush, *The National Security Strategy of the United States of America*, introduction.
[16] Ibid.
[17] Ibid., 18.

Mohamed ElBaradei, who recognizes that the existing system under the NPT and IAEA erred by allowing non-nuclear weapons states to build uranium enrichment and plutonium production facilities. This "loophole" will be discussed throughout this paper since it is exploited by many of the rogue states and terrorists mentioned in counterproliferation doctrine. Although the NSS is clear on this objective, it is not as clear in determining if this objective is achievable or what means may be employed to ensure it is accomplished. Allison discusses the necessity of employing multiple elements of national power to achieve this objective by stating, "closing this loophole will require deft diplomacy, imaginative inducements, and demonstrable readiness to employ sanctions, including the use of military capabilities, to establish a new bright line."[18]

The NSS proposes that the United States lead global efforts to spread nuclear material for nuclear energy production to preclude regimes from pursuing indigenous means of fissile material production including enrichment and reprocessing facilities. While a laudable effort, history is replete with examples of disappointments in multilateral efforts to control nuclear material including precursors to the NPT such as the Baruch Plan and Eisenhower's Atoms for Peace. The NSS continues this optimistic approach saying that following talks amongst United States, China, Japan, Russia, the Republic of Korea (South Korea), and North Korea, that "the DPRK [North Korea] agreed to abandon its nuclear weapons and all existing nuclear programs."[19] This optimistic assumption of diplomatic success has recently been proven incorrect. This is not to say that diplomatic efforts aimed at the peaceful control of nuclear material are in

[18] Graham, 141-142.
[19] Bush, *The National Security Strategy of the United States of America*, 21.

vain. Diplomatic efforts are critical to the success of counterproliferation, but diplomacy is only one element of national power and only one part of the solution.

The NSS has a lengthy discussion – relative to the entire discussion on nuclear proliferation – on Iraq and its WMD programs. Discussing Iraq's WMD programs the NSS states:

> The Iraq Survey Group also found that pre-war intelligence estimates of Iraqi WMD stockpiles were wrong – a conclusion that has been confirmed by a bipartisan commission and congressional investigations. We must learn from this experience if we are to counter successfully the *very real* [emphasis added] threat of proliferation.[20]

Iraq was a *real* threat of proliferation. The actions taken effectively eliminated the threat, and the true lesson learned should be timely preemption is the best means to prevent proliferation. The NSS continues saying that intelligence must improve and discusses means to that end. This entire discussion serves as an unwarranted apology for international efforts. If the only measure of counterproliferation success is to catch a regime with their hand in the nuclear cookie jar, then that program is destined for failure, and the only alert to another nuclear aspirant may well be a catastrophic attack against the United States or its allies. In this area the NSS fails to adequately address the uncertainty behind Iraq's nuclear program and relies too heavily on intelligence. Knowledge of a states nuclear capabilities and motives through intelligence is important, but as with diplomacy, it is only another part of the puzzle.

In addition to providing the grand strategy for the United States, the NSS serves as means for the United States to speak out to other regimes at the crossroads between nuclear weapons and peaceful disarmament. Unlike the unwarranted apology given to Iraq for failing to find WMD, the NSS ends with a stern and clear message of dissuasion:

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[20] Ibid., 23.

> Saddam's strategy of bluff, denial, and deception is a dangerous game that dictators play at their peril. The world offered Saddam a clear choice: effect full and immediate compliance with his disarmament obligations or face serious consequences. Saddam chose the latter course and is now facing judgment in an Iraqi court. [This judgment is now complete, and Sadam was hanged for his crimes.] It was Saddam's reckless behavior that demanded the world's attention, and it was his refusal to remove the ambiguity that he created that forced the United States and its allies to act. We have no doubt that the world is a better place for the removal of this dangerous and unpredictable tyrant, and we have no doubt that the world is better off if tyrants know that they pursue WMD at their own peril.[21]

As discussed in the introduction to this paper, the actors and methods have changed greatly since the dawn of the nuclear era. The NSS correctly recognizes the changes that have occurred since the Cold War and correctly defines the actors and bounds the planning necessary for future counterproliferation success. The NSS frequently describes potential proliferators in vague terms such as "rogue states," and simplifies the overall objective of counterproliferation as a commitment "to keeping the world's most dangerous weapons out of the hands of the world's most dangerous people."[22] This adaptable approach allows the strategy to be applied to a variety of actors including terrorists and countries with unknown intentions. Although intentionally vague in the description of the actors, the NSS is not vague on those it feels are the largest potential nuclear adversaries. Iran, Iraq, and North Korea are all discussed as potential nuclear threats and their illicit motives are discussed.

In addition to the changes in nuclear actors, the NSS correctly identifies changes in methods required to effectively preclude the proliferation of nuclear weapons. Bilateral diplomacy and military buildup – but not military force – dominated the Cold War nonproliferation efforts. Future efforts include the safeguarding of current fissile

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[21] Ibid., 24.
[22] Ibid., 19.

material, multilateral agreements, and potential interdiction all of which are all discussed as means for counterproliferation.

Following on the overarching strategy provided by the NSS, the National Strategy to Combat WMD (NS CWMD) written in 2002 serves as the nation's highest level strategy specifically focusing on efforts and methods to combat WMD. Similar to the NSS, the NS CWMD is current with recent global issues and reflects a paradigm shift from a posture of passive defense to active offensive tactics in order to prevent the spread of nuclear weapons. The NS CWMD is divided into three pillars aimed at three distinct aspects of WMD.

The first pillar is *counterproliferation to combat WMD use*. In the NS CWMD the counterproliferation pillar strictly states "to combat WMD use" and continues to say that "we know from experience that we cannot always be successful in preventing and containing the proliferation of WMD to hostile states and terrorists."[23] This approach may be more realistic since any absolute declaration, such as preventing the spread of nuclear weapons from anyone to anyone, may be unachievable, but this approach is softer than the commitment to keep the world's most dangerous weapons out of the hands of the world's most dangerous people used frequently in other WMD declarations. The NS CWMD does go on to discuss possession of military and civilian capability to counter the "*threat and use* [emphasis added] of WMD" which is more consistent with subsequent doctrine and the overall premise of both preventing the acquisition of WMD (i.e. the threat) and the use of such WMD.[24] This criticism is not meant to be a condemnation of the premises of the strategy because both the concept of combating the use of WMD and

[23] George W. Bush, *National Strategy to Combat Weapons of Mass Destruction* (Washington, D.C.: The White House, 2002), 2.

[24] Ibid., 2.

combating the threat of WMD are relevant. However, similar to the apology in the NSS for intelligence efforts on Iraqi nuclear capability, the emphasis of the higher objective is lost following a discussion on a lesser. Starting a discussion with "we cannot always be successful in…" followed by "therefore, we must…" opens the door for failure and encourages the skepticism that created the debate on the effectiveness of intelligence efforts such as in Iraq.

The counterproliferation pillar of the NS CWMD is divided into three concepts: interdiction, deterrence, and defense and mitigation. These concepts represent a holistic approach to the overall threat and use of WMD in that they represent the before proliferation (interdiction), after proliferation (deterrence), and after use (defense and mitigation). They also represent a paradigm shift from Cold War thought of deterrence alone including active measures that can be used against a wider base of adversaries rather than a sole opposing superpower. Within the interdiction concept, little insight is given on when interdiction may occur, what it may involve, or who may be involved in the process. In summary all that is stated is that "effective interdiction is critical" and "we must enhance the capabilities of our military, intelligence, technical, and law enforcement communities."[25] Part of this may be intentionally vague; however, this is a chance to bolster already existing international agreements on nuclear weapons. This chapter will discuss later the lack of teeth that some international agreements and agencies have with regard to blatant violations of agreements. The venue presented in the interdiction section of the NS CWMD is an opportunity to discuss multilateral consensus to proliferation problems and a multilateral interdiction effort vice the unilateral effort supposed by the choice of words, *we* and *our*.

[25] Ibid., 2.

The second pillar of the NS CWMD is *strengthened nonproliferation to combat WMD proliferation*. National and DOD doctrine are consistent in their split of counterproliferation and nonproliferation into two separate campaigns although ultimately both campaigns support the same objective which is to defeat the threat and/or use of nuclear weapons against the United States or our allies. The nonproliferation pillar focuses much more heavily on international efforts against the proliferation of nuclear weapons. This pillar correctly recognizes the importance of bilateral and multilateral agreements in pursuit of goals. Examples of these agreements will be discussed later in this chapter, and both bilateral and multilateral agreements will be shown as potentially effective.

The third pillar of the NS CWMD is *consequence management to respond to WMD use*. Part of the premise of this paper, and several other sources of literature, is that nuclear weapons are so destructive in their nature that the priority of effort must be employed in preventing their creation, their proliferation, and ultimately their use. Because of this a discussion on consequence management of nuclear weapons is beyond the scope of this paper. This is not to diminish the role of consequence management or the responsibility of the GCC to be ready and capable to deal with a nuclear attack.

Early in the NS CWMD, a parallel is made between the efforts to prevent proliferation of WMD and GWOT.[26] This parallel is based on the premise that both current counterproliferation doctrine and doctrine for GWOT are fundamentally different from past paradigms and must include new methods. This parallel between counterproliferation and GWOT will be utilized in several aspects of this paper. This is not to suppose that we should declare a global war on proliferation or that the United

[26] Ibid., 1.

States is in the midst of another cold war, but both programs share commonality that originates from their respective strategies down to their operational execution. Since both GWOT and counterproliferation are united efforts including many elements of power against a concept or technique vice a defined adversary, similar processes may be used to accomplish their objectives.

As with any high level strategy, a measure of the success of the NS CWMD is its effect on lateral level strategies, lower level strategies, and most importantly operational level planning. In this regard the overall national level theme on proliferation and control of nuclear weapons is less clear than portrayed in both the NSS and the NS CWMD. For example the NS CWMD discusses a "critical need for cutting-edge technology that can quickly and effectively detect, analyze, facilitate interdiction of, defend against, defeat, and mitigate the consequences of WMD."[27] Despite this declaration for research and development there is a lack of an overall approach or strategy to meet this need. In a February 2005 article the Center for the Study of WMD states:

> While the number of departments and agencies engaged in relevant research and development has grown substantially in recent years (and in particular since September 11), these activities lack strategic direction and coordination. Indeed, at no point in the last decade has there been an effort to assess comprehensively the range of ongoing R&D programs.[28]

The Center continues by pointing out a disparity in long term research and development plans for different cabinet departments creating a less than optimal national level program plan. In an attempt to synthesize counterproliferation efforts the Center recommends a

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[27] Ibid., 6.

[28] Center for the Study of Weapons of Mass Destruction, *Combating WMD Challenges for the Next 10 Years* (Washington, D.C.: National Defense University, February 2005), 33.

formalized consistent 5-year research and development plan across the cabinets or special national funding activity for WMD related research.[29]

Seemingly picking up on the call for additional research requested by the NS CWMD, the 2006 Quadrennial Defense Report (QDR) in its vision for combating WMD proposes to equip the future force with resources and the capability to "detect WMD, including fissile material at stand-off ranges; locate and characterize threats; interdict WMD and related shipments whether on land, at sea, or in the air; sustain operations under WMD attack; and render safe or otherwise eliminate WMD before, during or after conflict."[30] Contrasting to this premise is the summary of progress to date listed in the QDR that lists a $2.1 billion increase in the Chemical Biological Defense Program starting in Fiscal Year 2006 while nowhere mentioning any increase in funding for any nuclear nonproliferation capability.[31] Additionally, while detecting fissile material at stand-off ranges is a laudable task, technology to accomplish this task is far from fruition as chapter 2 will discuss.

As one of the future decisions, the QDR states that the DOD will designate the Defense Threat Reduction Agency (DTRA) as the primary Combat Support Agency for WMD efforts. Although DTRA performs a vital role in the overall national approach to counterproliferation, the concept mentioned in the QDR is hardly breaking new ground. DTRA has existed in other forms since 1947.[32] In its early days as the Defense Nuclear

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[29] Ibid., 34.

[30] Office of the Secretary of Defense, *Quadrennial Defense Review Report* (Washington, D.C.: Office of the Secretary of Defense, February 2006), 51.

[31] Ibid., 52.

[32] The chronology of DTRA can be traced by the Department of Defense Directives (DODD) that codified its existence. The Defense Nuclear Agency (DNA) was created in 1947, and its last implementation guidance, DODD 5105.31, was issued in January 1991. In May 1995, DNA became the Defense Special Weapons Agency (DSWA) under a revision to the same directive. In October 1998,

Agency and later as the Defense Special Weapons Agency, the agency focused primarily our own nuclear weapons stockpile support, nuclear effects research, and to a smaller extent nuclear threat reduction. Under its current mission statement, "the Defense Threat Reduction Agency safeguards America and its allies from Weapons of Mass Destruction (chemical, biological, radiological, nuclear, and high explosives) by providing capabilities to reduce, eliminate, and counter the threat, and mitigate its effects," DTRA is focused on threat reduction.[33] The progress represents an evolutionary process vice the revolutionary process the QDR seems to indicate. In a recent article on the analysis of the QDR a retired army Lieutenant Colonel is much more critical of the QDR's ability to accomplish counterproliferation objectives stating:

> The QDR does not clearly address the matter of *how* the U.S. military will accomplish these missions [deterring attacks, locating, tagging, and tracking WMD, and interdicting WMD], which are not hypothetical problems that might arise at some point in the distant future. They are today's challenges…. the QDR offers little insight as to how the U.S. will address the WMD problem if these challenges cannot (as seems likely) be overcome in the foreseeable future. Nor does the QDR invest much in the way of resources to address this problem, which has been brought to the forefront by North Korea's recent nuclear weapons test.[34]

Another example of the shortcomings in the NS CWMD is its limited integration within DOD strategies. Although the pillars of the NS CWMD can be applied within the challenges and objectives of the NDS and National Military Strategy of the United States of America (NMS), the same themes of counterproliferation and nonproliferation do not echo through these lower strategies. A similar criticism is made by the Center for the Study of WMD in its report on the future challenges for combating WMD.

DSWA became DTRA as part of the Defense Reform Initiative of 1997. DTRA is currently implemented by DODD 51505.62 dated November 28, 2005.

[33] Defense Threat Reduction Agency Mission Statement, Internet, available from http://www.dtra.mil/about/mission/index.cfm, accessed on 20 November 2006.

[34] Andrew Krepinevich Jr., Lieutenant Colonel. USA-Ret, "Mixed Review (Part Two of Two)," *Military Officer Magazine*, December 2006, Internet, available from http://www.moaa.org/pubs_mom_061201_Review.htm, accessed 5 December 2006.

> Combating WMD needs to be effectively integrated within the larger DOD planning framework. At a time of great ferment in defense planning, the Defense Department needs to examine systematically how combating WMD fits into emerging priorities for and approaches to defense strategy and plans. Such an examination could well have important implications for both the substance and organization of combating-WMD activities. How well do these activities align with what appear to be important elements of emerging defense strategy?[35]

The article continues with a series of questions on the entanglement of counterproliferation with DOD strategy and initiatives including questions with regard to goals, plans and resources, capabilities integration, and the GWOT.

These are all valid questions and until February 2006, there was no DOD guidance that serves to untangle the answers from the questions. Seemingly answering many of the issues noted by the Center for the Study of WMD, the National Military Strategy to Combat Weapons of Mass Destruction (NMS CWMD) fills the strategic gap that existed between national strategic policy and military doctrine. The relation of national strategies to military strategies, plans, and operations will be further discussed in the analysis of United States military doctrine.

United States Military Doctrine

The role of United States military doctrine is to support national strategic objectives as defined in the NSS and bridge the gap between strategic planning and operational level success. This requirement is formally delineated in Department of Defense Directive 5100.1, Functions of the Department of Defense and Its Major Components, which defines one of the functions of the DOD as to "uphold and advance the national policies and interests of the United States."[36] This directive also requires the

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[35] Center for the Study of Weapons of Mass Destruction, 33.

[36] Office of the Secretary of Defense, *Functions of the Department of Defense and Its Major Components*, Department of Defense Directive 5100.1 (Washington, D.C.: Office of the Secretary of Defense, 1 August 2002), 4.

Chairman of the Joint Chiefs of Staff to prepare "a military strategy to support national objectives within policy and resource-level guidance provided by the Secretary of Defense. Such strategy shall include broad military options prepared by the Chairman with the advice of the JCS and the Commanders of the Combatant Commands."[37] In his foreword to the 2005 NDS, the Secretary of Defense discusses how the NDS supports the tasks outlined by the President in the NSS and how it outlines the DOD approach to current and future challenges.[38] Similarly the introduction to 2004 NMS states "the National Military Strategy supports the aims of the National Security Strategy and implements the 2004 National Defense Strategy. It describes the Armed Forces' plan to achieve military objectives in the near term and provides the vision for ensuring they remain decisive in the future."[39]

Reviewing the NDS and NMS it is easy to see how they are interwoven to formulate a top down strategic approach. The NDS lists four strategic objectives and the NMS establishes three supporting military objectives. The NDS discusses four mature and emerging challenges that threaten national interests. The NMS discusses three key aspects of the security environment that drive the development of concepts and capabilities to meet the challenges outlined in the NDS. Lastly, the NDS lists several desired capabilities and attributes required to meet strategic objectives. The NMS describes the functions, capabilities, and composition of a Joint Force that will have the desired capabilities. The exact specifics of the previous examples are less important than the overall integration of the high level military doctrine with regard to strategic

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[37] Ibid., 5.

[38] Office of the Secretary of Defense, *The National Defense Strategy of the United States of America*, iii.

[39] Chairman of the Joint Chiefs of Staff, *National Military Strategy of the United States of America* (Washington, D.C.: Joint Chiefs of Staff, 2004), 1.

direction. It is clear to see how both the NDS and the NMS support the broad nine essential tasks of the NSS; however, the path for a specific goal down the strategic tier can be more challenging to follow using the NDS and NMS alone.

For example, fighting the GWOT is a major theme in national strategic doctrine and a strategic objective defined in the NSS. Following the theme of GWOT down the strategic pyramid, the National Strategy for Combating Terrorism (NS CT) expands on the foundation laid in the NSS by defining the terrorists threats faced today, discussing the strategic intent, and delineating the goals and objectives to win the GWOT.[40] The goals and objectives stated in the NS CT are directly translated into strategic objectives and means to accomplish these objectives in the NDS and supporting military objectives in the NMS. As an example, the goal to "deny sponsorship, support, and sanctuary to terrorists" and its supporting objective to "strengthen and sustain the international effort to fight terrorism" in the NS CT are directly supported in the NDS objective to "strengthen alliances and partnerships", its associated means to "assure allies and friends", and its element of "countering ideological support for terrorism." This same goal is supported by the goal of "creating a global anti-terrorism environment" in the NMS. Traveling further down the GWOT strategic tier, the National Military Strategic Plan for the War on Terrorism (NMSP WOT) clearly defines the bridge between strategic planning and operational success in prosecuting the GWOT. The opening statement of the NMSP WOT demonstrates this by stating:

> The NMSP-WOT outlines the Department's strategic planning and provides strategic guidance for military activities and operations in the GWOT. The document guides the planning and actions of the Combatant Commands, the Military Departments, Combat Support Agencies and Field Support Activities of

[40] George W. Bush, *National Strategy for Combating Terrorism* (Washington, D.C.: The White House, February 2003), 1-28.

> the United States to protect and defend the homeland, attack terrorists and their capacity to operate effectively at home and abroad, and support mainstream efforts to reject violent extremism.[41]

The purpose of discussing the pyramid strategy for the GWOT is to demonstrate the disparity that exists between the GWOT approach and the national and military strategic approach to counterproliferation. As previously mentioned the NSS and NS CWMD clearly define national objectives and pillars of national strategy. Unlike the GWOT strategic approach, these objectives are interspersed within the NDS and NMS only in their support of other objectives such as defending the United States from direct attack or preventing conflict or surprise attack. Additionally the pillars of opposing WMD are never mentioned, and the terms counterproliferation and nonproliferation, which are paramount in the NS CWMD, are infrequently mentioned and not in the same context.

Dated less than two weeks after the NS CWMD, the NMS CWMD accomplishes for counterproliferation what the NMSP WOT accomplishes for the GWOT. Unlike the NDS and NMS, the NMS CWMD builds from the pillars mentioned in the NS CWMD, expands on the objectives of the NSS, and builds the strategic military framework using an ends, ways, and means approach. Recognizing that the mission of counterproliferation is a task in itself rather than just a portion of preventing conflict and surprise attack as the NMS states, the NMS CWMD discusses strategic enablers and eight distinct military mission areas to support combating WMD. The strategic enablers "are crosscutting capabilities that facilitate execution of the military strategy" and "enhance the

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[41] Joint Chiefs of Staff, *National Military Strategic Plan for the War on Terrorism* (Washington, D.C.: U.S. Joint Chiefs of Staff, 1 February 2006), 3.

effectiveness and integration of military combating WMD mission capabilities."[42] The eight mission areas of the NMS CWMD support the overall military mission to "dissuade, deter, and defeat those who seek to harm the United States, its allies, and partners through WMD use or threat of use" and "is in direct support of the three pillars of the National Strategy for Combating WMD."[43]

Lastly, the final level of the counterproliferation strategic pyramid is Joint Publication (JP) 3-40, *Joint Doctrine for Combating Weapons of Mass Destruction*. The purpose of JP 3-40 is to:

> Set forth doctrine to govern the joint activities and performance of the Armed Forces of the United States in joint operations and provide the doctrinal basis for interagency coordination and US military involvement in multinational operations. It provides military guidance for the exercise of authority by combatant commanders and other joint force commanders and prescribes doctrine for joint operations and training. It provides military guidance for use by the Armed Forces in preparing their appropriate plans.[44]

To achieve this purpose JP 3-40 makes frequent reference back to the NS CWMD and builds on the pillars mentioned therein. Written before the NMS CWMD, JP 3-40 uses the same founding pillars but describes the tasks to achieve the overall strategic objectives only slightly differently. JP 3-40 and the NMS CWMD share the same mission objectives of conducting offensive operations, active defense, passive defense, consequence management, and security cooperation.[45] Although it can be seen that JP 3-40 and the NMS CWMD were written at different times and perhaps out of the correct

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[42] Joint Chiefs of Staff, *National Military Strategy to Combat Weapons of Mass Destruction* (Washington, D.C.: U.S. Joint Chiefs of Staff, 13 February 2006), 6.

[43] Ibid., 7.

[44] Joint Chiefs of Staff, *Joint Doctrine for Combating Weapons of Mass Destruction*, Joint Publication 3-40 (Washington, D.C.: U.S. Joint Chiefs of Staff, 8 July 2004), i.

[45] In JP 3-40 these are discussed as "tasks" under the three different pillars of nonproliferation, counterproliferation, and consequence management. In the NMS CWMD, these are referred to "mission areas." Additionally, JP 3-40 goes into more detail on the mission area/task of consequence management and combines the mission areas of elimination and interdiction into the task of conducting offensive operations.

pyramidal order, their respective tasks, mission areas, and overall focus are sufficiently coordinated to support planning and effectively bridge the gap between national strategic planning and regional operational planning. Equipped with the right resources and empowered by a comprehensive yet compliant counterproliferation strategy, individual GCCs can achieve national objectives in widely different regional areas.

A potential misconception with regard to the military's responsibility for counterproliferation is that United States Strategic Command (USSTRATCOM) as the lead DOD agent for combating WMD is solely responsible for counterproliferation objectives. While USSTRATCOM is defined as the "lead combatant commander for integrating and *synchronizing* [emphasis added] DOD CbtWMD [combating weapons of mass destruction] efforts including planning, integrating, and *synchronizing* [emphasis added] DOD CbtWMD efforts with the efforts of other US government agencies, as directed", individual GCCs are also responsible for "providing the single Department of Defense point of contact within the AOR, excluding the United States, for combating weapons of mass destruction (CbtWMD) activities and for execution of CbtWMD missions."[46] While this approach may appear to present a conflict between responsibilities between GCCs and functional combatant commands (USSTRATCOM in the counterproliferation example), in reality it creates an opportunity for synergy between commands and agencies. This is achieved by the selection of the word synchronizing in the UCP. The word synchronization is defined as "the arrangement of military actions in time, space, and purpose to produce maximum relative combat power at a decisive place

[46] Bush, *Unified Command Plan*, 5 and 14.

and time."[47] This authority grants USSTRATCOM the ability to direct overall global counterproliferation initiatives while allowing GCCs to combat proliferation within their AOR. A model for success for this approach already exists in the way the United States combats terrorism. Similar to USSTRATCOM and counterproliferation of WMD, USSOCOM serves as the "lead combatant commander for planning, synchronizing, and as directed, executing global operations against terrorist networks in coordination with other combat commanders" while also allowing GCCs to combat terrorism within their AOR.[48]

International Agreements

Immediately following the display of the destructive capabilities of nuclear weapons in the final phases of World War II, nations began to discuss nuclear weapon control in a variety of plans, treaties, and initiatives.[49] International agreements are critical to the successful completion of United States strategic goals and are the primary method to employ diplomacy as a means of national power. International agreements have also evolved with time and continue to expand both in the number of countries involved and the degree of involvement by all participants. The multinational coalition of countries involved in nuclear weapons control serves as one of the principal strengths behind international agreements, but also servers as one of its most exploited weaknesses.

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[47] Joint Chiefs of Staff, *Department of Defense Dictionary of Military and Associated Terms*, Joint Publication 1-02 (Washington, D.C.: U.S. Joint Chiefs of Staff, 17 September 2006), 522.

[48] Bush, *Unified Command Plan*, 11. The relative significance of the word "synchronizing" within the context of the UCP, and its application for USSOCOM and combating terrorism was formulated during a seminar discussion with senior military officials from USSOCOM. The application of this model as a parallel for counterproliferation and USSTRATCOM is done by the author of this paper and was subsequently supported during discussions on WMD planning with military officials at US Central Command.

[49] There is a wide variety of literature on nuclear weapons and arms control agreements, however, *Best of Intentions: America's Campaign Against Strategic Weapons Proliferation*, by Henry D. Sokolksi gives a very good description of the evolution of America's nonproliferation and counterproliferation initiatives. A chronological listing is given on pages 8-9.

Because of the extent of countries involved many agreements suffer from oversimplification and lack of enforceable standards. These situations create "loopholes" that create uncertainties and opportunities for rogue regimes.

Control of nuclear weapons is best discussed in terms of establishing control regimes. Kessler defines a control regime as "a fabric of international legal requirements reflecting and/or establishing accepted norms of national behavior, and mechanisms to implement or operationalize these requirements."[50] A nuclear control regime consists of an international agreement on the acquisition and use of nuclear material, a mandate on the controls regarding existing nuclear material, a process for verification, and a mechanism for enforcement. Current and past nonproliferation agreements have approached these four elements in different manners with varying degrees of success.

The early stages of nonproliferation initiatives were dominated by attempts to mandate international custody of nuclear weapons and nuclear material. Early attempts at nuclear weapons control, such as the Acheson-Lilienthal Report and the Baruch Plan, were based on the theory that "the aggressor will always win" and their was no effective means of deterrence.

> As long as nuclear weapons gave such a clear offensive advantage to their possessors, inspections, and prohibitions against their possible production from civilian nuclear facilities would only encourage countries to cheat. The only way around this problem was to prohibit nations from owning *anything* that might help them make a bomb…. Under the Acheson-Lilienthal Report and the Baruch Plan, then, all potentially dangerous nuclear activities… were to be owned and conducted by the proposed International Atomic Energy Authority alone.[51]

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[50] J. Christian Kessler, *Verifying Nonproliferation Treaties: Obligation, Process, and Sovereignty* (Washington, D.C.: National Defense University Press, 1995), 9.

[51] Henry D. Sokolksi, *Best of Intentions: America's Campaign Against Strategic Weapons Proliferation* (Westport, CT: Praeger Publishers, 2001), 15.

What the Baruch Plan failed to fully appreciate was the Soviet Union's unwillingness to surrender what they believed to be an offensive weapon of unequivocal value. Because of most countries unwillingness to subjugate to international control – a concept that continues with many countries today and will be discussed later in this paper – the early attempts to regulate nuclear material while overall positive in nature did not prevent the proliferation of nuclear weapons as can be demonstrated by the higher number of nuclear countries that exist today.

Realizing that the "nuclear genie" is out of the bottle and can not be caged, most current nonproliferation initiatives are deterrence control regimes that dissuade countries from pursuing nuclear weapons and prevent proliferation from nuclear capable countries.[52] What the Baruch Plan did correctly ascertain was the inherent problem associated with this alternate control regime which is the ability for countries to cheat. The premier deterrence control regime and today's most preeminent nonproliferation initiative is the NPT. However, the NPT's weakness is its inability to handle countries that cheat as the proponents of the Baruch plan had feared.

The NPT was signed in 1968, entered into force in March 1970, and after twenty five years, was extended indefinitely in 1995.[53] The NPT is not an absolute control regime in that it splits state parties into nuclear-weapon states ("the haves") and non-nuclear-weapon states ("the have-nots.") Although divided into eleven articles, the

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[52] Referring to *Caging the Nuclear Genie*, Turner's model of strategic escrow is one of the few contemporary theories that proposes an international custody control regime rather than a deterrence control regime.

[53] There are many sources of the text and fundamentals of the NPT; however, *Technology and the Proliferation of Nuclear Weapons*, by Richard Kokoksi (New York, N.Y.: Oxford University Press, 1995) gives a consolidated summary of major aspects of the NPT. This reference contains appendices for the entire text of the NPT, summary of provisions and implementation of the NPT, state parties to the NPT as of 1995, and all associated International Atomic Energy Agency documents for the NPT. The NPT presented in Appendix A of this reference is the version used for reference in this paper.

principles of the NPT are relatively simple. "The haves" will not share with "the have-nots," "the have-nots" will not attempt to become "the haves," there will be some control for "the haves," and anyone can pursue nuclear energy. The reasons behind the creation of the NPT are more challenging and are what substantially differentiate it from its predecessors such as the Baruch Plan and Eisenhower's Atoms for Peace. The Baruch Plan and other early initiatives were organized to reduce the threat posed by the superpower arsenals. The NPT is directed against the escalation of conflict by a third party by accident or malicious intent. This motive behind the NPT is summarized by the British representative to the General Assembly during NPT deliberations:

> We are concerned not only that new possessors of nuclear weapons may employ them against each other, or against a non-nuclear state; we see an even greater danger in the possibility that the use of nuclear weapons by a third country could precipitate a war which would end in a nuclear exchange between the two so-called Superpowers. In our view, and I would think in that of the Soviet Union as well, each additional nuclear power increases the possibility of nuclear war, by design, by miscalculation, or even by accident.[54]

The comparison of these two control regimes shows the evolution of nonproliferation international policy in the last sixty years.

The first weakness of the NPT is what the NSS refers to as the "loophole." Article IV of the NPT states "nothing in this Treaty shall be interpreted as affecting the *inalienable right* [emphasis added] of all the Parties to the Treaty to develop research, production and use of nuclear energy for *peaceful purposes* [emphasis added] without discrimination and in conformity with Articles I and II of this Treaty."[55] The difference

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[54] "Statement by the British Representative to the First Committee of the General Assembly, December 14, 1967," in U.S. Arms Control, *Documents on Disarmament*, 1967, 458, quoted in Henry D. Sokolski, *Best of Intentions*, 52.

[55] Treaty on the Non-Proliferation of Nuclear Weapons, 5 March 1970, quoted in Richard Kokoski, *Technology and the Proliferation of Nuclear Weapons* (New York, NY: Oxford University Press, 1995), Appendix A, 256.

between nuclear energy and nuclear weapons will be discussed in chapter 2 of this paper, and although it is certainly possible to have nuclear energy without having nuclear weapons, the two are inextricably linked. Looking closely at the specific words used in the NPT, it is easy to see how the "loophole" is created. First, whether by coincidence or intent, the term "inalienable right" can not be spoken or read without a reference thought to the "unalienable rights" mentioned in the Declaration of Independence. This is not meant to compare the NPT to the Declaration of Independence, but to compare the right to pursue nuclear energy to the inherent rights of all humans, whether intentionally or not, is absurd, and only strengthens the argument of the would be proliferator. This entire argument would be bypassed by absence of the word "inalienable" which would serve to de-emphasize the right without removing it. Additionally while a country may have the right to pursue nuclear energy, it may not be in the best interest of anyone including the country in question to do so. The NPT encourages the support of nuclear energy as much as it condemns the acquisition of nuclear weapon which is inherently contrary to effective counterproliferation.

Secondly, the NPT uses the term "peaceful purposes" but makes no effort to define what degree of nuclear research or production would be considered peaceful nor does it attempt to state what would be done if non-peaceful purposes were discovered or suspected. As previously discussed, one of the objectives of the NSS is to close this loophole, but no alternative is specifically suggested. What the NPT does do is require each party country to prepare a safeguard agreement with the IAEA within eighteen months of ratifying or acceding to the NPT that would ideally prevent an illicit nuclear weapons program. This process is equally flawed in that there is no real ramification for

countries that fail to execute an IAEA agreement within the allotted time. Additionally even if a country has an IAEA agreement and if the IAEA finds that state in noncompliance, the IAEA has no real authority and can only refer the occurrence to the United Nations Security Council and the NPT parties. Not surprisingly this has occurred on several occasions with countries such as Iraq, North Korea, and Romania.[56]

Article IV of the NPT continues to state that all parties will undertake to facilitate peaceful use of nuclear power. The lure of nuclear energy to promote nuclear weapons control is not new to the NPT. The Baruch Plan and Atoms for Peace both had at their centers the reward of nuclear energy for the sacrifice of international custody of nuclear material. The NPT presents nuclear energy as a shield for illicit nuclear weapons programs vice a reward for compliance, and thus negates any multinational benefit for nuclear energy.

What this discussion shows is that although a positive initiative, the NPT and its relation with the IAEA have weaknesses and no real means for enforcing nonproliferation. Where the NPT can succeed on its own is helping to shape the nuclear norm of an accommodating country. In his description of the three models, Sagan describes the NPT as an attempt to change the norm of a country from a "notion of joining the nuclear club" to "joining the club of nations adhering to international agreements."[57] Sagan then points out the Ukraine's decision to peacefully give up its nuclear weapons based largely on the changes in perceptions with regard to legitimacy and prestige. In the case of Ukraine, the NPT alone may have been sufficient, but in other scenarios such as Iran and North Korea – both of whom are parties to the NPT – the

[56] Kessler, 44.
[57] Sagan, 41.

outcome using the NPT alone is likely to be quite different. The NPT and other international agreements have value and are a viable means for the United States to use it diplomatic power, but they are also only one piece of the puzzle. An active element with the ability to identify regional issues, operate locally, and implement multiple elements of national power has the potential to be much more effective than universal national or international level policies.

Announced by President Bush in May 2003, the Proliferation Security Initiative (PSI) is major international initiative aimed at preventing the spread of nuclear weapons as well as other WMD. The PSI was founded by ten countries in 2003 but that number has quickly expanded to over seventy countries as of September 2006.[58] Neither an international control regime nor a deterrence control regime, the PSI is a control regime based on international agreement on interdicting principles. In fact the core members of the PSI were specifically careful to emphasize that the PSI is an activity not an organization. Because of this there is no formal organization, no binding legal document, nor any founding charter. Instead the PSI is based on the September 2003 "Statement of Interdiction Principles."[59]

The goal of the PSI is to create an environment that is more dynamic, creative, and proactive to preventing proliferation to or from nations or non-state actors. The PSI consists of four interdiction principles which can be summarized as: (1) effective measures to *interdict the transfer or transport* of WMD, (2) a streamlined process for

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[58] Some references differ slightly on the number of initial "founding members" of the PSI. The number ten used here comes from a Congressional Research Service report by Sharon Squassoni, Specialist in National Defense Foreign Affaris, Defense, and Trade Division, dated 14 September 2006.

[59] Jofi Joseph, "*The Proliferation Security Initiative: Can Interdiction Stop Proliferation?*" June 2004, Internet, available from http://www.armscontrol.org/act/2004_06/Joseph.asp, accessed 5 December 2006.

intelligence sharing on suspected proliferation activity, (3) increased emphasis to *strengthen national laws* to accomplish these objectives, and (4) specific actions to *control shipping* to support interdiction efforts. By creating an environment that supports the goals of many countries while not binding them to an international control regime, the PSI creates opportunities to work with countries and in areas that might otherwise not be available. This includes working in joint international military exercises such as the Turkish hosted exercise, Anatolian Sun, which is an air-land-sea exercise involving over forty countries in the Middle East working cooperatively on counterproliferation methods.

The combination of United States national policy, United States military doctrine, and international agreements build the framework for operational level forces to accomplish national objectives. Although not fully integrated into the NDS, NMS, and other military doctrine, the NMS CWMD builds from the NSS and the NS CWMD and defines the ends, way, and means necessary for operational success. Following an approach similar to the GWOT, the structure of the UCP establishes a lead combatant commander for counterproliferation while not removing the GCC's responsibility within his AOR. This provides flexibility and adaptability for differences in the nuclear environment throughout the world.

International agreements serve to compliment the objectives of national strategies. The NPT attempts to affect countries using Sagan's norms model by creating an environment where there is a tendency to renounce nuclear weapons vice embrace them. This has proven successful in directing nuclear trends in countries that were at the nuclear crossroads or even reversing efforts in some countries, such as Libya and South Africa,

who where already on the path towards nuclear weapons. In military terms, this can be compared to shaping. While effective at shaping the environment prior to proliferation, international agreements are insufficient at reversing proliferation once it has occurred. The NPT and efforts of the IAEA are examples of the lack of teeth that international agreements or organizations have. Even the PSI, which is founded on principles of interdiction, lacks international authority because the PSI's principle of controlling shipping is limited to internal and territorial waters not international waters.

CHAPTER 2 – USE OF TECHNOLOGY IN COUNTERPROLIFERATION

> **I feel impelled to speak today in a language that in a sense is new--one which I, who have spent so much of my life in the military profession, would have preferred never to use. That new language is the language of atomic warfare. The atomic age has moved forward at such a pace that every citizen of the world should have some comprehension, at least in comparative terms, of the extent of this development of the utmost significance to every one of us. Clearly, if the people of the world are to conduct an intelligent search for peace, they must be armed with the significant facts of today's existence.[60]**
>
> **Dwight D. Eisenhower**

In his revolutionary speech before the United Nations, President Eisenhower was introducing his proposal to regulate the spread of nuclear weapons by controlling nuclear material. More importantly he was introducing the concepts of nuclear material control and beginning to educate the world on the presence and power of nuclear technology. Now over fifty years later an understanding of the technology behind nuclear weapons including their basic physics, basic material composition, and potential for detection exploitation is essential if the United States and other international organizations are to effectively prevent the proliferation of nuclear weapons. In his book on technology and proliferation of nuclear weapons, Kokoski describes the necessity of understanding nuclear technology stating:

> Revelations in the wake of the Persian Gulf War about the technological capabilities of Iraq have made amply clear that it is necessary to be aware of all the potential methods by which a nuclear weapon option may be pursued. Every possible effort should be taken to avoid another 'surprise' such as that experienced by the international community at the extent of the development of the Iraqi nuclear weapon programme. The revelations have spurred and will continue to influence political decisions to ensure the application of controls on the key technologies that have been identified as important for nuclear weapon development. They might also spur fresh attempts to identify new specific control measures or information-

[60] Dwight D. Eisenhower, *Atoms for Peace*, address before the General Assembly of the United Nations, New York, 8 December 1953, Internet, available from http://www.eisenhower.archives.gov/atoms.htm, accessed on 20 November 2006.

> gathering capabilities which may prove useful and necessary to prevent such occurrences in the future.[61]

Although it was a misunderstanding of technology that lead to the "surprise" in the assessment of Iraq's nuclear program as Kokoski alludes, an understanding of the basics of nuclear technology as previously described applies to more than just the situation in Iraq.[62] An understanding of nuclear technology allows a strategist to "manage the uncertainty, simplify the complexity, and resolve the ambiguity" associated with counterproliferation.[63] It is mistakes in understanding of nuclear technology that lead to the "loophole" in the NPT. The latitude created by the "loophole" in the NPT gives rogue countries and dictators the ability to use bluff, denial, and deception with regard to their nuclear aspirations. As previously discussed one of the objectives of the NSS is to solve this problem. This approach coupled with an understanding of the important aspects of nuclear technology gives the United States and international agencies the opportunity to remove the false veil that rogue regimes use to hide their nuclear intentions.

This chapter will introduce the basic physics and material composition of nuclear weapons.[64] The intent of this portion is to determine a most likely course of action that a

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[61] Richard Kokoski, *Technology and Proliferation of Nuclear Weapons*, (New York, NY: Oxford University Press, 1995), 2.

[62] The "surprise" that Kokoski mentions refers to the IAEA's incorrect assessment of Iraq's uranium enrichment program. This will be discussed in more detail in chapter 3 of this paper. Essentially the IAEA did not give credence to technologies that were considered obsolete by the United States and other nuclear power countries; however, Iraq was using these technologies to develop significant indigenous capabilities that were essentially unnoticed by the IAEA. This "surprise" is discussed in detail in chapter 4, The Iraqi Nuclear Programme, of Kokoski's *Technolgoy and the Proliferation of Nuclear Weapons.*

[63] Yarger, 18.

[64] The intent of this chapter is not to give a detailed description of nuclear reactions or the construction of nuclear weapons. Because of this some technical aspects such as specific isotopes or mass requirements will be avoided for simplicity. The intent is to give a basic understanding of nuclear physics to understand the differences and similarities between peaceful nuclear energy and nuclear weapons. Additionally all of the material in this chapter is readily available in open source documents. Several of the

nuclear aspirant country would pursue in its efforts to manufacture a nuclear weapon. This process will point out key decisive points where if acted upon a country's nuclear proliferation can be stopped. This chapter will also discuss the use of technology for nuclear weapon detection including a discussion of the inherent technological limitations of detection and the inherent imperfections of any verification system. In the overall scheme of this paper, this chapter serves to arm the GCC with the basic knowledge necessary to understand nuclear technology within his AOR. This knowledge will help the GCC make logical and realistic assumptions with regard to countries nuclear capabilities and intentions.

Nuclear Power Versus Nuclear Weapons

At their core the process for nuclear power energy production and the process for the destruction created by nuclear weapons are very similar and are governed by the same fundamental physics. Ford and Schuller highlight this similarity stating, "It should be stressed that any source of Pu-239 or U-235 can eventually be converted into a functional weapon. If an adversary has the time, resources, and inclination, even commercial power reactor fuel can be a source of material for making weapons."[65] However, the material used in each instance, specifically the enrichment of the fissionable element, is not consistent, and it is the phrase "can eventually be converted" that allows for discrimination and therefore interdiction between nuclear energy and nuclear weapons.

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sources used in this paper such as Center for Counterproliferation Research, *U.S. Nuclear Policy in the 21st Century: A Fresh Look at National Strategy and Requirement*, Ford and Schuller, *Controlling Threats to Nuclear Security*, and Kokoski, *Technology and the Proliferation of Nuclear Weapons*, give succinct descriptions of nuclear processes.

[65] James L. Ford and C. Richard Schuller, *Controlling Threats to Nuclear Security: A Holistic Model* (Washington, D.C.: National Defense University, 1997), 84.

A nuclear reaction is an interaction between two nuclear particles. The predominant reactions for nuclear energy and nuclear weapons are *fission* and *fusion.* Fission is the splitting of a heavy nucleus into two or more lighter particles while fusion is the combination of two or more light particles into a single heavier particle. The predominant fusion reaction is the combination of isotopes of hydrogen into a single atom while the predominant fission reaction is the splitting of heavy elements such as plutonium and uranium into multiple smaller atoms. In both reactions the product(s) of the reaction weigh less than the reactant(s). This difference in weight, called mass defect, is directly related to energy created by the reaction using Einstein's famous equation $E=MC^2$. The energy released in both reactions is predominantly in the form of kinetic energy of the products and emitted gamma rays. This energy can also be expressed as the change in nuclear binding energy, which is a measure of the energy required to separate a nucleus into its component parts. The change in binding energy is higher per unit mass for fusion than for fission meaning fusion reactions produce larger amounts of energy per unit mass. This aspect makes fusion based weapons (hydrogen bombs) more appealing than fission based weapons (atom bombs) due to the potential for a higher release of energy. Currently there is no capability for fusion power production due largely to the extreme temperature requirements to sustain the fusion reaction. For this reason fission is the only currently available means for nuclear energy production.

Although a fusion based nuclear weapon would be preferred based on its higher destructive capability, the natural technological progression for a nuclear aspirant begins with fission based weapons. Additionally fusion based weapons have a fission primary trigger or use fusion to intensify the fission reaction. Because of these reasons the most

likely course of action for nuclear aspirant countries to pursue is the manufacture of fission based nuclear weapons.[66] As stated previously the predominant elements used for fission are isotopes of plutonium or uranium although several other heavy elements are capable of fission. Although both elements are rare, fissionable plutonium is not naturally occurring and is produced by neutron irradiation of uranium, manufactured in breeder reactors, or extracted from spent nuclear fuel. Additionally plutonium is toxic, can ignite at room temperature, and is in general far more difficult to handle than uranium. Although uranium, plutonium, and other heavy materials can be used in nuclear energy plants, uranium is more commonly used. Because uranium is relatively easier to obtain, easier to handle, and can be intended for use both in nuclear weapons and nuclear energy plants, nuclear aspiring countries are more likely to pursue uranium for nuclear weapons.

Uranium in its naturally occurring composition is not suitable for either nuclear weapons or power production in a light water reactor and therefore must be enriched to be useful for either application.[67] Enrichment is the process of selectively increasing specific isotopic concentrations within a material. For uranium to be useful for nuclear weapons, uranium must be enriched to create highly enriched uranium (HEU). To make HEU, natural uranium is enriched by one of several different methods to increase the Uranium-235 concentration to greater than 20%. The required enrichment is dependant

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[66] As mentioned in the introduction to this paper, this paper focuses on a country's capability to indigenously produce nuclear weapons. Because of this, the selection of the most likely course of action does not include theft of nuclear weapons. In *Controlling Threats to Nuclear Security*, Ford and Schuller discuss the nuclear theft process and a systems approach for prevention for nuclear theft.

[67] The vast majority of commercial energy reactors are light water reactors and require enriched uranium (LEU specifically) for operation. There are however some reactors such as CANDU heavy water reactors or graphite moderated reactors that are designed to use naturally occurring uranium. These reactors are less prevalent and also do not contradict the premise of this paper which is there are no viable necessities for HEU other than nuclear weapons and therefore are neglected in this analysis.

upon the application for which the uranium is intended. For most commercial light water reactors an enrichment of only 3-4% is required, and this is considered low enriched uranium (LEU). Contrastingly, uranium must be enriched to 90% or greater for nuclear weapon purposes in order for high yield weapons.[68] While the 90% enrichment requirement for nuclear weapons is accepted by most sources, it is critical to realize that this requirement is only to create high yield weapons. It is possible to make nuclear weapons with less than 90% enrichment although the process is more difficult, requires a larger and heavier design, is less suitable for a multiple warhead system, and can lead to a lower yield.[69] However this lower yield weapon may be completely satisfactory for a country that currently has no nuclear capability. Because of this and the fact that commercial nuclear energy plants require only 3-4% enrichment (i.e. LEU), it is completely logical and realistic to assume that the only viable rationale for HEU production is to support a nuclear weapons program.[70]

It is this drastic difference in enrichment requirements that differentiate uranium use for peaceful nuclear energy purposes and deceitful nuclear weapons programs. This difference becomes the new "bright line." By understanding the enrichment facilities of questionable countries, international agencies and combatant commanders can better understand the true motives behind nuclear programs. Early attempts at nuclear material

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[68] Kokoski, 12. The required enrichment percentages for uranium in different applications are available in multiple sources. The percentages Kokoski lists are consistent with widely accepted standards.

[69] The exact minimum enrichment percentage to achieve a weapon capable of nuclear yield is beyond the scope of this paper; however, this value is above the 20% threshold of HEU meaning that at a minimum HEU is required for nuclear yield. Understanding this difference is critical to understand the use of LEU for nuclear energy and HEU for nuclear weapons.

[70] Nuclear fuel used in both submarine and carrier naval nuclear propulsion plants are exceptions to this criterion. However, due the very small number of countries pursuing naval nuclear propulsion capability and the unlikely nature of a clandestine naval nuclear propulsion program, HEU use for naval nuclear propulsion fuel is neglected for this paper. Naval nuclear propulsion plants use HEU for operational reasons to maintain maximum operating time without refueling. Although commercial plants could use HEU for fuel, the expense of manufacturing HEU greatly outweighs the cost to periodically refuel a LEU commercial energy plant. For this reason, commercial energy plants do not use HEU.

control such as the Baruch Plan and Atoms for Peace were devised to prevent this enrichment question by creating an international control regime. The premise was that an international agency would conduct all uranium enrichment and make available only appropriate LEU for commercial nuclear energy programs. If this control regime were ever successful it would conceivably dissuade a country from pursuing enrichment programs. However, none of these programs have proven successful and several countries have and are pursuing uranium enrichment programs that raise valid questions about their intentions.

There are several means to achieve uranium enrichment. These include gaseous diffusion, electromagnetic isotope separation, gas centrifuge separation, chemical separation, and laser enrichment.[71] Although there are a variety of ways to enrich uranium, each has its own advantages, disadvantages, and likeliness of pursuit by different countries. Current nuclear countries are researching the more technologically advanced methods such as chemical and laser enrichment because these methods can achieve enrichment in fewer stages and with substantially less power consumption.[72] Due to the advanced nature of these programs, it is unlikely that an emerging nuclear country could achieve these methods without substantial assistance from a current nuclear power country. Gaseous diffusion and gas centrifuge separation are the prevailing methods of enriching uranium today. Gas diffusion was one of the processes used in the Manhattan Project, and is well proven and documented in open sources. However, gaseous diffusion plants are not well suited for clandestine development since

[71] Kokoski, 12-63. In his chapter on uranium enrichment technologies, Kokoski gives a succinct summary of the major methods for uranium enrichment. The intent of this paper is not to review all of the major methods, but rather to point out that there are a variety of means to the nuclear ends.

[72] Ibid., 64.

they consume large amounts of energy, and their large footprint make them easily detectable by satellites or other intelligence sources. In contrast, gas centrifuge separation has a smaller infrastructure requirement and is currently being utilized by the French and Iranians.

In the strategic approach to counterproliferation, understanding the enrichment capabilities of a country becomes the decisive point in an effective counterproliferation initiative. By understanding the method a country uses to enrich uranium and the capabilities of that method, the GCC can determine if a country is pursuing LEU or HEU, and therefore, can make logical and realistic assumptions on whether the intent is for nuclear energy or nuclear weapons. An example of where this process failed was revealed in the aftermath of Desert Storm where IAEA inspectors discovered that Iraq weapon designers had been pursuing uranium enrichment using calutrons, a form of electromagnetic separation, for approximately ten years.[73] This process is suspected to have begun as early as 1981 following the Israeli bombing of the Osirak reactor. Pursuing calutron separators, which became known as Baghdadtrons, Iraq was able to divide its enrichment resources into as many as forty separate units making them less conspicuous and less vulnerable. Although the use of calutrons was not the most current technological method, it was even more successful because intelligence analysts monitoring Iraq during this period discounted the use of calutrons because this method was viewed as antiquated and inefficient. Instead analysts focused on beliefs that Iraq

[73] Stephen Peter Rosen, "Nuclear Proliferation and Alliance Relations", in *The Coming Crisis*, edited by Victor A. Utgoff (Cambridge, MA: MIT Press, 2000), 135, and Ford and Schuller, 79. Both Rosen and Ford and Schuller discuss the Iraq nuclear program during this period with Rosen discussing Iraq's program between 1981 and the early 1990s and Ford and Schuller discussing the IAEA's finding post Desert Storm. The discussion in this paper is combined from both sources.

would build large gaseous diffusion plants. This oversight allowed the Iraq nuclear program to progress unchecked for nearly ten years.

Enrichment facilities also serve as a vital node in a nuclear weapon program and therefore are a critical vulnerability in the pursuit of nuclear weapons. Enrichment facilities of all varieties are complex and rely on several key components any of which if removed or damaged could prevent operation or neutralize its capabilities. The United States Army 20th Support Command is a Chemical, Biological, Radiological, Nuclear and High-Yield Explosives (CBRNE) unit whose missions includes conducting CBRNE operations in support of combatant and joint force commanders or other lead federal agencies.[74] The 20th Support Command's capabilities will include joint deployable forces capable of disabling nuclear WMD infrastructures in a semi-permissive or permissive environment.[75] Disrupting nuclear capabilities early by eliminating enrichment facilities is critical to prevent proliferation.

Nuclear Weapons Detection and Verification

Technological solutions to nuclear weapon detection and verification have existed for several years and continue to develop as technology advances. However, the physics behind nuclear weapons detection make the exact detection or classification of nuclear weapons inherently difficult and currently far from the dramatic vision espoused in the 2006 QDR which calls for detection of fissile material at stand-off ranges.[76] Additionally, despite the technology used, the process of verification itself is problematic

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[74] Richard Schueneman, Lieutenant Colonel, US Army, 20th Support Command, interview by author, 8 December 2006. The 20th Support Command was established in October 2004. The 2006 QDR directed the expansion of the 20th Support Command's capabilities to become a deployable Joint Task Force in 2007. The role of 20th Support Command will be discussed in more detail in chapter 4.

[75] Ibid.

[76] Office of the Secretary of Defense, *Quadrennial Defense Review Report*, 51.

when attempting to entirely prevent a singular event, such as the proliferation of a nuclear weapon.

In addition to being capable of fission as previously discussed, heavy elements such as uranium and plutonium also undergo radiological decay. The particles emitted during this decay can be passively detected by a wide variety of detection instruments. These instruments can then be used to detect or classify nuclear material contained within weapons. Los Alamos National Laboratory has utilized hand-held passive radiation monitors to distinguish between nuclear and non-nuclear munitions since the early 1990s.[77] Research with non-electronic and non-obtrusive devices such as bubble dosimeters has shown that emitted particles can be detected and analyzed in a manner to classify nuclear weapons based on their emitted signature.[78] Current weapons detection techniques such as those used by 20th Support Command include use of devices such as the Ortec® Detective EX, a high purity germanium based gamma detector.[79] Instruments such as the Ortec® Detective EX are superior to their predecessors by having a higher signal to noise ratio and higher selectivity resulting in greater capability to detect fissile material while also minimizing interference from other radiological elements.[80]

Despite advancements in sensitivity and selectivity all of the above means are proximity detectors and are subject to the effects of time, distance, and shielding that limit all radiation detection techniques. Viewing a nuclear weapon as a point source

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[77] Paul Fehlau, "Field-Trial Results for Pre-Flight Non-Nuclear Verification in Air Force NELA Flight Tests", Los Alamos National Laboratory document LA-12006-MS (Los Alamos, NM: Los Alamos National Laboratory, 1991), 1-5.

[78] Bradford Baker, "Evaluation of Temperature Compensated Bubble Dosimeters For Treaty Verification Applications", Trident Scholar Report #211 (Annapolis, MD: United States Naval Academy, May 1994), 85-91.

[79] Ortec, "Detective and Detective EX-100 HPGe-Based Portable Nuclide Identifier", Internet, available from http://www.ortec-online.com/pdf/detective.pdf, accessed 13 January 2007.

[80] Ibid.

emitter, any emitted radiation will decrease proportionally to the inverse square of distance making detection even at short ranges challenging. Because of this fact, detection at stand-off ranges with current technology is not possible. The effect of shielding also hinders this means of detection because of the inherent shielding comprising the composite weapon. Additionally clandestine efforts to mask radiation signature by installed shielding complicate detection efforts without internal inspection.

There are current efforts that are aimed at extending the range for detection of nuclear material. In a research study aimed specifically at detecting HEU in standard shipping containers on cargo ships, Nelson et al. demonstrate the capability to actively detect a small amount of HEU within a standard shipping container using external neutron stimulation.[81] This active approach is superior to the traditional passive measure discussed previously since it is less intrusive, less susceptible to shielding, and generates much fewer false responses. This approach, however, is targeted specifically at detecting shipboard smuggling at embarkation and debarkation ports and is currently not designed for clandestine or field deployment. This makes this method well suited for enforcement of international policies such as the PSI, but further advancements will be required to locate and characterize threats on air, land, and sea as the QDR proposes.

Even if perfect detection and classification at stand-off ranges becomes possible, verification alone does not serve as an effective control regime to prevent the proliferation of nuclear weapons. Detection of nuclear weapons or nuclear material only confirms proliferation has occurred. In his discussion of the verification process, Kessler

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[81] Martin E. Nelson, James F. Ziegler, Harry F. Feigal, Crystine M. Good, Bryan N. Blackburn, Joseph St. John, Sean J. Locke, and Jeffrey D. Alan, "Investigation into the Feasibility of Highly Enriched Uranium Detection by External Neutron Stimulation," Defense Threat Reduction Agency document DTRA –TR-03-37, May 2006.

discusses verification saying, "verification cannot prove the negative, which is a logical impossibility. For this reason alone, no practical set of verification measures can provide absolute assurance. Technological constraints [such as those described in this chapter] are simply additional, secondary reasons why there can be no absolute certainty through verification."[82]

This chapter has discussed current technological issues that relate to the basic construction and detection of nuclear weapons. To narrow the focus of the GCC, the most likely path a developing nuclear power country will pursue is a HEU based weapon. Using this as a starting point, there are many enrichment paths a country may take, and none may be eliminated without due consideration. There are prevalent methods, but older methods are viable and can not be ignored. The disparity in requirement between LEU for commercial nuclear energy applications and HEU for nuclear weapons programs is clear. Any efforts to acquire or produce HEU must be considered an effort to obtain nuclear weapons. Additionally there is a wide variety of technological devices available to detect and classify nuclear material, however, none provide the instant and infinite capability desired. Because of this verification is only part of the counterproliferation equation and can not be used as the only initiative to prevent proliferation.

[82] Kessler, 13.

CHAPTER 3 – CASE STUDY EXAMPLES

> **A very important conclusion, drawn from historical studies, is that there is no singular formula for deterrence. What is required to deter and how effective deterrence will be depends upon the party you are trying to deter and the context. Threats and actions that may seem to the United States as a credible deterrent may not deter others because their value system is different Determining what others value and how to utilize that knowledge in deterrence is a major challenge for U.S. intelligence agencies, analysts, and planners. This challenge can only increase in importance as the number and types of actors to be deterred grow.[83]**
>
> **U. S. Nuclear Policy in the 21st Century**
> **Center for Counterproliferation Research**

Written in 1998 the analysis of historical case studies of nuclear proliferation written by the Center for Counterproliferation Research is even more important today. As the number of potential proliferators increases, so do the challenges to the United States, international agencies, and planners. Regimes pursue nuclear weapons for a disparate array of reasons. Their levels of cooperation are equally different and each regime achieves varying levels of capability leading to various levels of success. Understanding these differences is critical in order to effectively achieve national level counterproliferation objectives in different areas of the world.

This chapter will review three major historical case studies of counterproliferation. In each example the ideology behind the pursuit of nuclear weapons is different, and it is this ideology that is critical to understanding their motives and establishing an effective counterproliferation program. This chapter will use Sagan's *security model*, *domestic policy model*, and *norms model* to analyze each example's real intentions.

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[83] Center for Counterproliferation Research, *U.S. Nuclear Policy in the 21st Century: A Fresh Look at National Strategy and Requirements* (Washington, D.C.: National Defense University, 1998), 2.8.

This analysis will reveal that the motives, cooperativeness, capabilities, and success of each case study are dramatically different and require a different application of the elements of national power to prevent the proliferation of nuclear weapons. The establishment of this difference will then be used in the last chapter of this paper to demonstrate the necessity of a flexible adaptation of power to achieve national objectives in different areas of the world.

The Former Soviet Union

> **Former Soviet officials have cited intermediate-range nuclear missile deployments, the Strategic Defense Initiative, the computer revolution coupled with export controls, and the expanding Western economy as factors that helped convince the Soviet leadership that sustaining the strategic competition for an indefinite future would ultimately result in a situation they would find untenable. Recognizing the decay and near bankruptcy of their own industrial and societal base, these leaders understood the need to transform the Soviet system fundamentally, a process that, once begun, unleashed the forces that would bring down the Soviet state.[84]**
>
> **U. S. Nuclear Policy in the 21st Century**
> **Center for Counterproliferation Research**

The success of the Cold War and the fall of the Soviet Union is the most successful historic application of all elements of national power to achieve national strategic objectives. The effective use of treaties such as SALT and START, the intelligence efforts of several governmental agencies, the steadfastness of the United States military, and the growth of capitalism combined to prevent a nuclear exchange between the United States and the former Soviet Union and brought down the Soviet Union as the Center for Counterproliferation Research states. The case study of the former Soviet Union represents the past, and although much has changed in the international environment, there are still viable lessons to be learned.

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[84] Center for Counterproliferation Research, 1.7.

The model for former Soviet Union's pursuit of nuclear weapons is the *domestic policy model* which proposes that countries pursue nuclear weapons to advance ideologies and bureaucratic agendas. The associated ideology is communism specifically as a counter ideology for capitalism. During the military buildup leading to the Cold War, there was little direct threat against the Soviet Union, but the Soviet leadership used the perception of foreign threats and expansion of capitalism as reasons for increased defense spending and the expansion of their nuclear capability. Soviet scientists pursued military technologies for prestige and to build what Sagan calls "a state's scientific-military-industrial complex."[85] It was this scientific-military-industrial complex that fueled the communist economy and gave the Soviet leadership both the legitimacy and the power to control the Soviet Union and influence the world.

The former Soviet Union's pursuit and attainment of nuclear weapons, while disruptive and threatening to the international counterproliferation environment, was not as threatening to the actual international security environment. The reason for this was the inherent cooperativeness of the former Soviet Union and a lack of real intent to use nuclear weapons. This inherent cooperativeness is especially apparent in comparison to the regional counterproliferation threats faced today such as Iran, North Korea, and others. In many ways the former Soviet Union was a cooperative adversary and was thus able to be deterred. Joseph and Reichart describe the United States and former Soviet Union's relationship as a "shared rationality" that presumes the leadership of the Soviet

[85] Sagan, 28.

Union would act in their best interests (i.e. to not initiate a nuclear exchange) if the United States could guarantee a retaliatory strike.[86]

The level of cooperativeness of a regime is critical because it directly translates to the level of communication that will be possible and sets the limits on the effectiveness of diplomacy. During the Cold War the communication between the United States and the former Soviet Union was formalized and allowed for effective diplomacy. In 1963, the United States and the former Soviet Union initiated an agreement to establish a direct communication link between the two heads of state.[87] Showing the level of detail put into this agreement, the "hot line" was actually a teletype device rather than a voice phone alone to help prevent misunderstandings due to speech. This cooperative nature between the United States and former Soviet Union led to several effective diplomatic agreements. The most ironic example of this cooperation is that both the United States and former Soviet Union agreed to honor the conditions of the SALT II treaty even though it was never ratified by either country and neither country was legally bound to the terms of the treaty. This level of diplomacy is in sharp contrast to today's efforts where numerous countries are bound to the NPT while several have been found in violation to the NPT or its associated IAEA agreements with little if any consequence.

With effective communication and cooperation comes a known understanding of an adversary's capability. The former Soviet Union posed the largest nuclear threat that the United States has ever faced due to the size and capability of their nuclear arsenal.

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[86] Robert G. Joseph and John F. Reichart, *Deterrence and Defense in a Nuclear, Biological, and Chemical Environment* (Washington, D.C.: National Defense University, 1999), 19.

[87] United States Department of State, *Memorandum of Understanding Between The United States of America and The Union of Soviet Socialist Republics Regarding the Establishment of a Direct Communications Link*, 20 June 1963, Internet, available from http://www.state.gov/t/ac/trt/4785.htm, accessed 1 February 2007.

The severity of that threat was diminished somewhat because the threat was known and measurable. There was no rhetoric about potential or unknown capabilities. During the initial phases of the atomic age both the United States and the former Soviet Union struggled to manage and build their nuclear capabilities, but during the height of the Cold War both sides knew each others capabilities. This knowledge allowed the United States to build effective strategies employing all elements of national power that eventually brought the Cold War to a successful end. Again this concept is in contrast to today's regimes that attempt to hide their capabilities as much as their motives.

One similarity that the nuclear struggle with the former Soviet Union shares with today's nuclear aspirants is the manner in which the adversary's capabilities were revealed. This similarity is an important lesson learned for the United States and international organizations in order to prevent further proliferation throughout the world. Like emerging countries today, the former Soviet Union nuclear threat arose from surprise. Prior to August 1949 the United States had an atomic monopoly and used this monopoly for military planning purposes including the defense of European allies. American analysts predicted that the Soviet Union was several years away from acquiring a nuclear weapon at the earliest and optimistically hoped it would be longer.[88] The Soviet successful nuclear test in August 1949 caught the United States by surprise and forced the United States to rapidly reevaluate its nuclear strategy.

Although the United States was not able to prevent the former Soviet Union from acquiring nuclear weapons, a nuclear exchange was avoided and the successes of the

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[88] Richard Smoke, *National Security and the Nuclear Dilemma: An Introduction to the American Experience* (Reading, MA: Addison-Wesley Publishing Company, 1984) 45-64. In his chapter "America Fashions Its National Security," Smoke discusses the early stages of the United States and former Soviet Union nuclear confrontation including 1949, "the year of shocks", when the Soviet nuclear threat was revealed.

Cold War are good examples for international counterproliferation programs today. It is imperative that strategists and planners realize that many of the cornerstones for success in the Cold War may not exist with regional threats today. Some of today's regional actors may not have the "shared rationality" with the United States and are far less likely to be the cooperative adversary that the former Soviet Union was during the Cold War.

The Middle East

> **Acquiring weapons for the defense of Muslims is a religious duty. If I have indeed acquired these weapons, then I thank God for enabling me to do so. And if I seek to acquire these weapons, I am carrying out a duty. It would be a sin for Muslims not to try to possess the weapons that would prevent the infidels from inflicting harm on Muslims.**[89]
>
> **Osama Bin Laden**
> **January 11, 1999**

In one of his most often quoted statements, Osama Bin Laden summarizes the rhetoric consisting of bluff, denial, and deception that dominates the regimes that exist in the Middle East. While revealing nothing and stating nothing, these types of statements whether they be from terrorists such as Bin Laden, despots such as the late Saddam Hussein, or leaders such as President Ahmadinejad, serve only to create a fog around a regime's nuclear intentions. This fog gives these regimes false power and causes confusion for countries and agencies such as the IAEA that attempt to enforce the NPT and its associated IAEA safeguards agreements. Many regimes use this type of rhetoric to assert their national power and relevance while also attempting to exploit avenues of nuclear energy to hide ulterior motives.

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[89] "Exclusive Interview: Conversation with Terror," *Time Magazine*, 11 January 1999, Internet, available from http://www.time.com/time/world/article/0,8599,174550-1,00.html, accessed 1 December 2006.

As mentioned in the introduction of this paper, the case study of the Middle East is chosen to include the regimes of Iraq, Iran, and terrorist organizations. This is done because of the similarities in their regimes, their uncooperative nature with international organizations such as the IAEA, and their geographic location. A salient point throughout this paper is that although each of these regimes fall within one GCC's AOR, each has its own subtleties that make it slightly different that the others. This underscores the necessity for an adaptable counterproliferation strategy rather a single approach for all scenarios.

Iran's quest of nuclear weapons best falls into Sagan's model of pursuit to meet the *norms model* which proposes that countries seek nuclear weapons as a symbol of their sovereignty, identity, and modernity. By acquiring nuclear weapons Iran meets what they perceive to be the international norm. Sagan discusses this as Iran's transition from national myth to strategic personality.[90] Iran's society is built on the premise that their Islamic culture and Persian history is superior. Iran uses this not only as a tool to project power outward, but also as a means to project power inward and justify their belief that they are the superior culture in the world. With this superior culture, it is natural to expect the Iranians to acquire the world's most superior weapons. Externally the acquisition of nuclear weapons also gives the Iranians a low cost means of attaining military power to influence the region and the United States.

Iran uses Persian ancient history coupled with Islamic expansionism to create a strategic personality that promotes Iran as the leader in the Persian Gulf region and all other influences, specifically Western culture, as infidels. Iran's anti-western sentiment is based on Iran's desire to control its own fate free from outside influences that they

[90] Sagan, 89-99.

fundamentally believe are inferior. This sentiment combined with Iran's inability to become the global power they believe they should be has caused Iran to become "a society that is introverted to the point of paranoia."[91] This introversion has created an environment where communication and cooperation is almost impossible. This inability to cooperate goes beyond relations between Iran and United States. Both Russia and China who have long been partners of Iran with regard to economic investments and nuclear infrastructure aid are now wavering in their support of Iran.

> This change in attitude was a direct result of a perception that Iran has been unreasonably stubborn in the face of broad international resolve to settle the issues revolving around Iran's nuclear problems through diplomatic means…. While Russia and particularly China are likely to continue to provide diplomatic and symbolic support to Iran's position, it is unlikely that in the long term they will continue to do so at the expense of their relationship with the West.[92]

Because of the Middle Eastern dislike and distrust for any western influence, the United States must resort to influence from other countries such as China and Russia as mentioned previously to effectively accomplish counterproliferation objectives.

Although neither Iran nor Iraq has demonstrated the full capability to build a nuclear weapon, both have demonstrated in the past the capability to achieve critical steps in the path to a nuclear weapon. As mentioned previously, Iraq transitioned to older calutron technology as a means to create HEU following the Israeli bombing of the Osirak reactor in 1989. The United States and coalition partners revealed this means of HEU production during Desert Storm in 1991. Although no exact determination can be made of when Iraq could have achieved a nuclear weapon, Iraq would have likely had the capability to build a small number of HEU nuclear weapons had this capability not been

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[91] Ibid., 99.

[92] Sammy Salama and Elizabeth Salch, "Iran's Nuclear Impasse: Give Negotiations a Chance", *Center for Nonproliferation Studies*, 2 June 2006: Internet, available from http://cns.miis.edu/pubs/week/060602.htm, accessed 25 January 2007.

removed. While the ongoing war in Iraq has removed the Iraqi capability for nuclear weapons, little has been done to impact the continual Iranian development of nuclear technology. In 2005 Sokolski predicted that "Iran is no more than 12 to 48 months from acquiring a nuclear bomb" and lacked neither the technology nor the material to do so.[93]

The success of counterproliferation in the Middle East is dependant on the manner in which it is viewed. Looking solely at the presence or absence of nuclear weapons, it would appear that counterproliferation efforts have been successful. This viewpoint overlooks many of the deeper aspects of counterproliferation. Both Iraq and Iran are members to the NPT, and both have violated their associated IAEA safeguards agreements. Both have liberally interpreted the "peaceful" use of nuclear technology mentioned in the NPT at best. Both are or have pursued manufacture of HEU which as described in chapter 2 of this paper, is the most likely path for nuclear weapons.

Despite the evidence of nuclear weapon aspirations, critics of intervention in Iraq cite the failure to find definitive nuclear weapons as a failure of intelligence and United States policy. Critics frequently cite that WMD was used an ulterior motive for conflict in Iraq and that there was no credible reason to believe Iraq possessed nuclear capability. This highlights a significant failure in the counterproliferation program and a misunderstanding of how counterproliferation is to be achieved. Discussing the criticism of WMD search in Iraq, General Franks, the United States Central Command (USCENTCOM) commander during and following 9/11, states that some people were

> disappointed that some of the intelligence on Iraq's WMD program was inaccurate and wrong and in some cases deliberately misleading. That, of course, is the nature

[93] Henry Sokolski, "Getting Ready for a Nuclear-Ready Iran: Report of the NPEC Working Group", in *Getting Ready for a Nuclear-Ready Iran*, edited by Henry Sokolski and Patrick Clawson (Carlisle, PA: Strategic Studies Institute, 2005), 1. Sokolski's prediction is based on a two year study with leading experts on Iran, the Middle East, and nuclear proliferation.

> of human intelligence. The issue is not whether the source of intelligence was telling the truth, but whether George Tenet [Director of the Central Intelligence Agency at the time], Colin Powell [Secretary of State at the time], and President George W. Bush *believed* [General Franks' emphasis] that the information was true. I believe they did. I know I did. And I do not regret my role in disarming Iraq and removing its Baathist regime.[94]

General Franks' approach is more consistent with the strong support of counterproliferation objectives such as those contained in the NSS and other national documents.

North Korea

> **There is now a sharp confrontation in the world between socialism and imperialism, and between the forces of independence and the forces of dominationism. In the complex international situation and relationship between forces, the people's struggle against domination and subjugation and for independence is continuing. The imperialists and reactionaries are tenaciously manoeuvring to arrest the world progressive people's drive towards independence and to obstruct their struggle for independence with a view to realizing their ambition for domination, but no force can ever turn back the main trend of our age which is heading for independence. In order to thwart the dominationist machinations of the imperialists and reactionaries and give a strong impetus to the people's cause of independence, the cause of socialism, we must maintain the Juche character of the revolutionary struggle and construction and sustain their national character.[95]**
>
> **Kim Jong Il**
> **June 1997**

In his 1997 paper discussing the preservation of the "juche" character, Kim Jong Il demonstrates the North Korean's view of perceived intervention from "imperialism" and "the forces of dominationism" against the independence of North Korea. The term "juche" translates to "self reliance" and is the cornerstone of North Korean ideology and

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[94] Tommy Franks, General USA-Ret, *American Soldier* (New York, NY: Harper-Collins Publishers, 2004), 562,

[95] Kim Jong Il, "On Preserving the Juche Character and National Character of the Revolution and Construction," 19 June 1997: Internet, available from http://www.cnet-ta.ne.jp/juche/pdf/ekimjongil783.pdf, accessed on 1 December 2006.

guides their collective will including the will to obtain nuclear weapons. Juche is so pervasive that it is described as the government's only authorized ideology and is ranked by some sources as the tenth most populous religion in the world encompassing the entire population of North Korea.[96] This vehement self reliance along with their belief that western society attempts to violate their culture with its globalization and internationalization makes diplomatic resolutions challenging.

Juche comes from the simple concept of nationalism which was combined with Stalinism and Confucianism to create a national society that has failed to develop politically, socially, or economically. Instead Juche has served to glorify the Kim family and has kept North Korea on the outside of the global development sphere. Oh and Hassig describe North Korea as living "a schizophrenic existence in which dreams of creating a totalitarian socialist utopian community under the stern but benevolent rule of a modern-day emperor are pursued with the calculations of domestic and international power politics."[97] North Korea continues to pursue of a form of government abandoned even by those who created it. This fact combined with North Korea's failing economy and inability to socially integrate a combined Korea continues to isolate the North Koreans and make them a people void of allies and contemporaries.

This self isolationism places North Korea directly in Sagan's *security model* which proposes that countries pursue nuclear weapons to increase national security

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[96] "Major Religions of the World Ranked by Number of Adherents," Internet, available from http://www.adherents.com/Religions_By_Adherents.html, accessed 1 December 2006. Contrasting to this documentation of juche as an official religion, the Central Intelligence Agency's factbook on North Korea (available from https://cia.gov/cia/publications/factbook/geos/kn.html, accessed on 1 December 2006) lists the religion of North Korea as "traditionally Buddhist and Confucianist, some Christian and syncretic Chondogyo" but then goes on to state that autonomous religious activities are virtually nonexistent. The factbook then also acknowledges "self-reliance" (not using the word juche) as a political and economic policy.

[97] Kongdan Oh and Ralph C. Hassig, *North Korea Through the Looking Glass* (Washington, D.C.: Brookings Institution Press, 2000), 2.

against foreign threats. Isolated from any true allies, North Korea looks at the political, military, and social power of neighboring countries such as China, Japan, and South Korea and turns to nuclear weapons as a security blanket to preserve its national identity and juche character. Ironically, North Korea's pursuit of nuclear weapons only serves to isolate them further from the global populace and degrades their security vice enhancing it. North Korea's fervent self reliance, isolation from global influence, and possession of nuclear weapons, once it occurs, make it one of the most dangerous countries to regional security in the world. Unlike the case studies of the former Soviet Union and even the regime in Iran, there are no internal or external constraints on North Korea that are likely to prevent North Korea from using nuclear weapons in a situation where North Korea feels its national security is threatened. Kim Jong Il's strong words discussing his "people's struggle against domination and subjugation" indicate that North Korea already feels threatened and are a strong indicator that North Korea would use nuclear weapons given the opportunity.

Looking at the history of North Korean negotiations with respect to nuclear weapons, it appears that North Korea frequently enters into cooperative agreements aimed at preventing nuclear weapons production and the promotion of peaceful nuclear energy. This would appear to make North Korea a rational actor that can be dissuaded from nuclear weapons. However, viewing the entire span of history from 1985 to 2007, it is readily apparent that North Korea uses these diplomatic opportunities for other purposes and is only serving to delay international scrutiny of its weapons program. In 1985 under heavy pressure from the international community, North Korea ratified the NPT. As demonstrated in chapter 1 of this paper, ratification of the NPT alone provides

little if any assurance that a country will not pursue nuclear weapons. What ratification of the NPT alone does give is international legitimacy. One can readily assume this was North Korea's true intent when it ratified the NPT. In 1992 North Korea finally agreed to an IAEA safeguards agreement despite the fact that an agreement is required within eighteen months of accession to the NPT. Less than one year after initiating an IAEA safeguards agreement, North Korea suspended its membership to the NPT citing unjust demands of the IAEA.[98] Looking back on this history, it is apparent North Korea's accession to the NPT was an attempt to stall international pressure while also giving North Korea legitimacy to pursue nuclear technology with other countries.

In 1994 in an agreement brokered largely by former President Jimmy Carter and Kim Il Sung, the United States and North Korea crafted a bilateral agreement which basically consisted of North Korea remaining in the NPT and submitting to IAEA inspections with the reward of receiving significant energy aid in the form of both nuclear and non-nuclear support.[99] What North Korea managed to create was a bargaining chip. By making concessions about its nuclear program that were both hard to verify and that North Korea likely had no intent on meeting, North Korea was able to acquire energy aid that it desperately needed and was able to appear as a rational actor on the world nuclear stage. The final verification of North Korea's deceptive intent occurred in October 2006 when despite all of the diplomatic efforts mentioned over the previous twenty years, North Korea continued to defy the international community by testing a nuclear device.

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[98] Vladimir F. Li, "North Korea and the Nuclear Nonproliferation Regime," in *The North Korean Nuclear Program Security, Strategy, and New Perspectives from Russia*, edited by James Clay Moltz and Alexandre Y. Mansourov (New York, NY: Routledge, 2000), 138-140.

[99] Marcus Noland, *Avoiding the Apocalypse the Future of the Two Koreas* (Washington, D.C.: Institute for International Economics, June 2000), 151-158. The entire text of the United States and North Korea bilateral agreement is contained in Appendix A.

The success of the United States and international agencies counterproliferation program with North Korea is marred by ambiguous and non-binding agreements coupled with substantial lack of integration of all elements of power. The failure of the international community to ensure that North Korea met its NPT requirement to create and abide to an IAEA safeguards agreement is significant and placed an overly optimistic reliance on diplomacy. In 1994 North Korea removed a spent fuel rod from an experimental reactor in direct defiance to IAEA policy. This event led to the former President Carter's brokered agreement with Kim Il Sung which became "one of the weirder episodes of an already strange saga."[100] The resulting bilateral agreement is potentially the worst integration of the elements of national power in history. Whatever Carter's motives were, they did not appear to be in concert with other national actions. While Carter was pursuing diplomatic avenues, General John Shalikashvili, the Chairman of the Joint Chiefs of Staff, was briefing President Clinton on military plans to remove North Korea's nuclear capability. Carter interrupted Shalikashvili's briefing to inform the White House that he had averted nuclear war and was about to inform the world via a live interview with CNN.[101] During this interview Carter mistakenly stated that United Nation's sanctions against North Korea had been lifted further complicating the political environment since sanctions had not yet been lifted.[102] Despite this unusual start and the widely varying views on methods that could or should be used to cease the North Korean nuclear program, a bilateral agreement was agreed upon. The bilateral agreement relied on the Korean Peninsula Energy Development Organization (KEDO) to oversee the aid

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[100] Ibid., 149-151.

[101] Ibid.

[102] Ibid. In this section, Noland discusses the environment between the White House, former President Carter, and other United States governmental agencies and their varying views on options for North Korea.

promised by the United States. The lack of foresight in the use of economic power quickly became apparent as financial support emerged as KEDO's primary problem. With the lack of integration of diplomatic, informational, military, and economic powers, it is no surprise that the efforts of the latter part of the twentieth century were ineffective at preventing North Korea from testing a nuclear device only a few years later in the beginning of the twenty first century.

Unfortunately it appears that the United States may not have sufficiently learned from these past failures. In response to the October 2006 North Korean nuclear test, the United States and other regional countries reached an agreement in February 2007 aimed once again at stopping the North Korean nuclear weapons program. In many ways the 2007 agreement is similar to the 1994 agreement which ultimately failed in 2002 due to evidence that North Korea was not in compliance. Both agreements offer money and energy aid in the hopeful return for North Korea halting its nuclear weapons ambitions. John Bolton, a former senior State Department official and ambassador to the United Nations, criticizes the new agreement stating that "It sends exactly the wrong signal to would-be proliferators around the world: 'If we hold out long enough, wear down the State Department negotiators, eventually you get rewarded,' in this case with massive shipments of heavy fuel oil, for doing only partially what needs to be done."[103]

Apparently learning from some past problems with ambiguity, the 2007 agreement is clear that North Korea is to shut down and seal the plutonium production capability at Yongbyon. What the agreement fails to address is North Korea's HEU

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[103] James Sterngold, "How Deal on Korea Nuclear Program Was Cut, Bush, Kim Jong Il Both Gave Ground to Permit a Pact," *San Francisco Chronicle*, 14 February 2007. Internet, available from: http://www.sfgate.com/cgi-bin/article.cgi?file=/c/a/2007/02/14/MNGEVO4DQ91.DTL, accessed 16 February 2007.

production capability which, as discussed in chapter 2 of this paper, is the most likely course to obtain a nuclear weapon. In a recent article, Cossa argues that from the United States perspective HEU falls under the "all nuclear program" caveat while admitting that HEU is not specifically delineated by the agreement.[104] What this has created is another loophole for North Korea to exploit.

Defending the 2007 agreement and using a football analogy, Secretary of State Condoleezza Rice calls the 2007 diplomatic efforts "still the first quarter" and states "there is still a lot of time to go on the clock."[105] Apparently Secretary Rice is neglecting the previous thirteen seasons. Nevertheless, there is time left on the clock and as long as the game plan involves a coordinated balance of offense and defense and involves the full commitment of all players, then the game can be won.

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[104] Ralph Cossa, "Six-Party Talks Moving in the Right Direction," *The Japan Times Online*, 19 February 2007, Internet, available from http://search.japantimes.co.jp/cgi-bin/eo20070219rc.html, accessed 19 February 2007.

[105] Janine Zacharia, "Bush Uses Clinton's Approach to Secure Korean Accord," 14 February 2007, Internet, available from http://www.bloomberg.com/apps/news?pid=20601087&sid=ab9JMOlf93l0&refer=home, accessed 16 February 2007.

CHAPTER 4 – ROLE OF THE GEOGRAPHIC COMBATANT COMMANDER

> **The combatant commands, military departments, and combat support agencies are the means to accomplish MSOs [Military Strategic Objectives]. Commander U.S. Strategic Command (CDRUSSTRATCOM) is the lead combatant commander for integrating and synchronizing DOD in combating WMD…. Combatant Commanders will continue to execute combating WMD missions within their AORs. Military efforts will need to be integrated with other organizations and nations that possess capabilities, resources, or information that can contribute to the mission.**[106]
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> **National Military Strategy to Combat WMD**

Counterproliferation of nuclear weapons requires the full effort of several agencies including commands within the DOD and organizations outside the DOD. As stated above the NMS CWMD acknowledges this requirement and directs combatant commands to integrate efforts with other organizations. Examples of these other organizations include combat support agencies such as DTRA, other United States governmental agencies such as the Department of State (DOS), and other international organizations such as the IAEA. Similar to the dictate of the UCP, the NS CWMD cites USSTRATCOM as the lead agent for counterproliferation and tasks USSTRATCOM with synchronization of global counterproliferation efforts.

So far this paper has pointed out the need for improved integration among national policies and military doctrine and identified holes and weaknesses in international policies such as the NPT. This paper has shown that current control regimes such as the IAEA have little ability to prevent proliferation on their own. This paper has shown that much of this problem is due to the lack of a "bright line" between nuclear energy and nuclear weapons. This paper has shown that despite admirable notions on

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[106] Joint Chiefs of Staff, *National Military Strategy to Combat Weapons of Mass Destruction*, 6.

detection and verification of nuclear weapons, there is no current method of detection that can fill the current need, and that even if a perfect detection method is created, verification alone is not a sufficient control regime. Lastly this paper has shown that each counterproliferation scenario is different. Each potential proliferator pursues nuclear weapons for different reasons and with different measures of success. Different applications of power are required in each scenario to effectively dissuade or deter regimes from pursuing and attaining nuclear weapons.

There is however a solution to all of the above problems and a means for effective counterproliferation. This solution lies in the centralized planning of USSTRATCOM and decentralized execution by GCCs as the UCP and NMS CWMD suggest. This chapter will discuss the role of USSTRATCOM as the global synchronizer of counterproliferation initiatives. This chapter will point out objectives that are beyond the scope and capability of the GCC and therefore better accomplished by USSTRATCOM. Finally this chapter will divide proliferation into three stages: *intent*, *production*, and *completion*. Analysis of proliferation in this staged approach allows for a flexible application of the elements of national power that is dependant upon the status of the proliferator. The case study examples detailed in chapter 3 will be used as examples for each of the different stages, and the role of the GCC will be discussed in each stage. The approach in this final chapter includes elements established in the previous three chapters and will present a comprehensive method for counterproliferation.

Counterproliferation Synchronization

As already discussed USSTRATCOM is tasked with synchronizing DOD efforts with efforts of all other United States government agencies to combat nuclear

proliferation.[107] This empowers USSTRATCOM to synchronize all elements of national power in time, space, and purpose and gives USSTRATCOM the authority to direct all counterproliferation actions. The first level at which this synchronization occurs is at counterproliferation planning. USSTRATCOM is responsible for the global concept plan to combat proliferation of nuclear weapons. In this capacity USSTRATCOM directs GCCs to create regional deliberate plans to combat proliferation. These subordinate plans are then synchronized within the global concept plan. This process is identical to the process currently in use by USSOCOM in the GWOT. Just as subordinate counter-terrorism plans such as those used in Iraq and Afghanistan support the GWOT, so do subordinate GCC counterproliferation plans support the global USSTRATCOM counterproliferation plan.

Counter-terrorism planning is only one element that USSOCOM synchronizes in the GWOT, and similarly there are many other counterproliferation tasks that USSTRATCOM must synchronize. Chapter 3 identified that intelligence is critical to accomplishment of counterproliferation objectives and is frequently an area that requires significant improvement. As the global synchronizer, USSTRATCOM has the ability to leverage governmental intelligence agencies and disseminate a common intelligence picture to each GCC. Additionally when conflicts in resources or priorities occur, USSTRATCOM has the ability to prioritize efforts. These efforts help shape the environment and set lateral limits for GCCs in their AOR.

As the lead agent for counterproliferation, USSTRATCOM has the ability to conduct actions that are beyond the scope of the individual GCC or that are common to

[107] As discussed in chapter 1, the UCP tasks USSTRATCOM to combat WMD as a whole. As done throughout this paper the application of WMD is interpreted here strictly as nuclear weapons.

more than one GCC. One of the largest weaknesses that this paper has pointed out is the lack of a "bright line" between nuclear energy and nuclear weapons. As the subject matter expert for nuclear weapons, USSTRATCOM has the ability to define this new line. Chapter 2 of this paper identified a potential defining point for this line: the only viable rationale for HEU production is a nuclear weapons program.[108] Using this as a start, acquisition or production of HEU constitutes an effort to obtain a nuclear weapon and would become the defining line for illicit proliferation.[109] With this new distinction between nuclear energy and nuclear weapons, USSTRATCOM could then work with the IAEA and other nations to close the loophole in the NPT and remove the veil that rogue countries use to hide illicit weapon programs.

USSTRATCOM can also give strategic direction and coordination to ongoing research and development programs aimed at counterproliferation. USSTRATCOM can build on the technological requirements listed in the QDR to help identify exactly what capability will be produced. In addition to what can be created, USSTRATCOM can also determine how these advancement will be used to accomplish counterproliferation objectives. Both of these provide resolutions to shortcomings identified in chapter 1 of this paper.

In addition to synchronizing counterproliferation planning, USSTRATCOM has the ability to standardize counterproliferation doctrine. The 2006 NMS CWMD has already been identified as the most recent doctrine for counterproliferation, but as shown

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[108] The exception for naval nuclear propulsion fuel identified in chapter 2 applies here again.

[109] Chapter 2 discussed the pursuit of HEU as the most likely course of action to obtain a nuclear weapon. Pursuit of plutonium is also a potential course of action and some countries (such as North Korea and Iraq) pursue both courses at different times or simultaneously. The case for plutonium was not as well developed in this paper as HEU since it is considered less likely; however, to fully establish this "bright line", any acquisition of plutonium must also be considered an effort to obtain a nuclear weapon.

in chapter 1, its elements are not well integrated in other national and military doctrine. Additionally while international agreements exist, they are not well incorporated into other strategic guidance. USSTRATCOM has the ability to standardize doctrine and combine national and international efforts. This is not to say that international agreements such as the NPT must be written to mirror United States strategic direction, but rather the elements in each must be complimentary and integrate to a common objective. A prime example of this is the identification of the line between nuclear energy and nuclear weapons. Defining a new bright line would be of minimal value if it were not incorporated into international policy.

Lastly with global strike capability and synchronization authority of counterproliferation efforts, USSTRATCOM has the capability and authority to accomplish military counterproliferation objectives timely all from within one combatant command. This combination of capability and authority is intentionally established to give the United States the ability to quickly respond with military force against potential nuclear or WMD threats. In this manner USSTRATCOM serves as the crisis action responder for time sensitive targets.

Stages of Proliferation

All of the above listed USSTRATCOM actions combine together to form the framework for GCCs within their AOR. Within this framework, GCCs must use different tactics to dissuade, deter, or if necessary, defeat nuclear proliferation. Using knowledge of the specific regional counterproliferation scenario and working within the synchronized USSTRATCOM plan, GCCs can conduct deliberate planning for specific counterproliferation objectives. The distinctness of each scenario as show in the case

studies of the chapter, make the regional GCCs better suited for situation where time sensitive action, such as deliberate planning, is not required.

The exact definitions of nonproliferation and counterproliferation have intentionally been avoided in this paper until now because there is little difference in their meanings that affects topics discussed up to this point. However, when determining actions by a GCC and when establishing stages of proliferation, the differences in the two definitions become important. The NMS CWMD defines the terms as follows:[110]

> **Nonproliferation:** Actions to prevent the proliferation of weapons of mass destruction by dissuading or impeding access to, or distribution of, sensitive technologies, material, and expertise.
>
> **Counterproliferation:** Actions to defeat the threat or use of weapons of mass destruction against the United States, U.S. Armed Forces, its allies, and partners.

What the difference in the definitions shows is a difference in the level of response to a potential proliferator. The term nonproliferation comes from the era where the United States was one of a very few countries with access to nuclear technology and could passively prevent (i.e. dissuade or impede in order to prevent) the spread of nuclear technology. With the spread of nuclear technology, nonproliferation has proven inadequate to contain the spread of nuclear weapons, and counterproliferation has emerged as the preeminent term that includes active measures (i.e. defeat) to control the spread of nuclear weapons.

In order to help gauge the level of effort required and to characterize the actions of countries, proliferation can be divided into three stages. The first of these stages is the

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[110] Joint Chiefs of Staff, *National Military Strategy to Combat Weapons of Mass Destruction*, 29. Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, lists slightly different definitions for both nonproliferation and counterproliferation. The differences are inconsequential in the context in this paper, but further point out the slight inconsistencies within military doctrine. The definitions from the NMS CWMD are used since the NMS CWMD is the more recent document and is the authoritative document for counterproliferation.

intent stage. This stage is defined as the pursuit of nuclear energy or nuclear weapons by word or by action. Countries in the intent stage include countries that make statements of intent to pursue nuclear energy or make attempts to acquire any material capable of a sustainable nuclear reaction. Including the pursuit of peaceful nuclear energy into this stage of proliferation is not designed to make proliferators guilty until proven innocent, but as discussed previously nuclear energy and nuclear weapons are inextricably linked, and therefore both must be included. Placing both nuclear energy and nuclear weapons in this first stage serves to establish a common frame of reference and a starting point for communications for countries that are developing nuclear capability.

The GCC should engage countries in the intent stage and help shape the environment as it develops. In terms of military planning this process is the Phase 0 shaping phase of operations. This shaping process serves to improve the communications between the country in question and the rest of the international community. This communication will help the GCC understand the true motives behind a regime's actions and will help establish courses of action that will prevent the proliferation of nuclear weapons. This early cooperation will come from Security Cooperation Guidance and will be developed by the GCC in Theater Security Cooperation plans and strategy. Actions in the intent stage are characterized by efforts of nonproliferation and must include government agencies such as the DOS and international organizations such as the IAEA. Actions in this stage are non-kinetic in nature and are designed to influence a country to willingly not pursue nuclear weapons.

Even if a country is pursuing nuclear technology only for peaceful nuclear energy purposes, the GCC should engage the country early and help shape the decisions that the

country makes. Just because a country has the "inalienable right" to pursue peaceful nuclear energy does not mean that they should. Nuclear energy is a means to solve energy problems, but there are potentially many solutions to these problems. Many countries pursue nuclear energy to meet what they perceive to be international norms rather than to solve energy problems. This is essentially Sagan's norms model applied to nuclear energy not just nuclear weapons. Pursuit of nuclear energy for this reason alone, while not illegal or against international agreements, is not appropriate, and the international community should not feel obliged to support these efforts. This is another flaw in the framework of the NPT since the NPT promotes the pursuit of nuclear energy as much as it condemns the pursuit of nuclear weapons. The reality is that nuclear energy is a complex, expensive, and potentially dangerous pursuit and should not be entered into lightly. GCCs and international organizations should work with developing countries to investigate all options to solve energy related problems. If this solution requires nuclear energy, then the GCC and international agencies can assist within established international regulations.

Looking back at the analysis in chapter 3, none of the case study countries are in the intent stage since each has developed past that point. There are, however, examples where non-kinetic means such as those discussed in the intent stage have proven effective. South Africa willingly gave up nuclear weapons pursuits and joined the NPT in 1991 and is an excellent example of reversing nuclear trends. Following the fall of the Soviet Union, Kazakhstan became the second largest republic in the area and inherited an extensive array of nuclear weapons capabilities. From 1994 to 1995 Kazakhstan joined

the NPT and willingly gave up all of its nuclear weapons to Russia.[111] Both of these examples show that non-kinetic means can be effective.

Despite the efforts in the intent stage, many countries continue to pursue nuclear weapons and transition to the second stage of proliferation, the *production stage*. The production stage is defined as the acquisition of the capability to produce material in sufficient concentration that will create a nuclear yield.[112] The identification of the production stage defines when a country has crossed the new bright line between nuclear energy and nuclear weapons. This paper has already defined that HEU is not required for peaceful nuclear energy purposes and is required as a minimum for a nuclear weapon, and therefore the ability to produce HEU is the new bright line between intent and production of nuclear weapons. It is also critical to emphasize that it is the acquisition of the capability to produce HEU, such as enrichment facilities capable of making HEU, that defines the transition from intent to production. For the GCC to be effective at preventing proliferation of nuclear weapons, the priority of effort must be in the production phase of proliferation. The case studies of the North Korea and the Middle East clearly show that both examples had the ability to produce material for a nuclear weapon and without effective intervention both have been or will be capable of ultimately producing a nuclear weapon.

Although the production stage may be the most difficult to identify and prevent, the full range of national capabilities are available for use. The GCC must work with

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[111] Nuclear Threat Initiative, *Kazakhstan Profile*, Internet, available from http://www.nti.org/e_research/profiles/Kazakhstan/index.html, accessed 10 February 2007.

[112] Assumed within this statement is the acquisition of material that is already sufficient for a nuclear yield. One of the goals of the NPT and PSI is to prevent the direct acquisition of such material from another party. This portion is left out of the definition of the production stage to highlight the significance of the ability to produce the material vice the material itself. Focusing on the material itself is what has led to failures in the past such as those pointed out in the case study of the Middle East.

other governmental agencies and international organizations to employ all elements of national power. Diplomatically the GCC can work with the DOS to apply diplomatic pressure to the country in question. Diplomacy can also work to influence international support by recognizing violations of international policy. Working cooperatively with a country can also serve to leverage the informational element of national power. By removing the aura of nuclear technology and proposing alternatives to both nuclear energy and nuclear weapons, the GCC and international organizations can change the accepted norms of a country. This can help change the focus of a country from joining the nuclear club to joining the club of countries agreeing to the elements of the NPT and PSI. The use of economic power can be in the form of a carrot or a stick. The United States can work with a country to resolve energy issues that can remove the requirement for nuclear energy and thereby hopefully remove the dual pursuit of nuclear energy and nuclear weapons.[113] Conversely, economic power can be used influence a country's decisions by imposing sanctions, limiting trade, or freezing assets.

As for military capabilities in the production stage, the 2006 QDR identified the need for a flexible joint force capable of dealing with a wide array of capabilities. To combat WMD the QDR called for a deployable Joint Task Force (JTF) for WMD elimination. As stated in chapter 2, the United States Army 20th Support Command fills this need and will be capable of rapidly forming and deploying, commanding, and

[113] Unfortunately the United States is not the best energy role model for other countries to follow. The United States operates on a net energy deficit and although it has a vast nuclear commercial capability, the United States does not reprocess nuclear fuel. This makes the United States nuclear fuel cycle incomplete and not as efficient an overall program as possible. For these reasons it is likely that the United States will be perceived as hypocritical in its attempts to steer countries away from nuclear energy and be energy efficient at the same time. However the reality is that the United States is a very responsible nuclear power and uses nuclear energy to supplement energy needs in a reasonable manner balanced with other sources of energy. Contrastingly, Iran who boasts one of the largest oil reserves in the world and operates on a large energy surplus, proposes that they need nuclear energy for its energy needs. This claim is completely unjustifiable and is a cover for less than responsible pursuits.

controlling responsive modular, multifunctional specialized CBRNE capabilities able to operate across a full spectrum of military operations.[114] These capabilities give a GCC flexible deterrent options against a nuclear proliferator. 20th Support Command has the resources to form a JTF consisting of several different teams whose capabilities range from WMD-related support missions to WMD-elimination missions.[115] 20th Support Command's WMD Coordination Element (WMD-CE) is a deployable joint force that provides CBRNE subject matter expertise and assists the GCC with planning, coordination, and execution of WMD missions. The WMD-CE has full reach back capability to the United States and is capable of "linking the foxhole to academia and scientific experts."[116] As mentioned throughout this paper the link to scientific experts and a full understanding of the technology behind nuclear weapons is critical to understanding an adversary's motives and capabilities. 20th Support Command also has the ability to deploy Joint Response Teams (JRT) with embedded Explosive Ordnance Disposal (EOD) teams that support identification and disablement of manufacturing and processing facilities. A JRT is also capable of environmental monitoring, restoration, and remediation in the consequence management phase of operations. Aimed specifically at nuclear proliferation, 20th Support Command has the capability to deploy Nuclear Disablement Teams (NDT) that can disable nuclear infrastructure in a semi-permissive or permissive environment. The NDTs have the capability to collect and transport samples of radiological material for forensic analysis to help a GCC prove proliferation. If necessary, the NDTs can conduct disablement operations that support follow on

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[114] Schueneman.

[115] Ibid. The description of the individual teams and capabilities of 20th Support Command all come from the interview with Lieutenant Colonel Schueneman of the 20th Support Command.

[116] Ibid.

elimination operations and represent the final approach to prevent a proliferator from progressing past the production stage. These capabilities give the GCC an assortment of options to contend with proliferation within their AOR.

The case study countries of chapter 3 highlight the importance for action in the production stage. Despite over two decades of effort, the United States and the international community were unable to prevent North Korea from ultimately testing a nuclear weapon. Efforts in Iraq have been successful at preventing Iraq from obtaining a nuclear weapon, and although the Iranians still pursue nuclear technology, they have not been successful at obtaining a nuclear weapon to date. In some situations such as Iraq strong intervention may be required, but in others such as Iran, it may be sufficient to delay production. The combination of diplomatic pressure, economic pressure, and military force when required can create an environment that is ultimately untenable for a country over the long term. This was the calculus that was ultimately successful against the Soviet Union. The United States must continue to use this approach against Iran. If military force is required, precision strike, special operating forces, or any combination of the capabilities of 20th Support Command listed previously can be used to remove the critical elements of Iran's nuclear program. An example of this is Israel's bombing of the Iraqi Osirak reactor in 1981. Although not supported by the international community including the United States, the precision strike on a critical vulnerability of the Iraqi nuclear infrastructure was very effective at delaying and redirecting Iraq's nuclear efforts.

The final stage of proliferation is the *completion stage*. The completion stage is defined as the production of a composite weapon that can achieve a nuclear yield. In this last stage of proliferation it is critical to define the final outcome as a weapon that *can*

achieve a nuclear yield. Although North Korea was finally able to test a nuclear weapon, the success of that test is a point of debate and may not ever be fully known outside of North Korea.[117] Even with the knowledge of nuclear physics and requisite material, it took the United States several years, billions of dollars, thousands of scientists, and resources across the country to successfully detonate a nuclear weapon during the Manhattan Project. Whether North Korea will ever be fully able to achieve a similar level of success is irrelevant. They have demonstrated the potential and have thus changed the equation required for successful counterproliferation.

The United States and international community have so far failed to adapt to this change. Measures used in the intent and production stages are less effective in the completion stage. Efforts in the intent stage are focused on identifying motives, increasing open communications, and shaping the decisions of regimes pursuing nuclear technology. These efforts are aimed at dissuasion. Efforts in the production stage are focused at balancing elements of power and removing critical capabilities or support for nuclear programs. These efforts are aimed at deterrence. In the completion stage, the true motives of a country are known and its production capabilities already exist. Efforts in this stage must be aimed at defeating the proliferation of nuclear weapons. This does not mean that a military only solution is the answer. All elements of power must still be employed, but the manner in which they are employed must change. If North Korea desires international acceptance and wants to be viewed as a rational actor, then the onus is on them to demonstrate credibility. The United States and international community

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[117] Center for Nonproliferation Studies, *North Korea Conducts Nuclear Test*, 10 October 2006, Internet, available from http://cns.miis.edu/pubs/week/pdf/061010_dprktest.pdf, accessed on 20 January 2007. In an article shortly after the North Korean nuclear test, the Center for Nonproliferation Studies lists several sources that estimate the yield from the test from as low as 250 tons of TNT to 15,000 tons of TNT.

can not continue to pursue approaches that have proven to be unsuccessful at dissuading or deterring North Korea's nuclear progression.

The United States and international community has failed to establish effective communication with North Korea over the last two decades. International accords such as the NPT and IAEA safeguards agreements have been broken with little consequence. Economic power has been utilized but has been ineffective at changing the course of the North Korean regime. The recent 2007 six party talks are a step in the right direction, but currently only give the same economic aide attempted previously. The six parties involved must establish clear requirements for actions by North Korea and must ensure these actions are completed. The United States must continue to develop military capabilities such as those of 20th Support Command and be prepared to use them if necessary.

As shown in chapter 3, counterproliferation scenarios are different throughout the world. This chapter has discussed the role of USSTRATCOM as the global synchronizer and crisis action responder and individual GCCs as the executors of a global strategy in the deliberate planning process. There are many models that can be applied to nuclear proliferation. This chapter has discussed a three stage model that shows the progression of a regime's nuclear efforts. The efforts of dissuasion, deterrence, and defeat fit within each stage of this model and help define how the elements of national power can be utilized to prevent proliferation. The intent of a successful counterproliferation program is to give the GCC flexible options that can be applied as needed in each different scenario. The development of a deployable JTF from the 20th Support Command is a prime example of this flexibility.

CONCLUSION

> **We will not permit the world's most dangerous regimes and terrorists to threaten us with the world's most dangerous weapons. We must accord the highest priority to the protection of the United States, our forces, and our friends and allies from the existing and growing WMD threat.**[118]
>
> **National Strategy to Combat WMD**

The closing statement to the introduction of the NS CWMD makes the ultimate objective of counterproliferation clear. The United States must not allow rogue regimes to threaten the world with nuclear weapons. These threats come from the intent, the production, and the completion of nuclear weapons. The NS CWMD is also correct to assert that these threats are growing. The countries analyzed in this paper have shown different scenarios with the main similarity being that they all threaten the international security environment. The United States must develop strategies and capabilities to deal with these threats during all stages of proliferation.

This process starts with the recognition of USSTRATCOM as the global synchronizer for all counterproliferation efforts. By defining the difference between nuclear energy and nuclear weapons the United States can close the loophole in the NPT and prevent rogue regimes from hiding illicit nuclear weapons programs. USSTRATCOM can use this new distinction to fully integrate national, military, and international doctrine and can ensure that all counterproliferation efforts are aimed at the single objective pointed out in the NS CWMD. USSTRATCOM can continue to develop methods of detection and can integrate new methods into comprehensive counterproliferation planning. Additionally with global strike capability, USSTRATCOM can decisively act in time sensitive situations.

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[118] Bush, *National Strategy to Combat Weapons of Mass Destruction*, 1.

Given the framework established by USSTRATCOM, GCCs can analyze the motives and capabilities of different countries in their AOR. Working within and using established national and international policies, GCCs can effectively communicate early with countries that show intent to pursue nuclear technology. GCCs can work with regimes to solve root energy issues and develop solutions that are based on true needs rather than perceived international norms with regard to nuclear energy. If a country does pursue nuclear energy, GCCs have access to technical and scientific resources such as those presented by 20th Support Command's WMD-CEs, NDTs, and JRTs. Working within well developed international agreements and armed with capability to identify misconduct and enforce requirements, the GCC can effectively prevent counterproliferation.

The United States has an array of flexible deterrent options to use against counterproliferation. Diplomatic, information, and economic elements of power are useful in all stages of proliferation and can prevent proliferation by non-kinetic means. With the continued development of resources such as 20th Support Command, the United States military will have a joint force capable of detecting, disabling, and eliminating nuclear material or nuclear weapons. Uniting these capabilities in a JTF and deploying them to an AOR gives the GCC a trained element capable of commanding and integrating individual elements tailored to a specific objective. These capabilities give the GCC the ability to dissuade, deter, or if necessary defeat counterproliferation. By understanding the stage of proliferation within each scenario the GCC can decide which method is appropriate.

LIST OF ACRONYMS USED

AOR – Area of Responsibility

CBRNE – Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives

DOD – Department of Defense

DOS – Department of State

DTRA – Defense Threat Reduction Agency

EOD – Explosive Ordnance Disposal

GCC – Geographic Combatant Commander

GWOT – Global War on Terrorism

HEU – Highly Enriched Uranium

IAEA – International Atomic Energy Agency

JRT – Joint Response Team

JP – Joint Publication

JTF – Joint Task Force

KEDO – Korean Peninsula Energy Development Organization

LEU – Low Enriched Uranium

NDS – National Defense Strategy

NDT – Nuclear Disablement Team

NMS – National Military Strategy

NMS CWMD – National Military Strategy to Combat Weapons of Mass Destruction

NMSP WOT – National Military Strategic Plan for the War on Terrorism

NPT – Treaty on the Non-Proliferation of Nuclear Weapons

NS CT – National Strategy for Combating Terrorism

NS CWMD – National Strategy to Combat Weapons of Mass Destruction

NSS – National Security Strategy

PSI – Proliferation Security Initiative

QDR – Quadrennial Defense Report

SALT – Strategic Arms Limitation Talks

START – Strategic Arms Reduction Treaties

UCP – Unified Command Plan

USSOCOM – United States Special Operations Command

USSTRATCOM – United States Strategic Command

WMD – Weapons of Mass Destruction

WMD/E – Weapons of Mass Destruction or Effect

WMD-CE – WMD Coordination Element

BIBLIOGRAPHY

Allison, Graham. *Nuclear Terrorism: The Ultimate Preventable Catastrophe*. New York, NY: Times Books, 2004.

Baker, Bradford. "Evaluation of Temperature Compensated Bubble Dosimeters For Treaty Verification Applications." Trident Scholar Report #211. Annapolis, MD: United States Naval Academy, May 1994.

Bush, George W. *National Strategy for Combating Terrorism*. Washington, D.C.: The White House, February 2003.

_____. *National Strategy to Combat Weapons of Mass Destruction*. Washington, D.C.: The White House, December 2002.

_____. *The National Security Strategy of the United States of America*. Washington, D.C.: The White House, March 2006.

_____. *Unified Command Plan*. Washington, D.C.: The White House, 5 May 2006.

Carus, W. Seth. "Defining Weapons of Mass Destruction." Washington, D.C.: Center for the Study of Weapons of Mass Destruction, January 2006.

Center for Nonproliferation Studies. *North Korea Conducts Nuclear Test*, 10 October 2006. Internet, available from http://cns.miis.edu/pubs/week/pdf/061010_dprktest.pdf, accessed on 20 January 2007.

Center for the Study of Weapons of Mass Destruction. *Combating WMD: Challenges for the Next 10 Years*. Washington, D.C.: National Defense University Press, February 2005.

Cossa, Ralph. "Six-Party Talks Moving in the Right Direction," *The Japan Times Online*, 19 February 2007. Internet, available from http://search.japantimes.co.jp/cgi-bin/eo20070219rc.html, accessed 19 February 2007.

Eisenhower, Dwight D. *Atoms for Peace*. Address before the General Assembly of the United Nation, New York, December 8, 1953. Internet, available from http://www.eisenhower.archives.gov/atoms.htm, accessed on 20 November 2006.

"Exclusive Interview: Conversation with Terror." *Time Magazine*, 11 January 1999. Internet, available from http://www.time.com/time/world/article/0,8599,174550-1,00.html, accessed 1 December 2006.

Fehlau, Paul. "Field-Trial Results for Pre-Flight Non-Nuclear Verification in Air Force NELA Flight Tests." Los Alamos National Laboratory document LA-12006-MS. Los Alamos, NM: Los Alamos National Laboratory 1991.

Ford, James L. and C. Richard Shculler. *Controlling Threats to Nuclear Security: A Holistic Model*. Washington, D.C.: National Defense University Press, 1997.

Franks, Tommy, General US Army-Ret. *American Soldier*. New York, NY: Harper-Collins Publishers, 2004.

Goodpaster, Andrew and Brent Scowcroft. "The Feasibility of Eliminating Nuclear Weapons," in *Tranforming Nuclear Deterrence*, edited by Hans Binnendijk and James Goodby. Washington, D.C.: National Defense University Press, 1997.

Joseph, Jofi. "*The Proliferation Security Initiative: Can Interdiction Stop Proliferation?"* June 2004. Internet, available from http://www.armscontrol.org/act/2004_06/Joseph.asp, accessed 5 December 2006.

Joseph, Robert G. and John F. Reichart. *Deterrence and Defense in a Nuclear, Biological, and Chemical Environment.* Washington, D.C.: National Defense University, 1999.

Kessler, J. Christian. *Verifying Nonproliferation Treaties: Obligation, Process, and Sovereignty*. Washington, D.C.: National Defense University Press, 1995.

Kokoski, Richard. *Technology and Proliferation of Nuclear Weapons*. New York, NY: Oxford University Press, 1995.

Krepinevich, Andrew Jr., Lt. Col. USA-Ret. "Mixed Review (Part Two of Two)." *Military Officer Magazine*, December 2006. Internet, available from http://www.moaa.org/pubs_mom_061201_Review.htm, accessed 5 December 2006.

Li, Vladimir F. "North Korea and the Nuclear Nonproliferation Regime", in *The North Korean Nuclear Program Security, Strategy, and New Perspectives from Russia*, edited by James Clay Moltz and Alexandre Y. Mansourov. New York, NY: Routledge, 2000.

Nelson, Martin E., James F. Ziegler, Harry F. Feigal, Crystine M. Good, Bryan N. Blackburn, Joseph St. John, Sean J. Locke, and Jeffrey D. Alan. "Investigation into the Feasibility of Highly Enriched Uranium Detection by External Neutron Stimulation", Defense Threat Reduction Agency document DTRA –TR-03-37, May 2006.

Noland, Marcus. *Avoiding the Apocalypse the Future of the Two Koreas*, Washington, D.C.: Institute for International Economics, June 2000.

Nuclear Threat Initiative, *Kazakhstan Profile*. Internet, available from http://www.nti.org/e_research/profiles/Kazakhstan/index.html, accessed 10 February 2007.

Office of the Secretary of Defense. *Department of Defense Counterproliferation (CP) Implementation.* Department of Defense Directive 2060.2. Washington, D.C.: Office of the Secretary of Defense, 9 July 1996.

_____. *Defense Threat Reduction Agency (DTRA).* Department of Defense Directive 5105.62. Washington, D.C.: Office of the Secretary of Defense, 28 November 2005.

_____. *Functions of the Department of Defense and Its Major Components*. Department of Defense Directive 5100.1. Washington, D.C.: Office of the Secretary of Defense, 1 August 2002.

_____. *Quadrennial Defense Review Report*. Washington, D.C.: Office of the Secretary of Defense, 6 February 2006.

_____. *The National Defense Strategy of The United States of America*. Washington, D.C: Office of the Secretary of Defense, March 2005.

Oh, Kongdan and Ralph C. Hassig. *North Korea Through the Looking Glass*. Washington, D.C.: Brookings Institution Press, 2000.

Rosen, Stephen Peter. "Nuclear Proliferation and Alliance Relations", in *The Coming Crisis*, edited by Victor A. Utgoff. Cambridge, MA: MIT Press, 2000.

Salama, Sammy and Elizabeth Salch. "Iran's Nuclear Impasse: Give Negotiations a Chance", *Center for Nonproliferation Studies*. 2 June 2006. Internet, available from http://cns.miis.edu/pubs/week/060602.htm, accessed 25 January 2007.

Sagan, Scott D. "Rethinking the Causes of Nuclear Proliferation: Three Models in Search of a Bomb", in *The Coming Crisis*, edited by Victor A. Utgoff. Cambridge, MA: MIT Press, 2000.

Schueneman, Richard, Lieutenant Colonel, US Army, 20th Support Command. Interview by author, 8 December 2006. Aberdeen, MD.

Smoke, Richard. *National Security and the Nuclear Dilemma: An Introduction to the American Experience.* Reading, MA: Addison-Wesley Publishing Company, 1984.

Sokolski, Henry D. *Best of Intentions: America's Campaign Against Strategic Weapons Proliferation*. Westport, CT: Praeger Publishers, 2001.

_____. "Getting Ready for a Nuclear-Ready Iran: Report of the NPEC Working Group", in *Getting Ready for a Nuclear-Ready Iran*, edited by Henry Sokolski and Patrick Clawson. Carlisle, PA: Strategic Studies Institute, 2005.

Squassoni, Sharon. *CRS Report for Congress: The Proliferation Security Initiative*. Septemer 14, 2006. Internet, available from http://www.fas.org/sgp/crs/nuke/RS21881.pdf, accessed 5 December 2006.

Sterngold, James. "How Deal on Korea Nuclear Program Was Cut, Bush, Kim Jong Il Both Gave Ground to Permit a Pact," *San Francisco Chronicle*, 14 February 2007. Internet, available from http://www.sfgate.com/cgi-bin/article.cgi?file=/c/a/2007/02/14/MNGEVO4DQ91.DTL, accessed 16 February 2007.

Turner, Stansfield. *Caging the Nuclear Genie: An American Challenge for Global Security*. Boulder, CO: Westview Press, 1997.

United States Department of State. *Memorandum of Understanding Between The United States of America and The Union of Soviet Socialist Republics Regarding the Establishment of a Direct Communications Link.* June 20, 1963. Internet, available from http://www.state.gov/t/ac/trt/4785.htm, accessed 1 February 2007.

U.S. Chairman Joint Chiefs of Staff. *National Military Strategic Plan for the War on Terrorism*. Washington, D.C.: Joint Chiefs of Staff, 1 February 2006.

_____. *National Military Strategy of the United States of America*. Washington, D.C.: Joint Chiefs of Staff, 2004.

_____. *National Military Strategy to Combat Weapons of Mass Destruction*. Washington, D.C.: Joint Chiefs of Staff, 13 February 2006.

_____. *Joint Doctrine for Combating Weapons of Mass Destruction*. Joint Publication 3-40. Washington, D.C.: Joint Chiefs of Staff, 8 July 2004.

Yarger, Harry R. "Strategic Theory for the 21st Century: The Little Book on Big Strategy." February 2006. Internet. Available from http://www.strategicstudiesinstitute.army.mil/pdffiles/PUB641.pdf. Accessed 1 December 2006.

Zacharia, Janine. "Bush Uses Clinton's Approach to Secure Korean Accord," 14 February 2007, Internet, available from http://www.bloomberg.com/apps/news?pid=20601087&sid=ab9JMOlf93l0&refer=home, accessed 16 February 2007.

VITA

LCDR Baker enlisted in the United States Navy in 1988 as a nuclear trained machinist mate. After finishing enlisted nuclear power training, LCDR Baker received an appointment to the United States Naval Academy starting in the Fall of 1990. LCDR Baker graduated with distinction from the Naval Academy in 1994 with a Bachelors of Science Degree in Marine Engineering and received the Captain Frederick's award for the highest graduating Marine Engineer. LCDR Baker began a Master of Science program at the Joint Forces Staff College in the Fall of 2006 and is scheduled to graduate in the Summer of 2007 with a Master of Science Degree in Joint Campaign Planning and Strategy.

LCDR Baker has over fifteen years of operational experience in the field of nuclear energy and has operated on four different naval nuclear propulsion plants. LCDR Baker has qualified from mechanical operator through Engineer Officer. LCDR Baker has served as Engineer Officer on two different submarines including serving as the Engineer Officer during the initial construction and testing of the United States Navy's newest class of submarine from 2004 to 2006.

In the field of nuclear weapons, LCDR Baker completed a Defense Nuclear Agency sponsored research project on a portable detector designed to be used for nuclear weapons treaty verification. As part of this research, LCDR Baker completed a summer internship with Los Alamos National Laboratory and used Nuclear-Explosive-Like-Assemblies as well as other nuclear devices to verify the detector's ability to differentiate between nuclear and non-nuclear weapons. LCDR Baker also completed research at the Armed Forces Radiobiological Research Institute, the Naval Surface Warfare Center, and the United States Naval Academy involving detection of other radiation sources using similar detectors. LCDR Baker has also complete five strategic deterrent patrols on two different operational nuclear ballistic missile submarines.