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BUILDING A PERSIAN GULF BALLISTIC MISSILE DEFENSE UMBRELLA: A COMPARATIVE CASE STUDY ANALYSIS OF REGIONAL PHASED ADAPTIVE APPROACHES

by

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June 2013

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This thesis investigates the shift to theater-based missile defense (TBMD) systems from the U.S. and its Gulf Cooperation Council (GCC) partners' perspectives, and it provides recommendations for developing a realistic pathway forward for the implementation of a TBMD system in the Persian Gulf region that takes into account the differences in the nature of security threats and collective security arrangements in this region. The 2010 Ballistic Missile Defense Review (BMDR) Report placed greater emphasis on theater-level missile defenses to counter weapons of mass destruction proliferation that threatens the European, Asian, and Middle Eastern regions. However, the European and Asian TBMD systems are significantly more developed than the Persian Gulf's capabilities. Lessons learned and key differences between threat capabilities and alliance structures within these regions have important implications for how a phased adaptive approach to missile defense is implemented in the Persian Gulf. Thus, a comparative case study analysis of the advanced European and Asian missile defense programs and the more modest Arabian Peninsula defense initiatives provides insight into developing a pathway forward for implementing a phased adaptive approach to missile defense that is tailored to the threats, interests, and abilities of the United States' Persian Gulf partners.

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TABLE OF CONTENTS

LIST OF FIGURES

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LIST OF TABLES

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LIST OF ACRONYMS AND ABBREVIATIONS

ABI	Airborne Boost-phase Intercept
ABM	Anti-Ballistic Missile
ABMT	Anti-Ballistic Missile Treaty
ALTBMD	Active Layer Theater Ballistic Missile Defense
AN/SPY-1	Army Navy/Sea-based S-band Radar Surveillance
AN/TPY-2	Army Navy/Transportable X-band Radar Surveillance
API	Ascent Phase Intercept
BMD	Ballistic Missile Defense
BMDR	Ballistic Missile Defense Review
BMDS	Ballistic Missile Defense System
C2BMC	Command, Control, Battle Management, and Communication
CAOC	Combined Air and Space Operations Center
CIA	Central Intelligence Agency
CWC	Chemical Weapons Convention
DPRK	Democratic People's Republic of Korea
EI	Early Intercept
EPAA	European Phased Adaptive Approach
FMS	Foreign Military Sales
GCC	Gulf Cooperation Council
GBI	Ground-Based Interceptor
GMD	Ground-based Midcourse Defense
GPALS	Global Protection Against Limited Strikes
GSD	Gulf Security Dialogue
HAT	Hizam Al-Taawun
IAMD	Integrated Air and Missile Defense
ICBM	Intercontinental Ballistic Missile
IRBM	Intermediate-Range Ballistic Missile
JSDF	Japanese Self Defense Force
MAD	Mutually Assured Destruction
MDA	Missile Defense Agency

MEADS	Medium Extended Air Defense System
MKO	Mujahedin-e Khalq Organization
MRBM	Medium-Range Ballistic Missile
MTCR	Missile Technology Control Regime
NATO	North Atlantic Treaty Organization
NMD	National Missile Defense
NPT	Nuclear Non-Proliferation Treaty
OPEC	Organization of Petroleum Exporting Countries
PAC	PATRIOT Advanced Capability
PATRIOT	Phased Array Tracking Radar to Intercept On Target
PSF	Peninsula Shield Force
QME	Qualitative Military Edge
R&D	Research and Development
SAMP-T	Surface-to-Air Missile Platform-Terrain
SBT	Sea-Based Terminal
SBX	Sea-Based X-band Radar
SCUD	Subsonic Cruise Unarmed Decoy
SDI	Strategic Defense Initiative
SM	Standard Missile
SM-T	Standard Missile-Terminal
SRBM	Short-Range Ballistic Missile
START	Strategic Arms Reduction Treaty
STSS	Space Tracking and Surveillance System
TBMD	Theater Ballistic Missile Defense
TEL	Transporter Erector Launcher
THAAD	Terminal High Altitude Area Defense
TMD	Theater Missile Defense
UAE	United Arab Emirates
U.S.-GCC SCF	United States – Gulf Cooperation Council Strategic Cooperation Forum
USSR	Union of Soviet Socialist Republics
WMD	Weapons of Mass Destruction

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I. INTRODUCTION

A. PURPOSE AND SCOPE:

This thesis focuses on understanding the United States' shift in missile defense policy and strategy towards a theater-based approach and its Gulf Cooperation Council (GCC) partners'[1] interest in collaborating in such an endeavor. Additionally, this thesis seeks to develop a realistic pathway forward for the development and implementation of a theater ballistic missile defense (TBMD) system in the Persian Gulf region that takes into account the unique nature of security threats and collective security arrangements within this part of the world. Thus, this thesis answers the following major research questions:

1. Question 1

What caused this recent paradigm shift in U.S. missile defense strategy from homeland defense to regional defense of allies and deployed forces?

2. Question 2

Why has the GCC embraced this U.S. shift in strategy, and what is a realistic pathway forward for the development and implementation of a TBMD architecture in the Persian Gulf region?

These two questions are interrelated, because it is important to understand the development of policy decisions concerning missile defense and how the U.S. and GCC arrived at this current juncture of pursuing theater-focused ballistic missile defenses in order to look ahead and postulate how such TBMD architectures can be built to meet the security needs of individual regions. The motivations and incentives for the U.S. and its GCC allies to embrace a TBMD approach to countering weapons of mass destruction (WMD) threats within the Persian Gulf region has implications for the development and implementation of such a technologically complex weapon system.

[1] The Gulf Cooperation Council consists of six Arab Gulf states: Saudi Arabia, Kuwait, Bahrain, Qatar, Oman, and the United Arab Emirates (UAE).

While building a TBMD architecture throughout a given region is a significant technological undertaking with physical threat data[2] and weapons system parameters needing to be taken into account, this thesis focuses predominately on the political considerations of building a TBMD system with coalition partners. Placement of missile defense components has both technical and political implications; the physics of intercepting a missile with another missile has to be combined with the social aspects of state relations within the region in order for a missile defense system to be effective. This thesis will utilize the available, open-source physical threat characteristics and models depicting Iran's ballistic missile capability as contextual information that is incorporated into the more in-depth consideration of domestic politics and relations between the GCC states and how these dynamics will impact the development of a robust TBMD system in this geographical area. The findings and recommendations from this thesis can provide a policy background for future research conducted within the technical realm of this region.

While a TBMD system is meant to adapt to new threats as they arise, and it should not necessarily be based on a single threat, this thesis will only examine the most prominent ballistic missile threat to the Arab states within the Persian Gulf region found in Iran. The components of the TBMD system are transportable and reconfigurable, so the architecture can be rearranged to counter different threats that may arise in the future (i.e., Syria); however, the political implications of such a reconfiguration will not be considered in this thesis. The emphasis of this research is on countering the Iranian ballistic missile threat in the Persian Gulf.

B. IMPORTANCE

Within the first year of the Obama Administration's first term in office, official statements and documents were released indicating a clear paradigm shift in missile defense concentration from homeland to theater security. In July 2009, Secretary of State

[2] The term "physical threat data" is used to refer to technical and numerical data concerning Iranian ballistic missile characteristics and capabilities. For example, the number and type of missiles, where they are located, number of launchers, and trajectory profiles represent physical data that would be used to build models that would indicate optimal location for certain components of a TBMDS (i.e., sensors and interceptors).

Hillary Clinton referred to extending a "defense umbrella" over the Persian Gulf region,[3] and two months later in September, President Barack Obama announced the initiative to build a robust ballistic missile defense (BMD) architecture with NATO partners—known as the European Phased Adaptive Approach (EPAA)—to counter the threat of WMD proliferation.[4] These statements were solidified five months later when the Secretary of Defense released the 2010 Ballistic Missile Defense Review (BMDR) Report, which placed greater emphasis on theater-level missile defenses to counter the North Korean and Iranian ballistic missile threats to the European, Asian, and Middle Eastern regions.[5] These statements and documents also suggest the willingness of the U.S. to pursue a non-nuclear, positive security assurance option instead of the offensive extended nuclear deterrence options that it utilized throughout the Cold War era to provide its allies with assurances against WMD threats, so that they would fore-go acquiring their own nuclear, chemical, or biological weapon arsenals.

This shift in American policy toward embracing theater missile defense was mirrored in the GCC states increased interest in purchasing lower- and upper-tier missile defense systems and recent overtures to work together in building a regional defense architecture against the Iranian ballistic missile threat.[6] While the level of cooperation between GCC states to achieve such an integrated architecture is far from reality, these overtures are a significant change in tone from the 1990s when the U.S. struggled to get the GCC member states to agree to build an integrated air and missile early-warning system.

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[3] Mark Landler and David E. Sanger, "Clinton Speaks of Shielding Mideast From Iran," *New York Times,* 22 July 2009, http://www.nytimes.com/2009/07/23/world/asia/23diplo.html.

[4] The White House Office of the Press Secretary, "Remarks by the President on Strengthening Missile Defense in Europe," 17 September 2009, http://www.whitehouse.gov/the-press-office/remarks-president-strengthening-missile-defense-europe.

[5] "Ballistic Missile Defense Review (BMDR) Report February 2010," Department of Defense, http://www.defense.gov/bmdr/, 32–34.

[6] The UAE recently purchased a couple Terminal High Altitude Area Defense (THAAD) batteries; Saudi Arabia has PATRIOT batteries, which are currently being upgraded. Saudi Arabia has also expressed interest in purchasing Aegis, sea-based missile defense capabilities (Kimberly Lansdale, "Royal Saudi Navy CNO visits Dahlgren," *Surface Warfare,* Winter 2012, 19); Kuwait has put in a request for PATRIOT batteries, and Qatar has agreed to host a TPY-2 X-band radar; "International Cooperation," Missile Defense Agency, http://www.mda.mil/system/international_cooperation.html.

It is important to investigate the reasoning and calculus behind this paradigm shift in missile defense in order to understand the political and strategic objectives that the U.S. and GCC intend to gain through a regional focus. These objectives should provide a framework and guidance in the development and implementation of a TBMD architecture in the Persian Gulf region. Understanding why this missile defense option is being pursued is a necessary prerequisite for understanding how this complex weapon system will be constructed to meet the political and strategic objectives of both parties. The roadmap for establishing a TBMD architecture in the Middle East region starts with identifying these objectives.

Once these policy and strategic aims are firmly in place and understood, the rest of the theater missile defense roadmap for the region can be established upon this foundation. A concrete plan for building this weapon system architecture in this region is of paramount importance, because of the three regions Washington stated that it intends to build TBMD systems, the Middle East represents one of the most at risk regions for WMD proliferation.[7] Yet, despite this high-risk potential, the plan for implementing Middle East TBMD is the least developed. If theater missile defense is going to be sought as an alternative to the traditional positive security assurances of extended nuclear deterrence, then this mismatch of defense supply and demand needs to be rectified. The ability of security assurances (nuclear or non-nuclear) to be successful in preventing the spread of WMD hinges upon the recipient's perceived credibility of the security guarantor.[8] While Washington's statements of intention to provide a "defense umbrella" to its Persian Gulf allies is in a sense reassuring, a concrete roadmap that identifies planned actions and milestones of how to achieve a missile defense architecture in the region would give these security assurances greater credibility and thus a greater likelihood of being an effective tool to prevent WMD proliferation among the Arab Gulf states.

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[7] "Ballistic Missile Defense Review (BMDR) Report February 2010," 22–27, 31–33.

[8] Jeffrey W. Knopf, ed., *Security Assurances and Nuclear Nonproliferation* (Stanford, CA: Stanford University Press, 2012), 286–87.

C. LITERATURE REVIEW

The BMDR Report released in February 2010 is the most recent articulation of U.S. missile defense policy. With direction from the President and a mandate from Congress, the Secretary of Defense in conjunction with other governmental organizations and agencies conducted a comprehensive evaluation of U.S. policies, strategies, and programs concerning BMD. The resulting policy framework is more outward looking than previous missile defense plans in the last decade, which concentrated almost exclusively on homeland defense.[9] While the report acknowledges the need to continue protecting the homeland against limited ballistic missile attack, it recommends the refocusing of resources towards regional threats for the expressed purposes of ensuring U.S. security guarantees, strengthening theater deterrence architectures, and maintaining a strategic balance with Russia and China.[10]

The BMDR identified three at-risk regions of geo-political importance to build theater-based BMD architectures: Europe, Asia, and the Middle East. The report sets forth an extensive pathway for implementing a TBMD plan in Europe known as the European Phased Adaptive Approach (EPAA). The pathway for developing a similar system in Asia is less concrete; however, through the Japanese-American alliance, extensive layered missile defenses have been developed and implemented and serve as a significant starting point to broaden the architecture to other allies within the region. The Middle East TBMD architecture is noticeably the least developed out of the three regions mentioned. The BMDR discusses the on-going missile defense partnership and programs the U.S. has with Israel, but there is only a vague mention of working with its Persian Gulf allies. The report mentions building upon a Bilateral Air Defense Initiative and the increased interest from certain Gulf Corporation Council (GCC) states for acquiring BMD technologies. Despite these developments, there is not a concrete plan for how these arms purchases will be integrated in a larger TBMD architecture for the region, and there is not an equivalent partnership that mirrors the U.S.-Japan cooperation on the

[9] Specifically, there was a reduction in GMD interceptors from 44 to 30 and the cancellation of the third GMD site that was planned for Poland; "Ballistic Missile Defense Review (BMDR) Report February 2010," 4–5, 15–18.

[10] Ibid., i-vii, 1–13.

development of layered missile defenses in the Persian Gulf that can be used as a stepping-stone to broaden the architecture throughout the area. While the Arabian Peninsula stands to be the most challenging place to implement a missile defense architecture, out of the three regions identified for TBMD development in the BMDR, it is the most threatened and strategically important region. Due to the pivotal role this area of the world plays in the world energy market, its security and stability is of interest to the entire international community, not the United States alone. This thesis aims to fill this gap the BMDR leaves in developing a concrete vision for TBMD within this threatened and unstable region.[11]

The BMDR's gap in addressing a robust TBMD architecture with the GCC countries is also reflected in the majority of the literature written pertaining to missile defense since the end of the Cold War. The literature during the 1990s and early 2000s, when the Anti-Ballistic Missile Treaty (ABMT) was still in effect, can be categorized into five main subject areas:

- The technical capability of missile defense in general (homeland and/or regional) and whether or not the cost of investing in the technology would result in a system that could provide adequate protection against ballistic missile attacks[12]

[11] Ibid., 19–34.

[12] Literature pertaining to subject area #1 includes: Dean Wilkening and Kenneth Watman, *Nuclear Deterrence in a Regional Context* (Santa Monica: RAND, 1995), 46–48; James J. Wirtz, *Counterforce and Theater Missile Defense: Can the Army Use an ASW Approach to the Scud Hunt* (Carlisle Barracks: Strategic Studies Institute, U.S. Army War College, 1995), 1–19; Daniel Goure, *Charting a Path for U.S. Missile Defenses: Technical and Policy Issues* (Washington, D.C.: Center for Strategic and International Studies, 2000), 8–13; Keith B. Payne, *Missile Defense in the 21st Century: Protection Against Limited Threats Including Lessons from the Gulf War* (Boulder: Westview Press, 1991), 13–25, 139–152; Michael D. Swaine, Rachel M. Swanger, and Takashi Kawakami, *Japan Ballistic Missile Defense* (Santa Monica: RAND, 2001), 1–10, 23–28; "Report to Congress on Theater Missile Defense Architecture Options for the Asia-Pacific Region," Department of Defense, 1999, 1–15; Robert W. Stanley II, *Attacking the Mobile Ballistic Missile Threat in the Post-Cold War Environment: New Rules to an Old Game* (Maxwell Air Force Base: Air University Press, 2006), 1–4, 37–50.

- The balance between national missile defenses (NMD) and theater missile defenses (TMD)[13]
- The feasibility of developing missile defense technologies within the constraints of the ABMT[14]
- The debate of whether to withdraw from the ABMT[15]
- Preventing WMD proliferation through arms-control regulations like the Missile Technology Control Regime (MTCR) and other diplomatic agreements like the nuclear Non-Proliferation Treaty (NPT) and the Chemical Weapons Convention (CWC).[16]

The literature throughout the 1990s also reflects the policy debate over what direction to take missile defense. The Reagan Administration's Strategic Defense Initiative (SDI), which focused on protecting the homeland against a large-scale ballistic missile attack from Russia, dominated missile defense policy and strategy in the 1980s. Shortly after the Berlin Wall fell in 1989, President George H.W. Bush ordered a review of the SDI. The findings of the review were completed in March 1990, and it reflected Washington's realization of the changed security environment characterized by ballistic missile and WMD proliferation to third world countries. The final report proposed a missile defense system that would protect the homeland against limited ICBM attacks, but included a new emphasis on theater defenses against short-range threats that had been absent from the SDI program. The new system was called Global Protection Against Limited Strikes (GPALS). The theater focus of the system was meant to protect both deployed overseas forces as well as allies. GPALS included three integrated components

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[13] Literature pertaining to subject area #2 includes: Wilkening and Watman, *Nuclear Deterrence in a Regional Context,* 46–48, 63–5; Goure, *Charting a Path for U.S. Missile Defenses: Technical and Policy Issues*, 15–17; Payne, *Missile Defense in the 21st Century: Protection Against Limited Threats Including Lessons from the Gulf War,* 139–157; Navy Studies Board, *Naval Forces' Capability for Theater Missile Defense* (Washington, D.C.: National Academy Press, 2001), 15–24, 39–93; Stanley II, *Attacking the Mobile Ballistic Missile Threat in the Post-Cold War Environment: New Rules to an Old Game,* 37–50, 54–57.

[14] Literature pertaining to subject area #3 includes: Wilkening and Watman, 46–48, 63–5, and Goure, 13–14.

[15] Literature pertaining to subject area #4 includes: Payne*,* 155–57; Goure, 13–14, 18–19.

[16] Literature pertaining to subject area #5 includes: Seth W. Carus, *Ballistic Missiles in Modern Conflict* (New York, Praeger/Center for Strategic and International Studies, 1991), 53–68; Martin S. Navias, "Ballistic Missile Proliferation in the Third World," *Adelphi Papers 252,* The International Institute for Strategic Studies, 1990, 61–72; Martin S. Navias, *Going Ballistic: The Build-up of Missiles in the Middle East* (London: Brassey's (UK) Ltd., 1993), 192–230.

of layered defenses: a space-based system of interceptors, ground and sea-based theater missile defenses, and a limited, ground-based system for homeland protection. This conceptualized version of theater and national missile defenses is similar to the current phased adaptive approaches being proposed with the only major difference being the absence of the space-based interceptors.[17]

The First Gulf War demonstrated to the United States and its allies the reality of the new, post-Cold War security environment. The Iraqi SCUD missile attacks against Israel and Saudi Arabia were evidence of the genuine threat ballistic missile proliferation to third world countries posed in the new world order. In the book *Missile Defense in the 21st Century: Protection Against Limited Threats Including Lessons from the Gulf War*, Keith B. Payne uses the incidence of the First Gulf War to argue that the U.S. government should refocus its missile defense policy towards regional threats, and that the SDI and ABMT were relics of the Cold War. He believed the GPALS theater-based missile defense system was the correct pathway forward, and that such a system would bring regional stability to the Middle East, as well as other regions faced with ballistic missile threats. While Payne uses the events that took place in the Middle East during the First Gulf War to support the policy and strategic shift to the regional-level, he does not go beyond arguing TMD is the correct focus. He does not provide guidance on how to overcome the challenges of establishing such a system in the Middle East or elsewhere.[18]

At the time the GPALS program was announced and Payne's book was written, TMD technologies were still in the conceptual stage; the only deployed, regional-based active missile defense was the Army's Phased Array Tracking Radar to Intercept On Target (PATRIOT) system. There were politicians and academics that doubted the capability and feasibility of employing TMD systems, and they believed a NMD system held better prospects against ballistic missile threats and would be a better investment of resources. This debate over the focus of missile defense, regional or national, was ongoing throughout 1990s with NMD eventually overshadowing TMD when President William J. Clinton signed the National Missile Defense Act in 1999. The

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[17] "Missile Defense: the First Sixty Years," Missile Defense Agency, 15 August 2008, www.mda.mil.

[18] Payne, 1–12, 153–58.

recommendations for handling the regional ballistic missile threat to deployed forces and allies that remained centered on developing attack operations (preemptive strike) and passive defenses due to the skepticism of whether or not active defenses were a viable technology at the time.[19] Entities such as the U.S. Army War College, Air University, Center for Asia Pacific Policy, and the Department of Defense were producing studies that were supportive of utilizing active defenses in an integrated, layered architecture; however, this research centered on the European and Asian regions with little to no mention of analogous systems in the Middle East theater.[20] With the exception of Payne's book, the literature that discussed the ballistic missile threat to the Middle East region typically concluded with policy recommendations that emphasized arms control regimes and diplomatic agreements, like the NPT, as a means to combat the danger. The only exceptions to this claim were a few articles and a book written by Israeli defense analysts. In 1997, Uzi Rubin contributed an article to the *RUSI Journal* that made a similar argument that Payne did about the significant threat of ballistic missile proliferation in the Middle East. Rubin's article is more focused on the stability that TMD with active defenses could specifically bring to the Middle East than Payne's book; however, like Payne, Rubin does not go into how such a defense system could be effectively employed in the region. Additionally, Arieh Stav wrote the book *The Threat of Ballistic Missiles in the Middle East: Active Defense and Counter-Measures;* however, despite the title of the book, it is entirely written from the Israeli point of view and

[19] The initial concept of ballistic missile defense focused on four pillars that were fused together to form a ballistic missile defense system (BMDS). The four pillars were active defense (interceptor missiles), attack operations (sometimes referred to as counterforce defense, which refers to preemptive/first strike operations), command and control, and passive defense (warning, protection, and hardening). "Missile Defense: the First Sixty Years," www.mda.mil; Wilkening and Watman, 39–51, 63–63; Wirtz, *Counterforce and Theater Missile Defense,* 1–19.

[20] Swaine, Swanger, and Kawakami, *Japan Ballistic Missile Defense*, 1–10, 23–39; "Report to Congress on Theater Missile Defense Architecture Options for the Asia-Pacific Region," Department of Defense, 1–15; Axel Schmidt and Frits Verschuur, "European Theater Missile Defense Program: A Field for International Cooperation" (Maxwell Air Force Base: Air University Press, 1997), 21–35.

pertains only to Israeli defense against ballistic missile threats, not the entire Middle East.[21]

Since TBMD systems are a response to counter the spread of WMD to third world states, literature pertaining to nuclear and ballistic missile proliferation was also reviewed due to its applicability to the topic. Ballistic missile defense is often analyzed through a realist lens in a similar manner that the closely related topics of nuclear strategy and proliferation are examined. During the Cold War, conclusions and policies concerning nuclear strategy, proliferation, and the role of missile defense were often predicated upon the state-level of analysis where security and power formed the cornerstone of the state's national interest, and arms control and security assurances were the chosen policies to contain the threat of nuclear proliferation. Since the end of the Cold War and dissolution of the bipolar international system, rational deterrence theory struggles to completely explain the new world order of rogue states and non-state actors. In Tanya Ogilvie-White's article "Is There a Theory of Nuclear Proliferation? An Analysis of the Contemporary Debate," she notes that nuclear proliferation explanations have been predominately viewed through the realist perspective focusing on external pressures to the state. Ogilvie-White points out that states face a "double security dilemma" that involves internal and external threats to their stability that effect their decision-making: "Domestic concerns—political stability, social cohesion, economic strength, environmental well-being, and technological development—would perhaps be factored in with more traditional strategic concerns about the existence of adversaries, the reliability of alliances, and the distribution of power in the international system."[22] These observation made about nuclear proliferation are reflected in the aforementioned BMD literature, which focuses on countering the external threat and the impact on strategic

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21 Carus, *Ballistic Missiles in Modern Conflict*, 53–68; Navias, "Ballistic Missile Proliferation in the Third World," 61–72; Navias, *Going Ballistic: The Build-up of Missiles in the Middle East*, 192–230; Uzi Rubin, "Missiles and Missile Defence in the Middle East: A Regional View," *RUSI Journal,* October 1997, 74–5; Arieh Stav, ed., *The Threat of Ballistic Missiles in the Middle East: Active Defense and Counter-Measure* (Brighton: Sussex Academic Press, 2011).

22 Tanya Ogilvie-White, "Is there a Theory of Nuclear Proliferation? An Analysis of the Contemporary Debate," *The Nonproliferation Review,* Fall 1996, 48.

balance.[23] In addition to external threats, an examination of the domestic politics of the regions the U.S. plans to implement TBMD systems should be conducted.[24]

The BMDR states that one of the intended outcomes of the policy and strategy it set forth is to underwrite security guarantees to allies. This plan to utilize missile defenses to bolster security assurances that have been supported through extended nuclear deterrence since the beginning of the Cold War, suggests that BMD may be part of the solution to the mounting policy dilemma created by positive and negative security assurances and arms reduction commitments that academics and policy makers have been pointing out for the last two decades. Jeffrey Knopf investigates the relationship between nuclear proliferation and security assurances in his book *Security Assurances and Nuclear Nonproliferation.* Knopf highlights several case studies to attempt to understand the conditions under which positive or negative security assurances are effective at preventing countries from acquiring or abandoning nuclear weapon programs. In his analysis of these case studies, Knopf examines domestic factors that may have pushed states in either direction, and concludes that the success or failure of security assurances is situational dependent, so it is hard to propose all-encompassing, fail-safe policies. However, he does acknowledge there are a few things that seem to be prevalent across the board when it comes to security assurance success stories. He finds that credibility between provider and recipient is important, as well as tailoring the assurance to the recipient's security environment. It is also suggested that security assurances are best offered as part of a larger strategy that involves positive incentives, which include strengthening of political and economic ties, as well as improving defense cooperation and consultation. Despite these findings, Knopf argues that continuing to provide positive security assurances in the form of extended deterrence guarantees requires the U.S. to

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[23] The following literature is in addition to the literature already cited that focuses on threat capability and strategic balance, Tom Sauer, *Eliminating Nuclear Weapons: Role of Missile Defense* (New York: Columbia University Press, 2011), 39–108; Dean Wilkening, "A Simple Model for Calculating Ballistic Missile Defense Effectiveness," *Science and Global Security,* 1999, Volume 8:2, pp. 183–215; Dean Wilkening, "How Much Ballistic Missile Defense Is Enough?" Center for International Security and Cooperation, Stanford University, October, 1998, 1–38.

[24] Ogilvie-White, "Is there a Theory of Nuclear Proliferation? An Analysis of the Contemporary Debate," 43–60; Paul Gordon Lauren, Gordon A. Craig, and Alexander L. George, *Force and Statecraft,* 4th ed. (New York: Oxford University Press, 2007), 175–180.

maintain its nuclear weapons at the ready, which makes negative assurances to non-nuclear states appear disingenuous. James Russell makes a similar assessment of this policy dilemma in his article "Extended Deterrence, Security Guarantees and Nuclear Weapons: U.S. Strategic and Policy Conundrums in the Gulf." Russell points to Secretary Clinton's remarks about extending a "defense umbrella" to the U.S. GCC allies, and how if this umbrella is a nuclear one, then such assertions are incongruent with the multilateral commitments the U.S. has to reduce its nuclear arms.[25]

If the solution to this policy dilemma is utilizing non-nuclear options like BMD systems, then the credibility and tailored nature of assurances that Knopf mentions will need to be applied to this new defense umbrella. While security assurances have been policy prescription of the realist school of thought, Knopf breaks down the interests of different states to accept or reject certain security arrangements. Through the case studies he looks at the inner motivations of the leaders of states and their relationship to other domestic institutions to add to a fuller understanding of what mechanisms, other than external threats, construct states' interests. Taking the level of analysis down to the individual or unit level and examining social and psychological perspectives allows for better predictions and explanations concerning the complex dynamics of nuclear proliferation.[26]

This literature review demonstrates a gap in the development of a concrete roadmap for building a TBMD architecture in the Persian Gulf region. There is also a tendency to frame WMD proliferation and missile defense solely in terms of the external pressures states experience. Therefore, examining the internal dynamics that equally form states' interests and decision-making processes can produce a fuller understanding of TBMD evolution and provide guidance for successfully implementing missile defenses within a coalition structure in the Persian Gulf.

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[25]Knopf, *Security Assurances and Nuclear Nonproliferation,* 1–7, 286–89; James Russell, "Extended Deterrence, Security Guarantees and Nuclear Weapons: U.S. Strategic and Policy Conundrums in the Gulf," *Perspectives on Extended Deterrence,* Foundation pour la Recherche Strategique, Recherches & Documents No. 03/2010,67–8, 75–7.

[26] Knopf, 89–268; Ogilvie-White, 48, 53–4.

D. METHODOLOGY

This thesis uses a comparative case study analysis of the three regions identified in the "BMDR Report" that the United States is committed to defending against ballistic missile threats: Europe, East Asia, and the Middle East. Since America's European and Asian allies are considerably further along in their missile defense programs than its Persian Gulf partners, they provide valuable lessons learned from similar challenges that the GCC may encounter as it begins to acquire integrated missile defense capabilities. More importantly, the differences within these regions will impact how phased adaptive approaches are implemented to fit each region's particular circumstances. These differences include threat capability, range, and volume, as well as how the countries within these regions cooperate with one another and with the United States. Due to these variations, the "BMDR Report" emphasizes the importance of preventing a 'one size fits all' mentality: "In short, the foundations for applying phased adaptive approaches in these regions are different, and thus so too are the pathways forward."[27] Through this comparative method of analysis, a tailored pathway forward for implementing a phased adaptive approach to missile defense can be developed to meet the threats, interests, and abilities of the United States' Persian Gulf partners.

E. THESIS OVERVIEW

This thesis is structured into five chapters, with the first chapter addressing the motivations and incentives for the U.S. and its GCC partners to embrace a TBMD approach to countering weapons of mass destruction (WMD) threats within the Persian Gulf region. These objectives will serve as guiding principles for the development and implementation of the phased adaptive approach, which are discussed in subsequent chapters.

Chapters III through V consist of the comparative analysis between the three different regions with the emphasis being on the Persian Gulf. Chapter III examines the European and Asian missile defense initiatives. The nature of the threats, alliances, strategic balances, and previous collaborations on missile defense within these regions

27 "BMDR Report," 25.

are analyzed. Chapters IV and V comprise the Persian Gulf case study with Chapter IV focusing on the nature the Iranian threat, and Chapter V concentrating on the internal dynamics of the GCC states and their alliances with one another and the United States. This chapter will also examine previous collaborative defense initiatives and their outcomes in the region.

The concluding chapter will provide policy recommendations based on the analysis from the previous chapters. These recommendations will include proposed TBMDS elements and where they should be stationed based off of political-military dynamics and capacities within the GCC states, as well as measures to be taken to integrate these efforts across the entire alliance. Lastly, critical issues are presented that will need to be addressed in order to ensure that a missile defense phased adaptive approach provides stability and credible deterrence within the region.

II. MOTIVATIONS AND INCENTIVES

This chapter analyzes the motivations and incentives for the United States and its GCC partners to embrace a TBMD approach to countering (WMD) threats within the Persian Gulf region. The first section reviews the evolution of ballistic missile defense in order to provide context for the recent shift in U.S. policy towards TBMD. Included in this section is an overview of the current TBMD construct, the phased adaptive approach, and the technical components and their capabilities that comprise this layered defense system. The second section discusses the relevance of implementing a TBMD architecture in the Persian Gulf, the objectives and interests of U.S. allies in the region, and the benefits and challenges of pursuing such an initiative.

A. THE SHIFT TO THEATER BALLISTIC MISSILE DEFENSE

Employing active missile defenses is not a new idea. Its origins lie within WWII and countering the threat of German V-2's against Western European allies. Its evolution also has to be understood within the larger context of the development of nuclear strategy from the Manhattan Project to the New START.

1. A Brief History of Nuclear Strategy and Ballistic Missile Defense Evolution

As the Manhattan Project worked towards building the first nuclear weapons, the lesser-known Project Thumper sought methods of defending deployed forces against the new ballistic missile threat.[28] Active missile defense is a component of nuclear strategy, and it has had to contend with the offensive side since Fat Man and Little Boy were dropped on Nagasaki and Hiroshima in August 1945. The unproven concept of creating a shield to defend against a barrage of nearly impossible-to-detect projectiles was pitted against the successfully demonstrated, awe-inspiring destructiveness of a single atomic bomb. Thus, from the beginning of the nuclear age, offensive and defensive capabilities

[28] Richard Dean Burns and Lester H. Brune, *The Quest for Missile Defenses* (Claremont: Regina Books, 2003), 15.

have constituted something of a sibling rivalry with the offense gaining favor and eventually coming to dominate the character of Cold War nuclear strategy and policy.

Secretary of Defense Robert McNamara elevated the approach of allowing the U.S. and U.S.S.R. to utilize their offensive nuclear arsenals to target each other's population centers while at the same time attempting to limit offensive and defensive systems. Mutually assured destruction (MAD) and arms control became the cornerstone of U.S. nuclear strategy from the 1960s to the end of the Cold War. Undoubtedly, MAD was a terrifying balance to accept, but it was nonetheless a balance that seemed to hold the strongest potential for providing stability within the international system at a time when it was desperately needed to stop the spiraling and destabilizing offensive-defensive, action-reaction cycle of an arms race. With the 1972 Anti-Ballistic Missile (ABM) Treaty, missile defense was sidelined in order to preserve this balance. Lawrence Freedman summarizes this strategy in his book *The Evolution of Nuclear Strategy*: "The formula for stabilizing the arms race could be summed up as: 'Offence good, defence bad; killing cities good; killing missiles bad.' This was not based on timeless and universal values but the circumstances of the moment."[29] While it was concluded during the latter half of the twentieth century that effective missile defenses were a destabilizing, as well as dubious endeavor, the changed strategic environment since the break-up of the Soviet Union presents serious challenges to these long-established Cold War foundations of stability.[30]

The Reagan Administration's Strategic Defense Initiative (SDI) in the 1980s was evidence that while MAD and arms control were the established mainstays of Cold War nuclear strategy, there were those who were not content to live indefinitely with the "balance of terror" created by these policies and strategies. Furthermore, there was a belief that as long as nuclear weapons existed, their use was inevitable. The SDI program's focus on protecting the homeland against a large-scale ballistic missile attack from Russia through the use of space-based interceptors and lasers was largely criticized

[29] Lawrence Freedman, *The Evolution of Nuclear Strategy*, 3rd ed. (New York: Palgrave Macmillan, 2003), 242.

[30] Ibid., 232–242; Burns and Brune, *The Quest for Missile Defenses,* 24–28; Sauer, *Eliminating Nuclear Weapons*, 1–18.

for being technologically premature and upsetting the stability of twenty years worth of arms control negotiations. However, the waning Soviet power and rising proliferation of ballistic missiles and WMD to the third world that accompanied the abrupt end to the Cold War caused President George H.W. Bush to scale down and refocus the SDI program to meet the needs of the changed security environment. His revised missile defense system, Global Protection Against Limited Strikes (GPALS), was to protect the homeland against limited ICBM attacks from accidental or unauthorized release, and have a greater emphasis on defending against short-range theater ballistic missiles that threatened allies and deployed forces. It was believed this new layered missile defense system that consisted of space, ground, and sea-based based interceptors could be achieved within the constraints of the ABM Treaty.[31]

As the Berlin Wall fell in 1989, so too began the dissolution of the bi-polar world and delicate "balance of terror" that had been constructed around it. The end of the Cold War ushered in an array of predictions of the new world order and what it would mean for stability in the international system.[32] The intra-state, ethnic-driven conflict, terrorist attacks, and the proliferation of weapons of mass destruction were the challenges that came to dominate the opening of the post-Cold War era. The proliferation of WMD to unstable, third world regimes that often had objectives that seemed to be incongruent with prevailing international norms and standards, as well as the possibility that sub-state, violent extremist organizations could gain access to such weapons, seriously challenged the assumptions and application of nuclear deterrence to the realities of the new strategic environment. The First Gulf War demonstrated to the United States and its allies this dilemma. The Iraqi SCUD missile attacks against Israel and Saudi Arabia were evidence of the genuine threat ballistic missile proliferation to third world countries posed in this new world order.[33]

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[31] Burns and Brune*,* 82–97, 101–7,120–23, 131–38, 143–48; Freedman, *The Evolution of Nuclear Strategy*, 391–400.

[32] In reference to pieces by Frances Fukuyama ("The End of History?"), John J. Mearsheimer ("Why We Will Soon Miss the Cold War"), and Samuel P. Huntington ("The Clash of Civilizations?") as reprinted in Richard K. Betts, *Conflict After the Cold War: Arguments on Causes of War and Peace,* 3rd ed. (New York: Pearson-Longman, 2008), 6–51.

[33] Freedman, 407–57; Payne, *Missile Defense in the 21st Century*, 139–57.

The inability of nuclear deterrence to address the complex and evolving challenges of the changing strategic environment in the 1990s led President William J. Clinton to initially continue the theater-focused approach to missile defense that the Bush I Administration started. However, facing a Republican-controlled Congress that was skeptical of the complete Soviet collapse and reluctant to accept new threats to national security that lay within Third World and non-state organizations, Clinton was forced to shift the main focus of missile defense back to the strategic realm due to this political pressure. Intelligence overestimates of WMD development by the so-called rogue nations (Iraq, Iran, North Korea, and Libya), and North Korea's launching of its Taepo Dong-1 (TD-1) missile in August 1998 put immense pressure on the Clinton Administration to deploy a NMD system and amend or withdraw from the ABM Treaty.[34] Clinton signed the National Missile Defense Act in 1999,[35] and his successor George W. Bush accelerated the deployment of a NMD system during his terms in office due to the events of 9–11, the "war on terror," and the formulation of the "axis of evil" that resulted in feelings of increased insecurity at home. The U.S. withdrawal from the ABM treaty in 2002, deployment of the Ground-based Midcourse Defense (GMD) system in 2005,[36] and the use of preventative attack against Iraq in 2003 was President Bush's response to the perceived growth in theater and homeland threats.[37]

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[34] Burns and Brune, 163–165; While North Korea's TD-1 test flight in 1998 out performed U.S. intelligence estimates in range, it did not achieve its intended goal of placing a satellite into orbit due to a third stage booster failure. Additionally, it was believed that North Korea did not yet have the technology required to develop sophisticated guidance systems or reentry vehicles that could carry nuclear warheads.

[35] This legislation advocated building a NMD system as soon as technologically possible and amending to the ABM Treaty to accommodate its deployment. Due to failed missile tests, delayed programs, and criticism against the alteration of the ABM Treaty terms, Clinton deferred the decision to deploy a NMD system to his successor George W. Bush; Burns and Brune, 153–180, Missile Defense Agency, "Missile Defense: the First Sixty Years," 15 August 2008, www.mda.mil; 16–17.

[36] The GMD program initially called for the deployment of 44 ground-based, conventionally armed interceptors at two sites in the U.S., and an additional site with 10 interceptors stationed in Poland to hedge against an Iranian threat to NATO allies; Department of Defense, "Ballistic Missile Defense Review (BMDR) February 2010," 15–18; Burns and Brune, 208–11.

[37] Burns and Brune, 153–214; Kenneth P. Werrell, "Hitting a Bullet with a Bullet: A History of Ballistic Missile Defense," Airpower Research Institute, 2000, 41–65.

2. The Paradigm Shift to Theater Missile Defense

At the end of the Bush Administration, missile defense was decidedly oriented towards the homeland, but shortly after the inauguration of President Barack Obama in January 2009, a dramatic shift back towards theater-level missile defense occurred. A combination of circumstances brought about this shift to regional missile defense. First, the latter Bush Administration's GMD program became plagued with failures and delays and faced criticism for its rushed deployment.[38] Conversely, theater missile defense programs were experiencing unprecedented success with THAAD, Aegis BMD, and PAC-3 showing increased capabilities against more sophisticated targets.[39]

Second, pursuing an NMD system designed to defeat a limited strike from rogue nations or accidental launches became increasingly disingenuous, as the ICBM threat from rogue states did not materialize as quickly as originally projected, and stability within Russia and China made an accidental launch seem highly unlikely.[40] The threat was and still is at the theater level. Thus, it made sense to rebalance missile defense efforts to protect regional allies and deployed forces against existing short- and medium-range ballistic missile threats. Additionally, given the negative consequences of launching a preventative war into a third world country, which had only increased regional instability, the United States sought a defensive deterrence strategy that included military and non-military tools to counter the threat posed by the proliferation of WMD.

Third, the strategic implications of pursing even a limited NMD system worried Russia and China and threatened the United States' ability to continue further arms reduction negotiations. While shifting the focus to the theater level has not completely alleviated these concerns, it puts the United States in a stronger position to convince Russia and China that its missile defense efforts are not aimed at diminishing their strategic deterrents, but rather the common threat to all parties of WMD proliferators.

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[38] Burns and Brune, 208–211, Sauer, 43–45.

[39] Burns and Brune, 200–8, Sauer, 43–6, 50–55.

[40] Burns and Brune, 160–3.

Fourth, the present U.S. administration's decision to take accelerated measures to disarm and deemphasize its reliance upon nuclear weapons while still intending to maintain alliance security guarantees, necessitates alternative means by which to fulfill these assurances. President Obama's April 2009 speech in Prague declared that during his term in office, the United States would make concerted efforts towards nuclear elimination: "I state clearly and with conviction America's commitment to seek the peace and security of a world without nuclear weapons."[41] While he acknowledged this ambitious goal may not be achieved within his lifetime, he declared that steps during his administration would be taken to move the world towards a reality free from nuclear threats, which he claimed had only grown with the end of the Cold War and reduction of nuclear armaments. These sentiments are reiterated in the 2010 Nuclear Posture Review and the signing of the New START in 2010 between the United States and Russia, which held both nuclear powers to limiting their arsenals to 1,550 deployed nuclear warheads apiece.[42]

Consequently, the overall non-proliferation regime is bolstered as the nuclear powers reduce their arsenals. Making concerted efforts towards nuclear elimination through continued arms reductions upholds the United States' and Russia's obligations as nuclear weapon states under Article VI of the Nuclear Non-Proliferation Treaty (NPT) to make progress towards nuclear disarmament. Meeting their Article VI requirements strengthens Washington and Moscow's position in insisting that non-nuclear states meet their obligations not to acquire nuclear weapons.[43] However, as America meets its commitment to reduce nuclear weapons, it may be challenging the long-established U.S. practice of offering extended nuclear deterrence to allies as a way to assure them that

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41 "President Obama's Speech on Nuclear Weapons," Prague: 5 April 2009 in Sauer, *Eliminating Nuclear Weapons: The Role of Missile Defense,* 113.

42 U.S. Department of State Under Secretary for Arms Control and International Security, "New START," http://www.state.gov/documents/organization/140035.pdf; This was a reduction from the 1700–2200 deployed warheads agreed upon in the 2002 Strategic Offensive Reductions Treaty (SORT), U.S. Department of State Under Secretary for Arms Control and International Security, "Treaty Between the United States of America and the Russian Federation On Strategic Offensive Reductions (The Moscow Treaty)," 24 May 2002, http://www.state.gov/t/isn/10527.htm.

43 Department of Defense, "Nuclear Posture Review Report," April 2010, http://www.defense.gov/npr/docs/2010%20nuclear%20posture%20review%20report.pdf, v-vi.

they do not need to develop their own nuclear arsenals.[44] It is not by coincidence that President Obama mentioned missile defense in his Prague speech and the Nuclear Posture Review; because five months after signing the New START, he announced the European Phased Adaptive Approach missile defense initiative. Shifting missile defense efforts to the theater level is a way of continuing positive security assurances to allies as the United States reduces the salience of its nuclear arsenal and continues to disarm. Thus, theater BMD is a possible solution to the mounting policy dilemma created by positive and negative security assurances and arms reduction commitments.

The Cold War strategy of nuclear deterrence presents less of a solution to the security challenges of today's international system. As the offense gained favor during the Cold War and came to dominate nuclear strategy, it is evident that in the present post-Cold War era that the balance is recalibrating towards the defense. Nuclear strategies such as MAD are no longer viewed as the stabilizing mechanisms they once were and, as some would argue, such approaches have become destabilizing forces that can stimulate nuclear proliferation.[45] In addition to decreasing the relevance of nuclear deterrence, the other Cold War mechanism of stability, arms control, has evolved into arms reduction. As the current U.S. administration comes to deemphasize the role of nuclear weapons and moves from a policy of mutually assured destruction to one of mutually assured security,[46] the defense is gaining ascendancy over the offense, and non-nuclear options like BMD will increasingly dominate the post-Cold War era. This evolution in policy and strategy along with the successful technological advances made in theater missile defense systems and the attempt to allay Russian and Chinese concerns over U.S. missile defense developments by focusing capabilities towards countering shared regional threats,[47]

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[44] Russell, "Extended Deterrence, Security Guarantees and Nuclear Weapons: U.S. Strategic and Policy Conundrums in the Gulf," 67–8, 75–7.

[45] Sauer, 105; Knopf ed., *Security Assurances and Nuclear Nonproliferation*, 1–7, 286–89.

[46] Freedman, 414–418.

[47] This effort to assuage Russian and Chinese fears of U.S. missile defense being aimed at their strategic arsenals has thus far been unsuccessful. Moscow and Beijing are still skeptical that America's TBMD intentions completely negate broader NMD ambitions, and these apprehensions are still the greatest political obstacle to fully implementing phased adaptive approaches in Europe and Asia.

explains the shift in U.S. policy towards theater-level missile defense in cooperation with regional allies.

3. The Phased Adaptive Approach

The phased adaptive approach the United States has adopted as its framework for implementing regional BMD architectures promotes strong partnerships with allies to address emerging ballistic missile threats. The concept is to build a system where new missile technologies are incorporated into each stage to counter the projected threat. The time period over which the entire system is implemented is intended to be realistic in the ability to develop, test, deploy, and finance the technology to counter the predicted threat before it is capable of effectively targeting deployed forces and allies. This concept is also flexible in the sense that all new missile technologies being developed are mobile. Defense experts and policy makers realize that the demand for these missile technologies will exceed the supply initially. Therefore, developing missile technologies that can be relocated and concentrated in troubled regions during a political-military crisis is a key feature of this phased adaptive approach. Additionally, technological burden-sharing is also encouraged with this approach as a way to defray costs, encourage allies to take ownership of their defense, and ensure that architectures meet the needs and capabilities of a region.[48]

4. Theater Ballistic Missile Defense System Components

The Ballistic Missile Defense System (BMDS) is predicated on an integrated and layered architecture of sensors, interceptors, and command and control nodes. The system has to be able to counter ballistic missiles that have a variety of ranges, speeds, sizes, and performance characteristics. There are four main stages in a ballistic missile's trajectory: boost, ascent, midcourse, and terminal. The objective of the BMDS is to target a threat missile at each stage of its flight path, thus providing multiple opportunities to shoot

48 "BMDR Report," 19–28.

down an incoming ballistic missile (known as a "shoot-look-shoot" tactic) and increasing the success of neutralizing the threat.[49]

Currently, the BMDS has sensors that are capable of detecting, tracking, and discriminating ballistic missile threats through all phases of trajectory. Regional BMDS architectures would include the following sensors: Space Tracking and Surveillance System (STSS), Sea-Based X-Band Radar (SBX), Land Based Transportable Radar Surveillance (TPY-2), and the Aegis SPY-1 Radar. STSS is a satellite constellation that utilizes infrared and visible light to detect the boost phase of a ballistic missile and provides accurate track data on midcourse re-entry vehicles to shooters. This is the first line of defense in the BMDS. Once STSS detects a ballistic launch, it relays this information to other ground- and sea-based sensors and shooters. SBX is an X-band radar mounted on a ocean-going, semi-submersible oil drilling platform that can acquire, track and discriminate ballistic missiles and provide this information to inceptor platforms. There is only one SBX sensor that has been continuously deployed in the Pacific Ocean to serve the Asian theater and testing and evaluation. In theory, it could service other regions; however, with a speed of eight knots, a decision to move it to another theater has to be made well in advance of the expected threat. The AN/TPY-2 is a land-based, transportable X-band radar that is phased array and high resolution. This sensor can detect ballistic missiles early in flight and provide precise tracking information to interceptors; it also provides fire control support for the Terminal High Altitude Area Defense (THAAD) weapon system. Eight TPY-2's have been manufactured, and three more are currently in production. Four of the seven are currently deployed in support of TBMD in Japan, Turkey, and Israel with another two being sold to the United Arab Emirates as a part of their recent THAAD FMS acquisition. The current plan calls for 11 TPY-2's to be part of the BMDS. The SPY-1 is an S-band radar onboard Aegis cruisers and destroyers that has the ability to detect and track threat missiles and provide fire

[49] Missile Defense Agency, "Fact Sheet: The Ballistic Missile Defense System," http://www.mda.mil/system/elements.html.

control support to the SM-3 interceptor missile.[50] There are currently 26 Aegis ships equipped with BMD capabilities, with a plan calling for 36 BMD capable ships by 2018.[51] The Aegis-Ashore system is currently under production, and will provide the same capabilities as sea-based Aegis from land with the ability to relocate if necessary. These BMDS components provide overlapping sensor coverage throughout the entire ballistic missile trajectory path, making it more challenging for enemy ballistic missiles to penetrate the system.[52]

While the BMDS sensor coverage can track all four phases of ballistic missile trajectory, the ability to intercept and destroy missiles in all four phases is still a work in progress. The current interceptor components of the system all utilize hit-to-kill technology (with the exception of the sea-based terminal missile, which has a blast fragmentation warhead), and they have the ability to intercept ballistic missiles in the midcourse and terminal phases of flight. These interceptor components include: the Aegis Standard Missile-3 (SM-3), Terminal High Altitude Area Defense (THAAD), PATRIOT Advanced Capability (PAC-3), and Sea Based Terminal (SM-T). The SM-3 is currently the only component capable of intercepting a ballistic missile in the midcourse phase of trajectory and thus provides the highest tier of defense. Aegis cruisers and destroyers are currently the only launching platforms for SM-3's; however, when the Aegis-Ashore concept is fielded beginning in 2015 as part of the EPAA, there will be additional mobile, land-based launching platforms. THAAD has the capability of intercepting ballistic

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[50] The difference between the X-band radars (SBX and TPY-2) and S-band (SPY-1) and C-band (PAC-3) radars is the wavelength. X-band radars have a shorter wavelength than the S-band or C-band radars. The shorter wavelength gives the X-band radars a higher resolution, which means they can discriminate the reentry vehicle (warhead) from surrounding decoys and debris. The S-band and C-band radars can search, track, and provide fire control for an engagement, but they cannot provide discrimination. They rely on cueing from X-band radars to ensure a successful engagement once the warhead has separated and is surrounded by decoys.

[51] MDA, "Fact Sheet: Aegis Ballistic Missile Defense," http://www.mda.mil/global/documents/pdf/aegis.pdf; Ronald O'Rourke, "Navy Aegis Ballistic Missile Defense (BMD) Program: Background and Issues for Congress," Congressional Research Service, 14 March 2013, http://www.fas.org/sgp/crs/weapons/RL33745.pdf.

[52] MDA, "Fact Sheet: Aegis Ballistic Missile Defense"; MDA, "Factsheet: Terminal High Altitude Area Defense," http://www.mda.mil/global/documents/pdf/thaad.pdf; MDA, "Factsheet: PATRIOT Advanced Capability-3," http://www.mda.mil/global/documents/pdf/pac3.pdf; MDA, "Factsheet: Space Tracking and Surveillance System," http://www.mda.mil/global/documents/pdf/stss.pdf; MDA, "Factsheet: Army Navy/ Transportable Radar Surveillance (AN/TPY-2)," http://www.mda.mil/global/documents/pdf/an_tpy2.pdf.

missiles both inside and outside of the atmosphere, upon re-entry, at the beginning of the terminal trajectory phase. Three THAAD batteries are operationally deployable, and another two batteries are being manufactured for sale to the United Arab Emirates. The PAC-3 and SBT components are the lowest tier elements in the system that provide point defense of deployed forces and allies. SBT is a long-range anti-air missile (SM-2 Block IV) that has been converted to shoot down missiles in their terminal phase. It provides similar capabilities to the PAC-3, but it is sea-based on Aegis ships. These interceptor components provide a robust and overlapping defense against short- and medium-range ballistic missiles in the midcourse and terminal phases of flight. Future capabilities that will provide earlier intercept opportunities in the boost and ascent phases of flight are rigorously being developed and tested. Early Intercept (EI) and Ascent Phase Intercept (API) technologies will provide the ability to neutralize threat missiles in the beginning stages of their flight trajectories when detection is easier and prior to countermeasure deployment. Eliminating the threat in these early stages provides additional layers of protection, conserves interceptors, and mitigates the effects of terminal phase, post-engagement debris on defended territory. All of these independent sensor and interceptor components are integrated through the Command, Control, Battle Management, and Communications (C2BMC) system that acts as the central hub for the BMDS. C2BMC provides situational awareness of missile threats, a common operating picture for decision makers, and weapon system resource management and integration.[53]

Tables 1 and 2 summarize the TBMD sensor and interceptor capabilities. The layer column in Table 2 denotes whether the interceptor is endo-atmospheric (lower-tier) or exo-atmospheric (upper-tier). The threat column in Table 2 denotes the type of ballistic missile the interceptor can engage. In principle, an interceptor with a higher altitude capability will be able to defend a larger area. Longer-range and faster speed interceptor capabilities allow for defense against longer-range ballistic missile threats.

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[53] MDA, "Potential New Technologies," http://www.mda.mil/system/potential_new_technologies.html; MDA, "Fact Sheet: Command, Control, Battle Management, and Communications," http://www.mda.mil/global/documents/pdf/c2bmc.pdf; MDA, "Factsheet: Terminal High Altitude Area Defense"; MDA, "Fact Sheet: Aegis Ballistic Missile Defense"; MDA, "Factsheet: PATRIOT Advanced Capability-3."

Table 1. TBMD Sensor Capabilities

Sensor	Location	Search	Track	Discriminate	Coverage
STSS	Space	X	X	X	Continuous
SBX	Sea	X	X	X	Temporary
TPY-2	Land/mobile	X	X	X	Temporary
SPY-1	Sea/land*	X	X		Temporary

*SPY-1 will have land-based components once Aegis-Ashore units are deployed.
Source: Missile Defense Agency, www.mda.mil.

Table 2. TMD Interceptor Capabilities

Interceptor	Location	Layer	Phase	Threat
PAC-2/3	Land/mobile	Lower	Terminal	SR
SBT	Sea	Lower	Terminal	SR
THAAD	Land/mobile	Upper/Lower	Terminal	SR/MR
Aegis SM-3	Sea/Land*	Upper	Midcourse	SR/MR/IR**

*SM-3 will have land-based components once Aegis-Ashore units are deployed.
**SM-3 IB has limited and IIA, IIB will have full IRBM capabilities.
Source: Missile Defense Agency, www.mda.mil.

B. THEATER BALLISTIC MISSILE DEFENSE IN THE PERSIAN GULF

Producing roughly 30 percent of the world's oil and holding over two-thirds of its proven oil reserves (approximately 786 billion barrels),[54] the geo-political importance of the Persian Gulf is firmly rooted in this vital energy source making it to the global market. Americans and other industrialized countries experienced the crippling effects of energy crises that came as a result of the disruption of oil from this region during the 1973 Arab-Israeli War and the 1979 Iranian Revolution.[55] While the United States has reduced its dependence on oil from the region, the growing Asian economies are now the

[54] International Energy Agency, "2012 Key World Energy Statistics," www.iea.org, 10; Organization of the Petroleum Exporting Countries, "OPEC Share of World Crude Oil Reserves 2011," http://www.opec.org/opec_web/en/data_graphs/330.htm.

[55] Charles D. Smith, *Palestine and the Arab-Israeli Conflict,* 7th ed. (New York: Bedford/St. Martin's: 2010), 321; "OPEC Oil Embargo, 1973–1974," U.S. Department of State Office of the Historian, http://history.state.gov/milestones/1969–1976/OPEC; "Petroleum Chronology of Events: Iranian Revolution of 1978–1979," U.S. Energy Information Administration, http://www.eia.gov/pub/oil_gas/petroleum/analysis_publications/chronology/petroleumchronology2000.htm#T_8_.

Middle East's biggest oil customer. For example, China gets over half of its oil from the Persian Gulf region.[56] Regardless of who is the largest customer of Arab oil, due to globalization and the industrialization of developing countries, any future disruption in oil from this region would be devastating to the entire world economy. The demand for oil is increasing and will continue to increase as more nations industrialize, and with the bulk of the world's proven and easily accessible oil reserves, the Persian Gulf region will fulfill this demand for the foreseeable future. Due to the critical role that this region plays in the global economy, its stability is of paramount importance to the entire international community.[57]

Since inheriting the role of chief security guarantor in the Persian Gulf from the British in the 1970s, the United States' prime concern has been energy security in this highly volatile region. Initially, Washington implemented a "twin pillar" policy of establishing diplomatic relations with both the Saudis and the Iranians to ensure regional stability was maintained in order to secure its energy interests. This arrangement came to an end in 1979 when the Iranian Revolution overthrew the U.S.-supported regime. The new government established an anti-Western theocracy based on Islamic Shi'ism that was antagonistic towards its Sunni-ruled Gulf neighbors and the United States. With only one pillar remaining, Washington has strengthened its ties to the Gulf monarchs in order to provide a bulwark against the destabilizing influence of Iran.[58]

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[56] Central Intelligence Agency World Factbook, "Country Comparison: Oil Consumption," https://www.cia.gov/library/publications/the-world-factbook/rankorder/2174rank.html; International Energy Agency, "2012 Key World Energy Statistics," 30–31; Damien Ma, "Dependence on Middle Eastern oil: Now It's China's problem, Too," *The Atlantic* online, 19 July 2012, http://www.theatlantic.com/international/archive/2012/07/dependence-on-middle-eastern-oil-now-its-chinas-problem-too/259947/.

[57] Christopher M. Blanchard, "Saudi Arabia: Background and U.S. Relations," Congressional Research Service, November 3, 2000, http://www.fas.org/man/crs/RL33533, 2–6; Peter Alsis, Marissa Allison, and Anthony H. Cordesman, "U.S. and Iranian Strategic Competition in the Gulf States and Yemen," A Report of the CSIS Burke Chair in Strategy, 16 March 2012, http://csis.org/files/publication/120228_Iran_Ch_VI_Gulf_State.pdf, 4; Jan H. Kalicki, "RX For 'Oil Addiction': The Middle East and Energy Security," *Middle East Policy* Vol. XIV No.1, Spring 2007, 76–78. Organization of the Petroleum Exporting Countries, "World Oil Outlook 2012" (Vienna: OPEC Secretariat: 2012), http://www.opec.org/opec_web/static_files_project/media/downloads/publications/WOO2012.pdf, 155–57.

[58] Alsis, Allison, Cordesman, "U.S. and Iranian Strategic Competition in the Gulf States and Yemen," 4–6.

One of Iran's main strategic priorities is to expand its influence within the Middle East region and Islamic world. This goal has only been bolstered since the toppling of the Sunni-led Iraqi regime in 2003, which had been a counter-weight to Iran's ambitions in the region. Iran has acquired capabilities of asymmetric warfare, long-range missiles, and is possibly developing a nuclear weapon capability as a means to exert its hegemony over the region. This antagonistic military build-up over the past 30 years has destabilized the region. The United States has sought stronger ties with the Arab Gulf States to contain Iran's ambitions: "As a part of its strategic partnership with the Arab Gulf states, the U.S. offers transfers of military weapons and technology, shares intelligence and early-warning data, and conducts capacity-building and training programs. . .and [seeks] to establish a mix of U.S., Iraqi, and Gulf capabilities for deterrence and defense that will contain Iran."[59] While the GCC states may have been more reluctant to collaborate with one another on joint defense endeavors, the events of the past decade that have further destabilized the already fragile balance within the region and amplified the Iranian threat have created pliability within the GCC alliance to strengthen collective security arrangements. The GCC's receptiveness to working with the United States to build a robust BMD system is a reflection of this shift towards greater cooperation. As both parties' interests are tied to one another, pursuing TBMD in the region will support the strategy of Iranian containment, and provide an alternative to extended nuclear deterrence to reassure Gulf allies of the United States' commitment to their security and prosperity. This conventional positive security assurance will contribute to the prevention of WMD proliferation in the region and the broader U.S. goals of Middle East peace and security.[60]

1. Benefits and Drawbacks of Implementing TBMD in the Middle East

While incorporating a TBMD system similar to the one being developed in Europe would enhance the deterrence objectives within the Gulf theater, there is debate amongst defense specialists and academics about whether approaching this TBMD

[59] Ibid., 4.

[60] Ibid., 4–5; Committee on Foreign Relations United States Senate Majority Staff Report, "The Gulf Security Architecture: A Partnership with the Gulf Cooperation Council," U.S. Government Printing Office, Washington: 19 June 2012; 1–6.

focused strategy will foster cooperation or contention with allies, deter or provoke adversaries, or be feasible or impractical. Therefore, it is important to assess the benefits and challenges of pursuing such an ambitious and expensive program within a region that has its own unique set of security challenges.

The possible benefits of pursing a phased adaptive approach in the Persian Gulf region include:

- Providing deterrence and defense against Iran's influence in the region, which threatens its stability and security;
- Providing an alternative to preventative strike, which could turn into a messy, protracted engagement that possibly catalyzes further regional instability;
- Protecting deployed forces and installations within the region;
- Providing assurances to the United States' GCC allies of the U.S. commitment to their security, which will prevent them from desiring to obtain nuclear weapons of their own and avert horizontal proliferation within the region;
- Preventing Iran from using nuclear weapons as a coercive tool during peacetime, which will discourage GCC members from aligning themselves with Iran for their own security;
- Fostering better multilateral security cooperation among GCC members.

The possible drawbacks to implementing a BMDS in the Persian Gulf region include:

- Encouraging Iran to develop countermeasure technologies and saturation tactics to overwhelm missile defenses;
- Upsetting relations with other regional allies such as Israel;
- Lacking a robust multilateral collective security foundation will make implementing a TBMD in the Persian Gulf more challenging;
- Lacking the capacity to burden share the technological development process, which is an integral, cost-saving characteristic to the phased adaptive approach;
- Integrating Israeli and GCC members' BMD capabilities to provide greater continuity between the Middle Eastern and European theaters will be more challenging due to the contentious relations between Israel and its Arab neighbors;

- Embarking on another major arms deal/security cooperation with the autocratic Gulf regimes increases the divergence of U.S. interests and values. All other allies that the U.S. plans to partner with in other regions share the same democratic values as well as interests.

As America moves towards deemphasizing the central role of nuclear weapons in national security policy, the shift in missile defense objectives to the theater level provides an option to rectify the policy dilemma of balancing security assurances to allies and bilateral and multilateral arms reduction commitments. As nuclear deterrence has become a hindrance to the prevention of WMD proliferation, non-nuclear security assurances along with soft-power tools need to be pursued to ensure stability within regions that will remain volatile and vulnerable through this transition towards nuclear elimination. The Middle East is a region requiring such security assistance. The Persian Gulf is an especially vulnerable region due to Iran's provocations, and the possibility that it is developing nuclear weapon capabilities. Additionally, the oil wealth within the region and its vital role in the global economy make ensuring stability within this geographic area of paramount importance to the international community. Theater ballistic missile defense is such a non-nuclear tool that can bolster security assurances with GCC partners, and contribute to providing a new counter-weight to Iranian hegemony in the region.

III. EUROPEAN AND ASIAN THEATER BALLISTIC MISSILE DEFENSE CASE STUDIES

The United States plans to pursue phased adaptive approaches to missile defense in Asia, Europe, and the Middle East. It is important that Washington recognize the differences in threat capabilities, alliance structure and maturity, and strategic balance concerns within each region in order to tailor missile defenses to meet each particular regions security needs. European and Asian collaborative missile defense efforts are well underway and advanced in their development and implementation. These two regions have varying defense needs and collective security arrangements, and the path each has chosen to address ballistic missile threats reflects these differences. For this reason, comparatively studying the development of these regions' missile defense capabilities will provide lessons learned and key differences that should be considered in the implementation of a phased adaptive approach in the Persian Gulf region. This chapter will analyze the nature of the threats, alliances, strategic balances, and development of missile defense initiatives in the European and Asian theaters. The findings of this analysis will be applied in following chapters to discussions on how to approach and implement cooperative missile defense with the United States' Persian Gulf partners.

A. EUROPE

1. The Threat[61]

While Russian and Chinese ballistic missiles have the capability of targeting Europe, it is unlikely that either country would deliberately undertake such action. Additionally, with robust safeguards in place on both arsenals, the chance of an accidental launch has been reduced significantly. Thus, excluding the miniscule chance of Russian or Chinese systems being employed, the most significant ballistic missile

[61] Ballistic missiles are classified into categories based on their maximum range: short-range ballistic missiles (SRBMs) travel less than 1,000 km (~620 mi), medium-range ballistic missiles (MRBMs) travel between 1,000–3,000 km (~620–1860 mi), intermediate-range ballistic missiles (IRBMs) travel between 3,000–5,500 km (~1860–3410 mi), and intercontinental ballistic missiles (ICBMs) travel more than 5,500 km. Mark Fitzpatrick ed., *Iran's Ballistic Missile Capabilities: A net assessment* (London: The International Institute for Strategic Studies, 2010), 8.

threat to Europe is Iran's present and growing medium and intermediate-range capabilities. The European TBMD system aims to develop a capability to counter an Iranian threat, not the more sophisticated Russian and Chinese ballistic missiles. The open source information regarding these capabilities and their development varies and sometimes conflicts; however, there is strong agreement that the Shahab-3 is Iran's longest-range missile that is currently deployed and fully operational. The Shahab-3 is a single-stage, liquid-propellant missile believed to have a range of 1,000–1,500 km with a payload of 760–1,100 kg.[62] A missile of this range can target most of the Middle East and portions of Turkey. The longer-range variants of the Shahab-3, and the new solid-propellant, two stage MRBM, the Sajjil-2, are of greater concern to Europe, since with a reported range of 2,500 km, they could reach parts of southeastern Europe (e.g., parts of the Balkans, Ukraine, Romania, and Bulgaria).[63] The current and projected Iranian ballistic missile threat to Europe is depicted in Figure 1.[64]

[62] Ibid., 19–20; Steven A. Hildreth, "Iran's Ballistic Missile Programs: An Overview," Congressional Research Service, 4 February 2009, http://www.fas.org/man/crs/RS22758, 3.

[63] Hildreth, "Iran's Ballistic Missile Programs: An Overview," 3.

[64] Note that in Figure 1 the Sajjil-2 is referred to as the Ashura as this was its name during the early testing stages.

Source: Igor Ivanov, Wolfgang Ischinger, and Sam Nunn, "Missile Defense: Toward a New Paradigm," The Carnegie Endowment for International Peace.

Figure 1. Iranian Ballistic Missile Threat to Europe.

The evidence indicates that Iran has successfully flight-tested these missiles, but they have not become fully operational or deployed. Thus, currently Iran does not have the capability of targeting NATO allies (with the exception of Turkey with the Shahab-3). When these longer-range missiles will be able to credibly reach European targets is widely debated with some estimates as early as 2015 and others past 2020.[65] Iran's intermediate-range capabilities are still believed to be in the early developmental

[65] Hildreth, "Iran's Ballistic Missile Programs: An Overview," 1–2; Andrew Feickert, "Iran's Ballistic Missile Capabilities," Congressional Research Service, 23 August 2004, http://fpc.state.gov/documents/organization/39332.pdf, 4–6; Fitzpatrick, *Iran's Ballistic Missile Capabilities: A net assessment*, 141–43.

stages. While Iran showed notable advancements throughout the 2000s in its MRBM and IRBM capabilities with the development of multi-stage, solid-fuelled missiles and a growing industrial and technical infrastructure that will allow Tehran to indigenously develop future missile endeavors, developing or procuring guidance and navigation systems still presents a challenge to improving the accuracy of these weapons.[66] Furthermore, the large investment required and the technological and industrial challenges to be overcome in order to develop more capable missiles tends to push full operational capability estimates toward the later end of the spectrum (i.e., 10-plus years).[67]

Since Iran does not pose an immediate threat to Europe, missile defenses capable of countering the Iranian MRBMs and IRBMs can be fielded in a methodical manner as the threat develops. This situation also allows for flexibility in fielding capabilities and coordinating and honing multilateral missile defense operations. As will be discussed later, these favorable conditions for development do not exist in the Asian or Persian Gulf regions where the threat is already capable of targeting allied territory.

2. U.S.–European Alliance

A post-1949 résumé of collaboration has allowed this security arrangement to mature and adapt its capabilities to a wide range of security challenges. Missile defense is one such endeavor that NATO has chosen to pursue in the last decade as nuclear deterrence becomes less of a prominent fixture in alliance strategy and it attempts to deal with threats of WMD proliferation and rogue state behavior. The multilateral framework that already exists within the U.S.-European alliance makes it ideal for implementing a theater missile defense architecture that mirrors the complexity of such an organization in integrating multiple components into a coherent and effective defense system. While NATO provides a solid foundation upon which to build a TBMD system, there have been setbacks in the process. Challenges remain in the pursuit of such an ambitious objective even for a strong, multilateral collective security institution like NATO.

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66 Fitzpatrick, *Iran's Ballistic Missile Capabilities: A net assessment*, 63–64.

67 Ibid., 35–36, 63–65, 132–34.

3. NATO TMD Initiatives

NATO initially began working on missile defense to protect deployed forces in the 1990s as a result of the proliferation of WMD and rudimentary, short-range ballistic missiles. At the 2002 Prague Summit, NATO decided to conduct feasibility studies to explore the option of implementing a theater missile defense capability to protect populations and territories. The studies concluded in 2005 that it would be technologically feasible to develop an integrated TBMD architecture to counter a limited threat such as Iran. At the 2010 Lisbon Summit, NATO declared TBMD to be a core alliance objective and agreed to integrate all partner nations' capabilities in this mission area. The evolution of TBMD in Europe has seen three major missile defense initiatives: the European Ground-based Midcourse Defense (GMD) site, the Medium Extended Air Defense System (MEADS), and the European Phased Adaptive Approach (EPAA). All three of these different programs have experienced various successes and failures, and they illustrate some of the challenges and concerns that need to be addressed when pursuing such a defense initiative within a multilateral framework.[68]

a. Medium Extended Air Defense System (MEADS)

The MEADS system was originally conceived in the 1990s as a collaborative effort between Italy, Germany, and the United States to field a lower-tier, ground-based, mobile air and missile defense system that would provide ground troop defense from cruise and short-range ballistic missiles. It was intended to be a composite of pre-existing technologies between the three nations that would be upgraded and integrated with one another. MEADS would be similar to the U.S. Army's PATRIOT system, but it would have an upgraded interceptor, 360-degree coverage, and an enhanced open architecture network for multiple units that would allow for a larger defended area. Additionally, it was to provide greater mobility and firepower with less manpower. Research and development costs were split among the three nations with the

[68] Steven A. Hildreth, "Ballistic Missile Defense: Historical Overview," Congressional Research Service, 9 July 2007, 6; "Ballistic Missile Defense," North Atlantic Treaty Organization, http://www.nato.int/cps/en/natolive/topics_49635.htm; Steven A. Hildreth and Carl Ek, "Missile Defense and NATO's Lisbon Summit," Congressional Research Service, 11 January 2011, http://www.fas.org/sgp/crs/row/R41549.pdf, 2–9.

United States funding 58 percent, and Germany and Italy covering 25 percent and 17 percent, respectively.[69]

From the beginning, the project faced problems with budgetary constraints and the sharing of technical information. Delayed production and cost overruns, in addition to defense budget cuts, caused Washington to pull out of the program in 2011.[70] The United States agreed to continue funding for the design and development phase through 2014 in order to avoid contract termination fees and to minimize political backlash from Italy and Germany. MEADS was to replace the PAC-2 system, but with the delays in production (from 2007 to 2018), Washington had to fund modernization of their PATRIOT batteries along with contributing to MEADS; it could not continue to fund both programs given its constrained fiscal environment.[71] With the United States contributing the majority of the funding for MEADS, Germany and Italy are currently looking for new partner nations to complete the project or may abandon it all together and purchase the upgraded PAC-3 system, which has incorporated technology from the MEADS program, or opt for a similar air and missile defense system to the one that the United Kingdom and France fielded (the SAMP-T system).[72]

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[69] "Beyond Patriot? Multinational MEADS Air Defense Program," Defense Industry Daily, 20 May 2013, http://www.defenseindustrydaily.com/34b-development-contract-signed-for-meads-0639/; Robert Shuey, "Theater Missile Defenses: Issues for Congress," Congressional Research Service, 19 March 2001, 4–6; "About MEADS," Medium Extended Air Defense System (MEADS) Inc., http://meads-amd.com/about-meads/. "Medium Extended Air Defense System (MEADS)," Lockheed Martin, http://www.lockheedmartin.com/us/products/meads.html.

[70] Office of the Secretary of Defense, "Medium Extended Air Defense System (MEADS) Fact Sheet," 11 February 2011, http://www.acq.osd.mil/docs/U.S._MEADS_Decision_Fact_Sheet_Feb_11_2011.pdf.

[71] By agreeing to fund the MEADS program through the design and development stage, the United States will have access to the new technologies and can incorporate them into its own domestic programs; Office of the Secretary of Defense, "Medium Extended Air Defense System (MEADS) Fact Sheet," 11 February 2011, http://www.acq.osd.mil/docs/U.S._MEADS_Decision_Fact_Sheet_Feb_11_2011.pdf.

[72] "Beyond Patriot? Multinational MEADS Air Defense Program," Defense Industry Daily, 20 May 2013; Shuey, "Theater Missile Defenses: Issues for Congress," 4–6; Andrea Shalal-Esa, "Stop-gap spending measure funds MEADS missile defense," *Reuters* Online, 25 March 2012, http://www.reuters.com/article/2013/03/25/us-lockheed-missiles-idUSBRE92O02F20130325; "About MEADS," Medium Extended Air Defense System (MEADS) Inc., http://meads-amd.com/about-meads/; Amy Butler and Graham Warwick, "Italy Looks To Poland As Meads Production Partner," *Aviation Weekly* Online, 15 May 2013, https://www.aviationweek.com/Article.aspx?id=/article-xml/asd_05_15_2013_p01–01–578951.xml&p=2.

b. European Ground-based Midcourse Defense (GMD) Site

In addition to its lower-tier collaboration, the United States made plans to contribute to upper-tier missile defense systems in Europe with the Bush Administration announcing a third GMD site to be located in Europe. In 2007, the United States made bilateral agreements with Poland and the Czech Republic to base elements of this system—10 ground based interceptors (GBIs) in Poland and an X-band radar in the Czech Republic, which was intended to counter a possible ballistic missile threat from Iran. This proposal was met with criticism from other NATO allies, since they feared upsetting the tenuous strategic balance with Russia. Other members felt the bilateral nature of the agreements undermined NATO solidarity. President George W. Bush's plan seemed to be ill fitted to the security needs of America's European allies. Due to these concerns, this missile defense plan was not ratified prior to Bush leaving office; his successor would address these challenges of implementing theater missile defenses with a new approach that aimed to be more in tune with the NATO framework and less provocative towards Russia.[73]

c. European Phased Adaptive Approach

In 2009, President Barack Obama announced the cancellation of the third GMD site in Europe, and offered a new initiative relying heavily upon the proven sea-based, Aegis SM-3 capability. This latest program is the European Phased Adaptive Approach (EPAA), which consists of a four-phase implementation process. Each phase is geared toward a specific predicted threat capability. While there is a tentative timeline for when phases will be deployed in Europe, their implementation is highly dependent upon the threat's evolution.[74] Currently, Phase I is operational, which means that portions of

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[73] Steven A. Hildreth, "Long-Range Ballistic Missile Defense in Europe," Congressional Research Service, 23 September 2009, http://www.fas.org/sgp/crs/weapons/RL34051.pdf, 9–13; Hildreth and Ek, "Missile Defense and NATO's Lisbon Summit," 1–4; Tom Z. Collina, "The European Phased Adaptive Approach at a Glance," Arms Control Association, May 2013, http://www.armscontrol.org/factsheets/Phasedadaptiveapproach.

[74] For example, Phase IV has been put on hold due to technological challenges, as well as in consideration for the strategic environment challenges with Russia. Additionally, the Iranian IRBM threat does not appear to be progressing as quickly as originally believed; Tom Z. Collina, "Pentagon Shifts Gears on Missile Defense," Arms Control Association, April 2013, http://www.armscontrol.org/act/2013_04/Pentagon-Shifts-Gears-on-Missile-Defense.

southern Europe can be defended from short- and medium-range ballistic missiles utilizing the Aegis BMD platform with SM-3 Block IA interceptors along with the TPY-2 radar deployed in Turkey.[75] Command and control functions have been also demonstrated between the U.S. and European BMD systems at Ramstein Air Force Base in Germany with the NATO ALTBMD (Active Layer Theater Ballistic Missile Defense) system. Figure 2 displays the progression of increased capability in each stage; the final two phases will defend all of Europe from an Iranian IRBM threat, and potentially have a limited ICBM and early intercept capability. This initiative also includes the forward deployment of four U.S. Navy Aegis BMD destroyers out of Rota, Spain, and two Aegis Ashore sites that will be stationed in Romania and Poland.[76] EPAA is the United States contribution to Europe's ALTBMD program. Each NATO ally is contributing to the construction of an open command and control architecture, so that each nation's sensors, interceptors, and command and control functions can be integrated. Other allies are providing their indigenously produced land, sea, and air-based sensor coverage and ship- and shore-based, lower-tier interceptors that will be plugged into this architecture, so that all of NATO's capabilities are interoperable and contributing to situational awareness, planning and tasking, and execution of the TBMD mission area.[77] This missile defense initiative is still a work in progress, and it will undoubtedly encounter challenges as it is implemented; however, it provides a more robust, flexible, and multilateral approach than has previously been attempted that meets the wide-ranging security needs of NATO allies.

[75] Collina, "European Phased Adaptive Approach at a Glance."

[76] Ibid., "BMDR Report," 24, 29–30.

[77] Dave Kiefer, "ALTBMD" Defense Technical Information Center," http://www.dtic.mil/ndia/2011IAMD/DaveKiefer.pdf.

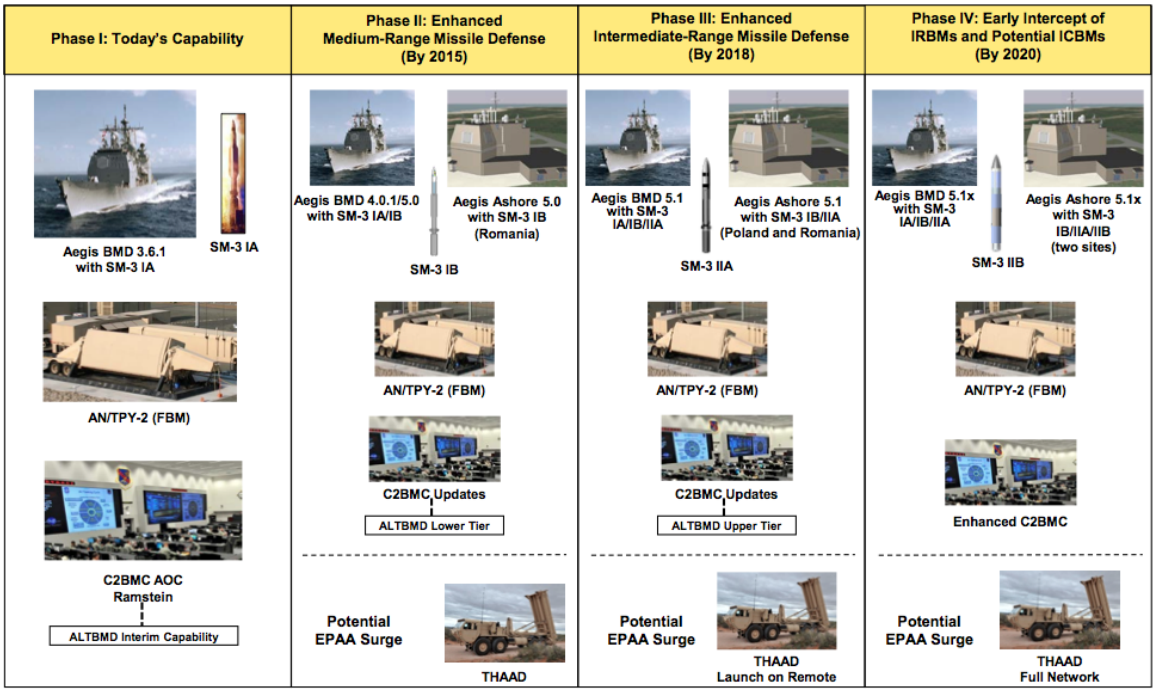

Figure 2. European Phased Adaptive Approach.
Source: Missile Defense Agency.

4. Regional Implications

The major political challenge with implementing this TBMD architecture in Europe is balancing NATO's desire to defend against an Iranian ballistic missile threat while not provoking Russian suspicion or mistrust. Missile defense is a sensitive topic for Russia, especially since the United States' withdrawal from the Anti-Ballistic Missile Treaty (ABMT) in 2002. Moscow desires to be seen as an equal by NATO members, and wants to play a broader role in regional security and politics. Missile defense is one of these facets. The EPAA originally called for a cooperative role with Russia with data exchange centers and incorporation of early-warning components. However, these cooperative efforts have not materialized in the manner originally envisioned, so Russia is left questioning NATO's intentions as it continues to be left out of the all-encompassing, collaborative effort that the EPAA originally planned with Moscow. Achieving a balance with Russia on TBMD developments with NATO partners is the

greatest political challenge to implementing the EPAA, and one that will require greater Russian inclusion if it is to be successful.[78]

B. ASIA

1. The Threat

There are three major ballistic missile threats in the Asian theater that are of varying concern to the United States and its regional allies. As in the European theater, Russian capabilities are unlikely to be employed against its Asian neighbors. China's growing military prowess coupled with uncertainty over its larger territorial, strategic, and political aims are of concern to the United States and its allies in the region. Thus, while U.S.-Japanese TBMD efforts are not currently aimed at countering China's arsenal, as missile defense capabilities advance, and if China continues pursue a more aggressive foreign policy stance towards its neighbors, then there is the possibility that a TBMD architecture could be designed to counter the Chinese threat. However, North Korea is currently the most concerning, near-term ballistic missile threat to Japan and South Korea.

North Korea possesses SRBM, MRBM, and IRBM capabilities. The SRBMs are of primary concern to South Korea, and the MRBMs and IRBMs are the greatest threat to Japan and to U.S. bases in the region. North Korea's SRBMs are upgraded versions of the SCUD B variant; its MRBMs include the Nodong-1 and -2 and Taepodong-1, and its IRBM capability consist of the Taepodong-2. The Nodong-1 and 2 can target most of Japan, while the Taepodong-1 can target all of Japan. The Latter is the missile that overflew Japan in 1998 that provided the impetus for Tokyo to engage with Washington on building a bilateral missile defense architecture. While North Korea possesses nuclear

[78] Matthew Fargo, "Recap- On Missile Defense and European Security," Center for Strategic & International Studies, 2 July 2012, http://csis.org/blog/recap-missile-defense-and-european-security; Wade Boese, "NEWS ANALYSIS: Missile Defense Five Years After the ABM Treaty," Arms Control Association: June 2007, http://www.armscontrol.org/act/2007_06/MissileDefense; Steven Pifer, "Missile Defense in Europe: Cooperation or Contention?" The Brookings Institute, May 2012, http://www.brookings.edu/research/reports/2012/05/08-missile-defense-pifer; Igor Ivanov, Wolfgang Ischinger, and Sam Nuun, "Missile Defense: Toward a New Paradigm," Euro-Atlantic Security Initiative Working Group on Missile Defense, 3 February 2012, The Carnegie Endowment for International Peace, http://carnegieendowment.org/2012/02/03/missile-defense-toward-new-paradigm/9cvz.

weapons, it does not yet have the capability of putting a nuclear warhead on its ballistic missiles; however, it is believed that Pyongyang does have operational chemical and biological warheads.[79] The North Korean ballistic missile threat is depicted in Figure 3.

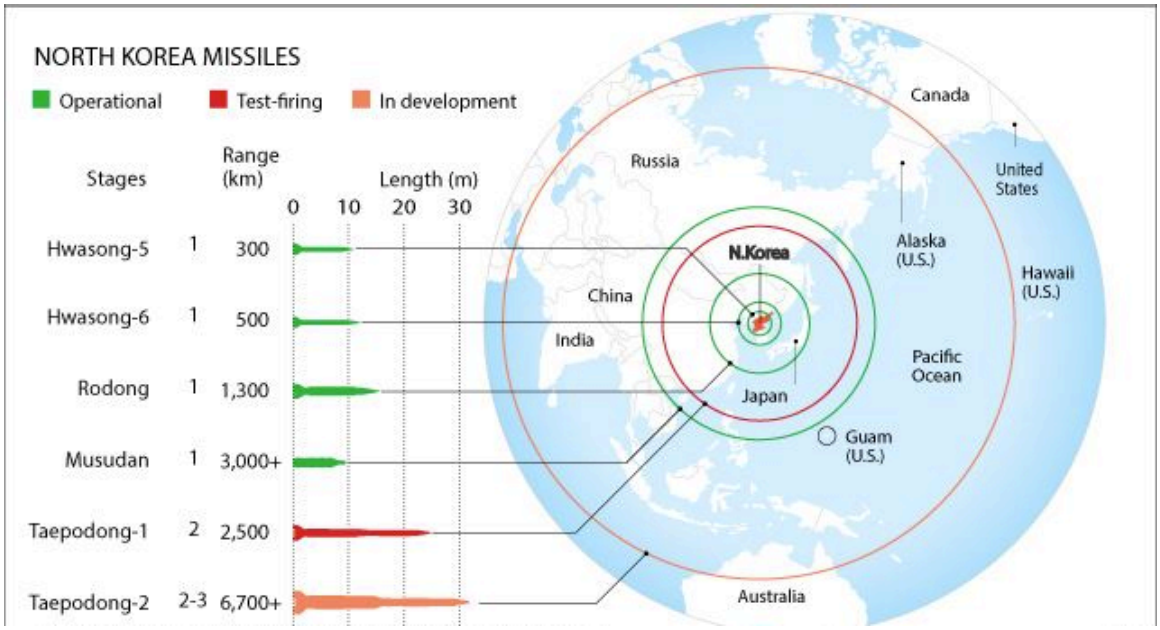

Figure 3. North Korean Ballistic Missile Threat.
Source: Federation of American Scientists, Global Security, Center for Nonproliferation Studies

China has a much greater ballistic missile capability than North Korea. The Chinese threat to Japan consists of two types of MRBMs and one type of IRBM (both capable of delivering nonconventional munitions). Ballistic missile defense efforts between America and Japan have thus far focused on countering the North Korean threat; however, as will be discussed in the "Regional Implications" section below, there is the possibility that the growing missile defense capability could potentially counter a limited strike from China at some point. For this reason, China views the U.S.-Japanese BMD build-up with concern. Some defense analysts have attributed Beijing's modernization and increase in

79 Swaine, Swanger, and Kawakami, *Japan Ballistic Missile Defense*, 13.

ballistic missiles as a reaction, at least in part, to the missile defense activities of the United States and Japan.[80]

2. U.S.-Asia Pacific Alliances

The United States' missile defense collaboration with partners in the Asia-Pacific region is bilateral in nature; these BMD relations include Australia, Japan, and South Korea (Taiwan has PAC-2 firing units, but they are not recognized as an active U.S. BMD partner). South Korea mainly employs lower-tier systems like the PAC-2, since they face a shorter-range threat. Australia is a BMD framework partner and is considering upgrading its Aegis ships to include BMD capabilities. Japan represents the United States' strongest BMD partner, as it has implemented the most robust, layered missile defense system in the region. Thus, the focus here will be on the U.S.-Japan alliance and BMD collaboration.[81]

The U.S.-Japan alliance has its roots in Japan's defeat at the end of World War II and the United States' occupation that lasted until 1952. The U.S. drafted Japan's constitution and included Article 9, which took away its right as a sovereign nation to wage war and maintain any form of armed force; however, Japan did retain a Self-Defense Force (SDF). In 1960, Tokyo and Washington established a formal bilateral alliance that guides their partnership today with the Treaty of Mutual Cooperation and Security. In return for granting the United States basing rights on its territory, Japan received American security guarantees. This defense arrangement was unique, because the defense was not mutual—Japan was not committed to come to the United States' aid if it were attacked. This security bias was on account of maintaining Japan's Article 9 obligations, which prohibited Japan from being in any formal collective security organization. Through this alliance, America has been able to operate forward in East

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[80] Swaine, Swanger, and Kawakami, 11–17; Richard P. Cronin, "Japan-U.S. Cooperation on Ballistic Missile Defense: Issues and Prospects," Congressional Research Service, 19 March 2002, http://fpc.state.gov/documents/organization/9186.pdf, 8–15; Tom Z. Collina, "U.S. Pushes Missile Defense Globally," Arms Control Association, November 2012, http://www.armscontrol.org/act/2012_11/U.S.-Pushes-Missile-Defense-Globally%20.

[81] Missile Defense Agency, "International Cooperation,"http://www.mda.mil/system/international_cooperation.html.

Asia from its strategic position on the Japanese islands. Despite Japan's constitutional interpretations that constrain it from participating in collective security and arms export arrangements, new interpretations of these restraints have allowed the U.S.-Japanese missile defense efforts to move forward, and a robust, multi-layered missile defense architecture has been established.[82]

3. U.S.-Japan TBMD Initiatives

Japan expressed initial interest in missile defense in the 1980s during Reagan's SDI era; however, in August 1998, this cursory interest turned into a primary defense objective with the launching of North Korea's Taepodong-1 ballistic missile that overflew Japan. As North Korea continued its quest for nuclear weapons and withdrew from the NPT in 2003, the Japanese cabinet officially announced that building its missile defenses was a top national priority. In the decade since this declaration, Japan has entered into a highly collaborative missile defense partnership with the U.S. This missile defense architecture consists of 16 PAC-3 firing units for lower-tier defense, and four Aegis BMD destroyers that regularly train and operate with U.S. BMD ships that provide upper-tier protection with their SM-3 interceptors. Japan is also working jointly with United States on the development of the SM-3 Block IIA interceptor that will provide enhanced intermediate-range defense capabilities. The JSDF also has an indigenous radar network that is fully integrated with U.S. sensors (SPY-1 and TPY-2) and provides early warning and tracking capabilities. Both forces have developed a highly dynamic and sophisticated command and control network with established emergency response procedures. While the U.S.-Japan BMD effort is the most successful thus far despite the legal constraints on the alliance, there are concerns that continued progress on BMD and

[82] Emma Chanlett-Avery, "U.S.-Japan Alliance" Congressional Research Service, 18 January 2011, http://www.fas.org/sgp/crs/row/RL33740.pdf, 1–4; Masako Toki, "Missile Defense in Japan" Bulletin of the Atomic Scientists, 16 January 2009, http://www.thebulletin.org/web-edition/features/missile-defense-japan.

other areas of collaboration may reach a point where these legal constraints become a hindrance.[83]

4. Regional Implications

The U.S.-Japan TBMD endeavor has caused great angst in China, which finds missile defense even more troublesome than Russia due to its limited nuclear deterrent. Some analysts have already pointed to China's increased ICBM production and positioning of SRBMs opposite Taiwan's coastline as a sign of an impending arms race in the region, with TBMD at least being partially blamed as a catalyst for such antagonistic behavior.[84] As Washington and Tokyo increase their interoperability and expand their joint missile defense capabilities, the more friction is likely to result with Beijing. For example, the United States' decision to possibly base another AN/TPY-2 radar on one of Japan's southern islands (the first radar is located in one of Japan's northern prefectures) to enhance detection and discrimination of North Korean ballistic missiles would also provide coverage over China and Taiwan.[85] This type of expansion of TBMD capabilities from the U.S.-Japan alliance, while meant to hedge against DPRK aggression, could provoke conflict and instability in an already fragile relationship with China. Furthermore, extending the TBMD architecture beyond Japan would prove challenging due to its checkered past with neighboring South Korea. It would also require a significant paradigm shift in Japan's defense policy; to allow Japan to participate in

[83] For example, there may be challenges getting the SM-3 Block IIA to full production because there are uncertainties about exporting this co-produced technology to third parties. The Japanese cabinet got around the Three Principles of Arms Export—prohibiting Japan from developing, producing, or transferring weapons or their components to foreign countries— for the development stage of the SM-3 Block IIA with a change in the National Defense Program Guidelines in 2005, but now they will have to contemplate the "Three Principles" again for the production and transferring of this weapon; Toki, "Missile Defense in Japan," http://www.thebulletin.org/web-edition/features/missile-defense-japan; Chanlett-Avery, "U.S.-Japan Alliance," 11; Japan Ministry of Defense, "Japan's BMD," http://www.mod.go.jp/e/d_act/bmd/bmd.pdf; O'Rourke, "Navy Aegis Ballistic Missile Defense (BMD) Program: Background and Issues for Congress," 11; Cronin, "Japan-U.S. Cooperation on Ballistic Missile Defense: Issues and Prospects," 4–6, 27–32.

[84] Wade Boese, "U.S. Outlines Plans for Missile Defense Talks with China," Arms Control Association, October 2001, http://www.armscontrol.org/act/2001_10/chimisdefoct01; Timothy Farnsworth, "China conducts Missile Defense Test," Arms Control Association, March 2013, http://www.armscontrol.org/act/2013_03/China-Conducts-Missile-Defense-Test.

[85] Adam Entous and Julian E. Barnes, "U.S. Plans New Asia Missile Defenses," *The Wall Street Journal* Online, 23 August 2012, http://online.wsj.com/article/SB10000872396390444812704577605591629039400.html.

collective security arrangements, which would further provoke China and escalate tensions in the region. As the U.S. military pivots to the Pacific, it will have to remain cognizant that any action it takes concerning TBMD in this region could cause negative reactions that will undermine Washington's objective of maintaining stability and order in the Asian-Pacific theater.[86]

C. THEATER MISSILE DEFENSE LESSONS LEARNED

This analysis of the European and Japanese approaches to developing and implementing TBMD is a reflection of their varying defense needs and collective security arrangements. This final section identifies the lessons learned and key differences that can be drawn from the analysis of the threats, alliances, strategic balances, and missile defense initiatives in the European and Asian theaters that could help inform the pursuit of cooperative missile defense in the Persian Gulf.

First, the nature of the threat and geography of each region has influenced the character of how missile defense has been executed with these U.S. partners. Both regions face MRBM and IRBM threats, so acquiring upper-tier systems is desired in order to have multiple opportunities to engage such threats. While MRBM and IRBM threats are the greatest concern to each theater, Europe is hedging against a potential future threat, while Japan is dealing with an existing one. Thus, NATO can develop a phased plan that flexibly responds to the growing Iranian ballistic missile capabilities, whereas Japan had to employ a TBMD system as quickly as possible, since it was already behind the threat curve. Additionally, geography plays a significant role in TBMD architecture. Since Japan is an island nation, the defended area is much smaller and lends itself to sea-based missile defense, since BMD ships can be stationed anywhere around Japan to achieve ideal intercept geometries based off ballistic missile trajectories. This geographical consideration explains Japan's investment in acquiring its own BMD Aegis destroyers. Conversely, NATO is attempting to defend large portions of the European

[86] Swaine, Swanger, and Kawakami, 29–39, 85–93; Boese, "U.S. Outlines Plans for Missile Defense Talks with China"; Richard Weitz, "Global Insights: Common Fears, Different Approaches to U.S. BMD for Russia and China," *World Politics Review*, 27 November 2012, http://www.worldpoliticsreview.com/articles/12524/global-insights-common-fears-different-approaches-to-u-s-bmd-for-russia-china.

continent. The defended area is much larger and lacks as many maritime options. Thus, sea-based assets alone cannot accomplish a robust TBMD system. Hence NATO plans to employ Aegis-Ashore in locations that are optimal for missile interception. Thus, geography and threat capabilities need to be considered in developing future TBMD architectures.

Second, the alliance structure with these two regions significantly impacted the implementation of TBMD. Japan's bilateral alliance appears to have allowed for a more streamlined process to develop and field TBMD components in an expeditious manner, since it is the only U.S. ally that has a fully operational, multi-layered missile defense system. However, up-scaling this successful model to the broader Asian region will prove difficult due to the legal constraints on Japan and its alliance with America. A defended area that encompasses large swaths of land with multiple states, as is the case in Europe and the Persian Gulf, necessitates the use of a multilateral approach in order to be successful. While NATO is a mature, multilateral alliance, its pursuit of a TBMD system that provides security for all member nations has not been without its own challenges. The GMD and MEADS are examples of the challenges of incorporating the wide range of multiple members' capabilities, burden-sharing research and development efforts, and transferring technology and information among partner nations. Balancing the needs and interests of various and diverse states is a formidable task; however, if a robust and effective TBMD system is a desired outcome, then a multilateral framework is required.

TBMD hinges upon balancing relations with states outside the immediate alliance. If misunderstandings over missile defense intentions cannot be resolved with regional actors, then its overall objectives of reinforcing stability will be undermined. Relations with China and Russia pose challenges to the development of the Asian and European TBMD systems. Thus, embarking on collaborative efforts (in the case of Russia) and using measured progress (in the case of China) should be considered in resolving issues of TBMD misunderstanding. Maintaining Israel's qualitative military edge (QME) is the major regional balance obstacle to pursuing TBMD in the Persian Gulf region.

This comparative analysis of European and Asian TBMD approaches provides some possible guidelines for implementing cooperative missile defense with the United States' Persian Gulf partners. Analysis of the threat, alliance structure, and regional implications will be applied to the Gulf Cooperation Council (GCC) in the following chapters. There are many things that set this region apart from the two discussed here; nonetheless, some of the challenges they face in TBMD may be similar. As the Persian Gulf stands to be the most challenging missile defense program to implement, noting the similarities and differences with the previously established programs provides a pathway forward for implementing a phased adaptive approach to missile defense that is tailored to the security interests and abilities of the Arab Gulf states.

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IV. GULF COOPERATION COUNCIL THEATER BALLISTIC MISSILE DEFENSE CASE STUDY: THREAT ANALYSIS

A. BACKGROUND: GCC-IRANIAN RELATIONS

With its growing asymmetric power, provocative rhetoric, nuclear program non-compliance, and subversive influence throughout the Middle East, Iran is one of the more troublesome states within the region, and its antagonistic behavior is especially concerning for its most proximate neighbors. For these reasons, the GCC states view Iran as the most significant external threat to their security and the broader stability of the Persian Gulf. The contentious relationship between the Arab Gulf states and Iran is often understood merely along its sectarian and ethnic cleavages; however, simply attributing the current regional turmoil to persisting ancient hatreds that formed centuries ago between empires and over ideological splits in the Islamic faith overlooks the actual root causes of what is driving hostilities in the Persian Gulf. Structural tensions and strategic competition between the two dominate powers in the region, Iran and Saudi Arabia, drive both conflict and collaboration in the geopolitical arena of the Persian Gulf.[87]

Iran and Saudi Arabia aspire to be regional hegemons and vie for preeminence amongst the broader Middle East Islamic community. However, they have differing perspectives on the organization of regional order. The 2009 Rand Corporation study *Saudi-Iranian Relations Since the Fall of Saddam* cites divergent visions over regional hierarchy and the role of the United States in the region as key points of contention between these two states:

> Since 2003, the fundamental driver of the relationship is a struggle to shape the regional balance of power. Each state sees the expansion of regional influence by the other as a net loss for itself…This game of

[87] Frederic Wehrey, Theodore W. Karasik, Alireza Nader, et al., *Saudi-Iranian Relations Since the Fall of Saddam: Rivalry, Cooperation, and Implications for U.S. Policy* (Santa Monica: RAND Corporation, 2009), ix-xvi; 1–9. 93–98; Gen. James N. Mattis, "2013 Posture Statement," 5 March 2013, http://centcom.ahp.us.army.mil/en/about-centcom/posture-statement/.

> geopolitics is aided by the fact that the regional landscape is defined by weak states and contending local factions that invite outside meddling.[88]

Saudi Arabia views Iran's use of asymmetric power and pursuit of nuclear weapons as evidence of the Islamic Republic's expansionist intentions, especially in post-Saddam Iraq. Riyadh relies on the United States as a security guarantor to assist in containing Iranian influence in the Persian Gulf in order to ensure regional stability, as well as to bolster its own regime authority and legitimacy. The Islamic Republic views Saudi Arabia as a proxy of the United States and a hindrance to its rightful position atop the regional hierarchy. Since its 1979 revolution, Tehran desires independence from foreign powers in its domestic politics and the broader Persian Gulf domain, and it has made overtures to the Arab Gulf monarchies to join it as equal partners in ensuring regional security free from external, in particular American, intervention. However, Riyadh doubts the sincerity of these claims, and believes Tehran designs to relegate Saudi Arabia to a subordinate role in the region.[89]

Disparities in political ideologies and governance support these concerns. Iran is a theocracy with semi-democratic institutions, vesting overall authority in its clerical elite. Tehran is adamantly against the type of dynastic rule that its Arab neighbors employ—where there is an interdependent relationship with clerical leaders, but ultimately, they are relegated to positions of junior status under the ruling families. Contrasting energy economy outlooks are a final point of contention between these regional powers that are both OPEC members. Saudi Arabia has the largest proven oil reserves in the world and a relatively small population, so it can pursue a long-term strategy of moderate oil prices. Conversely, Iran's smaller oil reserves and larger population necessitates a short-term view that promotes higher oil prices (See Table 3 on page 77). These factors drive geopolitical infighting between the major powers. The smaller Gulf monarchies are caught in-between an overbearing Riyadh and a menacing Tehran, which has created

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88 Wehrey, Karasik, Nader, et al., *Saudi-Iranian Relations Since the Fall of Saddam: Rivalry, Cooperation, and Implications for U.S. Policy*, xii.

89 Ibid., ix, xii; 2–4; Alsis, Allison, and Cordesman, "U.S. and Iranian Strategic Competition in the Gulf States and Yemen," 4–10; Lawrence G. Potter, *The Persian Gulf: Tradition and Transformation* (New York: Foreign Policy Organization, 2011), 97–100.

disunity in the GCC as some of these states choose more accommodating relations with Iran.[90]

Iran has been a pariah in the Persian Gulf since its 1979 Islamic Revolution. Its relations with its Arab Gulf neighbors have gone from one of extreme bipolarity that created an ideological Cold War in the region in the 1980s, to moderation and cooperation as a reformist regime came to power in Iran in the 1990s, to increased antagonism and uncertainty with the elimination of Saddam-ruled Iraq as a critical counterweight for the regional balance of power in the last decade. The American-led wars in Iraq and Afghanistan since 2003 had contained Iran on both its eastern and western fronts. As the United States withdraws its military forces from the region and leaves fragile states behind, Iran appears to be seizing this opportunity to expand its influence throughout the region, especially in post-Saddam Iraq. For the GCC, a crucial, stabilizing element to the structural make-up of the region has been removed—an autocratic Iraq under Saddam Hussein was a bulwark against Iranian ambitions of exporting its revolution beyond its borders. In addition to these changes in the regional balance of power, the Obama Administration's initial overtures toward rapprochement with Tehran and the ensuing events of the Arab Spring that saw the disposal of long-standing, Sunni-led, American-backed regimes in Tunisia and Egypt with barely a blink of an eye from Washington, has left feelings of vulnerability and perceptions of a U.S. lack of commitment among GCC allies. Without proper U.S. engagement, the mounting structural tensions in the Riyadh-Tehran relationship point towards greater conflict and escalation of hostilities in the region that will prove detrimental to all parties' interests in the Persian Gulf.[91]

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[90] Wehrey, Karasik, Nader, et al., *Saudi-Iranian Relations Since the Fall of Saddam,* x, 2–4; Alsis, Allison, and Cordesman, 8–25.

[91] Wehrey, Karasik, Nader, et al., 12–21; Potter, *The Persian Gulf: Tradition and Transformation,* 109–130.

B. THE IRANIAN BALLISTIC MISSILE THREAT

Iran's ballistic missiles are political weapons that enhance the asymmetric tactics[92] it employs against the Gulf monarchs. These methods aim to cause internal discord within the GCC states by challenging their legitimacy, thus threatening regime stability and making these actions just as worrisome as direct military action on their territories. While Iran's ballistic missiles may not be militarily decisive against the GCC states, such an attack could further undermine the monarchs' legitimacy and power in the eyes of their people. If Arab Gulf countries are unable to effectively defend their territories and populations from a ballistic missile attack or succumb to coercion on account of these weapons, their foremost security concern—regime survival—would be at stake.[93]

Ballistic missiles offer an attractive form of offensive power to regimes that lack ample military resources, because they are relatively cheap and can assuredly penetrate defenses. Thus, they can be quite effective at intimidating and coercing adversaries. Additionally, these weapons deliver their payloads quicker to targets, are not hindered by weather, and are easier to maintain and support than combat aircraft. For these reason, ballistic missiles are a prime feature in many arsenals of third-world militaries. Iran is an example of such a country, and it boasts the most robust and capable ballistic missile arsenal in the Middle East and continues to show a desire to improve its technologies within this warfare domain.[94]

Tehran began acquiring ballistic missiles during the Iran-Iraq War in the 1980s from China, North Korea, and Russia. The SCUD B and C missiles acquired during this time period have been subsequently improved both in range and accuracy and are now known as the Shahab-1 and Shahab-2 with ranges of 300 km and 500 km, respectively.

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92 These asymmetric tactics that aim to undermine the Gulf monarchs' legitimacy include taking up a rejectionist stance on the Palestinian issue to the detriment Gulf attempts to moderate the conflict, support for militant groups like Hamas and Hezbollah, and its perceived backing and mobilization of marginalized Shi'a populations in the GCC states; Wehrey, Karasik, Nader, et al., 46–47.

93 Ibid.; Potter, 82.

94 Richard L. Russell, "Swords and Shields: Ballistic Missiles and Defenses in the Middle East and South Asia," *Orbis* 46, no. 3 (2002): 485–86; Will Dossel, "Ballistic Missile Defense," in Scott Jasper ed., *Securing Freedom in the Global Commons* (Stanford: Stanford University Press, 2010), 119.

While it is difficult to determine the exact quantity of missiles due to Iran's ability to produce missiles indigenously, most defense experts estimate the Shahab-1 and Sahab-2 inventory to be between 300 and 400 missiles.[95] The Shahab-1 and 2, along with approximately 250 Chinese CSS-8 and CSS-7 missiles (150 km and 280 km, respectively), constitute the majority of Iran's current ballistic missile capability, and the most likely to target major population and economic centers within the Gulf region, as well as U.S. military installations.[96] While the primary ballistic missile threat in the Persian Gulf is within SRBM range, Iran's advanced MRBM capabilities can reach targets beyond the littoral regions and into the Gulf of Oman (e.g., population centers in inland Saudi Arabia and along the Red Sea and the littoral region of Oman).[97]

Over the past 20 years, Iran has pushed to advance its indigenous ballistic missile program. The Shahab-3 is the first MRBM in Iran's inventory with a range of 1,300 km.[98] The Shahab-3 was first successfully flight tested in 1997 and reported to have gone into mass production in 2001.[99] In 2009, an improved version of the Shahab-3 known as the Ghadr-1 was successfully flight-tested.[100] This test demonstrated a 1,600 km range, but experts believe it has the ability to go in excess of 2,000 km.[101] It is believed there are currently 25–100 Shahab-3 and Ghadr-1 missiles in Iran's inventory.[102] During the same year, Iran also successfully tested the two-stage solid propellant Sejil-2 IRBM that

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[95] Feickert, "Iran's Ballistic Missile Capabilities,"1; Fitzpatrick, *Iran's Ballistic Missile Capabilities: A net assessment,* 117.

[96] Fitzpatrick, 13–17; Feickert, "Iran's Ballistic Missile Capabilities," 1–3.

[97] Jane's Strategic Weapons, "Iran's Ballistic Missiles," http://search.janes.com.libproxy.nps.edu/Search/documentView.do?docId=/content1/janesdata/sent/gulfsu/gulfa025.htm@current&pageSelected=allJanes&keyword=strategic%20weapon%20systems%20iran&backPath=http://search.janes.com/Search&Prod_Name=GULFS&#toclink-j41980161300878122979.; Andrew Feickert, "Iran's Ballistic Missile Capabilities," Congressional Research Service, 23 August 2004, http://fpc.state.gov/documents/organization/39332.pdf., 1–6; Mark Fitzpatrick ed., Iran's Ballistic Missile Capabilities: A net assessment (London: The International Institute for Strategic Studies: 2010), 117.

[98] The Shahab-3 is modeled from imported North Korean No Dong-1 ballistic missiles; Fitzpatrick, 21.

[99] Ibid., 21, 23.

[100] Ibid., 35; Hildreth, "Iran's Ballistic Missile Programs: An Overview," 3.

[101] Hildreth, "Iran's Ballistic Missile Programs: An Overview," 4; Fitzpatrick, 25, 35.

[101] Hildreth, "Iran's Ballistic Missile Programs: An Overview," 4; Fitzpatrick, 25, 35.

[102] Fitzpatrick, 117.

achieved ranges in excess of 2,000 km.[103] The Iranian ballistic missile threat in the Persian Gulf is depicted in Figure 4.

Figure 4. The Iranian Ballistic Missile Threat in the Persian Gulf.
Source: The Heritage Foundation.

The shift from liquid to solid propellant missile production indicates a significant technological advancement in this weapons program. With solid-propellant fuel, the pre-launch window is drastically shortened and therefore indications and warnings of a missile launch are significantly reduced. Defense and technical experts believe that if Iran were able to develop a nuclear capability, they would most likely attempt to place nuclear warheads on missiles as small as the Shahab-3.[104] Along with these demonstrations of

[103] Ibid., 118; Hildreth, "Iran's Ballistic Missile Programs: An Overview," 4.

[104] Fitzpatrick, 129–132.

IRBM capabilities, Iran launched a satellite into low earth orbit in 2009 utilizing a Safir-2 rocket. Some experts express concern that Iran's space launch vehicle program is the foundation for its pursuit of ICBM technology.[105]

Ground-based, mobile platforms are the most likely means for launching ballistic missiles. Iran is estimated to have between 12–18 Transporter-Erector-Launchers (TELs) for the Shahab-1/2 and six for the Shahab-3/Ghadr-1.[106] There are also indications that Iran has began building underground silos in Tabriz and Khorramabad (located in the northwestern part of Iran near the Iraqi and Turkish borders); however, while SRBMs and MRBMs could possibly fit in these silos and reach targets throughout the Persian Gulf, Israel, and Turkey, analyst believe they are probably intended for future IRBM and ICBM capabilities.[107] Furthermore, mobile platforms provide an added element of uncertainty for adversaries attempting to launch pre-emptive strikes on launching units, since their locations prior to the first salvo are difficult to ascertain. U.S. forces experienced the difficulty of targeting highly mobile launch platforms in Iraq during *Operation Desert Storm* in 1991.[108]

The operational proficiency of launching ballistic missile attacks is highly speculative due to scarce and incomplete intelligence from supposed training evolutions and over-exaggerated capability claims in Iranian state media releases. However, Tehran conducted combat operations with its Shahab-1 and Shahab-2 missiles on three separate occasions in 1994, 1999, and 2001 against the Iranian resistance group Mujahedin-e Khalq Organization (MKO), which was allowed safe harbor in Iraq. The three combat operations against MKO bases in Iraq utilizing Shahab missiles showed increasing capability in coordination between multiple firing units and ability to reload quickly and launch a second strike. The last attack in 2001 consisted of over 30 missiles that were launched with the synchronization of three missile battalions in three different regions

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[105] Hildreth, "Iran's Ballistic Missile Programs: An Overview," 1–5; Feickert, 1–6; Fitzpatrick, 14–26, 54–64.

[106] Fitzpatrick, 117.

[107] Ibid., 118–119.

[108] Ibid., 117–119.

with long-range artillery batteries. Evidence also indicated that Shahab crews were composed of skilled operators and functional equipment that allowed for the reload and launch of a second attack within a two-hour time frame. Due to the number of Shahab missiles used in the attacks, it was inferred that Iran had acquired a sufficient indigenous manufacturing capability to replenish its inventory with these strategic assets.[109]

While Iran has made significant advances in its ballistic missile development, manufacturing, and operational capabilities over the past 20 years, these conventionally armed weapons still lack the accuracy, and numbers in the absence of accuracy, to be effective against military and economic targets.[110] The International Institute for Strategic Studies concluded that the extent of Iran's ballistic missile capability against fixed targets included the possibility of causing damage and disruption at large military facilities or fuel storage depots, but they would be unable to completely shut down operations at such facilities.[111] Thus, this arsenal's most effective use would be as a political weapon to terrorize population centers throughout the Gulf region in a similar manner that was witnessed during the Iran-Iraq War and Operation Desert Storm.[112] Furthermore, Iran's ballistic missiles are instruments that support its asymmetric tactics of delegitimizing Arab Gulf monarchs. Lastly, while Iran's ballistic missile capabilities have not yet matured to the point of causing massive damage or loss of life, the United States and its allies should not be remiss about falling behind the curve in the missile defense arena in this region.

C. GCC BMD OPTIONS TO COUNTER THE THREAT

Tehran's ballistic missile program currently poses the greatest threat to its Gulf neighbors with its substantial SRBM inventory; yet, the Persian Gulf region has minimal defenses against this threat. The Iranian ballistic missile program is progressing towards MRMB and IRBM capabilities, but these missile technologies are in the earliest stages of

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109 Ibid., 119–121.

110 The estimated accuracies for the Shahab-1/2 include CEPs of 1,000 m/1,500 m, and for the Shahab-3/Ghadr-1, CEPs of approximately 2,500 m; Ibid., 14, 16, 20.

111 Ibid., 139.

112 Ibid., 16, 139.

development and their numbers do not currently present as great of a threat to Israel or Europe. However, both Israel and Europe already have, or are in the process of developing, advanced BMD systems to counter this potential future threat. The Persian Gulf currently has a void in robust defensive measures to handle a ballistic missile attack from Iran, which will become even more threatening if Iran obtains nuclear weapon capabilities.

While it will take time for Iran to have the full capability of fixing a nuclear warhead on a ballistic missile, it has shown the intellectual and industrial capacity, as well as the political will to continue the advancement of its offensive ballistic missile program, in addition to defying international protocols concerning its nuclear program. BMD technology is not something that can be developed and implemented quickly at the last minute to respond to an imminent threat. The United States and its regional allies cannot afford to be behind the curve in the arena of BMD; it is a warfare area that requires the utmost proactive agenda rather than a reactive one. It takes years, sometimes decades, to field a fully tested and operational system that has the ability to counter a ballistic missile attack within minutes.[113] The Missile Defense Agency's (MDA) tenets of BMD emphasize the importance of reliable indications and warnings concerning an adversaries capabilities, intentions, and readiness, which allows the technological community to create defenses and gives senior leaders flexibility in decision-making and posturing of assets to counter a ballistic missile threat. The BMD tenets also stress that "BMD planning is 90-percent of the fight."[114] In the case of Iran, indications and warnings point towards the need for a more comprehensive BMD system to be incorporated into the larger deterrence architecture within the Persian Gulf region to protect American and its regional allies' interests.

The shorter range and highly mobile ballistic missile threat to the GCC states will be more challenging to counter than compared to the dynamics in the Asian and

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[113] For example, the concept of THAAD was conceived in the early 1990s, and the first fully operational THAAD battery was deployed in 2008. Missile Defense Agency, "Terminal High Altitude Area Defense (THAAD)," http://www.mda.mil/system/thaad.html; Burns and Brune, 172, 177.

[114] "BMDS Student Reference Supplement," Joint BMDS Training & Education Center. Missile Defense Agency: 1 February 2012, 28.

European theaters. The shorter range means that there will be six minutes or less to react to an attack, which necessitates a robust and thoroughly integrated command, control, and communications structure, as well as cooperative sharing of intelligence, surveillance, and reconnaissance assets. Established pre-planned response procedures need to be firmly in place and understood by highly trained operators; the consummation of a successful engagement against a threat of this nature begins well in advance of it being launched.

The TBMD architecture for the Persian Gulf should include upper- and lower-tier options to the greatest extent possible; PAC-3, THAAD, and Aegis SM-3 should be employed to create a layered defense. Due to the shorter-range of the threat, it will not have as long of a midcourse-phase, so there will be only a small window to engage it outside the atmosphere during this stage. If these SRBMs do not attain a minimum altitude of 70 km, Aegis SM-3 will not be able to engage them; terminal-phase defenses will provide the bulk of protection in this scenario. Additionally, as Dean Wilkening points out in his paper "A Simple Model for Calculating Ballistic Missile Defense Effectiveness," the compressed maritime space to maneuver within the Persian Gulf also makes engaging a threat with a BMD ship difficult. The Asian theater presents a more favorable geometry for maritime BMD platforms. The sea-based terminal capability on BMD ships may be the best option for maritime intercepts against an SRBM. Wilkening also suggests that ten THAAD batteries would be required to provide full coverage of the region. Furthermore, unlike the European theater, shore-based Aegis would more than likely be futile in the Persian Gulf. Since Aegis-Ashore is ideal for a theater that lacks maritime maneuverability to provide full coverage through sea-based assets, but has sufficient land area between the threat and the intended target, the Persian Gulf does not offer this type of geometry that would be conducive to shore-based Aegis.[115]

Ascent-phase capabilities currently under development and future boost-phase technologies would be especially helpful given the challenging space and time dimensions for Persian Gulf BMD. Newer variants of the SM-3 should have ascent-phase

115 Dean Wilkening, "A Simple Model for Calculating Ballistic Missile Defense Effectiveness," *Science and Global Security* 8, no. 2 (1999): 201.

capabilities. Additionally, launch-on-remote and engage-on-remote options will enhance interception probabilities in this difficult environment. Wilkening suggests that airborne boost-phase intercept (ABI) combined with space sensors could provide early detection and thus longer engagement windows against ballistic missile threats in the Persian Gulf region.[116]

The Persian Gulf faces different threats and technical challenges than the European and Asian theaters; therefore, a slightly different approach to building a TBMD architecture is required for this region. While the same components can be used, their arrangement and integration may be different than the European and Asian systems. Additionally, the technical difficulties of this region are mirrored within its political realm and present a more challenging alliance structure to operate within to implement an effective TBMD architecture for the Persian Gulf.

116 Dean Wilkening, "Airborne Boost-Phase Ballistic Missile Defense," *Science and Global Security* 12, (2004): 1–67.

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V. GULF COOPERATION COUNCIL THEATER BALLISTIC MISSILE DEFENSE CASE STUDY: U.S.-GCC ALLIANCE & INTRA-GCC RELATIONS

The alliance structure and political landscape of the Persian Gulf compounds the technical challenges of building a TBMD architecture in this region. The Arab Gulf monarchs formed the multilateral organization known as the Gulf Cooperation Council in 1981 in an effort to integrate economic and political institutions as well as build a collective defense arrangement (Figure 5 is a geographical depiction of this organization). In its 32-year existence, the GCC's performance has been largely characterized as a lackluster effort that has made minimal progress towards achieving true unity across political, economic, and security realms. Despite similarities in governance, economy, religion, ethnicity, and historical affiliation, the Sunni-led Arab Gulf monarchies harbor a legacy of distrust and internal tensions between one another. Recently, certain members have made concerted efforts toward operating in coalition environments and assuming larger roles in mediating political and social issues throughout the greater Middle East; however, all GCC members still heavily rely on bilateral security guarantees from the United States. Thus, the Persian Gulf alliance structure is somewhat of a hybrid between the multilateral NATO and the bilateral U.S.-Japan security arrangements. The dynamics of internal GCC relations and their individual bilateral connections to the United States need to be understood and taken into account in the implementation of a TBMD system whose success is highly dependent upon an integrated command, control, and communications network of sensors and interceptors that reside in different states.[117]

This chapter analyzes the implications of the intricacies of the GCC alliance and its ties to America in acquiring joint missile defenses and how such an endeavor can be used to further the aims of greater integration and interoperability among the Arab Gulf monarchies. The chapter first addresses the history of the Persian Gulf region with

[117] Anthony H. Cordesman and Alexander Wilner, "The Gulf Military Balance in 2012," CSIS, Washington, D.C., May 2012, www.csis.org/burke/reports, 6–10; Committee on Foreign Relations United States Senate Majority Staff Report, "The Gulf Security Architecture: Partnership with the Gulf Cooperation Council" (Washington, D.C.: Government Printing Office, June 2012), http://www.gpo.gov/fdsys/, 1–5.

foreign security guarantors and how such arrangements set the foundations of security dependency that persists today. Then the conditions that precipitated the formation of the GCC and increased U.S. involvement in the region are discussed. The second portion of the chapter reviews the major collective defense initiatives the GCC has been involved in since its inception. The success or failure of these previous collaborative defense initiatives is analyzed within the context of the evolution in alliance dynamics given certain shifts in the strategic environment. The individual GCC states' roles, interests, and relations to one another within the alliance are elaborated upon in the third section. The final portion looks at the current GCC response and actions taken thus far to deal with the Iranian ballistic missile threat. The findings from this chapter will be incorporated into the concluding chapter's policy recommendations for the implementation of a Persian Gulf TBMD system.

The Gulf Cooperation Council. *Source:* The Perry-Castaeda Library Map Collection, The University of Texas at Austin, http://www.lib.utexas.edu/maps/.

A. BACKGROUND: GCC ALLIANCE AND FOREIGN SECURITY GUARANTORS

While there are similarities between the European and Asian alliance structures and the GCC's multilateral and bilateral security aspects, there are two main differences: (1) The GCC is a fairly new alliance; it has not had the nearly 200 years of learning that the European allies have had to develop a mature multilateral collective security organization,[118] and (2) the bilateral security guarantees from foreign powers is more deeply rooted in the psyche of the region than in Japan, since such entities have been prevalent in the region for centuries, providing protection to the littoral sheikdoms from external forces.[119] These foreign defense providers played a significant role in forming the modern state structures within the region. These differences reveal important features of the Arab Gulf partnership that should be considered when attempting to advance its interoperability and multilateral efforts. The challenges of implementing an effective TBMD system in the region have their roots in the historical role of foreign security providers and the context within which the GCC was founded.

Contact between the Persian Gulf and West came as a result of the European Age of Exploration to find maritime sea lines of communication to the Far East that took place between fifteenth to seventeenth centuries. The Portuguese were the first Western power to exercise control over the region for the benefit of trade. The British began to make inroads in the Persian Gulf in the middle to late eighteenth century and eventually usurped Portuguese control by the nineteenth century. British involvement in the Persian Gulf was tied to its commercial interests in its colonial crown jewel of India, and the defense of the sea lines of communication leading to and from this lucrative colony. Piracy originating from the littorals of the Persian Gulf began causing disruptions to shipping from India and the local pearling industry. Additionally, due to the weak state

[118] The European powers have been developing collective defense core competencies, since the formation of the Concert of Europe in 1815. They have had major set backs in the evolution of multilateral cooperation with two world wars, which have served as a reminder of the vital importance of cooperation for attaining peaceful coexistence. The growing pains that the GCC have experienced in their 30-year existence are to be expected of an immature alliance.

[119] Japan had already developed a strong national identity and history of providing for their own defense prior to their bilateral treaty with the United States. A large part of the GCC states' identities and security apparatuses were shaped by centuries of foreign intervention.

of affairs between tribal entities of the Arabian Peninsula, the British were concerned about other imperial powers gaining control of the Red Sea and Persian Gulf, thus threatening its monopoly over commerce traveling from India. Given the strategic importance of this region to the economic vitality of Great Britain, a British residency was established in the Persian Gulf in the late eighteenth century to maintain an acceptable level of stability and order in the region through controlling to various degrees the political and economic affairs of the littoral states (Bahrain, Qatar, the UAE, Kuwait, Oman, and portions of the Iranian coast). They exercised this control through establishing relationships with local merchants that had ties to the different tribal sheiks. Throughout the nineteenth century, the British made various arrangements with the local rulers that allowed them to manage international affairs, external threats, and mediation of tribal disputes that threatened maritime commerce in exchange for not meddling within internal tribal matters. Eventually, these agreements grew to include treaties that prohibited the rulers from relinquishing any of their territory to another imperial power without British consent.[120]

This political infrastructure that the British set up in early 1800s to stabilize the region had long-lasting structural effects on governance and security institutions of the modern Arab Gulf states. In establishing stability within the Persian Gulf, the British relied upon propping up local tribal families and ensuring their reign in order to maintain the delicate regional balance of power. After a century and half of increasing power and wealth, especially with the discovery of oil in the region in the twentieth century, these tribal leaders were poised to take control of these countries after the British withdrawal and their ensuing independence in the 1960s and 1970s. These tribal sheiks were able to consolidate power under their rule and became the current monarchs of the Persian Gulf states; however, their legitimacy and security continue to be dependent upon foreign power assistance, namely the United States.[121]

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[120] Jeffrey R. Macris, *The Politics and Security of the Gulf: Anglo-American Hegemony and the Shaping of a Region* (London: Routledge, 2010), 11–16; James Onley, "Britain's Native Agents in Arabia and Persia in the Nineteenth Century," *Comparative Studies of South Asia, Africa and the Middle East,* Vol. 24, No.1, 2004, 129–30.

[121] Macris, *The Politics and Security of the Gulf: Anglo-American Hegemony and the Shaping of a Region,* 9–32; Potter, *The Persian Gulf*, 10–12, 17–28.

The official withdraw of the British from the Persian Gulf in 1971 resulted in a power vacuum that led to a tumultuous two-decade long period in the region. In the absence of super power mediation that had managed conflict and tensions in the region for a century and a half, internal and external hostilities flared. Iran, Iraq, and Saudi Arabia vied for regional supremacy, while the smaller Arab emirates struggled to respond to this chaotic new regional order by consolidating their power, strengthening their legitimacy, and balancing their need for protective cover from their larger Arab neighbor——Saudi Arabia——while still maintaining their sovereignty. With its Cold War commitments in Europe and Vietnam, the United States did not have the military wherewithal or political will to take up the reigns as chief arbiter and security guarantor in the Persian Gulf in the 1970s. Instead, Washington adopted a "Twin Pillars" policy of supporting the two dominant powers in the region that it had cultivated relations with over the previous decades—Iran and Saudi Arabia——to police the region and maintain an acceptable level of order.[122] It would take 20 years of experiencing the negative repercussions of instability in this part of the world for Washington to fully commit itself to the security of this region.[123]

The absence of a foreign power broker in this part of the world led to the creation of the Gulf Cooperation Council as an effort of the Arab Gulf monarchs to create some semblance of stability in their neighborhood as successive crises plagued the region in the decade following the departure of Great Britain. The Gulf monarchies' common historical experiences and similar political, economic, and social systems provided an attractive possibility of an indigenous cooperative arrangement to replace Western intercession; however, reveling in their new found independence, desiring to establish their own identity, and unwilling to relinquish their sovereignty to any supranational entity after shedding the last vestiges of colonialism, would see such an arrangement unmet in the first decade without superpower intervention. It would take the successive crises in the late 1970s and early 1980s of the fall of the Shah in Iran (1979), the Soviet invasion of Afghanistan (1979), and the outbreak of the Iran-Iraq War (1980) to provide a

[122] Macris, 175.

[123] Ibid., 189–190.

watershed in the emirates' attitudes towards systems of cooperation. These events impressed upon the Gulf monarchs their inability to independently respond to such crises with their comparatively underdeveloped militaries, and that an organization founded on the integration of their common political, economic, and social systems could also provide collective security for all participants in such a union. Thus, the Gulf Cooperation Council was formally established in 1981 with primary objectives aimed at political and economic integration; however, given the circumstances that it was created under and the ensuing events of the next decade, the GCC would increasingly become involved in pursuing collective security initiatives.[124]

While the United States was reluctant to assume complete responsibility for the protection and stability of the Persian Gulf region from the British in the 1970s, as the crises continued unabated throughout this period of foreign disengagement, Washington was forced to gradually assume a more prominent role in the regional security structure. Starting with the 1973 oil embargo, the effects of Middle East instability on the American way of life became apparent. This event was followed by the overthrow of the close U.S. ally Shah Mohammad Reza Pahlavi during the Iranian Revolution and the Soviet invasion of Afghanistan. These events saw increases in U.S. naval patrols in the Persian Gulf and Indian Ocean as well as developing closer ties to the smaller Arab emirates along with Saudi Arabia as a result of the collapse in the "Twin Pillars" strategy. With the centerpiece of the American strategy that made the Nixon Doctrine possible in the Persian Gulf no longer in existence, the Carter Doctrine proclaimed that the U.S. would defend its interest in the region by force if necessary, especially against any Soviet advances in the region. In addition this new policy, the Carter administration created a rapid response force known as the Rapid Deployment Joint Task Force (RDJTF), secured foreign base rights for pre-positioning of forces in Oman, Somalia, and Kenya, and improved its air and sea lift capabilities in the region. Within a year of the RDJTF's creation and the Carter Doctrine's annunciation, another calamity engulfed the region, the

[124] Erik R. Peterson, *The Gulf Cooperation Council: Search for Unity in a Dynamic Region* (Boulder: Westview Press, 1988), 56–64, 72–83; "Article Four: Objectives," *Charter, Gulf Cooperation Council,* 25 May 1981, http://www.gcc-sg.org/eng/indexfc7a.html; "Foundations and Objectives," The Cooperation Council for the Arab States of the Gulf Secretariat General; http://www.gcc-sg.org/eng/index895b.html?action=Sec-Show&ID=3; Potter, *The Persian Gulf,* 32–33.

Iran-Iraq War. Upon request from the nascent GCC, the United States Navy began escorting oil tankers through the region's troubled waters to protect them from Iranian attack as a result of hostilities between these regional actors and the GCC's subsequent support for Iraq in the conflict as a means to contain Iran. The United States also tacitly supported Saddam's regime with intelligence and reconnaissance information and turned a blind eye towards the GCC's funneling of weapons and money to Iraq. Following the end of the Iran-Iraq War, most the U.S. air and naval assets redeployed, but only two years later would they return in full force when Saddam invaded Kuwait, and the GCC called upon American assistance once again. This fourth and final occurrence during this interregnum would see Washington establish a permanent presence in the region through bilateral alliances with the Arab monarchs and assume the full duties and responsibilities as the region's chief security guarantor.[125] Twenty years of successive crises in the Persian Gulf had taken a toll on American interests, especially in the way of economic losses, to the point that the United States could no longer endure the unhinged nature of the region and its negative effects on U.S. national security. The U.S. military presence had steadily risen during this time period, but a permanent security infrastructure had not been established. Following the liberation of Kuwait, much like the previous Western super powers before it, America came to realize the necessity of ensuring the stability of this troubled corner of the world.[126]

B. GCC COLLECTIVE SECURITY INITIATIVES

The turmoil of the Iranian Revolution and the Iran-Iraq War were catalysts for cooperation amongst the Arab monarchs that led to the formation of the Gulf Cooperation Council. While collective security was not explicitly mentioned in the signed charter of 1981, within the first 18 months of its establishment, the GCC had put in place a framework for implementing a cooperative military program and allocated a combined $30.6 billion towards cooperative defense efforts. By 1984, a combined force known as the Peninsula Shield Force (PSF) was created. The PSF was initially composed of 10,000

[125] Macris, 198–228; Potter, 29–46.

[126] Macris, 256–57.

troops divided into infantry, armor, artillery, and combat support elements. Bilateral and multilateral ground, air, and maritime exercises were conducted between GCC members throughout the duration of the war.[127]

Despite this fledging defense organization's impressive build-up and pooling of military resources and willingness to increase military interoperability, it was unable to effectively respond to the turmoil of the Iran-Iraq War and relied on U.S. intervention and the international community to restore stability and order to the region. The GCC was a new organization at the time of the Iran-Iraq War, so it ability to handle such a conflict on its own was not surprising; however, its failure to respond to an invasion of one of its members in 1990 was far more humiliating to the alliance. This lack of success resulted in members abandoning the organization's multilateral security aims in favor of bilateral agreements with the United States, which became a permanent fixture in the regional security infrastructure following the First Gulf War. The GCC's early failures at executing multilateral security operations during the Iran-Iraq and First Gulf Wars created pessimism towards the continuance of building a robust combined military program. Thus, in the aftermath of these debacles, the Gulf monarchies have allowed their distrust of one another, fear of Saudi hegemony, and concerns of strong national militaries threatening regime supremacy to undermine progress towards a multilateral regional defense arrangement. The analysis of four collective security initiatives—the Iran-Iraq War, the First Gulf War, the Gulf Security Dialogue and the U.S.-GCC Strategic Cooperation Forum, and the PSF's intervention in Bahrain—that span the existence of the GCC and their subsequent outcomes will provide insight into the development of an effective TBMD system with member states and ways to mitigate prospective challenges to such an endeavor.

1. The Iran-Iraq War

The eight-year long Iran-Iraq War precipitated from the Iranian Revolution and resulted in one of the most devastating conventional wars in the twentieth century with 400,000 lives lost. It is remembered as a war that came with great cost, but little benefit

[127] Peterson, *The Gulf Cooperation Council: Search for Unity in a Dynamic Region*, 201–206.

for either side or the region as a whole. As an article in *The Economist* put it, "This was a war that should never have been fought…neither side gained a thing, except the saving of its own regime. And neither regime was worth the sacrifice."[128] The war saw the use of chemical weapons against military personnel and civilians and the launching of ballistic missiles against population centers for the first time since the German V-2 assaults of World War II. These characteristics of the conflict had lasting psychological effects on the regional leaders and have had a significant impact on their geopolitical calculus in the two and half decades since the signing of the cease fire agreement.[129]

The bourgeoning GCC played an indirect role through its financial support and funneling of weapons through their territories to Iraq. While Iraq had been a long time adversary of the Arab monarchs, all Sunni-ruled parties set aside differences and agreed that the Iranian design to export its revolution to its Arab neighbors was a credible threat to their regime survival. Thus, Iraq was a convenient counterweight for the GCC, since it would bear the brunt of the pain of war and keep Iran preoccupied and prevent it from menacing its neighbors on the other side of the Gulf. The subsidies that the GCC provided to Iraq were insufficient to bring about a decisive victory in their favor as the war eventually ended in a stalemate, so their financial support only contributed to the further prolongation and destabilization of the region. A facet of the war that directly affected the Arab emirates was the disruption to oil commerce due to Iranian attacks on oil tankers, which took a particular toll on Kuwait's oil revenues. The GCC was not ready to respond to such a threat, so the United States was called upon to intervene, which lead to U.S. naval escort operations of tankers through the troubled shipping lanes of the Persian Gulf and the destruction of Iranian oil platforms suspected of intelligence collection. In addition to the U.S. intervention in the maritime domain, the war was eventually brought to an end by international pressure exercised through the United Nations Security Council.[130]

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[128] Potter, 34–35.

[129] Ibid., 29–35; Efraim Karsh, *The Iran-Iraq War: 1980–1988* (Wellingborough: Osprey Publishing, 2002), 7–14.

[130] Macris, 213–29; Karsh, *The Iran-Iraq War: 1980–1988*, 1–8, 12–16.

The GCC attempted to operate as a unified political entity in order to defend the interests of all its members in the wake of the Iranian Revolution and the subsequent Iran-Iraq War. However, ultimately it failed and resulted in the need for foreign intervention to settle the conflict. Furthermore, its indirect involvement in the conflict would prove to worsen its position in the region as the war consolidated the Islamic Republic's power instead of weakening it, and the aftermath of a debt-strapped Iraq would become a direct threat to GCC members within two years of the close of Iran-Iraq hostilities.[131] While disappointing, this lackluster performance is to be expected of a new collective security organization consisting of states that had recently gained their independence and were still consolidating government power individually. However, the GCC's inability to prevent or effectively respond to the Iraqi invasion of Kuwait in 1990 would be far more humiliating to the integrity of the institution that eventually derailed its progress towards greater multilateral cooperation.

2. The First Gulf War and Its Aftermath

The GCC members made overtures towards improving the organization's collective security apparatus both through agreed crisis responses and integration of military resources, but these plans had failed to materialize by August 1990. Thus, the collective security mechanisms of the organization were completely ill-equipped and unprepared to respond to the Iraqi invasion of Kuwait. The Iran-Iraq War had left Iraq completely bankrupt and in a dire economic situation. Saddam saw the occupation of Kuwait as a solution to Iraq's financial woes as it would allow Iraq greater access to the Rumaila oil field and a longer coastline along the Persian Gulf. Furthermore, there had been a historical border dispute between Iraq and Kuwait that had never been fully settled since Kuwait's independence in 1961. The GCC members overlooked Iraq's financial situation and did not view Saddam's grievances as a grave threat to Kuwait's security. Even after Saddam threatened military action in July, which prompted Kuwait to call for an emergency meeting of the GCC, there was no collective effort on the organization's part to mediate the dispute. The only efforts to calm tensions came from individual

[131] Potter, 35–36.

countries (Egypt, Jordan, and Saudi Arabia), and only one of them was a GCC member.[132]

Some of the members felt that Saddam was bluffing and that a strong collective reaction may only provoke him; even Kuwait believed that if Saddam were to pursue military action, he would only move as far as capturing the Rumaila oil field, the ruling family did not believe Saddam would attempt to annex the entire country. Thus, the invasion on 2 August 1990 was surprising to all parties of the GCC. Only after the invasion was an emergency meeting of the council convened, which condemned the invasion; however, member states were not prepared to respond with force. Saudi Arabia feared the further advance of the Iraqi Army across its borders and towards its oil fields, so King Fahad made the unilateral decision to call upon U.S. assistance once its own sovereignty was threatened. During the coalition efforts to liberate Kuwait, Bahrain, the UAE, Qatar, and Oman did not contribute forces and instead offered only logistical and technical support. [133]

This failure to fulfill collective security action in defense of one of its members was demoralizing for the GCC, and while the organization remained intact following the First Gulf War, its members chose to enter into bilateral agreements with the United States, which established a permanent presence in the region following this conflict. While the wars of the 1970s and 1980s and the absence of a foreign security guarantor created an impetus for the formation of a collective security organization, these threats also presented an impediment to the development of a robust multilateral arrangement among the Gulf monarchies. Overcoming deeply seeded distrusts for one another rooted in territorial disputes and a fear of Saudi hegemony proved to be more difficult than originally believed and stagnated the rapid developments in cooperation and interoperability required to effectively counter the arising threats in the region. Additionally, the GCC states had an aversion to developing strong standing armies after

[132] Ibid., 35–40; Sami F. Al-Motairy, "The Gulf Cooperation Council and the Challenges of Establishing an Integrated Capability for Upholding Security," Naval Postgraduate School Thesis, June 2011, 18–22.

[133] Macris., 221–28; Al-Motairy, "The Gulf Cooperation Council and the Challenges of Establishing an Integrated Capability for Upholding Security," 22–28.

seeing neighboring monarchies deposed by such forces throughout the 1950s and 1960s. Thus. The PSF had become more symbolic than an effective combined military organization. This was evident when the Oman proposal to increase the PSF size to 100,000 troops failed to research the agreement of all members. The fact that Saddam was left in power following the First Gulf War and still posed a threat to the GCC states, and the apparent intransience of the council's views towards forming true institutions of collective security resulted in each individual state reverting to more reliable arrangements with the Americans. This move toward bilateral agreements with United States has made pursuing authentic collective security objectives in the region more challenging since the First Gulf War.[134]

Instead of addressing the failures of the alliance following the First Gulf War, multilateral efforts were abandoned in favor of forming a hub-and-spoke alliance structure with the United States in the center. This arrangement was able to maintain a tenuous stability for a decade in the region; it was able to reassure the GCC states of America's security commitments while at the same time containing Iraq and allowing it to act as a counterweight to Iran's ambitions. This long-standing status quo of regional stability came to an end with the 2003 U.S. invasion of Iraq and toppling of the Saddam regime. With the counterweight removed, Iran has strengthened its influence in the region, allied itself with the new Shi'a dominated Iraqi government, and is more aggressively flexing its hegemonic ambitions. As the Second Gulf War has drawn to an end and U.S. troops have left Iraq, the United States and the GCC recognize the inadequacy of the hub-and-spoke alliance structure and the need to devise a new mechanism to adjust to the changed structural balance in the region.[135]

3. The Move towards Multilateralism: The Gulf Security Dialogue (GSD), the U.S.-GCC Strategic Cooperation Forum, and the PSF Intervention in Bahrain

The contours of the post-war regional structure were apparent to all parties prior to the complete withdrawal of U.S. troops from Iraq. Thus, beginning in 2006, the Bush

[134] Peterson, 203–204; Al-Motairy, 41–46.

[135] Potter, 97–103; Al-Motairy, 49–53; Wehrey, Krasik, Nader, et al., 12–21, 60–67.

administration initiated the Gulf Security Dialogue (GSD), which was to serve as a mechanism to promote greater intra-GCC cooperation while still fostering strong U.S.-GCC relations.[136] The GSD attempted to construct a rim around the hub-and-spoke model of bilateral agreements, realizing that a U.S. presence needed to be maintained in any future stable arrangement, but that greater integration between GCC states and a return to collective defense objectives is required to provide a balance in the new regional order of uninhibited Iranian influence and aggression.

The Obama Administration built upon the foundation of the GSD, and in March 2012 launched the U.S.-GCC Strategic Cooperation Forum (SCF) to work more aggressively towards establishing a formalized multilateral framework for cooperation. The SCF holds semi-annual meetings at locations in the United States and GCC member states to discuss regional defense and cooperative initiatives. Through these discussions, agreements have been reached to work towards multilateral cooperation in areas of counter-terrorism, counter-proliferation, counter-piracy, border security, mine countermeasures, and ballistic missile defense. Full GCC participation in the mine countermeasure exercises and the evolution of the joint and combined Operation Eagle Resolve from a seminar to an integrated naval, land, and air exercise where participants are noticing a greater willingness to share information between one another are indications that the GCC is committed to making progress towards establishing a more multilateral collective security organization.[137]

Lastly, the 2011 Arab Uprisings across the Middle East that have seen entrenched authoritarian regimes overthrown, some of which were long-time U.S. allies, have served

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[136] Christopher M. Blanchard and Richard F. Grimmett, "The Gulf Security Dialogue and Related Arms Sale Proposals," Congressional Research Service, 8 October 2008, http://www.fas.org/sgp/crs/weapons/RL34322.pdf, 2.

[137] Committee on Foreign Relations United States Senate Majority Staff Report, "The Gulf Security Architecture: Partnership with the Gulf Cooperation Council," 1, 24; Royal Embassy of Saudi Arabia, "First Ministerial Meeting of the GCC-U.S. Strategic Cooperation Forum Concludes," 1 April 2012, http://www.saudiembassy.net/latest_news/news04011202.aspx; Donna Miles, "Eagle Resolve Promotes Gulf Region Cooperation, Interoperability," *Armed Forces Press* Service, http://www.centcom.mil/news/eagle-resolve-promotes-gulf-region-cooperation-interoperability; "Joint Comunique From the Second Ministerial Meeting for the U.S.-GCC Strategic Cooperation Forum," U.S. State Department Press Release, http://www.state.gov/r/pa/prs/ps/2012/10/198516.htm.

as an additional catalyst for driving the GCC members towards greater cooperation. The most recent multilateral operation undertaken by the GCC was the Bahrain intervention in March 2011. The GCC agreed to send 2,000 PSF troops to Bahrain to calm the internal unrest from the month-long protests and rioting of the predominantly Shi'a population, which Bahrain claimed was backed by Iran.[138] This action was solely a GCC endeavor with the United States attempting to dissuade the GCC from embarking on such an intervention. While the outcome of this invention led to a violent crack down on protesters and a diplomatically challenging situation for the U.S., it showed the willingness of the GCC to act multilaterally when one of their members was threatened. This event also illustrated the need for continued American involvement with the GCC to ensure that as it begins to take on more multilateral roles and responsibilities, it exercises actions through internationally agreed upon norms and standards.

C. THE INTRA-GCC POLITICAL-MILITARY BALANCE

While the GCC states share political, economic, and religious similarities that bind them together in an alliance, there exist jealousies and rivalries rooted in tribal ancestries and territorial disputes. These differences are residual consequences from meddlesome colonial practices in redefining local social structures and haphazard boundary delineations that are exacerbated by the presence of oil and natural gas reservoirs. Additionally, some of the smaller emirates associate greater multilateralism within the GCC with increased Saudi dominance within their internal affairs, which they are adamantly against and wish to maintain their unique character, as well as their own individual domestic and foreign policies.[139]

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[138] These claims of Iranian intervention in the Shi'a uprising in Bahrain in 2011 are contested by most outside analysts who believe these claims to be a scape-goating mechanism on the government's part in order to avoid the root cause of the uprising, which had more to do with political and economic grievances; Michele Dunne, "The Deep Roots of Bahrain's Unrest," Carnegie Endowment for International Peace, http://carnegieendowment.org/2011/01/18/deep-roots-of-bahrain-s-unrest/uz; Ethan Bronner and Michael Slackman, "Saudi Troops Enter Bahrain to Help Put Down Unrest," *New York Times,* 14 March 2011, http://www.nytimes.com/2011/03/15/world/middleeast/15bahrain.html?_r=2; Potter, 80–82.

[139] Wehrey, Karasik, Nader, et al., *Saudi-Iranian Relations Since the Fall of Saddam,* 46–60.

Within the GCC, there is a split between members who welcome closer ties with Saudi Arabia and favor containment of Iran, and those that are more apprehensive towards forming closer relations with Riyadh and prefer accommodation and more harmonious relations with Tehran. Kuwait and Bahrain have closer ties with Saudi Arabia and share similar views on how to deal with Iran. Kuwait and Saudi Arabia's bond was forged during the Iran-Iraq and the First Gulf Wars, since both suffered economic losses during the former conflict and faced threats to their territorial sovereignty from Iraq in the latter one. Due to its geographic proximity to Iran and Iraq and its smaller territorial and military size, Kuwait seeks protection from Saudi Arabia. Bahrain is in a precarious position, with a Shi'a majority ruled by a Sunni monarch. For historical and sectarian reasons, Bahrain tends to be an epicenter of tension between Saudi Arabia and Iran. Since Bahrain relies on Saudi Arabia for protection and oil subsidies from an offshore oil field, the Al-Khalifa ruling family's domestic and foreign policies are heavily influenced by Riyadh, which tends to prevent any move to politically liberalize on Manama's part in an effort to diffuse internal unrest within its population. Oman, Qatar, and the UAE from a subgroup within the GCC. They tend to distance themselves from Saudi Arabia, favoring accommodation and rapprochement with Iran due to economic ties with Tehran, a desire to balance Saudi influence, and/or fear of Iranian retribution in the event of a conflict. This disunity and diversity within the GCC members plays an integral role in the challenge of forming a more robust multilateral organization, and hence needs to be considered in the formation of an effective TBMD system in this region.[140]

All of the ruling families of the Arab Gulf monarchies maintain close ties with America and support the robust U.S. military infrastructure in the region through varying manners and to different degrees. They also have different military capabilities, all of which have been procured from overseas suppliers. The Persian Gulf region receives the largest amount of arms transfers than any other region. From 2008-11, the GCC states purchased $75.6 billion worth of arms from foreign suppliers; the majority of these

[140] Ibid., Committee on Foreign Relations United States Senate Majority Staff Report, "The Gulf Security Architecture: Partnership with the Gulf Cooperation Council," 9–19; Alsis, Allison, and Cordesman, 7–55.

agreements were with the United States, which made up 85 percent of these arms sales.[141] Tables 3 and 4 provide a summary and comparison of geographic, economic, energy, and military statistics among the GCC states and Iran. Figure 6 depicts the U.S. military footprint in the Persian Gulf, which is a byproduct of the bilateral security agreements with individual GCC members.

Table 3. GCC & Iran Population, Economy, and Energy Statistics

	Area (sq km)	Population	+GDP per capita	Oil Reserves/ Production	Natural Gas Reserves/Production
Saudi Arabia	2,149,690	26,939,583	$25,700	264.6 billion bbl/ 10 million bbl/day	8 trillion cu m/ 99.23 billion cu m
UAE	83,600	5,473,972	49,000	97.8 billion bbl/ 3.087 billion bbl/day	6.089 trillion cu m/ 51.28 billion cu m
Oman	309,500	3,154,134	28,500	4.902 billion bbl/ 915,600 bbl/day	849.5 billion cu m/ 35.94 billion cu m
Kuwait	17,818	2,695,316	43,800	101.5 billio bbl/ 2.682 million bbl/day	1.798 trillion cu m/ 11.73 billion cu m
Qatar	11,586	2,042,444	102,800	25.57 billion/bbl/ 1.631 million bbl/day	25.2 trillion cu m/ 116.7 billion cu m
Bahrain	760	1,281,332	28,200	107.2 million bbl/ 44,800 bbl/day	92.03 billion cu m/ 12.58 billion cu m
Iran	1,648,195	79,853,900	$13,100	151.2 billion bbl/ 4.231 million bbl/day	33.07 trillion cu m/ 146.1 billion cu m

+ Figures in 2012 dollars
Source: CIA— The World Factbook, https://www.cia.gov/library/publications/the-world-factbook/.

[141]Richard F. Grimmett and Paul K.Kerr, "Conventional Arms Transfers to Developing Nations, 2004–2011," Congressional Research Service, 24 August 2012, http://www.fas.org/sgp/crs/weapons/R42678.pdf. 45, 47.

Table 4. GCC & Iran Military Statistics

	Military Size (personnel)	U.S. Bilateral relations	No. U.S. Troops Hosted	FMS Agreements (in millions of current U.S. $)*	U.S. Military Installations
Saudi Arabia	333,500[+]	1945	small contingent	45,600	-
UAE	51,000	1994	3,000	14,300	-Al Dhafra AB -Jebel Ali port facilities
Oman	43,000	1979	small contingent	1,500	-Contingency Bases: Masirah, Muscat, Thumrait
Kuwait	15,500	1991	15,000	2,500	-Camp Arifjan -Camp Buehring -Ali Al Salem AB
Qatar	11,800	1992	7,500	200	-CENTCOM CAOC -Al Udeid AB
Bahrain	8,200	1991 (1971)	6,000	400	-C5F HQ
Iran	500,000	Ended 1979	-	-	-

[+]Includes ~100,000 Saudi National Guard troops, *Arms Transfer Agreements with the U.S. from 2008-11, CRS Report, http://www.fas.org/sgp/crs/weapons/R42678.pdf.
Source: SCFR, "The Gulf Security Architecture: Partnership with the Gulf Cooperation Council"; Anthony H. Cordesman, "The Conventional Military," *The Iran Primer,* USIP, http://iranprimer.usip.org/resource/conventional-military.

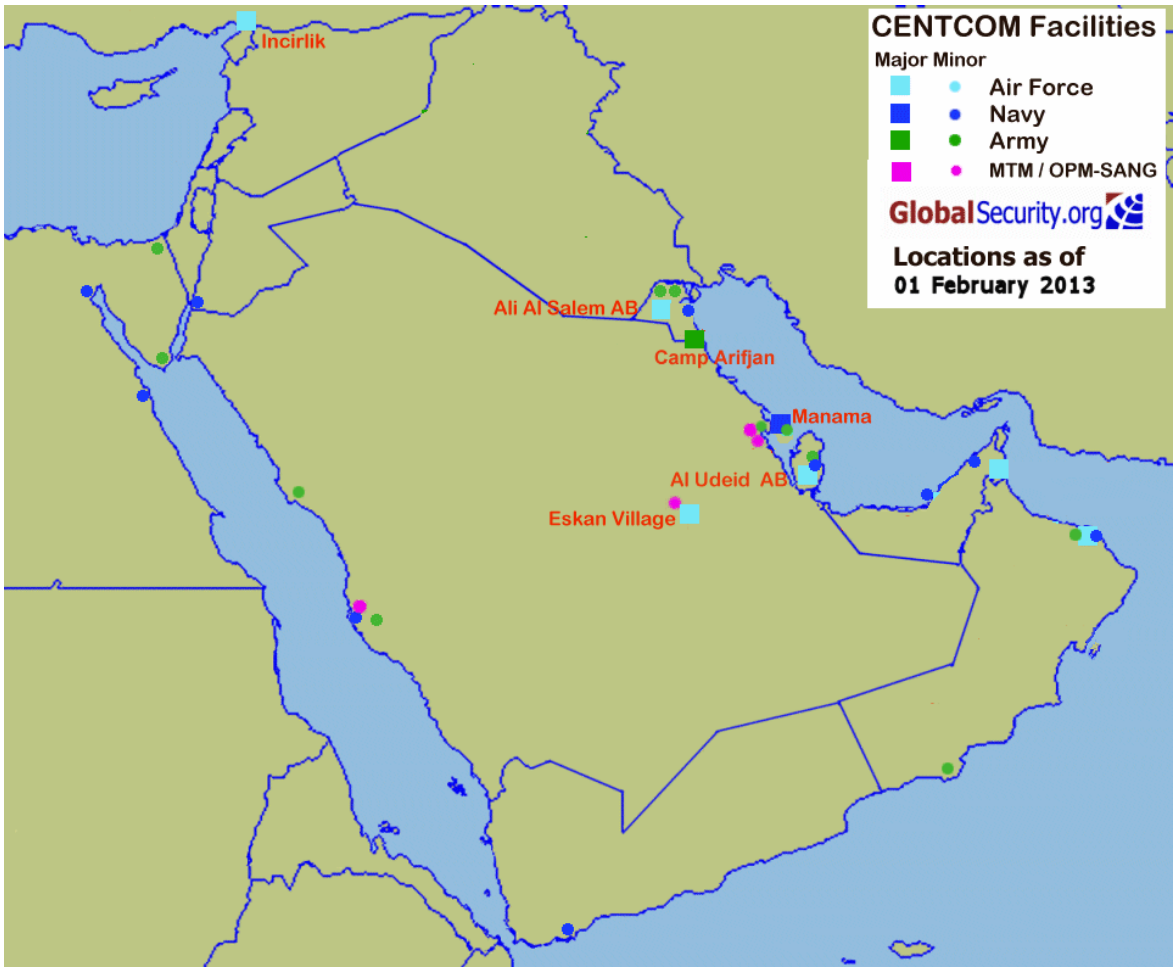

Figure 5. U.S. Military Installations in the Persian Gulf. *Source:* GlobalSecurity.org, http://www.globalsecurity.org/military/facility/centcom-map1.htm.

D. CURRENT GCC TBMD CAPABILITIES AND INITIATIVES

The GCC states have been as eager to purchase TBMD system components as they are with other military armaments; however, the challenge of building a missile defense infrastructure in the Persian Gulf is getting these countries to integrate their respective systems in order to share information and data. Additionally, training and operating in a joint and combined environment is required in order to have an effective regional missile defense capability. Each of the states has purchased through bilateral agreements with the United States early-warning as well as some active defense systems

(Kuwait and Saudi Arabia purchased PAC-2 batteries shortly after the First Gulf War).[142] The U.S. initially worked on developing each individual country's air and missile defenses under the Bilateral Air Defense Initiative, given the polarized environment between the different Arab monarchs during the 1990s. It was hoped that these bilateral systems would be integrated once diplomatic relations between the GCC members warmed. Table 5 depicts current and pending GCC missile defense acquisitions.[143]

Table 5. GCC Current and Future TBMD Capabilities

	TBMD Capability (2008)	Current/Pending Capabilities
Saudi Arabia	I-HAWK, PAC-2	PAC-3 upgrade, considering purchase of 2 Aegis BMD destroyers and THAAD
UAE	I-HAWK	THAAD, PAC-3, IAMD Center
Oman	None	PAC-3 (pending)
Kuwait	I-HAWK Phase III, PAC-2	PAC-3 upgrade (pending)
Qatar	None	Possible host of AN/TPY-2, PAC-3 purchse (pending), interested in THAAD
Bahrain	I-HAWK	Hosts U.S. PAC-2/3 batteries, TSP-59 BMD Radar

Source: Committee on Foreign Relations U.S. Senate Majority Staff Report, "The Gulf Security Architecture: Partnership with the Gulf Cooperation Council"; "GCC-Iran: Operational Analysis of Air, SAM and TBM forces," CSIS, http://csis.org/publication/gcc-iran.

[142] Alis, Allison, Cordesman, 22–24, 30–31.

[143] " BMDR," 33–34; Shawn L. Twing, "Mixed Signals in U.S.-Israel and U.S.-GCC Relationship," *The Washington Report on Middle East Affairs,* 5 (Feb 1998): 25, 2–3; Eddie Boxx, "Countering the Iranian Missile Threat in the Middle East," The Washington Institute for Near East Policy, 18 October 2012, http://www.washingtoninstitute.org/policy-analysis/view/countering-the-iranian-missile-threat-in-the-middle-east.

The initial effort to get these early-warning and communications systems integrated was in 1997 with the Hizam al-Taawun (HAT) or Belt of Cooperation Initiative. HAT was designed to share aircraft information, but it could easily be upgraded to track and share missile defense data. The only portion of this project that has been implemented is the communications component, so operators in the different countries have secure communications with one another; however, an agreement to share data from each country's respective sensors has not been reached. The Arab Gulf monarchs have still not reached a level of trust with one another to move forward with this initiative. Command, control, communications, and the sharing of information form the crux of the problem in moving forward with establishing a TBMD system in the Persian Gulf. The GCC members have the money to purchase these systems from the United States; now they need the political will to integrate their capabilities with one another, so that a functioning TBMD architecture can be fully realized.[144]

While the Gulf monarchs have made individual overtures at conferences and forums to work toward greater integration within the missile defense domain progress has been slow. However, the UAE's Integrated Air and Missile Defense (IAMD) training center is proving to be a possible coalition building mechanism within the GCC. This center is a state-of-the-art facility for IAMD training that the Emirates built in conjunction with the United States to service their military needs; however, it has welcomed other European and GCC countries for training. Due to the efforts of this training center, all GCC members participated in a recent IAMD exercise for the first time. Additionally, some members have shown a willingness to engage in multilateral tabletop and war-gaming exercises overseas.[145]

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[144] IHS Jane's Defense & Security Intelligence and Analysis, "Hizam Al Taawun,"18 September 2012, accessed through NPS library proxy, Jane's C4I Systems; Kevin M. Mullen, "Regionally Integrated Air and Missile Defense: The Future of Defense and Deterrence in the Middle East," Air Command and Staff College, April 2010, http://dtlweb.au.af.mil///exlibris/dtl/d3_1/apache_media/L2V4bGlicmlzL2R0bC9kM18xL2FwYWNoZV9tZWRpYS80MjIyOA==.pdf, 14–17; Mahmoud Habboush, "U.S. wants GCC to share defence data," *The National*, 12 January, 2010, http://www.thenational.ae/news/uae-news/us-wants-gcc-to-share-defence-data.

[145] For example, Saudi Arabia and the UAE are participating in the Nimble Titan planning exercise being held in Monterey in June; Committee on Foreign Relations United States Senate Majority Staff Report, "The Gulf Security Architecture: Partnership with the Gulf Cooperation Council," 17–18.

This chapter has analyzed the underlying problems and challenges of intra-GCC relations and the U.S.-GCC alliance that need to be considered in the development of a TBMD system in the region. The historical background of the Arab monarchies provides context to their reliance on foreign security guarantors and why members are reluctant to form stronger multilateral ties with one another. The evolution of the alliance from its inception in 1981 to the present showed a great willingness to work together at the beginning, but due to setbacks and failures, they came to rely on individual agreements with America for their security. The new regional order is forcing the alliance to reconsider how it functions, so that it can counter current and future threats. Member states are beginning to realize the utility of multilateralism, and that an endeavor such as TBMD requires a high degree of integration. Yet, there is still apprehension among the monarchs to take concrete steps towards cooperation and interoperability. The Emirates' efforts toward promoting multilateralism in the IAMD realm is a starting point for further progress toward building a TBMD system in the Persian Gulf.

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VI. A PERSIAN GULF PHASED ADAPTIVE APPROACH

The previous chapters have analyzed the three different regions where phased adaptive approaches for missile defense are being developed. The European and Asian theaters are further along in implementing TBMD architectures and provide guidance for pursuing similar missile defense initiatives in the Persian Gulf region. This chapter will utilize the alliance, threat, and collective defense analysis from previous chapters to compare and contrast the NATO and Japanese BMD experiences with the GCC's emerging missile defense and collective security efforts. Through this comparative analysis lessons learned and key differences in threat capabilities and alliance structures are identified and applied to develop policy recommendations for implementing a phased adaptive approach to missile defense that is tailored to the threats, interests, and abilities of the U.S.'s Persian Gulf partners. Lastly, critical issues are identified that policymakers and defense specialists should consider as they move forward with the development of a TBMD architecture in the Persian Gulf region.

A. THEATER COMPARISON AND LESSONS LEARNED

Within the three different theaters where missile defenses are being implemented, the similarities and differences between them can be categorized into five areas: (1) alliance structure, (2) relationship with the United States, (3) geography, (4) nature of the threat, and (5) burden-sharing capability. Comparisons within these five areas provide lessons learned, which form the basis for developing policy recommendations for pursuing a phased adaptive approach to missile defense in the Persian Gulf.

The European and Asian regions provide examples of the benefits and drawbacks of pursuing BMD initiatives through two different alliance structures. Europe is developing a TBMD architecture through the multilateral NATO alliance, while within the Asian theater, missile defense is progressing through bilateral agreements with the United States. The Persian Gulf is somewhat of a hybrid between these two alliance structures with a formal organization, the GCC, which is intended to strengthen

multilateral cooperation. But, in practice, its members have historically sought bilateral security assurances from foreign powers.

BMD is best pursued as a collaborative endeavor, since it entails countering a threat that moves several times the speed of sound across expanses of land and ocean without regard for political boundaries or demarcations. The defense of an entire region requires cooperation among the various states within the defended area in order to be effective. Thus, a multilateral framework, while more challenging to balance responsibilities and negotiate information sharing, is the ideal alliance structure through which to pursue TBMD initiatives. Nevertheless, the bilateral U.S.-Japan alliance has produced a remarkably advanced TBMD architecture within the span of the last decade, which highlights the benefits of working within a bilateral arrangement with technologically advanced allies—the ability to negotiate differences and reach agreements more quickly in order to field operational capabilities. However, the limited geography of Japan as an island nation has greatly facilitated this success story, and it cannot be replicated in Europe or the Middle East. Additionally, the Japanese case is not a purely theater-based system, since it only defends one country. Merging Japan's capabilities into a broader theater missile defense system is proving to be challenging, given the strategic environment in the Asia-Pacific region with China and Japan's tepid relations with neighbors like South Korea. While the European example for TBMD has experienced setbacks due to the challenges of negotiating and comprising among numerous actors, in the long-term a multilateral framework results in a more effective and robust TBMD architecture. Thus, the Persian Gulf TBMD system would be best pursued through such a multilateral arrangement.

The dynamics of geography and threat capabilities interact variably within each theater, thus resulting in different TBMD architecture requirements. The Persian Gulf faces shorter range and highly mobile ballistic missile threats that present a set of challenges different from the European and Asian examples. The shorter range allows only six minutes or less to react and counter an attack, and the mobility of launchers means there is greater uncertainty as the where an attack will originate. Thus, a thoroughly integrated system along with robust intelligence and surveillance is

paramount to countering the threats in this environment. Additionally, the compressed operating space makes engagement with land- or sea-based midcourse assets more challenging than in either the Asian or European theaters. The small midcourse phase window coupled with a challenging geometry to achieve such an engagement makes the Persian Gulf region a prime candidate for the development and implementation of early-intercept technologies like airborne boost-phase intercept (ABI).

The European and Asian alliance structures and their relationships with the United States have had more time to mature and grow than the GCC alliance. The Arab Gulf monarchs' alliance was forged in the midst of conflict 32 years ago, and thus has had a shorter amount of time to develop, and it has had an even shorter period of sustained U.S. involvement. Additionally, the region has been mired in continuous conflict ever since the GCC's formation, experiencing three major wars in the past three decades. Conversely, the NATO and U.S.-Japan alliances have been able to evolve under relatively peaceful conditions compared to the Middle East. All these factors contribute to a young alliance that is still evolving and learning how to be a multilateral entity. TBMD is an initiative that provides challenges as well as opportunities for this nascent organization to grow into a robust, genuinely multilateral alliance. Continued U.S. engagement can facilitate a shift from bilateral to more multilateral relations in this region through an initiative such as TBMD.

Each region also has different capacities for burden-sharing in conducting research and in covering development costs. Europe and Japan have a considerably more robust ability to burden-share technological development than GCC partners. Japan has been the most successful in this respect, helping to co-develop the SM-3 Block IIA. European allies had a harder time burden sharing missile defense programs like MEADS, and ALTBMD is still yet to be fully implemented. The Persian Gulf theater lacks a strong burden-sharing capacity as a result of their oil-based, rentier economies that have stagnated the development of the indigenous industrial or technological bases for the research and development required in missile defense programs. Thus, the TBMD system in the Persian Gulf region will rely on purchasing U.S. technology and training through the Foreign Military Sales (FMS) program; however, GCC states could financially

support foreign BMD research and development efforts. Additionally, with members like Saudi Arabia building state of the art science and technology universities, BMD could be designated as a major research aim at these institutions in the future, facilitating more collaborative R&D efforts between the United States and GCC members.[146]

B. POLICY RECOMMENDATIONS

The previous section identified lessons learned and key differences between the TBMD systems that have or are in the process of being implemented in the European and Asian theaters. These findings are incorporated into the following policy recommendations for implementing a tailored TBMD system for the Persian Gulf. While this region presents unique technological difficulties to countering ballistic missile threats, the *political* challenges of integrating capabilities across the GCC states present the most formidable obstacles to implementing a TBMD architecture in the Persian Gulf.

The Persian Gulf TBMD system needs to be implemented through a multilateral framework. Given the short reaction time, mobility of the threat, and difficult engagement geometry of the region, cooperation will be paramount to effectively counter the current Iranian ballistic missile threat and possibly others that might emerge in the future. A robust and thoroughly integrated command, control, and communications structure, as well as cooperative sharing of intelligence, surveillance, and reconnaissance assets and information needs to be established. Additionally, pre-planned response procedures need to be firmly in place and understood by highly trained operators.

The GCC members who currently show the greatest capacity and receptiveness for furthering this TBMD initiative are the UAE, Qatar, and Saudi Arabia. The UAE has its air warfare and IAMD centers that have already shown progress towards encouraging multilateral operations with other GCC and Arab League members as well as European and U.S. allies.[147] The Emirates were also the first Gulf monarchs to purchase the

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[146] Abdul Rahman Shaheen, "King Abdullah to open University of Science and Technology," *Gulf News,* 22 September 2009, http://gulfnews.com/news/gulf/saudi-arabia/king-abdullah-to-open-university-of-science-and-technology-1.540370.

[147] Committee on Foreign Relations United States Senate Majority Staff Report, "The Gulf Security Architecture: Partnership with the Gulf Cooperation Council," 17–18.

THAAD system. Qatar hosts the Combined Air and Space Operations Center (CAOC) at Al Udeid Air Base, and it has participated in numerous multilateral exercises, some of which have taken place in Qatar. The UAE and Qatar have also shown a willingness to engage in operations outside of the Persian Gulf with both of them contributing air support to NATO operations in Libya, and Qatar has participated in humanitarian efforts in Haiti and Pakistan. Additionally, Qatar played a mediation role in various conflicts including Palestine, Eritrea, Lebanon, Sudan, and Yemen.[148] Saudi Arabia is a long-time ally of the U.S. and a dominant power within the GCC organization. Riyadh has shown interest in procuring THAAD batteries as well as two Aegis BMD destroyers.[149] This group could form the core BMD partners within the GCC alliance; this arrangement would provide a balance of the dominant Saudi power along with the two smaller Arab monarchies that desire to establish themselves as prominent figures within the strategic environment of the region and greater Middle East. This core BMD group would bridge the two factions within the GCC (the Saudi-aligned bloc with Bahrain and Kuwait and the more diplomatically autonomous group of UAE, Qatar, and Oman) and bring in the members who are acquiring point defense capabilities (i.e., PAC-3 batteries) and who could contribute sensor data to the overall system.

A combined command, control, battle management, and communications (C2BMC) system should be built upon the HAT (Belt of Cooperation) elements already in place, and frequent IAMD exercises should be held with participation from all GCC members. The UAE's IAMD center could be used as a coalition training facility for all GCC members along with U.S. and European allies. Trust and confidence among foreign operators can be fostered in the training environment that will carry over into real-world operations. IAMD exercises could be coordinated to coincide slightly before or after the biannual U.S.-GCC Strategic Cooperation Forum (SCF) meetings, so that BMD progress and planned actions and milestones could be discussed to further the program's initiatives in follow-on exercises. GCC participation in planning exercises and war-gaming events

[148] Ibid., 15.

[149] Christopher P. Cavas, "Saudi Arabia Mulling BMD-capable Destroyers," *Defense News,* 13 June 2011, http://www.defensenews.com/article/20110613/DEFSECT03/106130314/Saudi-Arabia-Mulling-BMD-Capable-Destroyers.

would allow members to address a spectrum of issues ranging from the policy realm to the operational and tactical levels. Sustained U.S. involvement throughout these BMD engagement activities would facilitate the transition from a bilateral to a multilateral framework where GCC allies remained reassured of U.S. commitment, but would be encouraged to integrate their efforts into a genuine collective security arrangement.

The shorter reaction time and smaller window for midcourse engagement of the threat in the Persian Gulf will require a mixture of land, sea, and air based capabilities to provide a layered defense. With the GCC members' interest in purchasing PAC-3 and THAAD systems, a robust terminal phase engagement capability will likely be present in the architecture, which would provide reassurance to each individual state of its defense against ballistic missile threats. Even though the midcourse engagement opportunity is small, it would still be a preferable option to terminal phase engagement. While the Persian Gulf has a compressed maritime space, sea-based intercept is still the best option for midcourse engagement, since there is not sufficient land area to put a shore-based midcourse system along the threat axis. In addition to doing little to enhance the layered defense capabilities of the architecture, an Aegis-Ashore option would be more of a target than an asset, and it probably would require more protection than it would provide to the overall construct. If an Aegis-Ashore option were to be pursued, the UAE and Qatar would provide the best basing options, since they already host significant IAMD components, and they have the infrastructure and willingness to accommodate such a system in their territory. Two U.S. BMD ships normally patrol the Persian Gulf, and the potential Saudi purchase of two BMD destroyers would add additional midcourse engagement capabilities. The sea-based terminal (SBT) interceptor that is being deployed on BMD ships offers an opportunity for a possible terminal engagement over water to avoid collateral damage on land. Due to the compressed geography and engagement windows, the Persian Gulf region would benefit greatly from early intercept capabilities. Thus, current research and development in boost- and ascent-phase technologies should be geared towards the needs of the Persian Gulf.

Burden-sharing in research and development of future BMD technologies in the near-term with GCC allies should not be expected. The Arabian Peninsula monarchies'

economies do not have sufficient industrial bases or technological sectors to support research and development efforts like the European and Asian theaters. Burden-sharing could be a long-term goal that is coupled with on-going diversification efforts within the Gulf states' oil-driven economies. In the near-term, the GCC members will rely upon FMS sales to acquire their BMD capabilities, as they do with the majority of their defense equipment; additionally, the Arab monarchies could financially contribute to the R&D of ascent- and boost-phase technologies that would enhance the capabilities of the TBMD system in the region. FMS deals can have coalition training attached to the purchase to encourage cooperation and interoperability between member states. In the long-term, more collaborative R&D efforts could be pursued through the new science and technology universities being established in the Arabian Peninsula.

C. CRITICAL ISSUES

There remain critical issues that policymakers and defense specialists will need to consider carefully while moving forward with the implementation of a phased adaptive approach to missile defense in the Persian Gulf. These issues include:

- The preservation of Israel's qualitative military edge (QME), and the regional dynamics that will emerge with both Arab and Israeli BMD systems.
- The possible challenges of sharing data with other TBMD systems.[150]
- The collateral damage potentially caused from engaging a threat over politically or culturally sensitive areas.[151]
- The interests versus values paradox the United States faces in the Persian Gulf region with supplying autocratic regimes with another state-of-the-art defensive weapon system.[152]

[150] There has been discussion that stationing a TPY-2 radar in Qatar would allow triangulation capabilities between the TPY-2 radars stationed in Turkey and Israel, which would enhance the detection of ballistic missile launches from Iran. Given diplomatic relations between these states, how receptive would they be to sharing information from radars stationed in their respective territories? Boxx, "Countering the Iranian Missile Threat in the Middle East"; Adam Entous and Julian E. Barnes, "Pentagon Bulks Up Defenses in the Gulf," *The Wall Street Journal* Online, 23 August 2012, http://online.wsj.com/article/SB10001424052702304388004577531331722511516.html.

[151] For example, an engagement over or near Mecca and Medina; will the Saudis be solely responsible for the defense of these two cities even if another entity has a better chance of a successful engagement? What would be the political consequences of the U.S. engaging or not engaging a threat over the two Holy Cities?

These critical issues should be addressed at planning seminars and tabletop exercises where U.S. and GCC policymakers, diplomats, defense analysts, and military personnel can develop measured solutions to these challenges of pursuing TBMD in the Persian Gulf.

D. CONCLUSION

This thesis has examined the paradigm shift to theater-based missile defense systems from the point of view of the U.S. and its GCC partners, and through a comparative analysis with two other regions, has provided policy recommendations for developing a realistic pathway forward for implementing a tailored TBMD architecture in the Persian Gulf. The 2010 BMDR Report placed greater emphasis on theater-level missile defenses to counter WMD proliferation that threatens the European, Asian, and Middle Eastern regions. However, the European and Asian TBMD systems are significantly more developed than the Persian Gulf program. Thus, this thesis provides guidance for moving forward with the implementation of a phased adaptive approach to missile defense in the Persian Gulf that is tailored to the threats, interests, and abilities of the United States' partners in this region.

Chapter II identified the de-emphasis of nuclear weapons' role in American national security policy and strategy as the catalyst for pursuing non-nuclear means, such as theater-based missile defense, to maintain security assurances with allies in lieu of extended nuclear deterrence options. The proliferation of WMD and ballistic missile technologies in the third world following the end of the Cold War presents a greater threat to U.S. allies and deployed forces. As a result, ballistic missile defense efforts have shifted to the theater level to counter these new threats. The Middle East is a region where the proliferation of such weapons has significantly contributed to its

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[152] The Persian Gulf monarchs have thus far been able to stave off the threats of popular uprisings to regime stability and survival; however, situations like Bahrain will become increasingly more difficult to prevent and mitigate. The United States has sold an immense amount of weaponry and defense equipment to the GCC states, BMD being only one example. How does the U.S. promote an evolution in political liberalization in these countries to prevent destabilizing revolutions (i.e., the 1979 Iranian Revolution and the current conflict in Syria) from occurring and impeding the work accomplished thus far on defense programs in the region like BMD?

volatility, and TBMD is a mechanism to reassure key allies and bolster stability in this troubled corner of the world.

Chapters III–V analyzed the European and Asian alliances and their TBMD and collective security initiatives in comparison to the Persian Gulf. Lessons learned and key differences were gained from this analysis that were applied in Chapter VI to the formulation of policy recommendations for implementing tailored missile defenses in the Persian Gulf region.

The key policy recommendations in this thesis emphasize the need to pursue a phased adaptive approach to missile defense through a multilateral framework in the Persian Gulf. Sustained U.S. involvement will be required to facilitate the transition from bilateralism to multilateralism, which can be achieved through regular GCC participation in IAMD operational, planning, and war-gaming exercises that meet U.S.-GCC SCF objectives. A BMD core cadre of Saudi Arabia, Qatar, and the UAE should be formed and relied upon to promote a unity of effort throughout the GCC alliance on BMD matters. The challenging geography and short-range, mobile ballistic missile threat in the Persian Gulf necessitates nothing less than full integration and interoperability of all GCC members. The consummation of a successful engagement against a threat of this nature begins well in advance of it ever being launched, and thus demands a concerted effort to overcome the current political obstacles to achieving greater cooperation and continuity in the establishment of an effective TBMD system in the Persian Gulf.

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LIST OF REFERENCES

"About MEADS." Medium Extended Air Defense System (MEADS) Inc. http://meads-amd.com/about-meads/.

Al-Motairy, Sami F. "The Gulf Cooperation Council and the Challenges of Establishing an Integrated Capability for Upholding Security." Master's thesis, Naval Postgraduate School, June 2011.

Alsis, Peter, Marissa Allison, and Anthony H. Cordesman. "U.S. and Iranian Strategic Competition in the Gulf States and Yemen." A Report of the CSIS Burke Chair in Strategy, 16 March 2012. http://csis.org/files/publication/120228_Iran_Ch_VI_Gulf_State.pdf.

"Article Four: Objectives," *Charter, Gulf Cooperation Council,* 25 May 1981, http://www.gcc-sg.org/eng/indexfc7a.html.

"Ballistic Missile Defense." North Atlantic Treaty Organization. http://www.nato.int/cps/en/natolive/topics_49635.htm.

"Ballistic Missile Defense Review (BMDR) February 2010." Department of Defense. http://www.defense.gov/bmdr/.

Betts, Richard K. *Conflict After the Cold War: Arguments on Causes of War and Peace,* 3rd ed. New York: Pearson-Longman, 2008.

"Beyond Patriot? Multinational MEADS Air Defense Program." Defense Industry Daily. 20 May 2013. http://www.defenseindustrydaily.com/34b-development-contract-signed-for-meads-0639/.

Blanchard, Christopher M. "Saudi Arabia: Background and U.S. Relations." Congressional Research Service, November 3, 2000. http://www.fas.org/man/crs/RL33533.

Blanchard, Christopher M. and Richard F. Grimmett. "The Gulf Security Dialogue and Related Arms Sale Proposals." Congressional Research Service, 8 October 2008. http://www.fas.org/sgp/crs/weapons/RL34322.pdf.

"BMDS Student Reference Supplement." Joint BMDS Training & Education Center. Missile Defense Agency: 1 February 2012.

Boese, Wade. "NEWS ANALYSIS: Missile Defense Five Years After the ABM Treaty." Arms Control Association: June 2007. http://www.armscontrol.org/act/2007_06/MissileDefense.

———. “U.S. Outlines Plans for Missile Defense Talks with China.” Arms Control Association, October 2001. http://www.armscontrol.org /act/2001_10/chimisdefoct01.

Boxx, Eddie. “Countering the Iranian Missile Threat in the Middle East.” The Washington Institute for Near East Policy, 18 October 2012. http://www.washingtoninstitute.org/policy-analysis/view/countering-the-iranian-missile-threat-in-the-middle-east.

Bronner, Ethan and Michael Slackman. “Saudi Troops Enter Bahrain to Help Put Down Unrest.” *New York Times,* 14 March 2011. http://www.nytimes.com/2011 /03/15/world/middleeast/15bahrain.html?_r=2.

Burns, Richard Dean and Lester H. Brune. *The Quest for Missile Defenses.* Claremont: Regina Books, 2003.

Butler, Amy and Graham Warwick. “Italy Looks To Poland As Meads Production Partner.” *Aviation Weekly* Online, 15 May 2013. https://www.aviationweek.com/Article.aspx?id=/article-xml/asd_05_15_2013_p01–01–578951.xml&p=2.

Carus, Seth W. *Ballistic Missiles in Modern Conflict.* New York, Praeger/Center for Strategic and International Studies, 1991.

Cavas, Christopher P. “Saudi Arabia Mulling BMD-capable Destroyers.” *Defense News,* 13 June 2011. http://www.defensenews.com/article/20110613/DEFSECT03 /106130314/Saudi-Arabia-Mulling-BMD-Capable-Destroyers.

Central Intelligence Agency World Factbook. “Country Comparison: Oil Consumption.” https://www.cia.gov/library/publications/the-world-factbook/rankorder/2174rank.html.

Chanlett-Avery, Emma. “U.S.-Japan Alliance.” Congressional Research Service, 18 January 2011. http://www.fas.org/sgp/crs/row/RL33740.pdf.

Collina, Tom Z. “The European Phased Adaptive Approach at a Glance.” Arms Control Association, May 2013, http://www.armscontrol.org/factsheets/Phasedadaptiveapproach.

Collina, Tom Z. “Pentagon Shifts Gears on Missile Defense.” Arms Control Association, April 2013. http://www.armscontrol.org/act/2013_04/Pentagon-Shifts-Gears-on-Missile-Defense.

———. "U.S. Pushes Missile Defense Globally." Arms Control Association, November 2012. http://www.armscontrol.org/act/2012_11/U.S.-Pushes-Missile-Defense-Globally%20.

Committee on Foreign Relations United States Senate Majority Staff Report. "The Gulf Security Architecture: A Partnership with the Gulf Cooperation Council." Washington D.C.: U.S. Government Printing Office, 19 June 2012. http://www.gpo.gov/fdsys/.

Cordesman, Anthony H. "The Conventional Military." *The Iran Primer.* United States Institute of Peace. http://iranprimer.usip.org/resource/conventional-military.

Cordesman, Anthony H. and Alexander Wilner. "The Gulf Military Balance in 2012." CSIS, Washington D.C., May 2012. www.csis.org/burke/reports.

Cronin, Richard P. "Japan-U.S. Cooperation on Ballistic Missile Defense: Issues and Prospects." Congressional Research Service, 19 March 2002. http://fpc.state.gov/documents/organization/9186.pdf.

Dossel, Will. "Ballistic Missile Defense," in Scott Jasper ed. *Securing Freedom in the Global Commons.* Stanford: Stanford University Press, 2010.

Dunne, Michele. "The Deep Roots of Bahrain's Unrest." Carnegie Endowment for International Peace. http://carnegieendowment.org/2011/01/18/deep-roots-of-bahrain-s-unrest/uz

Entous, Adam and Julian E. Barnes. "U.S. Plans New Asia Missile Defenses." *The Wall Street Journal* Online, 23 August 2012. http://online.wsj.com/article/SB10000872396390444812704577605591629039400.html.

"Fact Sheet: Aegis Ballistic Missile Defense." Missile Defense Agency. http://www.mda.mil/global/documents/pdf/aegis.pdf.

"Factsheet: Army Navy/ Transportable Radar Surveillance (AN/TPY-2)." Missile Defense Agency. http://www.mda.mil/global/documents/pdf/an_tpy2.pdf.

"Fact Sheet: The Ballistic Missile Defense System." Missile Defense Agency. http://www.mda.mil/system/elements.html.

"Fact Sheet: Command, Control, Battle Management, and Communications." Missile Defense Agency. http://www.mda.mil/global/documents/pdf/c2bmc.pdf.

"Factsheet: PATRIOT Advanced Capability-3." Missile Defense Agency. http://www.mda.mil/global/documents/pdf/pac3.pdf.

"Factsheet: Potential New Technologies." Missile Defense Agency. http://www.mda.mil/system/potential_new_technologies.html.

"Factsheet: Space Tracking and Surveillance System." Missile Defense Agency. http://www.mda.mil/global/documents/pdf/stss.pdf.

"Factsheet: Terminal High Altitude Area Defense." Missile Defense Agency. http://www.mda.mil/global/documents/pdf/thaad.pdf.

Fargo, Matthew. "Recap- On Missile Defense and European Security." Center for Strategic & International Studies, 2 July 2012. http://csis.org/blog/recap-missile-defense-and-european-security.

Farnsworth, Timothy. "China conducts Missile Defense Test." Arms Control Association, March 2013. http://www.armscontrol.org/act/2013_03/China-Conducts-Missile-Defense-Test.

Feickert, Andrew. "Iran's Ballistic Missile Capabilities." Congressional Research Service, 23 August 2004. http://fpc.state.gov/documents/organization/39332.pdf.

Fitzpatrick, Mark, ed. *Iran's Ballistic Missile Capabilities: A net assessment.* London: The International Institute for Strategic Studies, 2010.

"Foundations and Objectives," The Cooperation Council for the Arab States of the Gulf Secretariat General; http://www.gcc-sg.org/eng/index895b.html?action=Sec-Show&ID=3.

Freedman, Lawrence. *The Evolution of Nuclear Strategy*, 3rd ed. New York: Palgrave Macmillan, 2003.

Goure, Daniel. *Charting a Path for U.S. Missile Defenses: Technical and Policy Issues.* Washington, D.C.: Center for Strategic and International Studies, 2000.

Grimmett, Richard F. and Paul K.Kerr. "Conventional Arms Transfers to Developing Nations, 2004-2011." Congressional Research Service. 24 August 2012. http://www.fas.org/sgp/crs/weapons/R42678.pdf

Habboush, Mahmoud. "US wants GCC to share defence data." *The National*, 12 January 2010. http://www.thenational.ae/news/uae-news/us-wants-gcc-to-share-defence-data.

Hildreth, Steven A. "Ballistic Missile Defense: Historical Overview." Congressional Research Service, 9 July 2007.

———. "Iran's Ballistic Missile Programs: An Overview." Congressional Research Service, 4 February 2009. http://www.fas.org/man/crs/RS22758.

———. "Long-Range Ballistic Missile Defense in Europe." Congressional Research Service, 23 September 2009. http://www.fas.org/sgp/crs/weapons/RL34051.pdf.

Hildreth, Steven A. and Carl Ek. "Missile Defense and NATO's Lisbon Summit." Congressional Research Service, 11 January 2011. http://www.fas.org/sgp/crs/row/R41549.pdf.

IHS Jane's Defense & Security Intelligence and Analysis. "Hizam Al Taawun."18 September 2012. Accessed through NPS library proxy. Jane's C4I Systems.

"International Cooperation." Missile Defense Agency. http://www.mda.mil/system/international_cooperation.html.

International Energy Agency. "2012 Key World Energy Statistics." www.iea.org.

Ivanov, Igor, Wolfgang Ischinger, and Sam Nuun. "Missile Defense: Toward a New Paradigm." Euro-Atlantic Security Initiative Working Group on Missile Defense. 3 February 2012. The Carnegie Endowment for International Peace. http://carnegieendowment.org/2012/02/03/missile-defense-toward-new-paradigm/9cvz.

Jane's Strategic Weapons. "Iran's Ballistic Missiles." http://search.janes.com.libproxy.nps.edu/.

Japan Ministry of Defense. "Japan's BMD." http://www.mod.go.jp/e/d_act/bmd/bmd.pdf.

"Joint Comunique From the Second Ministerial Meeting for the U.S.-GCC Strategic Cooperation Forum." U.S. State Department Press Release. http://www.state.gov/r/pa/prs/ps/2012/10/198516.htm.

Kalicki, Jan H. "RX For 'Oil Addiction': The Middle East and Energy Security." *Middle East Policy* Vol. XIV No.1, Spring 2007.

Karsh, Efraim. *The Iran-Iraq War: 1980-1988.* Wellingborough: Osprey Publishing, 2002.

Kiefer, Dave. "ALTBMD" Defense Technical Information Center." http://www.dtic.mil/ndia/2011IAMD/DaveKiefer.pdf.

Knopf, Jeffrey W., ed. *Security Assurances and Nuclear Nonproliferation.* Stanford: Stanford University Press, 2012.

Landler, Mark and David E. Sanger. "Clinton Speaks of Shielding Mideast From Iran." *New York Times.* 22 July 2009. http://www.nytimes.com/2009/07/23/world/asia/23diplo.html.

Lansdale, Kimberly. "Royal Saudi Navy CNO visits Dahlgren." *Surface Warfar.* Winter 2012.

Lauren, Paul Gordon, Gordon A. Craig, and Alexander L. George. *Force and Statecraft,* 4th ed. New York: Oxford University Press, 2007.

Ma, Damien. "Dependence on Middle Eastern oil: Now It's China's problem, Too." *The Atlantic* online, 19 July 2012. http://www.theatlantic.com/international/archive/2012/07/dependence-on-middle-eastern-oil-now-its-chinas-problem-too/259947/.

Macris, Jeffrey R. *The Politics and Security of the Gulf: Anglo-American Hegemony and the Shaping of a Region*. London: Routledge, 2010.

Mattis, James N., Gen. "2013 Posture Statement." 5 March 2013. http://centcom.ahp.us.army.mil/en/about-centcom/posture-statement/.

Navias, Martin S. "Ballistic Missile Proliferation in the Third World." *Adelphi Papers 252.* The International Institute for Strategic Studies, 1990.

———. *Going Ballistic: The Build-up of Missiles in the Middle East.* London: Brassey's (UK) Ltd., 1993.

"Medium Extended Air Defense System (MEADS)." Lockheed Martin. http://www.lockheedmartin.com/us/products/meads.html.

Miles, Donna. "Eagle Resolve Promotes Gulf Region Cooperation, Interoperability." *Armed Forces Press* Service. http://www.centcom.mil/news/eagle-resolve-promotes-gulf-region-cooperation-interoperability.

"Missile Defense: the First Sixty Years." Missile Defense Agency. 15 August 2008. www.mda.mil.

Mullen, Kevin M. "Regionally Integrated Air and Missile Defense: The Future of Defense and Deterrence in the Middle East." Air Command and Staff College, April 2010. http://dtlweb.au.af.mil///exlibris/dtl/d3_1/apache_media/L2V4bGlicmlzL2R0bC9kM18xL2FwYWNoZV9tZWRpYS80MjIyOA==.pdf.

Navy Studies Board. *Naval Forces' Capability for Theater Missile Defense.* Washington, D.C.: National Academy Press, 2001.

"Nuclear Posture Review Report." Department of Defense. April 2010. http://www.defense.gov/npr/docs/2010%20nuclear%20posture%20review%20report.pdf.

Office of the Secretary of Defense. "Medium Extended Air Defense System (MEADS) Fact Sheet." 11 February 2011. http://www.acq.osd.mil/docs/U.S._MEADS_Decision_Fact_Sheet_Feb_11_2011.pdf.

Ogilvie-White, Tanya. "Is there a Theory of Nuclear Proliferation? An Analysis of the Contemporary Debate." *The Nonproliferation Review.* Fall 1996.

Onley, James. "Britain's Native Agents in Arabia and Persia in the Nineteenth Century." *Comparative Studies of South Asia, Africa and the Middle East.* Vol. 24, No.1, 2004.

Organization of the Petroleum Exporting Countries. "OPEC Share of World Crude Oil Reserves 2011." http://www.opec.org/opec_web/en/data_graphs/330.htm.

Organization of the Petroleum Exporting Countries. "World Oil Outlook 2012." Vienna: OPEC Secretariat: 2012. http://www.opec.org/opec_web/static_files_project/media/downloads/publications/WOO2012.pdf.

"OPEC Oil Embargo, 1973–1974." U.S. Department of State Office of the Historian. http://history.state.gov/milestones/1969–1976/OPEC.

O'Rourke, Ronald. "Navy Aegis Ballistic Missile Defense (BMD) Program: Background and Issues for Congress." Congressional Research Service. 14 March 2013. http://www.fas.org/sgp/crs/weapons/RL33745.pdf.

Payne, Keith B. *Missile Defense in the 21st Century: Protection Against Limited Threats Including Lessons from the Gulf War.* Boulder: Westview Press, 1991.

Peterson, Erik R. *The Gulf Cooperation Council: Search for Unity in a Dynamic Region.* Boulder: Westview Press, 1988.

"Petroleum Chronology of Events: Iranian Revolution of 1978–1979." U.S. Energy Information Administration. http://www.eia.gov/pub/oil_gas/petroleum/analysis_publications/chronology/petroleumchronology2000.htm#T_8_.

Pifer, Steven. "Missile Defense in Europe: Cooperation or Contention?" The Brookings Institute, May 2012. http://www.brookings.edu/research/reports/2012/05/08-missile-defense-pifer.

Potter, Lawrence G. *The Persian Gulf: Tradition and Transformation.* New York: Foreign Policy Association, 2011.

"President Obama's Speech on Nuclear Weapons." Prague: 5 April 2009 in Sauer, *Eliminating Nuclear Weapons: The Role of Missile Defense.* New York: Columbia University Press, 2011.

"Remarks by the President on Strengthening Missile Defense in Europe." The White House Office of the Press Secretary. 17 September 2009. http://www.whitehouse.gov/the-press-office/remarks-president-strengthening-missile-defense-europe.

"Report to Congress on Theater Missile Defense Architecture Options for the Asia-Pacific Region." Department of Defense, 1999.

Royal Embassy of Saudi Arabia. "First Ministerial Meeting of the GCC-U.S. Strategic Cooperation Forum Concludes." 1 April 2012. http://www.saudiembassy.net/latest_news/news04011202.aspx.

Rubin, Uzi. "Missiles and Missile Defence in the Middle East: A Regional View." *RUSI Journal.* October 1997.

Russell, James. "Extended Deterrence, Security Guarantees and Nuclear Weapons: U.S. Strategic and Policy Conundrums in the Gulf." *Perspectives on Extended Deterrence.* Foundation pour la Recherche Strategique, Recherches & Documents No. 03/2010.

Russell, Richard L. "Swords and Shields: Ballistic Missiles and Defenses in the Middle East and South Asia." *Orbis* 46, no. 3 (2002): 485–86.

Sauer, Tom. *Eliminating Nuclear Weapons: Role of Missile Defense.* New York: Columbia University Press, 2011.

Schmidt, Axel and Frits Verschuur. "European Theater Missile Defense Program: A Field for International Cooperation." Maxwell Air Force Base: Air University Press, 1997.

Shaheen, Abdul Rahman. "King Abdullah to open University of Science and Technology." *Gulf News,* 22 September 2009. http://gulfnews.com/news/gulf/saudi-arabia/king-abdullah-to-open-university-of-science-and-technology-1.540370.

Shalal-Esa, Andrea. "Stop-gap spending measure funds MEADS missile defense." *Reuters* Online. 25 March 2012. http://www.reuters.com/article/2013/03/25/us-lockheed-missiles-idUSBRE92O02F20130325.

Shuey, Robert. "Theater Missile Defenses: Issues for Congress." Congressional Research Service, 19 March 2001.

Smith, Charles D. *Palestine and the Arab-Israeli Conflict,* 7th ed. New York: Bedford/St. Martin's: 2010.

Stanley II, Robert W. *Attacking the Mobile Ballistic Missile Threat in the Post-Cold War Environment: New Rules to an Old Game.* Maxwell Air Force Base: Air University Press, 2006.

Stav, Arieh, ed. *The Threat of Ballistic Missiles in the Middle East: Active Defense and Counter-Measure.* Brighton: Sussex Academic Press, 2011.

Swaine, Michael D., Rachel M. Swanger, and Takashi Kawakami. *Japan Ballistic Missile Defense.* Santa Monica: RAND, 2001.

Toki, Masako. "Missile Defense in Japan." Bulletin of the Atomic Scientists, 16 January 2009. http://www.thebulletin.org/web-edition/features/missile-defense-japan.

Toukan, Abdullah and Anthony H. Cordesman. "GCC-Iran: Operational Analysis of Air, SAM and TBM Forces." Center for Strategic & International Studies, 20 August 2009. http://csis.org/publication/gcc-iran.

Twing, Shawn L. "Mixed Signals in U.S.-Israel and U.S.-GCC Relationship." *The Washington Report on Middle East Affairs.* 5 (Feb 1998): 25.

U.S. Department of State Under Secretary for Arms Control and International Security. "New START." http://www.state.gov/documents/organization/140035.pdf.

———. "Treaty Between the United States of America and the Russian Federation On Strategic Offensive Reductions (The Moscow Treaty)." 24 May 2002. http://www.state.gov/t/isn/10527.htm.

Wehrey, Frederic, Theodore W. Karasik, Alireza Nader, et al. *Saudi-Iranian Relations Since the Fall of Saddam: Rivalry, Cooperation, and Implications for U.S. Policy.* Santa Monica: RAND Corporation, 2009.

Weitz, Richard. "Global Insights: Common Fears, Different Approaches to U.S. BMD for Russia and China." *World Politics Review*, 27 November 2012. http://www.worldpoliticsreview.com/articles/12524/global-insights-common-fears-different-approaches-to-u-s-bmd-for-russia-china.

Werrell, Kenneth P. "Hitting a Bullet with a Bullet: A History of Ballistic Missile Defense." Airpower Research Institute, 2000.

Wilkening, Dean. “Airborne Boost-Phase Ballistic Missile Defense.” *Science and Global Security* 12. (2004): 1–67.

———. “How Much Ballistic Missile Defense Is Enough?” Center for International Security and Cooperation. Stanford University. October, 1998.

———. “A Simple Model for Calculating Ballistic Missile Defense Effectiveness.” Science and Global Security, 1999, Volume 8:2.

Wilkening, Dean and Kenneth Watman. *Nuclear Deterrence in a Regional Context.* Santa Monica: RAND, 1995.

Wirtz, James J. *Counterforce and Theater Missile Defense: Can the Army Use an ASW Approach to the Scud Hunt.* Carlisle Barracks: Strategic Studies Institute, U.S. Army War College, 1995.

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