

# REPORT DOCUMENTATION PAGE

|  |  |  |           |
|--|--|--|-----------|
| <b>1. Report Security Classification:</b> Unclassified   |  |  |           |
| <b>2. Security Classification Authority:</b>   |  |  |           |
| <b>3. Declassification/Downgrading Schedule:</b>   |  |  |           |
| <b>4. Distribution/Availability of Report:</b> DISTRIBUTION STATEMENT A: APPROVED FOR<br>PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.  |  |  |           |
| <b>5. Name of Performing Organization:</b> JOINT MILITARY OPERATIONS DEPARTMENT  |  |  |           |
| <b>6. Office Symbol:</b><br>C  |  | <b>7. Address:</b> NAVAL WAR COLLEGE<br>686 CUSHING ROAD<br>NEWPORT, RI 02841-1207 |           |
| <b>8. Title (Include Security Classification):</b><br>Space-Time-Force and the Iranian Shahab-3 (U)  |  |  |           |
| <b>9. Personal Authors:</b> Paul B. Anderson, LCDR USN   |  |  |           |
| <b>10. Type of Report:</b> FINAL   |  | <b>11. Date of Report:</b> 03 February 2003  |           |
| <b>12. Page Count:</b> 25  | <b>12A Paper Advisor (if any):</b> Mr. James Fitzsimonds |  |           |
| <b>13. Supplementary Notation:</b> A paper submitted to the Faculty of the NWC in partial satisfaction of the requirements of the JMO Department. The contents of this paper reflect my own personal views and are not necessarily endorsed by the NWC or the Department of the Navy.  |  |  |           |
| <b>14. Ten key words that relate to your paper:</b> Ballistic Missile, MRBM, Asymmetrical capabilities, WMD, Sea-Based Midcourse, GCC, TMD, Deterrence, Operational Art  |  |  |           |
| <b>15. Abstract:</b> The operational factors of Space-Time-Force are a Theater Combatant Commander's most critical concern. The continual struggle to properly assess and balance these factors incorporates extensive time and effort, and in the end largely determines success or failure in any theater of operations. For instance, the introduction of a single weapon system into a theater can alter regional dynamics by giving one side a marked advantage. The United States Central Command faces just such a challenge with the development of the Iranian Shahab-3 Medium-Range Ballistic Missile (MRBM). With the United States maintaining forces and equipment in the Gulf Cooperation Council states, the development of the Iranian Shahab-3 will place increasing demands on USCENTCOM to provide ballistic missile defenses beyond that of protecting just U.S. forces. The USCENTCOM Commander will be required to evaluate the capabilities and limitations of the Shahab-3 to assess the level of threat it represents, as both a warfighting tool and a strategic weapon of deterrence. To counter this threat, the Commander will need to formulate and synchronize the central elements of Theater Missile Defense (Active and Passive Defense, Active Offense, and Battlefield management/C3) to overcome the missile's present and near-term capabilities, and demonstrate strong commitment to Gulf Allies in order to support U.S. interests in the region. |  |  |           |
| <b>16. Distribution / Availability of Abstract:</b>  | Unclassified<br>X  | Same as Rpt  | DTIC User |
| <b>17. Abstract Security Classification:</b> UNCLASSIFIED  |  |  |           |
| <b>18. Name of Responsible Individual:</b> CHAIRMAN, JOINT MILITARY OPERATIONS DEPARTMENT  |  |  |           |
| <b>19. Telephone:</b> 841-3556   |  | <b>20. Office Symbol:</b> C  |           |

**Security Classification of This Page Unclassified**

NAVAL WAR COLLEGE  
Newport, RI

Space-Time-Force and the Iranian Shahab-3

By  
Paul B. Anderson  
LCDR USN

03 February 2003

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Joint Military Operations Department.

The contents of this paper reflect my own personal view and are not necessarily endorsed by the Naval War College or the Department of the Navy.

---

## Table of Contents

|                                |    |
|--------------------------------|----|
| Abstract.....                  | 3  |
| Commanders Challenge.....      | 4  |
| The Shahab-3.....              | 7  |
| Recommendation.....            | 14 |
| Passive Defense.....           | 15 |
| Active Defense.....            | 16 |
| Active Operations.....         | 18 |
| Battlefield Management/C3..... | 19 |
| Conclusion.....                | 20 |
| Endnotes.....                  | 22 |
| Bibliography.....              | 25 |

### **Abstract.**

The operational factors of Space-Time-Force are a Theater Combatant Commander's most critical concern. The continual struggle to properly assess and balance these factors incorporates extensive time and effort, and in the end largely determines success or failure in any theater of operations. For instance, the introduction of a single weapon system into a theater can alter regional dynamics by giving one side a marked advantage. The United States Central Command faces just such a challenge with the development of the Iranian Shahab-3 Medium-Range Ballistic Missile (MRBM). With the United States maintaining forces and equipment in the Gulf Cooperation Council states, the development of the Iranian Shahab-3 will place increasing demands on USCENTCOM to provide ballistic missile defenses beyond that of protecting just U.S. forces. The USCENTCOM Commander will be required to evaluate the capabilities and limitations of the Shahab-3 to assess the level of threat it represents, as both a warfighting tool and a strategic weapon of deterrence. To counter this threat, the Commander will need to formulate and synchronize the central elements of Theater Missile Defense (Active and Passive Defense, Active Offense, and Battlefield Management/C3) to overcome the missile's present and near-term capabilities, and demonstrate strong commitment to Gulf Allies in order to support U.S. interests in the region.

## **Commander's Challenge**

The operational factors of Space-Time-Force are a Theater Combatant Commander's most critical concern. The continual struggle to properly assess and balance these factors incorporates extensive time and effort, and in the end largely determines success or failure in any theater of operations. External pressures can often change the equilibrium to such an extent that planners must quickly react in order to bring balance back to the equation. Technological advances, in particular, have increasingly challenged planners in their attempts to maintain that balance and achieve the freedom of action that warfighters seek. For instance, the introduction of a single weapon system into a theater can alter regional dynamics by giving one side a marked advantage.

The United States Central Command faces just such a challenge with the development of the Iranian Shahab-3 Medium-Range Ballistic Missile (MRBM). The Shahab-3 represents a new element in the USCENTCOM Commander's Space-Time-Force calculus. Why is the development of this missile so important to the Theater Commander? With the United States maintaining forces and equipment in the Gulf Cooperation Council states, the development of the Iranian Shahab-3 will place increasing demands on USCENTCOM to provide ballistic missile defenses beyond that of protecting just U.S. forces. The United States, as a third party requiring unfettered access to the region, will be required to take on a more permanent role in attempting to ensure theater security. A MRBM, like the Shahab-3, in the hands of a potentially hostile Iran means that every Air and Surface Port of Debarkation (APOD/SPOD) for U.S. and coalition troops can be targeted. Just as importantly, population centers and other civilian facilities can be held hostage to Iranian coercion if it is emboldened to act. This may

place a larger burden on the Theater Commander to develop an effective defense for operational protection in an effort to demonstrate U.S. commitment to Gulf Allies.

A MRBM adds unique challenges to a missile defense. Its flight parameters differ greatly from those of short-range missiles that U.S. and coalition forces experienced when confronted with Iraqi-launched Scud's in Operation Desert Storm in 1991. The increased range, velocity, payload and accuracy that can be achieved in a MRBM require specific and tailored means to form a credible and active defense system. For without a credible U.S. deterrent and demonstrated willingness to intervene on the behalf of GCC allies, the United States may increasingly lose the access it needs to secure its interests in the region.

Since 1991, the Arabian Gulf has remained a critical area of interest for the United States. Regional stability and the open flow of oil remain key policy objectives highlighted in the National Military Strategy. That strategy is intended to send a clear signal to potential belligerents that restricting access to the Arabian Gulf will not be tolerated, and to regional allies that the United States means to stand by its commitment to theater partnerships. With that construct in mind, USCENCOM serves as the principal facilitator to ensure the United States is militarily capable of meeting those obligations.

The subject of operational protection for U.S. forces in the Arabian Gulf is a timely one given the current buildup of military strength for a possible invasion of Iraq. At the time of this writing, approximately 100,000 U.S. troops are deployed at or near air and naval bases, command and control centers and assembly points in all six GCC states, with an anticipated force strength of 250,000 expected by the end of February.<sup>1</sup> Concern over possible Iraqi SCUD missiles, potentially armed with weapons of mass destruction, are a central concern not only to U.S. theater planners, but also to those states providing

the air and sea access necessary for force buildup and sustained combat operations. During Desert Storm, of the 86 Iraqi Scud's launched, 40 fell on Israel, while 46 impacted Coalition states.<sup>2</sup> Since that time, the GCC states have accepted the potential risks of hosting foreign combat forces involved in Iraqi containment. However, Iran presents another concern for GCC states. Its pursuit of a ballistic missile program and weapons of mass destruction, procurement of more modern weapons systems and strategic geographic position at the Strait of Hormuz have created worry in the region regarding Iranian long-term objectives.

The mission for the USCENTCOM Commander (hereafter referred to as 'Commander') is to evaluate what level of threat a new system like the Shahab-3 represents, both in the present and near term. For the purposes of this paper, near-term refers to the next 3-5 years, for it is here that technology estimates, evolving force structures and political trends can be ascertained with any sense of clarity.

There are unique dichotomies surrounding the development of ballistic missiles. They are not a 'one size fits all' weapon system. They contain inherent capabilities and limitations that suggest their relative importance and role in a state's security strategy. The Commander must identify those strengths and weaknesses and determine if and how they change the equilibrium. Does a missile have a warfighting capability, or does it represent a strategic weapon of deterrence? In either case, its credibility must be evaluated as a factor in the Commander's overall estimate of cost, benefits and risks when crafting a counter-balancing course of action.

### **The Shahab-3**

To determine what impact this missile has on the Commander's Space-Time-Force calculus requires an examination of its design and capabilities. The Shahab-3 is a liquid-fueled, road-mobile missile based on the North Korean No-Dong design.<sup>3</sup> Iran

began receiving parts and equipment for the missile during the mid-1990's and conducted its first test launch in 1998. To date, two of four tests have been considered a success.<sup>4</sup> With the demonstrated ability to achieve a successful launch, mid-course and terminal phase, the missile is considered to have an “emergency launch” capability, though a fielded force may not become operational before 2005.<sup>5</sup>

The most important aspect of the missile is the payload options available and the projected accuracy for the weapon, for these two factors ultimately determine its role and value to a warfighter. Currently, the Shahab-3 is capable of delivering a unitary conventional warhead to almost any place in the USCENTCOM AOR.<sup>6</sup> Yet, while a 700kg warhead is significant, its destructive effects are not much larger than that which could be achieved by aircraft-delivered ordnance. The Shahab incorporates contact fusing, which limits its destructive footprint as a result of a ground-based detonation. A sub-munition warhead, on the other hand, could increase that footprint 6.5 times by providing a spread of bomblets over a larger target area, such as an airfield parking apron.<sup>7</sup> However, this estimate is predicated on sufficient missile accuracy, which will be covered shortly.

The Shahab is assessed to have a chemical warhead capability.<sup>8</sup> Despite ratifying the Chemical Weapons Convention in 1997, Iran retains a significant chemical weapons program and maintains stockpiles of blister, blood and choking agents for bombs and artillery shells, with research continuing on nerve agents, to include VX. Yet, without a complex air dispersal capability, a chemical warhead's footprint also remains restricted. As far as a biological warhead, Iran began active biological weapons production in 1996, but only at a limited scale suitable for advanced testing and development. While it may have some limited capability for BW deployment through crude non-conventional



capabilities, exact details on its ability to weaponize a sophisticated biological dispersal capability remain unknown.<sup>9</sup>

In addition, there are important considerations when employing chemical and biological weapons. Weather factors, such as wind and temperature dictate density and persistence, thus determining their effectiveness. As a result, these warheads require complex delivery processes, such as precise altitude and density dispersals, if they are to achieve maximum effectiveness. In the late 1980's, both Iran and Iraq employed chemical agents using artillery and aircraft delivered ordnance; however, the method proved very ineffective given the required delivery parameters and weather conditions.

Finally, the important question of a nuclear option for the Shahab should be examined. Nuclear weapons require a minimum payload of 500-1000 kg for an early design 10-kiloton nuclear weapon, which the Shahab-3 provides.<sup>10</sup> However, the Intelligence Community assesses Iran is unlikely to develop an indigenous capability to produce fissile material for a nuclear weapon before 2010.<sup>11</sup> Then, additional time may be required for weaponizing. However, that does not rule out Iran receiving assistance from foreign sources, such as Russia, China and North Korea. With the proper amount of fissile material, Iran could acquire nuclear weapons in 1 to 3 years of a decision to do so.<sup>12</sup> In the mean time, Iran will likely continue to pursue a dual course of constructing nuclear facilities required to produce its own fissile materials, while continuing to covertly seek out possible sources for those materials.

The other important aspect of the Shahab-3 is its accuracy. The missile is assessed to have a 3000-4000 meter CEP, or circular error of probable, at maximum range.<sup>13</sup> While technologies are available that could provide greater accuracy, the technical characteristics of less advanced missiles like the Shahab preclude their effective incorporation. Applications of GPS-aiding for short- and medium-range ballistic missiles

result in only modest gains in accuracy. Use of GPS velocity aiding improved the accuracy of a No Dong missile by only 25 percent.<sup>14</sup> In addition, the advanced technical abilities required to facilitate this upgrade are also likely beyond Iran's capabilities without foreign assistance.

Given the constraints on the missile's CEP and warhead options, how might Iran attempt to overcome the missile's practical limitations? Salvoing might present one option in attempting to bring sufficient force to bear on a specific target. Yet, saturation will depend largely on the quantity of missiles and launchers available. North Korea is believed to have transferred to Iran components for at least 20 missiles, and Iran has one Mobile-Erector-Launcher (MEL) that it prominently displays in parades.<sup>15</sup> Iran announced in 2001 that the missile had gone into production, despite only one successful test launch. However, Iran's pronouncement of series production may have been intended for political consumption. The development of longer-range missiles generally requires greater time in testing and expense due to their complexity. For instance, the first 10 launches of a Space Launch Vehicle (ballistic missiles with non-weapon payloads and special trajectories) typically are successful only about one-third of the time, with dozens of launches and an average of six years of development necessary to achieve 75% reliability.<sup>16</sup> As long as systems testing continues, it is unlikely that any advanced pace in large-scale production will proceed.

In addition, the pursuit of follow-on systems to the Shahab-3 is likely to impact production quantities and timelines. Iran has indicated its desire to develop space launch vehicles of a 2000 km range with the Shahab-4 and 5.<sup>17</sup> With the Shahab-3 serving as a technology demonstrator, Iran is likely to pursue an evolutionary process in missile design, similar to the North Korean track, with the eventual goal of an intercontinental ballistic missile. Yet, a move into liquid-solid combinations necessary for SLV's will

result in greater technical hurdles, competition for scarce resources for separate programs and a resulting slide of production timelines to the right. In the near-term, Iran may well only be capable of fielding a handful of MEL's and several dozen missiles.

An important construct in Iran's pursuit of an MRBM is its current conventional force structure. Iran's conventional military forces possess limited power projection ability in the region.<sup>18</sup> Iran has struggled to recover from the tremendous losses accrued in its conventional forces during the Iran-Iraq war. Its efforts since that time have been focused on rebuilding certain components of its air, land and naval forces, while at the same time struggling through U.S-generated sanctions and a lagging economy. Presently, Iran's force structure is better suited for an access denial strategy for the Arabian Gulf than for sustained joint military operations against a Gulf neighbor. While its maritime forces are capable of temporarily closing the vital Strait of Hormuz, the Shahab-3 does little to enhance an access denial strategy, which begs the question of what role does it serve?

There are some compelling reasons to pursue ballistic missiles as a warfighting tool. Iran, like many developing states, views ballistic missiles as a substitute for advanced combat aircraft. Missiles provide a deep strike capability that may not be achievable with conventional air forces. Iran purchased the SU-24 Fencer from Russia to acquire an air strike capability.<sup>19</sup> However, these assets still possess limitations, such as range, ordnance and sortie rates that ultimately impact their effectiveness.

Geography is also a critical factor for Iranian conventional force employment. To project power into regional states, Iran would have to either transit land routes through Iraqi territory, conduct an amphibious invasion across the Arabian Gulf, or mount large-scale airborne assault operations, none of which it has the capacity to support.<sup>20</sup> A medium-range ballistic missile can provide significant operational reach.

Iran's formulation of security interests and resulting diplomatic and military initiatives are ultimately shaped by its perceptions of regional threats. These security concerns fall along three distinct lines. First, Iraq remains its most immediate and enduring adversary. Despite the Western containment of Baghdad over the past decade, Iran still greatly fears an Iraqi resurgence in both conventional and non-conventional military means. The eight-year war, in which Iran eventually sued for peace, left indelible memories of inferiority on the part of Tehran. Iran suffered hundreds of thousands of casualties and incurred large losses in combat equipment during the war. Of note, during the 'War of the Cities' from Feb-Apr 1988, Iraq launched 189 Scuds into Iranian cities, ultimately causing Tehran to be evacuated, whereas Iran had only the capability to launch 50 Scuds in return.<sup>21</sup> As a result, Iran views with suspicion any attempts by Iraq to increase not only conventional capabilities, but also missile and weapons of mass destruction programs.

Second, the staggering pace of conventional arms purchases by the GCC states has also concerned Iran. Saudi Arabia, Kuwait and the UAE have made large purchases of sophisticated tanks, combat aircraft and air defenses that together, far outpace Iran in quantity and quality.

Third, the existence of Israel looms large in Iran's political calculus. Iran justifiably fears Israel's demonstrated long-range air strike capability. Israel has stated that, similar to its attack on Iraq's Osirak nuclear facility, it would strike any Iranian facility believed to be contributing to the development of a nuclear weapons capability.<sup>22</sup> Iran frequently describes its pursuit of an Islamic nuclear bomb as being necessary to offset Israel's purported nuclear weapons capability. Therefore, it comes as no surprise that the Shahab-3 provides the range to strike Israel.

Presently, Iran's security is primarily focused on a defensive strategy. Since the mid-1990's, Iran has become far less active in promoting unrest in the Gulf and has pursued a generally less aggressive regional foreign policy. Following the election of Mohammad Khatami in 1997, Tehran has slowly shifted from confrontation to conciliation and attempted to court the Gulf States in an effort to improve relations.<sup>23</sup> Yet, the United States figures prominently in Iranian condemnation of foreign interlopers in the region. Tehran views with mistrust U.S. intentions in the Gulf and the potential to challenge its long-term ambitions for greater influence and dominance in regional affairs. Despite the benefits it would reap from a U.S.-led attack to disarm Iraq, it is concerned that as the other regional "Axis of Evil" state identified by President Bush in 2001, that it may be the next target for a regime change after Baghdad.

Therefore, Iran's development of the Shahab-3 is not an irrational move. It is a calculated undertaking intended to leverage the factors of Space-Time-Force in support of its own security interests. Iran, like many other states pursuing indigenous missile programs, has identified the asymmetric advantages inherent within ballistic missiles. Its missile program is intended to provide a cost-effective deterrence to regional and foreign threats. Yet, the missile's ability to intimidate depends greatly on its credibility as a threat.

Deterrence is based solely on credibility, and credibility is comprised of two critical dimensions. First, to be credible, one side must believe the other *intends* to implement its deterrent threat, and second, that it *can* implement that threat effectively.

A discussion of the current and projected capabilities of the Shahab-3 suggests that the system has little warfighting utility. Without significant numbers, accuracy and payload options, the missile's operational threat becomes significantly reduced. In

addition, a MRBM detracts from conventional capabilities, which are generally more flexible and relevant to most of the contingencies faced by Iran.

Nevertheless, the missile's potential with regard to the factor of Force cannot be completely discounted. Ballistic missiles can create effects far disproportionate to their mass. Iraq's use of conventionally armed Scuds against Israel during Operation Desert Storm came close to triggering an Israeli response, which would have likely incensed Arab states and fractured the shaky Coalition required for the operation. Still, credible deterrence is achieved by the creation of an effective operational force, which Iran has yet to demonstrate.

Concurrently, the Shahab-3's value as a strategic deterrent remains small given the lack of a credible WMD capability. Once coupled with WMD, the missile system might offer significant insurance against the possibility of regime change. Iran likely believes that this asymmetrical capability could greatly influence U.S. or regional decision-makers when considering actions counter to Iranian interests. Then, the question remains what factors or 'red lines' would trigger Iranian employment of WMD, and would they be important enough to risk a response by a superior U.S. conventional force, or a response in kind?

## **Recommendations**

The Space-Time-Force implications of the Shahab-3 provide the Commander an important framework for determining Theater Missile Defense (TMD) requirements. The current TMD concept envisions three pillars, Passive Defense, Active Defense and Active Operations that reside upon a common base of Battlefield Management/Command, Control and Communications. Together, these missions have the potential to create great synergistic effects if synchronized properly, for no one pillar will likely provide the deterrence value necessary for this regional context.

Once again, deterrence remains at the forefront of the issue. The United States has delineated the importance of the region to U.S. interests and highlighted red lines that would trigger immediate offensive action, such as the closing of the Strait of Hormuz. Though, without a credible U.S. capability and willingness to support Gulf interests, the Gulf States may feel increasingly isolated and susceptible to Iranian intimidation.

The current status of the Shahab-3 program may offer the Commander time to formulate competitive strategies intended to shape Iran's future efforts. By focusing on those elements of TMD that offer immediate and viable counters to ballistic missile attack, Iran may be less inclined to aggressively pursue the expensive and complex technologies required for research, development and fielding of missile and WMD programs. Emphasis must be placed on identifying both direct and indirect routes to mitigating the threat. If a defense capability does not exist to counter the missile itself, efforts must be made to minimize the impact that a missile attack represents. By creating an environment whereby a missile's destructive or disruptive effectiveness is reduced, a decrease in the missile's Force factor occurs, thus, its symbolism as a means of coercive diplomacy is marginalized, potentially resulting in an unwillingness to employ it.

### **Passive Defense**

Warning, deception, and operational security are key components for the passive defense effort. To be increasingly successful in protecting combat forces, though, operational intelligence is required. Developing a keen understanding of enemy strategy, tactics and doctrine is the most important element for divining enemy courses of action and establishing timely counters to enhance security. Given the relatively short time for a missile launch and the mobile nature of the Shahab-3, it is imperative that the Commander develops an aggressive strategy for Intelligence Preparation of the Theater. This effort must include a comprehensive collection plan to determine Iran's missile

support infrastructure to highlight strengths and vulnerabilities that can be exploited *prior to* a missile launch. Identifying key indicators for missile activity will increase the warning time necessary to prepare for a potential attack.

Operational intelligence should also provide the courses of action open to an enemy based on perceptions of centers of gravity. Iran has many targets available to it in the Gulf, but determining what Tehran believes is important to the U.S. Commander or regional states can be critical to establishing defenses around those centers. This effort will aid the Commander in developing a Defended Asset List, which will prioritize those vital centers. Also, deception, in this case, could prove valuable in complicating Iran's decision-making process for determining when and where to employ the Shahab.

Another key component for passive defense is reducing a force's vulnerability to theater missile attack. USCENTCOM has embarked on a program called the Cooperative Defense Initiative (CDI) which is intended to create the conditions to allow U.S. and coalition forces to prevail in a WMD environment in the Gulf.<sup>24</sup> The goal is to improve regional partners' abilities to protect their own forces, facilities and populations and operate with minimal impact on mission performance. At the heart of the initiative is a Consequence Management program that analyzes the ability of host nations to manage WMD effects, mass casualties and civil disruption as a result of a WMD attack, and offers training and advice on reducing the impact. The plan is extensive and complex, but is intended to demonstrate U.S. action and commitment to Gulf allies.

For this initiative to be fully successful, USCENTCOM should also conduct a number of well-publicized exercises and civil defense drills highlighting operations in a WMD environment. The intent is to demonstrate the lack of utility that WMD provides.

### **Active Defense**



Factors of Force in defending against the Shahab-3 are currently a significant challenge for the Commander. Increased MRBM range, altitude, orientations and velocities make intercept problematic given the limited capabilities of currently fielded systems. The Army Patriot PAC-3, a terminal phase system, is the only active defensive capability for local and area defense against short-range ballistic missiles. However, it is not optimized for intercepting the Shahab-3.<sup>25</sup>

The Israeli Arrow Weapon System, which was jointly developed and funded by the United States and Israel, was originally intended to provide a terminal and midcourse intercept capability against both short and medium-range missiles. However, Israel's Defense Minister, Benjamin Ben Eliezer, admitted that the current Arrow system design would not protect against an MRBM. An Arrow improvement program is in place to bolster Arrow's capability to meet such emerging threats, but the design may not be available until after 2005.<sup>26</sup>

The most promising near term solution to meeting the MRBM challenge comes from the Sea-Based Midcourse element of the Ballistic Missile Defense System capability (formerly Navy Theater-Wide).<sup>27</sup> Current testing has involved the firing of a developmental Standard Missile 3 (SM-3) from the Aegis cruiser USS Lake Erie to intercept Aries ballistic missile targets launched from the Pacific Missile Range Facility on the island of Kauai, Hawaii. The USS Lake Erie is equipped with Aegis Lightweight Exo-Atmospheric Projectile Intercept (ALI) computer programs and equipment that allow the SM-3 to conduct an exo-atmospheric hit-to-kill intercept. With the success of recent flight tests, the Aegis BMD project has accelerated its program to develop an emergency deployment sea-based defense to meet President Bush's directive to begin fielding initial missile defense capabilities in 2004-2005.<sup>28</sup>

With the potential for a near-term deployable missile defense, USCENTCOM should begin laying the groundwork for establishing a forward and permanent presence in the form of a missile defense strike group.<sup>29</sup> Instead of the current practice of pulling AEGIS-equipped ships from deployed Carrier Battle Groups, and placing greater demands on these low-density high-demand platforms, a multiple ship group could maintain a permanent and visible deterrent presence in the Gulf. The SPY-1 radar's ability to provide early warning track data on an MRBM, coupled with a future SM-3 intercept capability, would provide a powerful deterrent. Even one to two ships could provide sufficient numbers of intercepts for the Shahab.

Ultimately, any active defense may loom large in Iranian thinking. Introducing uncertainty as to their ability to get a missile through may cause Tehran to reassess the costs and benefits that its missile programs represent.

### **Active Operations**

Providing a counterforce to the launch of ballistic missiles is essential for defense. As was discussed before, operational intelligence of an enemy's capabilities and intentions is a critical enabler for planning, preparation and execution for offensive operations intended to destroy a missile or launcher at an early stage. Detailed planning must include identifying high-payoff targets, such as missile launchers, command, control and communications networks, storage facilities and the logistics elements required to support a missile launch. Rules of engagement or trigger events need to be established during the planning process in order to facilitate timely attack operations. Due to the high stakes involved with WMD, plans for preemptive strikes at the onset of hostilities must be formulated. Attacking the Shahab-3 system as early as possible can prevent the launch of a substantial number of missiles if employing multiple MELs in the future.

Iranian employment of WMD must be curtailed as early as possible. An effect must be created in Iranian minds that these weapons will act as a lightning rod for overwhelming counterforce. To employ WMD would risk an escalation in the level of U.S. force to include both conventional and nuclear means.

### **Battlefield Management/Command, Control and Communications**

The Principle of Unity of Command/Unity of Effort also provides an important construct for the Commander who is tasked with organizing regional warfighting capabilities and directing them in a future conflict. U.S. leadership is particularly important in this theater in order to efficiently organize and focus the GCC states on the threat at hand.

The GCC states are currently struggling to maintain cohesion and momentum in a number of joint projects that, if successful, will increase their cooperation and ability to counter regional threats, like ballistic missiles. The reasons for the lagging pace are many, from financial constraints, differing perceptions of security needs, to general mistrust among themselves. The Commander must forge through these institutional and cultural divisions to foster a more formalized multilateral security arrangement and harness the potential that a united front represents.

The GCC states have made incremental progress in linking their early warning radar and communication systems in a project called Hizam Al Taawun, 'Belt of Cooperation'. The network is intended to provide joint tracking of aircraft and to coordinate air defense systems, with an eventual link to U.S. systems.<sup>30</sup> Also, the GCC recently offered a plan for the establishment of three radar facilities, deployed in northern Saudi Arabia, on Oman's southern coast and in the UAE, to monitor ballistic missile launches from the region.<sup>31</sup> However, without impetus and direction from the United

States, the plans will continue to experience delays and lose inertia, thus losing valuable time to integrate.

The Commander must develop a missile defense that revolves around U.S. weapons systems and incorporates compatible technologies and components. Countries considering non-U.S. weapons or technology, such as the United Arab Emirates currently pursuing the Russian S-300 air defense system, must be dissuaded from action.<sup>32</sup> The potential interoperability and commonality of forces problems that accompany diverse weapons systems procurement will threaten the unity of effort required to defeat a ballistic missile threat. Without U.S. dominance in this sphere, the ineffective nature of the GCC will result in lost time and lost opportunities, which could potentially translate into lost access for the United States.

## **Conclusion**

The USCENTCOM Commander is faced with the daunting challenge of providing operational protection for U.S. and coalition forces against a potential MRBM threat. Coupled with the increasing pressure to convince regional allies of U.S. commitment, the Commander must remain assertive in defining the conditions for maintaining regional stability. This will take strong U.S. leadership and diplomacy. The Gulf Cooperation Council is a slowly evolving organization that is saddled with significant cultural baggage that prevents rapid change or the adoption of radical ideas. Its interests are comprised of the varying interests of six different states. While each harbors concern over Iranian objectives in the region, they are slow to act publicly, but quick to move privately to secure individual interests. Without a unifying element such as U.S. leadership and technical capability, disunity in the face of growing Iranian intimidation may create the possibility of each establishing its own separate defense or security agreement with Iran, independent of U.S. wishes or interests. Without the

demonstration of U.S. commitment, the GCC may begin denying the access so necessary for U.S. freedom of action in the region. In the end, a confrontation with Iraq may soon provide the litmus test for confronting states with ballistic missiles and weapons of mass destruction, and illustrate just how these regional dynamics will play out under the stresses of combat operations.

#### Endnotes

1. "U.S. Says It Has Right to Disarm Iraq: More Troops Being Deployed," *The Dawn Group of Newspapers website*, <http://www.dawn.com/2003/01/12/top16.htm>, 12 Jan 2003.
2. General Merrill McPeak, Chief of Staff, U.S. Air Force, *The Air Campaign: Part of the Combined Arms Operation*, Washington D.C.: Dept of the Air Force, 1991), briefing graphic 16.
3. "Shahab-3," Federation of American Scientists website, <http://www.fas.org/nuke/guide/iran/missile/shahab-3.htm>, 16 Jan 2003.
4. "Iran Conducts Fourth Shahab-3 Test", *Arms Control Today*, Jun 2002.

5. Kerry Gildea, "Israeli Defense Minister Proposes Expanded Cooperation On Arrow, UAV's," *Defense Daily International*, Feb 15, 2002, p. 1.
6. "Shahab-3," Federation of American Scientists website, <http://www.fas.org/nuke/guide/iran/missile/shahab-3.htm>, 16 Jan 2003.
7. John Stillion and David T. Orletsky, *Airbase Vulnerability to Conventional Cruise-Missile and Ballistic Missile Attacks*, RAND 1999, p. 12.
8. "Shahab-3," FAS website, <http://www.fas.org/nuke/guide/iran/missile/shahab-3.htm>, 16 Jan 2003.
9. "Proliferation in the Axis of Evil: North Korea, Iran and Iraq", Center for Strategic and International Studies (CSIS), <http://www.ciaonet.org/wps/coa19/coa19.pdf>, 30 Jan 2002, p.26.
10. Richard Speier, "Iranian Missiles and Payloads", The Nixon Center, Jan 2001, <http://www.nixoncenter.org/publications/monographs/Iran%27s%20Nuclear%20Weapons%20Options%20-%20Issues%20and%20Analysis2.pdf>, 5 Jan 2003.
11. "Foreign Missile Developments and the Ballistic Missile Threat Through 2015", Unclassified Summary from the National Intelligence Council, Dec 2001, [http://www.cia.gov/nic/pubs/other\\_products/Unclassifiedballisticmissilefinal.htm](http://www.cia.gov/nic/pubs/other_products/Unclassifiedballisticmissilefinal.htm), 5 Jan 2003.
12. Ibid.
13. CSIS, p 14.
14. "The Global Positioning System", National Security Assessment, RAND, 1998, <http://www.rand.org/publications/MR/MR614/MR614.sec3.pdf>, 5 Jan 2003, p. 63.
15. Ed Blanche, "Iran Hints at More Shahab-3 Capabilities", *Jane's Defense Weekly*, 22 May, 2002.
16. Speier, p. 56.
17. CSIS, p 22.
18. "Global Threats and Challenges Through 2015," Vice Admiral Thomas R. Wilson, Director, Defense Intelligence Agency, Senate Select Committee on Intelligence, 7 Feb, 2001.
19. CSIC, p. 11.
20. Donald L. Byman and John R. Wise, "The Persian Gulf in the Coming Decade: Trends, Threats and Opportunities", RAND: Project Air Force, 2002, p. 19.

21. "Missile Attacks Against Iran and the Gulf States", Human Rights Watch website, <http://www.hrw.org/reports/1991/gulfwar/CHAP6.htm>, 5 Jan 2003.
22. CSIC, p. 29.
23. Byman and Wise, p.2.
24. Cooperative Defense Initiative, United States Central Command/J5, <http://www.centcom.smil.mil>, 4 Nov 2002.
25. Kerry Gildea, "Kadish Says Problems Solved With PAC-3, Ready for Acceleration," *Defense Daily*, Nov 1, 2002, p. 1.
26. Kerry Gildea, "Israeli Defense Minister Proposes Expanded Cooperation On Arrow, UAV's," *Defense Daily International*, Feb 15, 2002, p. 1.
27. L.P. James, "Don't Give Up on Navy Area Defense," *Proceedings*, Oct 2002, p. 76.
28. "Sea Based Mid-Course," Missile Defense Agency website, <http://www.acq.osd.mil/bmdo/bmdolink/pdf/seabased.pdf>, 16 Jan 2003.
29. David Brown, "Missile Defense Strike Force Groups to be Formed", *Navy Times*, 14 Jan 2003.
30. Ed Blanche, "GCC Security: New Alliances in the Making?" *Middle East*, May 2001, p. 7.
31. "Gulf States Rethink Missile Shield," *Middle East Newslite*, 15 May 2002.
32. Col Stanislav Lunev, NEWSMAX.com website, <http://www.newsmax.com/archives/articles/2001/3/28/134307.shtml>, 28 Mar 2001.

### Bibliography

Gompert, David C and Isaacson, Jeffrey A. *Planning a Ballistic Missile Defense System of Systems*. Washington D.C.: RAND Issue Paper, 1999.

Handberg, Roger. *Ballistic Missile Defense and the Future of American Security*. Westport, Conn and London: Praeger, 2002.

Lindsay, James M and O'Hanlon, Michael E. *Defending America: The Case for Limited National Missile Defense*. Washington D.C.: Brookings Institution Press, 2001.

Moentmann, James E, LTC. *Analysis of Ballistic Missile Defense Policy in East Asia: Implications for Sino-U.S. Relations*. Carlisle Barracks, PA: U.S. Army War College, 2001.

O'Donogue, Patrick M. *Theater Missile Defense in Japan: Implications for the U.S.-China-Japan Strategic Relationship*. Carlisle Barracks, PA: U.S. Army War College, 2000.

Report of the National Missile Defense Independent Review Team. Committee on Armed Services, United States Senate. Washington D.C.: U.S. Government Printing Office, June 29 and July 25, 2000.

Schmidt, Edward B, LtCol. *Theater Ballistic Missile Defense: Who's Fight Is It?* Carlisle Barracks, PA: U.S. Army War College, 1999.



Siegel, Adam. *Scuds Against Al Jubayl?* Washington D.C.: U.S. Naval Institute Proceedings, Dec 2002.

Smith, James M. *Nuclear Deterrence and Defense: Strategic Considerations*. USAF Academy, CO: USAF Institute for national Security Studies, 2001.

Stillion, John and Orletsky, David T. *Airbase Vulnerability to Conventional Cruise-Missile and Ballistic Missile Attacks*. Washington D.C.: RAND, 1999.

Swicker, Charles C. *Theater Ballistic Missile Defense from the Sea*. Newport, RI: Naval War College, 1998.