THE USE OF LAND POWER TO COUNTER THE IRANIAN NUCLEAR PROLIFERATION CHALLENGE

A thesis presented to the Faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

MASTER OF MILITARY ART AND SCIENCE
Strategy

by

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2007

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	**2. REPORT TYPE**	**3. DATES COVERED** *(From - To)*
15-06-2007	Master's Thesis	Aug 2006 - Jun 2007

4. TITLE AND SUBTITLE

The Use of Land Power to Counter the Iranian Nuclear Proliferation Challenge

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

Major Bruce W. Terry

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

U.S. Army Command and General Staff College
ATTN: ATZL-SWD-GD
1 Reynolds Ave.
Ft. Leavenworth, KS 66027-1352

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT

Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES

14. ABSTRACT

Since the 9/11 attacks the US has declared a policy to stop emerging threats before they become dangerous. In this context, President Bush has declared that Iran will not be allowed to develop nuclear weapons. In order to prevent Iran from developing nuclear weapons, a number of policies are suggested including a diplomatic "Grand Bargain," building a system of containment and deterrence, and using military power to destroy Iran's nuclear infrastructure. In the case of using military power, air strikes are the most frequent recommendation, and the use of land power is largely ignored. If land power were used to destroy Iran's nuclear infrastructure, there are three major options including an invasion and occupation, a strategic raid to destroy known nuclear facilities, and a special operations raid to destroy a single nuclear facility. Each ground option would rely on significant air and naval power to be successful. The invasion option is feasible with great effort and is the most suitable ground option because it provides a certainty of effect that no other course of action can match. However, the invasion option is not acceptable due to the high costs. The strategic raid option is marginally feasible, but the costs are not acceptable and it lacks significant advantage over the pure air option thus rendering it only marginally suitable. The special operations raid is conditionally an acceptable course of action, but it is neither suitable nor feasible given the lack of intelligence the US has about Iranian nuclear facilities and the limited effect a special operations raid could have on a large industrial target.

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			**19b. TELEPHONE NUMBER** *(include area code)*
Unclassified	Unclassified	Unclassified	UU	119	

MASTER OF MILITARY ART AND SCIENCE
THESIS APPROVAL PAGE

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

THE USE OF LAND POWER TO COUNTER THE IRANIAN NUCLEAR PROLIFERATION CHALLENGE, by Bruce W. Terry, 119 pages.

The United States and Iran have been in conflict since the Iranian Revolution. Iran is seeking to increase its power in the Middle East while America is seeking to maintain its own power in the region while simultaneously containing Iran's regional ambitions. Though there appear to have been attempts by Iranian moderates to temper Iranian policy towards the US, extremists within Iran's domestic power structure have successfully blocked any significant openings.

Since at least the Iran-Iraq War, Iran has been developing nuclear technology to acquire the nuclear fuel cycle. Because the fuel cycle will allow Iran to construct atomic weapons as well as generate electricity, the US has opposed Iran's attempt at nuclear proliferation. With the news that Iran has begun enriching uranium and that it seeks to produce plutonium, the US and some European countries have sought to dissuade Iran from completing the nuclear fuel cycle.

Since the 9/11 attacks the US has declared a policy to stop emerging threats before they become dangerous. In this context, President Bush has declared that Iran will not be allowed to develop nuclear weapons. In order to prevent Iran from developing nuclear weapons, a number of policies are suggested including a diplomatic "Grand Bargain," building a system of containment and deterrence, and using military power to destroy Iran's nuclear infrastructure. In the case of using military power, air strikes are the most frequent recommendation, and the use of land power is largely ignored.

If land power were used to destroy Iran's nuclear infrastructure, there are three major options including an invasion and occupation, a strategic raid to destroy known nuclear facilities, and a special operations raid to destroy a single nuclear facility. Each ground option would rely on significant air and naval power to be successful. The invasion option is feasible with great effort and is the most suitable ground option because it provides a certainty of effect that no other course of action can match. However, the invasion option is not acceptable due to the high costs. The strategic raid option is marginally feasible, but the costs are not acceptable and it lacks significant advantage over the pure air option thus rendering it only marginally suitable. The special operations raid is conditionally an acceptable course of action, but it is neither suitable nor feasible given the lack of intelligence the US has about Iranian nuclear facilities and the limited effect a special operations raid could have on a large industrial target.

ACKNOWLEDGMENTS

I first want to acknowledge the support and encouragement from my family in support of my writing this thesis. Without the patience and understanding of my wife Beki, I could not have taken the time necessary to write this paper. I also wish to recognize my father for his guidance in my life. Without his direction towards academic achievement, I would not have the background to write this thesis

The second group I wish to thank are the staff and faculty in the Social Sciences Department at West Point. Specific people who have contributed to my success include Brigadier General Russ Howard who accepted me into the SOSH family, COL Cindy Jebb who was my mentor while I served as an instructor at West Point, and Dr. Thom Sherlock who helped me write my first research project and got me started on developing the idea for this thesis. I also wish to acknowledge LTC Clemson Turregano, without whose recommendation I would not have applied to be an instructor at West Point.

I also wish to recognize the critical contributions of my thesis committee. As my thesis chair, Mr. Cary's guidance was crucial to keeping my research on time and on topic. Similarly, COL Bowman provided me with invaluable advice on how to structure the various chapters while always giving timely and useful feedback on my work. Mr. Shadid was crucial to my efforts in the early months when I began my research and started writing. Every member of my committee gave me feedback, advice, and encouragement that helped me to complete this thesis in its final form.

Finally, I thank Mr. Lowe and Dr. Kem for their mentorship in the MMAS program.

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INITIAL DISTRIBUTION LIST 110

CERTIFICATION FOR MMAS DISTRIBUTION STATEMENT 111

ACRONYMS

DGDP	Directorate of Graduate Degree Programs
GDP	Graduate Degree Programs
SGA	Staff Group Advisor

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CHAPTER 1

INTRODUCTION

Is there a military ground option that the US can employ against Iran that is feasible, acceptable, and suitable? My interest in what ground options the US might have against Iran sprang from the issue of Iran's nuclear program and what I see as the current US administration's determination to deny Iran the capability to produce nuclear weapons. The position of the Bush administration in relation to Iran and nuclear technology is grounded in the possible threats to US interests. In the post-9/11 world, the Bush administration has changed its threat evaluation so that catastrophic threats, regardless of how remote the possibility, are treated as events that must be prevented.[1] Concurrent with this belief is an unwillingness to rely on deterrent strategies after new catastrophic threats have emerged. If these assumptions are correct, and the example of the 2003 attack on Iraq indicates that they are, then the question of how the US can invade Iran is relevant from both a temporal and practical standpoint. My goal in researching this topic is to grasp the strategic problems that would accompany an invasion and to become expert on what can be done.

The resources to conduct my study are readily accessible in open source formats. Specifically, the industrial, population, commerce, transportation, agriculture, political, and military assets of Iran are published in open sources, and the routes into and within Iran are easily determined by linking the above mentioned resource centers and by studying historical invasion routes. It is not my intention to access or analyze any secret information for two reasons. First, the type of data needed to conduct this thesis appears to be public knowledge and does not appear to require secret sources to be fundamentally

accurate. The second reason for avoiding secret information is that such use would restrict the publication and availability of this work. As a scholar and researcher, I hope to master this topic and to generate awareness on the questions of appropriate uses for US land power in the confrontation with Iran. Given these goals, restricting access to the topic is not conducive to my work.

America today is capable of influencing events in every corner of the globe. Though Iran has declared its opposition to US policy in the Middle East, Iran's ability to directly confront the US is precluded by the US's overwhelming military power in the region. Evidence of the US' ability to project power includes the concentration of five aircraft carrier groups, 200,000 soldiers and Marines, and over 800 combat aircraft for the 2003 Iraq War. Indeed, since the 1991 Gulf War, Iran has recognized that America's decision not to attack Iran is rooted in America's lack of will to confront the issues between itself and Iran, not on a lack of American power.[2]

In contrast, Iran suffers from many inherent weaknesses. First, Iran's government is structured with parallel institutions of power. Alongside the traditional parliamentary government are religious oversight institutions that have veto and policy initiation powers within the parliamentary system. The effect of these institutions is that statements by Iran's President and other parliamentary leaders may or may not have the sanction of religious leaders who ultimately control power. Second, Iran's military is weak in conventional combat systems. Specifically, Iran has almost no air force, its navy is constrained to small missile boats and shore based missiles, and the army is unevenly trained and equipped. Third, the Iranian economy is characterized by numerous production bottlenecks that make Iran's commerce both inefficient and relatively easy to

target. A fourth factor is Iran's diplomatic isolation. With no formal state allies, friendly countries who are ideologically opposed to the Iranian revolution (Syria), and multiple enemies including the world's only superpower, Iran is in a diplomatically weak position. The fifth factor of weakness in Iran is civil unrest and broad disaffection by the Iranian people with the regime.[3] With unemployment over 20 percent, lower living standards today than in 1980, and corruption by the religious leaders unchecked since the Revolution, Iran is falling behind its potential and creating conditions for mass opposition to the regime. A sixth weakness is Iran's dependence on oil. With oil constituting over 80 percent of Iran's economy, Iran depends entirely on its oil exports to sustain the economy and government budget. This is a great weakness because falling global oil prices could greatly reduce Iran's state budget, which is crucial to maintaining social programs for Iran's unemployed. A seventh weakness is the office of Iran's Supreme Leader Khameini. The office of Supreme Leader is a weakness because the mechanism for succession after he dies is untested and there is no heir apparent around whom all the factions in Iran's government can rally. The lack of an heir means that the highest position of power in Iran's government structure is up for grabs when the Supreme Leader dies. The final weakness inherent in Iran is its internal minorities and tribes. Depending upon sources, 40 to 50 percent of Iran's population is ethnically non-Persian, and the Persian majority discriminates against the minorities.[4] Though there is no serious separatist movement in Iran, official bias in Iran has created politically, socially, and economically disgruntled people who are not happy with the discrimination and marginalization they experience in their own country.

In the context of Iran's various weaknesses, Iran challenges the US only indirectly and by asymmetric means. Specifically, one lesson Iran draws from the 1991 Gulf War and 2003 Iraq War is that the US has redlines for the use of massive military force. Iran's leaders have come to see that so long as Iran does not cross a US redline, Iran can effectively pursue its interests both domestically and internationally.[5]

Regarding foreign policy, Iran appears to have four main goals: removing US influence from the Middle East; the destruction of Israel; the emergence of Iran as the regional hegemon; and the export of Islamic revolution.[6] Removing US influence in the Middle East is an Iranian goal because Iran views the US as both a foreign and corrupting influence. The US is a foreign power in the Persian Gulf due to the US' geographic location in North America. Iran's perception of the US as a corrupting presence results from its view that the US is a puppet-master controlling the governments of the Arab and Central Asian states. Viewing itself as the legitimate hegemon of the Middle East, Iran resents the US's usurping Iranian prerogatives that Iranians have assigned to themselves as Islamic Revolutionaries. Iran also views the US as a corrupting influence because the US is not Islamic, supports Israel, installed the Shah of Iran in 1953, and because of what is viewed as licentious US culture. There is a perception that the only way for a non-Islamic state like the US to have gained ascendancy is by subverting the will of God.

Tied to its goal of removing US power from the Middle East is the destruction of Israel. Viewing Israel as a colonial state overlaid on Islamic land by the US and other Western powers, Iran denies Israel's legitimacy and right to exist. Similar to its argument against submitting to US power, Iran sees Israel as an extension of US power and an intrusion into Islamic nation's affairs. Iran has seized on the Palestinian problem as an

issue where Iran can lead other Muslim states to oppose perceived US tyranny. This is an important issue for Iran because Iran's Persian ethnicity and its practice of Shia Islam separates Iran from the broader Arab and Sunni world. By uncompromisingly calling for Israel's destruction, Iran seeks to rally Islamic consciousness in support of Iranian policy goals.

Removal of US influence in the Middle East, especially if consummated by the destruction of Israel, would leave Iran as the dominant state in the Persian Gulf. Driven by memories of the ancient Achaemenid Empire, Iran seeks to recreate the power of the Empire in modern times. With the idea that Iran is entitled to dominate the Middle East just as the Persian Empire did 3000 years ago, Iranian policy seeks to eliminate the US and Israel as regional actors so that Iran will be treated as the indispensable power broker of the region.

The fourth aspect of Iranian foreign policy is the export of Islamic revolution. In the context of the 1979 Iranian Revolution, the Iranians believe the rest of the Middle East desires to throw off what is viewed as modern colonialism by the US. As evidence of this revolutionary zeal, the Iranians adopted the military conquest of both Baghdad and Jerusalem as one of their war goals in the Iran-Iraq War.[7] Having failed to march Iranian armies into the Levant during the 1980s, Iran now seeks to undermine domestic support for the Arab monarchies, indirectly oppose US power in the region, and directly support Hezbollah in its armed attacks against Israel.[8] Having succeeded in consolidating the revolution in Iran, the Iranian religious leadership has faith that Islamic revolutionary zeal is the necessary key to removing US power from the Middle East and establishing Iran as the modern regional hegemon.

Each of Iran's foreign policy goals are interrelated and nested in Iran's domestic policy goals. Domestically, Iran's policy goals include economic self-reliance, continuation of the revolution, and opposition to external threats, both real and imagined.[9] Regarding economic self-reliance, Iran does not seek to cut itself off from the global economy like North Korea. Instead, Iran seeks to develop its own internal key industries by selectively trading with regional actors and major states that are not operating in the Middle East. Iran's principal regional economic allies are Pakistan and India. Though Pakistan and India have many competing policy goals with Iran, they are willing to trade and provide technical assistance to Iran. The major non-regional actors Iran relies on include Russia, China, and in particular areas, North Korea.[10] By dealing with these non-regional states, Iran can improve its economy without drawing new competitors for influence into the Middle East. Though China or Russia might like to have direct influence in the Middle East, neither is positioned to project significant power there any time soon. A major Iranian economic goal is development of nuclear technology. Nuclear technology will promote Iran's self-reliance by freeing Iran from the need to refine oil into fuel for power and industry, and it will provide a military byproduct that may help ensure Iranian independence in the future.

Iran seeks to continue its revolution, but its leaders are increasingly unpopular due to the revolution's failure to deliver real improvement in Iranian foreign influence and domestic living standards. For this reason, Iran's leaders focus on external threats to Iran's security so that the revolutionary leadership will not lose power. Seeing themselves as divinely placed, Iran's religious leaders continue to use foreign events as the justification for holding power. Directly tied to the need to continue the revolution is the

maintenance of external threats. Iranians are historically prone to believe in foreign conspiracies to overthrow Iranian power.[11] As a result, Iran's government interprets every foreign event through the lens of effects on Iran. Indeed, even issues that are not related to Iran directly will be interpreted for malevolent intent towards the Islamic Republic.

Because it lacks conventional military power, Iran seeks catastrophic and disruptive technologies that may allow Iran to challenge the US for hegemony in the Persian Gulf and Middle East regions. As a developing state, Iran lacks the physical and human infrastructure needed to create disruptive technologies, but it does posses the sophistication to master the catastrophic technologies associated with nuclear weapons and their means of delivery. Once Iran gains nuclear weapons and missiles capable of carrying atomic weapons, the balance of power in the Middle East will be less favorable to the US and its allies. In this context, President Bush has declared that Iran will not be allowed to acquire nuclear weapons.[12] The stated position of the President indicates that war between the US and Iran is a possibility in the next two to ten years. In addition, other events could lead to armed conflict between Iran and the US. These events include Iranian or Hezbollah attacks on Israel, Iranian backed terrorism directly against America or American interests, and Iranian coercion against an Arab Gulf state. In the recent example of Iraq, the US invaded that country in order to prevent Iraq from acquiring and then using WMD against the US or her allies. In the Iraq example, an invasion was necessary in order to bring about regime change because deterrence and the United Nation's sanctioned no-fly zones were deemed incapable in the long-term of completely securing US interests. If similar logic is applied to Iran, then the most certain way to

secure the US long-term interests is through a military ground option. Indeed, if air strikes can only postpone Iran's acquisition of nuclear weapons, then the US must consider a ground option to prevent Iran from acquiring nuclear weapons in the long term. There are three ground options the US might use: a special operations raid against nuclear sights; a ground strategic raid against the nuclear sites; or a conventional invasion seeking regime change in addition to the destruction of Iran's nuclear facilities. An important problem with the first two options is that Iran will have the initiative to continue or terminate the conflict. If the Iranians will seek to terminate the conflict quickly, then the consequences of attacking Iran are minimized. If Iran decides to prolong the conflict, then an attack on Iran could involve the US in an extended and costly military campaign. Iran has many options for retaliation against an attack. These options include Hezbollah attacks against Israel, inflaming the Iraq and Afghanistan insurgencies, attacking Middle East oil facilities, conducting terror attacks beyond the Middle East, blocking the Strait of Hormuz, threatening regional governments, launching suicide attacks, and seeking Syrian involvement in actions against regional US interests.[13] The key factor for each of these reactions is that they are unconventional and asymmetric. In the context of a ground attack, Iran's retaliatory responses could make the war politically difficult to sustain and would widen the conflict beyond just US and Iranian actions. Despite these consequences, none of Iran's potential responses would prevent the US from achieving its anti-proliferation or regime change goals. Therefore, when evaluating the utility of a land attack against Iran, the questions of retaliatory effect must be judged against the perceived utility of achieving the primary goal of the ground attack.

Is there a military ground option that the US can employ against Iran that is feasible, acceptable, and suitable? To answer this question, a number of secondary questions must be examined. What is Iran's Center of Gravity? If an invasion is to achieve regime change and long-term stability, understanding Iran's center of power is critical. What are Iran's political, economic and military strategic decisive points? These points are important to know in any scenario, but the critical questions for a limited war objective are, what facilities in Iran's nuclear program are most critical to continuing the program, which are most easily damaged, which can be damaged for the longest period of time? What are Iran's major transportation routes and port facilities? These two questions determine the invasion routes that can be logistically supported. What armed forces can Iran employ and how quickly can Iran mobilize? This question will determine the force ratios and operational tempo that must be achieved for a ground war in Iran. What are Iran's retaliatory options if invaded by the US? This question will determine what sort of damage Iran could do to the US and if those costs would be acceptable. What should the US war aims be? This question will determine whether the US should pursue a limited war to destroy Iran's nuclear capability or if the US should pursue the larger goal of regime change. Ultimately, the question for appropriate war aims must also address whether a ground war is the suitable way to achieve the US' desired end state.

Strategic Raid Option

Under what conditions would a strategic raid against Iran's nuclear facilities be feasible, acceptable, and suitable? This question directly addresses the limited ground war option. If the US can attack Iran's nuclear facilities, destroy them, and somehow limit the spread of the conflict, would this outcome be preferable to the various

alternatives? The alternatives are generally listed as concluding a comprehensive diplomatic agreement, containing Iranian power with sanctions and alliances, relying on deterrence after Iran has developed nuclear technology, using airpower to damage Iran's nuclear facilities, and destroying Iran's government in order to establish a new regime. A diplomatic initiative, followed by deterrence and containment if the diplomacy fails, is a course of action favored by those who think Iran's leaders can be dealt with and that war is the worst solution possible. Sanctions and containment are options, but they are weak options because Iran is self-sufficient in nuclear material and knowledge, and its economy is strong enough to mitigate the effects of most sanctions. The deterrence option is a possibility grounded in the experience of the Cold War. The main argument against deterrence is that Iran may not be deterrable due to the religious and opaque nature of its government. The air power option has the strengths of being likely to succeed against known targets and relatively low risk in terms of US casualties. The main problems with airpower are that unknown facilities will not be attacked, and damage assessment of underground targets will be extremely difficult to discern and verify. The limited ground options resolve the issues of damage assessment that hamper the air option, but they leave unresolved the issue of secret or unknown facilities. The regime change option is the most expensive option in terms of human and financial costs, but it is the most certain to find and destroy all of Iran's nuclear facilities.

Understanding the history between the US and Iran, especially in the past 30 years, is vitally important to understanding the current conflict over nuclear technology. Since the Iranian Revolution in 1978, Iran has combined anti-colonialism with Islamic radicalism in the hope of transforming the Middle East. Two central problems concern

Iran's anti-colonial stance. These problems include the existence of Israel and the dominance of the US in the Persian Gulf. Iran has developed a terror network in Lebanon and the Palestinian Territories in conjunction with Syria in order to apply military, political, and economic pressure on Israel. Viewing Israel as a colonial occupation in the Middle East, Iran believes that Israel's will to remain a state can be worn down over time. Regarding the US, Iran views the US as the primary external factor that empowered and maintained the corrupt Shah Reza Pahlavi prior to the Iranian Revolution. The role of the US as the "Great Satan" in relation to the Iranian Revolution is central to maintaining revolutionary fervor in Iran and hence maintaining the Iranian theocracy in power. In addition, as the largest state with the most diversified economic base in the Persian Gulf, Iran recognizes that it could be the dominant power in the Persian Gulf if the US were forced out of the region. Lacking the conventional power to challenge the US, Iran has begun development of nuclear technology under the assumption that the possession of nuclear weapons will level the power imbalance between Iran and the US, and perhaps create a situation where the US will be forced to reduce its presence in the Persian Gulf.

Under the Nixon Doctrine, the US identified Iran as its preferred ally in the Persian Gulf. After the Iranian Revolution, the US acted to undermine the newly hostile regime in Tehran, most notably by arming and supporting Iraq in the 8 year long Iran-Iraq War. US hostility to Iran during the Iran-Iraq War signaled to the Iranian leadership that the US sought the regime's destruction, the Iran-Contra arms-for-hostage deal notwithstanding. At the end of the Cold War, the US settled for a status quo situation in the Persian Gulf until the terrorist attacks of 11 September 2001. Since that date, the US has identified Iran as one of its three primary hostile powers in the world, and the US has

demonstrated that it seeks the destruction of the regimes in those states by invading and occupying Iraq. On 22 September 2006, President Bush reiterated his position that Iran cannot be allowed to acquire nuclear weapons, and that all means are being considered to prevent Iranian progress in the nuclear field. Given the uncompromising position of Iran to develop a nuclear weapon and the policy trend in the Bush Administration since September 11 to seek regime change of America's enemies, it is reasonable to explore all military options, including ground options, if a war with Iran were to commence.

Limitations and Delimitations

There are two main limitations to this thesis, the country to be analyzed and the factors to be analyzed. Iran is the only country that will be analyzed for this thesis. Though many states surrounding Iran will be critical as bases, it is beyond the scope of this paper to investigate every potential logistic, transportation, and communication hub that would be necessary for the US to project decisive power against Iran. The second main limitation is the narrowing of significant military objectives. This thesis will address the major political (population and government centers), economic (industry, transportation, communications, energy), and military (bases, WMD installations) infrastructure that would be critical to Iran's war making ability, or that would provide the US with decisive advantages if they were seized. By identifying the major centers of power in Iran, discovering the routes that connect them is a straightforward process that will suggest the likely axis of advance in a campaign plan against Iran.

In delimiting my thesis, I will not address major questions of allied or regional context. Though I fully recognize that an invasion of Iran would not occur in a vacuum, I must assume the support of regional and global enablers (Germany, Saudi Arabia, etc), as

well as noninvolvement against US actions by regional and global opponents (al Qaeda, Russia, etc) to an invasion. Specifically, I will not address the potential for the conflict to spread or to affect other areas of US interest such as trade policy or the Israel-Palestine conflict. I also will not explore global economic or energy consequences, as these questions are beyond the scope of this paper. Additionally, this thesis will not address the specific capabilities required to conduct an invasion. Specific capability requirements are delimited because they would require potentially secret or sensitive operational and asset data that would restrict my ability to discuss and publish this thesis. Other delimitations are the questions of naval, airpower, deterrence, or diplomatic actions. Though these other options are probably more preferable than a ground attack, they are already well researched and advocated by a variety of sources.

In writing my thesis, I hope to do an original study rather than re-look analyses already completed by a number of other researchers. Though the ground options have been addressed by a number of scholars, no one has yet explored the ground options in depth and proposed what the actual costs and benefits of a ground option might be. Further delimitations include questions of political or diplomatic feasibility. The starting point for my analysis is a situation where the political decision for a ground option has already been made. Presumably, the diplomatic groundwork would be in place to facilitate the ground option. This delimitation assumes the support of key European and Middle Eastern allies, especially the NATO nations and Saudi Arabia. The NATO nations would be critical for all the support, basing, and over-flight rights that would be needed to sustain ground forces in Iran. The support of Saudi Arabia would be needed to get the support for invasion from the various Gulf states were the US has bases. In this

context, this thesis seeks only to provide options for what the US can do. The question of what the US can do is further delimited to focus exclusively on destroying Iran's nuclear capability. By defining the political goal as destruction of Iran's nuclear capability, the ground options developed can be focused on specific targets and objectives, thereby greatly limiting the potential length and scope of this thesis while simultaneously enhancing the depth of analysis and research.

The focus of my thesis is to understand and explain how the US can act if a ground war is selected as the method to achieve nuclear disarmament in Iran. Throughout the research for this thesis, I have encountered numerous advocates for diplomatic solutions, deterrence strategies, and airpower options. Universally, ground options are mentioned and then dismissed without analysis. The primary reason given for dismissing the ground option is the high costs associated with ground wars. Though this thesis does not contend the high cost assumption, it will quantify the costs to some degree. Additionally, this thesis will explore the quality of result that a ground option can bring relative to the other military options. By using the extensive research on airpower solutions as a baseline for comparison, this thesis can evaluate the effects of a ground option in terms of both costs and benefits.

Assumptions

In order to write a coherent paper, there are a number of assumptions that must be made. The first assumption is that Iran will not stop its nuclear development and all efforts to forestall Iran's acquisition of weapons grade fuel will fail. The ability to make weapons grade fuel appears to be the major issue leading to war between the US and Iran, though Iran's support of terrorism against Israel is also a relevant factor given the GWOT

and the US National Security Strategy to destroy international terror organizations and the states that sponsor them. By relying on weapons grade fuel development as the *casus belli*, it must be assumed that all other forms of persuasion to prevent military action have been exhausted. Closely related to this assumption is the limitation that the political choice for a ground option to eliminate this capability has been made.

The second assumption is that air strikes on Iran's nuclear facilities will not neutralize the facilities in the long-term, and air attacks will inspire Iranian nationalism against pro-US change. It may not be possible to damage Iran's facilities beyond repair by air strikes alone, and such an attack would likely harden the Iranian resolve to develop nuclear weapons. If air strikes cannot guarantee a high degree of assurance that Iran's nuclear program will be significantly damaged and delayed from progressing, then a ground option is necessary to achieve the needed level of assurance.

The third assumption is that the leadership of the US does not believe deterrence is a preferable solution to the Iranian nuclear challenge. Deterrence, including regional alliances, economic sanctions, and diplomatic isolation, are unlikely to deter a large and expanding power like Iran. This assumption is reasonable given that the populations they target generally view sanctions as hostile acts, and sanctions rarely affect the governments of the targeted states. As regards deterrence after Iran acquires nuclear technology, Iran may not be deterrable, it may use nuclear blackmail against its regional neighbors, and Iran's proliferation may encourage a nuclear arms race by the other Middle Eastern powers that are not currently in the nuclear club. Alternatively, countries such as Saudi Arabia and Egypt could seek to bind themselves to the US and gain security assurances under the US nuclear shield. The problem with this solution is that

the US could be drawn into a regional conflict where its forces and allies would be at risk of nuclear attack. A final consideration against deterrence is that Iran is already in a highly isolated diplomatic position. Without any allies whom it trusts, Iran is unlikely to bend to diplomatic pressure from its enemies.

The fourth assumption is that President Bush's statement that Iran cannot be allowed to have nuclear weapons indicates a willingness to use ground forces to prevent Iran from acquiring nuclear weapons. This assumption is directly linked to the air strikes and deterrence assumptions. Only a ground force can positively destroy Iran's nuclear facilities. If the will to prevent Iran acquiring a nuclear weapon is strong, then the ground option must be considered.

A fifth assumption is that Iran's development or imminent development of weapon grade fuel is the redline that will move the US political leadership to decide on war. Because Iran has already acquired the fuel cycle, the development of weapons grade fuel is a relevant redline to use. Though knowledge of the fuel cycle makes it feasible for Iran to develop a nuclear weapon, the threat of a nuclear weapon being used does not actually arise until the required quantity of fuel and level of enrichment is achieved.

The sixth assumption is that US intelligence does not know the location of every Iranian nuclear facility and therefore must consider options beyond just striking known nuclear facilities. This assumption is important because the uncertainty about Iran's real capabilities is a critical decision point both for initiating military action and for targeting once military operations commence.

A final assumption is that the US military will overmatch the Iranian military in any conventional conflict. This assumption is reasonable given the performance of

Iranian forces against Iraq in the Iran-Iraq War and the intelligence estimates of Iran's current military forces. The best estimates of Iranian military competence are that Iran's ground forces are no better led or trained than they were 30 years ago, with the notable exception of the Pasadran and some special operations forces. Without experience in major combat since 1988, there is no evidence to suggest that Iran's military has improved its capabilities.

Explanation of Terms

When discussing the question of military ground action in Iran, it is important to clarify some key terms. A "Center of Gravity" is the military or political element that by itself unhinges a state's ability to resist. In military terms, it is normally the main field army of a state. Politically, the center of gravity can be the will of the nation's people to continue the struggle, the capital city, or the ability or willingness of the government to continue the fight.

"Strategic Centers" are different from the center of gravity in that they are a geographical area that, if controlled, will have a material, but not decisive, outcome on the war. These areas normally include the industrial centers of a country, but they may also include key transportation hubs, communications centers, or population centers.

"Axes of Advance" are the major routes through which military formations can move, maneuver, and deploy for action. An axis of advance will have transportation infrastructure for receiving, storing, loading, and moving heavy military hardware at the terminals. The axis of advance itself will be capable of allowing brigade or larger formations to advance in deployed order.

The “nuclear fuel cycle” is the ability to produce nuclear fuel that is useful for energy production or for creating an atomic bomb. A uranium fuel cycle is one where uranium ore can be refined into uranium metal and then gasified for refinement into nuclear fuel. Nuclear fuel at a low level of refinement (about 5 percent) is suitable for reactor fuel. Nuclear fuel must be refined to a high degree (at least 85 percent) before it is weapons grade. The plutonium fuel cycle is where uranium in a reactor (most commonly in a heavy water reactor) generates plutonium as a by-product of nuclear power generation. The plutonium can then be extracted from the reactor and fashioned into weapons grade fuel.

“Weapon development” is the development of an atomic bomb. Weapon development is difficult to distinguish from the fuel cycle except by oversight of international inspectors who can evaluate levels of fuel refinement.

“Decisive operations” are military operations that impose one’s will such that the opposing side cannot resist. In the context of this paper, a decisive operation is one that would cripple Iran’s nuclear weapon development for a long period (more than 5 years) or that would overthrow Iran’s government.

The term “operations” refers to a series of attacks or battles linked in time and space to achieve a strategic goal.

In contrast, a “campaign” is a series of operations linked in time and space to achieve a strategic goal.

The term “seize” means to physically occupy a geographic space and control that space with military forces. Seize is usually contrasted with secure which means to control by occupation, fire, or observation.

"Hegemony" is meant to indicate the quality of influence by a dominant state that no combination of competing powers can directly or immediately challenge. The hegemonic state is indispensable to the security, economic well-being, and diplomatic process of its region. As such, the hegemon's policy preferences must be considered by all regional states when they formulate their own policies.

The term "asymmetric" refers to an action that avoids an opponent's strength. Asymmetric threats seek to employ inferior forces concentrated for local superiority to destroy an opponent's weak point. Two terms that deal with modern military threats are "catastrophic" and "disruptive" technologies. A catastrophic threat is one that can destroy such a large or valuable asset that that the loss would cripple the side that lost it. An example of a catastrophic threat is a nuclear weapon that can be delivered to a city. The loss of an entire city, to include its population, industrial capacity, transportation centers, and the moral effect on survivors would be a catastrophic loss. In contrast, a disruptive threat is one where the attack causes disruption of major systems without necessarily destroying major infrastructure or mass killing of people. Examples of disruptive attacks include the destruction of communications satellites or the use of computer viruses to cripple computer systems.

Three situations could obviate my thesis or render it incomplete. First, events could overtake my research. It is possible that an invasion of Iran could occur in the coming year, and if it did, then the actual movements would render my research redundant. This problem is unlikely given that it would probably take longer than the time between November 2006 and June 2007 to organize an invasion. The second problem would be if Iran acquired an ally. Though this eventuality would complicate my

analysis, it would not be fatal since I could do additional research to account for a secondary theater of operations or increased force ratios in the Iran theater. Finally, the thesis could be rendered obsolete if Iran were to have a political change that ended Iran's confrontational relationship with the US. There is no reason to think this may happen before June 2007, but if it did, then this thesis would be reduced in its relevance, though the analysis would still be of use as an unclassified educational tool for understanding Iran as an area of operations.

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[1]Sam Gardiner, *The End of the "Summer of Diplomacy,"* The Century Foundation, April 2007 5.

[2]Kenneth M. Pollack, *The Persian Puzzle*, New York, Random House Trade Paperbacks, 2005, 255.

[3]Ibid., 317.

[4]*CIA World Fact Book*, Iran, internet https://www.cia.gov/library/publications/the-world-factbook/geos/ir.html, accessed 18 November 2006.

[5]Pollack, 255.

[6]Ibid., 244.

[7]Ibid., 310.

[8]Ibid., 254.

[9]Ibid., 253.

[10]Ibid., 324.

[11]Ibid., 383.

[12]President George W. Bush, Meeting with Afghan President Kharzai,1 March 2006, internet http://www.forbes.com/finance/feeds/afx/2006/03/01/afx2561016.html, accessed 13 October 2006.

[13]Gardiner, 14-17.

CHAPTER 2

LITERATURE REVIEW

If air strikes can only postpone Iran's acquisition of nuclear weapons, then the US must consider a ground option to prevent Iran acquiring nuclear weapons in the long term. Is there a military ground option that the US can employ against Iran that is feasible, acceptable, and suitable? Answering this question requires an in depth review of current literature dealing with the Iran-US relationship. The depth of literature about Iran in the past three years is good. At least three major books have been written about Iran. These include *The Persian Puzzle* by Kenneth Pollack, *Hidden Iran* by Ray Takeyh, and *Modern Iran* by Nikki Keddie. A fourth book, *Persian Mirrors* by Elaine Sciolino, is valuable for understanding Iran in a social context, though it is at bit dated, having been published in 2000. In addition, there are two books that help explain the context of Middle Eastern politics. These two books include *A Concise History of the Middle East* by Arthur Goldschmidt and Lawrence Davidson, and *Arabs at War* by Kenneth Pollack. In addition to these main sources, there are a plethora of tertiary sources about Iran and its political and military relation to the US. These books include *Iran: Dilemmas of Dual Containment* by Anthony Cordesman and Ahmed Hashim, *The Political History of Modern Iran* by Mehran Kamrava, *Iranian Perspectives on the Iran-Iraq War* by Farhang Rajaee, and *Sword Point* by Harold Coyle.

Beyond the books, there are multiple sources of literature about Iran and potential US policy towards Iran. These sources include magazines, newspaper articles, US Government reports, consulting group and think tank position papers, interviews and

symposiums, and commentaries from various media sources to include Strategy Research Papers (SRP) and monographs.

This chapter will address the current state of publications on the topic of Iran and the US' potential ground options against Iran. I will begin by identifying the key works in each category of publication and then providing a synopsis of the general trend of scholarship from that source, as well as an estimation of the utility of each work to my investigation. Once the framework of the publications is established, I will evaluate the total body of literature to include an analysis of the overall trends in scholarship, how those trends have affected my study, and what potential impact my study may have on the total body of knowledge.

Books

I will begin my literature review with a brief description of the three main books that are central to my topic research, namely *The Persian Puzzle* by Kenneth Pollack, *Hidden Iran* by Ray Takeyh, and *Modern Iran* by Nikki Keddie. Once I have described these three books I will briefly summarize the relevance of the remaining books on my literature review list. At the end of my book review, I will evaluate the main trends of the book literature.

The Persian Puzzle by Kenneth Pollack is a comprehensive look at the US' relationship with Iran and analysis of how this relationship can be managed. *The Persian Puzzle* begins with a brief history of Iran and its Persian heritage. From the historical foundation, the book builds on the relationship between the US and Iran under the Shah from World War II until the Iranian Revolution in 1979. The bulk of the book focuses on the Iranian Hostage Crisis, America's relationship with Iran during the 1980s to include

the Iran-Contra scandal and the Iran-Iraq War, and the tortuous political relationship between the US and Iran in the 1990s and early 2000s. In the end, Mr. Pollack recommends a new policy of "Triple Track" engagement. The first track of the Triple Track entails a continuation of the current policy of offering Iran a "Grand Bargain" to comprehensively resolve all the problems between the US and Iran. The second track involves a carrot and stick approach whereby the US offers trade and economic benefits while leading a diplomatic effort to get the Europeans, Russians, Chinese and Japanese to implement sanctions in the event of bad Iranian behavior. The third track involves accepting Iran's acquisition of nuclear weapons and building a regional containment regime that boxes-out Iran from achieving its wider regional hegemonic aims. The key conclusion regarding my research topic from *The Persian Puzzle* is that no military solution exists that is preferable to dealing with Iran as a nuclear state and regional challenger to US dominance, with the notable exception of a situation where Iran attacked the US or its allies on a scale comparable to 9/11.

Hidden Iran by Ray Takeyh explores the US' relationship with Iran from a two-level game theory perspective. *Hidden Iran* suggests that most of Iran's international behavior can be explained as resulting from Iran's internal power struggles. Power struggles inside Iran are fought between three main groups, the hardliners, the reformers, and the pragmatists. *Hidden Iran* argues that Iran's belligerent and rejectionist international behavior is explained by observing the internal power struggles inside Iran. Specifically, when Iran's hardliners need to build ideological support, they increase international tension in order to undercut the pragmatist and reformer factions within Iran. Ultimately, *Hidden Iran* argues that if the US properly understands Iran's

leadership, then the US will focus on economic, political, and diplomatic solutions to their differences with Iran instead of threatening military force or resorting to a confrontational containment policy.

Modern Iran by Nikki Keddie is primarily a social and political history of Iran, but it has an extensive portion about modern political developments and evaluations about how Iran can be understood in light of the current Ahmadinejad government. The relevant potion of the book focuses on the post-Khomeini period with emphasis on the political developments and economic stasis that has characterized Iran for the past 15 years. Politically, *Modern Iran* asserts that the election of Khatami in 1996 is the defining event in post-Khomeini Iran because Khatami represented a rejection of the hard-line social and ideological control of the Khomeini period. The replacement of the Khatami government by the Amadinajad government is primarily a rejection of Khatami's limited economic and social reforms rather than an affirmation of the hard-line agenda. Economically, Khatami promised reform and a focus on the poor in Iran, but the power of the mullah dominated bonyads and other entrenched economic interests' stifled reform. Indeed, the rise of world oil prices in the past 5 years has taken pressure off the Iranian regime to reform and consequently resulted in building frustration among the mass of Iranian people. Viewed in this light, *Modern Iran* asserts that Iran is not the aggressive ideological state that it was 15 years ago, and that, in any case, the governments of Khatami and Amadinijad are not the relevant power centers for nuclear or foreign policy. Instead, *Modern Iran* asserts that Supreme Leader Khamenei and Expediency Council leader Rafsanjani are the real foreign and nuclear policy makers and that they are both pragmatists who will not follow ideological positions such as anti-

Israelism or anti-Americanism to the extreme of Iranian national self-destruction. As a result, *Modern Iran* reinforces the message that if Iran does acquire nuclear weapons, it is a state that can be deterred and dealt with like any other. In addition, *Modern Iran* makes the argument that the trajectory of Iran's leadership and political evolution is towards increased reformist and pragmatist policy, both domestically and internationally.

Having explained the focus of the three main books, I will now describe the relevance of each of the remaining books in my book review. *Persian Mirrors* is a compilation of images and impressions about Iran collected by the author over about 20 years of experience living and working in Iran. The main message of the book is that Iran is not a monolithic enemy of the US. Instead, Iran is a kaleidoscope of various cultures and civilizations ranging from the ancient Persian, through the Islamic, and into the modern and Western. The author seeks to express the complexity of Iran so that a better understanding of Iran can one day lead to a better relationship between Iran and the rest of the world. *Persian* Mirrors is valuable to my thesis study because it illuminates Iran and Iranian motivations from a perspective not found in the other main sources. A *Concise History of the Middle East* by Arthur Goldschmidt and Lawrence Davidson focuses on how history has molded the modern Middle East and contributed to the main conflicts of Arab Nationalism, the Israeli-Palestinian conflict, and the problem of Islamic terrorism. *A Concise History of the Middle East* provides a historical context in which to evaluate Iran and the regional conflicts that shape Iran's foreign policy.

Arabs at War by Kenneth Pollack is a comprehensive review of the main Arab states and the performance of their armies in the post World War II era. Observing that Arab armies have uniformly performed poorly in the modern era, Mr. Pollack seeks to

distill the political, social, and economic basis for the broad experience of military ineptitude. *Arabs at War* provides a view of Arab culture and Arab militaries that may or may not be relevant to evaluating Iran's military ability in a future-armed conflict.

In addition to these main sources, there are a plethora of tertiary sources about Iran and its political and military relation to the US. These books include *Iran: Dilemmas of Dual Containment* by Anthony Cordesman and Ahmed Hashim, *The Political History of Modern Iran* by Mehran Kamrava, *Iranian Perspectives on the Iran-Iraq War* by Farhang Rajaee, and *Sword Point* by Harold Coyle. *Iran: Dilemmas of Dual Containment* is a highly relevant book that discusses the full range of policy regarding Iran from the perceptions of sanctions by US allies against Iran, to the structure and capability of Iranian conventional forces, to the structure and threat posed by Iranian nuclear weapons and delivery systems. *The Political History of Modern Iran* is valuable mainly due to its insights into the various factions that constitute Iranian politics, and for its understanding of the political culture of Iran. This perspective is relevant to evaluate the threat posed by the current and potential future leaders of a nuclear-armed Iran. *Iranian Perspectives on the Iran-Iraq War* is a valuable addition to the literature on Iran because it provides a perspective on the Iran-Iraq War that is difficult to discern from other sources. Specifically, *Iranian Perspectives on the Iran-Iraq War* presents the war and the involvement of foreign powers in the war from the Iranian perspective. The perspective given in *Iranian Perspectives on the Iran-Iraq War* is useful in evaluating Iran's perceived worldview and threat environment in light of US pressure on Iran regarding the nuclear and other foreign and domestic policy issues. *Sword Point* is a fictional account

of a US – Soviet war fought in Iran. This book is also useful as a blueprint for how a US invasion of Iran might be conducted.

Evaluating the overall trend of books related to Iran, it is evident that most book authors see Iran as an evolving society with a general political trajectory towards pragmatism. Having failed to deliver the economic and social benefits imagined by an "Islamic" political system, the leaders of Iran are increasingly listening to the voice of the mass of people who are calling for greater reform in social, economic, and political systems. The people of Iran consistently vote for reform or anti-status quo candidates in Iranian elections. The election of the conservative President Amadinijad in 2005 can be seen in this light as a vote against the inept and eventually unsuccessful reform efforts of former President Khatami. In addition, all the book sources agree that Supreme Leader Khameni is a pragmatist and that he is the ultimate authority in nuclear and foreign policy within Iran. Invariably, the book authors support some variation of diplomatic, political, and economic pressures or enticements towards Iran, though there is some disagreement about how effective this enticement may be. Another common theme was that American government opinion or action is reflexively rejected by Iranian hardliners, and that expressions of American support for anything related to Iran immediately undercuts the efforts of domestic Iranian advocates for a less confrontational foreign policy. Regarding my thesis topic, the book authors are unanimously against military action as a solution to the Iranian challenge to US interests in the Middle East.

Magazine Articles

Having identified and evaluated the books dealing with Iran, I will now address the magazine articles that are relevant since summer 2006. Five magazine articles have

significance to my thesis topic. These five articles are *The Revenge of the Shia*, by Martin Walker in The Wilson Quarterly, *What War With Iran Would Look Like,* by Scott McLeod in TIME, *Iran: A Minority Report*, by Graeme Wood in The Atlantic, *Buying Time in Tehran,* by Afshin Molavi in Foreign Affairs, and *How to Keep the Bomb From Iran,* by Scott Sagan in Foreign Affairs. In *The Revenge of the Shia*, the author asserts that people of Shia faith in general and the Iranians in particular, are gaining strength politically, economically, and socially throughout the Middle East. Juxtaposed with the recent history of Sunni domination over Shia minorities, the rise of the Shia reflects the influence of Western ideas of self-determination as well as a historical narrative of increased Shia power in all categories of society. The recent history of Shia minority groups exerting themselves against the colonial constructs of Sunni domination, coupled with the success of Iran's revolution and the recent destruction of Iraq, one of the leading pillars of Sunni power, indicates a revolutionary period is dawning that may lead to wider regional and factional war.

What War With Iran Would Look Like is an analysis of an air strike or an invasion of Iran. The article evaluates both plans and concludes that the US is capable of conducting either operation. The caveat to a US military action is the question of what the aftermath would hold. The article reflects the conventional wisdom of the Iraq War that making the peace after a war may be more difficult and more painful than the invasion. Even more troubling, the article asserts that the cost of rebuilding stability after a war with Iran is not justifiable, given the objectives that a military option would seek.

In *Iran: A Minority Report*, the question of Iran's ethnic minority groups is raised. Though Iran's borders are not seriously threatened, the article asserts that Iran's internal

stability can be questioned given the lack of central control that Tehran exerts over its eastern desert region, the ethnic Arab Shia in Iran's southwest, and the large Azeri population that dominates the northwest. The article raises the question of whether the Iranian state can maintain control of its territory if the power of Iran's central government were ever seriously challenged.

Buying Time in Iran addresses the problem of limited social, political, and economic opportunity in Iran. The author argues that Iran faces enormous challenges if it cannot modernize and globalize in a manner similar to how Communist China has adopted economic liberalism as a blocking mechanism to allowing political expression. This article is relevant because it highlights the internal weakness of Iran's economy and social model in the context of the theocracy seeking to retain power.

How to Keep the Bomb From Iran addresses Iran's nuclear ambition as a problem that can be resolved by addressing Iran's underlying security and economic concerns. The author contends that deterrence of a nuclear Iran is undesirable because Iran's revolutionary nature may not be deterrable, and that containment is not likely to work because a nuclear-armed Iran will be too confident and dangerous to confront over any but the most important issues of US interest. Therefore, the author suggests a regime similar to the 1994 Agreed Framework with North Korea as a model for how to prevent Iran from going nuclear, with due regard to avoiding the weaknesses of the Agreed Framework itself.

The five magazine articles express a more diverse range of opinion than the books I reviewed. The dominant theme of the articles is that war with Iran is too dangerous to contemplate seriously. Therefore, determining how to prevent Iran's acquiring nuclear

weapons is the best option, and the second best option is some type of deterrence regime or containment strategy that accepts living with the danger of a nuclear-armed Iran.

Having identified and evaluated the magazine articles dealing with Iran, I will now address newspaper articles that are relevant to my thesis. There are two newspaper articles to include "Bush's Message to Iran," by David Ignatius in the *New York Times*, and "Islam, Terror and the Second Nuclear Age," by Noah Feldman in the *New York Times*.

In "Bush's Message to Iran," respect for the Iranian people and Iran's sovereignty are the central themes. Based on an interview with President Bush, the author communicates the US' intention to resolve the Iran nuclear issue through diplomacy and in the context of the "Grand Bargain" framework that has been offered by every American President since Ronald Reagan. The article also addresses American red lines concerning Iranian actions, but the article does not address the specifics of those red lines or what sanctions might result from Iran's crossing them.

In "Islam, Terror and the Second Nuclear Age," the author draws a connection between Iran's acquiring a nuclear weapon on once side, and proliferation pressures on Arab states, the effect suicide bombing has on deterrence theory, the legal basis of war in traditional Islam, and the maintenance of the US in a dominant position in the balance of power. By recognizing the power implications of Iran's acquiring a nuclear bomb, for both Arabs and Americans, the author illuminates the real danger that proliferation poses to the US as a regional and global actor. This article is relevant because it addresses American security needs in the medium and long term as reasons to act against Iranian nuclear proliferation today.

The theme of the newspaper articles is more skeptical of Iran's intentions than the book or magazine opinions were. Though they do not address the question of American military action, the articles do address the main issue being contested, namely Iran's continued nuclear development and the redline the US claims exists around that issue.

I will now address the US Government reports that are relevant to my thesis. These three reports include the speech, "Iran's Nuclear Ambitions: Two Paths to the Bomb, Another Path to Peace" by US Ambassador to the IAEA, Gregory Schulte on 13 November, 2006; a report to Congress by Under Secretary of State for Political Affairs Nicolas Burns titled "Responding to Iran's Nuclear Ambitions: Next Steps," on 19 September, 2006; and a report titled "Iran: U.S. Concerns and Policy Responses," by Kenneth Katzman of the Congressional Research Service, 31 July, 2006.

Ambassador Schulte's speech lays out the US' suspicions about Iran's nuclear intentions to build either a uranium or a plutonium based bomb, and what effects Iranian acquisition might have on politics in the Middle East. The speech concludes with a reaffirmation of the US' offer to Iran of various diplomatic and economic benefits if Iran abandons the quest for nuclear weapons. This speech is relevant to my thesis because it explains American policy towards Iran as of November 2006.

Under Secretary Burns' report to Congress describes the crisis over Iran's nuclear program that caused United Nations Security Council action this past summer (2006) and what alternatives to conflict the US has offered to Iran. The report then links Iranian support for terrorism, both regional and global, with Iran's human rights violations against its own people. The report concludes by recognizing Iran as a critical threat to the US' interests and stating that Iran's choice of isolation must be enforced by the US and

the world community in order to impress Iran with the costs of defiance. This report is relevant to my thesis because it specifies the confrontational nature of current US and Iranian relations.

The CRS report for Congress addresses efforts by the Bush Administration to limit Iranian nuclear development, reduce Iranian support for Hezbollah against Israel, and Iran's influence on the development of the new Iraqi state. While also addressing the issue of human rights in Iran, the report focuses on the diplomatic and economic tools being used to try to change Iranian policy towards American interests in the Middle East. The report also mentions the possibility of using military force to prevent Iran from acquiring nuclear weapons, rather than trying to live with the consequences of a nuclear-armed Iran in the long term. This report is relevant to my thesis because it provides and in-depth look at the internal workings of Iran's political, economic and military systems. This report is also important because it contains a wire diagram and description of Iran's government.

The general theme of the government reports is that Iran is a genuine threat to US interests. Though none advocates military action against Iran, they all mention the military option only as a response to Iranian nuclear developments. Each report mentions human rights violations, opposition to the Israel-Palestinian peace process, and support for terrorism as elements of Iran's behavior that deserve rebuke by the US and the international community.

I will now address the consulting group and think tank position papers that are relevant to my thesis. I will address five papers. The first two papers include "Iranian President Amadinijad, Islamic Eschatolgy, and Near-Term Implications," by Chuck

Vollmer, and “Democracy, Terrorism, and Nuclear Weapons,” by Stephen Zunes. The second two papers I will review are “Judging the Iranian Threat,” and “Iranian Nuclear Weapons? The Uncertain Nature of Iran’s Nuclear Programs,” both by the Center for Strategic and International Studies.

In “Iranian President Ahmedinejad, Islamic Eschatology, and Near-Term Implications,” Mr. Vollmer explores the religious views of President Ahmedinejad, the Islamic eschatology myth, and the potential impact that President Ahmedinejad could have on Iranian policy. The emphasis of Mr. Vollmer’s presentation is on the potential for a worst-case scenario if Iran acquired nuclear weapons while President Ahmedinejad or someone like him was in power. Mr. Vollmer’s presentation is important to my thesis because it clarifies the argument that religion is an important factor in determining Iran’s intentions and what the implications of such a development could be.

“Democracy, Terrorism, and Nuclear Weapons” explores the three main criticisms of Iranian policy including “suppression of political freedom, support for terrorism, and its nuclear program.” The paper then places these Iranian policies in the context of Iran’s defense needs and US hegemony in the Middle East. Ultimately, the paper concludes that Iran’s policies, especially its pursuit of nuclear weapons, would be the same regardless of what kind of government exists in Iran. The implied conclusion of this position is that regime change, however it might restrict anti-Americanism, would be unlikely to restrict Iran’s broader political and regional goals. This paper is relevant to my thesis because it explains the undesirability of a regime change solution to Iran’s policy direction.

"Judging the Iranian Threat" is a series of 20 questions that define the issues surrounding the nature of Iran's threat to the US and Iran's regional neighbors. By examining the various questions about Iran and the threat it posses, the study aims to clarify the debate and focus the potential policy choices that are considered relevant. This study is relevant to my thesis because it provides a good framework for narrowing the questions about Iranian action and motivations. By understanding, or at least judging, the Iranian threat, I can greatly reduce the scope of my analysis to focus on the most relevant issues.

"Iranian Nuclear Weapons? The Uncertain Nature of Iran's Nuclear Programs" is an extensive analysis of Iran and its nuclear program. The study is divided into five major categories, including the problems of uncertainty, estimating Iran's nuclear capabilities, a history of Iran's nuclear development, an overview of Iran's (known) nuclear facilities, and estimates of Iran's nuclear development milestones. This study is relevant to my thesis primarily for its enumeration of Iranian nuclear facilities and capabilities, as well as estimates of Iran's capabilities today and in the future. This study clearly illuminates the problems of uncertainty in predicting future Iranian behavior and action.

The major trend in the position papers is that Iran is unpredictable. Though two of the studies view Iran's unpredictability as a reason to worry, the other two view the unpredictability as a reason to act cautiously. The position papers advocate different policy prescriptions based on the same facts, but there is wide divergence of the meaning of the facts and of the judgments that interpret those facts.

I will now consider one interview and one symposium transcript that are relevant to my thesis. The interview is by Bernard Gwertman with David Albright, the President

of the Institute for Science and International Security, on 17 November 2006. The focus of the interview is on Mr. Albright's assessment of Iranian nuclear intentions. Specifically, Mr. Albright was optimistic at one time that a solution to Iran's nuclear ambitions could be negotiated in the United Nations Security Council, whereby Iran would forgo nuclear development. Within the space of several months though, Mr. Albright has concluded that Iran cannot be dissuaded from pursuing its nuclear program through diplomacy. In addition, the interview explains the general nature of a uranium enrichment cascade. The primary relevance of this interview is that it expands my technical knowledge about the difficulties Iran faces in its nuclear program.

The 2006 Soref Symposium, featuring Graham Allison and Richard Haass, was held on 12 May 2006. The transcript begins with a statement of positions where Mr. Allison describes the "Grand Bargain" path to dealing with Iran, and Mr. Haass enumerates four options for dealing with Iran, ranging from military action to continued diplomacy. The transcript continues with an assessment of the US intelligence weakness regarding information about Iran's nuclear program. The conclusion is that the US intelligence about Iran's nuclear facilities is no better than its intelligence about Iraq's nuclear program, so there is very little basis for action that can be derived from the intelligence estimates. The main conclusion about intelligence shortfalls is that the US should work with Russia to learn what the Russian know, because it is assumed that the Russians have a better insight into Iran's nuclear program. The relevance of the symposium transcript to my thesis is to echo the opinions about uncertainty that were evident in the policy papers reviewed earlier.

There are a great many commentaries from various media sources, to include Strategy Research Papers (SRP) and monographs that are relevant to my thesis project. In this section, I will review three of the most relevant and extensively written commentaries, and then provide a trend analysis of the whole body of commentary work. The three main commentaries are "Getting Serious About Iran: For Regime Change," by Amir Taheri, "Getting Serious About Iran: A Military Option," by Arthur Herman, and "The Crucible of Radical Islam: Iran's Leaders and Strategic Culture," by Gregory Giles. Beyond these three main works, there are over 20 additional works that are relevant to my research.

"Getting Serious About Iran: For Regime Change" begins with a recounting of the history between the US and Iran since 1979 and then it addresses Iran's current policies in the Middle East. The author clearly believes that Iran is, and will continue to be, a revolutionary power that cannot be dealt with as a normal nation-state with its current government in power. The author therefore recommends a policy of regime change be adopted by the US against Iran. Unlike some other people who equate regime change with military action, Mr. Taheri sees Iran as a modern parallel to the Soviet Union, and hence the solution to changing Iran's regime can be found in the experience of the Soviet Union's downfall. Specifically, Mr. Taheri calls for the US to lead a "moral offensive" against Iran to leverage the major weaknesses and divisions that already exist internally in Iran. By clearly positioning the US against accommodation with Iran, the forces of moderation within Iran will have a stronger hand in forming a political opposition within Iran's political space. Recognizing the reality of Iran's foreign policy, Mr. Taheri recommends keeping the military option on the table against Iran as a form of real

external pressure, but keeping direct conflict from flaring so that Iran's internal contradictions can work themselves out. This commentary is relevant to my thesis because it articulates the internal political and economic weaknesses of the Iranian regime. By asserting that a revolutionary regime in Iran can never be dealt with, and by emphasizing the real contradictions inherent in the Iranian regime, this article proposes that positive change in Iran can be achieved by some combination of internal and external pressure.

"Getting Serious About Iran: A Military Option" addresses a military option against Iran that focuses on using naval and air power to cripple Iranian economic power. Specifically, the author advocates destroying Iran's refining capacity and seizing Iran's offshore oil assets and oil terminals while simultaneously guaranteeing the passage of non-Iranian oil through the Straits of Hormuz with US naval assets. The author reiterates the opinion of most other authors that Iran's government is not especially stable, and that internal divisions can be exacerbated by creating an economic crisis for the regime. Ultimately, regime change and the best interests of Iran's oil importers would be served by eliminating the current Iranian regime rather than hoping for some other economic or diplomatic process to moderate the Iranian theocracy. This commentary is relevant to my thesis because, just like my thesis, it rejects the almost universal dismissal of military options. Instead, this article advocates a military option, though not a ground force-centric one, which may achieve the political goals of US policy for Iran.

"The Crucible of Radical Islam: Iran's Leaders and Strategic Culture" discusses Iran's leadership personalities and structure, and then tries to find insight into how the US should deal with Iran. The article concludes that any action regarding Iran can turn a

number of different ways, and therefore the article does not take a final stand on what should be done. This article is relevant to my thesis because it illuminates the structure and personalities of the Iranian regime. Despite this benefit, this article is of limited use due to its lack of conviction.

The remaining body of literature dealing with the Iran-US relationship centers on various monographs written by students at the Army War College. The major trend in these monographs is a focus on the Non-Proliferation Treaty (NTP) and various ways the US can leverage the current nuclear crisis with Iran to strengthen the NPT. Beyond this main body of work, two secondary themes are containment strategies and deterrence strategies for dealing with Iran's nuclear capabilities. In the containment theme, most authors recommend accepting Iran as a nuclear power and working to prevent further proliferation, especially by other states in the Middle East. In the deterrence theme, most authors advocate a variety of diplomatic, informational, and economic means to pressure Iran to abandon nuclear development while simultaneously helping Iran to become a legitimate nation-state that is fully integrated into the global community of nations. These monographs all follow an instrument of power model paradigm with heavy emphasis on the diplomatic, information, and economic means, and a general dismissal or lack of analysis of the military means. These monographs tend to de-link the various tools of national power, and very often consider optimal American policy without regard to the interests of revolutionary Iran, instead hoping to engage the moderate and pragmatic forces within Iran's government. These works are not directly important to my thesis because they dismiss, rather than discuss, the military option and the reasons why the military options should not be emphasized. Despite their lack of depth, this body of work

is important to my research because it explains the majority of non-military policy options that are considered least painful to implement among all of America's policy options with Iran.

Key Trends

There are four major trends in the literature about Iran that emerge from across the spectrum of works. These trends include agreement on the threat that Iran poses to US interests; a belief that the consequences of the military options are worse than any combination of diplomatic, political, and economic options; the idea that Iran is internally weak but evolving away from radicalism towards being a normal state; and, the uncertainty that characterizes American intelligence and understanding about Iran. In the following paragraphs, I will analyze how each of these trends has affected my thesis research, and then conclude with an evaluation of what impact my research may have on the overall body of knowledge.

Iran poses a threat to US interests in the Middle East. Regardless of the source, there is virtually unanimous agreement on this point. Iran poses three major threats to the US, including sponsorship of terrorism, opposition to the Palestinian-Israeli peace process, and nuclear weapon development. Sponsorship of terrorism threatens the US in two ways. First, the US is engaged in a Global War on Terrorism (GWOT) that equates state sponsors of terror to the terrorists themselves. From this basis, Iran's sponsorship of terrorist organizations puts Iran in direct opposition to US interests and GWOT objectives. Though Iran has been careful only harass America's allies and not to avail the US directly (with the notable exceptions of the hostage crisis and Khobar Towers bombing), the terror organizations Iran has sponsored, especially Hizbollah, have

demonstrated increased capability and reach. The increasing capability of Iranian sponsored terror groups gives Iran a credible retaliatory capability against American interests in the Middle East in the event of direct conflict between the US and Iran. Notably, Iran sponsors terror groups, militias, or opposition parties in Lebanon, Iraq, and Afghanistan that are capable of disrupting and challenging US allies in those countries. The effect of Iran's ties to terror is that most of the literature I reviewed downplayed the wisdom of confronting Iran militarily given the likely retaliatory response Iran could unleash. Despite this overall trend, there was a body of work that argued that Iran's weaknesses outweigh its offensive power. As a result, the minority opinion in the literature I reviewed was that the US could confront Iran militarily and expect to win on the battlefield, or at least cause Iran to back down from confrontation before actual force was used.

The agreement that Iran poses a threat to US interest's impacts my thesis by validating the assumption that Iran is a potential target for US military action. Where the trend breaks down, and where my thesis begins, is the question of the nature of Iran's threat, and its significance. Therefore, the literature about Iran provides a good basis for beginning my thesis.

The second major trend is a belief that military action against Iran would cost too much, relative to what might be gained from attacking Iran. The literature focused on Iran's nuclear development and the possibility that the US could destroy that capability without incurring disproportionate costs from Iran's retaliation and diplomatic backlash. The major costs of attacking Iran focus on terrorist retaliation against US allies, direct terrorist retaliation against the US, occupation costs if an invasion were attempted, the

potential for unleashing a wider regional war, and the likely impact of raising global oil prices. The most feared Iranian military reaction against US allies is the potential of Lebanese Hizbollah to provoke a confrontation with Israel, and Iran's ability to disrupt reconstruction and nation-building efforts in Iraq and Afghanistan. In addition, the possibility of Iran's influencing Hizbollah to attack the US, its assets, or its citizens overseas is seen as a grave threat that could alienate US allies from the GWOT, or that could become a new, long-term commitment for America in its fight against terror. In the instance of an American invasion of Iran, the literature judged the cost of occupation to be very high. Given the costs and difficulties of the Iraq occupation, an occupation of Iran would be much more difficult and costly. The specific reasons given that Iran would be more difficult to occupy than Iraq include Iran's anti-foreign social-political history, its geographic size more than twice the size of Iraq, and its population three times as large as Iraq. The potential also exists for unleashing a wider regional war if the US confronts Iran militarily. Many nations have vital interests in the Persian Gulf due to the oil that flows through it. This interest therefore potentially involves China, Japan, and Europe in any conflict that disrupts the flow, or raises the costs of, oil. In addition, several regional powers have important ethnic and religious interests in Iran. Turkey, Azerbaijan, Russian, Pakistan, and the Arab Gulf states all have interests in the balance of power in the region. An occupation of Iran, the presumed terrorist counter-offensive, and the potential for increased disorder in Iraq and Afghanistan all indicate a great potential for spreading conflict if the US were to attack Iran.

The impact of this trend on my thesis is that when I conduct my analysis, the full range of secondary and tertiary effects of invading Iran must be considered for my thesis

to be realistic and relevant. The literature on Iran has given me a strong background in the strengths and weaknesses that characterize the US-Iran conflict. From this background, I am prepared to analyze the potential costs and outcomes of war with Iran.

The third major trend in the literature is that though Iran is a theocracy cast from a revolutionary mold, Iran is in transition to becoming a more moderate and traditional state. Most authors divide Iran's leaders into three camps including the hardliners, the pragmatists, and the reformers. The analyses that favored military or containment strategies focus on the unreformed nature of Iran's hardliners and their ability to block changes to Iran's government and policies. In addition, the hardliners are associated with a religious tendency in Twelver Shiism that believes the Mahdi (the 12th Imam) is waiting for an apocalyptic war in order to usher in his return and the imminent conquest of the world for Islam. If this group seizes power, then the consequences of Iran's acquiring a nuclear weapon could be catastrophic for many people in the Middle East. The second group is the pragmatists who seek to maintain the theocracy but want to deal with the non-Islamic and non-Shia states of the world in order to ease Iran's economic development. This group is seen as being reasonable enough to strike a bargain that would promote Iran's state interests while also helping to stabilize and bring peace to the Middle East. The final group is the reformers. The reformers are viewed as a group that favors expanding the political, economic, and social freedoms of Iranians so that Iranian people can prosper, so that the nation can integrate itself into the global order as a global good citizen. Though this group gets good support during Iran's elections, they are consistently checked by Iran's hardliners from making any real or fundamental changes. From this analysis of the major power groups in Iran, the literature views the popularity

of the reformers and pragmatists, as well as their increasing ability to win votes in elections, as reason to believe that, given time, the Iranian people will prevail upon their leaders to moderate the revolution and to free Iranian social, economic, and political potential.

The impact of the reforming trend in the Iran literature is that the potential for a peaceful outcome to the US-Iran conflict must take extra weight when I conduct my analysis of feasibility, acceptability, and suitability. If the reforming trend is in fact the dominant trend, then even a nuclear-armed Iran may not pose the same threat to American interests in the future, as it does today.

The final trend in the literature on Iran is the theme of uncertainty that surrounds Iran. Taking a cue from the intelligence failures preceding the Iraq War, the literature describes American and global intelligence on Iran as being worse than what was available for Iraq in 2003. Tying the Iraq intelligence failures back to a military option for Iran, the authors tend to agree that there are too many unknowns about Iran's intentions and capabilities to make a military option viable. Given the previously mentioned trend of liberalization in the Iranian electorate, there is agreement that waiting out the hardliners, or negotiating with the pragmatists in order to weaken the hardliners, is the best course of action.

The impact of the uncertainty trend on my thesis research is that I must view the assembled body of knowledge as potentially wrong or skewed. Given that every major intelligence agency in the world believed Iraq had a WMD program before the 2003 Iraq War, and given that the intelligence was wrong, the impact on my thesis is that I must

caveat my thesis conclusions in light of the uncertainty that exists around Iran, its leaders, and its future policy intentions.

This thesis will affect the total body of knowledge about Iran in two significant ways. First, this thesis will examine the acceptability, feasibility, and suitability of an invasion of Iran. Though many examples exist in the literature where air strikes or naval options are used, this thesis may be the only study that focuses exclusively on the military ground option. The focus on the ground option will make this thesis unique among the body of knowledge currently assembled, and therefore relevant as a new and unique line of inquiry. The second impact of this thesis on the total body of knowledge about Iran is that the impact of a war with Iran will be quantified to some degree. Though many examples in the literature discuss a military ground option against Iran, they do not examine the possibility in-depth. The trend in the extant literature is to make some assumptions about casualties and retaliation, and then dismiss the entire line of thought. This thesis will be unique because I will examine the ground option to a level of detail not yet attempted by any other author.

CHAPTER 3

METHODOLOGY

If air strikes can only postpone Iran's acquisition of nuclear weapons, then the US must consider a ground option to prevent Iran's acquiring nuclear weapons in the long term. Is there a military ground option that the US can employ against Iran that is feasible, acceptable, and suitable? Answering this question requires a methodology to accomplish the tasks of defining the problem, acquiring relevant information, analyzing information, and synthesizing information into useful conclusions.

This chapter will summarize the methods used to research and write the thesis. The chapter includes a description of the research model and the timeline followed to complete the thesis, and a discussion of the criteria used to analyze and interpret evidence.

The research method chosen for this thesis is the literature review and interview. The literature review was chosen because it is the easiest research method to employ and it allows the researcher to view a very broad range of current and historical information about the relevant topic. Ease of use was a key consideration in choosing the literature review as the primary research method because the time allotted for completion of the thesis was limited. Though Masters theses are normally researched and written over the course of a two-year program, this thesis was written in the course of a single academic year of only nine months. The need to complete the thesis within this period meant that more time consuming methods such as surveys or questionnaires were impractical. By not extending my research methodology to include additional research methods, I have necessarily reduced the total data available for my analysis. Though limiting the research

method has necessitated a less complete analysis due to a more limited data set, the literature review does provide a broad view of the published research and opinion on the subject. By examining the various published sources, this paper examined the variety of views and opinions about Iran and Iranian politics mentioned in Chapter 2 of this paper. In addition, the literature review has covered the scope and context of the factors that would apply to a war with Iran. In this sense, the initial perception that the literature does not explore the possibilities of a ground war in Iran was confirmed. This fact has enhanced the relevance of the thesis by making this paper the only published direct analysis of how a land war with Iran could be fought.

The second research method used for this paper is the interview. The need for interviews emerged from a meeting of the thesis committee. In the meeting, the various courses of action for a ground war in Iran were discussed and a requirement for a Special Forces option was identified as a necessary component of a complete thesis. As a result, two interviews with current and former special operations officers were conducted to get technical information. The focus of the interviews was to determine the forces and support requirements that would be necessary to conduct a raid against one or two hardened underground industrial facilities. The information from these interviews was compared with the literature about previous special operations missions to gain an operational understanding and place the requirements into context. The relevant literature on special operations raids included the Israeli Entebbe Raid, Desert Eagle, and the Son Tay Raid. The greatest advantage of the interviews was the ability to check the facts from the literature against experts with operational experience, and to investigate the operations in-depth. Despite these strengths, the limits of time prevented a more thorough

set of interviews that could have supplemented the data gained. In addition, the conduct of the interviews for the special operations raids highlighted the value that interviews of additional sources for the rest of the thesis could have yielded.

Having highlighted the research methods, this paper will now summarize the timeline to illuminate the tempo of the thesis work. The purpose of the timeline is to illuminate how the research methodology and writing methodology developed in tandem. The research and writing process began with defining the issue. Given the topic, developing a thesis statement that was complete and answerable was the first step. The process of developing the thesis statement extended over 6 months and resulted in the thesis statement: Is there a military ground option that the US can employ against Iran that is feasible, acceptable, and suitable? The key components of the issue were to focus on a ground option and to determine the evaluation criteria. Concurrent with defining the issue the tasks included finding source material for research, building the thesis committee, and attending the research methods instruction by the Department of Graduate Degree Programs (DGDP). Building the thesis committee and attending the research instruction facilitated the search for data. The search for initial source material focused on the Combined Arms Research Library (CARL) and discussing relevant books, publications, and academic research with the thesis committee members. Sources from CARL included books on Iran and the Middle East, magazine articles, academic papers published at the service War Colleges and academic journals found in the Journal Storage (JSTOR) database. The thesis committee suggested sources included book recommendations, academic studies, and academic publications. The trends in the research included a lack of research on ground options, a focus on deterrence or

containment options, and faith in diplomatic solutions. When military options were discussed, my research revealed that only air options were considered seriously.

After the initial research and problem statement the focus was on refining the problem, prioritizing source material, and writing the prospectus, introductory chapter, and literature review. Refining the problem involved focusing the thesis statement and developing the research questions that would answer the thesis. At this stage, the thesis statement was broad and covered multiple problems. The research questions built at this stage were designed to answer the broad issues addressed by the thesis statement. Over time, the research questions were pared down to reflect the narrowing of the thesis statement.

Simultaneous to the thesis and research question refinement was prioritizing and conducting the research. Priority of research was on the books and academic publications recommended by the thesis committee. The primary sources at this point in the research were the books *Persian Puzzle* by Kenneth Pollack and *Persian Mirrors* by Elaine Sciolino, the magazine articles *The Revenge of the Shia*, by Martin Walker in The Wilson Quarterly, *What War With Iran Would Look Like*, by Scott McLeod in TIME, *Buying Time in Tehran,* by Afshin Molavi in Foreign Affairs, and *How to Keep the Bomb From Iran,* by Scott Sagan in Foreign Affairs. The book sources indicated a bias for diplomatic engagement with Iran and the belief that Iran's leadership prefers peace and development for its people. The magazine articles generally reflect the book author's opinions that diplomatic engagement in areas of mutual interest are possible, but the magazine writers are less optimistic about what can be accomplished. Chapter 2 contains a complete discussion of the research analysis.

After gaining a basic knowledge of Iran's people and Iran's relationship with the US, the next step was to write the prospectus and then begin writing Chapter 1, the introduction, and Chapter 2, the literature review. The prospectus organized the introductory information for the thesis to include background information, key terms, the thesis development plan, and the initial reference list. The prospectus evolved into Chapter 1, the introduction. Using the prospectus as a starting point, Chapter 1 added additional context to the background information, limitations and delimitations, assumptions, and what the significance of the study is. The major points of chapter one were the limitations and delimitations used to narrow the scope of the thesis study, and identifying the significance of the thesis. As stated before, the significance of this thesis is to explore the military ground options that could be used against Iran. This thesis is especially poignant because there is no other data in the currently published literature that addresses the question of ground war with Iran.

After completing Chapter 1, the next task was to write Chapter 2, the literature review. Chapter 2 was divided into categories of sources. In this way, an analysis was made regarding the trends in the literature by type. The categories used included books, magazine articles, scholarly journals, academic writing and presentations, and general sources like newspapers. By dividing the literature into categories, the literature review resulted in some generalities emerging by source. In total, the literature review established three major trends. The first trend was that there are no studies extant on the ground war option. This fact is one of the reasons this thesis is both unique and significant as an area of scholarly inquiry. The second trend was that almost every writer favored some variation on the diplomatic approach to solving the differences between the

US and Iran. The diplomatic approaches ranged from a ‘Grand Bargain’ whereby every issue between the US and Iran would be comprehensively resolved, to various schemes for deterrence or containment of Iran after it acquires technology for a nuclear weapon. Significantly, none of the writers proposed that diplomacy short of the Grand Bargain approach would be successful at preventing Iran’s acquisition of nuclear weapon technology or nuclear weapons. The third trend was for an air strike on Iran’s nuclear facilities if military action became necessary. Though the schemes for air strikes often addressed the possibility of a ground option, they universally dismissed the ground option as too difficult or too costly. Despite the claims of difficulty and cost, none of the studies explored what the actual difficulties or costs of a ground option would be, thus leaving the ground options dismissed and unexplored.

After completion of the first two chapters of the thesis, the focus turned to completing the research, developing evaluation criteria, for the analysis, and validating the research questions. Completing the research involved reading the rest of the collected literature and conducting interviews. The results of the literature review have already been summarized, so it is relevant now to evaluate the interview process. The decision to conduct the interviews resulted from the need to research a special operations type operation as one of the ground options. The interviews were important because the decision to explore a special operations course of action (COA) came late in the thesis development process. The interview process began with a literature review of past special operations missions. The literature revealed three major operations to include the Entebbe Raid, Desert Eagle, and the Son Tay raid. Using these operations as a base of knowledge, the interviews focused on the opinions of active and retired special operations officers to

flesh-out how a special operations COA might play out. The major points to come out of the interviews were that the raid would need limited objectives, it would have to be concluded rapidly, and that it would require major support by Special Forces and Air Force air assets.

The next event in the thesis methodology was developing the analysis evaluation criteria. The feasibility-acceptability-suitability (FAS) methodology was adopted at the suggestion of the thesis committee. Other evaluation methods considered included the strengths-weaknesses-opportunities-threats (SWOT) method, and the diplomacy-information-military-economic (DIME) method. The FAS method was adopted because the literature review had indicated that the ground option was inconceivable for most of the writers. Because none of the writers had explored and validated the assumption that the ground option is too difficult and too dangerous, determining the feasibility, acceptability, and suitability of the ground option is the perfect methodology to validate or invalidate the assumptions. In order to make the feasibility determination, several assumptions, limitations, and delimitations had to be made so that the thesis did not become too broad. The major assumption and delimitation is that the diplomatic requirements for an attack on Iran will be met. This assumption was made because exploring the diplomatic possibilities is a major topic by itself and this thesis is already sufficiently robust. A second justification for making the diplomatic assumption is that this thesis is focused on the military options. As a result, exploration of the diplomatic nuances is beyond the scope of this thesis and the question of diplomatic process is beyond the scope of the literature researched.

The methodology chosen to analyze the feasibility, acceptability and suitability questions is the operational design method. The elements of operational design focus on the practical aspects of building a campaign plan. By designing a campaign plan for Iran, the questions of feasibility, acceptability and suitability of a ground option are answered. Feasibility is determined by the availability of resources, the ability to deploy forces, and the determination of invasion routes that will support both the attacks and the logistics efforts that will facilitate them. In exploring acceptability, questions of cost-benefit are relevant for the direct human and financial considerations, as well as the indirect economic and political considerations. Operational design answers the suitability question by determining if the proposed ground COA is the best way to achieve the desired end state. Given the various diplomatic options and the military air option as baselines, there are numerous alternatives against which to judge the suitability of any of the ground option COAs.

Having determined the analysis method, the thesis and research questions were revalidated to ensure their relevance after several months of data collection and to ensure that they were aligned with the analysis methodology. It was at this point in the process that the precise wording of the thesis question was solidified. Combining the analysis methodology into the problem statement resulted in the thesis statement: Is there a military ground option that the US can employ against Iran that is feasible, acceptable, and suitable? This thesis narrowed the scope of the research to just the military ground options, and it provided an easily answerable question regarding the feasibility, acceptability, and suitability of the ground option. The conclusion of the analysis chapter will have a simple yes-or-no answer.

The remaining elements of the research and analysis methodology include the writing of Chapter 3, (methodology) Chapter 4, (analysis) and Chapter 5, (the conclusion). The analysis chapter was written first for two reasons. First, the research data was fresh and needed to be analyzed and recorded as soon as possible. By focusing on the analysis first, the writer is less likely to lose relevant information to memory loss. The second reason for writing the analysis chapter first was so that the methodology chapter could be written to describe as much of the thesis project as possible. By writing the methodology chapter after the analysis chapter, this thesis describes the actual methodology used, rather than describing an intended methodology.

The analysis used the elements of operational design to develop potential ground courses of action. The COAs then became the basis for exploring the feasibility, acceptability, and suitability questions at the core of this thesis. The feasibility issue raised major questions about the availability of forces for a war with Iran. Without a major expansion of US ground forces or a major reduction in US military obligations, the feasibility of a ground war with Iran is highly questionable. The acceptability issue appears to depend on the reason for going to war, the intensity of the perceived threat, and the costs in terms of human loss, financial costs, and time. The research indicates that getting into a war and absorbing the various costs may be acceptable if the reasons for, and the duration of, the conflict are sufficient to mobilize the nation. In terms of suitability, a judgment call must be made regarding the certainty with which the destruction and delay of Iran's nuclear development is desired. However, if living with a nuclear-armed Iran is an acceptable outcome, then any of the diplomatic proposals is more suitable than the ground option. If living with a nuclear-armed Iran is not an

acceptable outcome, then the level of certainty in the destruction of Iran's nuclear capability is the relevant measure of suitability between the air and ground options.

The final chapter of this thesis will be the conclusion. The conclusion will provide a summary of the analysis results, synthesize the implications of the analysis, and make recommendations for application and further analysis. The conclusion will answer the thesis question of whether there is a feasible, acceptable, and suitable military ground option. Depending on the answer, the thesis will explore the implications of a ground war with Iran, or the implications of living with a nuclear-armed Iran. Also, depending on the answer to the thesis question, recommendations for further analysis will be made to explore the implications of the conclusion.

Once the body of this thesis is complete, the final actions will be to get feedback on a final draft from the thesis committee, make any corrections, and ensure the technical compliance of this thesis with course guidelines. The final draft will allow the members of the thesis committee to suggest improvements or refinements for the final paper. Once the thesis committee feedback is incorporated into the thesis body, this thesis will be submitted for review by DGDP administrative personnel to ensure compliance with all the technical requirements for the final submission. Once the thesis is confirmed to comply with the technical requirements, the final submission will be printed and distributed to the relevant departments and individuals.

CHAPTER 4

ANALYSIS

If air strikes can only postpone Iran's acquisition of nuclear weapons, then the US must consider a ground option to prevent Iran's acquiring nuclear weapons in the long term. Is there a military ground option that the US can employ against Iran that is feasible, acceptable, and suitable? There are three main points that will be addressed to analyze and answer the thesis question. First, I will specify the decision criteria that will measure each course of action (COA). Second, I will summarize the air option proposed by Sam Gardiner. Finally, I will describe and quantify three ground option courses of action. The analysis of each ground COA will conclude with an evaluation of its feasibility, acceptability, and suitability.

Each COA must be judged against a common set of decision criteria. The decision criteria I will use to evaluate the three courses of action include the time and force requirements to execute the COA, casualties, financial costs, Iran's likely retaliatory response, and certainty of effects. The time required to execute a COA is relevant for two reasons. First, a large-scale operation may require so much time to organize and execute that the purpose for which it is initiated becomes a moot point. If a COA will take five years to execute, and Iran can complete the fuel cycle in two, then that COA would not be suitable. It is for this reason that the force requirements are considered in conjunction with the time requirements. A second consideration of time is the length of time that US forces might be engaged in combat. A COA that takes a long time to complete will have comparatively larger human, financial, economic, and diplomatic costs. The second decision criterion is casualties. Casualties are a relevant criterion because they reflect the

human cost of war. The third decision criterion is financial costs. Financial costs are relevant because they represent the opportunity costs of using national resources for war instead of productive domestic or foreign projects. The fourth decision criterion is Iran's retaliatory options. Iran's retaliatory options are relevant because they define the military and non-military costs Iran can impose on the US and its allies. The fifth and final decision criterion is the certainty with which a COA can destroy Iran's quest for nuclear technology. The certainty of destruction is a relevant decision criterion because a COA that increases costs but does not improve upon the effects of an air attack is not a cost-effective option. Of these five criteria, the most important for evaluating the ground options is certainty of effect. Using the decision criteria, the major drawback to the air option is the lack of battle damage assessment capability and the related problem of not striking unknown nuclear facilities. Therefore, if a ground option is going to be a significantly better COA than the air option, it must improve on the certainty criterion.

With the relevance of the decision criteria established, I will now evaluate Iran as a target for a ground invasion, describe and quantify the three COAs, and provide a summary of the air option. The evaluation of Iran as a target will explore the military conditions of Iran to include decisive points, lines of operation, and Iran's potential military strength. The three courses of action that will be analyzed are an invasion to destroy the nuclear facilities, a conventional raid to destroy the nuclear facilities, and a special operations raid to destroy specific nuclear facilities. These three COAs were chosen because they cover the full spectrum of possible ground options including a full-scale invasion, a limited conventional attack, and a minimal cost special operation. The

air option summary will describe the base-line military option the US can employ against Iran.

Geographic Considerations

Iran is a large country. With a land area of about 1.6 million square kilometers, Iran is roughly the size of Alaska.[1] In addition to its size, Iran is strategically located in the Middle East. Iran's southern border is the Persian Gulf, a body of water that reaches the world's oceans through the narrow Strait of Hormuz. The Strait of Hormuz is a strategic chokepoint in the global economy because the strait is only 21 miles wide and more that 20 percent of the world's oil is shipped through it on a daily basis.[2] As a large country, Iran has strategic depth, the ability to retreat within its borders and retain the ability to generate additional national power. Iran is more than 850 miles across east to west, and more than 900 miles across south to north. Measured diagonally at its longest point northwest to southeast, Iran is over 1,400 miles across. In comparison, the distance from Kuwait to Baghdad is only 300 miles, and the greatest distance across Iraq is about 600 miles. Iran's vast scale is compounded by its complex and arid terrain. Iran is ringed by mountains to its north, west, and south. The eastern border is a plateau characterized by arid desert. The center of Iran is flat desert and salt plains.

The primary geographic challenges to entering Iran are securing mountain passes from the borders into the central plain, and crossing the arid central plateau. There are five primary routes into Iran indicated by Iran's transportation network. Two routes begin on the Persian Gulf. One route leads north from Bandar Abbas at the Strait of Hormuz, and the second leads northeast from Bandar Khomeini at the Shaat al-Arab. The third route leads west across the central desert from Pakistan at Zahedan. A fourth route enters

Iran from Turkmenistan at Sarakhs and heads west along the south edge of Iran's northern mountain range. The fifth route enters Iran from Turkey and Armenia at Tabriz (see figure 1). These routes are identifiable as the best routes into Iran by the presence of Iran's railroad system and major highways. Railroads and highways are always built on the easiest terrain available to traverse. Beyond these five major routes, there are only three other routes with major highway connections between Iran's borders and its interior. One route runs north from Bushier on the Persian Gulf to the interior at Ishfahan. The second route runs northeast from Ilam on Iraq's border to Qom in the interior. The third route is the highway that follows the coast of the Caspian Sea. This highway enters Iran from the east by way of Turkmenistan or from the west through Azerbaijan. There is one tertiary route worth considering for military purposes. This route runs from Bandar Beheshti on the Gulf of Oman up to Zahedan or Kerman. Though additional roads exist that lead from Iran's borders into its interior, these other roads are not as well developed or maintained, to include segments that may not even be paved. In addition, these tertiary routes all must join one of the five major routes described earlier if they are to lead towards Iran's economic, population, and military centers.

Iran is also a large country in terms of population. Iran's population in 2007 is over 68.7 million people.[3] This total is more than double what the population was in 1979. At the encouragement of the Revolutionary Government, Iranians raised their birth rate in the 1980s to achieve the population doubling that has occurred. Since the mid-1990s, Iran's government has pursued a policy of economic development that has reduced the birthrate resulting in a relative rise of per capita GDP. Iran's population is generally concentrated in the western part of the country, with most of its urban centers

located in the interior or mountain valleys. There are also population concentrations around Mashad near the Turkmenistan-Afghanistan border and around Zahedan on the Pakistan border. Iran's population is increasingly urban, though roughly one-third of all Iranians still work in agriculture.[4] Iran's population can theoretically deploy up to 15.65 million men for military service.[5]

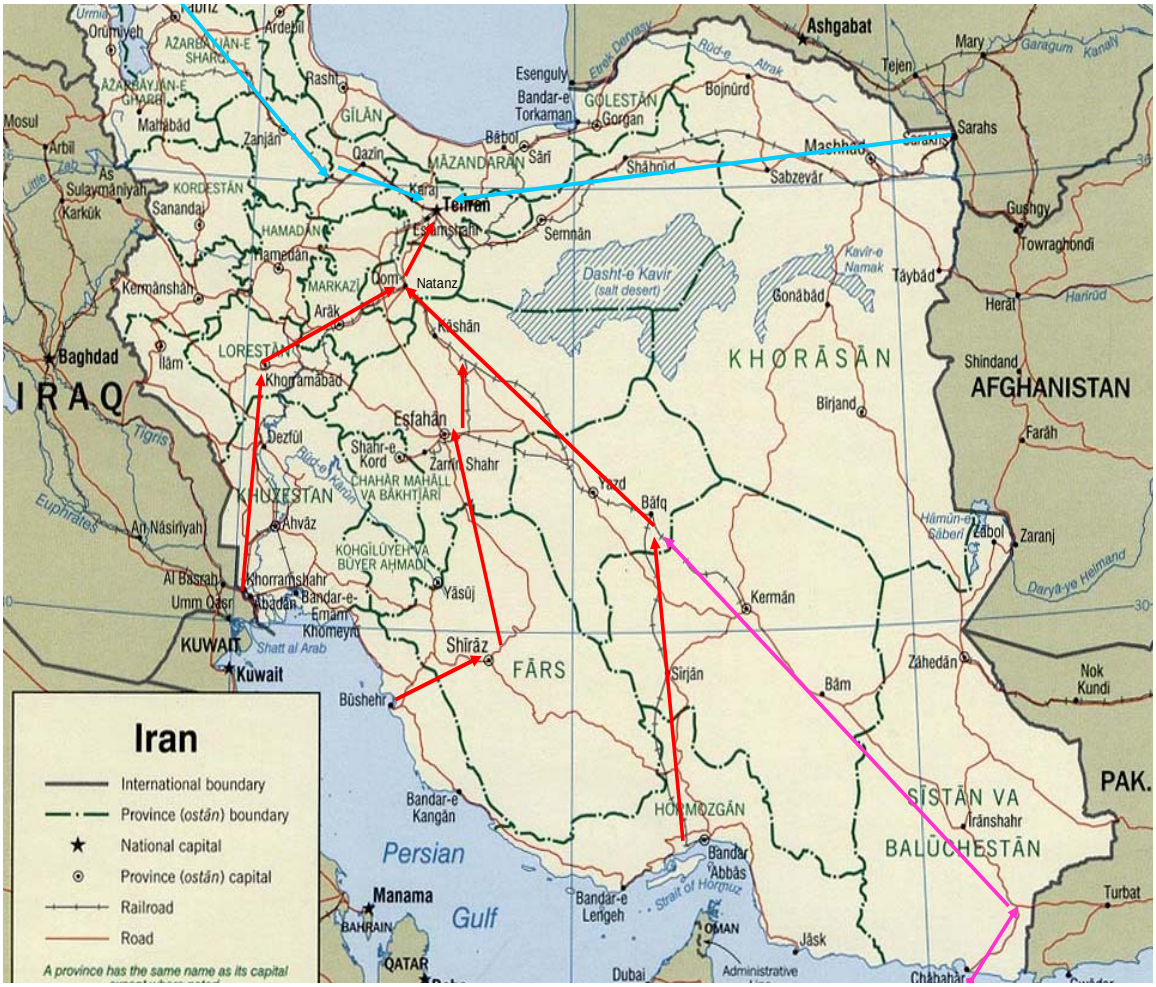

Figure 1. Map of Iran

Perry-Castaneda Library Map Collection, "Map of Iran," University of Texas Libraries, http://www.lib.utexas.edu/maps/iran.html, accessed 5 June 2007. The map of Iran is modified by the author to include the location of Natanz and to specify the major routes into Iran. Red arrows indicate the primary routes. Blue arrows indicate secondary routes. Purple indicates the tertiary route.

Iran's economy is dominated by the oil industry. Secondary economic activities include state manufacturing and service industries, small-scale private manufacturing and service companies, and agriculture. The oil industry is concentrated on the southwestern coastal plain in Khuzestan and in the Persian Gulf. These oil fields account for about 80 percent of Iran's export income, but the fields are producing less output each year due to a lack of maintenance, repair parts, and investment.[6] Iran also has large oil reserves in the Caspian Sea region, but these reserves are mostly undeveloped due a lack of foreign investment and expertise. Tehran is the major industrial and service center of the country with major metal, heavy industry, cement, textile, metal, oil, and light industries[7]. Other major economic centers include Shiraz (oil, manufacturing, cement, food processing, chemicals, heavy industry), Ahvaz (textiles, metal, oil), Bahktaran (textiles, oil, chemicals), Eshfahan (food processing, textiles, oil, cement, metal, chemicals), Tabriz (oil, chemicals, textiles, heavy industry), Mashad (food processing, textiles, cement, chemicals), and Qom (oil, metal, food processing).[8]

Cities with heavy industries are the centers of armaments production and nuclear projects in Iran. Specifically, these cities are Tehran, Shiraz and Tabriz. In addition to these economic centers, known nuclear facilities include the Khodab heavy water plant, the Arak heavy water reactor, the Natanz enrichment facility, the Darkhouin uranium enrichment plant, the Ardakan uranium plant, the Bushier light water reactor, the Fasa uranium plant, and the Yazd complex including uranium mines and milling plants.[9] Natanz is the center of Iran's uranium program and Arak is the center of the plutonium program.[10] Iran also has a well-developed metal industry with major deposits of both iron

and copper located in the desert plain east of the Zagros Mountains. Major metal working industries are concentrated in Ahvaz, Eshfahan, and Qom.

Iranian Military

The Iranian military consists of four major organizations. These four organizations are the Iranian Military, the Islamic Revolutionary Guard Corps (Pasdaran), the Basij Force (militia), and the local law enforcement forces. The Iranian Army is composed of about 350,000 soldiers, with 200,000 conscripts and 150,000 regular soldiers.[11] The Iranian Army is "organized in four corps, with four armored divisions, six infantry divisions, two commando brigades, an airborne brigade and other smaller independent formations. Each Iranian division has a different organization."[12] Iran's main mechanized forces are the 92nd Armored Division and the 28th and 84th infantry divisions.[13] Tehran is the home of Iran's military academy, and Shiraz is home to Iran's airborne and Special Forces. Major Army bases in Iran are located at Tehran, Eshfahan, Shiraz, Kerman, Khorramabad, Qazin, Ahvaz, Hamadan, Bandar E Mah Shah, and Tabriz.[14] Major weapon systems of the Iranian Army include about 1,600 Main Battle Tanks (MBTs), a similar number of Armored Personnel Carriers / Infantry Fighting Vehicles, 2000 towed and 300 self-propelled artillery pieces, over 900 multiple rocket launch systems, and at least 300 tactical ballistic missiles.[15] Iran produces its own MBT, the Zulfigar, at the rate of about 40 per year.[16]

The Pasdaran consist of about 125,000 people whose primary purpose is to maintain the Revolution in Iran.[17] The Pasadran has parallel structures to the Iranian military to include army, navy, air force, and special operations forces. The Pasadran is also responsible for Iran's nuclear program. The Pasadran is organized into 2 armored

divisions, 5 mechanized divisions, 10 infantry divisions, 7 independent infantry brigades including 1 parachute brigade and one Marine brigade, two independent armor brigades, 7 special forces brigades, 6 artillery groups, and 5 surface to surface missile groups. Pasadran special operations troops are known as the Quds Force. The Quds Force is responsible for training foreign revolutionary agents and conducting direct action operations to include targeting and advising terrorist attacks.[18]

The Pasdaran also controls the Basij Force. The Basij are militia volunteers best known for launching the human wave attacks against Iraq during the Iran-Iraq War. The Basij consist of about 90,000 active duty soldiers and about 300,000 reservists.[19] It is estimated that the Basij can mobilize about 1 million soldiers through their nearly 11,000 stations throughout Iran.[20] Theoretically, the Basij Force can mobilize Iran's entire military capable manpower of roughly 15.5 million men, and potentially another 15.5 million women.

Iran's Air Force consists of about 300 combat aircraft of various types and readiness. Iran's major aircraft types include the F4 Phantom (about 35 serviceable), the F-14 Tomcat (about 10 serviceable), the Su-24 (about 30 serviceable), the F5 (about 30 serviceable), the Mirage F1 (about 20 serviceable) and the MiG-29 (about 20 serviceable). In addition to the combat aircraft, Iran has about 75 support aircraft of various types. The major military airfields in Iran include Ahvaz, Bandar Abbas, Bushier, Chan Bahar, Dezful, Doshan Tapeh (Tehran), Ghaleh Morghi (Tehran), Hamadan, Isfahan, Mashhad, Mehrabad (Tehran), Shiraz, Tabriz and Zahedan.[21] "Bandar Abbas, Bushier, Dezful, Hamadan, Tabriz and Mehrabad are the centers for ground attack squadrons. Shiraz is the home of the interceptor squadron. It also provides training along

with, Mehrabad, Doshan Tapeh and Isfahan. Shiraz also houses the transport squadron."[22] In important supporting roles, Iran's Air Force Headquarters is located at Doshan Tapeh Air Base, near Tehran, and the major maintenance and aircraft manufacturing facility is at Mehrabad, outside Tehran. A lack of maintenance, new acquisitions, and training opportunities makes the Iranian Air Force a relatively weak opponent.

The Iranian Navy is a very small force of about 18,000 sailors. Iran has about 125 surface vessels of various types and six submarines. Of these vessels, there are about 5 frigates, 25 missile craft, 45 patrol craft, 7 mine warfare craft, 20 amphibious craft, and 25 support craft. Iran's submarines include three Kilo-class boats that are considered among the best diesel-electric submarines in the world. The Iranian Navy is based out of Bandar E-Abas with a second major port at Bushier. Iran maintains smaller naval bases at Khorramshahr, Khark Island, and Bandar-e Khomeini (formerly known as Bandar-e Shahpur).[23] "Bandar-e Anzelli (formerly known as Bandar-e Pahlavi) is the major training base and home of the small Caspian fleet, which consists of a few patrol boats and a minesweeper."[24] Iran is developing a major new naval base at Bandar Beheshti (formerly known as Chah Bahar) on the Gulf of Oman.[25] Iran also maintains several smaller naval bases along the Strait of Hormuz.[26] Though very small, the Iranian Navy has several modern missile craft and submarines that are serious threats to military and commercial shipping in the Persian Gulf and the Gulf of Oman. In addition to the naval craft, Iran has approximately 60 C-802 anti-shipping missiles in batteries along its coast that can interfere with shipping through the Straits of Hormuz.[27]

Iran has a well-developed chemical weapon capability and it is developing a biological weapon capability as well as the long-range missiles to deliver Iran's current and future weapons of mass destruction (WMD).[28] Iran is known to have mustard gas and phosgene gas weapon capability.[29] Iran is suspected of developing VX nerve agent for military use. Regarding biological weapons, Iran is known to have a well-developed pharmaceutical industry and can likely produce biological warfare agents with little or no foreign assistance. Iran's chemical weapons and biological weapons industries are centered on Damghan, at city about 180 miles east of Tehran.[30]

Iran currently has four types of ballistic missiles in its inventory. These missiles include the Mushak series, the Shahab series, the IRIS, and the X-55 land-attack cruise missile (LACM). The missiles and their propellants are produced at the Sanam Industrial Complex about 105 miles east of Tehran.[31] The Mushak is a short-range guided missile that comes in three types with ranges of 80 miles, 100 miles, and 120 miles. The Mushak 120 carries a 1,100-pound warhead, while the Mushak 160 and Mushak 200 can carry a 1,300-pound warhead.

The Shahab series missiles include imported Shahab 1 and Shahab 2 missiles (SCUD B/C missiles from North Korea), and the domestically produced Shahab 3 and Shahab 4 missiles. The Shahab 1 and 2 carry a 2,000-pound warhead 180 miles and 300 miles, respectively. The Shahab 3 is a medium range ballistic missile (MRBM) that can carry a 2,000-pound warhead 800 miles. The Shahb 4 is an intermediate range ballistic missile (IRBM) that can carry a 2,000-pound warhead about 1,600 miles. The Iranians are also working on development of the Shahab 5 and Shahab 6 missiles. These two

weapons are long-range missiles that can potentially reach 3,300 miles and 6,000 miles, respectively.

The IRIS missile is intended as a rocket booster for Iran's space program. If used for military purposes, the IRIS could carry a 2,000-pound warhead about 1,800 miles.

The fourth Iranian missile type is the X-55 LACM, imported from Ukraine. As a cruise missile, the X-55 is much more difficult to detect and defend against than a ballistic missile. Despite this fact, Iran does not have an indigenous cruise missile program and Iran only acquired twelve (12) X-55s from Ukraine. The X-55 can carry a 1,000-pound warhead about 1,800 miles.[32]

The Air Option

Having described the military conditions of Iran I will now focus on summarizing the air option for attacking Iran. Once the air option is summarized, I will then describe and quantify the three ground courses of action. The air option, as described by Sam Gardiner in *The End of the "Summer of Diplomacy*," would involve long-range strikes by Air Force bombers and Navy cruise missiles. The target list for air strikes would include a range of assets beyond Iran's nuclear facilities in order to destroy various capabilities that support Iran's government and economy. These additional capabilities would be hit for the purpose of destabilizing Iran's government in the hope that it would fall. The initial list of targets for air strikes include Iran's nuclear facilities, its military air bases, its air defense command and control centers, terrorist training camps, chemical facilities, ballistic missiles and ballistic missile production facilities, Iran's best ground units, and Iran's naval assets.[33] Secondary targets would include Revolutionary Guard bases,

command and governance assets, security forces in Tehran, and targeted killing of Iran's leadership.

Mr. Gardiner contends that the use of B2 Stealth Bombers, in concert with air and sea launched cruise missiles fired from beyond Iran's sea and air defense stand-off range, would result in the destruction of the above mentioned target list, with little or no risk of American losses. The primary strengths of an air option are that it could be done independently without foreign help; it can be executed with existing assets at any time of the President's choosing; the attacks would require only about five days to achieve their purpose; and casualties would be low or non-existent. The main concerns with an air option are the degree of diplomatic isolation that could result from a unilateral action; the severity and duration of oil price hikes due to supply disruption and risk premium; Iran's retaliatory capabilities and actions; and the lack of certainty about the extent of damage to Iran's nuclear program, compounded by the difficulty of battle damage assessment on underground facilities. Of these concerns, Iran's retaliatory capabilities and the uncertainty of what would be accomplished are the most troubling.

Based on the Gardiner article, expected consequences include Iran's influencing Hezbollah to attack Israel, influencing Iraqi Shia militias to attack US forces in Iraq, channeling additional personnel and equipment into Iraq, and influencing Iraqi militias to interdict Iraqi oil exports. If the US were to persist in attacking Iran for an extended period, Iran would probably increase its retaliatory response. Additional actions could include restricting or cutting-off Iranian oil exports to world markets, attacking Gulf oil shipments or Gulf state oil facilities, influencing Hezbollah to attack the UN mission in Lebanon, and conducting targeted killings or terrorist strikes against US facilities or

interests outside the Middle East. Potential secondary effects of extended US strikes on Iran might include anti-US demonstrations by the "Arab street," Iranian attempts to destabilize weak governments such as those in Pakistan, Jordan, and Bahrain, a global recession triggered by sustained and rising oil prices, and the unintended consequence of high oil prices' enriching US adversaries such as Russia and Venezuela. Given the potential costs of Iranian reaction to a US air attack, the uncertainty about the extent of Iran's nuclear program, and the difficulties of assessing bomb damage against underground facilities, the air attack option is a very risky proposition.

In summary, the air option holds the promise of destroying or significantly damaging Iran's known nuclear facilities and military assets. Unfortunately, the inability to assess the damage caused to Iran's underground facilities and the probability that the US does not know about additional secret nuclear facilities degrades the promise held by the air option. Additionally, Iran has the potential to retaliate in ways that are potentially disproportionate to the desired gains.

Ground Options – Invasion and Occupation

Using the projected costs and benefits of the air option as a baseline, I will now describe and evaluate the three ground options. Course of action one, an invasion and occupation of Iran, is the first case that will be examined. Based on the estimates of Iranian military power, a ground war against Iran would require significant forces. Though Iran's air force and navy are remarkably weak, Iran's potential missile and Special Forces could deliver significant military power beyond Iran's borders. The greatest threat to consider in an invasion of Iran is Iran's ground forces. Iran's ground forces are large, they have deep manpower reserves, they are well equipped with small

arms, and they are presumably willing to fight. Since most of the air option described above would likely occur simultaneously with a ground war, it can be expected that Iran's air force and navy will be neutralized by American airpower in the first week of war.[34] In addition, significant Iranian military bases and formations would be attacked by air from the outset of the war. Iran's active forces include 350,000 active duty soldiers, 125,000 Pasadran fighters, and 250,000 Basji militia. In a conventional fight against an equal opponent, the US would need at least an equal number of troops to conduct an invasion, 750,000 troops. Despite Iran's well-developed small arms industry, Iran does not field a modern ground force on par with the US Army and Marine Corps. By most accounts, Iran's military is not fully armed or manned, and it lacks many of the Command, Control, Communications, Computer and Information (C4I) systems that are force multipliers for US ground forces. If the Iraq War is a relevant indicator of US conventional ground dominance over Iran, then the US can probably invade Iran and defeat its ground forces from a 1:3 disadvantage, thus requiring 250,000 troops. (The US invaded Iraq in 2003 with 165,000 troops against an Iraqi Army estimated at about 500,000 troops). Given these numbers, the US would need to reduce Iran's active forces at a rate that exceeds Iran's capability to arm and mobilize its inactive reserves, estimated at about 1 million men and women. Though Iran has more than 1 million people capable of bearing arms, 1 million is the most Iran can probably mobilize and sustain at one time in a centrally organized fashion. This estimate is based on the force structure Iran fielded in the 1980–1988 Iran-Iraq War.

Iran's ground forces are well equipped with small arms, but they lack many heavy weapons and force multipliers. Though Iran's order of battle indicates 11 active duty

divisions, only three of these are fully equipped armor or mechanized organizations.[35] The Pasadran and Basji forces are primarily organized in battalion or smaller formations, so they do not constitute a major conventional threat to US military power.[36]

Where Iran's military becomes a major threat to the US military is in its will to fight. Though Iran's military is equipped to fight a regional power like Iraq, Iran's armed forces are not structured for a conventional fight with the US. Iran's ability to withstand a US invasion lies in the will of its people to resist. By providing its Pasadran and Basji volunteers with small arms and leadership from the active army, Iran would be capable of a sustained unconventional war against an invading army. As noted earlier in this thesis, Iranians are nationalistic and have demonstrated their willingness to sacrifice for the nation. Though there are many social and economic problems that are causing internal resentment inside Iran, an invasion of Iran will probably subsume these internal divisions and unite the country. Certainly Iran's regular army, the Pasadran 'defenders of the Revolution,' and the current Basji could be expected to fight.

Beyond invasion and the question of defeating Iran's armed forces is the issue of occupation. As demonstrated by the American experience in Iraq for the past 4 years, occupation is a manpower intensive operation that depends on force ratios relative to the population. In Iran, a nation of over 69 million people, an occupation force would need to number about 1.25 million security forces. This force level reflects a minimum estimated requirement of 20 counterinsurgency forces per 1000 population.[37] An occupation of this size would likely result in a permanent US field army in Iran rather than rely on a rotational force as is currently used in Iraq. If the US global security requirements did not increase as a result of a war with Iran, current global and institutional requirements of

about 500,000 soldiers would remain, resulting in a total Army requirement of at least 2 million troops.[38] Troop requirements of this magnitude would likely require conscription. The current strength of the US Army and Marine Corps are about 510,000 and 180,000, respectively. In addition, there are about 800,000 National Guard and Reserve troops available to the Army and Marine Corps. Though these numbers suggest the US has about 1.5 million total ground troops available, the US has many commitments that limit its strength for any single military event. Considering the needs for institutional support, US commitments to Europe and Korea, and the rest, retraining, and re-equipping of forces, the US probably has no more than 250,000 active duty troops available for a ground war. If the National Guard and Reserves were fully mobilized, then the US could potentially put a million soldiers in the field for a campaign. However, with the troop commitments to Iraq and Afghanistan, there are probably less than 40,000 troops in the active force not committed at any given time. In any case, the US would need to mobilize the National Guard and Reserves in order to invade Iran, and it would need to build additional forces to sustain a presence in Iran.

Invasion and Occupation Feasibility

In order to evaluate if an invasion of Iran feasible, acceptable, and suitable I will evaluate the invasion COA using some decision criteria. Assuming the US will succeed if it has the necessary resources mobilized, time and troop availability will determine the feasibility. How long will it take to assemble the required forces and how long will it take to fight the war? The minimal force level required for an invasion of Iran is 250,000. For the purpose of this COA, I will assume that the troops committed to Iraq and Afghanistan, roughly 180,000 troops in the spring of 2007, are still needed for those two

wars. I will also assume that the remainder of the US ground forces is committed to rotations into the Iraq and Afghanistan wars. The result is the need to build a field army of 250,000 troops, not counting the requirements of expanding the training units in the US. There are various opinions about how long it will be before Iran has mastered a nuclear weapon with estimates ranging from three to ten years.[39] If the US began building a new field army for contingencies in Iran, the manning, equipping, training, and deployment of the new forces would take at least four years if a maximum effort were made.[40] If this estimate is valid for creating a modern army, only the shortest estimate of Iran's nuclear development would make the invasion COA infeasible due to mobilization constraints. Therefore, assembly of the forces needed to invade Iran, if the expansion began immediately, could be accomplished in time to prevent Iran's nuclear development in most scenarios. Despite this conclusion, there is still a four-year minimum time differential that must be considered. Conceivably, the US commitments in Iraq and Afghanistan could be greatly reduced within four years, thus decreasing the number of forces needed to mobilize and the time required to accomplish the expansion.

How long would it take to seize Iran in an invasion? This estimate relies entirely on how much resistance is encountered. Maneuvering against light opposition in open terrain, the rate of advance will be about 14 miles per day on average.[41] Heavy opposition will reduce the rate of advance to less than 8 miles a day. Using the main invasion routes identified earlier, an attack from Iraq would need to cover over 400 miles to reach Tehran, and attacks from the Persian Gulf would need to cover over 630 miles. All routes require moving through or past seven to ten major urban or military areas. For planning purposes, it is assumed there would be heavy opposition at major military and urban

centers and light opposition between those key areas. If lightly opposed movement covered 14 miles a day on open terrain and heavily opposed movement or movement on restricted terrain covers 5 miles a day, then an attack along the invasion routes from Iraq will take about 48 days, with 7 – 14 days of heavy fighting. Using the same planning factors for the invasion routes from the Persian Gulf, it would take 78 days from Bandar Abbas, or 83 days from Bushier, including 10 – 20 days of heavy fighting. These calculations do not account for urban fighting which may occur. It is entirely conceivable that bypassed urban areas and bypassed enemy formations may need to be reduced by forces following the invasion advance elements. The conquest of Tehran would likely be the culminating event of the invasion. A city of 12.7 million including suburbs, seizing Tehran would be a massive undertaking. Calculating the duration of urban combat is very difficult and it is situation dependent. If no insurgency develops and Iran's current military forces are the only forces the US faces, then the conquest of Tehran could take as long as 10 months using the existing planning factors. Thus the estimates for campaign length are from 11 ½ months to 13 ½ months. These estimates would extend much longer if an insurgency were to commence.

The combined length of time to prepare for and execute an invasion of Iran is from four to six years. This estimate means that invading to prevent Iran from acquiring a nuclear weapon is only feasible if Iran's nuclear horizon is longer than 4 years, and if the US is willing to mobilize the required manpower. As of May 2007, the decision to mobilize does not appear to be in the offing. Therefore, the invasion COA does not appear to be feasible for timelines of four to five years, and it is only marginally feasible given longer timelines of more than five years. In terms of having the forces needed, the

invasion COA is infeasible at this time, though it could become more feasible if the troop levels in the Iraq War were to decrease greatly in the near future.

Invasion and Occupation Acceptability

What level of casualties might be expected for an invasion of Iran? The human cost of a ground war is difficult to estimate given the uncertainties that surround the conduct of war. Despite this uncertainty, there are planning factors that are relevant to estimating potential costs and losses based on military judgment and historical extrapolation.[42] In the case of ground combat, losses can be estimated at 2 to 3 percent per day for all causes during periods of combat. All causes includes combat action, accidents, and disease. For periods of conflict where there is no ground combat, a loss rate of 0.5 percent is historically accurate. Losses will be higher for periods of intense combat action, and lower for rear-echelon forces not directly engaged in direct fire engagements. For rear echelon forces, losses of 0.5 to 1 percent per day are historically reasonable estimates. Given these loss factors and the estimate that a force of 250,000 would be needed to invade Iran, losses of 3,500 to 4,500 per day of heavy combat could be expected, with losses of about 1000 per day of light combat. These estimates anticipate an active and competent enemy with modern weapons and adaptive tactics. For a 48-day campaign with 7 to 14 days of intense combat, losses are estimated from 69,000 to 90,000. For a longer campaign of about 80 days, losses are estimated at 110,000 to 140,000. These casualty rates imply a need for replacements equal to roughly half the total force.

However, the casualty estimates above are doubtful based on the war performance of the US military since the end of the Cold War in 1990, and Iranian military

performance in the Iran-Iraq War. The two major combat operations for the US military during the period 1990 – 2007 are the 1991 Persian Gulf War and the 2003 Iraq War. In both cases, American losses during the conventional stage of operations were less than $1/10^{th}$ of one percent. If the assumption of comparable American overmatch against Iran's military is valid, then US casualties could number as low as 300 for any of the envisioned campaigns.[43] This estimate raises the question of Iran's military competence and how it should be judged relative to US military competence. The only relevant military action by Iran in the past 30 years is the Iran-Iraq War from 1980 – 1988.[44] In this war, Iran relied on religious fervor and numerical superiority against Iraq's firepower advantages. Throughout the conflict, Iran's military and political leaders demonstrated a lack of creativity and adaptability. Strategically, the political goals of igniting Islamic revolutions in the Sunni Middle East and marching to Baghdad (and then on to Jerusalem) were unrealistic. Operationally, after the first few weeks of the war, Iran's military lacked the leadership and equipment to execute offensive maneuver more complex than frontal assault. Since the end of the war, Iran's social and political climate is one of stasis, its economic system stifles enterprise, and its military funding has prioritized missiles and nuclear technology over training and maintenance of ground forces. There is no reason to think that Iran's military has gained broad competence since 1988.

In this COA, the conclusion of conventional combat would be followed by an occupation with enough force to control the population and minimize the effects of an insurgency. If Iran's military does not fight conventionally but instead resorts immediately to a guerrilla campaign, then the casualty estimates for the invasion would decrease and the metric for measuring casualty rates would shift from daily loss rate to

yearly loss rate. Using Iraq's insurgency as a baseline, US casualties in a counter-insurgency would result in roughly 5 percent casualties per year. Considering an invasion force of 250,000, the number is 12,500 casualties for the year.[45] As mentioned earlier, an occupation force in Iran after conventional combat had ended would need to number about 1.25 million to control a country of 69 million inhabitants. Using the 5 percent casualties per year assumption, an occupation army of 1.25 million would endure losses of about 62,500 per year. This estimate is on the high end because the 50:1 force to population ratio should allow the occupation army to control the country and therefore theoretically minimize the potential for attacks.

If Iran's military can fight conventionally with effect, then the casualty estimates of 69,000 – 140,000 are the relevant measures of acceptability. If Iran's military fights conventionally but it is not effective, then the low estimate of around 300 casualties is the relevant measure. The most likely event is a combination of conventional efforts that are mostly ineffective due to American military overmatch and unconventional efforts that are effective. If Iran's conventional military is destroyed or neutralized without being able to affect the US invasion, and the insurgent activity begins immediately upon initiation of the invasion, then casualties will probably be in line with traditional insurgency rates of about 5 percent, or about 78,000 for the year of fighting. Based on US domestic political unease with casualty levels in the Iraq insurgency from 2003 to 2007, this level of casualties is probably not acceptable, even given the object of preventing Iranian nuclear proliferation, and the potential of less costly air strikes as an alternative COA.

A second element of acceptability is the financial cost of war. Estimating the financial cost of attacking Iran can be made by extrapolating the costs of the Iraq War. A September 2002 Congressional Budget Office estimate for a war against Iraq estimated deployment costs for 5 Army divisions (240,000 troops plus supporting air and naval forces) at $9 – $13 billion, and monthly operations costs of $6 – $9 billion.[46] These estimates equal $72 to $108 billion per year, with a mean cost of $90 billion per year. The actual cost of fighting the Iraq War and the insurgency that followed is in line with these estimates, though for a force of only about 150,000. The Iraq counter-insurgency is costing about $6.8 billion per month with a total war cost of about $380 billion as of April 2007 (about $95 billion per year).[47] A high intensity war with Iran employing 250,000 troops should produce deployment costs on the higher end of the cost estimates, and operational costs about 50 percent higher. Therefore, assuming the original estimate of a 250,000 soldier invasion force, a war with Iran is estimated to cost $13 billion over 3 months for the initial deployment, and then about $12.5 billion per month of combat. Using the estimates of 48 to 80 days, the conventional fight should cost between $33 billion and $46 billion. The high-end estimate of $46 billion represents less than 3/10th of one percent of the US GDP of $12 trillion, and only two percent of the US government budget of $2 trillion. Using the Iraq insurgency for perspective, the yearly cost to the US is about $90 billion. In this context, the financial costs of a three-month war with Iran would be high, but acceptable.

Upon conclusion of the invasion, the costs of an occupation would arise. If a counterinsurgency force of 250,000 costs $12.5 billion per month and a linear relationship in costs exists for the occupation force of 1.25 million, then monthly

occupation costs would be $50 billion. Extended out for a year, occupying Iran could cost $600 billion per year, or roughly $100 billion more than the total US defense budget for 2007.[48] As with casualties, this level of sacrifice is probably not acceptable, given the war's object and available alternatives.

The third element of acceptability is the retaliation Iran would likely take in response to an invasion. Beyond defending its territory, the most likely forms of retaliation would include influencing Hezbollah to attack Israel, directing attacks against US forces in Iraq, sabotaging Iraqi oil pipelines, and attempting to block the flow of oil from the Persian Gulf.[49] Other likely and available forms of retaliation would include Iran's stopping its own oil exports and launching terrorist attacks against US targets outside the Middle East. It is also highly likely that street demonstrations could take place throughout the Muslim world against another US war on an Islamic nation. In the worst case, Iran could resort to attacking regional oil facilities, encouraging suicide attacks against Western forces in Lebanon, Afghanistan and Iraq, and provoking civil unrest against Muslim states that support the US attack. A further possible action, though an unlikely one, would be for Syria to honor its defense treaty with Iran and initiate operations against the US and/or Israel.[50]

The major intended impacts of Iran's retaliatory options include expanding the war into a regional conflict, destabilizing other regional governments, increasing global oil prices, causing global oil shortages, causing a global recession, and undermining diplomatic support for US actions against Iran. As the most extreme military option against Iran, an invasion would likely result in Iran's employing every retaliatory action available to it. In a worst-case scenario, the governments of Pakistan, Saudi Arabia,

Egypt, Jordan, Syria, Iraq and the Gulf states could all be threatened or overthrown. If Islamist governments hostile to the US replaced the monarchies and dictatorships that exist now, the overall situation would be worse for the US. Other worst-case scenarios include the destruction of regional oil infrastructure, global oil shortages, and global recession due to a lack of energy and high prices for available energy. The cause of human development would be set back by the loss of economic activity resulting from an oil shortage and global recession, especially in rapidly developing economies such as China and India. In addition, the likely expansion of the conflict into a regional war would cause extreme suffering on the people of the Middle East, could result in hundreds of thousands or millions of deaths, and would effectively alter the political and social boundaries of the region. Most importantly, an economic and humanitarian disaster could undercut global faith in US leadership such that the US might lose its leading role in the global economic, financial, and diplomatic spheres.

Invasion and Occupation Suitability

Is an invasion a suitable way to prevent Iran from acquiring a nuclear weapon? Leaving aside the questions of whether war is moral or legal, the suitability question must determine if the COA achieves the desired end state. In terms of the certainty of effect, an invasion is a suitable COA. An invasion would place US forces on the ground in Iran with a capacity to control Iran's nuclear sites. In addition, the occupation that would follow an invasion would have the time and resources to find and destroy hidden nuclear facilities. This follow-on capability to provide the certainty that all of Iran's nuclear facilities are destroyed is the major advantage of the invasion COA over all other military options. Where other military options can destroy Iran's known nuclear facilities with

varying degrees of certainty, only the invasion can guarantee the complete destruction of all nuclear facilities.

In summary, the invasion and occupation COA is marginally feasible if great effort is made and suitable because it offers certainty of effect. Despite the feasibility and suitability assessment, this COA fails the acceptability test when one considers the time and effort involved, the casualties and expense, and the potential effects of Iranian retaliation.

Ground Options – Strategic Raid

The second course of action for a ground option is a conventional force raid to seize and destroy Iran's critical nuclear facilities. In this scenario, the most difficult targets for air attacks to destroy would be assaulted by airborne and ground maneuver troops. The ground formations would be able to destroy deeply buried or hardened targets while the Air Force destroyed the more exposed elements of Iran's nuclear infrastructure. The most important known facilities for this COA include the Bushier Light Water Nuclear Complex, the Natanz Uranium Enrichment Complex, and the Arak Heavy Water Complex.[51] Natanz is located nearly 250 miles east of the Iraq border and more than 450 miles north of the Persian Gulf, and Arak is located about 150 miles east of Iraq and 450 miles north of the Persian Gulf. Bushier is about 120 miles south of Iraq and it is located on the Persian Gulf. Of these facilities, the Natanz Complex is the best protected from air attack, thus making it the most likely target for a ground force raid. This assessment reflects the underground nature of the Natanz enrichment facilities as opposed to the exposed nuclear reactor sites at Bushier and Arak. The second most likely target would be the Arak complex. The Arak complex is the center of Iran's plutonium operation. In

contrast, the Bushier Complex is the least protected and the least likely to be used for a weapons program due to its light water reactors. Consequently, the Bushier facility is not relevant as a target for this COA.

In this strategic raid COA, the airborne or airlifted forces could land either at the objectives or at critical chokepoints along the invasion routes and secure them. Simultaneously, the ground attack could enter Iran from Iraq or the Persian Gulf. These forces would attack to link-up with the airborne forces, complete the destruction of nuclear facilities, and then withdraw. Specifically, the ground force would have to enter Iran from Iraq or the Persian Gulf, penetrate to the center of Iran, destroy the known nuclear facilities, and then withdraw. This scenario would require the same numbers of forces as the full invasion scenario owing to the time it would take to penetrate Iran's interior and destroy the nuclear facilities, but it would not require an occupation army to hold the country after the raid was complete.

In terms of time, the ground raid option would, like COA 1, take several years to organize. Like the invasion option, the raid would require a force of at least 250,000 in order to penetrate into Iran as far as Natanz and hold the logistics lines of communication. The required force could be constituted from existing forces if Army forces in Iraq were removed and supplemented by the National Guard, or if a new field army were raised for this contingency. Barring a mobilization like that envisioned in the invasion scenario, the most likely way to get the forces needed is to wait for the Army to expand and for the redeployment of troops from Iraq to take place. As of May 2007, it appears that the US Army may have about 10 brigades in Iraq by Fall 2008, which suggests there will be about 30 brigades in "reset" and available for deployment

sometime in 2009. In these two years, recruiting efforts anticipate increasing the Army end-strength by about 20,000. Additionally, some of the National Guard forces mobilized for the Iraq War in 2004 will be eligible for another mobilization under the six-to-one deployment to time at home model. Given these estimates, it appears that a raid strategy to destroy Iran's known nuclear facilities within the next three years is broadly feasible from a force generation perspective.

The raid would take about as long as the invasion to reach the targeted facilities at Arak and Natanz.[52] Specifically, it would take about 48 days along the Iraq invasion route and about 80 days from the Persian Gulf route. Once the nuclear facility objectives were reached, it could take up to ten days to breach the facility defenses and destroy the industrial equipment. After the facilities were destroyed, it would take about 20 days to conduct an orderly withdrawal along the Iraq route and about 30 days along the Persian Gulf routes. In total, the raid would take anywhere from two to four months.

Casualty estimates for the raid option are comparable to the invasion COA for the initial attack. Specifically, a ground force of 250,000 that takes minimal casualties in conventional fights and historically average casualties from irregular forces would suffer about 1,100 casualties a month. Using the time estimate for the operation, the raid would result in casualties ranging from 2,200 to 4,400.

Cost estimates for the raid are also comparable to the invasion option. Using the estimates of 48 to 80 days, the attacks to Natanz and Arak should cost between $33 billion and $46 billion. The raid strategy then envisions 10 days to destroy the facilities and 20 to 30 days for the withdrawal of forces. These estimates mean the total cost of the raids would range between $45 billion and $63 billion.[53]

Iran's likely retaliation options for a large-scale raid are similar to those envisioned for an invasion. Specifically, Iran could influence Hezbollah to attack Israel, increase attacks against US forces in Iraq, sabotage Iraqi oil pipelines, and attempt to block the flow of oil from the Persian Gulf.[54] It is also highly likely that Iran would stop its own oil exports and influence its proxies to attack targets outside the Middle East. Street demonstrations would likely take place throughout the Muslim world against another US war on an Islamic nation and Iran may seek to provoke civil unrest against Muslim states that support the US attack. Because the raid strategy would not have regime change as a primary goal, it is possible that Iran would refrain from attacking regional oil facilities, seeking suicide attacks against Western forces in Lebanon and Afghanistan, and calling on Syria to honor its defense treaty.

Concerning the certainty of results, the ground raid option is somewhat better than the air-only option, but not quite as certain as the invasion option. The ground raid is superior to the air raid option because the known nuclear facilities at Arak and Natanz would be destroyed and there would be certainty about the degree of destruction. In contrast, the air-only option does not have the advantage of damage assessment from the ground, nor can it target specific pieces of equipment as precisely. Despite this advantage, the ground raid option is less complete than COA 1 because it cannot account for secret or unknown nuclear facilities that duplicate or reinforce the capabilities of those industrial complexes destroyed. Therefore, the major advantage of the ground raid over an air-only option is the certainty of destruction of the known nuclear facilities and any unknown facilities in the path of the raid, while accepting the same risk of overlooking secret and unknown facilities that are beyond the scope of the raid.

In summary, the conventional raid is minimally feasible in terms of time to prepare and force generation. The casualty and financial costs are disproportionately high when compared to the air option, thus rendering COA 2 unacceptable. Finally, the certainty of effects is suitable but not much superior to the air option. The main flaws with the strategic raid COA are the costs relative to what is to be accomplished. Specifically, COA 2 bears all of the costs of the full invasion, minus the occupation costs, and it is judged to provoke greater retaliation from Iran than what is expected from an air-only option, while offering only marginally better certainty of effects.

Ground Options – Special Operations Raid

The third course of action is a special operation to quickly seize and destroy Iran's key nuclear facility. After completing the destruction, the special operations forces (SOF) would need to be rapidly extracted to prevent their destruction or capture by Iranian forces. In this scenario, a team of about 60 special operations forces would attack the Natanz uranium facility, destroy critical equipment that would render the plant inoperable/unusable for a lengthy period, and then withdraw. A security force would also be necessary due to the time it might take to complete the mission inside the facility and secure the extraction area. At least a battalion of Rangers must be included as a security force; extensive Air Force close air support, air interdiction, and Suppression of Enemy Air Defense (SEAD) missions would be required. The Natanz facility is the most likely target for two reasons. First, the Natanz complex is the most difficult for airpower to produce desired results. Buried underground with reinforced concrete, the Natanz complex will require a tremendous amount of ordnance to penetrate. In addition, once the complex is penetrated it will be very difficult to assess what kind of damage has occurred

inside. In contrast, the Arak heavy water facilities are not nearly as well protected. The Arak facilities are not buried, so both their destruction and their damage assessment are much easier from the air.

The second reason for focusing on the Natanz facility is that conducting more than one operation is not a realistic possibility. Separated by more than 120 miles of desert and mountain terrain, simultaneous operations mounted against each site could not be mutually supportive. With due concern for the safe return of the special operations forces, it is infeasible to support more than one operation of this scale at a time, especially when the need for supporting air operations is considered. Given the need to choose between targets, the Natanz facility is the more suitable for a special operation because of its lesser vulnerability to airpower.

The special operation course of action is a very risky one in terms of what can be accomplished. In order for special operations forces to take a direct action against a large industrial target, the target must have a critical weakness and the target must be well understood in order to plan the operation. If the target is too big, then the small teams that constitute special operations forces cannot bring enough force to bear on the target by themselves and a much larger operation must be planned. The adequacy of information about the target is critical because the special operations force must be able to plan every detail of the operation in advance so that contingencies are anticipated and surprises do not occur. Using the CARVER[55] method to analyze targets, the special operation must have all elements of the planning process complete before the mission can be initiated with any acceptable level of risk. Due to the limited mass and firepower of special operations, thorough and detailed planning is critical for success.

Regarding time, the US could initiate the special operation plan relatively quickly using existing forces. Therefore, the relevant time consideration to prepare the force is limited to the training aspects. If adequate information about the target and security systems were available, the US could probably train a team for the operation within six months.[56] This makes the special operation raid the most feasible ground option in terms of the time required to organize the operation. Given the type of operation envisioned, total forces on the ground would number about 60 special operations forces and about 600 Rangers in the security force.

Because special operations forces lack mass and organic firepower, the duration of this COA is of critical importance. Due to the proximity of Natanz to Qom and Tehran, major Iranian ground formations will be able to respond to the raid within hours. If barracks in the target area are hit preemptively and if the Air Force can interdict Iranian forces responding to the raid on the highways, the raid may have several hours in which to complete its mission before the extraction must begin. In no case could the raid hope to maintain a defended perimeter for a full day without risking the destruction or capture of the entire force. Therefore, the raid would likely seek to maximize US advantages in night fighting by beginning the attack shortly after dark and concluding before sunrise. The operation could then be supported by AC-130 gunships as well as Air Force ground attack aircraft. In any case, the mission would have between 9 and 12 hours of darkness in which to do the mission depending upon the season.[57] Whether or not an operation could accomplish the mission within the time allotted is an open question. Besides infiltrating and exfiltrating the target by air, the mission must seize the facility, enter into its depths, set charges on the critical equipment, and then escape the facility. The

feasibility of this COA is impossible to determine without detailed information about the security at the Natanz facility, and whether or not any critical capability or node exists that a special operations team could attack. If there is no critical capability or node to attack, then use of a SOF mission is an unsuitable COA.

Casualties are another factor that is very difficult to estimate for this COA. In a worst-case scenario, the entire force of about 650 soldiers plus several aircrews could be killed or captured. This scenario could emerge if inaccurate or incomplete information were used in the planning process, or if Iran's security forces were able to avoid the airpower assigned to help guard the ground force. In contrast, the best-case scenario would have the Iranian security forces so disorganized by air and cruise missile strikes that the only resistance would be by guards at the facility. In this scenario, it is possible that there would be minimal US casualties. Assuming the planning factors for the mission were all valid, the amount of time spent on the ground would likely be a major determinant of casualties, with more US troops being risked as time on the ground increased.

The financial cost of a special operation raid would be miniscule compared to the other two ground options. Not only would the training and staging costs be very small, but the operational cost would also be limited by the small number of US forces employed. Though the cost of a special operation raid is obviously less than any conventional ground option, there are no reliable or exact estimates of cost available in unclassified sources. Despite this limitation, the ground component of a special operation raid would certainly cost in the tens or hundreds of millions of dollars, not in the billions of dollars.

What sort of retaliation could be expected from Iran in the event of a special operation raid? Iran's likely retaliation for a special operation raid is probably much less than that envisioned for a more robust ground option. Specifically, Iran would probably influence Hezbollah to confront Israel, seek attacks against US forces in Iraq, sabotage Iraqi oil pipelines, and attempt to block the flow of oil from the Persian Gulf.[58] The major difference between the special operation raid and the two conventional ground options is that Iran would be more reluctant to stop its own oil exports and direct its proxies to attack targets outside the Middle East. With US ground forces in-and-out of Iran within 24 hours, the costs to Iran's own economy of cutting off oil exports would not be worth the risk of affecting the global oil markets. Similarly, the expansion of the conflict to include the Europeans by directing Hezbollah or Iranian agents to conduct killings or sabotage in Europe would probably not be worth the risks. In terms of the reaction by the Muslim world, it is likely that street demonstrations could be expected, though the limited nature of the incursion would probably limit the scale and scope of the reaction. Additionally, it is unlikely that Iran would seek to provoke civil unrest against other Muslim states because the risks of aligning more enemies to Iran would outweigh the potential of destabilizing or overthrowing those states. For the same reason, it is also a remote possibility that Iran would seek to attack regional oil facilities, ordering suicide attacks against Western forces in Lebanon and Afghanistan, or call on Syria to honor its defense treaty.

Is a special operation raid a suitable way to destroy the Natanz nuclear facility? Given the lack of information about security, facility layout, and other factors, the answer is no. The risks to the soldiers sent on such a mission would far outweigh the proposed

benefits. However, if the security and layout questions were answered, and if a critical chokepoint does exist within the Natanz facility, a special operation raid would make more sense. As mentioned in the first chapter, every ground COA discussed assumes the air option as a concurrent operation. Given this assumption, the question becomes, does the certainty provided by the special operation raid at Natanz outweigh the resource diversion of air assets from the air campaign? In the Son Tay Raid, every air asset in the theater was reserved to support the Son Tay raiders. Given the need to protect the ground force in a Natanz raid exclusively from the air, it is reasonable to assume there would be a similar impact on air operations over Iran. Compounding these decision criteria is the fact that if the data required for a special operation raid existed, then the targeting of ground penetrating air attacks would be relatively more effective at hitting the "chokepoint" without endangering the ground troops. Given this criteria, the special operation option does not appear to be a suitable COA. The data required to attempt a special operation raid is not accessible, and if the data were accessible, then the targeting data would probably be sufficient to achieve success with air attacks alone.

Is a ground war against Iran a suitable way to pursue US policy goals against Iran? Compared to an air-only option, the ground options require a tremendous sacrifice in life and treasure as well as the weight of provoking the most extreme potential retaliations from Iran. The invasion COA is the only option that can guarantee the destruction of all Iranian nuclear facilities, both known and unknown at this time. This certainty makes the invasion and occupation a suitable COA.

Despite this degree of certainty, the invasion is also the most costly in terms of time, scale of effort, casualties, national wealth, and potential backlash. Given the need to

occupy Iran after an invasion with at least 1.25 million troops, the invasion option is not an acceptable course of action for three main reasons. First, a force of 1.25 million Americans would likely require a draft to fill the ranks with soldiers. This would constitute a political decision to deny a large number of American citizens their rights to liberty and pursuit of happiness for the cause of preventing Iran from becoming a nuclear threat in the Middle East. Second, because there are credible arguments that Iran is a rational actor and that containment and deterrence policies will work with Iran, there is probably not enough political will to mobilize the US population for an invasion and occupation of Iran. Finally, the expected casualties in the tens of thousands and the costs exceeding $600 billion per year make the invasion an option only in the extreme circumstance where Iran is a clear and imminent danger to the US.

Similar to the invasion option, the strategic raid option is a high cost course of action, but it lacks the redeeming quality of certainty. With the requirement for a massive build-up, casualties again reaching into the thousands, financial costs in the tens of billions of dollars, and the possibility of retaliation on a scale similar to that of a full invasion, the strategic raid has little to recommend it. Though the strategic raid would end when the ground force withdrew from Iranian territory, it is not clear if the Iranians would let the matter rest at that time, and the US could find itself in a protracted low to medium intensity war. Given these evaluations, the strategic raid COA does not offer enough advantage over the air-only option in terms of certainty to offset the vastly higher costs.

The special operation raid is also an unsuitable course of action when compared to the air-only option. However, while the special operation raid avoids the greatest

human, financial, and time costs of the other two ground options, it does not offer any great advantage in certainty of destruction. As mentioned in the body of the chapter, if the data existed to make a special operation raid feasible, then the air-only option could probably accomplish similar results without the risks to the ground forces. The great strength of special operations is that they can strike at targets without the second-order effects that accompany some more high profile types of operations. Given the requirements of a security force to facilitate the special operation strike, the advantage of stealth is lacking in this COA (see table 1). An alternative special operation raid that used a team small enough to be stealthy would be a potential COA if enough data were available to plan a small team insertion, but that data does not exist in unclassified form. One option for special operations forces that could be feasible would be to place a targeting team on the ground to place precision air delivered munitions on the target. More precise than a GPS guided bomb, a special operation team with a laser designator could play a role in enhancing the effects for the air-only option.

Table 1. Summary Table of the Military Options

	Feasibility	Acceptability	Suitability
Air Option	Yes Can be accomplished with existing assets	Yes Lowest cost, feasible military option available	Conditional Suitable for known sites; will miss unknown or secret sites
Invasion and Occupation	Conditional Can be done, but only with great effort	No The human, financial, and retaliatory costs are to high for all but the most extreme circumstance	Yes Ensures the destruction of the nuclear threat
Strategic Raid	Conditional Can be done, but only with great effort	No Benefits are similar to the air option, but the costs are disproportionately high	Conditional Suitable for known sites and sites found along the attack routes; will miss sites not on the attack routes
SOF Raid	No Lack of intelligence data for planning	Conditional Lowest cost ground option if good intelligence becomes available	No Can only target one site at a time; no known critical node or chokepoint

[1]*CIA World Factbook*, https://www.cia.gov/cia/publications/factbook/geos/ir.html, accessed 8 March 2007.

[2]Wikipedia, http://en.wikipedia.org/wiki/Straight_of_Hormuz, accessed 8 March 2007.

[3]*CIA World Factbook*, https://www.cia.gov/cia/publications/factbook/geos/ir.html, accessed 10 March 2007.

[4]Mahmoud Taleghani, Guy Burgel, Ali Goli, and Masud Kowsari, *Atlas of Iran Socio-Economic and Cultural*, French Research Institute in Iran, 2005.

[5]*CIA World Factbook*, https://www.cia.gov/cia/publications/factbook/geos/ir.html, accessed 10 March 2007.

[6]*CIA World Factbook*, https://www.cia.gov/cia/publications/factbook/geos/ir.html, accessed 12 March 2007.

[7]SESRTCIC, http://www.sesrtcic.org/members/irn/irnmapec.shtml, accessed 10 March 2007.

[8]SESRTCIC, http://www.sesrtcic.org/members/irn/irnmapec.shtml, accessed 10 March 2007.

[9]Nuclear Threat Initiative, Iran Nuclear Sites, http://www.nti.org, accessed 16 October 2006.

[10]Global Security.Org, WMD, http://www.globalsecurity.org/wmd/world/iran/index.html, accessed 17 March 2007.

[11]Global Security.Org, Iran Military, http://www.globalsecurity.org/military/world/iran/army.htm, accessed 12 March 2007.

[12]bid.

[13]Ibid.

[14]Global Security.Org, Order of Battle, http://www.globalsecurity.org/military/world/iran/army-orbat.htm, accessed 12 March 2007.

[15]Ibid.

[16]Ibid

[17]Global Security.Org, Iran Air Force, http://www.globalsecurity.org/intell/world/iran/basij.htm, accessed 12 March 2007.

[18]Global Security.Org, Pasadran , http://www.globalsecurity.org/intell/world/iran/qods.htm, accessed 12 March 2007.

[19]Global Security.Org, Pasadran, http://www.globalsecurity.org/intell/world/iran/basij.htm, accessed 12 March 2007.

[20]Ibid.

[21]Global Security.Org, Iran Air Force, http://www.globalsecurity.org/military/world/iran/airforce.htm, accessed 12 March 2007.

[22]Ibid.

[23]Global Security.Org, Iran Air Force, http://www.globalsecurity.org/military/world/iran/navy-base.htm, accessed 12 March 2007.

[24]Ibid.

[25]Ibid.

[26]Ibid.

[27]Global Security.Org, Iran Navy, http://www.globalsecurity.org/military/world/china/c-802.htm, accessed 2 May 2007.

[28]Global Security.Org, WMD, http://www.globalsecurity.org/wmd/world/iran/index.html, accessed 17 March 2007.

[29]Ibid.

[30]Global Security.Org, WMD, http://www.globalsecurity.org/wmd/world/iran/cw.htm, accessed 17 March 2007.

[31]Global Security.Org, WMD, http://www.globalsecurity.org/wmd/world/iran/solid-prop.htm, accessed 17 March 2007.

[32]Global Security.Org, WMD, http://www.globalsecurity.org/wmd/world/russia/as-15-specs.htm, accessed 17 March 2007.

[33]Sam Gardiner, *The End of the "Summer of Diplomacy,"* The Century Foundation, April 2007, 12.

[34]Ibid.

[35]Global Security.Org, Order of Battle, http://www.globalsecurity.org/military/world/iran/army-orbat.htm, accessed 17 March 2007.

[36]Global Security.Org ,Pasadran, http://www.globalsecurity.org/military/world/iran/pasdaran.htm, accessed 17 March 2007.

[37]FM 3-24, *Counterinsurgency* (HQ, Department of the Army, December 2006), 1-13.

[38]The 2 million figure is based on a 1.25 million-occupation army, the current 500,000-soldier force, and an additional 200,000 soldiers to increase the institutional support units that would train and equip such a large force.

[39]Sam Gardiner, 5.

[40]Ground forces for World War II began to expand in 1939 and were intended to reach full mobilization by summer 1943. Within these four years, the US Army expanded from 240,000 active soldiers to over 5.4 million. *Mobilization*, The US Army in World War II The 50th Anniversary, CMH Pub 72-32, internet source http://www.army.mil/cmh-pg/documents/mobpam.htm, accessed 10 May, 2007.

[41]Fourteen miles per day was the average speed maintained by the US Army during the 2003 invasion of Iraq. The invasion covered about 300 miles in 21 days, resulting in an average speed of just over 14 miles per day.

[42]FM 101-10-1/2, *Staff Officer's Field Manual Organizational, Technical, and Logistical Data Planning Factors,* Table 4-18, October 1987, http://www.globalsecurity .org /military/library/policy/army/fm/101-10-1_2/FM101-10-1-2.PDF, accessed 2 April 2007.

[43]This estimate uses the total US casualties during the major combat operations phase of the Iraq War in 2003 and extrapolates the numbers to reflect the projected Iran invasion force.

[44]The Iran-Iraq War is relevant because it is the only time Iran has made a national military effort. Though Iran has conducted smaller special operations with great competence, the social, equipment maintenance, and military training aspects of Iran's regular forces argues against assuming Iran's regular forces are much improved over their performance of 30 years ago.

[45]Estimate 30,000 killed and wounded over four years out of a baseline force of 150,000.

[46]Matthew Schmit and David Newman, *Estimated Cost of a Potential Conflict with Iraq*, Budget Analysis Division, September 2002, http://usgovinfo.about.com/gi/ dynamic/offsite.htm?site=http://www.cbo.gov/showdoc.cfm%3Findex=3822%26amp%3 Bsequence=0, accessed 2 April 2007.

[47]Cost of Iraq War and Nation Building, zFActs,com, http://zfacts.com/ p/447.html, accessed 2 April 2007.

[48]National Defense Budget Summary, p. 4 http://www.defenselink.mil/ comptroller/defbudget/fy2007/fy2007_greenbook.pdf, accessed 13 April 2007.

[49]Sam Gardiner, 16.

[50]Ibid.

[51]Sammy Salama and Karen Ruster, A Preemptive Attack on Iran's Nuclear Facilities: Possible Consequences, Center for Nonproliferation Studies (CNS), http://cns.miis.edu/pubs/week/040812.htm, accessed 31 March 2007.

[52]The Natanz facility is only about 50 miles south of Tehran, so the distances covered by forces in COA 1 and COA 2 are materially the same.

[53]Each day in combat costs about $4.12 billion.

[54]Sam Gardiner, 16.

[55]CARVER refers to Criticality (single points of failure or chokepoints), Accessibility (ease of access to the critical chokepoints), Recoverability (how long will it take to replace the asset versus the needed time of disruption), Vulnerability (how

effective is the adversary security system), Effect (what will the adversary do in response to the action), and Recognizability (does the adversary recognize the targeted chokepoint as critical).

[56]The Son Tay Raid took about 4 months to plan and rehearse, the Eagle Claw operation was planned over a full year, but operational training took about 6 months.

[57]Farmers Almanac, Astronomy, Rise and Set, http://www.almanac.com /rise/results.php?month=12&day=13&year=2007&zipcode=66027&searchtype=zip&place=Fort+Leavenworth&state=KS&usamap_x=&usamap_y=&timezone=1&what%5B%5D=Sun&what%5B%5D=Moon, accesses 17 May 2007.

[58]Sam Gardiner, 16.

CHAPTER 5

CONCLUSION

If air strikes can only postpone Iran's acquisition of nuclear weapons, then the US must consider a ground option to prevent Iran's acquiring nuclear weapons in the long term. Is there a military ground option that the US can employ against Iran that is feasible, acceptable, and suitable? The need to answer this question was evident when I began my research nine months ago, and the need was confirmed by the time I finished the literature review: no one had yet written an analysis of the ground options the US has for dealing with Iran. What I discovered in my research was that most analysts of a potential conflict with Iran favored a diplomatic solution, a "Grand Bargain," to prevent Iran from acquiring nuclear weapons. Barring a diplomatic agreement, most analysts recommended accepting a nuclear armed Iran and dealing with the threat by deterrence and containment. A minority of analysts favored a military strike to set back the Iranian nuclear program by several years and thereby prevent Iran from acquiring the necessary weapon's grade nuclear material for a bomb. However, those who favored a military strike focused exclusively on the use of airpower. My research revealed no attempt by other analysts to explore the potential ground options. This thesis therefore fills a gap in the body of knowledge about land warfare and its potential use in the current political and military environment.

In order to provide a comprehensive but manageable analysis of the thesis question, I choose three broad courses of action (COA) to describe the range of possibilities that exist for a ground war in Iran with the aim of eliminating Iran's nuclear program. These three COAs include an invasion and occupation of Iran, a strategic raid to

destroy Iran is known nuclear facilities, and a special operations raid to destroy the Natanz uranium enrichment facility. Every ground COA assumes employing airpower to complement the ground attack. The targets of the ground options focus on the center of gravity (CoG) for Iran's nuclear program. The CoG for the uranium program is the Natanz enrichment facility and the CoG for the plutonium program is the heavy water complex at Arak. Though additional nuclear facilities exist throughout the country, these two facilities appear to be the indispensable components of the military nuclear program, since they represent the key facilities necessary to develop weapons grade nuclear material.

Significant decisive points that must be controlled, destroyed, neutralized, or eliminated include the mountain passes through Khorramabad and Shiraz, the landing beaches and port facilities at Bandar Abbas and Bushier, and the military, economic, and population centers at Kerman, Yazd, Ispahan, Qom, Ahvaz, Chahr-e Kord and Yasoudj. These cities represent the best military and transportation infrastructure in Iran south of Tehran. Due to its location north of the major nuclear weapon sites, Tehran is not a decisive point except in the invasion and occupation COA. Significantly, Tehran is the most important geographic location if a full invasion is envisioned because Tehran is the political, economic, military, social, and transportation hub of the nation.

Of the five major routes that lead into Iran, the routes from Turkmenistan and Armenia are the least desirable for a ground attack because they are the most difficult to support logistically and they require passing through Tehran to get to Natanz and Arak. The most direct route into Iran is from Iraq. This route passes through Iran's coastal plain and then follows the mountain passes into the interior. The other two major routes begin

on the Persian Gulf at Bushier and Bandar Abbas. The Bushier route passes through the Zagros Mountains while the Bandar Abbas route passes through the coastal ranges into Iran's interior.

Iran's military forces are generally weak in conventional terms. The air force and navy are very small, though they are both dangerous if they employ missiles or suicide forces. Iran has a robust ballistic missile force that can reach all of the Persian Gulf states, Iraq, and most of the Middle East. Iran also possesses a small but significant shore-to-ship cruise missile capability, three very capable and modern diesel submarines, and anti-shipping mines. Iran's best supplied and trained force is the Pasadran, a volunteer force of about 120,000 that includes its special operations force, the Quds Force. Iran's army numbers about 350,000 regulars, though they are unevenly trained and equipped. Iran can also field several hundred thousand militia fighters with small arms. Though Iran can field a formidable number of fighters, a lack of training and heavy equipment limits the conventional power of Iran's ground forces. Despite the limitations, Iran's soldiers can be expected to fight, and both the leadership and population are motivated to defend their homeland. If expectations hold true, the greatest threat to US ground forces in an attack on Iran would be unconventional tactics by Iran's military forces. An additional capability of the Iranian military is their chemical weapons. Though small-scale use of chemicals is possible, it is unlikely that Iran would use them extensively because Iran lacks the conventional ability to spread chemical weapons in a militarily significant way against US forces, and because of the response that such a use of WMD could provoke from the US.

Though Iran cannot adequately defend itself from a determined conventional US attack, Iran is not defenseless. Iran's full array of retaliatory options could destabilize the Middle East, cause global energy shortages and economic recession, potentially undercut global faith in US leadership, and further reduces America's standing in the world. As the sole global superpower, US leadership depends upon American security guarantees and an open global marketplace. If Iran is capable of actions that could undermine the security or economic foundations of American power, then any confrontation between the US and Iran must be viewed with caution.

In light of my research, I conclude that there are no ground options that are feasible, acceptable, and suitable. Using the airpower COA as a baseline to judge the ground options, the advantages of the air option are the low risk to American forces, the ability to strike virtually at will against targets inside Iran, the relatively low financial cost, the ability to execute an attack on relatively short notice, and the probability that Iran would constrain its retaliatory response. The major problems with the airpower option are the lack of certainty that the US knows about and can therefore strike every critical nuclear facility, the inability to conduct a thorough damage assessment on underground targets, and the fact that an air strategy would allow the Iranians to salvage and restart their nuclear program in a relatively short time.

In contrast to the air option, the special operation raid is infeasible due to the lack of detailed intelligence data necessary to plan and execute the mission with acceptable risk to the American forces. Specifically, security systems in the Natanz facility are unknown, the interior layout is not well mapped, and there is no known "chokepoint" to target within the facility. A final flaw with the special operation raid is that even if a

chokepoint exists and were destroyed, the Iranians could salvage and rebuild the critical equipment more quickly than in any other military option envisioned.

Unlike a special operation raid, a strategic raid would enter Iran with overwhelming force and would maneuver to seize Iran's critical nuclear facilities in order to ensure their total destruction. Though the conventional raid appears to have some of the advantages of the special operation raid as well as some of the advantages of the full invasion, it is actually more notable for having all of the disadvantages of the other two courses of action. The conventional raid is expensive, difficult and time consuming to execute, it promises relatively high casualties, the Iranian retaliation would be severe, and it would not resolve the issue of failing to strike unknown facilities. Though the raid is broadly feasible in terms of the resources required, a raid is not acceptable given the casualties and very costly retaliation that is expected.

A full ground invasion and occupation of Iran is only marginally feasible, but it is not acceptable for the object of preventing Iran from acquiring a nuclear weapon, though the assurance of stopping Iran's nuclear development makes this COA suitable. An invasion would take a minimum of four years, under ideal circumstances, just to mobilize the force needed to execute the invasion. The mobilization would likely require conscription to fill the 1.25 million soldiers needed for an occupation, and the casualties would be in the tens of thousands each year for each year of occupation. Financially, the cost would be disproportionate compared to any other course of action unless it is weighed against a future Iranian nuclear attack against a city. Adding to the cost, Iran could be expected to unleash the most extreme retaliation possible. Given these costs, the only major advantage of the invasion COA is the certainty with which the Iranian nuclear

program would be stopped. By occupying the country, every facility could be searched, every piece of nuclear technology could be removed or destroyed, and every nuclear scientist could be identified.

An invasion and occupation is also not acceptable due to the human and financial costs. The imposition of conscription, the loss of American lives, and the financial burden of funding the occupation of a nation of 69 million is disproportionate to any goal except stopping Iran's imminent employment of nuclear weapons. Though Iran with nuclear weapons will be more threatening to its neighbors and US forces in the region, most of the historical evidence and current analyses suggests that Iran can be deterred and contained. In addition, an American nuclear guarantee for the Arab and Turkish states may be enough to prevent a nuclear arms race in the Middle East. As regards Israel and Europe, modern anti-ballistic missile defenses could be operational before Iran acquires a deliverable nuclear weapon. The problem of Iran's giving a nuclear device to terrorists is a real concern, though the logic of deterrence still applies. The fallout of a nuclear explosion would identify the device as having come from Iran, and the retaliation by the targeted state and its allies would undoubtedly be severe. In addition, the idea of any state giving away its most powerful weapons to a non-state actor is not credible. The repercussions of the plot being discovered, the bomb being used against the wrong target or the weapon being captured by criminals or other non-state actors is too high. As an additional consideration, if an enemy captured the bomb, then the bomb could be turned against Iran and there would be little to trace the attack back, since the nuclear materials would be of Iranian origin.

In conclusion, the various land power options to destroy Iran's nuclear capabilities are either not feasible, not acceptable, or not suitable to confront the Iranian nuclear threat. The time and resources a ground invasion would require are out of proportion to the potential costs of an airpower option, and the potential increase in certainty of effects does not appreciably increase without resort to the very costly invasion and occupation option.

Given my understanding of the Iranian regime, I do not expect the Iranians to accept any diplomatic bargain that denies them the nuclear fuel cycle or the ability to construct nuclear weapons. Religious ideology and assertive nationalism appear far more important to the leaders of Iran than any practical considerations of economic development, human welfare, or diplomatic connection to the Western dominated global political and financial systems. For the same reasons, I do not believe the Iranians will give up their nuclear program under mere threat. Therefore, the only practical options for the US appear to be accepting Iran as a nuclear power and developing a system of containment and deterrence, or using airpower to destroy Iran's known nuclear facilities and thus set back their program by some number of years, and then dealing with Iran's retaliatory response. If Iran can be deterred, then containment and deterrence should be the preferred solution. If Iran cannot be deterred, then an air strike is by far the best option.

The question of what to do about the Iranian nuclear threat comes down to the question of whether Iran can be deterred from using nuclear weapons or not. If the US does nothing, then by default the containment and deterrence course of action will be its policy. This default position accepts the risk that Iran could employ a nuclear weapon at

sometime in the future. If the US resorts to air strikes, then it will likely commit itself to a long, low intensity war with Iran where the US seeks to find and destroy Iran's remaining nuclear capabilities while the Iranians and their allies retaliate in various ways against US interests. The only certain conclusion I can draw from my research is that none of the ground options are the best solution, and that although the air option is feasible and suitable, the acceptability of its costs depends entirely on the degree of Iranian retaliation.

If the US decides to use the deterrent and containment option, then the US must make clear the severe consequences that will obtain if Iran ever elects to use its nuclear weapons. In some future crisis, would Iran's leaders elect to use their weapons anyway? This question is a potential topic for further study. Using deterrence theory, a future study could examine if a nuclear-armed Iran would be immune to the considerations of mutual assured destruction that held the two superpowers in check from nuclear war during the Cold War. Indeed, the deterrent effect on Iran would also have to consider the increasing ability of the US to protect itself and its allies from ballistic and cruise missile attack. Without a credible first strike or counter strike capability, would nuclear weapons be at all useful to Iran as diplomatic or coercive tools? Having shown that a ground attack is not a feasible, acceptable, or suitable way to deal with Iran's nuclear proliferation threat, an in-depth analysis of the deterrent option is the next logical step in analyzing whether the air option or deterrence is in fact the best policy for the US.

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