

**LEGAL CONSTRAINTS UPON THE USE OF
A TACTICAL NUCLEAR WEAPON AGAINST
THE NATANZ NUCLEAR FACILITY IN IRAN**

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I. INTRODUCTION

The United States initially developed concerns about the Islamic Republic of Iran (Iran) using its nuclear energy program as a cover

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for the development of nuclear weapons in the mid-1970s.¹ After the 1979 Islamic Revolution deposed Iran's pro-western government, however, U.S. suspicions about Iranian pursuit of nuclear weapons increased dramatically.² In the 1990s, the Central Intelligence Agency believed Iran was shopping for surplus nuclear weapons belonging to the former Soviet Union³ and that Iran's domestic nuclear program might produce a nuclear weapon by 2000.⁴ In the current diplomatic standoff, the United States and its allies suspect Iran of using its domestic nuclear energy program as a subterfuge for the clandestine development of nuclear weapon technology⁵ in violation of Iranian obligations under the Nuclear Non-Proliferation Treaty.⁶

In April 2006, the *New Yorker* published an article alleging that the U.S. military was actively planning for a possible attack upon suspected nuclear-weapon-development sites within Iran.⁷ When asked about the possibility of a nuclear strike upon Iran, President George W. Bush responded, "All options are on the table. We want to solve this issue diplomatically and we're working hard to do so."⁸ The president's response⁹ considered in conjunction with publicly

1. INT'L INST. FOR STRATEGIC STUDIES, IRAN'S STRATEGIC NUCLEAR WEAPONS PROGRAMMES 11 (2005).

2. See generally Richard Z. Chesnoff, *A Little Shopping for Horrors (Nuclear Weapons Research in Iran)*, U.S. NEWS & WORLD REP., Nov. 23, 1992, at 52; Ed Blanche, *Iran May Have Secret Nuclear Arms Program*, S.F. EXAMINER, Dec. 14, 1992, at B12.

3. *Iran Shopping for Nuclear Arms*, ROCKY MOUNTAIN NEWS, Sept. 27, 1994, at 19A.

4. Elaine Sciolino, *CIA Report Warns of Iran's Nuclear Plans It Says Tehran Could Build Nuclear Weapon by 2000*, S.F. CHRON., Nov. 30, 1992, at A1.

5. The development of nuclear weapons by a nation that did not previously have them is known as horizontal proliferation. PETER L. HAYS, VINCENT J. JODOIN & ALAN R. VAN TASSEL, COUNTERING THE PROLIFERATION AND USE OF WEAPONS OF MASS DESTRUCTION 2 (1998). In contrast, an increase in the amount of nuclear weapons possessed by a nation that already possessed them is known as vertical proliferation. During the arms race of the Cold War, vertical proliferation predominated. Jed C. Snyder, *The Non-Proliferation Regime: Managing the Impending Crisis*, in STRATEGIC CONSEQUENCES OF NUCLEAR PROLIFERATION IN SOUTH ASIA 7, 7-27 (Neil Joeck ed., 1986). Since the end of the Cold War, however, horizontal proliferation has emerged as a primary concern for the United States. HAYS, JODOIN & VAN TASSEL, *supra*.

6. Treaty on the Non-Proliferation of Nuclear Weapons, *opened for signature* July 1, 1968, 21 U.S.T. 483, 729 U.N.T.S. 161 (entered into force Mar. 5, 1970) [hereinafter NPT].

7. Seymour M. Hersh, *Would President Bush Go to War to Stop Tehran from Getting the Bomb?*, NEW YORKER, Apr. 17, 2006, http://www.newyorker.com/printables/fact/060417fa_fact.

8. Press Release, President Bush Nominates Rob Portman as OMB Director and Susan Schwab for USTR (Apr. 18, 2006), *available at* <http://www.whitehouse.gov/news/releases/2006/04/20060418-1.html> (last visited Mar. 12, 2008).

9. The President's statement exemplifies the official U.S. policy of deliberate or strategic ambiguity regarding situations in which a nuclear weapon would be used. See JOINT CHIEFS OF STAFF, DOCTRINE FOR JOINT NUCLEAR OPERATIONS: JOINT PUBLICATION 3-12

available excerpts regarding “Hard and Deeply Buried Targets” from the 2001 United States Nuclear Posture Review¹⁰ suggests tactical nuclear weapons may be considered a good option to destroy fortified, underground Iranian nuclear facilities.

In 1945, the United States was the first and last nation to use nuclear weapons against an enemy. Since that time, the legality of both the existence and potential use of nuclear weapons under international law has been the topic of countless articles and books. The International Court of Justice (ICJ), the principal judicial organ of the United Nations (U.N.), promulgated the most authoritative analysis in 1996 when it issued an advisory opinion on the threat or use of nuclear weapons.¹¹ Most of the literature, including the ICJ advisory opinion, focuses on city-leveling strategic nuclear weapons¹² as an abstract concept in various hypothetical situations. In contrast, this Article will explore, to the extent possible given the highly classified nature of much of the relevant information, the legality of employing a comparatively low-yield tactical nuclear weapon¹³ against an underground target at a particular location within Iran. Such a factual focus enables a sharper analysis of situation specific issues.

Iran has constructed numerous nuclear facilities both above and below ground.¹⁴ The high number of separate facilities necessitates a limitation upon the number of targets discussed. There is no military need to use a tactical nuclear weapon against surface

(2005), available at http://www.globalsecurity.org/wmd/library/policy/dod/jp3_12fc2.pdf. The goal of ambiguity is to increase the deterrent value of nuclear weapons by precluding an adversary's ability to accurately predict the consequences of a particular course of action. See *id.*

10. GlobalSecurity.org, Nuclear Posture Review [Excerpts], <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm> (last visited Mar. 17, 2008).

11. Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. 66 (July 8) [hereinafter Legality of Nuclear Weapons].

12. The distinction between strategic and tactical nuclear weapons is rather murky and depends largely upon who is making the classification. See generally AMY P. WOOLF, CONG. RESEARCH SERV., REPORT NO. RL 32572, NONSTRATEGIC NUCLEAR WEAPONS (Jan. 28, 2009), available at <http://www.fas.org/sgp/crs/nuke/RL32575.pdf>. The following are some of the factors employed to distinguish a tactical weapon from a strategic weapon: range, yield, intended target, national ownership, capability, and delivery vehicle. *Id.* For the most part, tactical weapons have a lower explosive yield and are intended for use against specific battlefield targets. REGINA LENOX, BRIEFING BOOK ON TACTICAL NUCLEAR WEAPONS 2 (2003), available at http://old.armscontrolcenter.org/resources/20030101_bb_tnw.pdf.

13. The ICJ expressly declined to consider the possibility of tactical nuclear weapons capable of limiting the risks inherent in using nuclear weapons. Legality of Nuclear Weapons, *supra* note 11, at para. 43.

14. See INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 33-68.

targets because conventional weapons can easily destroy them with minimal collateral damage. Accordingly, they will not be addressed. The underground facility posing probably the greatest immediate nuclear-weapon-proliferation risk is the Natanz uranium-enrichment facility in the central Iranian desert.¹⁵ Indeed, Natanz is the facility U.S. military planners were contemplating when assessing the possible use of a tactical nuclear weapon.¹⁶ This Article will explore the various legal issues associated with an attack upon the underground Natanz facility.

In the summer of 2002, President Bush made the first public announcement of a controversial new foreign policy now known as the Bush Doctrine.¹⁷ In September 2002, the U.S. government officially adopted and promulgated the Bush Doctrine in the National Security Strategy of the United States.¹⁸ In essence, the Bush Doctrine asserts a U.S. right to use force preemptively against an inchoate, emerging threat of sufficient severity to national security.¹⁹ The Bush Doctrine claims justification as a legitimate extension of the customary-international-law right of anticipatory self-defense.²⁰ Classification of the Bush Doctrine within the black-letter self-defense framework of the U.N. Charter is more problematic. Indeed, the U.N. Charter, specifically Articles 2(4)²¹ and 51,²²

15. See generally Nazila Fathi, *Iran Says It Can Enrich Uranium on an Industrial Scale*, N.Y. TIMES, Apr. 10, 2007, at A3; William J. Broad & Elaine Sciolino, *Iran's Secrecy Widens Gap in Nuclear Intelligence*, N.Y. TIMES, May 19, 2006, at A1.

16. Editorial, *Military Fantasies on Iran*, N.Y. TIMES, Apr. 11, 2006, at A20.

17. President George W. Bush, Commencement Address at the United States Military Academy in West Point, New York (June 10, 2002), in 38 WKLY. COMP. PRES. DOC., at 946.

18. WHITE HOUSE, THE NATIONAL SECURITY STRATEGY OF THE UNITED STATES OF AMERICA 15 (2002), available at <http://www.globalsecurity.org/military/library/policy/national/nss-020920.pdf>.

19. *Id.*

20. *Id.* at 15.

21. U.N. Charter art. 2, para. 4. The paragraph states: "All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations." *Id.*

22. U.N. Charter art. 51. The article states the following:

Nothing in the present Charter shall impair the inherent right of individual or collective self-defence if an armed attack occurs against a Member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security. Measures taken by Members in the exercise of this right of self-defence shall be immediately reported to the Security Council and shall not in any way affect the authority and responsibility of the Security Council under the present Charter to take at any time such action as it deems necessary in order to maintain or restore international peace and security.

is the legal authority most cited by the myriad critics of the Bush Doctrine.²³

The legality of the application of the Bush Doctrine falls under the category of *jus ad bellum*²⁴ in that it is a question regarding the legal validity of the initiation of armed conflict. Whether any U.S. attack upon Iran is legally justifiable is a topic beyond the scope of this discussion. For the purposes of this analysis, the *jus ad bellum* basis is presumed valid. Such a presumption limits the topic to the category of *jus in bello*,²⁵ or the law regarding the means and methods of how a war is conducted. Specifically, this Article addresses whether limited use of a tactical nuclear weapon against the Natanz nuclear facility is legally permissible in an otherwise lawful conflict.

Application of the basic principles of international humanitarian law reveals that use of the only earth-penetrating tactical nuclear weapon in the U.S. arsenal against the Natanz facility would likely be an illegal act. Under the principle of distinction,²⁶ uncertainty regarding the Natanz facility's military connection makes problematic the conclusive identification of the facility as a legitimate military objective. Nevertheless, there is a basis to assert the facility is a lawful target by virtue of Iranian efforts to fortify the structure against attack.²⁷ In contrast, it is difficult to conclude that use of a tactical nuclear weapon (configured for a 400 kiloton explosion)²⁸ against the Natanz facility would not violate the principles of military necessity and proportionality. The only available earth-penetrating nuclear weapon simply has too large an explosive yield that cannot be contained by its limited earth-penetration depth.²⁹

Apart from international humanitarian law is the issue of nuclear security assurances. All states with nuclear weapons,³⁰ including

23. See generally Sean D. Murphy, *The Doctrine of Preemptive Self-Defense*, 50 VILL. L. REV. 699 (2005) (discussing four different schools of thought regarding the legal status of preemptive self-defense under the U.N. Charter).

24. *Jus ad bellum* regulates when States may legally resort to the use of armed force. DOCUMENTS ON THE LAWS OF WAR 1-2 (Adam Roberts & Richard Guelff eds., 2000).

25. *Jus in bello* regulates the means and methods by which States conduct an armed conflict. It is also known as international humanitarian law, law of war, and law of armed conflict. *Id.* at 2. Hereinafter, the term international humanitarian law will be used.

26. See *infra* Part III.A.

27. U.S. DEP'T OF THE ARMY, FIELD MANUAL FM 27-10: THE LAW OF LAND WARFARE 19 (1956).

28. See *infra* Part II.C.

29. See *infra* Parts II.C, III.C.

30. Hereinafter, a nation with nuclear weapons will be referred to as a nuclear-weapon state. Article IX (3) of the NPT defines a nuclear-weapon state as one that manufactured and detonated a nuclear weapon before January 1, 1967. NPT, *supra* note 6, at

the United States, unilaterally issued positive and negative nuclear security assurances.³¹ These guarantees are expressly for the benefit of states without nuclear weapons³² and who are party to the Non-Proliferation Treaty (NPT). Whether the security assurances are legally binding is an undecided question with a direct impact upon the legality of a U.S. nuclear strike against Iran. There are three theories under which the United States' negative security assurance could be found to impose a legal obligation requiring it to refrain from using a tactical nuclear weapon against Iran, a non-nuclear-weapon state party to the NPT.³³ Several ICJ decisions, including the *Legality of Nuclear Weapons* opinion, indicate that nuclear security assurances would likely be deemed a legal obligation the United States is bound to uphold.

II. BACKGROUND

A. *The Iranian Nuclear Program*

Soon after World War II, peaceful applications for the nascent science of nuclear physics were widely recognized. Most notable was nuclear energy's ability to generate significant amounts of relatively inexpensive electrical power. Thus, there was and is a commercial demand for nuclear technology.³⁴ Nevertheless, there is a substantial overlap between the procedures necessary for peaceful power generation and those necessary for production of weapons-grade nuclear material.³⁵ Therein lies the basic problem of non-proliferation and the source of current U.S. concern regarding the Iranian nuclear program. Prior to the 1979 Islamic Revolution in Iran, however, the United States considered the Iranian nuclear program much differently.

art. ix (3). Under that definition the only recognized nuclear-weapon states are China, France, Russia, United Kingdom, and the United States. RANDALL FORSBERG ET AL., NON-PROLIFERATION PRIMER: PREVENTING THE SPREAD OF NUCLEAR, CHEMICAL, AND BIOLOGICAL WEAPONS 138 (1995). Unrecognized nuclear-weapon states include India, Pakistan, North Korea and probably Israel. MARY BYRD DAVIS & ARTHUR H. PURCELL, WEAPONS OF MASS DESTRUCTION 14 (2006).

31. See generally S.C. Res. 255, ¶ 2, U.N. Doc. S/RES/255 (June 19, 1968); UNILATERAL SECURITY ASSURANCES BY NUCLEAR-WEAPON STATES, www.ppnn.soton.ac.uk/bb2/Bb2secK.pdf (last visited Apr. 26, 2009).

32. Hereinafter, a nation without nuclear weapons will be referred to as a non-nuclear-weapon state.

33. See *infra* Part IV.

34. See generally OFFICE OF NUCLEAR ENERGY, SCI. & TECH., U.S. DEP'T OF ENERGY, DOE/NE-0088, THE HISTORY OF NUCLEAR ENERGY, available at http://www.nuc.umr.edu/nuclear_facts/history/history.html (last visited Mar. 14, 2008).

35. See generally ALBERT WOHLSTETTER, SWORDS FROM PLOWSHARES: THE MILITARY POTENTIAL OF CIVILIAN NUCLEAR ENERGY (1979).

In 1953, President Dwight D. Eisenhower proposed a plan to share peaceful nuclear energy technology with other nations in hopes of removing the impetus for development of nuclear weapons technology.³⁶ Known as the Atoms for Peace program, it facilitated the creation of research reactors, fueled with highly enriched uranium, throughout the world.³⁷ A precursor to the NPT, the Atoms for Peace program resulted in the creation of the International Atomic Energy Agency (IAEA) in 1957.³⁸ Iran's domestic nuclear energy program also began in 1957, when it entered into a nuclear cooperation agreement with the United States under the Atoms for Peace program.³⁹ Perhaps more important to Iran than energy production, nuclear technology offered the possibility of renewed prestige and heightened regional and international status for descendants of the once mighty Persian Empire. Iranian mastery of nuclear technology could also have ensured military security by enabling nuclear weapon development, if Iran so deemed development necessary.⁴⁰

During this period, the Iranian monarch, Shah Mohammad Reza Pahlavi, took a personal interest in nuclear power and directed the creation of a nuclear research center at Tehran University.⁴¹ The centerpiece of the new research center was to be a five megawatt research reactor purchased from the United States pursuant to the nuclear cooperation agreement.⁴² The United States also agreed to lease Iran enriched uranium to power the reactor.⁴³ In 1967, Iran took possession of the uranium nuclear fuel as well as a smaller amount of plutonium and successfully started its reactor.⁴⁴

In July 1968, Iran signed the NPT on the day it opened for signature.⁴⁵ Iran ratified the NPT in February 1970 and continues to

36. OFFICE OF NUCLEAR ENERGY, SCI. & TECH., *supra* note 34.

37. George Bunn, *The Nuclear Nonproliferation Regime and Its History*, in U.S. NUCLEAR WEAPONS POLICY 75, 75 (George Bunn & Christopher F. Chyba eds., 2006).

38. *Id.*

39. Agreement for Cooperation Between the Government of the United States of America and the Government of Iran Concerning Civil Uses of Atomic Energy, U.S.-Iran, Mar. 5, 1957, 10 U.S.T. 733.

40. GORDON CORERA, SHOPPING FOR BOMBS: NUCLEAR PROLIFERATION, GLOBAL INSECURITY, AND THE RISE AND FALL OF THE A. Q. KHAN NETWORK 60 (2006); INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 11.

41. See INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 10.

42. *Id.*

43. *Id.*

44. See *id.*

45. UNITED NATIONS, MULTILATERAL ARMS REGULATION AND DISARMAMENT AGREEMENTS, <http://disarmament.un.org/TreatyStatus.nsf> (last visited Mar. 17, 2008).

remain party to the agreement.⁴⁶ In 1974, the Iranian government, with full coffers as a result of increased oil revenue following the 1973 oil crisis,⁴⁷ declared its intention to develop a robust domestic nuclear power industry with a target electrical production capacity of 23,000 megawatts.⁴⁸ At that time, Iran also announced its goal of attaining all the technology and facilities necessary for independent control of the complete nuclear fuel cycle.⁴⁹ The government created the Atomic Energy Organization of Iran (AEOI) to manage the undertaking.⁵⁰ The degree of Iran's commitment to nuclear power is reflected in the AEOI budget which increased from approximately \$31 million in 1974 to \$1 billion in 1976.⁵¹

In May 1974, Iran's safeguard agreement with the IAEA entered into effect.⁵² That same month, the United States agreed to collaborate with Iran on its plan to develop a domestic nuclear power system.⁵³ In June 1974, the shah made a public statement indicating that Iran would have nuclear weapons in the near future.⁵⁴ Soon after, the shah recanted and reiterated the need for Iran and other regional states to avoid seeking nuclear weapons.⁵⁵ Nevertheless, research into laser enrichment and reprocessing methods for producing weapons-grade nuclear material quietly were ongoing.⁵⁶

46. *Id.*

47. INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 10.

48. *Id.* at 11.

49. *Id.*; The nuclear fuel cycle involves the following major steps: (1) mining and milling of uranium ore into uranium oxide (yellowcake); (2) conversion of uranium oxide into uranium hexafluoride gas; (3) enrichment (gas diffusion or centrifuge) to concentrate the level of U-235 between 3% and 5%; (4) conversion into uranium dioxide powder and compression into small pellets for inclusion in metal fuel rods; (5) use of the fuel rods in a reactor to produce electricity; (6) storage of spent fuel rods in cooling ponds to reduce heat and radiation levels; (7) reprocessing to recover approximately 96% of the original uranium, 1% plutonium, and isolate 3% waste; (8) sealing the radioactive waste within liquid glass in metal containers; (9) final disposal of radioactive waste at designated sites. See ANTHONY V. NERO, JR., A GUIDEBOOK TO NUCLEAR REACTORS 264-74 (1979); U.S. GOV'T PRINTING OFFICE, NUCLEAR PROLIFERATION FACTBOOK 313-24 (1985).

50. ANTHONY H. CORDESMAN & KHALID R. AL-RODHAN, IRAN'S WEAPONS OF MASS DESTRUCTION 102 (2006).

51. ALIREZA JAFARZADEH, THE IRAN THREAT: PRESIDENT AHMADINEJAD AND THE COMING NUCLEAR CRISIS 130 (2007).

52. *Id.*

53. *See id.*

54. Elaine Sciolino, *Nuclear Ambitions Aren't New for Iran*, N.Y. TIMES, JUN. 22, 2003.

55. CORDESMAN & AL-RODHAN, *supra* note 50, at 102.

56. JAFARZADEH, *supra* note 51, at 130; *see also* INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 11.

The talk of obtaining nuclear weapons in violation of Iran's NPT obligations apparently had only limited impact upon the nuclear energy plan.⁵⁷ In 1976, Iran contracted to purchase two reactors and enriched uranium fuel from French interests⁵⁸ (another agreement for six more reactors was concluded later)⁵⁹ and two reactors and enriched uranium fuel from West German interests⁶⁰ (another agreement for four more reactors was concluded later).⁶¹ A later agreement to purchase eight reactors and enriched uranium fuel from U.S. interests⁶² made a total of 22 reactors. Each reactor had an electrical production capacity of approximately 1,000 megawatts, so the completed system would have effectively realized the declared production goal of 23,000 megawatts.⁶³ Although Iran had extensive oil and gas energy supplies to generate electricity, the United States fully supported Iran's nuclear energy program as a means to ensure more oil was available for export.⁶⁴

While Iran was negotiating to purchase nuclear reactors, it also aggressively pursued the prospect of constructing a nuclear-reprocessing facility within its borders.⁶⁵ Reprocessing is the method to isolate any remaining usable elements, such as uranium or plutonium, within spent nuclear fuel.⁶⁶ Once a sufficient quantity of the useable elements is obtained, it can be reused as nuclear fuel or, in the case of plutonium, used for a nuclear weapon.⁶⁷ Having a nuclear-reprocessing facility would reduce Iranian reliance upon foreign nuclear suppliers by giving it control over most of the nuclear fuel cycle, thereby creating a largely self-sustaining nuclear energy program. At the same time, a reprocessing facility represents a significant nuclear-weapon-proliferation risk because it provides a ready source of plutonium that is ideal for use in

57. In March 1975, the U.S. National Security Council expressed concern about potential Iranian nuclear weapon aspirations. See INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 11. The nuclear-weapon-proliferation risk from Iran possessing a complete nuclear fuel cycle caused the Ford Administration to balk at the idea of an independent reprocessing facility in Iran. *Id.*

58. *Id.*

59. *Id.*

60. *Id.*

61. *Id.*

62. *Id.*

63. *Id.*

64. Dafna Linzer, *Past Arguments Don't Square with Current Iran Policy*, WASH. POST, Mar. 27, 2005, at A15.

65. See INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 11

66. See NERO, *supra* note 49, at 162-77.

67. See *id.*

nuclear weapons.⁶⁸ Despite the risk, President Gerald R. Ford supported the sale of nuclear-reprocessing technology to Iran as long as it was for a multinational reprocessing facility as opposed to exclusively Iranian.⁶⁹

Although at different ends of the nuclear fuel cycle, the ability to enrich uranium and reprocess spent nuclear fuel are both major proliferation concerns.⁷⁰ Reactor-grade nuclear fuel is enriched to a much lower level (3%)⁷¹ than necessary for a nuclear weapon (+20%).⁷² Nevertheless, continuing the enrichment process beyond what is necessary for reactor-grade fuel would eventually produce weapons-grade uranium such as was used in the weapon dropped on Hiroshima, Japan, in 1945.⁷³ Similarly, reprocessing allows the collection of weapons-grade plutonium such as was used in the weapon dropped on Nagasaki, Japan, in 1945.⁷⁴

At the same time as Iran was negotiating for a reprocessing facility, it also sought to purchase significant shares of uranium-enrichment facilities in Europe and the United States.⁷⁵ As a partial owner of enrichment facilities, Iran would have ensured access to the nuclear fuel supplies necessary to initiate the nuclear fuel cycle. By 1977, reactor construction was underway at locations near Darkhovin (also known as Ahvaz, Darkhouin, Esteghlal, and Karun) and Bushehr.⁷⁶ In late 1978, however, domestic social, political, and fiscal problems forced Iran to suspend its nuclear shopping spree.⁷⁷

The 1979 Islamic Revolution in Iran deposed the shah and installed a new Iranian government that was not concerned about nuclear energy production.⁷⁸ The nuclear program was deemed an evil, un-Islamic waste of money.⁷⁹ Iran soon cancelled reactor

68. See FRANK BARNABY, *HOW NUCLEAR WEAPONS SPREAD NUCLEAR-WEAPONS PROLIFERATION IN THE 1990s* 9-11, 20, 27-29 (1993).

69. See INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 11; Linzer, *supra* note 64.

70. See NERO, *supra* note 49, at 186-97.

71. *Id.* at 21.

72. *Id.* at 186.

73. The Nuclear Weapon Archive, Nuclear Weapons Frequently Asked Questions, <http://nuclearweaponarchive.org/Nwfaq/Nfaq8.html> (last visited Mar. 13, 2008).

74. *Id.*

75. See INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 11.

76. *Id.*; Iran Nuclear Watch: Iran Nuclear Timeline, <http://irannuclearwatch.blogspot.com/2006/08/iran-nuclear-timeline.html> (last visited Apr. 26, 2009).

77. INST. FOR STRATEGIC STUDIES, *supra* note 1, at 11.; Iran Nuclear Watch: Iran Nuclear Timeline, *supra* note 76.

78. CORERA, *supra* note 40, at 61.

79. See INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 11-12; JAFARZADEH, *supra* note 51, at 131.

construction at Darkhovin.⁸⁰ Reactors under construction at Bushehr were closer to completion so that contract was not cancelled.⁸¹ The Bushehr facility, however, was not completed because Iran failed to pay the West German company constructing it.⁸² Another consequence of the anti-nuclear attitude of the new Iranian government was the mass exodus of highly trained scientists and professionals for better jobs abroad.⁸³

For approximately five years after the revolution, the new Iranian government was more interested in recovering money spent on nuclear energy by the shah's government than in the prospect of a domestic nuclear energy system.⁸⁴ By 1984, however, ongoing Iraqi use of chemical weapons against Iran during the Iran-Iraq War rekindled interest in the largely dormant nuclear program.⁸⁵ During that period, Iran entered into a new phase of nuclear energy development that continues today.⁸⁶ Nuclear research, of course, requires highly skilled and trained personnel such as those that fled after the Islamic Revolution. In a largely ineffective effort to jumpstart the nuclear program, Iran sought to entice expatriate Iranian nuclear scientists back to Iran.⁸⁷ At the same time, thousands of students were sent abroad to obtain the education and training necessary for a nuclear program.⁸⁸ In addition, the 1985 discovery of a large deposit of natural uranium ore in the Saghand region of the central Iranian desert⁸⁹ meant Iran had the necessary raw material to fuel nuclear reactors (or produce nuclear weapons) and could control the entire nuclear fuel cycle (or produce nuclear weapons) if it mastered uranium-enrichment technology.⁹⁰

80. See INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 12.

81. See CORDESMAN & AL-RODHAN, *supra* note 50, at 107.

82. See *id.*

83. CORERA, *supra* note 40, at 61.

84. *Id.*

85. *Id.*

86. See generally *Iran Dusts Off Nuclear Program*, TIMES-PICTAYUNE (New Orleans, La.), Jul. 18, 1991, at A21.

87. See Kai Bird & Max Holland, *Iran: Khomeini's Nuclear Program*, NATION, Dec. 8, 1984, at 608; CORERA, *supra* note 40, at 62.

88. Nuclear Threat Initiative, Iran Profile: Nuclear Chronology, http://www.nti.org/e_research/profiles/1825_1826.html (last visited Mar. 16, 2008); CORERA, *supra* note 40, at 62.

89. Nuclear Threat Initiative, *supra* note 88.

90. This is a logical inference based upon Iranian efforts to develop domestic enrichment and reprocessing capability.

Largely cut off from American and European nuclear technology,⁹¹ Iran began working to establish nuclear cooperative relationships with states not party to the NPT, most notably Argentina, India, Pakistan, and North Korea.⁹² Western states first began to suspect Iran was trying to develop nuclear weapons at this time.⁹³ Western suspicions were not allayed when the president of Iran stated publicly that “we must fully equip ourselves with defensive and offensive chemical, biological, and radioactive weapons.”⁹⁴

Despite the personnel limitations and the difficulties of the Iran-Iraq War, Iran resumed work on uranium-enrichment technology almost immediately with help from North Korea, Pakistan, Argentina, and China.⁹⁵ From a nuclear-weapons-proliferation standpoint, the most disturbing fact is that Iran obtained enrichment-centrifuge design information and components from the A. Q. Khan nuclear-black-market network that produced a nuclear weapon for Pakistan.⁹⁶ Equally disturbing from this perspective is the fact that China and Russia were also major nuclear suppliers for Iran⁹⁷ and are now Iran’s primary defenders at the U.N. Security Council.⁹⁸

After the Iran-Iraq War ended in 1988, the Iranian nuclear power program began a long expansion period. Although not at the same level as the 1970s, the 1990s were another nuclear shopping spree for Iran. Both Russia and China ignored repeated protests by the United States about the proliferation risk posed by nuclear sales to Iran.⁹⁹ China sold nuclear technology and trained Iranian scientists from the mid-1980s through the late 1990s.¹⁰⁰ Chinese assistance enabled Iran to open a nuclear research center

91. INT’L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 12.

92. See CORDESMAN & AL-RODHAN, *supra* note 50, at 108-10.

93. Editorial, *Iran’s Reach for a Nuclear Sword*, BOSTON GLOBE, Nov. 13, 1991, at 18; see JAFARZADEH, *supra* note 51, at 132.

94. Editorial, *supra* note 93, at 18; see JAFARZADEH, *supra* note 51, at 132.

95. See CORDESMAN & AL-RODHAN, *supra* note 50, at 108-10; CORERA, *supra* note 40, at 62.

96. CORERA, *supra* note 40, at 63-64; INT’L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 12.

97. See *China, Russia Advised by U.S. Not to Sell Nuclear Items to Iran*, AEROSPACE DAILY, May 13, 1993, at 271; Nuclear Threat Initiative, Iran Profile, http://www.nti.org/e_research/profiles/Iran/index.html (last visited Mar. 6, 2007); CORERA, *supra* note 40, at 63.

98. Elissa Gootman, *Security Council Approves Sanctions Against Iran Over Nuclear Program*, N.Y. TIMES, Dec. 24, 2006, at A8.

99. See CORERA, *supra* note 40, at 63; *China, Russia Advised by U.S. Not to Sell Nuclear Items to Iran*, AEROSPACE DAILY, May 13, 1993, at 271; Nuclear Threat Initiative, *supra* note 97.

100. See JAFARZADEH, *supra* note 51, at 132; *China Helping Iran Build Nuclear Arms, U.S. Says*, S.F. CHRON., Mar. 17, 1992, at A10; *China Sales of Nuclear Gear to Iran Acknowledged*,

near Isfahan.¹⁰¹ In 1991, China even provided Iran with 1.8 tons of uranium ore that was not reported to the IAEA as required under Iran's safeguard agreement thus enabling research without IAEA knowledge.¹⁰² In 1992, Iran agreed to purchase a 300-megawatt reactor from China in the first new reactor contract since the shah was in power.¹⁰³ In 1993, both China and Russia contracted to sell Iran nuclear reactors for power generation.¹⁰⁴ By the mid-1990s, Chinese suspicions about Iranian motives were increasing and pressure from the United States was growing, so China scaled back nuclear trade with Iran until ultimately canceling it altogether after a 1997 agreement with the United States.¹⁰⁵

In response to the increased reluctance of China to transfer nuclear technology, Iran turned to Russia in the 1990s.¹⁰⁶ After the collapse of the Soviet Union, Russia needed the money oil-rich Iran was willing to pay.¹⁰⁷ In 1995, Russia agreed to complete the unfinished Bushehr nuclear reactor.¹⁰⁸ As part of the agreement, Russia set up a large training program for Iranian nuclear scientists.¹⁰⁹ The program was a technical information and intelligence bonanza for Iran.¹¹⁰ The Bushehr agreement also contained a secret protocol in which Russia offered to sell Iran a research reactor, nuclear-fuel-fabrication facilities, and a centrifuge-uranium-enrichment facility.¹¹¹ Such facilities would have given Iran immediate control of the nuclear fuel cycle and been a ready potential source of fissile nuclear-weapon material.¹¹² Upon learning of the proposal, President William Jefferson Clinton contacted Russian

MIAMI HERALD, Nov. 5, 1991, at 8A; *Nuclear Link to Iran Isn't for Arms, China Says*, CHI. TRIB., Nov. 1, 1991, at 4.

101. Nuclear Threat Initiative, *supra* note 88; *see also* CORDESMAN & AL-RODHAN, *supra* note 50, at 110.

102. *See* CORERA, *supra* note 40, at 62; INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 13.

103. *Iran Agrees to Purchase Nuclear Plant from China*, J. COM., Sept. 11, 1992, at 7B.

104. *See* Gary Sick, *Talk Now to Avoid a Nuclear Crisis With Iran*, NEWSDAY, Nov. 22, 1994, at A30.

105. CORERA, *supra* note 40, at 62; INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 13.

106. CORERA, *supra* note 40, at 63.

107. *Id.*

108. INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 13.

109. CORERA, *supra* note 40, at 63.

110. *Id.*

111. *Id.*; INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 13; JAFARZADEH, *supra* note 51, at 137.

112. This is a logical inference given the preceding discussion.

President Boris Yeltsin and the formerly secret protocol was cancelled.¹¹³ The Bushehr reactor project, however, went forward.¹¹⁴

After almost two decades of relatively unhindered growth, Iran's nuclear program is now comprised of more than a dozen known facilities scattered all over the country.¹¹⁵ Although efficiency would be increased and expense decreased by collocating facilities, Iran intentionally separated key activities to minimize the risk of military attack causing significant damage to the nuclear program as a whole.¹¹⁶ Similarly, several major facilities were believed to be built as underground fortifications specifically to avoid detection by satellites¹¹⁷ and minimize damage from aerial attack.¹¹⁸ Despite the highly suspicious physical layout of most of Iran's nuclear facilities, the Iranian government has not wavered from its claim of a purely peaceful nuclear energy program.¹¹⁹ Indeed, Ayatollah Ali Khamenei, Iran's supreme leader, purportedly issued a fatwa (religious edict) banning the production, stockpiling, and use of nuclear weapons as contrary to Islam.¹²⁰

Under the shah, Iran pursued nuclear technology as a means to develop a modern economy and, equally importantly, foster international perception of itself as a modern and advanced state able to play the role of a major regional power.¹²¹ Presently, Iran has similar ambitions for its nuclear program. It advances several economic and strategic arguments in support of public statements asserting a purely peaceful desire for nuclear energy and control of

113. CORERA, *supra* note 40, at 63; INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 13.

114. CORERA, *supra* note 40, at 63-64.

115. See generally INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1.

116. See Barbara Slavin, *U.S. Prefers Diplomacy with Iran, but Conflict Possible*, USA TODAY, Nov. 5, 2004, at 11A.

117. See Dana Priest, *New Spy Satellite Debated on Hill; Some Question Price and Need*, WASH. POST, Dec. 11, 2004, at A01.

118. Slavin, *supra* note 116; Associated Press, *Iran Admits Nuclear Facility is Underground*, FOX NEWS, Mar. 7, 2005, <http://www.foxnews.com/story/0,2933,149657,00.html>.

119. See generally Nazila Fathi, *Iran Hints It Sped Up Enriching Uranium as a Ploy*, N.Y. TIMES, Dec. 6, 2004, at A6; Nazila Fathi, *Iran to Sign Inspection Pact on Atomic Sites*, N.Y. TIMES, Dec. 18, 2003, at A24; Steven R. Weisman & David E. Sanger, *U.S. and Britain Try a New Tack on Iran*, N.Y. TIMES, Dec. 4, 2005, at 14; M. Javad Zarif, *Railroading Iran*, L.A. TIMES, Dec. 30, 2006, at A31.

120. William Green Miller, *Negotiations Hold Solution; Dealing with Iran*, BALT. SUN, June 29, 2006, at 21A; Federation of American Scientists, *Iran's Statement at IAEA Emergency Meeting*, <http://www.fas.org/nuke/guide/iran/nuke/mehr080905.html> (last visited Mar. 13, 2008).

121. CORDESMAN & AL-RODHAN, *supra* note 50, at 11; INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 30.

the nuclear fuel cycle.¹²² Despite substantial oil and gas resources, Iran claims nuclear energy would allow diversification of energy sources while mastery of the necessary science and technology would establish it on the international stage as a modern scientific state.¹²³ With substantial population growth and increasing domestic energy consumption, the energy-export revenues are declining so nuclear energy is touted domestically as a means for energy independence and national pride.¹²⁴ Energy independence, however, means total control of the nuclear fuel cycle, specifically enrichment. Indeed, Iran is fixated on attaining large-scale enrichment capability “at any cost.”¹²⁵

Iran’s actual need for enrichment capability is questionable. The agreement with Russia for construction of the Bushehr reactor included provision of Russian nuclear fuel for 10 years.¹²⁶ As of early 2007, Iran did not yet have a single functioning nuclear reactor, but it is pressing ahead with enrichment efforts in defiance of the IAEA and U.N. Security Council.¹²⁷ If full scale industrial enrichment is up and running within a few years there are limited options for use of the finished product. Iran will either have to store the product while awaiting completion of domestic nuclear reactors to use it, use it immediately for production of nuclear weapons, provide it to a subnational group for use in weapons, or sell it on the international market to a state with functional reactors. Most countries with a nuclear power system, however, find it much cheaper to purchase nuclear fuel on the international market rather than enrich it themselves.¹²⁸ Indeed, Russian offers to supply cheaper nuclear fuel were repeatedly rebuffed,¹²⁹ and Iran has acknowledged that it is cheaper to purchase fuel if it has only one operational reactor.¹³⁰ Thus, while Iran publicly aspires to become a nuclear exporter, the fiscal reality of the situation combines with the limited supply of natural uranium in Iran to foster international suspicions of secret nuclear weapon ambitions.¹³¹

122. See SHAHRAM CHUBIN, *IRAN’S NUCLEAR AMBITIONS* 24 (2006); CORDESMAN & AL-RODHAN, *supra* note 50, at 137; INT’L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 30-31.

123. CHUBIN, *supra* note 122; CORDESMAN & AL-RODHAN, *supra* note 50, at 137.

124. See CHUBIN, *supra* note 122; CORDESMAN & AL-RODHAN, *supra* note 50, at 137; INT’L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 30-31.

125. CHUBIN, *supra* note 122, at 25.

126. CORDESMAN & AL-RODHAN, *supra* note 50, at 115.

127. CHUBIN, *supra* note 122, at 25.

128. *Id.* at 26.

129. CORDESMAN & AL-RODHAN, *supra* note 50, at 10.

130. INT’L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 51.

131. CHUBIN, *supra* note 122, at 26.

At the same time, the importance of Iran's nuclear program to domestic politics cannot be underestimated. To an extent, Iran seems motivated by an inferiority complex resulting from the ancient superpower status of the Persian Empire, the non-Arab people from whom modern Iranians descend. The scientific and technical achievements of the nuclear program, real or purchased ready-made from another state, are claimed as a product of Iranian ingenuity and intellectual prowess and trumpeted by Iran's leaders to increase the legitimacy of the regime.¹³² Despite the generally poor day-to-day conditions of most Iranians, and the government's inability or unwillingness to take the steps necessary for improvement, support for the nuclear program is relatively high among the population.¹³³ The nuclear program, then, is used as a means of uniting the population and convincing them that Iran is already a great power on the cutting edge of modern technology.¹³⁴

Whatever Iran's subjective motivation for pursuing enrichment capability at any cost, an objective fact is that enrichment facilities pose one of the greatest risks of nuclear-weapons proliferation.¹³⁵ As a result, they are the most likely targets in any military attack. At the previously secret Natanz facility, Iran claims to have realized its short term goal of operating 3,000 enrichment centrifuges with continuing expansion planned.¹³⁶ In 2003, before Iran officially brought in uranium for enrichment, IAEA investigators gathered baseline samples from one of the Natanz facilities.¹³⁷ The samples contained traces of two different types of highly enriched uranium that were out of place because Iran claimed not to have done any enrichment yet and because uranium enriched to the levels found was not on the IAEA list of nuclear materials Iran was known to possess.¹³⁸ Iran explained away the situation with an assertion that the enrichment equipment must have been contaminated when it

132. *Id.* at 26-28.

133. CORDESMAN & AL-RODHAN, *supra* note 50, at 11.

134. CHUBIN, *supra* note 122, at 26-28.

135. See RANDALL FORSBERG, WILLIAM DRISCOLL, GREGORY WEBB, & JONATHAN DEAN, NONPROLIFERATION PRIMER PREVENTING THE SPREAD OF NUCLEAR, CHEMICAL, AND BIOLOGICAL WEAPONS, 43-44 (1995); 2 THE ATLANTIC COUNCIL OF THE UNITED STATES, NUCLEAR FUELS POLICY WORKING GROUP, NUCLEAR POWER AND NUCLEAR WEAPONS PROLIFERATION 14-16 (1977).

136. Bay Fang, *Iran Raises Nuclear Ante Announces Leap in Uranium Program*, CHI. TRIB., Apr. 10, 2007, at 1.

137. Int'l Atomic Energy Agency [IAEA], *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, at 7, IAEA Doc. GOV/2003/63 (Aug. 26, 2003).

138. *Id.*

was imported into Iran.¹³⁹ The IAEA remains unconvinced by the Iranian answer,¹⁴⁰ but the ongoing lack of cooperation by Iran has left the issue an open question while Iran rushes to expand enrichment operations. Natanz is projected to eventually have an operating capacity of 54,000 centrifuges.¹⁴¹ Three thousand centrifuges operating for a year are estimated to have the capacity to produce enough weapons-grade uranium for one weapon.¹⁴²

Natanz is a city of approximately 40,000 residents in the Iranian province of Isfahan about 160 miles south of Tehran. The Natanz enrichment facility is in the desert roughly seventeen miles northwest of the city and ninety-three miles north of the Isfahan nuclear research and conversion facility.¹⁴³ Policed by armed guards and ringed with anti-aircraft batteries,¹⁴⁴ the main facility consists of three primary parts.¹⁴⁵ Above the ground, six huge buildings are grouped together and surrounded by a security fence.¹⁴⁶ The buildings within the fenced area are used for centrifuge assembly and one contains a pilot fuel-enrichment plant with operating centrifuges.¹⁴⁷ Separate from the fenced area but also above ground is a large building used for administrative purposes and seven other buildings with several more under construction.¹⁴⁸ Many of the new buildings are believed to be worker dormitories.¹⁴⁹ The actual number of civilian workers is unknown, but an estimate based upon the size of the facility suggests it could range from many hundreds to several thousand.

139. *Id.*

140. IAEA, *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolution 1737 (2006) in the Islamic Republic of Iran*, at 5-6, IAEA Doc. GOV/2007/8 (Feb. 22, 2007).

141. David E. Sanger & William J. Broad, *Iran Expanding Nuclear Effort*, *Agency Reports*, N.Y. TIMES, Feb. 23, 2007, at A1.

142. *Id.*

143. See INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 48; Global Security, Natanz Satellite Imagery, <http://www.globalsecurity.org/wmd/world/iran/natanz-imagery.htm> (last visited Mar. 17, 2008).

144. See CORERA, *supra* note 40, at 57; Barbara Slavin, *Natanz Plant in Iran is Focus of Nuclear Concerns*, USA TODAY, Feb. 21, 2005, available at http://www.usatoday.com/news/world/2005-02-21-natanz-iran_x.htm.

145. Nuclear Threat Initiative, *Iran Profile: Nuclear Facilities: Natanz Enrichment Plant*, http://www.nti.org/e_research/profiles/Iran/3119_3158.html (last visited Mar. 16, 2008).

146. PAUL BRANNAN & DAVID ALBRIGHT, *ISIS IMAGERY BRIEF: NEW ACTIVITIES AT THE ESFAHAN AND NATANZ NUCLEAR SITES IN IRAN (2006)*, <http://www.isis-online.org/publications/iran/newactivities.pdf>.

147. *Id.*

148. *Id.*

149. Global Security, *supra* note 143.

The underground part of the facility consists of three immense, hardened concrete structures that were constructed in a hole eighty-two feet below ground level and then covered with at least twenty-six feet of successive layers of earth and reinforced concrete.¹⁵⁰ The layering method is intended to defeat earth-penetrating weapons. Two of the buildings have nearly 32,000 square meters of floor space each.¹⁵¹ They are intended to house the 54,000 enrichment centrifuges Iran plans to operate.¹⁵² The third building is about half the size of the other two and its precise function is unknown.¹⁵³ All the underground structures are connected by tunnels.¹⁵⁴ A hidden entrance for the underground system is some distance away from the structures themselves.¹⁵⁵

B. *International Reaction to Date*

The ongoing international tension regarding Iran's nuclear program originated in August 2002 when an Iranian opposition group made accusations that Iran had secret underground nuclear facilities used in a clandestine nuclear-weapons program.¹⁵⁶ The allegation that Iran had a uranium-enrichment facility at Natanz and a heavy-water¹⁵⁷ production facility at Arak that

150. See BRANNAN & ALBRIGHT, *supra* note 146; INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 51.

151. DAVID ALBRIGHT & COREY HINDERSTEIN, THE IRANIAN GAS CENTRIFUGE URANIUM ENRICHMENT PLANT AT NATANZ: DRAWING FROM COMMERCIAL SATELLITE IMAGES (2003), http://www.isis-online.org/publications/iran/natanz03_02.html.

152. See INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 49; Global Security, *supra* note 143.

153. See INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 49; Global Security, *supra* note 143.

154. See INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 49; Global Security, *supra* note 143.

155. See INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 49; Global Security, *supra* note 143.

156. INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 33-34; JAFARZADEH, *supra* note 51, at 139; *Aid Groups Wary of US Money for Iraq*, AUSTRALIAN, Aug. 16, 2002, at 8.

157. Heavy-water is a key component of a type of nuclear reactor that enables the production of plutonium from natural uranium without going through the uranium-enrichment process. Federation of American Scientists, Heavy Water Production, <http://www.fas.org/nuke/intro/nuke/heavy.htm> (last visited Mar. 5, 2008). While heavy-water could be used merely for the production of electricity in a reactor, its inherent capability for use in the large scale production of weapons-grade plutonium presents a major proliferation risk. See *id.*

it had not declared to the IAEA¹⁵⁸ triggered an international response.¹⁵⁹

The IAEA conducted an inspection of the facilities at Natanz and Arak in February 2003 after Iran postponed earlier visits.¹⁶⁰ During the IAEA visit, Iran first officially declared the existence of two uranium-enrichment facilities at Natanz and confirmed the existence of the heavy-water facility at Arak.¹⁶¹ Iran also admitted to importing natural uranium in 1991 without IAEA knowledge and storing it in a previously undeclared research facility.¹⁶² The IAEA director-general was surprised by the highly developed state of the Iranian program.¹⁶³ After considering all information, the IAEA ultimately concluded “the number of failures by Iran to report the material, facilities and activities in question in a timely manner as it is obliged to do pursuant to its Safeguards Agreement is a matter of concern.”¹⁶⁴ Additional meetings with Iranian officials in July and August 2003 generated further concern from the IAEA as it realized the scope and longevity of Iran’s secret nuclear fuel cycle research program dating to the 1980s.¹⁶⁵ The level of IAEA concern was reflected in a September IAEA Board of Governors resolution imposing an ultimatum upon Iran to completely disclose all its nuclear activities.¹⁶⁶

With the U.S. military still in control of Iraq and the United States advocating referral of the situation to the U.N. Security Council, the Iranian response to the ultimatum demonstrated its negotiating strategy for the next few years. Before the deteriorating security situation in Iraq tied down the United States, Iran tried to demonstrate cooperation with the IAEA, confirmed only what the IAEA identified as violations, explained nondisclosure as merely omissions rather than affirmative violations, boisterously proclaimed its right to nuclear technology as a party to the NPT,

158. The IAEA safeguards agreement in effect at the time did not require Iran to declare the existence of the Natanz facility until 180 days prior to the introduction of nuclear material. INT’L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 46.

159. See generally INT’L CRISIS GROUP, IRAN: IS THERE A WAY OUT OF THE NUCLEAR IMPASSE? (2006), <http://www.globalpolicy.org/security/sanction/iran/2006/0223crisisgroup.pdf>.

160. See IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, at 2, IAEA Doc. GOV/2003/40 (June 6, 2003).

161. *Id.*

162. *Id.*

163. CHUBIN, *supra* note 122, at xv.

164. IAEA, *supra* note 160, at 7.

165. See CORDESMAN & AL-RODHAN, *supra* note 50, at 127.

166. IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, at 2, IAEA Doc. GOV/2003/69 (Sept. 12, 2003).

and generally tried to buy time.¹⁶⁷ In essence, Iran sought to reassure the international community that its assertions of purely peaceful ambitions could be trusted.

Beginning in the fall of 2003, Germany, France, and the United Kingdom (known as the EU-3) blocked U.S. efforts to refer the matter to the U.N. Security Council and led ultimately fruitless efforts to reach a diplomatic solution.¹⁶⁸ Iran was initially willing to make a number of concessions that produced some promising interim agreements (2003 Tehran Agreement & 2004 Paris Agreement).¹⁶⁹ Most notably, Iran signed and implemented (but never ratified) an additional protocol to its IAEA safeguards agreement expanding IAEA oversight authority and agreed to unilaterally suspend uranium-enrichment activities.¹⁷⁰ Nevertheless, the fundamental issue for the EU-3 and the United States, Iran's pursuit of uranium-enrichment capability, was not something Iran was willing to negotiate away.¹⁷¹ The Tehran and Paris agreements merely postponed consideration of the matter by the U.N. Security Council, presumably Iran's primary negotiation goal.

After the 2005 election of a confrontational new president, Mahmoud Ahmadinejad, Iran was largely unwilling to make any further concessions and prior trust building concessions such as voluntary implementation of the additional protocol were cancelled.¹⁷² By September 2005, the failure of diplomacy led the IAEA Board of Governors to conclude that Iranian actions "constitute non compliance in the context of Article XII.C of the Agency's Statute."¹⁷³ While remaining party to the NPT, it seems that Iran is willing to comply only to the extent that it can pick and choose the rights and corresponding obligations it wishes.

Another troubling result of the election of President Ahmadinejad was increased military oversight of the nuclear pro-

167. CHUBIN, *supra* note 122, at 63-68.

168. INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 110.

169. See Elaine Sciolino, *Board Accepts Nuclear Vow by Iranians*, N.Y. TIMES, Nov. 30, 2004, at A3; Elaine Sciolino, *Letter from the Middle East; A Change of Heart in Tehran? Is It Time to Talk?*, N.Y. TIMES, Oct. 29, 2003, at A4.

170. CHUBIN, *supra* note 122, at 66-68; INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 110.

171. CHUBIN, *supra* note 122, at 66-68; INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 110-111.

172. See Karl Vick, *Iran's President Sparks Fears of New Isolation; Nuclear Talks at Risk, Analysts Say*, WASH. POST, Nov. 5, 2005, at A14.

173. IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, IAE Doc. GOV/2005/77 (Sept. 24, 2005).

gram.¹⁷⁴ Officially, the AEOI, the organization administering Iran's nuclear program, is an executive-branch organization that reports directly to the Iranian president.¹⁷⁵ Unofficially, it is purportedly controlled by the Supreme National Security Council, a group responsible for foreign policy, defense, and security issues.¹⁷⁶ The Supreme National Security Council allegedly provided the money necessary to construct the previously secret facilities at Natanz and Arak outside normal AEOI budgetary channels.¹⁷⁷ President Ahmadinejad has appointed several senior officers from the Islamic Revolutionary Guard Corps to the Supreme National Security Council thereby increasing military oversight of the nuclear program.¹⁷⁸ Even if innocuous, military oversight of an allegedly peaceful nuclear program is cause for international concern when done by a state supporter of terrorism and aspiring regional power.¹⁷⁹

The nuclear standoff between Iran and the United States escalated significantly near the end of 2006. On December 23, 2006, after more than three years of diplomatic failure in negotiating a resolution to allay concerns over Iranian enrichment efforts, the U.N. Security Council voted unanimously to sanction Iran for continuing and expanding uranium-enrichment efforts in defiance of prior IAEA¹⁸⁰ and Security Council mandates.¹⁸¹ Security Council Resolution 1737¹⁸² imposed sanctions intended to limit Iranian access to sensitive nuclear materials and freeze the financial assets of certain Iranian officials and institutions related to potential nuclear-weapon-proliferation activities. Not surprisingly, the government of Iran responded to the sanctions with derision, vowing

174. JAFARZADEH, *supra* note 51, at 140.

175. *Id.* at 139.

176. *Id.*

177. *Id.*

178. *Id.* at 139-141.

179. See generally Joshua Muravchik, *Confronting Iran, Force is the Only Answer; Diplomacy Has Done Nothing to End Tehran's Nuclear Threat*, L.A. TIMES, Nov. 19, 2006, at M1.

180. See IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, IAEA Doc. GOV/2006/14 (Feb. 4, 2006); IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, IAEA Doc. GOV/2006/15 (Feb. 27, 2006); IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, IAEA Doc. GOV/2006/27 (Apr. 28, 2006); IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, IAEA Doc. GOV/2006/38 (June 8, 2006); IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, IAEA Doc. GOV/2006/53 (Aug. 31, 2006); IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, IAEA Doc. GOV/2006/64 (Nov. 14, 2006).

181. S.C. Res. 1696, U.N. Doc. S/RES/1696 (July 31, 2006).

182. S.C. Res. 1737, U.N. Doc. S/RES/1737 (Dec. 23, 2006).

to accelerate and expand uranium-enrichment efforts, and revise cooperation with the IAEA.¹⁸³

Resolution 1737 allowed Iran sixty days to comply before the Security Council reconsidered the situation based upon IAEA input.¹⁸⁴ When Iran made no efforts to comply, the IAEA reported the situation to the Security Council.¹⁸⁵ The Security Council unanimously adopted Resolution 1747, which somewhat strengthened the limited financial sanctions of Resolution 1737 while adding constraints upon Iranian arms exports.¹⁸⁶ A restriction on arms exports, however, is of little consequence as Iran imports far more arms than it produces.¹⁸⁷ Notably, Resolution 1747 merely urges restraint in arms sales to Iran.¹⁸⁸ In a repeat of its response to Resolution 1737, Iran declared Resolution 1747 illegal and vowed to further reduce cooperation with the IAEA.¹⁸⁹ In the face of Iran's ongoing open defiance, in March 2008, the Security Council unanimously adopted Resolution 1803.¹⁹⁰ This time, however, it was targeted at individuals who were known to work with the Iranian nuclear program.¹⁹¹ Most recently, in September 2008, the Security Council adopted Resolution 1835 simply calling upon Iran to comply with the prior resolutions.¹⁹² Thus, the international community has largely lost track of Iranian nuclear activities.

Security Council unanimity in decisions to impose limited sanctions is in stark contrast with the fact that the relatively weak sanctions of both resolutions are not expected to have any real impact upon Iran's nuclear ambitions.¹⁹³ More severe sanctions, advocated by the United States and its allies, were consistently opposed by veto-wielding Security Council members Russia and China.¹⁹⁴

183. Nasser Karimi, *Iranians Lash Out over Nuclear Curbs*, SEATTLE TIMES, Dec. 28, 2006, at A17.

184. S.C. Res. 1737, *supra* note 182.

185. IAEA, *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolution 1737 (2006) in the Islamic Republic of Iran*, at 2, IAEA Doc. GOV/2007/8 (Feb. 22, 2007).

186. S.C. Res. 1747, U.N. Doc. S/RES/1747 (Mar. 24, 2007).

187. See CORDESMAN & AL-RODHAN, *supra* note 50, at 323.

188. S.C. Res. 1747, *supra* note 186.

189. See Thom Shanker & William J. Broad, *Iran to Limit Cooperation with Nuclear Inspectors*, N.Y. TIMES, Mar. 26, 2007, at A6.

190. S.C. Res. 1803, U.N. Doc. S/RES/1803 (Mar. 3, 2008).

191. *Id.*

192. S.C. Res. 1835, U.N. Doc. S/RES/1835 (Sep. 27, 2008).

193. Editorial, *U.S. Tries New Approach to Pressure Iran*, ALBANY TIMES UNION, Jan. 2, 2007 at A8.

194. Helene Cooper, *Diplomats to Begin Drafting New U.N. Sanctions on Iran*, N.Y. TIMES, Feb. 27, 2007, at A9; Editorial, *The Europeans Step Up*, N.Y. TIMES, Jun. 28, 2008, A16; Edito-

As of April 2009, Iran was moving ahead with enrichment in direct defiance of five Security Council resolutions.¹⁹⁵

In 2006, Russia and China also opposed any significant Security Council sanctions against North Korea after it tested a nuclear weapon developed, at least partially, in violation of the NPT.¹⁹⁶ With Iran widely suspected of engaging in the same sort of furtive nuclear-weapon development as North Korea, Russia and China's steadfast opposition to harsh Security Council sanctions indicates an international political solution is unlikely.¹⁹⁷ At some point, military force may be deemed necessary to destroy suspected Iranian nuclear-weapon-development sites. Indeed, the United States has repeatedly refused to completely rule out the use of military force.¹⁹⁸ Resolutions 1696, 1737, 1747, 1803, and 1835, however, did not authorize or even contemplate the use of force against Iran for noncompliance. Security Council reluctance to impose more severe sanctions suggests the chance of the United States and its allies obtaining an express legal authorization under the U.N. Charter to use force in the future is highly improbable.¹⁹⁹

C. U.S. Tactical Nuclear Weapons

In Iraq and Afghanistan, the U.S. military demonstrated a high degree of proficiency striking and destroying fixed targets above and below the surface of the earth.²⁰⁰ Such ability is partially the

rial, *Remember Iran?*, N.Y. TIMES, Sep. 22, 2008, A28; Warren Hoge, *U.N. Council Gets New Draft Decree on Iran Nuclear Sanctions*, N.Y. TIMES, Mar. 16, 2007, A 13.

195. See Nazili Fathi, *Iran Says It Plans New Nuclear Offer*, N.Y. TIMES, Apr. 15, 2009, A12; Nazili Fathi, *Iran Claims Gains in Nuclear Program*, N.Y. TIMES, Apr. 9, 2009, A9.

196. See Warren Hoge, *U.S. Hits Obstacle to Action by U.N. on North Korea*, N.Y. TIMES, Oct. 14, 2006, at A1; Norimitsu Onishi, *Questions Grow over U.N. Curbs on North Korea*, N.Y. TIMES, Oct. 16, 2006, at A1.

197. Russian and Chinese reluctance to support meaningful sanctions could be related to the fact that both nations have sold significant amounts of nuclear technology and materials to Iran. Russia has benefited from major sales of military equipment and civilian aircraft to Iran and perceives Iran as an ally against U.S. power in the region. See generally Christopher de Bellaigue, *Iran & the Bomb*, N.Y. REV., Apr. 27, 2006, at 29; *China Gives Iran Nuclear Boost*, WASH. TIMES, July 5, 1993, at A2; *China, Russia Advised by U.S. Not to Sell Nuclear Items to Iran*, *supra* note 99, at 271; *Russia Considers Putting 3 Nuclear Power Plants in Iran*, ORLANDO SENTINEL, June 29, 1999, at A6.

198. See generally David E. Sanger & Eric Schmitt, *At the White House, Engaging Iran with Words over Action*, N.Y. TIMES, Apr. 12, 2006, at A8.

199. The U.N. Charter contemplates the use of force only in self defense or as authorized by the Security Council under Chapter VII. U.N. Charter arts. 42, 51.

200. See Max Boot, *The Nation; Sparing Civilians, Buildings and Even the Enemy*, N.Y. TIMES, Mar. 30, 2003, §4, at 5; Douglas Jehl, *A NATION AT WAR: MILITARY TECHNOLOGY; Digital Links Are Giving Old Weapons New Power*, N.Y. TIMES, Apr. 7, 2003, at B2; Andrew C. Revkin, *A NATION CHALLENGED: ADVANCED ARMAMENTS; U.S. Making Weapons to Blast Underground Hide-Outs*, N.Y. TIMES, Dec. 3, 2001, at B4; Eric Schmitt &

result of an arsenal that includes a broad array of conventional weapons designed to inflict measured amounts of damage to a variety of target types with minimal collateral damage.²⁰¹ An attack planner is able to select a weapon based upon the degree of damage sought and the type of target.²⁰² Underground targets, however, can be constructed in such a manner as to be largely immune from destruction with conventional weapons.²⁰³ As a result, the U.S. nuclear arsenal includes weapons designed to destroy otherwise impervious underground targets.²⁰⁴ While the existence of such weapons is beyond dispute,²⁰⁵ the type and capability of the weapons is highly classified.²⁰⁶ Accordingly, this Part is based exclusively upon information available in the public domain.

Hardened, underground targets such as the Natanz facility effectively limit the choice to the only earth-penetrating tactical nuclear weapon, the B61-11 bomb. The B61-11 is a modified version of the B61 gravity bomb that was originally fielded in 1966.²⁰⁷ Over the years, the B61 benefited from twelve modifications and upgrades resulting in a forty-plus-year service life.²⁰⁸

James Dao, *A NATION CHALLENGED: THE AIR CAMPAIGN; Use of Pinpoint Air Power Comes of Age in New War*, N.Y. TIMES, Dec. 24, 2001, at A1; Thom Shanker & Eric Schmitt, *A NATION AT WAR: AIR OFFENSIVE; American Planners Stick With the Scalpel Instead of the Bludgeon*, N.Y. TIMES, Mar. 27, 2003, at B7.

201. See Boot, *supra* note 200; Jehl, *supra* note 200; Revkin, *supra* note 200; Schmitt & Dao, *supra* note 200; Shanker & Schmitt, *supra* note 200.

202. See generally U.S. DEP'T OF THE AIR FORCE, AIR FORCE PAMPHLET 14-210, USAF INTELLIGENCE TARGETING GUIDE (1998) [hereinafter AFPAM 14-210].

203. GlobalSecurity.org, *supra* note 10. The review stated the following:

More than 70 countries now use underground Facilities (UGFs) for military purposes. In June 1998, the Defense Science Board Task force on Underground Facilities [concluded] that there are over 10,000 UGFs worldwide. Approximately 1,100 UGFs were known or suspected strategic (WMD, ballistic missile basing, leadership or top echelon command and control) sites. Updated estimates from DIA reveal this number has now grown to over 1,400. A majority of the strategic facilities are deep underground facilities. These facilities are generally the most difficult to defeat because of the depth of the facility and the uncertainty of the exact location. At present the United States lacks adequate means to deal with these strategic facilities.

204. Matthew L. Wald, *U.S. Refits a Nuclear Bomb To Destroy Enemy Bunkers*, N.Y. TIMES, May 31, 1997, §1, at 1.

205. See generally U.S. DEP'T OF THE AIR FORCE, AIR FORCE INSTRUCTION 63-103, JOINT AIR FORCE – NATIONAL NUCLEAR SECURITY ADMINISTRATION (AF-NNSA) NUCLEAR WEAPONS LIFE CYCLE MANAGEMENT (2008).

206. See U.S. DEP'T OF THE AIR FORCE, AIR FORCE INSTRUCTION 35-101, PUBLIC AFFAIRS POLICIES AND PROCEDURES para. 7.24 (2005).

207. Nuclear Weapon Archive, *The B61 Bomb*, <http://nuclearweaponarchive.org/Usa/Weapons/B61.html> (last visited Mar. 22, 2008).

208. *Id.*

The B61 was not originally designed to penetrate the earth or destroy underground targets.²⁰⁹ In 1993, the Department of Defense decided a replacement was necessary for a massive nuclear weapon²¹⁰ designed to destroy underground targets by sheer explosive force.²¹¹ The political situation of the 1990s precluded the possibility of designing a completely new weapon for underground targets,²¹² so the B61-7 was selected to undergo another modification.²¹³ The result was the B61-11 earth-penetrating weapon that entered service in 1997.²¹⁴ There are believed to be approximately fifty such weapons in the U.S. arsenal.²¹⁵

The primary difference between the B61-7 and B61-11 is the external casing.²¹⁶ An earth-penetrating weapon must be packaged in a stronger case to survive the force of impact and burrowing into the earth.²¹⁷ As a result, the B61-11 has a hardened steel case with a different nose and tail assembly than the B61-7.²¹⁸ The B61-11 was not designed to penetrate rock or concrete, but rather the icy soil of Russia.²¹⁹ Despite the changes, tests suggest the weapon is only able to penetrate approximately ten to twenty feet into the earth.²²⁰ In contrast, the GBU-28, a conventional 5,000-pound “bunker-buster” bomb developed to destroy “hardened[,] underground” structures, is able “to penetrate” up to “[twenty] feet of concrete” or “100 feet of earth.”²²¹ Information about the concrete penetrating ability of a B61-11, if any, is not publicly available.

Several B61 versions are equipped with a feature called “dial-a-yield” which allows selection of the warhead’s explosive yield from

209. Wald, *supra* note 204.

210. The B53 gravity bomb had a yield of nine megatons. *Id.* Although intended to detonate at ground level, it was expected to destroy underground targets by creating a massive seismic shockwave that would compress and collapse underground structures. The Nuclear Weapon Archive, The B-53 (Mk-53) Bomb, <http://nuclearweaponarchive.org/Usa/Weapons/B53.html> (last visited Mar. 22, 2008).

211. The Nuclear Information Project, The Birth of a Nuclear Bomb: B61-11, <http://www.nukestrat.com/us/afn/B61-11.htm> (last visited Mar. 12, 2008); Wald, *supra* note 204.

212. See Brian Hall, *Overkill Is Not Dead*, N.Y. TIMES, Mar. 15, 1998, § 6, at 42.

213. *Id.*

214. *U.S. Fields an H-Bomb Cast as ‘Bunker Buster,’* CHI. TRIB., June 1, 1997, at 10C.

215. *See id.*

216. Hall, *supra* note 212.

217. *Id.*

218. *Id.*

219. GlobalSecurity.org, B61-11 Earth-Penetrating Weapon, <http://www.globalsecurity.org/wmd/systems/b61-11.htm> (last visited Mar. 13, 2008).

220. Nuclear Weapon Archive, *supra* note 207.

221. Military Analysis Network, Guided Bomb Unit – 28, <http://www.fas.org/man/dod-101/sys/smart/gbu-28.htm> (last visited Apr. 15, 2009).

several different settings.²²² The lowest setting available on any B61 warhead is .3 kilotons or the equivalent of 300 tons of high explosive.²²³ In 2000, the dial-a-yield feature was removed from the B61-11 in favor of a standard warhead yield of 400 kilotons.²²⁴ For the sake of comparison, the yield of the bomb dropped on Hiroshima in 1945 was estimated at between twelve to fifteen kilotons²²⁵ while the Nagasaki bomb was estimated at twenty-two kilotons.²²⁶ The limited earth penetration of the B61-11 and its change to a large, single yield seems to mark a return to the strategy of its predecessor, destruction of underground targets by sheer explosive magnitude.²²⁷

The 2001 Nuclear Posture Review identified the B61-11 as largely incapable of performing its sole mission of destroying hardened underground targets.²²⁸ The report stated the following:

The United States currently has a very limited ground penetration capability with its only earth penetrating nuclear weapon, the B61 Mod 11 gravity bomb. This single-yield, non-precision weapon cannot survive penetration into many types of terrain in which hardened underground facilities are located. Given these limitations, the targeting of a number of hardened, underground facilities is limited to an attack against surface features, which does not provide a high probability of defeat of these important targets.²²⁹

Based upon those conclusions, the Department of Defense advocated for development of another weapon system dubbed the Robust Nuclear Earth Penetrator.²³⁰ The proposed weapon would be a modification of an existing weapon with a yield of 1.2 megatons.²³¹ Congress, however, stopped funding on the project, so it

222. Hall, *supra* note 212.

223. See Military Analysis Network, *supra* note 221.

224. The Nuclear Information Project, *supra* note 211.

225. THOMAS B. COCHRAN, WILLIAM M. ARKIN & MILTON M. HOENIG, NUCLEAR WEAPONS DATABOOK 32 (1984).

226. *Id.*

227. A new conventional weapon is in development testing with the ability to penetrate up to ten times deeper than the B61-11 before detonating approximately three tons of high explosive. Erik Holmes, *Testing to Begin on New Bunker Buster*, AIR FORCE TIMES, Feb. 12, 2007, at 23. Unlike the B61-11, the small explosive yield would be offset by proximity to the target afforded by deep penetration and precision guidance. *Id.*

228. GlobalSecurity.org, *supra* note 10.

229. *Id.*

230. Union of Concerned Scientists, The Robust Nuclear Earth Penetrator, http://www.ucsusa.org/global_security/nuclear_weapons/the-robust-nuclear-earth-penetrator-rnep.html (last visited Mar. 12, 2008).

231. *Id.*

was cancelled.²³² Thus, the only earth-penetrating tactical nuclear weapon available for striking the Natanz facility is the B61-11 configured for a yield of 400 kilotons.

III. INTERNATIONAL HUMANITARIAN LAW CONSTRAINTS UPON USE OF A TACTICAL NUCLEAR WEAPON AGAINST THE NATANZ NUCLEAR FACILITY

The underlying premise of international humanitarian law is perhaps best summarized in Article 22 of the 1907 Hague Regulations stating “[t]he right of belligerents to adopt means of injuring the enemy is not unlimited.”²³³ Rooted in both longstanding custom and convention, military necessity, distinction, proportionality, and humanity are overlapping and complementary foundational principles within international humanitarian law that impose specific limitations upon military operations.²³⁴ In the *Legality of Nuclear Weapons* opinion, the ICJ confirmed that any use of nuclear weapons is governed by international humanitarian law when it stated the following:

A threat or use of nuclear weapons should also be compatible with the requirements of the international law applicable in armed conflict, particularly those of the principles and rules of international humanitarian law²³⁵

The ICJ conclusion focused on the principles of distinction and humanity, but the prospect of nuclear weapons being subject to international humanitarian law represents a concurrence with the preexisting opinion of the United States and other participating nuclear-weapon states.²³⁶ Thus, there is no dispute that the use of

232. Editorial, *Nuclear Sense and Nonsense*, CHI. TRIB., Nov. 30, 2004, at C16; JONATHAN MEDALIA, CONG. RESEARCH SERV., REPORT NO. RL 325347, “BUNKER BUSTERS”: ROBUST NUCLEAR EARTH PENETRATOR ISSUES, FY2005-FY2007 (Feb. 21, 2006), <http://www.fas.org/sgp/crs/nuke/RL32347.pdf>.

233. Regulations Respecting the Laws and Customs of War on Land, art. 22 [hereinafter Hague Regulations], *annexed to* Convention Respecting the Laws and Customs of War on Land, Oct. 18, 1907, 36 Stat. 2277, 187 Consol. T.S. 227 [hereinafter 1907 Hague Convention].

234. See JUDGE ADVOCATE GEN.’S LEGAL CTR. & SCH., U.S. ARMY, LAW OF WAR HANDBOOK 164 (2005).

235. Legality of Nuclear Weapons, *supra* note 11, at para. 105.

236. See generally Written Statement of the Government of the United States of America, The Legality of the Threat of Nuclear Weapons (1996), *available at* <http://www.icj-cij.org/docket/files/95/8700.pdf>; Written Statement of the Government of the United Kingdom, The Legality of the Threat of Nuclear Weapons (1996), *available at* <http://www.icj-cij.org/docket/files/95/8802.pdf>; Written Statement of the Government of the Russian Federation, The Legality of the Threat of Nuclear Weapons (1996), *available at* <http://www.icj-cij.org/docket/files/95/8796.pdf>.

a tactical nuclear weapon at Natanz must comply with international humanitarian law.

Indeed, the official policy of the U.S. military is full compliance with international humanitarian law when conducting military operations in any armed conflict.²³⁷ No exception is asserted for nuclear weapons.²³⁸ Because international humanitarian law is comprised of a mixture of customary international law and multiple conventions, full compliance first requires identification of the law. The United States is party to most major conventions regarding international humanitarian law,²³⁹ so the specific rules and prohibitions enumerated therein are not difficult to identify. Identification of the customary rules and prohibitions that bind the United States, however, is more problematic.

Although a signatory of two Protocols Additional to the Geneva Conventions,²⁴⁰ the United States has not ratified either. Additional Protocol II applies only to non-international conflicts²⁴¹ so it is irrelevant to conflicts involving different states. Additional Protocol I, however, deals with international conflicts and contains relatively detailed guidance regarding application of international humanitarian law.²⁴² The vast majority of the world's nations are party to Additional Protocol I.²⁴³ Such widespread international acceptance means that there is a large body of states engaging in

237. U.S. JOINT CHIEFS OF STAFF, CHAIRMAN OF THE JOINT CHIEFS OF STAFF INSTRUCTION 5810.01C, IMPLEMENTATION OF THE DoD LAW OF WAR PROGRAM para. 4 (2007).

238. See Written Statement of the Government of the United States of America, *supra* note 236, at 22.

239. See generally 1907 Hague Convention, *supra* note 233; Convention Relative to the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, Aug. 12, 1949, 6 U.S.T. 3114, 75 U.N.T.S. 31 [hereinafter Geneva Convention I]; Convention Relative to the Amelioration of the Condition of the Wounded, Sick and Shipwrecked Members of Armed Forces at Sea, Aug. 12, 1949, 6 U.S.T. 3217, 75 U.N.T.S. 85 [hereinafter Geneva Convention II]; Convention Relative to the Treatment of Prisoners of War, Aug. 12, 1949, 6 U.S.T. 3316, 75 U.N.T.S. 135 [hereinafter Geneva Convention III]; Convention Relative to the Protection of Civilian Persons in Time of War, Aug. 12, 1949, 6 U.S.T. 3516, 75 U.N.T.S. 287 [hereinafter Geneva Convention IV].

240. Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), June 8, 1977, 1125 U.N.T.S. 3 (entered into force Dec. 7, 1979) [hereinafter Additional Protocol I]; Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II), June 8, 1977, 1125 U.N.T.S. 609 (entered into force Dec. 7, 1979) [hereinafter Additional Protocol II].

241. Additional Protocol II, *supra* note 240, art. 1.

242. The United States' objection to Additional Protocol I was centered primarily upon what it perceived as inappropriate application of prisoner-of-war protections to otherwise unlawful combatants. Michael G. Renner, *Let's Join the World on Geneva Protocols*, N.Y. TIMES, Aug. 6, 1985, at A22.

243. See Additional Protocol I, *supra* note 240.

consistent practices out of a sense of legal obligation.²⁴⁴ While many provisions of Additional Protocol I already reflect recognized rules of customary international law, there is an argument such uniformity of state practice has already or will eventually change the provisions that previously did not reflect customary international law into binding rules.²⁴⁵ To preclude being bound by such newly emerging customary rules, the United States has expressly objected to numerous provisions while acquiescing in the legally binding nature of others.²⁴⁶ As a result, identifying precisely what rules of customary international law are applicable to the United States is a more complicated process.

The principle of humanity prohibits the imposition of suffering, injury, or destruction that is not required for realization of a lawful military objective.²⁴⁷ The concept found broadest application in the Martens Clause²⁴⁸ of both the 1899 and 1907 Hague Conventions.²⁴⁹ Because humanity is effectively incorporated into the concepts of military necessity, proportionality, and distinction,²⁵⁰ the requirements of humanity are addressed within the respective discussion of those principles.²⁵¹

A. *Application of the Principle of Distinction*

Whether the Natanz nuclear facility is a valid military target must be determined before assessing any other aspects of a potential

244. SEAN D. MURPHY, *PRINCIPLES OF INTERNATIONAL LAW* 78 (2006).

245. See generally Michael J. Matheson, *The United States Position on the Relation of Customary International Law to the 1977 Protocols Additional to the 1949 Geneva Conventions*, 2 AM. U. J. INT'L L. & POL'Y 419, 420 (1987).

246. *Id.*

247. U.S. DEP'T OF THE AIR FORCE, AIR FORCE PAMPHLET 110-31, INTERNATIONAL LAW—THE CONDUCT OF ARMED CONFLICT AND AIR OPERATIONS para. 1-3(a)(2) (1976) [hereinafter AFPAM 110-31]; U.K. MINISTRY OF DEFENCE, THE MANUAL OF THE LAW OF ARMED CONFLICT 23 (2004).

248. Rupert Ticehurst, *The Martens Clause and the Laws of Armed Conflict*, 317 INT'L REV. RED CROSS 125, 125 (1997). The Martens Clause was named after the Russian delegate to the 1899 Hague Peace Conference. It states the following:

Until a more complete code of the laws of war is issued, the High Contracting Parties think it right to declare that in cases not included in the Regulations adopted by them, populations and belligerents remain under the protection and empire of the principles of international law, as they result from the usages established between civilized nations, from the laws of humanity and the requirements of the public conscience.

Id.

249. U.K. MINISTRY OF DEFENCE, *supra* note 247, at 23.

250. See generally AFPAM 110-31, *supra* note 247.

251. See *infra* Parts III.A-C.

military attack.²⁵² Such a question requires application of the most fundamental concept of international humanitarian law, the principle of distinction. The principle of distinction requires military forces to recognize the difference between civilian and military personnel, material, and structures.²⁵³ Generally speaking, civilians and anything used for civilian purposes are never lawfully subject to attack, while military forces and anything used for military purposes are always legitimate objects of attack.²⁵⁴ In 1942, the United States Supreme Court expressly recognized the principle of distinction as a binding part of international humanitarian law in *Ex Parte Quirin*.²⁵⁵ The concept is articulated most thoroughly, however, in Articles 48, 51, and 52 of Additional Protocol I,²⁵⁶ which bind the United States only as established rules of customary international law.²⁵⁷

Guidance regarding structures such as the Natanz facility is found primarily in Article 52 of Additional Protocol I. Article 52 is one of the provisions recognized by the United States as reflecting existing customary international law, so it is binding upon the United States.²⁵⁸ Article 52 provides in full:

Art 52. General Protection of civilian objects

1. Civilian objects shall not be the object of attack or of reprisals. Civilian objects are all objects which are not military objectives as defined in paragraph 2.
2. Attacks shall be limited strictly to military objectives. In so far as objects are concerned, military objectives are limited to those objects which by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage.

252. In the context of a single attack or limited series of attacks this is somewhat of a redundant issue. The presumed *jus ad bellum* validity of the Bush Doctrine necessarily requires a finding that the military threat posed by the Iranian nuclear program and the Natanz facility is substantial. See Murphy, *supra* note 23. Thus, under international humanitarian law analysis the facility should easily qualify as a legitimate military target. See *supra* Parts II.A.-B.

253. See generally *Declaration of St. Petersburg Forbidding Use of Certain Projectiles in Time of War*, Nov. 29, 1868, 1 AM. J. INT'L L. 95 (Supp. 1907); Hague Regulations, *supra* note 233, art. 25.

254. LESLIE C. GREEN, *THE CONTEMPORARY LAW OF ARMED CONFLICT* 124-125 (2d ed. 2000).

255. *Ex Parte Quirin*, 317 U.S. 1, 30-31 (1942). The Court stated: "By universal agreement and practice the law of war draws a distinction between the armed forces and the peaceful populations of belligerent nations and also between those who are lawful and unlawful combatants." *Id.*

256. Additional Protocol I, *supra* note 240, arts. 48, 51-52.

257. See generally Matheson, *supra* note 245.

258. See JUDGE ADVOCATE GEN.'S LEGAL CTR. & SCH., *supra* note 234, at 24.

3. In case of doubt whether an object which is normally dedicated to civilian purposes, such as a place of worship, a house or other dwelling or a school, is being used to make an effective contribution to military action, it shall be presumed not to be so used.²⁵⁹

Article 52(1) imposes a general prohibition upon attacking civilian structures.²⁶⁰ Thus, if the Natanz facility is found to be a purely civilian structure, it would be illegal to attack it with either a nuclear, or conventional weapon.²⁶¹

Article 52 does not specify what constitutes a civilian structure. Rather, Article 52(2) lists the criteria used to identify a military objective.²⁶² If the Natanz facility does not clearly meet the enumerated criteria, Article 52(3) imposes a presumption that the facility is a civilian structure immune from attack.²⁶³ There is a two prong test for the Natanz facility to qualify as a legitimate military objective under Article 52(2). A negative answer to either prong means any type of attack upon the Natanz facility would be a violation of customary international law for the United States.

The first prong of the Article 52(2) test is whether the nature, location, purpose, or use of the Natanz facility makes an effective contribution to the military action of Iran.²⁶⁴ The site of the Natanz facility in an otherwise insignificant part of the central Iranian desert²⁶⁵ precludes “location” from playing a role in the analysis of its military classification.²⁶⁶ The nature, purpose, and use of the underground structure, however, are critical factors. The Commentary to Article 52 defines the “nature” of structures making an effective contribution to military action as including those “directly used by the armed forces . . . fortifications, depots, buildings occupied by armed forces, staff headquarters, communications centres etc.”²⁶⁷ Because most structures are able make a contribution to military action under certain circumstances, the Commentary focuses on the temporal aspect of “purpose” and “use.”²⁶⁸ A structure’s “use” is determined by “its present func-

259. Additional Protocol I, *supra* note 240, art. 52.

260. *Id.*

261. *Id.*

262. *Id.*

263. *Id.* art. 53.

264. *Id.* art 52.

265. See ALBRIGHT & HINDERSTEIN, *supra* note 151.

266. Additional Protocol I, *supra* note 240, art. 52.

267. INT'L COMM. OF THE RED CROSS, COMMENTARY ON THE ADDITIONAL PROTOCOLS OF 8 JUNE 1977 TO THE GENEVA CONVENTIONS OF 12 AUGUST 1949 at 636 (1987).

268. *Id.*

tion,” while “purpose” is determined by its “intended future use.”²⁶⁹ What constitutes “an effective contribution to military action”²⁷⁰ is not articulated in Additional Protocol I or the Commentary. Nevertheless, the phrase itself suggests something more than incidental connection to the military is necessary.²⁷¹

Analysis of the purpose and use of the Natanz facility is complicated by the same issue at the core of the nuclear weapon non-proliferation problem. Specifically, that the uranium-enrichment activities Iran admits are taking place at the facility²⁷² may be genuinely intended only for the peaceful production of reactor-grade nuclear fuel as Iran claims, or intended, at least partially, for the production of highly enriched, weapons-grade uranium as the United States fears. Applying the Commentary’s definitions, the use and purpose of the Natanz facility is unquestionably uranium enrichment. The link between the enrichment use and purpose of the Natanz facility and military action is a key factor, however, that is largely limited to speculation. Given the inherent doubt regarding the contribution to military action posed by the enrichment use and purpose of the facility, the presumption of civilian purpose from Article 52(3) would seem to apply. The civilian purpose is further strengthened by the December 2007 public release of a U.S. National Intelligence Estimate concluding that Iran halted its nuclear weapons program in the fall of 2003.²⁷³

Nevertheless, the nature of the Natanz facility suggests a much closer link to an effective military contribution. For a truly peaceful nuclear energy program, the extra expense of building enrichment facilities underground would not seem warranted.²⁷⁴ Even assuming a valid industrial-safety justification for an underground facility, burying it below successive layers of earth and hardened concrete²⁷⁵ cannot be considered anything other than a fortification. Such a conclusion is further supported by the attempt to disguise the entrance and exit to the facility and the placement of defensive anti-aircraft batteries on the surface.²⁷⁶ Indeed, Iran has

269. *Id.*

270. Additional Protocol I, *supra* note 240, art. 52.

271. *Id.*

272. Fang, *supra* note 136.

273. U.S. OFFICE OF THE DIR. OF NAT’L INTELLIGENCE, NATIONAL INTELLIGENCE ESTIMATE, IRAN: NUCLEAR INTENTIONS AND CAPABILITIES 6 (2007).

274. *See supra* Part II.A.

275. BRANNAN & ALBRIGHT, *supra* note 146; INT’L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 51.

276. *See* CORERA, *supra* note 40, at 57; INT’L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 49.

admitted building underground nuclear facilities such as Natanz specifically to prevent or minimize the damage from potential aerial attack.²⁷⁷

The Commentary lists fortifications directly used by the military as structures of a nature to make an effective contribution to military action.²⁷⁸ Neither the Commentary nor Additional Protocol I, however, defines what constitutes a fortification. A common understanding of fortification is that of a defensive position specially constructed or equipped to preclude or minimize the risk of military attack.²⁷⁹ On the basis of the common meaning of fortification, then, the underground Natanz facility clearly qualifies as such. The argument that the fortified structure is directly used by the Iranian military would be based upon the mission assigned to the military forces stationed there. The desert location of the Natanz facility has no apparent military importance so the only reason to place air-defense systems there would be to protect the enrichment facility and equipment. Thus, the Iranian military unit responsible for operation of the anti-aircraft batteries would be charged with defending the enrichment facility and equipment against an aerial attack. To further ensure the safety of the enrichment equipment, the Iranian military is directly using the fortified underground structure to meet its mission objective. If U.S. speculation about the direct military contribution of the enrichment facility is not enough by itself,²⁸⁰ the fact that the underground facility is fortified and defended by Iranian military forces satisfies the first prong of Article 52(2).

The second prong of the Article 52(2) test is whether total or partial destruction, capture, or neutralization of the Natanz facility, in the circumstances ruling at the time of attack, offers a definite military advantage to the United States. In the context of attack with a tactical nuclear weapon, destruction is the only term applicable. The phrase “definite military advantage”²⁸¹ suggests the military benefit sought must be reasonably substantial with a high degree of certainty. The Commentary states that “potential or indeterminate advantages” are insufficient to meet the standard, and an attack must be based upon sufficient information to allow a reasonably informed balancing.²⁸² The knowledge standard sug-

277. CHUBIN, *supra* note 122, at 22; Associated Press, *supra* note 118.

278. INT'L COMM. OF THE RED CROSS, *supra* note 267, at 636.

279. See BLACK'S LAW DICTIONARY 654 (6th ed. 1990).

280. The level of proof required to legally justify an attacker's conclusion is unclear.

281. Additional Protocol I, *supra* note 240, art. 52.

282. INT'L COMM. OF THE RED CROSS, *supra* note 267, at 636.

gested by the Commentary seems questionable in that it appears to preclude attack on the basis of limited information of unknown reliability that is quite common in an armed conflict. Moreover, declaring potential or indeterminate advantages insufficient to meet the second prong of Article 52(2) poses similar problems. The significant restriction to military operations posed by the Commentary's interpretation seems to reflect the political and legal reality of modern warfare. Even if correct, an honest belief by an attacker that a structure is a valid military target may not be sufficient without direct, convincing evidence to support such a belief.²⁸³

Gauging the degree of military advantage the United States would receive from the destruction of the Natanz facility is difficult for the same reason as determining the facility's effective contribution to Iranian military action. The true purpose of Iran's enrichment operation is known only to Iranian military and political leadership. While the entire program looks quite suspicious, short of Iran publicly admitting its nuclear weapon aspirations, there is simply no direct evidence of the military contribution made by the Natanz facility. If Iran is actually enriching uranium for use in nuclear weapons, the military advantage the United States would receive from destroying enrichment facilities is definite and substantial. Otherwise, there is no definite military benefit, and an attack is probably illegal despite the fortified aspect of the facility. In light of the need to convince the international community, if not a court, that attacking the Natanz facility was a legal act, the United States probably needs something more than suspicious behavior by Iran. As a result, prong two of the Article 52(2) test is unlikely to be met.

Prior to Additional Protocol I, analysis of the military status of the Natanz facility would have been more straightforward and produced a clearer legal basis for attack. Article 25 of the Hague Regulations provides "attack or bombardment, by whatever means, of . . . buildings which are undefended is prohibited."²⁸⁴ By implication, defended buildings are not protected by Article 25 and are valid military targets. The United States Army Field Manual 27-10 regarding the law of land warfare includes "[a] fort or fortified

283. *Cf.* Oil Platforms (Islamic Republic of Iran v. United States of America), 2003 I.C.J. 161, paras. 74-76 (Nov. 6) [hereinafter Oil Platforms Case] (finding—although concerned with a claim of self-defense rather than international humanitarian law—that the circumstantial evidence asserted by the United States to justify attacking and treating Iranian oil platforms as military installations was insufficient to support the use of force).

284. Hague Regulations, *supra* note 233, art. 25.

place” within the definition of defended places.²⁸⁵ As previously discussed, the underground Natanz facility is fortified and protected with anti-aircraft batteries.²⁸⁶ Without the additional requirement for a definite military advantage, the only limitations upon an attacker’s discretion come from other principles of international humanitarian law. In any event, the Natanz facility would be a legitimate subject of attack solely on the basis of its fortification.

In July 1976, the section of Field Manual 27-10 entitled “Permissible Objects of Attack or Bombardment” was updated to include language nearly identical to Article 52 of Additional Protocol I under a new subsection entitled “Military Objectives.”²⁸⁷ Analysis of the legality of attacking the Natanz facility as a military objective under that provision is identical to analysis under Article 52 of Additional Protocol I. Also in July 1976, Field Manual 27-10 incorporated the criteria from Article 59(2) of Additional Protocol I to identify what constituted an undefended locality that was immune from attack.²⁸⁸

Marking a unique distinction with Additional Protocol I, however, Field Manual 27-10 indicates the United States still considers defended places as a separate target category from military objectives as defined by Article 52 of Additional Protocol I. In essence, the United States has assimilated Article 52 guidance as an expansion, not contraction, of preexisting legal bases to attack fortified places such as the underground Natanz facility.²⁸⁹ Given the lack of information regarding the military contribution of Iranian enrichment operations at the Natanz facility and an inability to identify how much military advantage would result for the United States from the facility’s destruction, the strongest legal justification for attack comes from the fact that the Iranians chose to fortify and defend the structure from attack.

In sum, the principle of distinction does not prevent a U.S. attack upon the Natanz nuclear facility. The status of the facility under Additional Protocol I, Article 52(2) is unclear based upon the known facts. Nevertheless, as a fortification, the Natanz facility is a lawful military objective and not a purely civilian facility

285. U.S. DEP’T OF THE ARMY, *supra* note 27.

286. CORERA, *supra* note 40, at 57; Slavin, *supra* note 144.

287. Compare Additional Protocol I, *supra* note 240, art. 52, with Change Number 1 to U.S. DEP’T OF THE ARMY, *supra* note 27.

288. Compare Additional Protocol I, *supra* note 240, art. 59, with Change Number 1 to U.S. DEP’T OF THE ARMY, *supra* note 27.

289. See AFPAM 110-31, *supra* note 247, para. 5-3(b).

immune from attack.²⁹⁰ Although the target is valid, the international humanitarian law analysis must continue in order to determine the legality of the means and methods of the attack. While the classification of the target as military or civilian is determined largely by Iranian actions, the remaining principles of international humanitarian law regarding the means and method of attack are determined primarily by the actions and choices of the United States. In applying these principles, the United States has a good faith obligation to conduct objective analysis.²⁹¹

B. *Application of the Principle of Military Necessity*

First codified during the American Civil War,²⁹² military necessity is a broad concept that applies to every action a belligerent nation takes against an enemy. In the context of an armed attack, it serves as a restraint upon the actions of a warring state by permitting the imposition of only so much damage as is reasonably required for the rapid realization of a lawful military objective.²⁹³ In essence, it is a limitation upon the type of weapon or amount of force a state may employ to reach a certain objective. Although there is significant deference to a military commander's decision regarding the military necessity of directing an attack,²⁹⁴ using force in excess of that permitted by military necessity is a violation of international humanitarian law.²⁹⁵

It is important to note that military necessity is not the same as the principle of necessity found in *jus ad bellum*. As previously mentioned, international humanitarian law and *jus ad bellum* are separate topics and *jus ad bellum* is outside the scope of this discussion. Nevertheless, an explanation of the distinction between the two concepts is warranted to avoid any confusion. In the context of *jus ad bellum*, the necessity analysis focuses on the initial need to resort to military force. In essence, the principle of necessity is intended to prevent unjustified escalation of a situation to the point of

290. Its fortified status notwithstanding, the Natanz facility is perhaps best described as a dual-use facility because it potentially serves both a military and civilian purpose. See U.S. DEP'T OF DEFENSE, JOINT PUBLICATION 3-60, JOINT TARGETING, E3, at 92 (2007).

291. GREEN, *supra* note 254, at 353.

292. See Instructions for the Government of Armies of the United States in the Field, General Orders No. 100, arts. 14-16 (1863) [hereinafter Lieber Code].

293. Hague Regulations, *supra* note 233, art. 23(g); MYRES D. McDOUGAL & FLORENTINO P. FELICIANO, THE INTERNATIONAL LAW OF WAR 72 (1994).

294. The obligation is to "do everything feasible to verify that the objectives to be attacked are neither civilians nor civilian objects." Additional Protocol I, *supra* note 240, art. 52.

295. *Id.* at arts. 57, 87.

armed conflict by requiring a state to assert a legal justification for its initial use of military force.²⁹⁶ In contrast, under international humanitarian law, military necessity is intended to prevent needless death and destruction in an otherwise valid armed conflict.²⁹⁷

Assessing the military necessity of attacking the Natanz nuclear facility with a tactical nuclear weapon requires application of a four-prong test. Prong one is whether the United States is able to control the application or delivery of a tactical nuclear weapon to the specific target.²⁹⁸ In essence, this prong prohibits the use of indiscriminate weapons. A historical example of such prohibited weapons is the World War II-era incendiary balloons released into the atmosphere by Japan with the expectation that the weapons would eventually reach the United States.²⁹⁹ Using such uncontrolled weapons effectively precludes adherence to the principle of distinction and calls into question adherence to the principle of proportionality.³⁰⁰

Until the recent past, an attacker using bombs delivered by aircraft maintained positive control over the weapon only until its release from the aircraft. At that point, the weapon was no longer under control and was subject only to the effects of wind and gravity. With the advent of precision guided munitions at the end of the twentieth century, however, the United States is now able to maintain positive control over bombs all the way to the target and even change the target after release.³⁰¹ The Joint Direct Attack Munition (JDAM) is a computerized satellite guidance kit that converts traditional gravity bombs to enable such control and precision.³⁰² The 2001 Nuclear Posture Review described the B61-11 as an unguided weapon.³⁰³ Research disclosed no information regarding the possible use of a JDAM kit on a B61-11. Whether or not the B61-11 has a precision guidance system, widespread prac-

296. See generally *Military and Paramilitary Activities in and Against Nicaragua* (Nicar. v. U.S.), 1986 I.C.J. 14, 94, para. 176 (June 27) [hereinafter *Nicar. v. U.S.*]; *Legality of Nuclear Weapons*, *supra* note 11, para. 41.

297. See generally *Additional Protocol I*, *supra* note 240, art. 48.

298. See AFPAM 110-31, *supra* note 247, para. 1-3(a)(1); U.K. MINISTRY OF DEFENCE, *supra* note 247, at 22.

299. AFPAM 110-31, *supra* note 247, para. 6-3(c).

300. Charles J. Moxley, Jr., *The Unlawfulness of the Threat or Use of Nuclear Weapons*, 8 INT'L L. STUDENTS ASS'N J. INT'L & COMP. L. 447, 450 (2002).

301. Air Force Link, *Joint Direct Attack Munition GBU -31/32/38*, <http://www.af.mil/factsheets/factsheet.asp?fsID=108> (last visited Mar. 5, 2008).

302. *Id.*; Steven Komarow, *Bombers Vie for Return to the Action*, USA TODAY, Oct. 15, 1997, at 16A.

303. GlobalSecurity.org, *supra* note 10.

tice indicates prong one of the military necessity test is met by virtue of the United States' maintaining positive control of the weapon until release from an aircraft.³⁰⁴

Prong two of the military necessity test is whether attack upon the Natanz facility with a tactical nuclear weapon is necessary to quickly realize the total or partial capitulation of Iran.³⁰⁵ This prong overlaps to a great extent with the military advantage analysis found in the second component of Article 52(2) of Additional Protocol I—whether total or partial destruction of the Natanz facility offers a definite military advantage to the United States. It is more difficult to analyze than military advantage, though, because it implicates the United States' ultimate strategic and political goal for concluding an armed conflict with Iran.³⁰⁶ Complete destruction of Iran's nuclear facilities to prevent the development of a nuclear weapon would be a relatively modest objective compared to the much broader goal of regime change. The ultimate objective sought dictates what types of targets are attacked, so not knowing that aspect effectively precludes detailed evaluation of the necessity of striking the Natanz facility. Nevertheless, this analysis will proceed on the assumption that the ultimate political objective is destruction of Iran's nuclear facilities to prevent the development of a nuclear weapon.

The strategic objective of preventing nuclear-weapon development through destruction of Iran's nuclear facilities renders all nuclear facilities subject to attack. Indeed, such an objective can only be realized by attacking the nuclear facilities and rendering them unusable by ensuring their complete or near complete destruction. Thus, an attack upon the Natanz enrichment facility is necessary to achieve the ultimate U.S. objective and thereby quickly realize the total or partial capitulation of Iran.

The military necessity analysis, however, does not stop there. Evaluation of the specific means and method of a planned attack is also required. Scrutiny of the military necessity of employing a single B61-11 tactical nuclear weapon to ensure destruction of the Natanz facility instead of conventional weapons is warranted. The fortified aspect of the Natanz facility is key to this part of the analy-

304. Michael N. Schmitt, *Bellum Americanum: The U.S. View Of Twenty-First Century War And Its Possible Implications For The Law Of Armed Conflict*, 19 MICH. J. INT'L L. 1051, 1088 (1998).

305. AFPAM 110-31, *supra* note 247, para. 1-3(a)(1); U.K. MINISTRY OF DEFENCE, *supra* note 247, at 22.

306. See MCDUGAL & FELICIANO, *supra* note 293, at 526.

sis which would be a major component of the weaponeering³⁰⁷ aspect of targeting.

The above ground structures at the Natanz facility are highly vulnerable³⁰⁸ to attack and destruction by aircraft using conventional weapons. Because there is no apparent reason for use of a tactical nuclear weapon against such facilities, discussion is limited to only the underground part of the facility. The fortified underground facility is specifically designed and constructed to be less vulnerable to aerial attack.³⁰⁹ Buried beneath at least twenty-six feet of layered earth and concrete, the underground facility is comprised of three separate structures of enormous proportion.³¹⁰ Due to its thick cover of earth and concrete, the weapon choice is effectively limited to earth-penetrating weapons.³¹¹ The sheer size of the underground facility (two large structures of approximately 300,000 square feet each³¹² and another smaller structure) is a factor that reduces its vulnerability to the presumed goal of near complete destruction. A detailed weaponeering analysis by professional targeteers would produce a precise estimate of the number and type of weapons necessary to attain the desired level of destruction.³¹³ Unavailability of the sort of detailed information used by professional targeteers in a weaponeering analysis precludes such discussion here. Nevertheless, logic and common sense indicate that it will take a significant number of 5,000 pound conventional earth-penetrating weapons to destroy an underground facility the size of Natanz.³¹⁴ In contrast, a single B61-11 with an explosive yield of 400 kilotons is able to completely destroy both the above and below ground structures of the facility.

307. "Weaponeering is the process of estimating the quantity of a specific type weapon required to achieve a specific level of damage to a given target, considering target vulnerability, weapon effects, munition delivery errors, damage criteria, probability of kill, weapon reliability, etc." AFPAM 14-210, *supra* note 202, para. 6.1.

308. "Vulnerability" is "the physical vulnerability of an installation or facility. Size, shape, and hardness all determine how susceptible a target is to damage. Vulnerability affects the size of force required to damage a target, as well as munitions and fuzing requirements." *Id.* para. 5.2.3.3.3.7.

309. Associated Press, *supra* note 118; Slavin, *supra* note 116.

310. See BRANNAN & ALBRIGHT, *supra* note 146; INT'L INST. FOR STRATEGIC STUDIES, *supra* note 1, at 51.

311. See Michael Levi, *Iran's Sitting Duck*, N.Y. TIMES, Apr. 18, 2006, at A27.

312. By way of comparison, the area of a regulation collegiate football field including end zones is 57,600 square feet. See SportsKnowHow.com, College-NCAA Football Field Dimensions Diagram, <http://www.sportsknowhow.com/football/field-dimensions/ncaa-football-field-dimensions.html> (last visited Mar. 22, 2008).

313. AFPAM 14-210, *supra* note 202, para. 6.5.7.

314. See Scott Canon, *Is New Bunker Buster Too Big for the Job*, KAN. CITY STAR, Mar. 11, 2007, at A8.

As the name implies, earth-penetrating weapons are intended to enter the earth some distance before detonating. The B61-11 does not need to actually penetrate into an underground structure to destroy it. By exploding somewhere near the target as little as a few feet underground, rather than at or above ground level, a much higher percentage of the explosive energy is transferred into the ground as opposed to the less dense atmosphere.³¹⁵ The energy travels through the ground in the same manner as a short-range shock wave from an earthquake.³¹⁶ By penetrating as little as six to ten feet into the ground, the 400 kiloton explosive yield of the B61-11 would generate the same-size shock wave as a 1.2-megaton surface explosion.³¹⁷ It is primarily the shock wave resulting from the explosion rather than the explosion itself that destroys an underground target.³¹⁸ The Natanz underground facility is comparatively shallow at a depth of less than thirty feet below the surface and the surrounding earth is loose dry soil rather than solid rock, which is more resistant to shock.³¹⁹ Those two factors indicate that use of a B61-11 with even minimal penetration (five to ten feet) into the earth above the target would ensure the underground facility's complete destruction.³²⁰ It would also destroy most, if not all, of the above-ground structures simultaneously.³²¹

It is clear that use of a single B61-11 tactical nuclear weapon would meet the objective of destroying the Natanz facility completely. In contrast, an undetermined number of conventional earth-penetrating weapons would be necessary to realize the same objective. Use of a single weapon instead of perhaps dozens to realize the same objective is typically much more expeditious. It also generally offers far less risk to aircraft and crew than the repeat attacks necessary to deliver multiple conventional weapons. For these reasons, use of a B61-11 offers a definite advantage in terms of economy of force and rapid realization of the ultimate U.S. objective. Thus, prong two of the military necessity test,

315. See Robert W. Nelson, *Low-Yield Earth-Penetrating Nuclear Weapons*, 10 *SCI. & GLOBAL SEC.* 1, 3 (2002).

316. *Id.*

317. See *id.* at 4.

318. *Id.*; LISBETH GRONLUND, DAVID WRIGHT & ROBERT NELSON, *EARTH-PENETRATING WEAPONS* (2005), http://www.ucsusa.org/global_security/nuclear_weapons/earthpenetrating-weapons.html.

319. See generally GlobalSecurity.org, Natanz – Iran Special Weapons Facility, <http://www.globalsecurity.org/wmd/world/iran/natanz-imagery.htm> (last visited Apr. 26, 2009).

320. See generally Nelson, *supra* note 315, at 10; SAMUEL GLASSTONE & PHILIP DOLAN, *EFFECTS OF NUCLEAR WEAPONS* 253-257 (3d ed. 1977).

321. See Nelson, *supra* note 315, at 17-18.

whether attack upon the Natanz facility with a tactical nuclear weapon is necessary to quickly realize the total or partial capitulation of Iran, would seem to be met by use of a tactical nuclear weapon.

Prong three is whether use of a tactical nuclear weapon is otherwise prohibited by international humanitarian law.³²² Use of a prohibited weapon would be *per se* illegal in addition to being a violation of the principle of military necessity.³²³ The ICJ's *Legality of Nuclear Weapons* opinion is arguably the most authoritative source regarding the legal status of nuclear weapons.³²⁴ The ICJ concluded that "there is in neither customary nor conventional international law any comprehensive and universal prohibition of the threat or use of nuclear weapons as such."³²⁵ The ICJ, however, specifically declined to consider whether a *jus cogens* prohibition existed because the legal character of the rule at issue was not part of the question the court was tasked to answer.³²⁶ Thus, despite the absence of an identifiable prohibition upon the threat or use of nuclear weapons within international custom or convention, the existence of a *jus cogens* prohibition upon such threat or use remains an open question.

A category of law separate and distinct from custom and convention, *jus cogens* is the name given to peremptory norms of international law considered so fundamental that derogation is not permitted.³²⁷ Essentially a special, elevated form of customary international law, *jus cogens* norms are so powerful that they supersede and nullify any conflicting source of law.³²⁸ Although the notion of peremptory norms entered the international legal system comparatively recently, the concept is now firmly established. The

322. AFPAM 110-31, *supra* note 247, para. 1-3(a)(1); U.K. MINISTRY OF DEFENCE, *supra* note 247, at 22.

323. *See generally* Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, Jan. 13, 1993, S. TREATY DOC. NO. 103-21, 1974 U.N.T.S. 45; Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects, Oct. 10, 1981, 1342 U.N.T.S. 137; Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, Apr. 10, 1972, 26 U.S.T. 583, 1015 U.N.T.S. 163; Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, Jun. 17, 1925, 94 L.N.T.S. 65.

324. *Legality of Nuclear Weapons*, *supra* note 11.

325. *Id.* para. 105.

326. *Id.* para. 83.

327. RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 102 cmt. k (1979).

328. *Id.* § 102, reporters' notes 6.

ICJ first acknowledged the concept of *jus cogens* in the 1986 case *Military and Paramilitary Activities in and against Nicaragua*,³²⁹ and more recently in the 2006 case *Democratic Republic of the Congo v. Rwanda*.³³⁰ With the existence of peremptory norms no longer subject to serious challenge, disputes regarding *jus cogens* now focus on what norms qualify as peremptory.³³¹ Although difficult to conclusively identify, some activities that are probably prohibited by *jus cogens* are genocide, slavery, and the use of force in a manner inconsistent with the U.N. Charter's general prohibition upon the use of force.³³²

The functional distinction between tactical and strategic nuclear weapons is sometimes limited to name alone.³³³ Tactical nuclear weapons, however, generally have lower explosive yields than strategic weapons.³³⁴ As previously mentioned, the ICJ's *Legality of Nuclear Weapons* opinion and academic writing about nuclear weapons has rarely distinguished between strategic and tactical weapons.³³⁵ Thus, if a *jus cogens* prohibition upon the use of nuclear weapons does exist it is unlikely to include such a distinction. As a result, the only applicable question is whether a peremptory norm exists prohibiting the use of nuclear weapons in general. It is important to note, however, that there is currently no recognized peremptory norm prohibiting the use of a specific type of weapon.

The Vienna Convention on the Law of Treaties,³³⁶ considered by the United States as a codification of customary international law regarding treaty interpretation,³³⁷ expressly mentions *jus cogens* in Articles 53 and 64 as a concept capable of rendering a treaty void. As the first widely accepted international codification of the *jus*

329. *Nicar. v. U.S.*, *supra* note 296, para. 190.

330. *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Rwanda)*, 2006 I.C.J. Lexis 7 (Feb. 3) [hereinafter *Democratic Republic of the Congo v. Rwanda*] (separate opinion of Dugard, J.).

331. RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES §102, reporters' notes 6 (1979).

332. *Id.* at cmt. k; MURPHY, *supra* note 244, at 82.

333. See Amy F. Woolf, *Nonstrategic Nuclear Weapons*, (2009), <http://www.fas.org/sgp/crs/nuke/RL32572.pdf>.

334. *Id.* at 5.

335. See *supra* Part I.

336. Vienna Convention on the Law of Treaties, *opened for signature* May 23, 1969, 1155 U.N.T.S. 331 (entered into force Jan. 27, 1980) [hereinafter VCLT].

337. RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES pt. III introductory note (1979).

cogens concept, the VCLT definition of *jus cogens* is influential.³³⁸ Article 53 defines *jus cogens* as follows:

[A] norm accepted and recognized by the international community of States as a whole as a norm from which no derogation is permitted and which can be modified only by a subsequent norm of general international law having the same character.³³⁹

The key aspect of the VCLT definition is who must accept and recognize a norm for it to obtain peremptory status. The “international community of States as a whole”³⁴⁰ suggests unanimity or near unanimity of state opinion is required. In contrast, a normal rule of customary international law is identified by the consistent, recurring practice of nations based upon a sense of legal obligation known as *opinio juris*.³⁴¹ Thus, the standard for recognition of emerging customary international law is much lower than the standard for recognition of an emerging peremptory norm.

As a concept, *jus cogens* is rooted primarily in traditional natural law theory. Natural law is premised upon the existence of permanent, common principles of right and wrong.³⁴² Such moral and ethical principles exist independent of states and may be discovered and applied without regard to state consent.³⁴³ This aspect of *jus cogens* is uniquely suited to the argument that the threat or use of nuclear weapons is prohibited. Modern international law, however, is premised upon a positive demonstration of state consent through either recurring practice or express acceptance of treaty obligations.³⁴⁴ The prospect of a newly identified, non-derogable legal obligation binding state action is in direct conflict with the prevailing positive law conception of international law as a consent-based system. By inserting a type of state consent requirement into the *jus cogens* formation process, the VCLT definition created a hybrid of natural and positive law. For better or worse, the need for unanimity in state opinion is a significant obstacle to the recognition of any new peremptory norms.

338. Jacob Werksman & Ruth Khalastchi, *Nuclear Weapons and Jus Cogens Peremptory Norms and Justice Pre-Empted?*, in INTERNATIONAL LAW, THE INTERNATIONAL COURT OF JUSTICE AND NUCLEAR WEAPONS 181, 182 (Laurence Boisson de Chazournes & Philippe Sands eds., 1999).

339. VCLT, *supra* note 336, art. 53.

340. *Id.*

341. RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 102 cmt. c (1979).

342. MURPHY, *supra* note 244, at 10.

343. *Id.*

344. *Id.* at 12-13.

Because of its non-derogable nature, the existence of a *jus cogens* prohibition upon the use of nuclear weapons would swallow the military necessity analysis it falls under and render all other international-humanitarian-law issues moot. Whether the use of nuclear weapons is prohibited by a peremptory norm is an ongoing subject of international debate between non-nuclear-weapon states and nuclear-weapon states.³⁴⁵ Short of an ICJ decision specifically recognizing a peremptory norm regarding use of nuclear weapons, the *jus cogens* status of the weapons will remain in dispute. On the basis of the VCLT definition, the fact that such a degree of dispute exists on the topic is perhaps the primary obstacle to recognition of a peremptory norm.

The lower standard necessary to establish customary-international-law norms creates the possibility of peremptory norms emerging from established customary law. Chemical³⁴⁶ and biological³⁴⁷ weapons are types of weapons of mass destruction that are already illegal under conventional and arguably customary international law.³⁴⁸ Chemical and biological weapons produce a high, indiscriminate death rate with little or no accompanying physical destruction.³⁴⁹ In contrast, a nuclear weapon produces a high, indiscriminate death rate and extreme physical destruction.³⁵⁰ In addition to the incredible amount of heat and explosive energy released by even the smallest nuclear weapon, a nuclear detonation also releases deadly amounts of radioactivity. Radioactivity can contaminate and render uninhabitable the site of the detonation for many years. Moreover, once released into the environment,

345. See generally Legality of Nuclear Weapons, *supra* note 11.

346. See generally Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, *opened for signature* Jan. 13, 1993, 32 I.L.M. 800, 1974 U.N.T.S. 45 (entered into force Apr. 29, 1997) [hereinafter Chemical Weapons Convention]; Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of Warfare, *opened for signature* June 17, 1925, 26 U.S.T. 571, 94 L.N.T.S. 65 (entered into force Feb. 8, 1928) [hereinafter Geneva Protocol].

347. See generally Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, *opened for signature* Apr. 10, 1972, 26 U.S.T. 583, 1015 U.N.T.S. 163 (entered into force Mar. 26, 1975) [hereinafter Biological Weapons Convention]; Geneva Protocol, *supra* note 346.

348. FRITS KALSHOVEN, CONSTRAINTS ON THE WAGING OF WAR 30-31 (1987).

349. See generally U.S. DEP'T OF THE AIR FORCE, AIR FORCE JOINT MANUAL 32-4003, TECHNICAL ASPECTS OF BIOLOGICAL DEFENSE (1971); U.S. DEP'T OF THE AIR FORCE, AIR FORCE HANDBOOK 32-4014, VOLUME 2: USAF OPERATIONS IN A CHEMICAL AND BIOLOGICAL (CB) WARFARE ENVIRONMENT, CB HAZARDS (1997).

350. See Legality of Nuclear Weapons, *supra* note 11, para. 35 (observing that the destructive power of nuclear weapons could not be contained by time or space and had the potential to destroy the entire environment on earth).

radioactivity can travel to areas far from the detonation site with negative consequences upon the natural environment and unsuspecting human populations.³⁵¹

Compared to chemical and biological weapons, the nature of nuclear weapons would seem to make them more likely to be regulated by conventional or customary international law. Unlike chemical and biological weapons, however, there are no conventions prohibiting nuclear weapons to serve as the origin for a custom to develop. Nevertheless, there is evidence of a belief by many states that use of nuclear weapons is illegal. Beginning in the 1960s, the U.N. General Assembly passed a series of resolutions declaring the use of nuclear weapons a crime against humanity and civilization.³⁵²

Despite the absence of relevant conventions, non-nuclear-weapon states, including Iran,³⁵³ asserted to the ICJ in the *Legality of Nuclear Weapons* advisory opinion that a custom had developed since 1945 prohibiting the threat or use of nuclear weapons. The argument was based upon the theory that the General Assembly resolutions declaring use of nuclear weapons illegal and the non-use of nuclear weapons since 1945 were sufficient evidence of a consistent state practice and *opinio juris* to indicate the existence of a custom prohibiting use.³⁵⁴ As previously mentioned, the ICJ concluded there was no customary-international-law prohibition upon the threat or use of nuclear weapons.³⁵⁵ Considering the lower standard necessary to establish the existence of customary international law compared to *jus cogens*, the absence of a binding custom regarding non-use of nuclear weapons indicates the ICJ could not have identified a peremptory norm either.

It is clear, then, that *jus cogens* does not prohibit the use of nuclear weapons. Unless nuclear-weapon states fundamentally alter their stance on nuclear weapons, the unanimity of opinion within the international community necessary for a new peremptory norm to emerge will never exist and the status quo will not change. Based upon the current status of *jus cogens* norms, U.S. use of a nuclear weapon against the Natanz nuclear facility is not other-

351. *Id.*

352. *See generally* G.A. Res. 1653 (XVI) (Nov. 24, 1961); G.A. Res. 33/71(B) (Dec. 14, 1978); G.A. Res. 35/152(D) (Dec. 12, 1980); G.A. Res. 36/92(1) (Dec. 9, 1981); G.A. Res. 45/59(B) (Dec. 4 1990); G.A. Res. 46/37(D) (Dec. 6, 1991).

353. *See generally* Written Statement of the Government of the Islamic Republic of Iran (1995), <http://www.icj-cij.org/docket/files/95/8678.pdf>.

354. *Legality of Nuclear Weapons*, *supra* note 11, paras. 64-69.

355. *Id.* paras. 71-73.

wise prohibited under international humanitarian law. Thus, the third prong of the military necessity test is met.

Prong four of the military necessity test is whether use of a tactical nuclear weapon will have a greater effect on Iranian personnel and property than necessary to attain the rapid capitulation of Iran.³⁵⁶ This component of the military necessity analysis overlaps extensively with evaluation of compliance with the principle of proportionality. Accordingly, it will be addressed within the following section of this Article concerning proportionality.

C. *Application of the Principle of Proportionality*

The principle of proportionality is a fairly simple and straightforward concept first codified in Additional Protocol I.³⁵⁷ It represents “a link between the principles of military necessity and humanity.”³⁵⁸ Stated simply, proportionality renders illegal an attack on an otherwise legitimate military target if the incidental damage the attack causes to civilian personnel and property is disproportionate to the expected military advantage.³⁵⁹ Proportionality, however, does not entirely preclude an attack simply because it would result in civilian casualties; it merely requires the anticipated military advantage to outweigh the anticipated civilian casualties.³⁶⁰ Thus, an increase in the expected military advantage results in a corresponding increase in the acceptable level of civilian casualties.³⁶¹ Notably, determination of the anticipated military advantage can be that expected from an entire military operation as a whole, if the attack at issue is part of that larger coordinated operation.³⁶²

Articles 51(5)(b) and 57(2)(a)(iii) of Additional Protocol I expressly impose a proportionality requirement.³⁶³ The United States has recognized both provisions as a reflection of customary

356. AFPAM 110-31, *supra* note 247, para. 1-3(a)(1); U.K. MINISTRY OF DEFENCE, *supra* note 247, at 22.

357. Additional Protocol I, *supra* note 240, arts. 51(5)(b), 57(2)(a)(iii).

358. U.K. MINISTRY OF DEFENCE, *supra* note 247, at 25.

359. KALSHOVEN, *supra* note 348, at 35.

360. See Additional Protocol I, *supra* note 240, arts. 51(5)(b), 57(2)(a)(iii).

361. *But see* INT'L COMM. OF THE RED CROSS, *supra* note 267, at 636 (suggesting Additional Protocol I may impose an unspecified absolute upper limit upon the acceptable level of civilian casualties no matter how great the anticipated military advantage).

362. GREEN, *supra* note 254, at 124.

363. Additional Protocol I, *supra* note 240, arts. 51(5)(b), 57(2)(a)(iii). Article 85(3) of Additional Protocol I makes a willful violation of either provision a grave breach punishable as a war crime. *Id.* art 85(3).

international law, so they are binding in that way.³⁶⁴ Article 51(5)(b) defines an indiscriminate attack as one “which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.”³⁶⁵ In essence, it is a combination of the principles of distinction and proportionality. In contrast, Article 57(2)(a)(iii) is a pure proportionality limitation. It imposes an obligation upon attackers to “[r]efrain from deciding to launch any attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.”³⁶⁶

Actual application of the proportionality principle often requires a decision regarding the allocation of risk between military personnel and civilians.³⁶⁷ A military commander will always seek the quickest, most effective, and safest means for military personnel to attack an enemy military target. If that means of attack, however, would result in civilian casualties or property damage, then the commander cannot legally direct the attack unless the military advantage outweighs the anticipated civilian casualties. If collateral damage concerns outweigh the military advantage, proportionality would require either use of an alternative means of attack or forgoing an attack completely.³⁶⁸ By forcing such an outcome, proportionality requires military personnel to assume greater risk to realize the same objective or to give up on pursuing the objective. Exactly how much increased risk military personnel must accept to minimize the risk to civilians and still meet the military objective is unclear.³⁶⁹

As with military necessity, the concept of proportionality also plays a role in *jus ad bellum*. It is important to understand the difference between proportionality under international humanitarian law and *jus ad bellum*. Under *jus ad bellum*, the proportionality analysis focuses on how much force is justified in response to another state’s actions.³⁷⁰ Essentially, the principle of proportionality is intended to prevent a state from overreacting to a situation and

364. See Matheson, *supra* note 245, at 420.

365. Additional Protocol I, *supra* note 240, art. 51(5)(b).

366. *Id.* art. 57(2)(a)(iii).

367. Additional Protocol I, *supra* note 240, art. 57(2)(a)(iii).

368. See Additional Protocol I, *supra* note 240, arts. 51(5)(b), 57(2)(a)(iii).

369. See U.K. MINISTRY OF DEFENCE, *supra* note 247, at 26.

370. MURPHY, *supra* note 244, at 446-447.

escalating the level of conflict. Proportionality is assessed on the basis of the desired outcome of a state's military action in the unique circumstances of the situation.³⁷¹ In contrast, under international humanitarian law, proportionality is intended to prevent needless civilian death and destruction in an otherwise valid armed conflict.³⁷²

In the U.S. military, professional targeteers conduct a proportionality analysis when they generate a collateral-damage estimate. Collateral damage is defined as "unintentional or incidental damage that occurs as a result of an attack but affects facilities, equipment, or personnel that are not militarily acceptable targets."³⁷³ U.S. nuclear weapons doctrine specifically contemplates a variety of means for reducing collateral damage caused by a nuclear weapon.³⁷⁴ Nevertheless, an attack upon the Natanz nuclear facility with a B61-11 would still generate serious collateral-damage concerns.³⁷⁵

As previously discussed, the underground Natanz facility can be considered a legitimate military objective only because it is a fortification defended by an air-defense system.³⁷⁶ The facility is located in the desert approximately seventeen miles from the town of Natanz.³⁷⁷ Although there is a military presence for security and air defense, the majority of the individuals working at or near the facility are believed to be civilians.³⁷⁸ It appears possible, but by no means certain, that the facility is used for enriching uranium to the level necessary for production of nuclear weapons.³⁷⁹ If so, the facility would be roughly analogous to a munitions factory when assessing the status of civilian employees.³⁸⁰

371. See U.K. MINISTRY OF DEFENCE, *supra* note 247, at 26.

372. See Additional Protocol I, *supra* note 240, arts. 51(5)(b), 57(2)(a)(iii).

373. AFPAM 14-210, *supra* note 202, para. 5.3.3.

374. See generally U.S. JOINT CHIEFS OF STAFF, JOINT PUBLICATION 3.12-1, DOCTRINE FOR JOINT THEATER NUCLEAR OPERATIONS (1996) (suggesting reducing weapon yield, improving accuracy, using multiple smaller weapons, adjusting the detonation height, and employing the weapon offset from the actual target).

375. See *supra* Part III.A.

376. See *supra* Part III.B.

377. GlobalSecurity.org, Natanz Satellite Imagery, <http://www.globalsecurity.org/wmd/world/iran/natanz-imagery2.htm> (last visited May 1, 2008).

378. The number and type of employees is impossible to know with any high degree of certainty due to tight security, but Iran's argument that the facility is purely for peaceful civilian use would be much weaker if the majority of workers were military members. See generally GlobalSecurity.org, Natanz – Iran Special Weapons Facility, <http://www.globalsecurity.org/wmd/world/iran/natanz-fep.htm> (last visited Apr. 27, 2009).

379. See discussion *supra* Part II.

380. See U.S. DEP'T OF THE ARMY, *supra* note 27, at 19.

Scientific and technical information regarding the effects of different size nuclear explosions at various underground depths comes primarily from U.S. government testing. During the 1960s and 1970s, a test program known as Project Plowshare detonated more than two dozen nuclear devices in an effort to identify peaceful uses for nuclear explosions.³⁸¹ The data produced by the tests enabled scientists to develop complex mathematic formulas for predicting the physical results of a certain size nuclear explosion at a certain depth.³⁸² Application of these formulas allows a reasonably accurate forecast of what will likely happen when a B61-11 is detonated in the ground above the Natanz nuclear facility.³⁸³

Although a tactical nuclear weapon, the B61-11 has a relatively large explosive yield of 400 kilotons.³⁸⁴ Based upon its maximum expected penetration depth of twenty feet, the explosion and resulting radioactivity cannot be contained.³⁸⁵ Indeed, it would be physically impossible for the B61-11 to penetrate deep enough underground to contain a 400 kiloton explosion.³⁸⁶ Containment of a nuclear explosion of that size could only be ensured at a depth well in excess of 3,000 feet.³⁸⁷ Because containment is not even a factor, analysis must focus upon the above-ground effects.

An explosion at a depth of twenty feet underground would produce a crater through a combination of vaporization of surface material and an air burst (shock wave).³⁸⁸ The resulting apparent (observable) crater size is contingent upon soil type and the water-table depth.³⁸⁹ In the dry soil of the Iranian desert, the apparent crater produced by a B61-11 would be much larger than the 480-foot-wide by 120-foot-deep crater produced by the ground-level detonation of a 100-kiloton explosion in similar soil conditions.³⁹⁰ Thus, depending upon the actual detonation location, the apparent crater would eliminate much of the underground facility, and any portion that still existed underground would have been

381. See generally SCOTT KIRSCH, *PROVING GROUNDS: PROJECT PLOWSHARE AND THE UNREALIZED DREAM OF NUCLEAR EARTHMOVING* (2005).

382. See generally GLASSTONE & DOLAN, *supra* note 320; Nelson, *supra* note 315.

383. Information limitations and the complexity of the formulas involved preclude this discussion from producing anything more than a general estimate of the likely collateral damage.

384. See The Nuclear Information Project, *supra* note 211.

385. See Nelson, *supra* note 315, at 8-9.

386. See generally *id.*; The Nuclear Information Project, *supra* note 211.

387. See Nelson, *supra* note 315, at 9.

388. GLASSTONE & DOLAN, *supra* note 320, at 231-32.

389. *Id.* at 236.

390. See *id.*

destroyed by virtue of its presence in the true crater (the area actually displaced by the explosion before debris fell back to produce the apparent crater)³⁹¹ or as a result of the seismic shock wave.³⁹² Surface structures would be destroyed by the resulting air burst in the same manner as a ground-level detonation.³⁹³ The military and civilian personnel in any above- or below-ground structure of the Natanz facility and within approximately a one-mile radius would likely be killed immediately.³⁹⁴

Radioactive fallout consists of two types, early (local) and delayed (long range).³⁹⁵ The level of radioactive fallout resulting from a shallow underground nuclear explosion is greater than from a high-altitude nuclear detonation because the explosion's fireball transfers much more dirt and debris from the crater into the atmosphere.³⁹⁶ The inherent radioactive particles released by the weapon itself supplement the now radioactive dirt and debris to produce a large dust cloud that can reach high into the atmosphere.³⁹⁷ The fact that the Natanz facility would presumably have a considerable amount of radioactive uranium in it when attacked would only exacerbate the fallout risk. Another potential exacerbating factor is demonstrated during seasonal dust storms that reveal the increased propensity for desert soil particles for suspension in the atmosphere.³⁹⁸ Such propensity potentially allows a greater dispersion of radioactive particles.³⁹⁹

Early fallout, which is more likely to result in fatalities, settles back to earth within twenty-four hours of detonation generally within the local area of the explosion.⁴⁰⁰ Because of its greater radiation concentration level,⁴⁰¹ early fallout has the potential to cause a high number of injuries and fatalities among the 40,000 civilians in the nearby city of Natanz if they are not evacuated immediately. Delayed fallout consists of finer particles that remain in the atmosphere longer than twenty-four hours and are capable

391. *Id.* at 253-54.

392. *Id.*

393. *Id.* at 241.

394. *Id.* at 324-25.

395. *Id.* at 387-88.

396. Nelson, *supra* note 315, at 11.

397. *Id.*

398. See generally Victor R. Squires, *Dust and Sandstorms: An Early Warning of Impending Disaster*, in PHYSICS, MECHANICS AND PROCESSES OF DUST AND SANDSTORMS 15, available at <http://www.unccd.int/publicinfo/duststorms/part1-eng.pdf>.

399. Compare *id.* with Nelson, *supra* note 315, at 11-14.

400. GLASTONE & DOLAN, *supra* note 320, at 388.

401. *Id.*

of traveling much farther from the detonation site.⁴⁰² A host of environmental factors affect where and when both early and delayed radioactive fallout will settle,⁴⁰³ so it is impossible to predict the likely death and injury rate of civilians outside the immediate vicinity. Nevertheless, it is reasonably certain that a large number of civilians in Iran, and outside Iran, would be exposed to some degree of delayed fallout with a potential for adverse health consequences in the future.⁴⁰⁴

The Commentary to Additional Protocol I points out the language of Article 51(5)(b) was adopted directly from Article 57(2)(a)(iii), so application of the standard is identical for each provision.⁴⁰⁵ There is a two prong test for each proportionality provision. The first prong is whether the attack is expected to cause collateral damage resulting in “incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof.”⁴⁰⁶ There is no question civilians will die and be injured by a 400-kiloton nuclear explosion at the Natanz nuclear facility. The expected level of civilian fatalities and injuries would likely be measured in the thousands if not tens of thousands or more. Immediate fatalities would include all of the several-hundred to several-thousand civilians at the Natanz facility during the attack.⁴⁰⁷ Within a few days, a high number of the 40,000 civilians from the nearby city of Natanz would develop severe radiation sickness caused by early fallout (assuming no evacuation or an excessively delayed evacuation). Death would result for many of these individuals within one to three months afterwards.⁴⁰⁸ Depending upon the weather, delayed fallout could also reach population centers all over the Middle East and possibly Asia or Europe.⁴⁰⁹ While the risk of fatality from delayed fallout is lower than that of early fallout, any adverse health effects would clearly constitute injury to civilians. Thus, the first prong of the test would be answered in the affirmative.

The second prong of the proportionality test is whether the collateral damage would be “excessive in relation to the concrete and

402. *Id.*

403. *Id.* at 414-22.

404. *See id.* at 387-450; Nelson, *supra* note 315, at 15-17.

405. *See* INT’L COMM. OF THE RED CROSS, *supra* note 267, at 625.

406. Additional Protocol I, *supra* note 240, arts. 51(5)(b), 57(2)(a)(iii).

407. *See* GLASSTONE & DOLAN, *supra* note 320, at 241-44.

408. *See generally* Nelson, *supra* note 315, at 15-17.

409. *See generally id.*; GLASSTONE & DOLAN, *supra* note 320, at 387-450.

direct military advantage anticipated.”⁴¹⁰ The necessary first step is to identify the “concrete and direct military advantage anticipated” from an attack upon the Natanz facility.⁴¹¹ The phrase “concrete and direct” indicates the military advantage must be “substantial and relatively close [in time].”⁴¹² As pointed out in the discussion of the distinction principle, the military advantage realized from the complete destruction of the Natanz facility is tenuous based upon the available evidence.⁴¹³ A military advantage can only be realized if Iran is using the facility to enrich uranium for nuclear weapons not nuclear reactors. If it is, the military advantage of preventing the production of nuclear weapons is substantial and immediate. Nevertheless, the only solid legal justification for concluding the Natanz facility is a military objective is the fact that it qualifies as a fortification.⁴¹⁴ Because of its largely irrelevant location in the desert, the military advantage realized from destruction of the fortified structure is neither substantial nor immediate.⁴¹⁵ Thus, attacking the Natanz facility may or may not offer a “concrete and direct military advantage.”⁴¹⁶

The high degree of uncertainty about the potential military advantage effectively precludes the need to address the question of disproportionately high collateral damage. Nevertheless, it seems safe to assert that thousands or tens of thousands of civilian dead and injured would likely be considered excessive even if Iran was known to be enriching uranium for nuclear weapons. For the preceding reasons, the second prong of the proportionality test would also be answered in the affirmative. Consequently, use of a B61-11 tactical nuclear weapon against the Natanz nuclear facility could simultaneously violate the attack precautions specified in Article 57 and constitute an indiscriminate attack under Article 51 of Additional Protocol I. Moreover, the fourth prong of the military necessity test, whether use of a tactical nuclear weapon will have a greater effect on Iranian personnel and property than necessary to attain the rapid capitulation of Iran, would also have to be answered in the affirmative.

410. Additional Protocol I, *supra* note 240, arts. 51(5)(b), 57(2)(a)(iii).

411. *Id.*

412. INT'L COMM. OF THE RED CROSS, *supra* note 267, at 684.

413. *See supra* Part III.A.

414. *Id.*

415. *Id.*

416. Additional Protocol I, *supra* note 240, arts. 51(5)(b), 57(2)(a)(iii).

IV. U.S. NUCLEAR SECURITY ASSURANCES

Negative Security Assurances (NSA) and Positive Security Assurances (PSA) are fundamental concepts upon which the NPT is based. An NSA is a guarantee by a nuclear-weapon state, that it will not use such weapons against a non-nuclear-weapon state.⁴¹⁷ In essence, it is a promise of inaction by a nuclear-weapon state. In contrast, a PSA is a guarantee by a nuclear-weapon state that it will come to the aid of a non-nuclear-weapon state in the event that state is attacked or threatened with the use of nuclear weapons.⁴¹⁸ Thus, it is a promise of action by a nuclear-weapon state. As a party to the NPT, Iran is protected by NSAs and PSAs of not only the United States, but all nuclear-weapon states that have issued them.⁴¹⁹ Accordingly, NSAs and PSAs are quite relevant to any analysis regarding the use of tactical nuclear weapons against the Natanz nuclear facility.

Whether NSAs and PSAs fall within the realm of international humanitarian law, *jus ad bellum*, or neither, is difficult to say. Indeed, the United States has always challenged any classification of NSAs as a legal obligation.⁴²⁰ In any event, NSAs and PSAs are fundamentally limitations upon the threat of use and use of a specific type of weapon, the existence or nonexistence of an armed conflict notwithstanding. Based upon the nature of the obligation, it is perhaps accurate to consider them as existing in both international humanitarian law and *jus ad bellum*. Whatever their proper classification, the application of NSAs and PSAs to the legal analysis regarding use of a tactical nuclear weapon against the Natanz facility is clear. In the *Legality of Nuclear Weapons* opinion, the ICJ indicated international humanitarian law was not the only source of law regulating nuclear weapons when it stated the following:

A threat or use of nuclear weapons should also be compatible with the requirements of the international law applicable in armed conflict, particularly those of the principles and rules of international humanitarian law, as well as with *specific obligations* under treaties and *other undertakings which expressly deal with nuclear weapons*.⁴²¹

By mentioning “other undertakings,” the ICJ was arguably speaking about NSAs, and possibly PSAs, both of which are difficult to classify into one of the other categories listed. By doing so, the ICJ has

417. Bunn, *supra* note 37, at 105

418. *Id.* at 104.

419. UNILATERAL SECURITY ASSURANCES BY NUCLEAR-WEAPON STATES, *supra* note 31.

420. *Id.* at 105.

421. *Legality of Nuclear Weapons*, *supra* note 11, para. 105 (emphasis added).

seemingly signaled a willingness to identify security assurances as a legal obligation binding upon promulgating nuclear-weapon states.

Although the NPT does not contain either an NSA or PSA provision, the United States has twice issued an NSA in the form of a unilateral declaration applicable to all non-nuclear-weapon states party to the NPT.⁴²² The United States also issued two unilateral PSAs and supported two U.N. Security Council resolutions endorsing the unilateral PSAs issued by all nuclear-weapon states for the benefit of non-nuclear-weapon states party to the NPT.⁴²³ Apparent ICJ willingness to find security assurances legally binding would still require an independent basis within recognized international law to support such a conclusion.

There are three primary theories supporting the proposition that the United States is legally bound by its unilateral NSA declaration.⁴²⁴ First, the NSA has become a rule of customary international law.⁴²⁵ Second, the United States is estopped from renouncing or modifying its 1995 NSA based upon application of the general principle of good faith.⁴²⁶ Finally, the 1995 NSA is binding as a commitment made in the context of international negotiations based upon the principle of good faith.⁴²⁷ Each theory is rooted in concepts previously espoused by either the ICJ or Permanent Court of International Justice (PCIJ) within a case.⁴²⁸

Both the NSA and PSA concepts originated in NPT negotiations and are closely linked to the NPT for a variety of historical reasons. During the main nuclear-weapon-developmental-testing period of the major powers,⁴²⁹ the U.N. General Assembly continued advo-

422. UNILATERAL SECURITY ASSURANCES BY NUCLEAR-WEAPON STATES, *supra* note 31.

423. S.C. Res. 255, *supra* note 31; S.C. Res. 984, ¶ 7, U.N. Doc. S/RES/984 (Apr. 11, 1995); Warren Christopher, U.S. Sec'y of State, A Declaration by the President on Security Assurances for Non-Nuclear Weapon States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (Apr. 5, 1995), *available at* <http://dosfan.lib.uic.edu/acda/factshee/wmd/nuclear/npt/nonucwp.htm>.

424. George Bunn, *The Legal Status of U.S. Negative Security Assurances to Non-Nuclear Weapon States*, NONPROLIFERATION REV., Spring-Summer 1997, at 1, 9.

425. *See id.*

426. *Id.*

427. *Id.* at 10.

428. *See* Legality of Nuclear Weapons, *supra* note 11; Nuclear Tests (Austl. v. Fr.), 1974 I.C.J. 253 (Dec. 20); Nuclear Tests (N.Z. v. Fr.), 1974 I.C.J. 457 (Dec. 20) [hereinafter Nuclear Test Cases]; Legal Status of Eastern Greenland (Den. v. Nor.), 1933 P.C.I.J. (ser. A/B) No. 53, at 22 (Apr. 5) [hereinafter Eastern Greenland].

429. During the 1950s and 1960s, the permanent members of the U.N. Security Council conducted extensive nuclear weapons tests and built vast nuclear arsenals as part of the Cold War arms race. DAVIS & PURCELL, *supra* note 30, at 12-18.

cating nuclear disarmament and nuclear-testing bans.⁴³⁰ Although calls for disarmament never gained sufficient support to result in any concrete action during that period, in late 1961, a General Assembly nonproliferation resolution proposed by Ireland⁴³¹ obtained critical support from both the Soviet Union and United States.⁴³² The resolution called for “an international agreement, subject to inspection and control, whereby the states producing nuclear weapons would refrain from relinquishing control of such weapons to any nation not possessing them and whereby states not possessing such weapons would refrain from manufacturing them.”⁴³³

The movements for nuclear disarmament and the prevention of nuclear proliferation, considered essentially the same issue by most non-nuclear-weapon states, gained increased momentum after initial French and Chinese nuclear tests and the United States and Soviet Union narrowly avoided a potential nuclear conflict during the Cuban Missile Crisis. In 1965, with the strong support of the United States and Soviet Union, another U.N. General Assembly resolution called for “the early conclusion of a treaty to prevent the proliferation of nuclear weapons.”⁴³⁴ The resolution also advocated shared responsibilities and obligations between nuclear-weapon states and non-nuclear-weapon states.⁴³⁵

National security is a core interest of every nation. Inasmuch as a nuclear weapon represents a significant offensive and defensive military capability, there is a huge disparity in power between non-nuclear-weapon states and nuclear-weapon states. During the negotiations that ultimately produced the NPT, military security was understandably a key topic.⁴³⁶ As a concession for giving up such an important security right, non-nuclear-weapon states sought

430. See generally G.A. Res. 192 (III), U.N. Doc. A/RES/192(III) (Nov. 19, 1948); G.A. Res. 299 (IV), U.N. Doc. A/RES/299(IV) (Nov. 23, 1949); G.A. Res. 1380 (XIV), U.N. Doc. A/RES/1380(XIV) (Nov. 20, 1959); G.A. Res. 1576 (XV), U.N. Doc. A/RES/1576(XV) (Dec. 20, 1960); G.A. Res. 1664 (XVI), U.N. Doc. A/RES/1664(XVI) (Dec. 4, 1961); G.A. Res. 1665 (XVI), U.N. Doc. A/RES/1665(XVI) (Dec. 4, 1961); G.A. Res. 1911 (XVIII), U.N. Doc. A/RES/1911(XVIII) (Nov. 27, 1963); G.A. Res. 2028 (XX), U.N. Doc. A/RES/2028(XX) (Nov. 19, 1965).

431. G.A. Res. 1665 (XVI), *supra* note 430, at 5.

432. See *The Non-Proliferation Treaty and the IAEA*, IAEA BULL., at 3, 3, available at <http://www.iaea.org/Publications/Magazines/Bulletin/Bull104/10403500308.pdf>.

433. G.A. Res. 1665 (XVI), *supra* note 430, at 5.

434. G.A. Res. 2028 (XX), *supra* note 430, at 7.

435. *Id.*

436. 2 MOHAMED I. SHAKER, *THE NUCLEAR NON-PROLIFERATION TREATY ORIGIN AND IMPLEMENTATION 1959-1979*, at 472-473 (1980).

the inclusion of NSAs and PSAs within the text of the NPT.⁴³⁷ Non-aligned nations, those that were not allied with either the Soviet Union or the United States during the Cold War, were the most vocal NSA advocates.⁴³⁸

Early in the NPT negotiations, the Soviet Union also supported inclusion of an NSA. The Soviets suggested “a clause on the prohibition of the use of nuclear weapons against non-nuclear States parties to the treaty, which have no nuclear weapons in their territory.”⁴³⁹ As proposed, the Soviet Union would have been able to maintain a nuclear threat against West Germany, Italy, and Turkey because of the presence of United States or United Kingdom nuclear weapons in their territory.⁴⁴⁰ Thus, it was impossible for the United States to support the Soviet proposal due to the nature of its nuclear deterrence strategy in Europe.⁴⁴¹ The NSA issue was discussed in detail, but ultimately lack of consensus between the Soviet Union, United States, and United Kingdom resulted in the final draft of the NPT without an NSA.⁴⁴² Although not included in the treaty and thus not legally binding as an express treaty provision, non-nuclear-weapon states still sought NSAs from nuclear-weapon states.

A concession to the non-nuclear-weapon states was the inclusion of NPT Article VI that directed good faith negotiations towards nuclear disarmament and an end to the nuclear-arms race. To allay the defensive-security concerns of non-nuclear-weapon states, unilateral PSAs from nuclear-weapon states were expressly recognized and accepted in a U.N. Security Council Resolution as an incentive for joining the NPT.⁴⁴³ Adopted unanimously, Security Council Resolution 255 stated the following:

[The Security Council] [w]elcomes the intention expressed by certain States that they will provide or support immediate assistance, in accordance with the Charter, to any non-nuclear-weapon State party to the Treaty on the Non-Proliferation of

437. *Id.*

438. See Bunn, *supra* note 424, at 3.

439. 2 SHAKER, *supra* note 436, at 473.

440. Bunn, *supra* note 424, at 3.

441. 2 SHAKER, *supra* note 436, at 501.

442. The nuclear-weapon states and some allies argued the NSA issue was too complex for the limitations of a treaty provision. *Id.* at 475. They also contended that the NPT itself would produce the desired military security so relinquishing nuclear weapons should not be viewed as a sacrifice by non-nuclear-weapon states. *Id.* at 475.

443. Nuclear Threat Initiative, The Role of Security Assurances: Is Any Progress Possible?, http://www.nti.org/e_research/e3_45a.html (last visited Mar. 17, 2008).

Nuclear Weapons that is a victim of an act or an object of a threat of aggression in which nuclear weapons are used⁴⁴⁴

The NSA issue, however, continued to resurface and was a major topic of discussion at the 1975 NPT Review Conference.⁴⁴⁵

In 1978, responding to the ongoing security concerns of non-nuclear-weapon states, the United States issued a unilateral NSA related to the NPT. At a U.N. Special Session on Disarmament, the secretary of state publicly announced the following:

The United States will not use nuclear weapons against any non-nuclear-weapon state party to the NPT or any comparable internationally binding commitment not to acquire nuclear explosive devices, except in the case of an attack on the United States, its territories or armed forces, its allies, or by such a state allied to a nuclear weapon state, or associated with a nuclear weapon state in carrying out or sustaining the attack.⁴⁴⁶

The other nuclear-weapon states had issued their own NSAs several months prior.⁴⁴⁷ Iran, a non-nuclear-weapon state party to the NPT at the time, was included in the protections this declaration offered.

The U.S. NSA has been reaffirmed a number of times since 1978. In 1995, in anticipation of the upcoming NPT review and extension conference, the secretary of state publicly announced the following:

The United States reaffirms that it will not use nuclear weapons against nonnuclear weapon states parties to the treaty on the nonproliferation of nuclear weapons except in the case of an invasion or any other attack on the United States, its territories, its armed forces or other troops, its allies, or on a state toward which it has a security commitment, carried out or sustained by such a nonnuclear weapon state in association or alliance with a nuclear weapon state.⁴⁴⁸

In a 2002 interview, the undersecretary of state for Arms Control and International Security described the U.S. NSA as not “terribly helpful in analyzing what our security needs may be in the real

444. S.C. Res. 255, U.N. Doc. S/RES/255, ¶ 2 (June 19, 1968).

445. U.S. GOV'T PRINTING OFFICE, *supra* note 49, at 567-568.

446. Fed'n of Am. Scientists, Nuclear Non-Proliferation Treaty Background, <http://www.fas.org/nuke/control/npt/back.htm> (last visited Mar. 12, 2008).

447. See generally UNILATERAL SECURITY ASSURANCES BY NUCLEAR-WEAPON STATES, *supra* note 31.

448. Letter from Edward W. Gnehm, Chargé d'affaires a.i. of the Permanent Mission of the United States of America to the United Nations, to the Secretary-General of the United Nations, U.N. Doc. S/1995/263 (Apr. 6, 1995); Barbara Crossette, *U.N. Council Seeks Support for Nuclear Pact*, N.Y. TIMES, Apr. 6, 1995, at 12.

world.”⁴⁴⁹ The resulting concern about a potentially dramatic change in U.S. nuclear weapon policy prompted the State Department to reiterate U.S. commitment to the 1995 NSA.⁴⁵⁰ A State Department spokesperson announced the following:

The United States reaffirms that it will not use nuclear weapons against non-nuclear weapon state parties to the Treaty on the Nonproliferation of Nuclear Weapons [NPT], except in the case of an invasion or any other attack on the United States, its territories, its armed forces or other troops, its allies or on a state toward which it has a security commitment, carried out or sustained by such a non-nuclear weapon state in association or alliance with a nuclear weapon state.⁴⁵¹

The announcement was made at a press conference unrelated to any NPT proceedings. On both occasions when the United States renewed its unilateral NSA, Iran was a non-nuclear-weapon state party to the NPT.

On April 11, 1995, the U.N. Security Council recognized and accepted the PSA declarations of the nuclear-weapon states in anticipation of the upcoming NPT review and extension conference.⁴⁵² Compared to Resolution 255, Resolution 984 contained more explicit language regarding the options of a non-nuclear-weapon state party to the NPT that is threatened or attacked with nuclear weapons.⁴⁵³ Resolution 984 also recognized and accepted the individual offers of assistance put forth by each nuclear-weapon state:

[The Security Council] [w]elcomes the intention expressed by certain States that they will provide or support immediate assistance, in accordance with the Charter, to any non-nuclear-weapon State Party to the Treaty on the Non-Proliferation of Nuclear Weapons that is a victim of an act of, or an object of a threat of, aggression in which nuclear weapons are used⁴⁵⁴

As a non-nuclear-weapon state party to the NPT, Iran is within the scope of the PSA coverage.

449. Philipp C. Bleek, *Bush Administration Reaffirms Negative Security Assurances*, ARMS CONTROL TODAY, Mar. 2002, http://www.armscontrol.org/act/2002_03/negasmarch02.asp.

450. *Id.*

451. *Id.*

452. S.C. Res. 984, *supra* note 423, ¶ 7.

453. Compare S.C. Res. 255, *supra* note 31, ¶ 2, and S.C. Res. 984, *supra* note 423, ¶ 7.

454. S.C. Res. 984, *supra* note 423, ¶ 7.

A. *Binding Nature of the U.S. NSA Under Customary International Law*

Unlike the treaty obligations of the NPT, the U.S. NSA was issued in the form of a unilateral declaration in 1978,⁴⁵⁵ a decade after the NPT was opened for signature. Standing alone, a unilateral statement by a nation that it will act or refrain from acting under certain circumstances would not seem to create any legal obligation. Such a statement is not easily classified within any of the sources of international law mentioned in Article 38(1) of the ICJ Statute.⁴⁵⁶ Although expressly linked to the NPT, an international convention already in force when the declaration was made, the NSA does not meet any of the treaty criteria mentioned by the VCLT.⁴⁵⁷ Thus, for any legal obligation to exist it must first be identified within the other sources contemplated by the ICJ Statute.

After treaties, the next most likely source to identify an international legal obligation is customary international law. A rule of customary international law is identified by the consistent, recurring practice of nations based upon a sense of legal obligation known as *opinio juris*.⁴⁵⁸ Although decisions of the ICJ or its predecessor, the Permanent Court of International Justice (PCIJ), do not have any value as binding legal precedent for nations not party to the original dispute,⁴⁵⁹ their decisions are a valuable resource for determining the existence or non-existence of a recognized rule of customary international law or a general principle of law applicable within the international legal system.⁴⁶⁰ Indeed, the ICJ regularly relies upon PCIJ as well as its own prior decisions and advisory opinions.⁴⁶¹

455. See Fed'n of Am. Scientists, *supra* note 446.

456. Statute of the International Court of Justice art. 38(1), June 26, 1945, 59 Stat. 1055 [hereinafter ICJ Statute].

457. *But see* VCLT, *supra* note 336, art. 31. Article 31(2)(b) defines the context of a treaty for interpretive purposes to include "any instrument which was made by one or more parties in connection with the conclusion of the treaty and accepted by the other parties as an instrument related to the treaty." *Id.* art 31(2)(b). Article 31(3)(b) directs interpretive consideration of "any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation." *Id.* art 31(3)(b).

458. RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 102 cmt. c (1979).

459. ICJ Statute, *supra* note 456, art. 59.

460. RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 103 cmt. b (1979).

461. *Id.* § 903, reporters' notes 8.

In *Legality of Nuclear Weapons*, ICJ judges were in agreement on three main points. Specifically, the threat or use of nuclear weapons (1) is not expressly prohibited under international customary or treaty law, (2) is illegal if it violates Article 2(4) or does not meet the criteria of Article 51 of the U.N. Charter, and (3) must comply with international humanitarian law.⁴⁶² Beyond such consensus, the judges had sometimes widely diverging opinions regarding applicable international law. The opinion addressed NSAs as a minor ancillary issue, but the analysis and discussion of a variety of arguments and evidence provides valuable insight into the status of unilateral NSA declarations in the realm of customary international law.

In an effort to identify “any prohibition of recourse to nuclear weapons”⁴⁶³ the ICJ considered treaty law and customary international law. Anti-nuclear-weapon states pointed to the Nuclear Weapon Free Zone (NWFZ) treaties,⁴⁶⁴ the NPT, and the Partial Test Ban Treaty⁴⁶⁵ as evidence of the materialization of a total legal ban on any use of a nuclear weapon.⁴⁶⁶ They also asserted the many decades since the last use of a nuclear weapon amounted to a consistent, recurring practice that is sufficient evidence of *opinio juris* to represent a binding obligation of non-use within customary international law.⁴⁶⁷ Nuclear-weapon states countered that such treaties could not be read as an absolute prohibition upon use of nuclear weapons because there are certain situations in which use

462. *Legality of Nuclear Weapons*, *supra* note 11, para. 105.

463. *Id.* para 53.

464. South Pacific Nuclear Free Zone Treaty, *opened for signature* Aug. 6, 1985, 24 I.L.M. 1440 (entered into force Dec. 11, 1986) [hereinafter Treaty of Raratonga]; Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean, *opened for signature* Feb. 14, 1967, 22 U.S.T. 762, 634 U.N.T.S. 281 (entered into force Apr. 25, 1969) [hereinafter Treaty of Tlatelolco]. NWFZ parties pledge not to develop, manufacture, stockpile, acquire, possess, or control a nuclear weapon in the zone. *See* Treaty of Raratonga, *supra*; Treaty of Tlatelolco, *supra*. They also agree not to assist other entities with research, development, production, acquisition, stockpiling, or possession of a nuclear weapon in the zone. *See* Treaty of Raratonga, *supra*; Treaty of Tlatelolco, *supra*. The total ban on nuclear weapons within the zone is much more limiting than the NPT. *See* Treaty of Raratonga, *supra*; Treaty of Tlatelolco, *supra*. The cooperation and support of nuclear-weapon states is key to the successful implementation of a NWFZ, so each NWFZ treaty has an additional protocol specifically for nuclear-weapon states. *See* Treaty of Raratonga, *supra*; Treaty of Tlatelolco, *supra*. Among other provisions, each additional protocol contains an NSA clause to legally preclude nuclear-weapon States from threatening to use or using a nuclear weapon against a non-nuclear-weapon state party to the NWFZ treaty. *See* Treaty of Raratonga, *supra*; Treaty of Tlatelolco, *supra*.

465. Treaty Banning Nuclear Weapon Tests In The Atmosphere, In Outer Space And Under Water, Aug. 5, 1963, 14 U.S.T. 1313, 480 U.N.T.S. 43.

466. *Legality of Nuclear Weapons*, *supra* note 11, paras. 60-63.

467. *Id.* para. 65.

of a nuclear weapon would be lawful.⁴⁶⁸ Such circumstances exist within the widely accepted NSA exceptions put forth by nuclear-weapon states.⁴⁶⁹ Furthermore, military deterrence was a primary purpose routinely served by nuclear weapons.⁴⁷⁰ Nuclear weapons were used daily for deterrence and have not been employed as a weapon because the circumstances justifying use have not arisen, not because *opinio juris* prevents such use.⁴⁷¹ Consequently, nuclear-weapon states argued that a legally binding prohibition upon use of nuclear weapons could not have developed under customary international law.

When the ICJ considered the unilateral NSA declarations issued by nuclear-weapon states in relation to the NPT, its focus was not on the NSAs when they were initially offered, but rather when they were renewed in conjunction with the conference considering extension of the NPT in 1995.⁴⁷² The unilateral NSAs included exceptions which would allow the use of nuclear weapons under certain circumstances.⁴⁷³ PSAs were also renewed at the same time to provide the non-nuclear-weapon states an incentive to extend the NPT.⁴⁷⁴ The ICJ noted that the U.N. Security Council referenced both the PSAs and NSAs in Resolution 984, but expressed no objection to the claimed NSA exceptions.⁴⁷⁵ After its review of the law regarding the use of nuclear weapons, the ICJ made the following conclusions:

- (a) a number of States have undertaken not to use nuclear weapons . . . against certain other States (non-nuclear-weapon States which are parties to the Treaty on the Non-Proliferation of Nuclear Weapons);
- (b) nevertheless, even within this framework, the nuclear-weapon States have reserved the right to use nuclear weapons in certain circumstances; and
- (c) these reservations met with no objection from . . . the Security Council.⁴⁷⁶

Following its treaty review and factual conclusions, the ICJ was only able to identify a qualified prohibition upon use of a nuclear

468. *Id.* para. 61.

469. UNILATERAL SECURITY ASSURANCES BY NUCLEAR-WEAPON STATES, *supra* note 31. The common exception is premised upon an act of aggression by a non-nuclear-weapon state acting in conjunction with a nuclear-weapon state. *See generally id.*

470. Legality of Nuclear Weapons, *supra* note 11, para. 66.

471. *Id.*

472. *Id.* paras. 61-63.

473. *See* UNILATERAL SECURITY ASSURANCES BY NUCLEAR-WEAPON STATES, *supra* note 31.

474. S.C. Res. 984, *supra* note 423, ¶ 7.

475. Legality of Nuclear Weapons, *supra* note 11, para. 61.

476. *Id.* para. 62.

weapon. Similarly, the court was unable to identify sufficient *opinio juris* to show an absolute use prohibition within customary international law.⁴⁷⁷

The logic employed in the ICJ analysis, however, imputes significant legal status to the unilateral NSA declarations related to the NPT. The ICJ search for an absolute prohibition upon the use of nuclear weapons was unsuccessful within treaty law and customary international law precisely because the court identified the justifiable use exceptions incorporated into each NSA by the nuclear-weapon state promulgating the NSA.⁴⁷⁸ The inference to be drawn from the ICJ discussion is that unilateral NSA declarations related to the NPT can be legally binding under customary international law as a self-imposed limitation upon the routine use of nuclear weapons for deterrence.⁴⁷⁹ Accepting the possibility posed by such an inference—that the nuclear-weapon states' unilateral NSA declarations have transformed into a legal obligation under customary international law—still requires a factual analysis similar to that employed by the ICJ. Examination of the facts surrounding the U.S. NSA suggests it, and indeed all of the nuclear-weapon states' NSAs, may have evolved into a legally binding obligation within the international legal system.

As previously mentioned, customary international law is identified by the consistent, recurring practice of nations based upon *opinio juris*.⁴⁸⁰ The first and last use of a nuclear weapon as a weapon (as opposed to a deterrent) occurred in 1945. More than sixty years and many wars later, not a single nuclear-weapon state has ever used a nuclear weapon against an adversary. The difficulty with establishing a consistent practice of inaction by states is overcome, to an extent, by nuclear-weapon states' contention of long-term and ongoing use of nuclear weapons as deterrents.⁴⁸¹ The number of nuclear weapons in the world is measured in the tens of thousands,⁴⁸² all of which are used regularly for the sole function of military deterrence. Deterrence relies fundamentally upon a continuous threat of use, so a nuclear weapon ceases to function as a *de jure*, if not *de facto*, deterrent against states that are specifically exempted from use by an NSA.

477. *Id.* para. 67.

478. *Id.* paras. 62-63.

479. Bunn, *supra* note 424, at 10.

480. RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 102 cmt. c (1979).

481. Legality of Nuclear Weapons, *supra* note 11, paras. 66-67.

482. BARNABY, *supra* note 68, at 51.

In the years since the NPT opened for signature, significant numbers of non-nuclear-weapon states, including Iran, renounced any claim to nuclear weapons and became party to the treaty. While Iran joined the NPT regime before the United States made its unilateral NSA declaration in 1978, the U.S. NSA applied to “any non-nuclear-weapon state party to the NPT” from that date forward without regard to when the state joined the NPT.⁴⁸³ In addition, the reaffirmed U.S. NSA declaration in conjunction with the 1995 NPT review and extension conference ensured broad applicability.⁴⁸⁴ Indeed, Iran and all non-nuclear-weapon states that were party to the NPT in 1995 were able to rely upon a renewed unilateral NSA declaration from each nuclear-weapon state that was substantially the same as the U.S. NSA.

Since the 1978 U.S. NSA, U.S. nuclear weapons have not been used for de jure deterrence against non-nuclear-weapon states that did not engage in activity bringing them within the announced NSA exceptions. The longstanding and ongoing practice of every nuclear-weapon state to exempt from the nuclear deterrent threat non-nuclear-weapon states that are party to the NPT can be considered evidence of a consistent, recurring practice by the only states capable of engaging in such practice. Direct evidence of *opinio juris* such as an official statement that a nation feels legally bound is not necessary as it may be deduced from acts or omissions.⁴⁸⁵ Applying an extension of the ICJ logic, then, the non-use of nuclear weapons either as a deterrent or actual weapon against the vast majority of the world’s nations that qualify as non-nuclear-weapon states party to the NPT may be considered a legally binding rule of customary international law. Of course, the NSA exceptions would be incorporated along with the NSA, but the underlying legal obligation of nuclear-weapon states would be firmly established.

B. *Binding Nature of the U.S. NSA Under the General Principles of Good Faith and Estoppel*

Two companion cases decided by the ICJ in 1974 illustrate perhaps the strongest argument that the United States is legally bound by its unilateral NSA declaration.⁴⁸⁶ The salient facts of the *Nuclear*

483. UNILATERAL SECURITY ASSURANCES BY NUCLEAR-WEAPON STATES, *supra* note 31.

484. Letter from Edward W. Gnehm, *supra* note 448; Crossette, *supra* note 448.

485. RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 102 cmt. c (1979).

486. Nuclear Test Cases, *supra* note 428.

Test Cases are quite similar to the facts surrounding the U.S. NSA. At issue was a series of unilateral declarations by France that it would not conduct further atmospheric nuclear tests at its South Pacific nuclear test site after a certain time.⁴⁸⁷ The French declarations were made in response to ongoing efforts by Australia and New Zealand to convince France to cease nuclear testing in the South Pacific.⁴⁸⁸ Although France did not intend to impose a legal restriction upon its future actions, the ICJ concluded France was legally bound to refrain from future atmospheric nuclear tests by application of the principle of good faith.⁴⁸⁹ The logic and analysis employed by the ICJ to reach its conclusion can also be applied to the unilateral NSA declaration of not only the United States, but all nuclear-weapon states.

The ICJ determined it was a commonly accepted principle of international law for unilateral declarations to create legal obligations in certain circumstances. The court observed the following:

It is well recognized that declarations made by way of unilateral acts, concerning legal or factual situations, may have the effect of creating legal obligations. Declarations of this kind may be, and often are, very specific. When it is the intention of the State making the declaration that it should become bound according to its terms, that intention confers on the declaration the character of a legal undertaking, the State being thenceforth legally required to follow a course of conduct consistent with the declaration. An undertaking of this kind, if given publicly, and with an intent to be bound, even though not made within the context of international negotiations, is binding. In these circumstances, nothing in the nature of a *quid pro quo* nor any subsequent acceptance of the declaration, nor even any reply or reaction from other States, is required for the declaration to take effect, since such a requirement would be inconsistent with the strictly unilateral nature of the juridical act by which the pronouncement by the State was made.⁴⁹⁰

In that statement, the ICJ repeatedly mentioned the intent of the state to be bound by making the declaration. The opinion, however, indicated such intent is properly determined by the objective analysis of the court, not by subjective analysis of the declaring state at the time the unilateral declaration is made.⁴⁹¹ This point was further clarified by the ICJ when it stated, "The general nature and characteristics of these statements are decisive for the evalua-

487. *Id.*

488. *Id.*

489. Nuclear Tests (Austl. v. Fr.), *supra* note 428, paras. 46-51.

490. *Id.* para. 43.

491. *Id.* para. 50.

tion of the legal implications.”⁴⁹² Moreover, the court also declined to consider the subjective interpretation of any state, including a beneficiary of the unilateral declaration.⁴⁹³

A fundamental tenet of the international legal system is that a state must consent to be bound before any obligation becomes legally enforceable.⁴⁹⁴ While treaties represent an express indication of consent by a state, customary international law is based upon an implied indication of consent identified through objective analysis of widespread state practice.⁴⁹⁵ From the standpoint of international stability and security, objective analysis of intent to be bound by a unilateral declaration is the best standard because it minimizes uncertainty within the international system. The ICJ found support for application of the objective standard within the principle of good faith. The court noted the following:

One of the basic principles governing the creation and performance of legal obligations, whatever their source, is the principle of good faith. Trust and confidence are inherent in international co-operation, in particular in an age when this co-operation in many fields is becoming increasingly essential. Just as the very rule of *pacta sunt servanda* in the law of treaties is based on good faith, so also is the binding character of an international obligation assumed by unilateral declaration. Thus, interested States may take cognizance of unilateral declarations and place confidence in them, and are entitled to require that the obligation thus created be respected.⁴⁹⁶

As the ICJ stated, good faith is a foundational principle within international law. Article 2(2) of the U.N. Charter imposes a good faith requirement to fulfill U.N. membership obligations.⁴⁹⁷ General Assembly Resolution 2625⁴⁹⁸ and VCLT Articles 26 and 31(1),⁴⁹⁹ provisions reflecting customary international law,⁵⁰⁰ all

492. *Id.* para. 50.

493. *Id.* paras. 47-48.

494. MURPHY, *supra* note 244, at 12-13.

495. *See id.* 78-81.

496. Nuclear Tests (Austl. v. Fr.), *supra* note 428, para. 46.

497. U.N. Charter art. 2, para. 2. The paragraph states: “All Members, in order to ensure to all of them the rights and benefits resulting from membership, shall fulfill in good faith the obligations assumed by them in accordance with the present Charter.” *Id.*

498. G.A. Res. 2625 (XXV) (Oct. 24, 1970).

499. VCLT, *supra* note 336, arts. 26, 31(1). Article 26 provides, “Every treaty in force is binding upon the parties to it and must be performed by them in good faith.” *Id.* art. 26. Article 31(1) states, “A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.” *Id.* art. 31(1).

500. Michael Virally, *Good Faith in Public International Law*, 77 AM. J. INT’L L. 130, 130 (1983).

support the application of good faith in the context of international intercourse. Good faith serves three main functions in the international legal system. The presumption of good faith in international agreements allows the overt expression of a state's intent to be bound to assume a legal character.⁵⁰¹ At the same time, good faith serves to mark the boundaries of a state's legal obligations by requiring no more and no less than good-faith performance.⁵⁰² Finally, good faith enables the continued existence of trust in the international system by protecting the interests of states that rely upon the performance of obligations assumed by another state.⁵⁰³ Good faith, then, supports the continued functioning of the international legal system in its current form.

The ICJ considered several factors when determining whether France was estopped from acting contrary to its declaration. The first criterion seemed to be that the declarations were announced publicly as opposed to private notification of the affected nations. The court, however, noted that the legally binding nature of declarations does not require them to be addressed to a specific nation or for such a nation to formally acknowledge and accept the declaration.⁵⁰⁴ Another key factor was the position held by the source of the declaration. The French declarations came from the president and his ministers so they were considered official actions of the French government.⁵⁰⁵ The court also pointed out, unlike customary international law, no sense of legal obligation, *opinio juris*, was required.⁵⁰⁶

Applying the same factors to the question of the United States' unilateral NSA, the argument that it is legally binding is stronger than that of the *Nuclear Test Cases*. During NPT negotiations, non-nuclear-weapon states, led by the non-aligned states, advocated inclusion of an NSA clause within the treaty.⁵⁰⁷ The United States opposed inclusion of an NSA because it did not want any legal constraints upon possible use of its nuclear weapons.⁵⁰⁸ When the final draft of the NPT did not include an NSA, the issue remained a recurring topic of discussion. The NSA issue was brought up at

501. *Id.* at 132.

502. *Id.*

503. *Id.* at 133.

504. *Nuclear Tests (Austl. v. Fr.)*, *supra* note 428, para. 50.

505. *Id.* para. 49.

506. *Id.* para. 51.

507. HENRY SOKOLSKI, *FIGHTING PROLIFERATION NEW CONCERNS FOR THE NINETIES* 11-19 (1996).

508. *Id.*

the 1975 NPT review conference after the *Nuclear Test Cases* decision was already public knowledge. Thus, when the United States first announced its NSA in 1978 it did so with full knowledge that such a declaration could potentially form a legally binding obligation.

The manner by which the United States chose to implement its NSA appears almost tailored to establish a legally binding obligation under the analysis of the *Nuclear Test Cases*. The U.S. NSA was initially announced by the secretary of state in the very public forum of a U.N. Special Session on Disarmament.⁵⁰⁹ Although the NSA was applicable to a multitude of nations that were party to the NPT, the United States did not choose to notify each nation in a private, individual manner. Similarly, its announcement by the secretary of state cannot be considered anything other than an official act of the U.S. government.⁵¹⁰

In 1995, the U.S. NSA declaration was renewed in conjunction with international negotiations to extend the NPT beyond its originally specified duration.⁵¹¹ The secretary of state was the source of the renewed declaration which had some minor differences from the 1978 version. The other nuclear-weapon states also renewed their NSAs at the same time.⁵¹² U.N. Security Council Resolution 984 noted the renewed NSAs and also reiterated the PSA it initially sanctioned in 1968.⁵¹³ Thus, the renewed U.S. NSA was issued by a senior official within the U.S. government, presented to a broad public audience, and referenced by an international organization.

In 2002, the United States publicly stressed its commitment to abide by the 1995 NSA declaration.⁵¹⁴ Unlike the 1978 and 1995 announcements, the government official making the declaration was merely a State Department spokesperson instead of the secretary of state.⁵¹⁵ The context of the renewal, however, is important. The statement was necessary because an undersecretary of state made statements seemingly calling into question the United States' commitment to the 1995 NSA.⁵¹⁶ The resulting controversy was ultimately resolved by an official announcement from the State

509. See Letter from Edward W. Gnehm, *supra* note 448; Crossette, *supra* note 448.

510. See *Nuclear Tests (Austl. v. Fr.)*, *supra* note 428, paras. 51-53.

511. Letter from Edward W. Gnehm, *supra* note 448; Crossette, *supra* note 448.

512. Letter from Edward W. Gnehm, *supra* note 448; Crossette, *supra* note 448; UNILATERAL SECURITY ASSURANCES BY NUCLEAR-WEAPON STATES, *supra* note 31.

513. S.C. Res. 984, *supra* note 423.

514. Bleek, *supra* note 449.

515. *Id.*

516. *Id.*

Department.⁵¹⁷ Although the NSA renewal declaration was not issued by a senior government official, it was announced to a broad audience at a press conference.⁵¹⁸ The manner in which the situation was handled is evidence of U.S. intent to reassure other nations that the U.S. NSA could still be relied upon.

It is particularly noteworthy that the *Nuclear Test Cases* indicated “nothing in the nature of a *quid pro quo* nor any subsequent acceptance of the declaration, nor even any reply or reaction from other States, is required . . . since such a requirement would be inconsistent with the strictly unilateral nature of the juridical act”⁵¹⁹ Although there is no requirement to show reliance upon a unilateral declaration, in this case it is possible to infer from the factual circumstances. A showing of non-nuclear-weapon states’ reliance upon the NSA makes it much more likely that the U.S. NSA would be deemed a legal obligation.⁵²⁰

Objective review of the general nature and characteristics of the U.S. NSA declarations indicates the United States may be legally bound. The NSA declaration was made in response to repeated requests from non-nuclear-weapon states for a legally binding NSA.⁵²¹ In 1978, the position of the individual making the declaration, the context of the announcement, and the specificity and nature of the limitations imposed by the NSA indicate that the United States must have recognized that other nations would rely upon it. Applying an objective standard there is no other possible conclusion. It is hard to articulate, however, how nations that were already party to the NPT in 1978, such as Iran, may have relied upon the initial NSA. Nonetheless, nations that elected to become party to the NPT after 1978 may be presumed to have been motivated, at least in part, by the U.S. NSA. Thus, reliance upon the U.S. NSA by later-joining NPT member states is a factor in support of the U.S. NSA having a legally binding effect.

More important to the estoppel analysis is the 1995 United States’ renewal of its NSA in conjunction with the NPT review and extension conference. Given the factual details, the only possible objective conclusion is that the United States intended non-nuclear-weapon states to rely upon the NSA. In contrast to the

517. *Id.*

518. *Id.*

519. *Nuclear Tests (Austl. v. Fr.)*, *supra* note 428, para. 43.

520. RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 301 cmt. c (1979).

521. 2 SHAKER, *supra* note 436, 472-473.

1978 NSA, all non-nuclear-weapon states party to the NPT in 1995, including Iran, may be presumed to have relied upon the NSA. The difference results from the possibility of prospective action in 1995 that was not present in 1978. Inasmuch as the 1995 NSA may have swayed the opinion of non-nuclear-weapon states regarding whether to support or oppose NPT extension, the applicable principles of good faith cannot permit the United States to unilaterally suspend or modify the NSA. Indeed, the same analysis applies to all nuclear-weapon states as each renewed its NSA during the same period.

C. *Binding Nature of the U.S. NSA Under the General Principle of Good Faith as a Commitment Made in an International Negotiation*

Also based upon the principle of good faith, this theory—the general principle of good faith as a commitment made in an international negotiation—overlaps to an extent with the theory just discussed, but differs in how it considers the context of the 1995 NSA renewal declaration. A fundamental premise of this interpretation is that the 1995 U.S. NSA renewal served as a quid pro quo for extension of the NPT. In essence, the renewed NSAs issued by the nuclear-weapon states were a concession to non-nuclear-weapon states in return for extension of the NPT.

With the indefinite extension of the NPT,⁵²² it appears non-nuclear-weapon states accepted the offer and nuclear-weapon states obtained the concession they sought. Under the prior theory, the analysis did not need to consider NPT extension as a factor because the *Nuclear Test Cases* made it clear that a quid pro quo was not necessary for a unilateral declaration to have legal effect.⁵²³ A much older PCIJ case, however, provides some limited insight into the legal status of unilateral statements made in the course of an international negotiation and involving an implied quid pro quo. It is difficult to classify the controlling law applied by the PCIJ within the sources previously discussed, but the outcome appears similarly rooted in the general principle of good faith.

The *Legal Status of Eastern Greenland*⁵²⁴ involved a dispute between Denmark and Norway over ownership of the east coast of Greenland. When the PCIJ delivered its ruling in 1933, the dis-

522. Barbara Crossette, *Treaty Aimed at Halting Spread of Nuclear Weapons Extended*, N.Y. TIMES, May 12, 1995, at A1.

523. *Nuclear Tests (Austl. v. Fr.)*, *supra* note 428, para. 43.

524. *Eastern Greenland*, *supra* note 428.

agreement was already over a century old. It originated with a Napoleonic-era peace treaty in which the King of Denmark surrendered the territory of Norway to the King of Sweden, but simultaneously retained Danish claim to Greenland.⁵²⁵ After World War I, Denmark sought to solidify its legal claim to the entire island of Greenland.

Among other things, the 1919 Paris Peace Conference worked to resolve territorial issues.⁵²⁶ Seeing an opportunity to conclusively settle its own territorial concerns, the Danish government instructed its representative in Norway to inform the Norwegian government that Denmark would not object to Norway's claim to an arctic archipelago known as Spitzbergen.⁵²⁷ The Danish representative was also directed to inform Norway of Denmark's desire to obtain recognition of Danish sovereignty over the island of Greenland. The Danish message was conveyed to the Norwegian Minister for Foreign Affairs who indicated "that the question would be considered."⁵²⁸ Approximately a week later, the Norwegian Minister for Foreign Affairs informed the Danish representative "that the Norwegian Government would not make any difficulties in the settlement of this question."⁵²⁹ Denmark honored its commitment, and less than a year later, Norway perfected its Spitzbergen claim in a multilateral treaty to which Denmark was party.⁵³⁰ The issue of Greenland, however, was not addressed by the Peace Conference, and during the following decade, Norway became more aggressive in challenging Danish control over the east coast.⁵³¹

In a lengthy opinion, the PCIJ ruled in favor of Denmark on a number of legal and factual bases. Unlike the *Nuclear Test Cases* in which a unilateral declaration was the sole legal basis supporting the outcome, in *Eastern Greenland* the statement made by Norway was merely one of several legal issues resolved in Denmark's favor.⁵³² Moreover, the PCIJ did not elaborate upon its logic for deciding the issue as it did. Accordingly, *Eastern Greenland* provides

525. *Id.* at 27-33.

526. *Id.* at 36.

527. *Id.* at 36-37.

528. *Id.* at 36.

529. *Id.*

530. Treaty Relating to Spitzbergen, *opened for signature* Feb. 9, 1920, 43 Stat. 1892, 2 L.N.T.S. 7 (entered into force Aug. 14, 1925).

531. *Eastern Greenland*, *supra* note 428, at 37-44.

532. *See generally id.*

the weakest argument that the United States is legally bound by its NSA, but it is still worthy of consideration.

In *Eastern Greenland* there was no dispute about whether such comments were exchanged, as both nations agreed to the salient facts.⁵³³ Denmark argued the Norwegian Minister for Foreign Affairs' statement amounted to Norwegian recognition of existing Danish sovereignty over Greenland.⁵³⁴ The PCIJ did not agree with that contention, but deemed the exchange important as "an engagement obliging Norway to refrain from occupying any part of Greenland."⁵³⁵ The PCIJ concluded Denmark's initial message to Norway indicated its intent to not "oppose the wishes of Norway in regard to the settlement of this question [the Spitzbergen claim]" if Norway "would not make any difficulty" with resolution of the Greenland claim.⁵³⁶

The PCIJ used an objective standard to determine that Norway knew what it was agreeing to when it responded to the Danish offer.⁵³⁷ The court observed that the Danish offer was accepted by the Norwegian Minister for Foreign Affairs' unconditional and definitive response. Based upon the unequivocal Norwegian response, the PCIJ stated the following:

The Court considers it beyond all dispute that a reply of this nature given by the Minister for Foreign Affairs on behalf of his Government in response to a request by the diplomatic representative of a foreign Power, in regard to a question falling within his province, is binding upon the country to which the Minister belongs.⁵³⁸

The court did not specify why such a situation is binding, but the principle of good faith seems most applicable. Norway conceded its statement was unconditional and definitive, but claimed it was unenforceable because Norway had misunderstood Denmark's intention regarding Greenland and would not have accepted the Danish offer had it known what Denmark really sought.⁵³⁹ The

533. The Norwegian Minister for Foreign Affairs commemorated in writing his conversations with the Danish representative. The text was provided to the PCIJ and clearly indicated that the Danish offer was considered a *quid pro quo* that was accepted by the Norwegian government. *Eastern Greenland*, *supra* note 428, at 69-70.

534. *Id.* at 69-73.

535. *Id.* at 69, 73.

536. *Id.* at 70.

537. *See id.* at 70-71.

538. *Id.* at 71.

539. *Id.*

PCIJ applied an objective standard of foreseeability based upon the entire factual situation to dispose of the Norwegian argument.⁵⁴⁰

Application of the *Eastern Greenland* logic and criteria to the 1995 U.S. NSA renders it a legally binding obligation. This theory is irrelevant to the 1978 U.S. NSA because it does not embody the same quid pro quo situation as the 1995 NSA. The offer for a quid pro quo is found within the language the U.S. secretary of state used in conjunction with the April 5, 1995, NSA announcement. Immediately prior to renewing the NSA, he stated the following:

The United States of America believes that universal adherence to and compliance with international conventions and treaties seeking to prevent the proliferation of weapons of mass destruction is a cornerstone of global security. The Treaty on the Non-Proliferation of Nuclear Weapons is a central element of this regime. 5 March 1995 was the twenty-fifth anniversary of its entry into force, an event commemorated by President Clinton in a speech in Washington, D.C., on 1 March 1995. A conference to decide on the extension of the Treaty will begin in New York on 17 April 1995. *The United States considers the indefinite extension of the Treaty on the Non-Proliferation of Nuclear Weapons without conditions as a matter of the highest national priority and will continue to pursue all appropriate efforts to achieve that outcome.*

It is important that all parties to the Treaty on the Non-Proliferation of Nuclear Weapons fulfil [sic] their obligations under the Treaty. In that regard, consistent with generally recognized principles of international law, *parties to the Treaty on the Non-Proliferation of Nuclear Weapons must be in compliance with these undertakings in order to be eligible for any benefits of adherence to the Treaty.*⁵⁴¹

The statement clearly conveys the U.S. desire for “the indefinite extension of the Treaty on the Non-Proliferation of Nuclear Weapons without conditions,”⁵⁴² and indicates that NPT benefits such as the NSA extend only to NPT parties who comply with the treaty.⁵⁴³ The announcement was made less than two weeks prior to the start of the NPT review and extension conference.⁵⁴⁴ The timing of the announcement and the mention of the pending NPT conference is evidence the United States implied a quid pro quo that could be

540. *See id.*

541. Letter from Edward W. Gnehm, *supra* note 448; *see also* Crossette, *supra* note 448 (emphasis added).

542. Letter from Edward W. Gnehm, *supra* note 448; *see also* Crossette, *supra* note 448 (emphasis added).

543. Letter from Edward W. Gnehm, *supra* note 448; *see also* Crossette, *supra* note 448 (emphasis added).

544. Letter from Edward W. Gnehm, *supra* note 448; *see also* Crossette, *supra* note 448 (emphasis added).

accepted by extension of the NPT. That interpretation is strengthened by the fact that all nuclear-weapon states renewed their NSAs during the same two-day period in 1995.⁵⁴⁵ Such coordinated action by nations with the common goal of extending the NPT indicates the U.S. NSA renewal was part of a group negotiation strategy and not a purely unilateral act.

Although the U.S. NSA renewal did not explicitly condition the NSA upon NPT extension, the implication was obvious. In that sense, the U.S. NSA statement was similar to the Danish offer in *Eastern Greenland*, which also implied an expectation of reciprocal behavior by Norway. The lack of an express conditional offer did not present an enforcement problem for the PCIJ as long as the reciprocal obligation was foreseeable based upon objective analysis of the factual situation. In 1995, the United States was aware of the longstanding desire of non-nuclear-weapon states for a legally binding NSA and that the issue would be addressed at the NPT review and extension conference.⁵⁴⁶ Thus, the factual situation indicates when the United States renewed its NSA, it intended to grant non-nuclear-weapon states most of what they sought with the expectation of obtaining what it sought, NPT extension. Furthermore, the 1995 U.S. NSA contained key differences from the 1978 NSA that rendered it wholly ineffective without NPT extension.⁵⁴⁷ Objective review of the facts, then, demonstrates that the United States should have, and probably did, foresee how non-nuclear-weapon states would understand and react to the U.S. NSA renewal.

Unlike the situation in *Eastern Greenland*, the recipients of the implied offer for reciprocal obligations have already acted upon the U.S. offer. When the non-nuclear-weapon states, including Iran, accepted the implied U.S. offer by extending the NPT indefinitely, a non-revocable act, the United States became legally bound by the 1995 NSA. The 1995 NSA ceased to be a purely unilateral

545. See Letter from Edward W. Gnehm, *supra* note 448; Crossette, *supra* note 448.

546. 2 SHAKER, *supra* note 436, at 472-473; U.S. GOV'T PRINTING OFFICE, *supra* note 49 at 567-568.

547. The 1978 NSA indicated that the United States "will not use nuclear weapons against any non-nuclear-weapon state party to the NPT or any comparable internationally binding commitment not to acquire nuclear explosive devices . . ." Fed'n of Am. Scientists, *supra* note 446 (emphasis added). In contrast, the 1995 NSA indicated that the United States "will not use nuclear weapons against nonnuclear weapon states parties to the treaty on the nonproliferation of nuclear weapons . . ." Letter from Edward W. Gnehm, *supra* note 448 (emphasis added).

act when the non-nuclear-weapon states accepted the quid pro quo offer. The principle of good faith cannot allow any other outcome.

V. CONCLUSION

Constraints upon U.S. use of a tactical nuclear weapon in Iran range from general political obligations to specific legal rules rooted in international custom and convention.⁵⁴⁸ The first nation to use nuclear weapons against an enemy can expect to be the subject of universal, or near universal, international opprobrium.⁵⁴⁹ The political cost to the United States of using a nuclear weapon against the Natanz nuclear facility is difficult to predict, but it is sure to be exacerbated by the PSAs issued by other nuclear-weapon states.⁵⁵⁰ Because Iran is a party to the NPT, the PSAs recognized and accepted in Security Council Resolution 984 are likely to be a factor.⁵⁵¹ Iran will undoubtedly seek to invoke the military assistance offered by PSAs and the United States will have to address the matter. In the end, U.S. veto authority at the U.N. Security Council would probably preclude any significant military assistance to Iran,⁵⁵² but the political repercussions of the situation have the potential to undermine the entire NPT regime.

Similarly, Iran will almost certainly raise the issue of why the United States violated the terms of its NSA by using a nuclear weapon against a non-nuclear-weapon state party to the NPT. Unlike North Korea,⁵⁵³ Iran has never even threatened to withdraw from the NPT. Previous discussion of the three theories by which a unilateral NSA declaration could become an international legal obligation suggests the ICJ would likely find the United States' unilateral NSA legally binding under at least one of the theories.⁵⁵⁴ Whatever the legal status of the NSA, the United States is already politically and morally bound by its express terms.⁵⁵⁵

548. See *supra* Parts III, IV.

549. See *supra* Parts II.B, III, IV.

550. See *supra* Part IV.

551. See *id.*; S.C. Res. 984, *supra* note 423, ¶ 7.

552. See *generally* U.N. Charter art. 51. The Security Council is charged with taking "measures necessary to maintain international peace and security" in response to an armed attack. *Id.* Inasmuch as the right of collective self-defense called for in PSAs is implicated by a U.S. nuclear attack upon Iran, the obligation to immediately report such collective defensive measures to the Security Council seems to allow the possibility of veto. See *id.* art. 27.

553. Seth Mydans, *Threats and Responses: Nuclear Standoff; North Korea Says It Is Withdrawing from Arms Treaty*, N.Y. TIMES, Jan. 10, 2003, at A1.

554. See *supra* Part IV.A-C.

555. See *id.*

Each of the three theories under which the United States could be found legally bound by its NSAs also includes numerous claimed exceptions.⁵⁵⁶ Because the United States included exceptions as part of each unilateral declaration, the exceptions would be incorporated into any legal obligation.⁵⁵⁷ Unfortunately, none of the express exceptions would apply to the Iran situation. The Bush Doctrine notwithstanding, the exceptions did not contemplate non-nuclear-weapon states remaining party to the NPT and secretly developing nuclear-weapon technology under the guise of peaceful nuclear-energy technology.⁵⁵⁸ Thus, as long as Iran remains party to the NPT and does not test a nuclear weapon (conclusively changing its status from a non-nuclear-weapon state to a nuclear-weapon state), it arguably falls under the protection of the NSA even if it is violating the treaty provisions.⁵⁵⁹

The statement immediately preceding the NSA provision that “parties to the Treaty on the Non-Proliferation of Nuclear Weapons must be in compliance with these undertakings in order to be eligible for any benefits of adherence to the Treaty”⁵⁶⁰ may allow the United States to argue that Iran has been outside the scope of the U.S. NSA since September 2005 when the IAEA Board of Governors found Iran in violation of its safeguard agreement (not the NPT).⁵⁶¹ Such a legalistic argument would be significantly stronger with direct evidence that Iran was actually developing nuclear weapon technology. Under the present facts, however, the argument is rather weak as it is based entirely upon unsubstantiated suspicion. The interpretative theory of the argument is unlikely to provide much solace to non-nuclear-weapon states.

In any event, prior ICJ decisions suggest the court would probably find unilateral NSA declarations legally binding.⁵⁶² It should be noted, however, that even if the United States used a tactical nuclear weapon against the Natanz nuclear facility, an allegation that the United States violated its NSA obligations would never be heard by the ICJ.⁵⁶³ Facing an adverse ruling by the ICJ in 1986,⁵⁶⁴

556. *See id.*

557. *See id.*

558. *See* UNILATERAL SECURITY ASSURANCES BY NUCLEAR-WEAPON STATES, *supra* note 31.

559. The 1995 NSA states, “The United States reaffirms that it will not use nuclear weapons against nonnuclear weapon states parties to the treaty on the nonproliferation of nuclear weapons except” Letter from Edward W. Gnehm, *supra* note 448.

560. *See* Letter from Edward W. Gnehm, *supra* note 448; Crossette, *supra* note 448.

561. IAEA, *supra* note 173.

562. *See supra* Part IV.

563. *See* MURPHY, *supra* note 244, at 135.

564. *Nicar. v. U.S.*, *supra* note 296, para. 142.

the United States withdrew consent to the compulsory jurisdiction of the court.⁵⁶⁵ Moreover, for an issue where the ICJ would likely rule against the United States, it is probably safe to presume the United States would not consent to special jurisdiction. Nevertheless, from a nonproliferation standpoint, it makes little difference whether the United States is perceived by non-nuclear-weapon states as violating a legal obligation or merely a political and moral obligation. The fact that a nuclear-weapon state chose to disregard an NSA and use a nuclear weapon will certainly cause serious reconsideration of the NPT bargain.

The United States' obligations under international humanitarian law are unquestionably legal in character as opposed to the political and moral nature of NSAs.⁵⁶⁶ Despite the greater degree of clarity provided by international humanitarian law, application of the specific legal obligations to the uncertain facts of the Natanz nuclear facility does not produce a clear legal basis for attack with a tactical nuclear weapon. Indeed, detailed analysis indicates that use of the only earth-penetrating tactical nuclear weapon in the U.S. arsenal would likely constitute a violation of several fundamental principles of international humanitarian law.⁵⁶⁷ There are two primary factors causing such a legal problem.

First, there is the uncertainty about whether Iran is using the Natanz facility to enrich uranium for nuclear weapons, a military purpose, or nuclear reactors, a civilian purpose, or both.⁵⁶⁸ Without direct evidence of a nuclear-weapons-development program, classification of the Natanz facility as a military objective is tentative at best. Iran's decision to fortify and defend the facility⁵⁶⁹ is the only factor clearly supporting a military objective classification under the principle of distinction.⁵⁷⁰

The same uncertainty complicates military necessity analysis as well.⁵⁷¹ The only way to identify a military necessity that allows targeting of the Natanz facility is to presume the existence of a nuclear weapons development program supported by the Natanz facility. Such a presumption, however, is directly contradicted by the National Intelligence Estimate.⁵⁷² Moreover, disregarding the

565. MURPHY, *supra* note 244, at 135.

566. *See supra* Part III.

567. *See id.*

568. *See supra* Part II.A.

569. *See supra* Parts II.A, III.A.

570. *See supra* Part III.A.

571. *See supra* Part III.B.

572. U.S. OFFICE OF THE DIR. OF NAT'L INTELLIGENCE, *supra* note 273, at 6.

National Intelligence Estimate does not entirely resolve the issue. Mere suspicion about the actual existence of a nuclear weapons program, justifiable or not, is probably insufficient to support a valid finding of military necessity;⁵⁷³ from a political perspective, the international community will demand a greater justification from the United States than unsubstantiated suspicion.⁵⁷⁴

The second unalterable fact is that the 400 kiloton explosive yield of the B61-11 tactical nuclear weapon is simply too large to contain underground at the maximum penetration depth it is capable of achieving.⁵⁷⁵ The relatively isolated desert location of the Natanz facility minimizes civilian casualties caused by the initial explosion to a certain extent.⁵⁷⁶ Assuming *arguendo* there is persuasive evidence of a nuclear weapons program at the Natanz facility, the death of all civilians employed there would likely be found proportionate.⁵⁷⁷ The resulting radioactive fallout, however, will affect countless civilians unrelated to the Natanz facility. The civilian population of the nearby city of Natanz will experience a high number of injuries and deaths caused by the fallout.⁵⁷⁸ Depending upon the weather after the attack, radioactive fallout could also spread to population centers in and out of Iran causing additional civilian injuries.⁵⁷⁹ In essence, any reasonable argument of proportionality is nearly impossible.

In sum, Iranian actions regarding its nuclear program in general and the Natanz facility in particular are quite suspicious. Nevertheless, there is simply not enough information currently available to justify an attack upon the Natanz nuclear facility with a tactical nuclear weapon. Moreover, direct evidence of ongoing nuclear-weapon development at the Natanz facility is unlikely to offset the collateral damage that would result from a shallow 400-kiloton nuclear explosion.

573. See *supra* Parts III.A, .B.

574. See *supra* Parts III.A, .B.

575. See Nelson, *supra* note 315, at 9.

576. See *supra* Part II.A, .C.

577. See *supra* Part III.C.

578. See GLASSTONE & DOLAN, *supra* note 320, at 388.

579. *Id.* at 387; see Nelson, *supra* note 315, at 15-17.