THE IMPENDING NUCLEAR DISASTER: FLAWS IN THE INTERNATIONAL COUNTER-PROLIFERATION REGIME AT SEA

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I. Introduction

The Nuclear Non-Proliferation Treaty (NPT) was originally negotiated and designed to prevent the spread of nuclear weapons beyond the five recognized nuclear-weapon states – China, France, Russia, United Kingdom and the United States.¹ Although there were some initial setbacks when India, Israel, Pakistan and South Africa did not sign the NPT in 1968 and subsequently acquired nuclear weapons, the non-proliferation regime was generally successful in limiting the spread of nuclear weapons beyond the five permanent members of the U.N. Security Council.² Belarus, Kazakhstan, and Ukraine joined the NPT and returned the nuclear weapons they had inherited from the Soviet Union to the Russian Federation.³ South Africa also abandoned its nuclear weapons program and

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¹ Nuclear Weapons: Who Has What at a Glance, ARMS CONTROL ASS'N, http://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat (last visited Oct. 3, 2011).

² *Id*.

³ *Id*.

joined the NPT in 1991, as did Argentina, Brazil, Libya, South Korea, and Taiwan. In addition, the two Gulf Wars effectively ended Iraq's nuclear ambitions.⁴

However, at no time since the NPT entered into force in March 1970 has the world been closer to the brink of a nuclear disaster. Conflict over the disputed Kashmir region between India and Pakistan, both nuclear weapon holders, could escalate into a nuclear exchange. Israel also possesses nuclear weapons. Of greater concern, however, are the fledgling nuclear weapons programs of North Korea (DPRK) and Iran, and the possibility that nuclear devices and related technology from these countries could find their way into the hands of terrorist groups or other rogue states like Syria. Both states have defied U.N. Security Council resolutions and International Atomic Energy Agency (IAEA) safeguard agreements: the DPRK by successfully testing two nuclear devices in 2006 and 2009 following its withdrawal from the NPT in 2003,⁵ and Iran by engaging in a clandestine nuclear weapons program.⁶ These actions draw into serious question the continued ability of the non-proliferation regime and the Security Council to stop the spread of nuclear weapons and related technology in the twenty-first century. Coupled with their unpredictable political regimes and their growing ballistic missile programs, both the DPRK and Iran pose more than just regional threats. Both the former Chairman of the Joint Chiefs of Staff, Admiral Mike Mullen, and the former Secretary of Defense, Robert Gates, have indicated that the DPRK's expanding ballistic missile and nuclear programs are becoming a "direct threat to the United States." Intelligence estimates indicate that the DPRK will have the capability to strike the continental United States with an intercontinental ballistic missile within the next five years.8 and the DPRK has, on more than one occasion, threatened South Korea (ROK) with nuclear war.9 Iranian President Mahmoud Ahmadinejad has also made it quite clear that Israel should be "wiped off the map." Then-Iranian President Hashemi Rafsanjani made similar statements in 2001 indicating that a nuclear weapon developed by a Muslim state might be used to destroy Israel.¹¹

This paper will outline the international counter-proliferation regime currently in effect; examine whether the existing regime is adequate to curtail the proliferation of weapons of mass destruction (WMD), their delivery systems and other

⁴ *Id*.

⁵ See Text of North Korea's Statement on NPT Withdrawal, Atomic Archive (Jan. 10, 2003), http:// www.atomicarchive.com/Docs/Deterrence/DPRKNPTstatement.shtml.

⁶ Nuclear Weapons: Who Has What at a Glance, supra note 1.

⁷ Anne Gearan, Pentagon Chief Huddles With Allies About NKorea, ABC News Int'l, Jan. 13, 2011, http://abcnews.go.com/International/wireStory?id-12602644.

⁸ Elizabeth Bumiller and David E. Sanger, Gates Warns of North Korea Missile Threat to U.S., N.Y. TIMES, Jan. 11, 2011, http://www.nytimes.com/2011/01/12/world/asia/12military.html?_r=1&nl=todays headlines&emc=tha24.

⁹ Chico Harlan, South Korea-U.S. Cooperation Draws Nuclear Threat by North, WASH. POST, Dec. 14, 2010, http://www.washingtonpost.com/wp-dyn/content/article/2010/12/13/AR201012130 5363.html.

¹⁰ Iran's Leader's Comments Attacked, BBC News, Oct. 27, 2005, http://news.bbc.co.uk/2/hi/43789 48.stm.

¹¹ *Id*.

related materials; identify weaknesses in the regime that have prevented the international community from dissuading the DPRK and Iran to abandon their nuclear ambitions; and offer a way forward to convince the DPRK and Iran to return to the NPT and abandon their nuclear weapons programs.

II. International Counter-Proliferation Legal Regime

A. General Principles of International Law of the Sea

A host of international and domestic laws and regulations govern the interdiction of WMD and related systems and materials. Foremost are the general principles of international maritime law reflected in the United Nations Law of the Sea Convention (UNCLOS) and other international agreements and arrangements.¹² In general, unless otherwise provided by law, jurisdiction to board and inspect foreign flag vessels is dependent on the location of the vessel (i.e., internal waters, territorial sea, contiguous zone, exclusive economic zone (EEZ) and high seas), the vessel's registry or flag state, the vessel's status (i.e., public or commercial) and the vessel's conduct (i.e., legal or illegal).¹³ In this regard, international law permits the boarding and inspection of foreign flag vessels suspected of illegally transporting WMD-related material in the following circumstances: as a function of port state control; coastal state customs jurisdiction in the territorial sea and contiguous zone; with the consent of the flag state or ship's master in areas beyond national jurisdiction (e.g., EEZ, high seas); pursuant to a U.N. Security Council resolution; or in accordance with bilateral or multi-lateral agreements.

1. Port State Control/Coastal State Jurisdiction

Coastal states enjoy complete sovereignty over their internal waters and their territorial sea and archipelagic waters, subject to the right of innocent passage by foreign-flagged ships.¹⁴ Accordingly, coastal states may adopt laws and regulations consistent with international law relating to innocent passage through the territorial sea in respect of, *inter alia*, the prevention of infringement of the customs, fiscal, immigration, or sanitary laws and regulations of the coastal state.¹⁵ Additionally, in the case of ships proceeding to internal waters, the coastal state may also take the necessary steps to prevent any breach of the conditions to which admission of those ships is subject.¹⁶ Moreover, within the contiguous zone, a coastal state may also exercise the control necessary to: (1) prevent infringement of its customs, fiscal, immigration or sanitary laws and regulations

¹² United Nations Convention on the Law of the Sea, Dec. 10, 1982, 1833 U.N.T.S. 3, available at http://www.un.org/depts/los/convention_agreements/texts/unclos/UNCLOS-TOC.htm [hereinafter UNCLOS].

¹³ *Id.* pt. 2, sec. 2.

¹⁴ Id. pt. 2, sec. 2, art. 2; pt. 4, art. 49.

¹⁵ *Id.* pt. 2, sec. 3, art. 21(1)(h); pt. 4, art. 52.

¹⁶ *Id.* pt. 2, sec. 3, art. 25(2); pt. 4, art. 52.

within its territory or territorial sea, and (2) punish infringement of these laws and regulations committed within its territory or territorial sea.¹⁷

For example, 33 U.S.C. § 1228 provides that "no vessel . . . shall operate in the navigable waters of the United States or transfer cargo or residue in any port or place under the jurisdiction of the United States, if such vessel . . . (2) fails to comply with any applicable regulation issued under [the Ports and Waterways Safety Act] . . . or any other applicable law or treaty." Similarly, 33 U.S.C. § 1223 provides that ships destined for a U.S. port may be required to provide pre-arrival messages in sufficient time to permit advance vessel traffic planning prior to port entry. ¹⁹ In this regard, foreign ships bound for a U.S. port must provide a notice of arrival at least 96 hours before entering the port. ²⁰ Authority to enforce conditions of port entry is vested in the Captain of the Port (COTP). ²¹

The COTP has authority to inspect and search any non-sovereign immune vessel or any person or thing thereon that is within the jurisdiction of the United States.²² Similarly, 14 U.S.C. § 89 authorizes Coast Guard officials to make "inquiries, examinations, inspections, searches, seizures, and arrests upon the high seas and waters over which the United States has jurisdiction, for the prevention, detection, and suppression of violations of laws of the United States."23 Thus, a foreign vessel that enters a U.S. port, whether suspect or not, may be boarded and searched upon its arrival to determine the nature of its cargo (e.g., WMD) and its crew (e.g., terrorists), and to assure compliance with other U.S. laws and regulations.²⁴ Similarly, foreign vessels located within the U.S. territorial sea or contiguous zone may be boarded and searched if there is reason to believe that the vessels may be violating, inter alia, U.S. customs, fiscal, or immigration laws.²⁵ Accordingly, if there are reasonable grounds to believe that a vessel is transporting prohibited items or persons in violation of U.S. customs and immigration laws, the Coast Guard may board and search the vessels in the U.S. territorial sea or contiguous zone.26

2. Flag State Jurisdiction

Generally, ships sail under the flag of only one state and, with limited exceptions, are subject to the exclusive jurisdiction of the flag state on the high seas.²⁷

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17 Id. pt. 2, sec. 4, art. 33.
18 33 U.S.C. § 1228 (1990).
19 33 C.F.R. §§ 160.201-215.
20 Id. Certain vessels are exempt from complying with this requirement, including vessels arriving at a port under force majeure.
21 33 C.F.R. § 1.01-30.
22 33 C.F.R. § 6.04-07.
23 14 U.S.C. § 89 (1986) (emphasis added).
24 Id.
25 Id.
26 Id.
27 UNCLOS, supra note 12, pt. 7, sec. 1, art. 92.
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Therefore, flag state or master consent is required before a warship can stop and board a foreign flag vessel on the high seas.²⁸ For purposes of WMD-interdiction and related materials at sea, the same rule applies in the EEZ.²⁹ A vessel that violates this rule and sails under the flags of two or more states may be assumed to be a ship without nationality and therefore subject to the jurisdiction of all states.³⁰ To illustrate this point, in November 2002, U.S. intelligence sources began tracking the M/V So San after it departed Nampo, North Korea, with a suspected cargo of missiles bound for the Middle East. The So San was registered in Cambodia, but was sailing without a flag. In addition, the ship's name and identification number had been painted over. The ship was therefore assumed to be stateless. At the request of the United States, Spanish naval units (Navarra (F-85) and Patino (A-14)) in the vicinity of the So San were requested to stop and inspect the vessel on the high seas (600 miles off the Yemeni coast). On December 9, 2002, when the So San failed to respond to requests to heave to, failed to respond to warning shots from Navarra and Patino and attempted to escape, Spanish Special Forces conducted a nonconsensual boarding by helicopter and small boat. The ship's manifest indicated that the freighter was carrying a cargo of cement to Yemen. However, a subsequent search of the cargo hold by Spanish and U.S. naval personnel discovered 15 scud missiles (surface-to-surface missles), 15 conventional warheads, and 85 drums of inhibited red fuming nitric acid used in scud missile fuel hidden under 40,000 bags of cement.³¹ While this incident illustrates how nations can cooperate to interdict WMD and related materials on the high seas, it also warned states of proliferation concern like Iran and the DPRK never to use a stateless vessel to transport prohibited cargo.

International law does, however, provide a number of exceptions to the principle of exclusive flag state jurisdiction on the high seas. For instance, as mentioned above, the flag state or the master may give consent to authorities of another state to board and inspect one of its vessels on the high seas. From a practical and a safety standpoint, flag state or master consent are the preferred methods to gain access to a ship. As a matter of state practice, U.S. warships routinely request and receive permission from the master or the flag state to board vessels suspected of engaging in illegal activities, such as narcotics trafficking, migrant smuggling, nuclear proliferation, and, as of September, 11 2009 (9-11), terrorist-related activities. However, not all nations agree with the U.S. view that the master can legally give consent to foreign authorities to board a vessel. Nonetheless, the U.S. takes the position that, as the official representative of the flag state, the master has plenary authority over all activities on board the

²⁸ Id. pt. 7, sec. 1, art. 94.

²⁹ Id.

³⁰ Id. pt. 7, sec. 1, art. 92.

³¹ See Brian Knowlton, Ship allowed to take North Korea Scuds on to Yemeni port: U.S. freed freighter carrying missiles, N.Y. Times, Dec. 12, 2002, http://www.nytimes.com/2002/12/12/ news/ 12iht-scuds ed3 .html; see also Amitai Etzioni, Tommorow's Institution Today: The Promise of the Proliferation Security Initiative, 88 Foreign Affairs 7, 7 (May/June 2009), available at http://www.gwu.edu/~ccps/etzioni/documents/A397%20(PSI)%20Tomorrow's%20Institution%20Today-%20PSI. pdf.

vessel while in international waters, including authority over all personnel on board. The U.S. position is supported by Article 27(1)(c) of UNCLOS, which recognizes the authority of the master to request the assistance of local authorities to exercise criminal jurisdiction on board the vessel.³² But while master consent permits the boarding and search of the vessel, it does not allow the assertion of additional law enforcement authority, such as arrest of persons or seizure of cargo or the vessel. Even under the U.S. view, flag state consent would still be required to take these additional law enforcement measures against the vessel unless unilateral action was required in self-defense.

Nonconsensual boardings can also be conducted if the foreign flag vessel is engaged in universally condemned activities. Pursuant to the right of visit reflected in Article 110 of UNCLOS, a warship that encounters a foreign ship (except sovereign immune vessels) beyond the territorial sea of another nation may board the ship if there are reasonable grounds to suspect that the ship is engaged in piracy, slave trade, or unauthorized broadcasting.³³ After inspecting the ship's papers, if suspicion remains that the ship is engaged in one of the prohibited activities, the boarding officer may proceed with a further examination of the ship. Unfortunately, however, the right of visit does not apply to ships engaged in proliferation-related or terrorist-related activities.

B. Nuclear Non-proliferation Treaty

The NPT defines nuclear-weapon states to include those states that had "manufactured and exploded a nuclear weapon or other nuclear explosive device prior to January 1, 1967."³⁴ These states include the United States (1945), Soviet Union (1949), United Kingdom (1952), France (1960) and China (1964).³⁵ Pursuant to Article II, the 184 non-nuclear-weapon State Parties agree "not to receive the transfer . . . of nuclear weapons or other nuclear explosive devices; . . . not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices; and not to seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices."³⁶ To ensure peaceful nuclear material is not diverted for illegal weapons purposes, the non-nuclear-weapon states also agree under Article III to "accept safeguards . . . for the exclusive purpose of verification of . . .its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices" and to "conclude agreements with

³² See UNCLOS, supra note 12, pt. 2, sec. 3, art. 27(1)(c).

³³ *Id.* pt. 7, sec. 1, art. 110 (with regard to unauthorized broadcasting, UNCLOS does impose some limitation on the exercise of jurisdiction).

³⁴ Treaty on the Non-Proliferation of Nuclear Weapons, July 1, 1968, 21 U.S.T. 483, 729 U.N.T.S. 161, art. IX, *available at* http://www.armscontrol.org/documents/npt.

³⁵ Nuclear Weapons: Who Has What at a Glance, supra note 1 (India and Pakistan first tested nuclear weapons in 1974 and 1998 respectively. Israel and South Africa have not publicly conducted nuclear tests).

³⁶ Treaty on the Non-Proliferation of Nuclear Weapons, supra note 34, art II.

the International Atomic Energy Agency to meet the requirements of this article."37

Pursuant to Article III of the NPT, both Iran and the DPRK entered into safe-guard agreements with the IAEA in 1974³⁸ and 1992,³⁹ respectively. In Article 1 of the respective agreements, both governments agree to "accept safeguards...on all source or special fissionable material in all peaceful nuclear activities within its territory, under its jurisdiction or carried out under its control anywhere, for the exclusive purpose of verifying that such material is not diverted to nuclear weapons or other nuclear explosive devices." They further agree in Article 3 to "co-operate to facilitate the implementation of the safeguards provided for in this Agreement."

Despite these undertakings, neither Iran nor the DPRK have complied with their legal obligations under the NPT or their safeguard agreements. In his most recent report, the IAEA Director General said, "Iran has not provided the necessary cooperation to permit the Agency to confirm that all nuclear material in Iran is in peaceful activities." He reported further, "Iran is not implementing the requirements contained in the relevant resolutions of the Board of Governors and the Security Council . . . which are essential to . . . resolve outstanding questions." In particular, contrary to the relevant resolutions of the Board of Governors and the Security Council, Iran has: (1) continued with the operation of the Pilot Fuel Enrichment Plant and Fuel Enrichment Plant at Natanz, and the construction of a new enrichment plant at Fordow; and (2) continued with the construction of the IR-40 reactor and related heavy water activities and has failed to allow the IAEA to take samples of the heavy water which is stored at the Uranium Conversion Facility, and has not provided the IAEA access to the Heavy Water Production Plant.

Similarly, the Director General's report on the DPRK reflects that "since December 2002, the DPRK has not permitted the Agency to implement safeguards in the country and, therefore, the Agency cannot draw any safeguards conclusion

³⁷ Id. art. III.

³⁸ Int'l Atomic Energy Agency [IAEA], *The Text of the Agreement between Iran and the Agency for the Application of Safeguards [AAS] in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons*, IAEA Doc. INFCIRC/214 (Dec. 13, 1974), *available at* http://www.iaea.org/Publications/Documents/Infcircs/Others/infcirc214.pdf [hereinafter AAS-Iran].

³⁹ IAEA, Agreement of 30 January 1992 between the Government of the Democratic People's Republic of Korea and the IAEA for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons, IAEA Doc. INFCIRC/403 (May 1992), available at http://www.iaea.org/Publications/Documents/Infcircs/Others/inf403.shtml [hereinafter IAEA Agreement].

⁴⁰ IAEA Agreement, *supra* note 39, art. 1; AAS-Iran, *supra* note 38, art. 1.

⁴¹ IAEA Agreement, *supra* note 39, art. 3; AAS-Iran, *supra* note 38, art. 3.

⁴² IAEA, Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran, Report of the Director General, ¶ 46, IAEA Doc. GOV/2010/10 (Feb. 18, 2010), available at http://www.isis-online.org/uploads/isis-reports/documents/IAEA_Report_Iran_18F eb10.pdf [hereinafter IAEA, Implementation].

⁴³ *Id.* ¶ 47. Further IAEA resolutions concerning Implementation of the NPT Safeguards Agreement with Iran *available at* http://www.iaea.org/newscenter/focus/iaeairan/ iaea_resolutions.shtml.

⁴⁴ Id

regarding the DPRK."45 Additionally, the report indicates that the DPRK has not "implemented the relevant measures called for in United Nations Security Council resolutions 1718 (2006) and 1874 (2009)" and that, since April 15, 2009, the IAEA "has not been able to carry out any monitoring and verification activities in the DPRK and thus cannot provide any conclusions regarding the DPRK's nuclear activities."46

United Nations Sanctions Regime

U.N. Charter

Pursuant to Article 39 of the U.N. Charter (Charter), the Security Council has the authority to "determine the existence of any threat to the peace, breach of the peace, or act of aggression" and "decide what measures shall be taken in accordance with Articles 41 and 42, to maintain or restore international peace and security."47 Measures adopted under Article 41 do not include the use of armed force and "may include complete or partial interruption of economic relations and of rail, sea, air, postal, telegraphic, radio, and other means of communication, and the severance of diplomatic relations." In accordance with Article 42, however, if the Security Council determines that measures not involving the use of armed force will not be adequate "or have proved to be inadequate, it may take such action by air, sea, or land forces as may be necessary to maintain or restore international peace and security," to include "demonstrations, blockade, and other operations by air, sea, or land forces."48 Of course, prior to adopting measures under Articles 41 or 42, the Security Council may "call upon the parties concerned to comply with such provisional measures as it deems necessary or desirable."49

Acting under Chapter VII, the Security Council adopted Resolution 1540 on April 28, 2004.⁵⁰ After acknowledging that the proliferation of WMD and their delivery systems constituted a threat to international peace and security, the Council called on "all states, in accordance with their national legal authorities and legislation and consistent with international law, to take cooperative action to prevent illicit trafficking in nuclear, chemical or biological weapons, their means of delivery, and related materials."51

⁴⁵ IAEA, Application of Safeguards in the Democratic People's Republic of Korea (DPRK), Report of the Director General, ¶ 9, IAEA Doc. GOV/2010/45-GC(54)/12 (Aug. 31, 2010), available at http:// www.iaea.org/newscenter/focus/iaeadprk/iaea_reports.shtml.

⁴⁶ Id.

⁴⁷ U.N. Charter art. 39.

⁴⁸ Id. art. 40.

⁴⁹ Id.

⁵⁰ S.C. Res. 1540, U.N. Doc. S/RES/1540 (Apr. 28, 2004), available at http://www.un.org/docs/sc/.

2. DPRK-Specific Resolutions

On February 19, 1992, ROK and the DPRK issued a joint declaration renouncing the testing, manufacturing, production, receipt, possession, storing, deploying or use of nuclear weapons.⁵² Less than a year later, in March 1993, the DPRK sent a letter to the President of the Security Council stating its intent to withdraw from the NPT. The Security Council responded with the adoption of Resolution 825 on May 11, 1993, in which the Council called on the DPRK to reconsider its decision, reaffirm its commitment to the NPT and honor its non-proliferation obligations under the NPT and its safeguards agreement with the IAEA.⁵³ The DPRK suspended its withdrawal from the NPT on June 9, 1993.⁵⁴ But thereafter began the saga of broken promises; numerous U.N. Security Council Resolutions (UNSCRs), IAEA resolutions and other international efforts failed to convince the DPRK to abandon its nuclear ambitions.

Ten years later, in January 2003, the DPRK revoked its suspension and formally withdrew from the NPT, citing national security concerns, and further declared that it would no longer abide by the terms of its safeguards agreement with the IAEA.⁵⁵ A few years later, following the fourth round of the Six-Party Talks in Beijing in September 2005, the DPRK affirmed that it was committed to abandoning all nuclear weapons and its existing nuclear programs and that it intended to return to the NPT and IAEA safeguards.⁵⁶

Despite its affirmations, international expectations for a more stable Korean Peninsula were shattered on July 5, 2006 when the DPRK launched a number of ballistic missiles that landed in the Sea of Japan, violating its self-proclaimed moratorium on missile launching. The Security Council reacted ten days later by condemning the multiple launches and demanding that the DPRK suspend all activities related to its ballistic missile program.⁵⁷ UNSCR 1695 additionally required "all Member States, in accordance with their national legal authorities and legislation and consistent with international law," to prevent:

- the transfer of missile and missile-related items, materials, goods and technology to the DPRK's missile or WMD programs;
- the procurement of missile and missile-related items, materials, goods and technology from the DPRK; and
- the transfer of any financial resources in relation to the DPRK's missile or WMD programs.⁵⁸

⁵² Joint Declaration of South and North Korea on the Denuclearization of the Korean Peninsula, Center for Nonproliferation Studies (Feb. 19 1992), http://www.nti.org/e_research/ official_docs/inventory/pdfs/aptkoreanuc.pdf (last updated Feb. 25, 2009).

⁵³ S.C. Res. 825, U.N. Doc. S/RES/825 (May 11, 1993), available at http://www.un. org/docs/sc/.

⁵⁴ Joint Declaration, supra note 52.

⁵⁵ Text of North Korea's Statement on NPT Withdrawal, supra note 5.

⁵⁶ Joint Statement of the Fourth Round of the Six-Party Talks, Beijing, The Acronym Institute (Sept. 19, 2005), available at http://www.acronym.org.uk/docs/0509/doc04.htm.

⁵⁷ S.C. Res. 1695, U.N. Doc. S/RES/1695 (Jul. 15, 2006), available at http://www.un.org/docs/sc/.

⁵⁸ *Id.* ¶ 4.

The DPRK responded to the Security Council's demands with a nuclear weapon test on October 9, 2006 in flagrant disregard of UNSCR 1695. Recognizing that this test had increased tensions in the region and was a "clear threat to international peace and security," the Council condemned the nuclear test and demanded that the DPRK not conduct any further tests or ballistic missile launches.⁵⁹ Acting under Article 41 of the Charter, UNSCR 1718 further directed the DPRK to abandon all nuclear weapons and nuclear programs, and other existing WMD and ballistic missiles programs, in a complete, verifiable, and irreversible manner. 60 Additionally, all Member States were directed to prevent the supply, sale or transfer to the DPRK, through their territories or by their nationals, or using their flag vessels or aircraft, of:

- any battle tanks, armored combat vehicles, large caliber artillery systems, combat aircraft, attack helicopters, warships, missiles or missile systems, or related materials including spare parts;
- items, materials, equipment, goods and technology that could contribute to the DPRK's nuclear-related, ballistic missile-related or other WMDrelated programs; and
- luxury goods.61

Member States were also directed to:

- prohibit the procurement of these items from the DPRK⁶² by their nationals or using their flagged vessels or aircraft;
- prevent any transfers to or from the DPRK by their nationals or from their territories, of technical training, advice, services or assistance related to these items;
- freeze financial assets located in their territories used to support the DPRK's nuclear-related, other WMD-related and ballistic missile-related programs;
- impose travel restrictions on designated persons responsible for the DPRK's nuclear-related, ballistic missile-related and other WMD-related programs and polices.63

Finally, Member States were urged to "take, in accordance with their national authorities and legislation, and consistent with international law, cooperative action including thorough inspection of cargo to and from the DPRK."64

Three years later, the DPRK reacted to the increased sanctions in UNSCR 1718 with a second nuclear test on May 25, 2009. The Security Council responded with UNSCR 1874, which reiterated the condemnations, demands and

⁵⁹ S.C. Res. 1718, ¶¶ 1-2, U.N. Doc. S/RES/1718 (Oct. 14, 2006), available at http://www.un. org/ docs/sc/.

⁶⁰ *Id*. ¶ 6.

⁶² The DPRK was also prohibited from exporting such items; see id. ¶ 8(b).

⁶³ *Id.* ¶ 8(c)-(e).

⁶⁴ *Id*. ¶ 8(f).

economic sanctions of UNSCR 1718, in addition to prohibiting all weapons exports by the DPRK and expanding the arms embargo to all arms (except small arms and light weapons).⁶⁵ UNSCR 1874 additionally established an inspection regime that required all states to inspect:

- in accordance with their national authorities and legislation, and consistent with international law, all cargo to and from the DPRK, in their territory, including seaports and airports, if they have reasonable grounds to believe the cargo contains items prohibited by UNSCRs 1718 or 1874 (i.e., port state control/jurisdiction), and
- vessels, with the consent of the flag state, on the high seas, if they have reasonable grounds to believe that the vessel's cargo contains items prohibited by UNSCRs 1718 or 1874 (i.e., flag state jurisdiction/ consent).⁶⁶

With regard to the latter point, if the flag state does not consent to the inspection on the high seas, the flag state shall direct the vessel to proceed to an appropriate and convenient port for the required inspection by local authorities. If an inspection discovers prohibited items, member states are further authorized to seize and dispose of the items. This "diversion" provision of the resolution is an interesting, but irrelevant, new development. While responsible flag states will, in all probability, observe this requirement and divert their vessels to a convenient port for inspection, it is highly unlikely that rogue states like Syria, Iran, Myanmar and the DPRK will do so.

An additional new requirement in UNSCR 1874 that warrants special recognition, however, is the "no bunkering" provision.⁶⁷ Operative paragraph 17 of the resolution prohibits Member States from providing "bunkering services, such as provision of fuel or supplies, or other servicing of vessels, to DPRK vessels if they have. . .reasonable grounds to believe they are carrying items. . .prohibited by [UNSCR] 1718 (2006) or. . [UNSCR 1874]."⁶⁸ This provision was instrumental in preventing a suspected weapons shipment from finding its way from the DPRK to Myanmar in July 2009. In June 2009, satellites detected that the DPRK was loading the tramp steamer *Kang Nam 1* with a cache of weapons for Myanmar. After the vessel set sail, the *USS John S. McCain* shadowed it for several days. When it became apparent to the ship's master that he would not be able to refuel in Singapore as originally planned, the *Kang Nam* reversed course and returned to the DPRK.⁶⁹ Assuming regional coastal nations such as China, Indonesia, and Malaysia continue to comply with this prohibition, it will be ex-

⁶⁵ S.C. Res. 1874, U.N. Doc. S/RES/1874 (Jun. 12, 2009), *available at* http://www.un.org/docs/sc/. As was the case with previous resolutions, this resolution was adopted pursuant to Chapter VII and took measures under Article 41.

⁶⁶ *Id.* ¶¶ 11-12.

⁶⁷ *Id*. ¶ 17.

⁶⁸ Id.

⁶⁹ Op.-Ed., A Victory for U.N. Sanctions, BANGKOK POST, July 10, 2009, http://www.ba ngkokpost.com/opinion/19963/a-victory-for-un-sanctions.

tremely difficult, if not impossible, for DPRK flag vessels to make the long voyage to Myanmar or Iran without stopping for fuel along the route.

3. Iran-Specific Resolutions

In March 2006, Iran announced its intentions to resume its enrichment-related activities and suspended cooperation with the IAEA. The Security Council responded with a weak resolution, adopted under Article 40 of the Charter, demanding Iran suspend all enrichment-related and reprocessing activities, including research and development.⁷⁰ The resolution, UNSCR 1696, additionally called on all states, "in accordance with their national legal authorities and legislation and consistent with international law, to. . .prevent the transfer of any items, materials, goods and technology that could contribute to Iran's enrichment-related and reprocessing activities and ballistic missile programs."⁷¹ It is unclear why this resolution is somewhat watered-down in comparison to UNSCR 1695 on the DPRK, which additionally prevented both the procurement of missile and missile-related items from the DPRK and the transfer of any financial resources related to the DPRK's missile or WMD programs.⁷² Perhaps the thirst for oil had something to do with it, but the Security Council clearly missed an opportunity to send a stronger message to Tehran concerning its nuclear weapons and ballistic missile programs.

Like the DPRK, Iran ignored the demands of UNSCR 1696. In response, the Security Council adopted enhanced measures under Article 41 of the Charter demanding that Iran suspend all enrichment-related and reprocessing activities, including research and development, and all work on heavy water-related projects, including the construction of a research reactor moderated by heavy water.⁷³ UNSCR 1737 further provided that all Member States must prevent the supply, sale or transfer to Iran from their territories or by their nationals using their flag vessels or aircraft of all items, materials, equipment, goods and technology that could contribute to Iran's enrichment-related activities, reprocessing activities, heavy water-related activities or to the development of nuclear weapon delivery systems.⁷⁴ Member States were also required to "prevent the provision to Iran of any technical assistance or training, financial assistance, investment, brokering or other services, and the transfer of financial resources or services, related to the supply, sale, transfer, manufacture or use of the prohibited items, materials, equipment, goods and technology. . ." specified in the resolution.⁷⁵

⁷⁰ S.C. Res. 1696, U.N. Doc. S/RES/1696 (Jul. 31, 2006), available at http://www.un. org/docs/sc/.

⁷¹ *Id.* ¶ 2.

⁷² See S.C. Res. 1695, supra note 57, ¶ 4.

⁷³ S.C. Res. 1737, U.N. Doc. S/RES/1737 (Dec. 27, 2006), available at http://www.un .org/docs/sc/.

⁷⁴ Id. ¶ 3. For a list of prohibited nuclear program-related and ballistic missile program-related items see Permanent Representative of France to the U.N., Letter dated Oct. 13, 2006 from the Permanent Representative of France to the U.N. addressed to the President of the Security Council, U.N. Doc. S/ 2006/814, S/2006/815 (Oct. 13, 2006), available at http://www.undemocra.cy.com/S-2006-814.pdf and http://www.undemocracy.com/S-2006-815.pdf (the annex to the letter contains an extensive list of prohibited materials by category).

⁷⁵ S.C. Res. 1737, *supra* note 73, ¶ 6.

Additionally, Member States were specifically required to prevent specialized teaching or training of Iranian nationals in disciplines that would contribute to Iran's proliferation sensitive nuclear activities and development of nuclear weapon delivery systems.⁷⁶ UNSCR 1737 also prohibited Iran from exporting, and Member States or their nationals from procuring, any of the items in documents S/2006/814 and S/2006/815.77 Lastly, Member States were directed to freeze financial assets located in their territories that were owned or controlled by persons identified by the Security Council as being engaged in, directly associated with, or providing support for Iran's proliferation-sensitive nuclear activities or the development of nuclear weapon delivery systems.⁷⁸ Unlike UNSCR 1718, which imposed travel restrictions on certain individuals responsible for the DPRK's nuclear and ballistic missile programs, UNSCR 1737 only required states to exercise "vigilance" regarding the entry or transit of their territories of individuals involved in Iran's proliferation-sensitive nuclear activities or the development of nuclear weapon delivery systems. Again, it is unclear why the Security Council would elect to impose lesser restrictions on Iran when it was apparent that stronger sanctions against the DPRK had failed.

When Iran failed to comply with the requirements of UNSCR 1737, the Security Council imposed new measures under Article 41 of the Charter aimed at encouraging Iran to comply with its previous resolutions and the requirements of the IAEA.⁷⁹ New measures adopted by the Council in UNSCR 1747 included a prohibition on the:

- the supply, sale or transfer by Iran (or its nationals or use of its flag vessels or aircraft) of any arms or related materials; and
- the procurement of such items from Iran by any State (or its nationals or use of its flag vessels or aircraft).⁸⁰

Additionally, all states were urged, but not required, to:

exercise vigilance and restraint in the supply, sale or transfer directly or indirectly from their territories or by their nationals or using their flag vessels or aircraft of any battle tanks, armored combat vehicles, large caliber artillery systems, combat aircraft, attack helicopters, warships, missiles or missile systems . . . and in the provision to Iran of any technical assistance or training, financial assistance, investment, brokering or other services, and the transfer of financial resources or services, related to the supply, sale, transfer, manufacture or use of such items.⁸¹

Similarly, all states and international financial institutions were urged, but not required, not to "enter into new commitments for grants, financial assistance, and

⁷⁶ *Id*. ¶ 17.

⁷⁷ *Id.* ¶¶ 3-4.

⁷⁸ *Id.* ¶¶ 12-15.

⁷⁹ S.C. Res. 1747, U.N. Doc. S/RES/1747 (Mar. 24, 2007), available at http://www.un.org/docs/sc/.

⁸⁰ *Id*. ¶ 5.

⁸¹ *Id*. ¶ 6.

concessional loans" to Iran.⁸² The failure to impose a mandatory arms embargo on major weapons systems and mandatory economic sanctions on Iran clearly sent the wrong signal to Iran and other states of proliferation concern and demonstrated a lack of resolve on the part of the Security Council to adequately curtail Iran's nuclear ambitions.

Less than a year later, the Director General of the IAEA issued a report that indicated that Iran had not suspended its enrichment-related, reprocessing activities or its heavy water-related projects as required by UNSCRs 1696, 1737 and 1747.83 The report further indicated that Iran had not resumed its cooperation with the IAEA and had taken issue with the IAEA's right to verify design information in accordance with Article 39 of Iran's Safeguards Agreement.84 In an effort to persuade Iran to comply with resolutions 1696, 1737, and 1747 and other IAEA requirements, the Security Council adopted additional measures under Article 41 of the Charter.85 UNSCR 1803 imposed new travel restrictions, directing all states to prevent the entry into or transit through their territories of designed individuals that were engaged in, directly associated with or providing support for Iran's proliferation sensitive nuclear activities or development of nuclear weapon delivery systems.86 The resolution additionally required all states to take the necessary measures to prevent the supply, sale, or transfer from their territories or by their nationals or using their flag vessels or aircraft to Iran of:

- all items, materials, equipment, goods and technology associated with Iran's nuclear program, as set out in relevant Security Council documents (except for use in light water reactors), and
- all items, materials, equipment, goods and technology associated with Iran's ballistic missile program, as set out in relevant Security Council documents.⁸⁷

States were also urged, but not required, to avoid contributing to Iran's nuclear activities or the development of nuclear weapons by exercising vigilance in entering into new commitments for financial support or trade with Iran, and over the activities of financial institutions in their territories with banks in Iran.⁸⁸ Lastly, states were urged, but not required, to exercise port state jurisdiction both in accordance with their national legal authorities and legislation and also consistent with international law (in particular the law of the sea and relevant international civil aviation agreements.)⁸⁹ Specifically, states were requested to inspect the cargoes at their airports and seaports located on board aircraft and vessels

⁸² *Id.* ¶ 7.

⁸³ IAEA, Implementation, supra note 42, ¶ 56.

⁸⁴ Id. ¶ 56.

 $^{^{85}}$ S.C. Res. 1803, $\P I$ 15, 20-21, 23, U.N. Doc. S/RES/1803 (Mar. 24, 2007), available at http://www.un.org/docs/sc/.

⁸⁶ *Id.* ¶ 3.

⁸⁷ *Id.* ¶ 8.

⁸⁸ *Id*. ¶ 9.

⁸⁹ *Id*. ¶ 11.

owned or operated by Iran Air Cargo and Islamic Republic of Iran Shipping Line, if the state had reasonable grounds to believe that the aircraft or vessel was transporting prohibited goods to or from Iran.⁹⁰

Despite numerous political and diplomatic efforts to bring Iran into compliance with its obligations under the NPT and relevant UNSCRs (including an offer by Russia and France to have Iran swap its low-enriched uranium for higher grade fuel rods for use in its nuclear reactors), Iran was not dissuaded from pursuing its nuclear ambitions. Additional reports surfaced in mid-May 2010 of a trilateral agreement between Iran, Turkey and Brazil to send low-enriched uranium abroad for enrichment. Notwithstanding these efforts, in May, an IAEA report indicated that Iran was not cooperating with the IAEA and had not suspended its enrichment-related activities, reprocessing activities and heavy water-related projects as required by UNSCRs 1696, 1737, 1747 and 1803. Of greater concern, however, was the finding that Iran had constructed an enrichment facility at Qom and had enriched uranium to 20 percent without notifying the IAEA, violating its obligations under its Safeguards Agreement.

In response, the Security Council directed Iran not to begin construction on any new uranium-enrichment, reprocessing, or heavy water-related facility and to discontinue any ongoing construction of any such facility in UNSCR 1929.94 UNSCR 1929 further provided that all states were to prohibit Iran, its nationals, and entities incorporated in (or acting on behalf of) Iran from acquiring an interest in any commercial activity in their territories involving uranium mining, production, or use of nuclear materials and technology.95 Additionally, all states were directed to "prevent the. . .supply, sale or transfer to Iran, from or through their territories or by their nationals. . .or using their flag vessels or aircraft. . .of any battle tanks, armored combat vehicles, large caliber artillery systems, combat aircraft, attack helicopters, warships, missiles or missile systems. . .or related material, including spare parts."96

States were also directed to take the necessary measures to prevent the transfer of technical training, financial resources or services, advice, other services or assistance related to the supply, sale, transfer, provision, manufacture, maintenance, or use of such arms and related materials to Iran.⁹⁷ Similarly, Iran was

⁹⁰ Id.

⁹¹ Lara Setrakian, *Iran Agrees to Draft of a Nuclear deal – Again*, ABC WorldNews, Oct. 21, 2009, http://abcnews.go.com/WN/International/iran-nuke-deal-prompts-talk-normalizing-relations/story?id=88 81164.

⁹² See Iran Agrees Turkey Nuclear Deal, BBC News, May 17, 2010, http://ne ws.bbc.co.uk/2/hi/8685846.stm; see also Daniel Dombey, Harvey Morris & Geoff Dyer, Clinton Attacks Turkey-Brazil deal with Iran, Financial Times, May 18, 2010, http://www.ft.com/cms/s/0/58caa4b4-62a4-11df-b1d1-00144feab49a.html#axzz1BbwYrK8G; see also Text of the Iran-Brazil Turkey deal, The Guardian, May 17, 2010, http://www.guardian.co.uk/world/julian-borger-global-security-blog/2010/may/17/iran-brazil-turkey-nuclear.

⁹³ IAEA, Implementation, supra note 42, ¶ 38.

⁹⁴ S.C. Res. 1929, U.N. Doc. S/RES/1929 (June 9, 2010), available at http://www.un. org/Docs/sc/.

⁹⁵ *Id*. ¶ 7.

⁹⁶ Id. ¶ 8.

⁹⁷ *Id*.

directed not to undertake any activity related to ballistic missiles capable of delivering nuclear weapons, including launches using ballistic missile technology. Unlike the limited travel restrictions imposed by UNSCR 1737, UNSCR 1929 imposed a strict travel ban on certain designated individuals, similar to the travel restrictions imposed by UNSCR 1718 on individuals responsible for the DPRK's nuclear and ballistic missile programs. States were also urged to exercise vigilance over transactions involving the Islamic Revolutionary Guard Corps that could contribute to Iran's proliferation-sensitive nuclear activities or the development of nuclear weapons. The Security Council imposed additional economic sanctions regarding banking and financial services. Descriptions of the development of nuclear weapons.

With regard to cargo inspections, UNSCR 1929 called upon all states to exercise port state jurisdiction by inspecting all cargo to and from Iran into its territory when it had reason to believe the cargo contained items prohibited by UNSCRs 1737, 1747, 1803 or 1929 in a manner consistent with international law and in accordance with their national authorities and legislation. 102 All states were also urged to, "request inspections of vessels on the high seas with the consent of the flag State" and to "cooperate in such inspections if there is information that provides reasonable grounds to believe the vessel is carrying items" prohibited by UNSCRs 1737, 1747, 1803 or 1929.¹⁰³ If states discovered prohibited items during an inspection, they were authorized to seize and dispose of the items. Bunkering services to Iranian-owned or contracted vessels were also prohibited similar to the restrictions imposed on DPRK ships under UNSCR 1874.¹⁰⁴ Unlike UNSCR 1874, however, UNSCR 1929 did not contain a "diversion" provision that would require a flag state that did not consent to an inspection on the high seas of one of its vessels to direct the vessel to proceed to an appropriate port for inspection.

D. Convention for the Suppression of Unlawful Acts (SUA Convention)

In October 1985, Palestinian terrorists hijacked the Italian cruise ship *Achille Lauro* off the coast of Egypt. The hijackers demanded the release of 50 Palestinian prisoners from Israel in exchange for the 400 passengers and crew on board the vessel. When their demands were not met, the terrorists killed Leon Klinghoffer, a 69-year-old American tourist with a disability, and threw his body over the side, along with his wheelchair. The hijackers ultimately surrendered to Egyptian authorities in exchange for a pledge of safe passage. While the Egyptian aircraft was en-route to Tunisia, however, it was intercepted by U.S. Navy fighters and forced to land in Sicily, where the terrorists were taken into cus-

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98 Id. ¶ 9.

99 Id. ¶ 10-12.

100 Id. ¶ 12.

101 Id. ¶ 23-24.

102 Id. ¶ 14.

103 Id. ¶ 15.

104 Id. ¶ 18.
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tody. 105 Concerned over this and other incidents affecting the safety of ships and the security of their passengers and crews, the International Maritime Organization (IMO) adopted the Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation and the Protocol for the Suppression of Unlawful Acts Against the Safety of Fixed Platforms Located on the Continental Shelf in March 1988 (the 1988 Convention and Protocol).

1. 1988 Convention and Protocol

The goal in adopting the 1988 Convention and Protocol was to ensure appropriate action was taken against persons who committed unlawful acts against ships and persons onboard. Acts prohibited under Article 3 of the Convention include:

- seizing or exercising control over a ship by force;
- acts of violence against a person on board a ship;
- destroying a ship or causing damage to the ship or its cargo;
- placing a device or substance on the ship that is likely to destroy the ship or cause damage to the ship or its cargo;
- destroying or damaging maritime navigational facilities or seriously interfering with their operation;
- communicating information which is known to be false that endangers the safe navigation of the ship; and
- injuring or killing any person in connection with the commission of any
 of the offenses.¹⁰⁶

Article 6 obligates States Parties to extradite or prosecute any alleged offenders.

2. 2005 Protocols

The 1988 Convention and Protocol were amended in 2005 following the terrorist attacks against the United States on 9-11. The 2005 Protocols, which entered into force in July 2010, add a number of new offenses directly related to terrorism and the proliferation of WMD. Both the 1988 Convention and the 2005 Protocol to the Convention should be read as a single, integrated treaty, which is called the 2005 SUA Convention. The same nomenclature applies to the treaty concerning fixed platforms on the continental shelf, which is referred to as the 2005 Protocol.

Under the 2005 SUA Convention, if the purpose of the act is to intimidate a population or compel a government or an international organization to do or abstain from any act, Article 3bis of the new Protocol prohibits:

¹⁰⁵ American killed as terrorists capture cruise ship — October 7, 1985, CNN Interactive Video Almanac (1985), http://www.cnn.com/resources/video.almanac/1985/index2.html.

¹⁰⁶ Convention for the Suppression of Unlawful Acts of Violence Against the Safety of Maritime Navigation, Center for Nonproliferation Studies (Mar. 10, 1988), http://www.nti.org/e_research/official_docs/inventory/pdfs/maritime.pdf.

- using against or on a ship or discharging from a ship any explosive, radioactive material or biological, chemical, nuclear (BCN) weapon in a manner that causes or is likely to cause death or serious injury or damage;
- discharging from a ship, oil, liquefied natural gas, or other hazardous or noxious substance, in such quantity or concentration that causes or is likely to cause death or serious injury or damage; or
- using a ship in a manner that causes death or serious injury or damage.¹⁰⁷

Article 3bis additionally prohibits transporting on board a ship:

- any explosive or radioactive material, knowing that it is intended to be used to cause, or in a threat to cause, death or serious injury or damage for the purpose of intimidating a population, or compelling a government or an international organization to do or to abstain from doing any act:
- any BCN weapon, knowing it to be a BCN weapon;
- any source material, special fissionable material, or equipment or material especially designed or prepared for the processing, use or production of special fissionable material, knowing that it is intended to be used in a nuclear explosive activity or in any other nuclear activity not under safeguards pursuant to an IAEA comprehensive safeguards agreement; and
- any equipment, materials or software or related technology that significantly contributes to the design, manufacture or delivery of a BCN weapon, with the intention that it will be used for such purpose.¹⁰⁸

A new Article 3ter prohibits the transportation of persons on board a ship knowing that the person has committed an act that constitutes an offense under the SUA Convention or any of the nine terrorism-related treaties listed in the Annex to the Protocol.¹⁰⁹ And Article 3quater makes it an offense to injure or

Convention for the Suppression of Unlawful Seizure of Aircraft, done at The Hague on 16 December 1970;

Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation, done at Montreal on 23 September 1971;

Convention on the Prevention and Punishment of Crimes against Internationally Protected Persons, including Diplomatic Agents, adopted by the General Assembly of the United Nations on 14 December 1973;

International Convention against the Taking of Hostages, adopted by the General Assembly of the United Nations on 17 December 1979;

Convention on the Physical Protection of Nuclear Material, done at Vienna on 26 October 1979;

Protocol for the Suppression of Unlawful Acts of Violence at Airports Serving International Civil Aviation, supplementary to the Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation, done at Montreal on 24 February 1988;

Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf, done at Rome on 10 March 1988;

¹⁰⁷ Id.

¹⁰⁸ *Id*.

¹⁰⁹ Id. The treaties listed in the Annex include:

kill any person in connection with the commission, or attempted commission, of any of the offenses in the Convention, as well as participating as an accomplice or contributing to the commission of an offense.¹¹⁰

Article 8bis of the Protocol includes a comprehensive framework to facilitate boarding of suspect vessels at sea.¹¹¹ This framework, although more robust, suffers from the same drawback as other international instruments and arrangements regarding the boarding of foreign flag vessels on the high seas—it is based on flag state consent. In this regard, if a boarding request is received by the flag state, it must:

- authorize the requesting party to board and take appropriate measures;
- conduct the boarding and search with its own officials;
- conduct the boarding and search with the requesting party; or
- decline to authorize the boarding and search. 112

It is highly unlikely that any state of proliferation concern, including Iran and the DPRK, would authorize a boarding by foreign officials.

E. Proliferation Security Initiative

In December 2002, President Bush unveiled a new, more robust strategy to combat WMD proliferation that went beyond the traditional methods of dealing with proliferation—diplomacy, arms control, threat reduction assistance and export controls—by placing greater emphasis on the need to interdict WMD and related materials. Five months later, President Bush announced the establishment of the Proliferation Security Initiative (PSI) in Krakow, Poland. He Support for the initiative has grown from its original eleven members to nearly a hundred countries, although the level of support varies from country to country. The Obama Administration has continued to voice its strong support for the initiative. The 2010 National Security Strategy emphasizes that the Administration will "work to turn programs such as the [PSI] and the Global Initiative to Combat Nuclear Terrorism into durable international efforts."

International Convention for the Suppression of Terrorist Bombings, adopted by the General Assembly of the United Nations on 15 December 1997;

International Convention for the Suppression of the Financing of Terrorism, adopted by the General Assembly of the United Nations on 9 December 1999.

- 110 Id.
- ¹¹¹ *Id*.
- 112 *Id*

¹¹³ See Bureau of Int'l Sec. and Nonproliferation [ISN], U.S. Dep't of State, National Strategy to Combat Weapons of Mass Destruction, 2 (2002), available at http://www.state.gov/documents/organization/16092.pdf; see also Mary Beth Nikitin, Cong. Research Serv., RL 34327, Proliferation Security Initiative (PSI), 1 (2011), available at http://www.fas.org/sgp/crs/nuke/RL 34327.pdf.

¹¹⁴ NIKITIN, supra note 113, at 1.

¹¹⁵ Proliferation Security Initiative Participants, ISN, U.S. Dep't of State (Sept. 10, 2010), http://www.state.gov/t/isn/c27732.htm; Nikitin, supra note 113, at 2.

¹¹⁶ See Exec. Office of the President, National Security Strategy, 24 (2010), available at http://www.whitehouse.gov/sites/default/files/rss_viewer/national_security_strategy.pdf; see also Re-

proliferation concern like the DPRK, Iran, Myanmar, and Syria have not signed on to the initiative, while some other notable countries¹¹⁷ have rejected PSI as contrary to international law. Unfortunately, many of the states that have not signed on to the PSI are strategically situated along the sea routes, which could significantly diminish the effectiveness of the interdiction regime envisioned by the initiative, in particular port state and coastal state interdiction efforts.

Recognizing that the spread of WMD, their delivery systems, and related materials represent a fundamental threat to global peace and security, PSI is designed to prevent trafficking in WMD and related materials to and from states and non-state actors of proliferation concern. PSI does not, however, create a new international organization with formal membership and a secretariat to run day-to-day operations. Rather, it is an operationally focused activity that relies on the voluntary participation of states with the common interest of curtailing the growing threat of WMD proliferation by air, land and sea. Moreover, PSI is not intended as a replacement for other nonproliferation mechanisms (e.g., SUA, UNSCRs, NPT, MTCR); rather, it is designed to reinforce and complement these mechanisms.¹¹⁸ Since 2003, PSI nations have conducted forty-five exercises aimed at enhancing counter-proliferation cooperation. 119

States that endorse PSI commit themselves to follow the PSI Statement of Interdiction Principles (SIP). These principles are designed to establish a more coordinated and effective basis through which to disrupt trafficking in WMD, their delivery systems, and related items in a manner consistent with national and international legal authorities and nonproliferation frameworks. In particular, the SIP encourage supporting states to commit to:

- undertake effective measures, either alone or in concert with other states, for interdicting the transfer or transport of WMD, their delivery systems, and related materials to and from states and non-state actors of proliferation concern;
- adopt streamlined procedures for rapid exchange of relevant information concerning suspected proliferation activity. . .dedicate appropriate resources and efforts to interdiction operations and capabilities, and maximize coordination among participants in interdiction efforts;
- review and work to strengthen their relevant national legal authorities where necessary to accomplish these objectives, and work to strengthen when necessary relevant international law and frameworks in appropriate ways to support these commitments; and
- take specific actions in support of interdiction efforts regarding cargoes of WMD, their delivery systems, or related materials, to the extent their

marks of President Barack Obama in Hradèany Square (Prague, Czech Republic, Apr. 5, 2009), available at http://prague.usembassy.gov/obama.html.

¹¹⁷ Brazil, China, Bangladesh, India, Indonesia, Malaysia, and Pakistan.

¹¹⁸ Proliferation Security Initiative Fact Sheet, ISN, U.S. DEP'T OF STATE, http://www.state.gov/t/isn/ c10390.htm (last visited Sept. 13, 2011).

¹¹⁹ Jeffrey Lewis and Philip Maxon, The Proliferation Security Initiative, 2 DISARMAMENT FORUM 35, 37 (2010), available at www.unidir.org/pdf/articles/pdf-art2962.pdf.

national legal authorities permit and consistent with their obligations under international law and frameworks. 120

Interdiction efforts contained in the SIP are based on the existing legal principles of port state control, coastal state jurisdiction and exclusive flag state jurisdiction, including the duties:

- not to transport or assist in the transport of MWD-related cargoes to or from states or non-state actors of proliferation concern, and not to allow any persons subject to their jurisdiction to do so;
- to take action to board and search any vessel flying their flag in their internal waters or territorial seas, or areas beyond the territorial seas of any other state, that is reasonably suspected of transporting such WMD-related cargoes, and to seize such cargoes that are identified at their own initiative or at the request by another state;
- to seriously consider providing consent to other states to board and search its flag vessels, and to seize WMD-related cargoes in such vessels:
- to take appropriate actions to stop and/or search in their internal waters, territorial seas, or contiguous zones vessels that are reasonably suspected of carrying WMD-related cargoes and to seize such cargoes;
- to take appropriate actions to enforce conditions on vessels entering or leaving their ports, internal waters or territorial seas, such as requiring vessels to be subject to boarding and search prior to entry;
- to (a) require aircraft that are reasonably suspected of carrying MWD-related cargoes and that are transiting their airspace to land for inspection and seize any such cargoes that are identified; and/or (b) deny aircraft reasonably suspected of carrying such cargoes transit rights through their airspace in advance of such flights at their own initiative or upon the request by another state; and
- to inspect vessels, aircraft, or other modes of transport reasonably suspected of carrying such cargoes, and to seize such cargoes that are identified if their ports, airfields, or other facilities are used as transshipment points for shipment of WMD-related cargoes.¹²¹

Consistent with UNSCR 1540 and the 2005 SUA Convention, PSI encourages states to enter into bilateral agreements or operational arrangements to enhance cooperation and facilitate authorized ship boardings by participating flag states. In this regard, the United States has entered into a number of bilateral boarding agreements with key flag states, including the major flags of convenience, to allow for boarding and inspection of suspect ships seaward of the territorial sea of other nations. Under these agreements, if a vessel registered in the U.S. or the partner country is suspected of carrying WMD-related cargo, either party can request the other to confirm the nationality of the ship and authorize the board-

¹²⁰ Proliferation Security Initiative: Statement of Interdiction Principles, ISN, U.S. Dep't of State (2003), http://www.state.gov/t/isn/c27726.htm.

¹²¹ *Id*.

ing, search, and detention of the vessel and its cargo. The boarding provisions vary from agreement to agreement, from flag state consent being required under all circumstances (*i.e.*, Bahamas and Croatia), to boarding authority being presumed if the flag state does not respond within a certain timeframe (*i.e.*, Belize, Liberia, Marshall Islands, Mongolia and Panama), to authority to board within a certain period of time if registry cannot be confirmed (*i.e.*, Cyprus, Liberia, Malta, Marshall Islands, Mongolia, and Panama). To date, the United States has concluded ten such agreements with the Bahamas, Belize, Croatia, Cyprus, Liberia, Malta, Mongolia, Panama, Marshall Islands, Mongolia, and St. Vincent and the Grenadines.¹²² These countries account for over sixty percent of the world's shipping in terms of deadweight tonnage.¹²³

While there have been alleged successes along the way (*e.g.*, interdiction of the *BBC China* in October 2003¹²⁴ and an Ilyushin cargo plane by Thai authorities in 2009¹²⁵) PSI suffers from the same defect as other counter-proliferation regimes and initiatives: it is based on flag state consent. As a result, states of proliferation concern and key states that have refused to participate in the initiative (e.g., Brazil, China, India, Indonesia, Malaysia, and Pakistan) can operate their ships and aircraft on the high seas or disregard their port state and coastal state responsibilities with impunity.

III. Are U.N. Sanctions Effective?

Despite years of economic sanctions and arms embargoes, both the DPRK and Iran appear unwilling to abandon their nuclear weapons and ballistic missile programs. Not only have they disregarded their obligations under the NPT, their respective IAEA Safeguard Agreements, and numerous UNSCRs; but also neither the DPRK nor Iran participate in any of the relevant counter-proliferation initiatives established to curtail the spread of MWD and ballistic missile technol-

¹²² Ship Boarding Agreements Fact Sheet, ISN, U.S. DEP'T OF STATE (2011), http://www.state.gov/t/isn/c27733.htm.

¹²³ Flags of Convenience Countries, Int'l Transport Workers' Federation, http://www.itfglobal.org/flags-convenience/flags-convenience-183.cfm (last visited Sept. 27, 2011); The Geography of Transport Systems: Tonnage by Country of Registry, 2006, Hofstra University, http://people.hofstra.edu/geotrans/eng/ch3en/conc3en/registships.html (last visited Sept. 27, 2011).

¹²⁴ Lewis and Maxon, *supra* note 119. The *BBC China* was a German-owned ship en route to Libya with centrifuge components. At the request of Washington and Berlin, the ship owner directed the ship to proceed to Taranto, where Italian officials inspected the vessel and seized the cargo.

¹²⁵ See Crew of NKorean Weapons Plane in Thai Court, Worldnews, Dec. 14, 2009, http://article.wn.com/view/2009/12/14/Crew_of_NKorean_weapons_plane_in_Thai_court_l/; see also South Korea Seizes Iran-Bound Nuclear Material, Iran Watch (Dec. 2010), http://www.iranwatch.org/enforcementnotebook/enforcement-newsummaries.htm (last visited September 27, 2011). In December 2009, Thai authorities seized a Georgian-registered plane and its cargo when it landed at Don Muang airport in Bangkok to refuel. The inspection of the aircraft by Thai authorities revealed 35 tons of explosives, rocket-propelled grenades and surface-to-surface missile components in violation of the U.N. arms embargo against the DPRK.

ogy. 126 Nor have the two emerging nuclear-armed powers filed the reports required by UNSCRs 1540 and 1673. 127

Most experts would agree with former IAEA Director General Mohamed ElBaradei that the DPRK has become a "fully-fledged nuclear power." Having conducted successful nuclear tests in 2006 and 2009, the Arms Control Agency now estimates that the DPRK has separated enough plutonium for up to twelve nuclear warheads.¹²⁹ There are also reports that the DPRK may be planning a third nuclear test in early 2011.¹³⁰ Moreover, in November 2010, the DPRK announced that it could produce uranium hexafluoride (a raw material for uranium enrichment) and had constructed a uranium-enrichment plant at Yongbyon that could be easily converted to produce highly enriched uranium for weapons.¹³¹ U.S. officials have indicated that the DPRK has "at least one other" uranium-enrichment facility apart from the Yongbyon plant.¹³² When fully operational, the Arms Control Agency estimates that the new plant could produce enough material for one to two bombs each year.¹³³ The DPRK also has an active ballistic missile program and is in the process of developing intercontinental ballistic missiles, which pose a direct threat to the United States. 134 In addition, the DPRK remains a major exporter of ballistic missile technology to the Middle East, South Asia and North Africa. 135

Iran continues to insist that it does not have nuclear weapons ambitions and that its peaceful nuclear efforts are purely for energy production and medical research, but it remains defiant of Security Council and IAEA demands for transparency. In late-January 2011, nuclear talks between Iran and the P5+1 (Britain, China, France, Russia, the United States and Germany) collapsed after Iran re-

¹²⁶ Relevant counter-proliferation initiatives include: the Australia Group, Missile Technology Control Regime, Nuclear Suppliers Group, Wassenaar Arrangement, Global Initiative to Combat Nuclear Terrorism, Hague Code of Conduct against Ballistic Missile Proliferation and the PSI.

¹²⁷ Arms Control and Proliferation Profile: North Korea, ARMS CONTROL ASS'N, http://www.armscontrol.org (last visited Sept. 27, 2011) [hereinafter Arms Control: North Korea]; Arms Control and Proliferation Profile: Iran, ARMS CONTROL ASS'N, http://www.armscontrol.org (last visited Sept. 27, 2011) [hereinafter Arms Control: Iran].

¹²⁸ Malcolm Moore, *North Korea now fully fledged nuclear power*, The Telegraph, Apr. 24, 2009, http://www.telegraph.co.uk/news/worldnews/asia/northkorea/5212630/North-Korea-now-fully-fledged-nuclear-power.html.

¹²⁹ Arms Control: North Korea, supra note 127.

¹³⁰ Yu Miao, *Third Nuke Test Feared*, GLOBAL TIMES, Dec. 16, 2010, http://world.globaltimes.cn/asia-pacific/2010-12/602003.html.

¹³¹ Arms Control: North Korea, supra note 127.

¹³² Miao, supra note 130.

¹³³ Arms Control: North Korea, supra note 127.

¹³⁴ See Anne Gearan, Pentagon chief huddles with allies about NKorea, Fox News, Jan. 13, 2011, http://www.foxnews.com/world/2011/01/12/pentagon-chief-huddles-allies-nkorea/; see also Elisabeth Bumiller and David Sanger, Gates Warns of North Korea Missile Threat to US, N.Y. Times, Jan. 11, 2011, http://www.nytimes.com/2011/01/12/world/asia/12military.html?_r=1&nl=todaysheadlines&emc=tha24.

¹³⁵ Arms Control: North Korea, supra note 127.

fused to allow increased IAEA scrutiny of its nuclear program.¹³⁶ Ali Asghar Soltaneih, Iran's representative to the IAEA, stated, "resolutions, sanctions, threats, computer virus [sic] or even a military attack will not stop uranium enrichment in Iran."137 This statement is consistent with Iranian practices to date. Secret nuclear facilities—a heavy-water production plant near Arak (that could be used to produce plutonium) and a gas centrifuge uranium-enrichment facility near Natanz (that could be used to produce fissile materials for weapons)—were discovered by the IAEA in 2002. A number of additional clandestine nuclear activities have been discovered since that time, including a secret facility near Qom.¹³⁸ Uranium extracted from a mine in southern Iran, near Bandar Abbas, and considerable amounts of yellowcake (uranium concentrate) acquired from South Africa in the 1970s and from China before U.N. sanctions were imposed could be used to offset U.N. sanctions that ban Iran from importing nuclear material. 139 Additionally, Iran continues to develop and refine its ballistic missile forces, one of the largest in the Middle East. 140 Reported ranges for these missiles vary from 1,000 to 2,000 kilometers. Missiles of this range could be used to attack targets in Israel.141

IV. Conclusion: Shortcomings And The Way Forward

Although the NPT has been widely accepted and offers a framework for preventing the spread of nuclear weapons and related materials, it lacks the necessary "teeth" to keep rogue nations in line. Moreover, the IAEA, the Security Council and the international community have been reluctant to use all available measures to enforce its provisions. As a result, a regime that envisioned a world with only five nuclear weapons states is now faced with the realization that India, Israel, Pakistan and the DPRK possess nuclear weapons in flagrant disregard of the NPT structure, and Iran could have enough enriched uranium to produce nuclear weapons as early as 2011, though most analysts believe that 2015 is a more realistic date. Israel, who has the most to lose from a nuclear-armed Iran, estimates that the Islamic Republic will not be able to produce a nuclear weapon until the latter date. But the British Defense Secretary told Parliament in Janu-

¹³⁶ EU lawmakers seek to extend Iran sanctions, GOOGLE NEWS, Jan. 25, 2011, http://www.google.com/hostednews/afp/article/ALeqM5hU6LHfXFn-HXyKK8CrSlLxCEZAQw?docId=CNG.148a6c3820 24ebbebe64021de441dac9.5b1.

¹³⁷ George Jahn, *Iran sees progress at talks, others demur*, Washington Examiner, Jan. 21, 2011, http://washingtonexaminer.com/news/world/2011/01/iran-and-6-powers-begin-nuke-talks.

¹³⁸ Arms Control: Iran, supra note 127.

¹³⁹ Iran says key site has higher uranium ore reserves, Fox News, Oct. 19, 2010, http://www.foxnews.com/world/2010/10/19/iran-says-key-site-higher-uranium-ore-reserves/.

¹⁴⁰ Arms Control: Iran, supra note 127.

¹⁴¹ *Id*

 $^{^{142}}$ National Intelligence Council, Iran: Nuclear Intentions and Capabilities (Nov. 2007), available at http://www.dni.gov/press_releases/20071203_release.pdf.

¹⁴³ Adrian Croft and Janet Lawrence, *Iran could have nuclear weapons by 2012: Britain*, Reuters, Jan. 31, 2011, www.reuters.com/article/2011/01/31/us-iran-nuclear-britain-idUSTRE70 U5SV20110131.

ary 2011 that Iran could produce such weapons as early as 2012.¹⁴⁴ This new British assessment appears to be in line with a soon-to-be-released study by the Federation of American Scientists that indicates that Iran is not slowing down its nuclear ambitions and could produce a simple nuclear warhead by mid-2011.¹⁴⁵ Furthermore, Iran remains openly defiant of U.N. sanctions and IAEA inspectors as Iran's envoy to the IAEA indicated while speaking on Iranian state TV, that U.N. sanctions and continued threats by the international community will not stop Iran's uranium enrichment program.¹⁴⁶ Additionally, Iranian officials have accused the Western powers of "nuclear terrorism," blaming Israel and the United States for the assassination of one of Iran's leading nuclear scientists, Majid Shahriariwas.¹⁴⁷

U.N. sanctions have been ineffective in preventing the development of nuclear weapons by the DPRK. Yet, sanctions imposed on Iran have followed the exact same stepped-approach model and have, in some cases, been less stringent than those imposed on the DPRK. More importantly, where DPRK sanctions focused on, inter alia, "luxury goods" to encourage North Korean leaders to return to the NPT and abandon their nuclear weapons program, U.N. sanctions on Iran fail to limit Iran's oil exports. Loss of oil revenues would cripple Iran's economy and would undoubtedly have a lasting, detrimental effect on Tehran's nuclear ambitions. While many might argue that such a measure would adversely affect the world economy, oil prices would also skyrocket if a nuclear-armed Iran would attack Israel or one of its neighbors. Thus, there are two options: either deal with the rise of oil prices now with a non-nuclear Iran, or wait to deal with the inevitable rise in oil prices a few years after Iran acquires and uses nuclear weapons. Clearly, dealing directly and harshly with a non-nuclear Iran now is the preferred option, a fact recognized by Spain's Member of the European Parliament, Alejo Vidal-Quadras, who indicated that the current "soft" approach being used by the Western powers to deal with Iran has proven futile. 148

Similarly, all of the maritime interdiction regimes attempted to date, including UNSCRs, SUA, and PSI, have failed to prevent rogue states from transporting WMD-related material by sea. All of these regimes suffer from the same fatal defect—they are based on exclusive flag state jurisdiction on the high seas. One would expect a responsible state to consent to a boarding of one of its flag vessels on the high seas if there is reasonable grounds to believe that the ship is transporting prohibited goods. But in most cases, ships registered in responsible states will not be used by states of proliferation concern to transport WMD-related material. Rather, states of concern will use their own flag vessels to transport material to support their nuclear and ballistic missile programs. If a request

¹⁴⁴ Id.

¹⁴⁵ Ali Akbar Dareini and George Jahn, *Iran's nuke program - how much time for diplomacy?*, MSNBC News, Jan. 20, 2011, http://www.msnbc.msn.com/id/41176786/ns/world_news-mideastn_africa/#.

¹⁴⁶ Jahn, supra note 137.

¹⁴⁷ Iran accuses West of 'nuclear terrorism', Fox News, Jan. 25, 2011, http://www.foxnews.com/world/2011/01/25/iran-accuses-west-nuclear-terrorism/.

¹⁴⁸ EU lawmakers seek to extend Iran sanctions, supra note 136.

were made to board one of these vessels, the answer would undoubtedly be "no." The only way to get on board one of these suspect vessels to inspect its cargo would be through a nonconsensual boarding.

Speaking on the issue of nonproliferation, Admiral Robert Willard, Commander U.S. Pacific Command, recently asked: "how do you leverage with a regime [like the DPRK] that does not care how it is viewed by the rest of the world, and does not care how it treats its own people." The same observation could be made regarding Iran's sensitivity to world opinion. The answer is simple - the international community must adopt a more forceful and effective approach rather than the contemporary "sanction and diplomacy" approach. Because of decades of dithering, the world faces the prospect that armed force alone may be the only effective recourse.

The only two effective U.N. sanction regimes in recent memory were the sanctions imposed on Iraq and Former Republic of Yugoslavia (FRY). These sanctions were effective because the Security Council authorized the use of all necessary means, including the use of force and nonconsensual boardings, to interdict all shipping entering or departing Iraqi and FRY ports. Iraq, for example, was subjected to a total embargo (except medical and humanitarian food stuffs) and severe economic sanctions for over a decade. 150 UNSCR 665 authorized a maritime blockade of Iraq, including the use of such "measures commensurate to the. . .circumstances as may be necessary . . . to halt all inward and outward maritime shipping, in order to inspect and verify their cargoes and destinations and to ensure strict implementation of the provisions related to such shipping laid down in resolution 661 (1990)."151 These sanctions, coupled with the maritime blockade and U.S.-led invasion of Iraq authorized by UNSCR 1441 in 2003, put an end to Saddam Hussein's nuclear ambitions once and for all. 152 Similar measures were adopted by the Security Council with regard to the FRY in UNSCRs 713 (1990), 724 (1990), 757 (1992), 787 (1992), 820 (1993), 942 (1994), 943 (1994), and 1015 (1995). 153

Absent more effective sanctions enforcement and authority for nonconsensual boardings, Israel will once again have to intervene, as it did in 1981 and 2007, to ensure that nuclear weapons do not fall into the hands of erratic Middle Eastern states. On June 7, 1981, Israeli aircraft destroyed the Iraqi nuclear reactor under construction in Osirak, Iraq. Two decades later, on September 6, 2007, Israeli

¹⁴⁹ RSN Singh, *India and the US-China Great Game*, 25.4 INDIAN DEF. REV. (Dec. 20, 2010), *available at* http://www.indiandefencereview.com/geopolitics/India-and-the-US-China-Great-Game.html.

¹⁵⁰ S.C. Res. 661, ¶ 3, U.N. Doc. S/RES/661 (Aug. 6, 1990), available at http://www.un. org/docs/sc/.

¹⁵¹ S.C. Res. 665, U.N. Doc. S/RES/665 (Aug. 25, 1990), available at http://www.un. org/docs/sc/.

¹⁵² S.C. Res. 1441, U.N. Doc. S/RES/1441 (Nov. 8, 2002), available at http://www.un. org/docs/sc/.

¹⁵³ S.C.Res. 713, ¶ 6, U.N.Doc. S/RES/713 (Sept. 25, 1991); S.C.Res. 724, ¶ 5 U.N.Doc.S/RES/724 (Dec. 15, 1991), S.C.Res. 757, ¶ 4, U.N.Doc.S/RES/757 (May 30, 1992); S.C.Res. 787, ¶¶ 11-12, U.N.Doc.S/RES/787 (Nov. 16, 1992); S.C.Res. 820, ¶ 13, U.N.Doc.S/RES/820 (Apr. 17, 1993); S.C.Res. 942, ¶ 7, U.N.Doc.S/RES/942, (Sep.23,1994); S.C.Res. 943, ¶ 1, U.N.Doc.S/RES/943 (Sep. 23, 1994); S.C.Res. 1015, U.N.Doc.S/RES/1015 (Sep. 15, 1995), available at http://www.un.org/Docs/sc/.

¹⁵⁴ Operation Opera, Absolute Astronomy, http://www.absoluteastronomy.com/topics/Operation_Opera (last visited Oct. 3, 2011).

aircraft destroyed a possible undeclared nuclear reactor in the Deir ez-Zor region of Syria.¹⁵⁵ Although condemned by many nations, these operations effectively prevented Iraq and Syria from advancing their respective nuclear weapons programs. Alternatively, although no nation has claimed responsibility or has been blamed for deploying the virus, continued cyber attacks like the Stuxnet malware virus can also be used to significantly damage and delay Iran's enrichment program. Iran has acknowledged that Stuxnet disrupted uranium enrichment at Natanz in November 2010 by crippling thousands of centrifuges.¹⁵⁶

Failure to fix the flaws in the current enforcement regime could result in a worldwide nuclear disaster. Members of the UNSC and bilateral partners must recognize that deterrence should be preferred option to the use of force, but the use of force through nonconsensual enforcement authority, cyber-solutions, or surgical strikes would be preferable to nuclear strikes by erratic nations who refuse to respect existing UNSCRs and international law.

¹⁵⁵ Operation Orchard, Absolute Astronomy, http://www.absoluteastronomy.com/topics/Operation_Orchard (last visited Oct. 3, 2011).

¹⁵⁶ Dareini and Jahn, *supra* note 145; William Broad, John Markoff, and David Sanger, *Israeli Test on Worm Called Crucial in Iran Nuclear Delay*, N.Y. Times, Jan. 15, 2011, http://www.nytimes.com/2011/01/16/world/middleeast/16stuxnet.html; Ed Barnes, *Mystery Surrounds Cyber Missile That Crippled Iran's Nuclear Weapons Ambitions*, Fox News, Nov. 26, 2010, http://www.foxnews.com/scitech/2010/11/26/secret-agent-crippled-irans-nuclear-ambitions/; Ken Dilanian, *Iran's nuclear program and a new era of cyber war*, L.A. Times, Jan. 17, 2011, http://articles.latimes.com/2011/jan/17/world/la-fg-iran-cyber-war-20110117.