



NATIONAL INSTITUTE FOR PUBLIC POLICY

Section II. Minimum Deterrence: Fragile Hope of a Constant and Benign Threat Environment

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Section II: Minimum Deterrence: Fragile Hope of a Constant and Benign Threat Environment

Introduction

The Minimum Deterrence narrative generally dismisses or is silent about the potential for serious threats pertinent to nuclear deterrence, now or in the future, from the Russian Federation, the People's Republic of China, Iran or North Korea. Minimum Deterrence proponents often simply observe that the Cold War is over and largely ignore or dismiss the potential threats posed by the nuclear programs and apparent doctrinal developments in Russia, China, North Korea and Iran.¹

Similarly, in Minimum Deterrence proposals, Russian tactical nuclear weapons are typically discussed only as a negotiating problem, not a military threat capable of negating U.S. conventional capabilities.² To the extent that Minimum Deterrence proponents identify the possibility of a threat to the U.S. and our allies, they generally claim that it can be dealt with by U.S. conventional superiority.

For example, the Global Zero Commission report states that strong U.S. conventional forces and missile defenses “may offer a far superior option” over U.S. nuclear forces for deterring and defeating a regional aggressor.³

Even after the provocative Chinese actions of 2013 in the East and South China Seas and the Russian invasion and annexation of the Crimea, the April 2014 report of the Deep Cuts Commission, a trilateral German-U.S.-Russian disarmament group, did not discuss Russian and Chinese nuclear modernization programs or doctrine, or discuss the possible threats emanating

¹ The report of the International Commission on Nuclear Nonproliferation and Disarmament is a partial exception to this rule, but at best it provides very limited information about Russian and Chinese nuclear developments and doctrine. Gareth Evans and Yoriko Kawaguchi, *Eliminating Nuclear Threats* (Canberra, Australia: The International Commission on Nuclear Nonproliferation and Disarmament, 2009), pp. 20-24, 30, 36.

² Deep Cuts Commission, *Preparing for Deep Cuts: Options for Enhancing Euro-Atlantic and International Security* (Hamburg, Germany: The Deep Cuts Commission, April 2014), pp. 2, 4, 5; James Cartwright, et al., *Global Zero U.S. Nuclear Policy Commission Report: Modernizing U.S. Nuclear Strategy, Force Structure and Posture* (Washington, D.C.: Global Zero, May 2012), p. 16, available at http://www.globalzero.org/files/gz_us_nuclear_policy_commission_report.pdf.

³ Cartwright, et al., *Global Zero*, op. cit., p. 2.

from these countries.⁴ Reports of Russian “flight-tests of ground-based cruise missiles at ranges prohibited by the Intermediate-Range Nuclear Forces (INF) Treaty” were not discussed even as a potential threat, but rather as a factor complicating the negotiation of more arms control agreements.⁵

The *Global Zero* report asserts that Russia and China are not enemies of the U.S. and further that the risk of nuclear confrontation between the U.S. and either Russia or China “belongs to the past, not the future...”⁶ The report claims that there is no threat from Russia on the basis of a survey of several hundred experts conducted by the Council on Foreign Relations in which Russia was not identified in their top 20 concerns.⁷ And, the Stimson Center’s recent Minimum Deterrence report states the required number of U.S. nuclear weapons could be reduced if we based our deterrent requirements on “current Russian economic and military capabilities, [and] on the nature of Russian society,” which is deemed to pose no threat.⁸

The Cato Institute’s Minimum Deterrence report (funded by the Ploughshares Fund, a well-known nuclear disarmament advocacy organization) devotes most of its pages to arguing that there was not a serious threat from the Soviet Union during the Cold War and that Soviet leaders were mainly deterred by conventional forces.⁹ Furthermore, it asserts that Russian early warning capability and force readiness have declined to the point that the U.S. has obtained a disarming first-strike capability.¹⁰ Deterrence requirements are assessed under the Cold War concept commonly referred to as Mutual Assured Destruction (MAD) and, as such, there is no need for U.S. counterforce targeting capabilities or for the Triad.¹¹

⁴ Deep Cuts Commission, *Preparing for Deep Cuts*, op. cit.

⁵ Ibid., p. 7.

⁶ Cartwright, et al., *Global Zero*, op. cit., pp. 5-6.

⁷ Ibid., pp. 2-3.

⁸ Stimson Center, *A New US Defense Strategy for a New Era: Military Superiority, Agility, and Efficiency* (Washington, D.C.: Stimson Center, November 2012), p. 29, available at http://www.stimson.org/images/uploads/researchpdfs/A_New_US_Defense_Strategy_for_a_New_Era.pdf.

⁹ Benjamin Friedman, Christopher Preble and Matt Fay, *The End of Overkill* (Washington, D.C.: The Cato Institute, 2013), pp. 6-8, available at http://object.cato.org/sites/cato.org/files/pubs/pdf/the_end_of_overkill_wp_web.pdf.

¹⁰ Ibid., p. 15.

¹¹ Ibid., p. 14.

Similarly, in a Minimum Deterrence proposal published in the Air Force journal, *Strategic Studies Quarterly*, James Wood Forsyth Jr. (Professor of National Security Studies, USAF School of Advanced Air and Space Studies, Maxwell AFB, Alabama), B. Chance Saltzman (Chief, Strategic Plans and Policy Division, Headquarters Air Force), and Gary Schaub Jr., (Assistant Professor in the Leadership and Strategy Department, Air War College), advocate for a deterrent based on about 300 weapons. They assert that nuclear parity with Russia is unnecessary because a Russian counterforce attack would leave Russian cities at risk and, thus, Russia would be deterred from undertaking the first move.¹²

The Carnegie Endowment for International Peace Minimum Deterrence report written by George Perkovich asserts, “Large-scale aggression is not a realistic challenge to today’s nuclear-armed states and NATO.”¹³

According to the Arms Control Association’s report by Sidney D. Drell and James E. Goodby, the Cold War confrontation and Mutual Assured Destruction have been replaced by a U.S.-Russian relationship of cooperation against the new threats, terrorism and non-proliferation.¹⁴ James E. Doyle (Los Alamos National Laboratory) makes a similar argument. He states that since Russia is not presumed to be a potential adversary, the fundamental features of the US nuclear force structure make little sense.¹⁵ In summary, Minimum Deterrence advocates claim that present and future U.S. relations with Russia will be sufficiently benign that nuclear weapons will be irrelevant.

With regard to China, the reports discussed above largely ignore or even deny a threat and generally provide no detail about Chinese nuclear programs or doctrine. The *Global Zero* report

¹² James Wood Forsyth Jr., B. Chance Saltzman, and Gary Schaub Jr., “Remembrance of Things Past: The Enduring Value of Nuclear Weapons,” *Strategic Studies Quarterly*, Vol. 4, No. 1 (Spring 2010), pp. 82-83.

¹³ George Perkovich “The Diminishing Utility and Justice of Nuclear Deterrence,” in Bruno Tertrais (director), *Thinking About Strategy: A Tribute to Sir Michael Quinlan* (Paris: L’Harmattan, 2011), p. 109.

¹⁴ Sidney D. Drell and James E. Goodby, *What are Nuclear Weapons for? Recommendations for Restructuring U.S. Strategic Nuclear Forces* (Washington, D.C.: Arms Control Association, October 2007), p. v, available at http://www.armscontrol.org/pdf/20071104_Drell_Goodby_07_new.pdf.

¹⁵ James E. Doyle, “Why Eliminate Nuclear Weapons?,” *Survival: Global Politics and Strategy*, Vol. 55, No. 1 (February 2013), pp. 20-21.

acknowledges that China “technically” represents an “existential” threat to the United States, but dismisses it with the assertion that large-scale conflict with the U.S. is “implausible.”¹⁶

The Federation of American Scientists’ Minimum Deterrence report says that the Chinese nuclear capability is growing but attributes this to Beijing’s concern about U.S. counterforce capability, not to assertive Chinese foreign policy goals that could threaten the United States or allies.¹⁷ Minimum Deterrence advocates generally do not relate Chinese nuclear programs to the Chinese anti-access (“Active Defense”) strategy, but rather to U.S. nuclear or missile defense programs.¹⁸

Regarding North Korea and Iran, Minimum Deterrence advocates also dismiss any serious threat that would affect the composition of the U.S. nuclear force. The *Global Zero* report rejects the need for “outsized arsenals” to deter North Korea because it has only a “handful of primitive nuclear devices.”¹⁹ Without elaboration or methodology it allocates 40 warheads against each of the “rogue” states for deterrence purposes and asserts that the threat from them can otherwise be dealt with by U.S. conventional forces.²⁰ The approach in the Cato Institute report is essentially the same. Neither report identifies a need to maintain U.S. ICBMs, reduce damage to the United States and allies in the event deterrence fails, or limit collateral damage from U.S. offensive responses to North Korean or Iranian nuclear use.

Indeed, the Cato Institute report would leave the United States with no weapon in its nuclear arsenal with a yield under 100-kt.²¹ Other Minimum Deterrence proposals, including the

¹⁶ Cartwright, et al., *Global Zero*, op. cit., p. 10.

¹⁷ Hans M. Kristensen, Robert S. Norris, and Ivan Oelrich, *From Counterforce to Minimal Deterrence: A New Nuclear Policy on the Path Toward Eliminating Nuclear Weapons* (Washington, D.C.: Federation of American Scientists, April 2009), p. 2, available at [http://www.fas.org/pubs/_docs/occasional paper7.pdf](http://www.fas.org/pubs/_docs/occasional%20paper7.pdf).

¹⁸ Andrew Futter and Benjamin Zala, “Advanced US Conventional Weapons and Nuclear Disarmament,” *The Nonproliferation Review*, Vol. 20, No. 1 (February 2013), p. 113; and Hui Zhang, “China’s Perspective on a Nuclear Free World,” *Washington Quarterly*, Vol. 33, No. 2 (April 2010), p. 150.

¹⁹ Cartwright, et al., *Global Zero*, op. cit., p. 2.

²⁰ Ibid., pp. 2, 9-10.

²¹ Friedman, Preble and Fay, *The End of Overkill*, op. cit., p. 14.

presentation by Jeff Richardson (Los Alamos National Laboratory),²² and the Minimum Deterrence report of the Federation of American Scientists fail to mention North Korea or Iran. The Arms Control Association report says simply that nuclear weapons are nearly irrelevant to any possible threat from North Korea or Iran.²³

In short, the contemporary Minimum Deterrence narrative suggests a near-unanimous consensus that there is no serious threat relevant to nuclear deterrence from Russia, China, North Korea or Iran, now or in the future. Suggesting otherwise often is dismissed as outdated Cold War sloganeering.

Minimum Deterrence Threat Denial and Minimum Deterrence Policy Recommendations

The Minimum Deterrence prediction of a relatively benign threat environment for the foreseeable future is the basis for much of the argument for deep U.S. nuclear reductions. Since there is no serious threat, the U.S. no longer requires large numbers of nuclear weapons; indeed, the common call is for very deep reductions in U.S. nuclear weapons numbers and almost all proposals urge the elimination of one or two legs of the Triad. Additionally, the Minimum Deterrence literature argues that the U.S. should end its reliance on “Cold War” (used pejoratively) deterrence concepts, a development which proponents see as demanding deep reductions in nuclear weapons. Since the Cold War is over, concludes the Arms Control Association report, deterrence “could be achieved at far lower levels than currently planned by the United States for a wholly different era and set of security challenges.”²⁴

The *Global Zero* report argues, “Current U.S. nuclear policy focuses too narrowly on threats rooted in Cold War thinking, incurring excessive costs to prepare for an implausible contingency of nuclear war with Russia when there is no conceivable circumstance in which either country’s interest would be served by deliberately initiating such a conflict.”²⁵ The Federation of American

²² Jeff Richardson, “Shifting from a Nuclear Triad to a Nuclear Dyad,” *Bulletin of the Atomic Scientists*, Vol. 65, No. 5 (September 2009), p. 9.

²³ Drell and Goodby, *What are Nuclear Weapons for?*, op. cit., p. 7.

²⁴ *Ibid.*, p. 2.

²⁵ Cartwright, et al., *Global Zero*, op. cit., p. 20.

Scientists' Minimum Deterrence report argues that U.S. nuclear forces and mission planning are “unjustifiably” held over from the Cold War and, thus, we must “take clear steps away from Cold War planning assumptions toward the elimination of nuclear weapons.”²⁶ Indeed, the Deep Cuts Commission report, published *after* the Russian invasion and annexation of the Crimea, treats this not as a security threat, but rather as an action that will “severely complicate near-term efforts to address weapons-related security concerns affecting Russia, the United States, and Europe.”²⁷

In short, the presumption of a benign national security environment is central to the Minimum Deterrence recommendations for deep reduction in U.S. nuclear forces. The Minimum Deterrence advocacy literature does not take a serious look at the intentions or capabilities of potential adversaries and to a large extent dismisses threats to the United States and allies that have developed or may develop from Russia, China, North Korea and Iran--and possibly from other states. This is particularly striking in the case of Russia which is openly engaged in an impressive modernization of its strategic and theater nuclear offensive and missile defense programs, has announced its intent to expand the number of its weapons and delivery systems, has a military doctrine which allows for the first use of nuclear weapons in limited warfare, appears to reject consideration of new arms control measures on its theater nuclear arms, and is in violation of existing pertinent arms control measures.²⁸

The increased tensions in international relations already apparent in the wake of Russian actions in Ukraine and Chinese actions in the South and East China Seas cast serious doubt on the credibility of the constant, benign future asserted by Minimum Deterrence proponents as the basis for their recommendations. These developments suggest that the United States and allies could face acute crises with multiple opponents, including the possibility of nuclear crises. Moreover, there is also the possibility that other surprising threats will develop. Thus, one of the

²⁶ Kristensen, Norris and Oelrich, *From Counter Force to Minimal Deterrence*, op. cit., pp. 1, 8.

²⁷ Deep Cuts Commission, *Preparing for Deep Cuts*, op. cit., p. 7.

²⁸ U.S. State Department, *Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments* (Washington, D.C.: State Department, July 2014), available at <http://www.state.gov/documents/organization/230108.pdf>.

most basic presumptions of Minimum Deterrence advocacy literature—a relatively benign security environment—appears to be highly questionable.

Denial of a serious nuclear threat from Russia or China combined with the denial of the significance of the emerging nuclear threats from North Korea and Iran enables Minimum Deterrence proponents to frame the question of deterrence requirements in a context that suggests very limited requirements, but is itself speculative and highly questionable. This benign framework enables a similar approach to the question of requirements in case, as the 2014 Quadrennial Defense Review puts it, there is a need to “defeat or counter aggression if deterrence fails.”²⁹

A consequence of this presumption of a relatively benign threat environment, and corresponding call for large cuts in the U.S. nuclear deterrent and elimination of one or more legs of the Triad, would be a shift in the nuclear balance toward Russia and China. Minimum deterrence proponent Jeff Richardson explicitly argues that the United States should pursue deep reductions so as to “lead by example,”³⁰ even if the consequence is Russian nuclear “superiority and Chinese parity.” He acknowledges no risk to the United States doing so.

Most Minimum Deterrence proponents are not as candid as this, but this outcome is the general implication of their policy proposals. If Russia were to retain its current number of nuclear warheads (it actually has announced an intent to increase them) and if the U.S. were to reduce its nuclear arsenal to 500 or fewer warheads as advocated in many Minimum Deterrence proposals, the numerical disparity in nuclear capability could be as dramatic as approximately four-to-one (in Russia’s favor) in strategic warheads and thirteen-to-one in the total number of nuclear weapons (i.e., strategic and tactical).³¹

²⁹ Department of Defense, *Quadrennial Defense Review 2014*, (Washington, D.C.: Department of Defense, 2014), p. 14, available at http://www.defense.gov/pubs/2014_Quadrennial_Defense_Review.pdf.

³⁰ Jeff Richardson, “Shifting from a Nuclear Triad to a Nuclear Dyad,” op. cit., p. 9.

³¹ In 2001, then Deputy Under Secretary of Defense James Miller said, “Unclassified estimates suggest that Russia has 4,000 to 6,500 total nuclear weapons, of which 2,000 to 4,000 are non-strategic tactical nuclear weapons.” Dr. James N. Miller, Principal Deputy Under Secretary of Defense for Policy, “Prepared Statement” before the House Committee on Armed Services, November 2, 2011, available at http://armedservices.house.gov/index.cfm/files/serve?File_id=faad05df-9016-42c5-86bc-b83144c635c9.

The Minimum Deterrence presumption of a relatively benign threat environment is extended to China, despite the fact of double digit annual Chinese defense spending increases for the past two decades. Notably, proponents generally assume that China will not significantly increase its nuclear forces; the Arms Control Association Minimum Deterrence report argues that the United States should not set its nuclear requirements at a level intended to dissuade a Chinese effort to equal U.S. capabilities.³²

Further deep U.S. strategic nuclear reductions, as recommended in the Minimum Deterrence narrative, particularly if accompanied by the elimination of all U.S. tactical nuclear weapons (as has been proposed by the *Global Zero* report), would create the possibility not only of Chinese nuclear parity, but of a sizeable margin of Chinese nuclear superiority within two decades or possibly sooner. Alexei Arbatov (former Duma Defense Committee Vice Chairman) and Major General (ret.) Vladimir Dvorkin (a well known Russian nuclear weapons expert) have concluded that China could deploy between 200-250 DF-41 ICBMs carrying 1,200-2,500 warheads within 10 years.³³

Minimum Deterrence proponents advocate further deep U.S. nuclear reductions despite these possible consequences largely on the presumption that the future threat environment will be relatively benign and constant. This is a central element in the contemporary Minimum Deterrence narrative.

To test the Minimum Deterrence presumption of a relatively benign and constant security environment, and its associated advocacy of low or very low U.S. nuclear force numbers, this report examines the unclassified empirical evidence for Russia, China, North Korea and Iran. For each country, this report identifies strategic objectives and challenges as stated by its leaders, the current state of nuclear weapon modernization, and, to the extent possible, nuclear

³² Drell and Goodby, *What are Nuclear Weapons for? Recommendations for Restructuring U.S. Strategic Nuclear Forces*, op. cit., p. 7.

³³ Alexei Arbatov and Vladimir Dvorkin, *Nuclear Reset, Arms Control and Non-Proliferation* (Moscow: Carnegie Endowment for International Peace, 2012), p. 62, available at http://carnegieendowment.org/files/nuclear_reset_Book2012_web.pdf.

employment doctrine. The picture resulting from the empirical evidence, as discussed below, provides a stark contrast to the postulated security environment on which Minimum Deterrence advocates base their recommendations.

Russia

Strategic Aims

Since Vladimir Putin replaced Boris Yeltsin as President of Russia, Russia has moved away from democracy towards a more authoritarian and expansionist nation.³⁴ Indeed, President Putin has stated that the collapse of the Soviet Union was “the greatest geopolitical catastrophe” of the 20th century.³⁵ Under Putin, Russia has sought to create a Russian-centered “Eurasian Union,” and has recently signed a treaty establishing such a union.³⁶

Since 2008, Russia has invaded Georgia and Ukraine, and has annexed the Crimea by force. As noted by former Secretary of Defense Robert Gates, in addition to these two actions, Putin has pressured Armenia to break off its agreements with the European Union, and has put Moldova under similar pressure.³⁷ In the aftermath of the annexation of the Crimea, Russia massed troops and apparent artillery fire along the Ukrainian border, raising concerns about a further Russian invasion of Ukraine and Moldova.³⁸ While the situation is still evolving, as of mid-July 2014, Russia appears to be intent on carving two more provinces out of Ukraine, and Russian tanks have occupied a border town.³⁹ These actions suggest the development of a threat environment that contrasts sharply with that presumed by Minimum Deterrence proponents.

The Russian annexation of Crimea and subsequent belligerent acts have been denounced widely as dangerous to international stability. Nothing like this has happened in Europe since World

³⁴ Pavel Felgenhauer, “Resurgent Russian Nationalism Flies in the Face of Putin’s Imperial Eurasian Union Plans,” *Eurasia Daily Monitor*, Vol. 10, No. 185 (October 17, 2013).

³⁵ “Putin deplores collapse of USSR,” *BBC*, April 25, 2005, available at <http://news.bbc.co.uk/2/hi/4480745.stm>.

³⁶ F. Michael Maloof, “Russia confronting obstacles to Eurasian Union,” *WND*, January 11, 2013, available at <http://www.wnd.com/2013/01/russia-confronting-obstacles-to-eurasian-union/>; and, Vladimir Fedorenko, “Eurasian Union Treaty Disproves Western Skepticism – Russian Lawmaker,” *RIA Novosti*, May 29, 2014, available at <http://en.ria.ru/world/20140529/190224172/Eurasian-Union-Treaty-Disproves-Western-Skepticism--Russian.html>

³⁷ Robert M. Gates, “Putin’s Challenge to the West,” *The Wall Street Journal*, March 25, 2014, available at http://online.wsj.com/news/articles/SB10001424052702303725404579460183854574284?mod=WSJ_Opinion_LEADTop&mg=reno64-wsj&url=http%3A%2F%2Fonline.wsj.com%2Farticle%2FSB10001424052702303725404579460183854574284.html%3Fmod%3DWSJ_Opinion_LEADTop.

³⁸ “NATO Commander Warns of Russian Threat to Transdnistria,” *Voice of America*, March 23, 2014, available at <http://www.voanews.com/content/unity-rally-set-for-kyiv/1877234.html>.

³⁹ Pavel Felgenhauer, “Moscow’s Dilemma: Finlandization of Ukraine or Occupation?,” *Eurasia Daily Monitor*, Vol. 11, No. 106 (June 12, 2014).

War II. According to Secretary of State John Kerry, “The United States condemns the Russian Federation’s invasion and occupation of Ukrainian territory, and its violation of Ukrainian sovereignty and territorial integrity in full contravention of Russia’s obligations under the UN Charter, the Helsinki Final Act, its 1997 military basing agreement with Ukraine, and the 1994 Budapest Memorandum.” Vice President Biden denounced the Russian annexation of the Crimea as a “blatant, blatant disregard of international law.”⁴⁰ He noted that this action is a threat to the peace and security of Ukraine, and the wider region.⁴¹ The European Union also strongly condemned the invasion and annexation of the Crimea as acts of aggression by Russia.⁴² Former Secretary of State Hillary Clinton compared Putin’s actions to “what Hitler did back in the 30s,” noting that his excuse of protecting ethnic Russian was the same rationale that Hitler used.⁴³ Again, Russian behavior appears inconsistent with fundamental Minimum Deterrence presumptions.

There is widespread recognition that Russian actions have dramatically increased the risk of a confrontation between Russia and the North Atlantic Treaty Organization (NATO). Well known Russian journalist and Deputy Editor of the online newspaper *Yezhednevny Zhurnal*, Alexander Golts, believes the invasion of Ukraine will turn Russia into “a different country,” in effect, a new USSR.⁴⁴ General Philip Breedlove, Commander of NATO forces, has stated, “I think we need to think about our allies, the positioning of our forces in the alliance and the readiness of those forces ... such that we can be there to defend against it if required, especially in the Baltics

⁴⁰ Scott Wilson, “Biden in Europe to ‘reassure our allies’ over Russia’s moves in Ukraine,” *The Washington Post*, March 18, 2014, available http://www.washingtonpost.com/politics/biden-in-europe-to-reassure-our-allies-over-russias-moves-in-ukraine/2014/03/18/ff05b5be-ae84-11e3-9627-c65021d6d572_story.html.

⁴¹ Dana Davidsen, “Kerry rebukes Russia’s ‘incredible act of aggression’ in Move into Ukraine,” *CNN.com*, March 3, 2014, available at <http://politicalticker.blogs.cnn.com/2014/03/02/kerry-rebukes-russias-incredible-act-of-aggression-in-move-into-ukraine/comment-page-3/>.

⁴² Claire Rosenberg, “EU warns Russia to de-escalate or face sanctions,” *Yahoo.com*, March 3, 2014, available at <http://news.yahoo.com/eus-ashton-meet-russias-lavrov-madrid-tuesday-185109518.htm>.

⁴³ Umberto Bacchi, “Ukraine Crimea Crisis: Hillary Clinton Compares Russian President Vladimir Putin to Adolf Hitler,” *Yahoo.com*, March 5, 2014, available at <http://news.yahoo.com/ukraine-crimea-crisis-hillary-clinton-compares-russian-president-111139669.html>.

⁴⁴ Aleksandr Golts, “Putin Has Decided to Send Troops into Ukraine,” *Yezhednevny Zhurna*, March 1, 2014, translated by Open Source Center, Doc. ID: CEN2014030277795722. Also see Alexander Golts, “How the West Encouraged Putin’s Aggression,” *The Moscow Times*, March 18, 2014, available at <http://www.themoscowtimes.com/opinion/article/how-the-west-encouraged-putins-aggression/496379.html>.

and other places.”⁴⁵ According to the prominent German publication *Der Spiegel*, official NATO documents state, “Russia’s ability to undertake significant military action with little warning presents a wider threat to the maintenance of security and stability in the Euro-Atlantic area. Russia can pose a local or regional military threat at short notice at a place of its choosing. This is both destabilizing and threatening for those allies bordering or in close proximity to Russia.”⁴⁶ This assessment portrays a serious threat to NATO in light of Russian strategic objectives.

Other Russian policies also appear to present the risk of possible future military confrontation. Senior Russian military leaders, such as Chief of the General Staff General Valeriy Gerasimov, talk about nuclear war resulting from the struggle for fuel and energy and manpower resources, markets for goods, and “living space.”⁴⁷ Russia claims the entire Arctic Ocean, threatens foreign navigation and is reactivating Soviet-era Arctic military bases.⁴⁸ Senior Russian military leaders believe, according to noted Russian journalist Alexander Golts, that Russia’s status as a great power is based upon “a million-strong Armed Forces and the number of nuclear warheads.”⁴⁹ Russia probably can’t sustain a million-man Army because of demographic problems, but it certainly is committed to building nuclear weapons and is significantly modernizing all three legs of the Russian triad and its theater nuclear forces.

⁴⁵ “Crimea crisis: Nato commander calls for allies to mobilise after Russia prepares ‘incredible force’ on Ukrainian border,” *The Independent* (UK), March 23, 2014, available at <http://www.independent.co.uk/news/world/europe/crimea-crisis-nato-commander-calls-for-allies-to-mobilise-in-eastern-europe-after-russia-prepares-incredible-force-on-ukrainian-border-9210756.html>.

⁴⁶ “Ukraine Crisis Shows Up Cracks in NATO,” *Der Spiegel*, May 19, 2014, available at <http://www.spiegel.de/international/germany/ukraine-crisis-shows-up-cracks-in-nato-a-970248.html>.

⁴⁷ General Valeriy Gerasimov, “The Future Is Being Laid Today: Armed Forces Force Structure Theory Must Correspond to the Nature of Future Wars to the Maximum Extent Possible,” *VPK Voenno-Promyshlennyy Kuryer Online*, March 19, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>.

⁴⁸ Pavel Felgenhauer, “Russia Ready to Use Force to Deny Other Countries Free Navigation of Arctic High Seas,” *Eurasia Daily Monitor*, Vol. 10, No. 176 (October 3, 2013); Felgengauer, “Russia Preparing for Global Resource War,” *Eurasia Daily Monitor*, Vol. 10, No. 205 (November 14, 2013); “Putin Calls to Focus on Deployment of Military Forces in Arctic Direction,” *ITAR-TASS*, December 10, 2013, available at <http://en.itar-tass.com/russia/710949>; “Putin Orders Russian Military to Boost in Presence Arctic,” *BBC*, December 11, 2013, available at <http://www.bbc.com/news/world-europe-25331156>.

⁴⁹ Aleksandr Golts, “The Military Art of Economizing,” Moscow *Yezhednevny Zhurnal*, January 11, 2012. Translated by Open Source Center, Doc. ID: CEP20120111006001.

Improving Military Capabilities

Russian defense policy is driven by the Cold War legacy Soviet view of the United States. According to former Duma Defense Committee Vice Chairman Alexei Arbatov, Russian defense policy is driven by the following assumptions:

- Russia is surrounded by enemies led by the US.
- The US is using the pro-democracy opposition inside Russia to subvert the regime.
- The US with its allies may invade Russia anytime.
- The West plans to use military power to seize Russia's natural riches.
- Russia will use its own technologies to rearm its military.
- Russia's allies are the Shanghai Cooperation Organization or SCO nations together with Belarus, Armenia and possibly Syria.
- Nuclear weapons are the cornerstone of Russian security, while calls for nuclear disarmament are a malicious US swindle.⁵⁰

In January 2011, the chairman of the State Duma's International Affairs Committee, Konstantin Kosachev, wrote that Russian military strategists believe that the chief (and maybe the only) threat to Russia, as in Soviet times, is posed by a possible US nuclear strike.⁵¹ These attitudes appear to be driving Russian defense policy into defining the United States and NATO as first-order enemies, and toward preparation for a major war with the United States and NATO. Correspondingly, Russia is increasing its nuclear and conventional capabilities in stark contrast to the reductions that are underway in NATO and the U.S. While Russian economic weakness and corruption limit the effectiveness of its planned military buildup, Russia is still substantially increasing its military capabilities and shifting in its favor the military balance along much of its border.

Nuclear Weapons and Russian Strategy

It is widely recognized that Russia's defense modernization is focused on nuclear weapons. The 2014 statement of the Director of the Defense Intelligence Agency, Lt. Gen. Michael T. Flynn, said "Russia will continue to maintain a robust and capable arsenal of strategic and nonstrategic

⁵⁰ Pavel Felgenhauer, "Russia Prepares for War with the US and NATO, While Lacking Resources," *Eurasia Daily Monitor*, Vol. 10, No. 48 (March 14, 2013).

⁵¹ Konstantin Kosachev, "Kosachev 'Pleased' With Duma Document on START Treaty Ratification," *Ekho Moskv Online*, January 8, 2011, available at <http://www.wnc.dialog.com/proquestdialog/>.

nuclear weapons for the foreseeable future. To support this policy, the Russian government is making strong investments in its nuclear weapon programs.”⁵² According to Russian General Vladimir Popovkin, then the third ranking official in the Russian Defense Ministry, the main priority of the state defense program is to maintain and develop Russia’s strategic nuclear forces. He said that Russians plans to spend around 10% of all funds allocated for defense procurement to modernize the entire ICBM force.⁵³ In light of the announced Russian increases in military funding, it is now clear that Russian nuclear capabilities will increase for the foreseeable future – both qualitatively and quantitatively.

RT (which is under Kremlin control) summed up the Russian attitude toward nuclear weapons in the title of a May 2011 article: “In Nukes We Trust.”⁵⁴ This view is still prevalent in Russia. In 2009, then Russian Chief of the General Staff, General Nikolai Makarov, said, strategic nuclear forces “are a sacred issue” in Russia.⁵⁵ In 2009, nuclear deterrence was even endorsed by the Patriarch of the Russian Orthodox Church.⁵⁶ In 2006, President Putin declared that the new Borey class missile submarine would “secure Russia’s glory as a great sea power.”⁵⁷ These expressed Russian views appear to be in sharp contrast with the Minimum Deterrence narrative regarding Russia and the value of and priority attributed to nuclear forces in general.

⁵² Lieutenant General Michael T. Flynn, “Prepared Statement” before the Senate Armed Services Committee, February 11, 2014, available at http://www.fas.org/irp/congress/2014_hr/021114flynn.pdf.

⁵³ Dmitriy Litovkin, “Triumf and Tsirkon are Going into the Force: Deputy Defense Minister Valdimir Popvkin Explained, How to Rearm the Army,” *Izvestiya Online*, March 11, 2011, available at <http://www.wnc.dialog.com/proquestdialog/>.

⁵⁴ “Russia not to cut nuclear potential until ABM question settled - General Staff,” *Interfax-AVN Online*, June 5, 2009, translated by Open Source Center, Doc. ID: CEP20090605950149.

⁵⁵ “In Nukes We Trust,” *RT*, May 16, 2011, available at <http://rt.com/politics/nato-russia-missile-defense-rogozin/>.

⁵⁶ “Russia needs nuclear weapons - Patriarch Kirill,” *RIA Novosti*, September 11, 2009, available at <http://en.ria.ru/russia/20090911/156098682.htm>.

⁵⁷ Dmitriy Litovkin, “The St Petersburg Will Go to Sea,” *Izvestiya (Moscow Edition)*, March 16, 2006, translated by Open Source Center, Doc. ID: CEP20060317019004.

Nuclear Weapon Numbers

The Obama administration estimates that Russia has between 4,000-6,500 nuclear weapons, including essentially 10 times the number of tactical nuclear weapons in the U.S. arsenal.⁵⁸ However, Russian sources often cite higher numbers. For example, in 2009, the main official news agency *ITAR TASS* reported that Russia probably had between 15,000 to 17,000 total nuclear warheads.⁵⁹ In addition, Russia reportedly maintains a fully functional nuclear weapons complex capable of producing up to 2,000 nuclear warheads per year.⁶⁰

Strategic Nuclear Modernization

Russia's announced strategic nuclear objectives are:

1. to increase both the number of its strategic nuclear warheads and delivery vehicles⁶¹;
2. to modernize its entire ICBM and SLBM/SSBN force by 2021;
3. to modernize its tactical nuclear weapons systems; and
4. to develop new and modernized nuclear weapons.

Russia's announced ongoing strategic programs include:

1. the deployment of new mobile and silo-based RS-24/*Yars* (SS-27 Mod 2) MIRVed ICBMs (4-6 warheads and eventually, perhaps, 10);
2. the development and near term deployment of RS-26 *Rubezh* "ICBM" (MIRVed, apparently, with a theater strike mission);
3. the development of the new *Sarmat* heavy ICBM (reportedly carrying 10 heavy or 15 medium warheads);
4. the development of a new rail mobile ICBM;
5. the deployment of the new *Bulava* 30 SLBM (6 warheads and eventually, perhaps, 10);
6. the deployment of the new *Borey* class SSBN (8 planned) to carry the *Bulava* 30;
7. the development of a "5th generation" missile submarine;
8. the deployment of improved versions of the SS-N-23 called the *Sineva* and the *Liner*;
9. the deployment of a new 5,000-km range KH-102 nuclear ALCM; and

⁵⁸ "Prepared Statement," op. cit.; "Obama Advisor Gary Samore, 'The Ball is Very Much in Tehen's Court,'" *Radio Free Europe*, April 14, 2011, available at http://www.rferl.org/content/interviewsamore_russia_iran_us_policy/3557326.html.

⁵⁹ "New RF-US agt to replace START to be concluded before year end – FM," *ITAR-TASS*, March 9, 2009, available at <http://www.itar-tass.com/eng/level2.html?NewsID=14295189&PageNum=1>.

⁶⁰ Robert Joseph, "Second to One," *National Review Online*, October 17, 2011, available at http://russianforces.org/blog/2007/05/how_many_warheads.shtml.

⁶¹ "Russia to reach New START ceilings by 2028 (Part 2)," *Interfax-AVN*, January 14, 2011, available at <http://www.wnc.dialog.com/proquestdialog/>.

10. the development of a new stealth heavy bomber which will carry hypersonic missiles.⁶²

Since 2011, the announced Russian ICBM production rate reportedly has increased 3-4 times.⁶³

Most striking, the number of new strategic nuclear systems under development and deployment in Russia is reminiscent of the Soviet Union's Cold War behavior.

Yuri Solomonov, the chief designer of Russia's new solid fuel ICBMs and SLBMs and former head of the MITT missile design and production organization, at a hearing at the Federation Council (Russia's legislative upper house), said Russian strategic nuclear weapons are 10-15

⁶² Ilya Kharlamov, "Russia's Strategic Rocket Forces to get new missiles," *The Voice of Russia*, December 20, 2013, available at http://voiceofrussia.com/news/2013_12_20/Russia-s-Strategic-Rocket-Forces-to-get-new-missiles-7150/; "Russia to build RS-20 'Voyevoda' successor," *Interfax*, July 21, 2011, available at <http://www.wnc.dialog.com/proquestdialog/>; Pavel Felgengauer, "The Russia Sea-Based Deterrent Development Seems On Track," *Eurasia Daily Monitor* Vol. 8, No. 126 (June 30, 2011); "New Heavy ICBM to Be Put Into Service in 2018 - Expert (Part 2)," *Interfax*, May 5, 2011, available at <http://www.interfax.co.uk/russia-cis-military-news-bulletins-in-english/new-heavy-icbm-to-be-put-into-service-in-2018-expert-part-2-2/>; "Tupolev aircraft maker to develop Russia's new strategic bomber," *RIA Novosti*, August 19, 2009, available at http://www.en.rian.ru/military_news/20090819/15585_7912.html; Pavel Podvig, "RS-24 warheads - three or four?," *Russianforces.org*, March 9, 2011, available at http://russianforces.org/blog/2011/03/rs-24_warheads_-_three_or_four.shtml; "Missile tested in Plesetsk was an upgrade - expert," *Interfax-AVN*, September 28, 2011, available at <http://www.interfax.com/newsinf.asp?pg=7&id=276372>; "Putin: Russian seaborne nuclear forces to be renewed by 2020," *Interfax*, December 23, 2013, available at <http://www.interfax.com/newsinf.asp?pg=2&id=469260>; Ilya Kharlamov, "Russia's Strategic Rocket Forces to get new missiles," *The Voice of Russia*, December 20, 2013, available at http://voiceofrussia.com/news/2013_12_20/Russia-s-Strategic-Rocket-Forces-to-get-new-missiles-7150/; Steve Gutterman, "Russia plans new ICBM to replace Cold War 'Satan' missile," *Reuters*, December 17, 2013, available at <http://www.reuters.com/article/2013/12/17/us-russia-missiles-idUSBRE9BG0SH20131217>; "Russia to Bring Back Railroad-Based ICBM - Source," *RIA Novosti*, December 26, 2012, available at http://en.rian.ru/military_news/20121226/178413560.html; "Russia Plans Rail-Mounted Missiles to Counter US Global Strike Program," *RIA Novosti*, December 18, 2013, available at http://en.ria.ru/military_news/20131218/185683711.html; "Kh-101 / Kh-102," *GlobalSecurity.org*, available at <http://www.globalsecurity.org/wmd/world/russia/kh-101.htm>; "Bulava The Lightest Ballistic of its Type," *RIA Novosti*, November 27, 2008, available at <http://en.ria.ru/infographics/20081127/118575067.html>; Sergey Turchenko, "Russian Strategic Missile Troops," *Svobodnaya Pressa*, October 4, 2009, available at <http://www.wnc.dialog.com/proquestdialog/>; "Nuclear warheads ready for Bulava missile as test program picks up steam," *RIA Novosti/Avrora*, July 12, 2010, available at http://en.ria.ru/military_news/20101207/161664867.html; "Liner missile won't substitute Bulava -source," *RIA Novosti*, August 10, 2011, available at http://rusnavy.com/news/newsofday/index.php?ELEMENT_ID=12673&print=Y.

⁶³ Sergei Mamontov, "Putin Pledges 400 ICBMs for Russia in Ten Years," *RIA Novosti*, February 20, 2012, available at <http://en.ria.ru/russia/20120220/171407962.html>; "Russia Ready To Produce 6 - 7 Topol-M Missiles Per Year - Ivanov," *Interfax*, December 7, 2007, available at <http://www.wnc.dialog.com/proquestdialog/>; "Russian Missile Forces to get 22 new ICBMs in 2014," *ITAR-TASS*, November 27, 2013, available at <http://en.itar-tass.com/russia/709273>; Pavel Podvig, "Missile production plans for 2011-2013," *Russianforces.org*, May 2011, available at http://russianforces.org/blog/2011/05/missile_production_plans_for_2.shtml; Dmitriy Litovkin, "Army Awaits Fifth-Generation Missiles," *Izvestiya (Moscow Edition)*, May 13, 2011, available at <http://www.wnc.dialog.com/proquestdialog/>.

years ahead of those of the West or the East.⁶⁴ Russian development of improved missiles apparently is unlikely to stop with these weapons. The Russian press discusses new missiles about which little appears to be known in the West. The *BBC* points out, “The sudden appearance of new names to designate the latest crop of Russian ballistic missile developments has caused confusion and even concern among defence analysts both in Russia and abroad.”⁶⁵ According to one ominous report, “The development of a new *Proryv* heavy ICBM capable of carrying 15 heavy nuclear warheads is underway.”⁶⁶

Tactical Nuclear Weapons

Russia is more secretive about its tactical nuclear forces than about its strategic nuclear weapons. However, it appears that Russia maintains a diverse arsenal of these weapons. According to public statements by Russian military and civilian experts, Russia’s tactical nuclear inventory is comprised of short-range missiles, nuclear artillery, nuclear landmines, nuclear air and missile defense weapons, nuclear anti-ship missiles and bombs, nuclear depth charges, nuclear antisubmarine warfare missiles, nuclear torpedoes, nuclear bombs, coastal missile complexes, and the missiles of the Russian Air Force’s and Navy’s non-strategic aviation.⁶⁷ There appears to have been little change since the end of the Cold War in types of weapons, although the numbers may have declined.

⁶⁴ “Russia far ahead of its rivals by strategic nuclear armaments – Russian arms designer,” *Interfax-AVN*, February 16, 2012, available at <http://www.interfax.co.uk/russia-cis-military-news-bulletins-in-english/russia-far-ahead-of-its-rivals-by-strategic-nuclear-armaments-russian-arms-designer/>.

⁶⁵ “BBCM Feature: Experts baffled by profusion of Russian missile projects,” *BBC Monitoring*, January 24, 2014, transcribed by Open Source Center, Doc. ID: CEL2014012474052058.

⁶⁶ “Russian Institute of Strategic Studies Presents: Russia-2012. The Enemy at the Gates,” *KM.ru*, January 4, 2012, translated by Open Source Center, Doc. ID: CEP20120604041013.

⁶⁷ Aleksey Arbatov, “Tactical Nuclear Weapons: Problems and Solutions: Strategic Offensive Weapon Reductions Could Extend to Nonstrategic Munitions,” *Voyenno-Promyshlenny Nezavisimoye Online*, May 20, 2011, available at <http://www.wnc.dialog.com/proquestdialog/>; “Washington presses Moscow to begin non-strategic nuclear weapons reduction,” *RIA Novosti*, February 10, 2010, available at <http://en.rian.ru/papers/20100205/157782788.html>; Grigoriy Vylegzhanin, “Necessity of Resorting to Nuclear Weapons: Urgent Problem - Development of Strike Assets for General Purpose Forces,” *Voyenno-Promyshlenny Kurier Online*, July 25, 2012, available at <http://www.wnc.dialog.com/proquestdialog/>; Aleksey Arbatov, “‘Concepts:’ Nonstrategic Nuclear Weapons: Dilemmas and Approaches: The Path to a Nuclear-Free World Promises To Be Long,” *Nezavisimoye Voyennoye Obozreniye Online*, May 20, 2011, available at <http://www.wnc.dialog.com/proquestdialog/>; “Russia’s New Bomber to Carry Hypersonic Weapons – Source,” *RIA Novosti*, August 30, 2013, available at http://en.ria.ru/military_news/20130830/183062128.html.

In violation of its pledge as part of its 1991-1992 Presidential Nuclear Initiatives, Russian generals have stated that Russia has retained battlefield nuclear weapons. In 2003, years after Moscow had pledged to eliminate battlefield nuclear weapons, Colonel General Vladimir Zaritskiy, then commander of the Russian Artillery and Missile Troops, stated that Russian nuclear artillery and tactical missiles will play a decisive role in contemporary warfare by conducting “artillery and nuclear missile strikes” and will be one of the primary means of deterring aggression.⁶⁸ In 2005, a Russian Defense Ministry publication noted that the Artillery and Missile Troops “are the main means for fire and nuclear strikes against an enemy.”⁶⁹ In February 2014, the Sarov nuclear weapons laboratory (the All-Russian Scientific-Research Institute) said the 152-mm nuclear artillery shell with “a kiloton yield...has been broadly deployed throughout our Army.”⁷⁰

Thus, it appears NATO would face the same types of battlefield tactical nuclear threats as during the Cold War. However, unlike during the Cold War, Russia apparently now has a monopoly on these types of weapons in the context of a confrontation with NATO.

The Russian Navy is also reported to have retained its tactical nuclear weapons. In 2006, Admiral M. L. Abramov, Chief of the Main Naval Headquarters, stated that the role of the Russian Navy was to “deliver surprise and concentrated strikes, including use of nuclear weapons at surface targets, aircraft carrier task force[s], detachments of warships and transport convoys, to fight successfully against submarines of any enemy...”⁷¹ This has potentially great military significance in light of the fact that comparable Western capabilities reportedly have been eliminated.

⁶⁸ “Interview with Colonel-General Vladimir Nikolayevich Zaritskiy, chief of the RF Armed Forces Missile Troops and Artillery, by Oleg Falichev,” *Voyenno-Promyshlennyy Kuryer*, November 19, 2003, translated by Open Source Center, Doc. ID: CEP20031120000239.

⁶⁹ “The structure of the Russian Ground Forces,” Russian Federation Ministry of Defense, March 9, 2005, translated by Foreign Broadcast Information Service, Doc. ID: CEP20050323000280.

⁷⁰ “Interview with Russian Nuclear Weapons Scientist Yevgeniy Avrorin (formerly affiliated with VNIITF),” *Atomic-Energy.ru*, April 10, 2013, translated by Open Source Center, Doc. ID: CPR2013073125696379.

⁷¹ Admiral M. L. Abramov, “Submarine Forces of the Russian Federation: Current Status and Prospects,” *Military Thought*, June 30, 2006, available at <http://www.wnc.dialog.com/proquestdialog/>.

Open-source reporting provides evidence that Russia is modernizing its tactical nuclear weapons—e.g., the new *Iskander-M* tactical missile, the Su-34 long-range strike fighter, and subsonic and supersonic long-range naval land-attack cruise missiles.⁷² Russia has announced that it plans to deploy 120 *Iskander-M* launchers which carry two missiles each.⁷³ In 2009, the third ranking official in the Russian Defense Ministry, General Vladimir Popovkin, confirmed the *Iskander-M* was nuclear capable and, recently, Russia said that the *Iskander-M* was launched (i.e., simulated) during its October 2013 nuclear exercise.⁷⁴ In 2012, Colonel General Alexander Zelin, then Commander of the Russian Air Force, said Russia planned to give the new Su-34 strike fighter long-range missiles to solve “the problem of increasing nuclear deterrence forces within the Air Force strategic aviation.”⁷⁵ Thus, in qualitative terms, the United States will apparently face a nuclear threat more advanced than during the Cold War and the United States will have little comparable capability.

Development and Deployment of New Types of Nuclear Weapons

Senior Russian officials have stated openly and for years that Russia is developing new and improved types of nuclear weapons. Statements by Russian officials and press reports suggest

⁷² “Army Brigade To Be Equipped With Iskander Systems This Year – Commander,” *ITAR-TASS*, September 28, 2009, available at <http://www.wnc.dialog.com/proquestdialog/>; “Up to 120 Iskander missiles to be supplied to Russian Armed Forces,” *Interfax-AVN*, August 1, 2011, available at <http://www.interfax.co.uk/russia-cis-general-news-bulletins-in-english/up-to-120-iskandermissiles-to-be-supplied-to-russian-armed-forces/>; “Russian strategic aviation to be reinforced with Su-34 frontline bombers,” *Interfax-AVN Online*, March 19, 2012, available at <http://www.wnc.dialog.com/proquestdialog/>; “Russia: Western Military District to get another Su-34 squadron by year’s end,” *Interfax-AVN*, June 3, 2012, available at <http://www.wnc.dialog.com/proquestdialog/>; “Lead 4th generation multirole nuclear sub of Project 885 to undergo state sea trial in November,” *ITAR-TASS*, September 5, 2012, available at <http://www.itar-tass.com/en/c154/511570.html>; “Russia to Lay Down 3rd Yasen Class Nuclear Sub on July 26,” *RIA Novosti*, July 4, 2013, available at http://en.ria.ru/military_news/20130704/182061179/Russia-to-Lay-Down-3rd-Yasen-Class-Nuclear-Sub-on-July-26.html.

⁷³ Iliya Pitalev, “Russian army to receive 120 Iskander tactical missile systems,” *RIA Novosti*, August 2, 2011, available at http://en.ria.ru/military_news/20110802/165508090.html.

⁷⁴ *ITAR-TASS*, “Army Brigade To Be Equipped With Iskander Systems This Year – Commander,” op. cit.; “Ground Forces Personnel Will Be Armed With Iskanders,” *Nezavisimoye Voyennoye Obozreniye*, October 29, 2009, available at <http://www.wnc.dialog.com/proquestdialog/>; “Russia: General Staff Chief Gerasimov Directs Key Personnel Video Conference on Strategic Exercise,” *Ministry of Defense of the Russian Federation*, November 1, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>; “Iskander, Tochka-U tactical missiles launched in Russia’s snap drill,” *Interfax-AVN*, October 30, 2013, available <http://www.wnc.dialog.com/proquestdialog/>; “Four Iskander and Tochka-U missiles fired during surprise check of troops,” *Interfax-AVN*, October 29, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>.

⁷⁵ “Russian strategic aviation to be reinforced with Su-34 frontline bombers,” *Interfax-AVN*, March 2012, available at <http://www.wnc.dialog.com/proquestdialog/>.

that the new Russian warheads range from high-yield thermonuclear weapons, to small MIRVed warheads, including precision low yield nuclear weapons, earth penetrators and low collateral damage nuclear weapons.⁷⁶ Then Russian Atomic Energy Minister, the late Viktor Mikhaylov, stated in 1994 that “a new generation” of nuclear weapons could be developed by the year 2000.⁷⁷ In June 2000, Nikol Voloshin, a senior official of the Ministry of Atomic Energy, noted that work was nearing completion on a warhead for the Topol M (SS-27), and Russia was modernizing other nuclear warheads.⁷⁸ Colonel General Nikolay Solovtsov and Lieutenant General Vitaliy Linnik, who were then the Commander and Deputy Commander of Strategic Missile Troops, both stated that the SS-27 Mod 1 (RS-12 Variant 2) warhead had an “enhanced-yield charge” or “an increased yield.”⁷⁹ In 2005, then Russian Defense Minister Sergei Ivanov stated, “We will develop, improve and deploy new types of nuclear weapons.”⁸⁰ He revealed, “New types of nuclear weapons are already emerging in Russia.”⁸¹ According to Colonel General Vladimir Verkhovtsev, then chief of the Defense Ministry’s 12th Main Directorate, the

⁷⁶ Mark Schneider, “The Future of the U.S. Nuclear Deterrent,” *Comparative Strategy*, Vol. 27, No. 4 (July 2008), pp. 347-348; “Russian pundit Litovkin argues case of Bulava,” *Ekho Moskv Radio*, July 17, 2009, available at <http://www.wnc.dialog.com/proquestdialog/>; Andrey Kislyakov, “Does Russia Need a ‘Wet’ Missile and One More Tank?,” *RIA Novosti*, January 19, 2008, available at <http://www.wnc.dialog.com/proquestdialog/>; “Interview with Colonel-General Vladimir Nikolayevich Verkhovtsev, chief of RF Defense Ministry 12th Main Directorate, by Vitaliy Denisov, *Krasnaya Zvezda*,” *Krasnaya Zvezda*, September 4, 2009 available at <http://www.wnc.dialog.com/proquestdialog/>; VADM (ret.) Robert R. Monroe, “A Perfect Storm over Nuclear Weapons,” *Air & Space Power Journal*, Vol. 23, No. 3(Fall 2009); Mark B. Schneider, “The Nuclear Doctrine and Forces of the Russian Federation,” (Fairfax, VA: National Institute for Public Policy, 2006), pp. 15-16, available at <http://nipp.org/Publication/Downloads/Publication%20Archive%20PDF/Russian%20nuclear%20doctrine%20--%20NSF%20for%20print.pdf>; Arbatov, “‘Concepts’: Nonstrategic Nuclear Weapons: Dilemmas and Approaches: The Path to a Nuclear-Free World Promises To Be Long,” op. cit.; Office of Transnational Issues, Central Intelligence Agency, *Evidence of Russian Development of New Subkiloton Nuclear Warheads*, August 30, 2000, p. 4, available at <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB200/20000830.pdf>.

⁷⁷ “New Generation of Arms,” *The Moscow Times*, June 7, 1994, available at <http://www.themoscowtimes.com/news/article/new-generation-of-arms/212085.html>.

⁷⁸ “MINATOM’s Voloshin on the Nuclear Weapons R&D Budget,” *Vek*, June 3, 2000, pp. 23-29, translated by Foreign Broadcast Information Service, Doc. ID. 200070600307.

⁷⁹ “Interview with Strategic Missile Troops Commander Colonel-General Nikolay Yevgenyevich Solovtsov by Aleksandr Vovk and Aleksandr Dolinin,” *Krasnaya Zvezda*, December 2, 2005, translated by Foreign Broadcast Information Service, Doc. ID: CEP20060201436003; Lieutenant General Vitaliy Linnik, “In the Near Future the Strategic Missile Troops [RVSN] Will Decommission About 200 RS-18 and RS-20 Missile Systems. What Is To Replace Them?,” *Voyenno-Promyshlennyy Kuryer*, February 1, 2005, translated by Foreign Broadcast Information Service, Doc. ID: CEP20060201436003.

⁸⁰ Alexei Berezin, “Moscow Emphasizes Quality of its Nuclear Potential,” *RIA Novosti*, January 13, 2005, available at <http://www.wnc.dialog.com/proquestdialog/>.

⁸¹ “Russia: ‘Full Understanding’ Seen at Ivanov’s Meeting with Rumsfeld,” *NTV MIR*, January 12, 2005, translated by Foreign Broadcast Information Service, Doc. ID: CEP20050112000194.

nuclear weapons organization, newly developed and manufactured nuclear munitions will have “improved tactical and technical specifications.”⁸²

Russian press reports indicate that new warhead types are being introduced. In 2006, *RIA Novosti* reported the MIRVed SS-27 ICBM and the *Bulava-30* SLBM missiles were to receive new “miniature” warheads because of the low throw-weight of these missiles.⁸³ Several Russian publications have said that Russia has developed 100-kt weapons with a weight of 100-kg.⁸⁴ According to Russian expatriate Pavel Podvig, a noted expert on Russian strategic forces, the *Bulava-30* warhead is better than the best Soviet-era designs which he says were in “the 110-130-kg range (this includes reentry vehicle body and electronics) and [had] yields of 50 and 75 kt. respectively.”⁸⁵ Yuriy Solomonov (the Chief designer of the SS-27 and *Bulava 30*) has stated that the single warhead and MIRVed versions of the SS-27 ICBM (Topol M Variant 2/RS-24/Yars) will get new warheads by 2016.⁸⁶ These reports suggest that widespread modernization of the Russian nuclear force with new types of nuclear weapons is underway, a situation very different from that in the U.S. where the effort is focused on life extension programs and policy dictates “no new nuclear capabilities” for U.S. warheads.

Russia is apparently pursuing clean and low-yield nuclear weapons. A declassified Clinton-era CIA intelligence document states, “Moscow’s military doctrine on the use of nuclear weapons has evolved and probably has served as the justification of the development of very low yield, high precision nuclear weapons.”⁸⁷ Another declassified CIA report noted, “A number of articles

⁸² “Nuclear Munitions to be Improved and Revitalized --Russian Federation Ministry of Defense,” *RIA Novosti*, September 4, 2009, available at <http://www.wnc.dialog.com/proquestdialog/>.

⁸³ Viktor Litovkin, “Sergei Ivanov visits Novaya Zemlya nuclear testing site,” *RIA Novosti*, July 26, 2006, available at <http://en.rian.ru/analysis/20060726/51869240.html>.

⁸⁴ Viktor Myasnikov, “Asymmetrical-Range Sineva: The Supreme Commander Liked the Bulava’s Competitor,” *Nezavisimaya Gazeta*, October 13, 2008, translated by Open Source Center, Doc. ID: CEP20081014358024; “The Bulava Against the Background of the Sineva,” *Nezavisimoye Voyennoye Obozreniye*, October 17, 2008, translated by Open Source Center, Doc. ID: CEP20081022548002.

⁸⁵ Pavel Podvig, “How many warheads?,” *Russian Forces.org*, May 15, 2007, available at http://russianforces.org/blog/2007/05/how_many_warheads.shtml.

⁸⁶ “New warheads for Russian missiles,” *Voice of Russia*, December 22, 2010, available at <http://english.ruvr.ru/2010/12/20/37280236.html>; Dmitriy Litovkin, “‘Topols’ Will Change Warheads,” *Izvestiya Online*, December 21, 2010, translated by Open Source Center, Doc. ID: CEP20101221358014.

⁸⁷ CIA, “Evidence of Russian Development of Subkiloton Nuclear Warheads,” op. cit.

[in the Russian press] suggest that Russia is developing low-yield warheads with enhanced radiation that could be used on high-precision non-strategic weapons systems.”⁸⁸

There are many reports in the Russian press concerning Russian development of precision low-yield nuclear weapons. In 1999, Major General (ret.) Vladimir Belous discussed the development of “neutron artillery shells, mortar shells, and operational-tactical missile warheads” with varying yield. Some of them apparently have yields of 1-5 tons of TNT.⁸⁹ In 2002, noted Russian journalist Pavel Felgengauer wrote that in April 1999 the Security Council approved a concept for developing and using “non-strategic low- and flexible-yield battlefield weapons.”⁹⁰ He indicated that the yield of the new low-yield precision weapons would be tens or hundreds of tons.⁹¹ In December 2010, *RIA Novosti*, an official news agency, reported that the *Sineva* SLBM in addition to being equipped with four 100-kilotons warheads each, “may be equipped with new generation sub-kiloton warheads having a yield of several dozen tons of TNT, which enables pinpoint targeting.”⁹² There also are several Russian press reports that say Russian SLBMs now carry some low-yield weapons (yields of 50 to 200 tons).⁹³ Finally, in 2009, Deputy Chief of the Russian Navy Vice Admiral Oleg Burtsev said the future may belong to tactical nuclear weapons noting, “We can install low-yield warheads on existing cruise missiles.”⁹⁴

These reports of low-yield warheads are consistent with Moscow’s open discussions of doctrine and would create options for some types of nuclear attacks that Western nations apparently cannot duplicate. Minimum Deterrence force recommendations, if adopted, would magnify this condition by cutting back or completely eliminating U.S. low-yield options.

⁸⁸ Office of Russian and European Analysis, Central Intelligence Agency “Russia: [Deleted],” June 22, 2000, available at <http://www2.gwu.edu/~nsarchiv/NSAEBB/NSAEBB200/20000622.pdf>.

⁸⁹ Major-General (ret.) Vladimir Belous, “Characteristics and Missions of Modern Neutron Weapons,” *Yadernyy Kontrol No 3*, May-June 1999, translated by Open Source Center, Doc. ID: FTS19990903000070.

⁹⁰ Pavel Felgengauer, “Bomber Makers Trade Union,” *Moscow Times*, March 14, 2002, available at <http://www.themoscowtimes.com/opinion/article/bomb-makers-trade-union/247805.html>.

⁹¹ Ibid.

⁹² Ilya Kramnik, “Nevsky and Novomoskovsk: Two submarines for Putin,” *RIA Novosti*, December 15, 2010, available at <http://en.rian.ru/analysis/20101215/161784522.htm>.

⁹³ Kislyakov, “Does Russia Need a ‘Wet’ Missile and One More Tank?,” op. cit.; Kramnik, “Nevsky and Novomoskovsk: Two Submarines for Putin,” op. cit.

⁹⁴ Stephen Blank, “European Proposal on Tactical Nuclear Weapons Highlights Russian Nuclear Dilemmas,” *Eurasian Daily Monitor*, Vol. 1, No. 33 (February 18, 2010).

There is also evidence in the open Russian press (much of it in official statements) of Russian development of new low collateral damage nuclear weapons which are based on thermonuclear fusion and earth penetration. In 2003, there was a particularly interesting statement by Viktor Mikhaylov (former Atomic Energy Minister and then Director of the Sarov nuclear weapons laboratory) who said that Russia was developing “low yield warheads [which] will be surrounded with a superhardened casing which makes it possible to penetrate 30-40 meters into rock and destroy a buried target” and would be available in 10-20 years.⁹⁵ In 2003, he also indicated the existence of thermonuclear weapons “yielding hundreds of tons.”⁹⁶ He said “the philosophy behind thermonuclear weapons development has changed, and the discussion is about how to develop high-precision weapons with greater penetration.”⁹⁷ In a March 2004 interview, he again stated work was being conducted on the development of “precision-guided munitions with penetrating capability.”⁹⁸ In February 2014, the Sarov nuclear weapons laboratory said that during the Cold War they had developed a peaceful nuclear explosive (PNE) device that was 99.85% based upon fusion.⁹⁹ These reported developments lend credibility to Russian press reports which discuss Russian development of advanced low collateral damage nuclear weapons.

Military Doctrine and the First Use of Nuclear Weapons

Russian military doctrine allows for the use of nuclear weapons not only in response to nuclear, chemical or biological attack, but also in response to conventional warfare.¹⁰⁰ The draft “Military Doctrine of the Russian Federation,” released to the public in 1999, was approved by Acting President Putin in 2000. It says: “The Russian Federation reserves the right to use nuclear

⁹⁵ Schneider, “The Future of the U.S. Nuclear Deterrent,” op. cit., p. 348.

⁹⁶ “Interview with Viktor Nikitovich Mikhaylov, former RF minister of atomic energy, conducted by Andrey Vaganov: ‘Thermonuclear Weapons in the 21st Century’,” *Nezavisimaya Gazeta*, August 12, 2003, translated in Open Source Center, Doc. ID: CEP20031126000140.

⁹⁷ Ibid.

⁹⁸ “Nuclear Deterrence - One of Russia’s Primary National Security Tools,” *Vooruzheniye, Politika Konversiya*, May 1, 2004, translated by Foreign Broadcast Information Service, Doc. ID: CEP20040907000204.

⁹⁹ Aleksandr Yemelyanenko, “Rykovarov’s Peak: Nuclear Weapons-Have a Special Mission and a Long-Term Perspective, Their Creators Believe,” *Rossiyskaya Gazeta Online*, February 14, 2014, translated by Open Source Center, Doc. ID: CER2014020544735205.

¹⁰⁰ Schneider, *The Nuclear Doctrine and Forces of the Russian Federation*, op. cit., p. 20.

weapons in response to the use of nuclear or other weapons of mass destruction against it and (or) its allies, as well as in response to large-scale aggression utilizing conventional weapons in situations critical to the national security of the Russian Federation.”¹⁰¹ The only change in the more recent 2010 doctrine is that “situations critical to national security” was replaced with the words “jeopardizing the very existence of the state.”¹⁰²

With regard to the 2010 doctrinal statement, in August 2009, Colonel General Anatoly Nogovitsyn, the Deputy Chief of the General Staff, said Russia was drafting a document that would contain open and closed parts. The closed parts would deal with the use of nuclear weapons.¹⁰³ In 2010, the Kremlin announced the issuing of a secret document on nuclear deterrence entitled “Bases of State Policy in the Field of Nuclear Deterrence Through 2020.”¹⁰⁴ In 2010, Deputy Prime Minister (former Defense Minister and now Kremlin Chief of Staff) Colonel General Sergei Ivanov said, “In terms of hypothetical use of nuclear weapons by Russia, the new Military Doctrine does not differ from the one that was signed in 2000.”¹⁰⁵ Security Council Secretary Nikolay Patrushev stated that “it does not reject what existed previously although it updates it to reflect contemporary circumstances.”¹⁰⁶ Then Russian Ambassador to NATO (now Deputy Prime Minister) Dmitry Rogozin described the 2010 military doctrine as giving emphasis to using nuclear weapons in regional and local wars. He stated Russia was developing a compact, mobile Army “with state-of-the-art flexible nuclear weaponry.”¹⁰⁷ In October 2009, *ITAR-TASS* reported, “Russia is shifting its military doctrine towards a greater

¹⁰¹ Konstantin Machulskiy “Russian Envoy Gives Kuwaiti Leaders Putin’s Message,” *ITAR-TASS*, April 24, 2000, translated by Foreign Broadcast Information Service, Doc. ID: CEP20000424000117.

¹⁰² *The Military Doctrine of the Russian Federation*, February 5, 2010, available at http://carnegieendowment.org/files/2010russia_military_doctrine.pdf.

¹⁰³ Roger McDermott, “Patrushev Signals a Shift in Russian Nuclear Doctrine,” *Eurasia Daily Monitor*, Vol. 6, No. 197 (October 27, 2009).

¹⁰⁴ Aleksandr Golts, “New-Born Mouse—Almost Harmless,” *Yezhednevnyy Zhurnal*, February 8, 2010, translated by Open Source Center, Doc. ID: CEP20100209004028.

¹⁰⁵ “RF New Military Doctrine No Different From Old One In Terms Of Nuclear Arms Use,” *ITAR-TASS*, February 6, 2010, available at <http://www.wnc.dialog.com/proquestdialog/>.

¹⁰⁶ Aleksey Nikolskiy and Andrey Kotov, “Dmitriy Medvedev Has Confirmed Russia’s Military Doctrine,” *Vremya Novostey*, February 8, 2010, translated by Open Source Center, Doc. ID: CEP20100209004033.

¹⁰⁷ “Russia to broaden nuclear strike options,” *RT*, October 13, 2009, available at <http://rt.com/news/russia-broaden-strike/>.

freedom in using nuclear armaments and other weaponry, although officials say the revised doctrine will not have any major differences from the previous one.”¹⁰⁸

The U.S National Intelligence Council openly published its own assessment in December 2012: “Nuclear ambitions in the US and Russia over the last 20 years have evolved in opposite directions. Reducing the role of nuclear weapons in US security strategy is a US objective, while Russia is pursuing new concepts and capabilities for expanding the role of nuclear weapons in its security strategy.”¹⁰⁹

Russian doctrinal literature reportedly asserts that Russian first use of low-yield nuclear weapons “will not result in immediate nuclear war.”¹¹⁰ In 1999, then First Deputy Defense Minister of the Russian Federation Nikolai Mikhailov explained the strategy: “This strategy boils down to the threat of using nuclear weapons against any aggressor at a scale ensuring unacceptable damage to such aggressor. The amount of damage should be such as not to provoke the aggressor into escalating the use of nuclear weapons without a justified reason. In other words, the point at issue is *a limited use of strategic nuclear forces adequate to the threat*.”¹¹¹ The implication of this is that the Russians appear to believe that the initiation of limited strategic and tactical nuclear strikes would not lead to a nuclear response given the Russian threat of further escalation.

In 2009, Russia’s National Security Council Secretary Nikolai Patrushev revealed that Putin’s nuclear strategy contemplated the first use of nuclear weapons in local and regional wars.¹¹² Indeed, the 2010 version of Russia’s military doctrine defines regional war as one in which *both* conventional and nuclear weapons are used.¹¹³ Russian journalist Andrey Kislyakov

¹⁰⁸ “Russia Amending Its Military Doctrine Towards Freer Use Of Nukes,” *ITAR-TASS*, October 9, 2010, transcribed by Open Source Center, Doc. ID: CEP20091009950411.

¹⁰⁹ The National Intelligence Council, *Global Trends 2030: Alternative Worlds*, December 2012, p. 69, available at www.dni.gov/nic/globaltrends.

¹¹⁰ Pavel Felgengauer, “Russia Mulls ‘Precision’ Use of Nukes,” *Segodnya*, May 6, 1999, translated by Foreign Broadcast Information Service, Doc. ID: FTS19990506000851.

¹¹¹ “Russian Military Review Oct 99,” *Voyeninform*, November 2, 1999, translated by Foreign Broadcast Information Service, Doc. ID: FTS19991198001431. (Emphasis added)

¹¹² *RT*, “Russia to broaden nuclear strike options,” *op. cit.*

¹¹³ “The Military Doctrine of the Russian Federation,” February 5, 2010, *op. cit.*, p. 2.

characterizes the Russian view of nuclear weapons use as: “we will respond with nuclear weapons at the slightest provocation.”¹¹⁴ This may well be an exaggeration, but there appears to be no question that Putin’s nuclear doctrine allows for the first use of nuclear weapons in a wide variety of circumstances.

Russian thinking appears to be based upon the optimistic belief that Russia’s first use of nuclear weapons would result in “cessation of military operations” because this “will be the most acceptable thing for the enemy...”¹¹⁵ Ominously, a September 2008 report by the Department of Energy and the Department of Defense noted that there was increased training for nuclear operations in all branches of the Russian military.¹¹⁶

Envisioning the possible employment of nuclear weapons in a wide variety of scenarios appears to be a central element of the Putin strategy. When the draft doctrine was released in 1999, Russian journalist Pavel Felgengauer wrote that it was linked to the possibility of Russian military intervention *outside* of Russian national territory that could not be accomplished successfully with conventional weapons.¹¹⁷ The former Vice Chairman of the Duma Defense Committee, Alexei Arbatov suggested the same, writing that the nuclear doctrine was linked to a situation in which the world’s “mightiest powers attempt to intervene in a local conflict, as over Kosovo.”¹¹⁸

Then Russian Defense Minister Sergei Ivanov linked the modernization of Russian strategic nuclear forces not only to the deterrence of an attack on Russia but to prevent any state from promoting “their national interests at our expense.”¹¹⁹ Russian journalist Alexander Golts

¹¹⁴ “Kislyakov Analyzes Mistaken Focus on Nuclear Weapons, Precision Weapons Needed,” *Nezavisimoye Voyennoye Obozreniye Online*, March 22, 2010, available at <http://www.wnc.dialog.com/proquestdialog/>.

¹¹⁵ Schneider, *The Nuclear Doctrine and Forces of the Russian Federation*, op. cit., p. 8

¹¹⁶ U.S. Department of State and Department of Defense, *National Security and Nuclear Weapons in the 21st Century*, (Washington, D.C.: Department of State and U.S. Department of Defense, September 2008), p. 8.

¹¹⁷ Felgengauer, “Russia Mulls ‘Precision’ Use of Nukes,” op., cit.

¹¹⁸ Aleksey Arbatov, “What Kind of Wars Can Russia Afford? Correctly Chosen Direction of Development of General-Purpose Forces Will Make It Possible To Ensure Country’s Security in Future,” *Nezavisimoye Voyennoye Obozreniye*, April 27, 2011, translated by Open Source Center, Doc. ID: CEP20010508000096.

¹¹⁹ “Russian Defense Minister Determined to Modernize Nuclear Forces,” *ITAR-TASS*, May 12, 2006, translated by Open Source Center, Doc. ID: CEP20060512027051.

observes that under the Kremlin world view it is fundamentally important that the “partners” believe that the occupants of the Kremlin are a “tad bit insane” and are ready to push the button.¹²⁰

Indeed, in October 2013, *Vzglyad*, a publication owned by Putin political ally Konstantin Rykov, linked the Russian Navy’s tactical nuclear weapons to the crisis over Syrian use of chemical weapons. It suggests that the U.S. Navy had to take Russian tactical nuclear weapons into account and thus regard Russia with caution.¹²¹ The implication here is that Russia sees value in the perceived risk of nuclear escalation posed by its tactical nuclear forces, and correspondingly may anticipate greater license to act in crises.

Nuclear Exercises

Russian military exercises reportedly frequently feature simulated Russian first use of nuclear weapons.¹²² The first announced Russian simulated use of nuclear weapons in a theater war exercise was in the *Zapad* [West] 1999 exercise.¹²³ Then Russian Defense Minister Marshal Igor Sergeyev announced, “Our Army was forced to launch nuclear strikes first which enabled it to achieve a breakthrough in the theater situation.”¹²⁴ A Russian press account stated that Russia responded to a conventional attack with limited nuclear strikes by cruise missiles launched from

¹²⁰ Aleksandr Golts, “Preemptive Madness,” *Yezhednevnyy Zhurnal*, October 15, 2009, translated by Open Source Center, Doc. ID: CEP20091016358007.

¹²¹ Yaroslav Vyatkin, “Force of Persuasion. Russian Squadron Already Exerting Influence on US Policy With Respect to Syria,” *Vzglyad Online*, October 10, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>.

¹²² Simon Saradzhyan, *Russia’s Non-strategic Nuclear Weapons in Their Current Configuration and Posture: A Strategic Asset or Liability?* (Boston, MA: Harvard Belfer Center, January 2010), p. 18, available at <http://belfercenter.ksg.harvard.edu/files/russian-position-NSNWs.pdf>; Ilya Kramnik, “Stability-2008: back to the major leagues,” *RIA Novosti*, October 7, 2010, available at <http://www.en.rian.ru/analysis/20081007/117536324.html>; Pavel Felgengauer, “The Details: Stable Weapons: The Russian Army Has Rehearsed the Scenario of a Nuclear War with the West for the First Time in 20 Years,” *Novaya Gazeta*, October 12, 2008, available at <http://www.wnc.dialog.com/proquestdialog/>; Matthew Day, “Russia ‘simulates’ nuclear attack against Poland,” *TheTelegraph.com*, November 1, 2009, available at <http://www.telegraph.co.uk/news/worldnews/europe/poland/6480227/Russia-simulates-nuclear-attack-on-Poland.html>; Schneider, *The Nuclear Doctrine and Forces of the Russian Federation*, op. cit., p. 8; Stephen Blank, “European Proposal on Tactical Nuclear Weapons Highlights Russian Nuclear Dilemmas,” *Eurasia Daily Monitor*, Vol. 7, No. 33 (February 18, 2010); Baker Spring, “New START: Increasing the Risk of Nuclear War,” The Heritage Foundation, August 11, 2010, available at <http://blog.heritage.org/2010/08/11/new-start-increasing-the-risk-of-nuclear-war/>.

¹²³ Schneider, *The Nuclear Doctrine and Forces of the Russian Federation*, op. cit., p. 8.

¹²⁴ Ibid.

Tu-95 and Tu-160 bombers “against countries from whose territories the offensive was launched.”¹²⁵ Russian journalist Vladimir Mikhaylov said the enemy “clearly was understood” to mean NATO.¹²⁶ Russian journalist Aleksandr Koretskiy described the scenario as follows: “in response to an air attack on its territory (on the Kaliningrad Special Region, to be exact) and on the territory of Belarus, Russia inflicted a nuclear strike not only on the territory of the immediate aggressor countries but also on U.S. territory.”¹²⁷

Simon Saradzhyan of the Harvard Belfer Center has observed that “the Russian military has repeatedly gamed the use of strategic bombers to carry out such a demonstration nuclear strike during a number of war games, including the *Zapad* exercise, which is held annually to simulate a war with NATO.”¹²⁸ For example, in the *Zapad* 2009 exercise, *Interfax* reported that Polish Foreign Minister Radoslaw Sikorski said, “Warsaw was particularly worried by large-scale military exercises that Russia and Belarus conducted in September, during which troops simulated the use of nuclear weapons and an assault on the Polish seacoast...”¹²⁹

Similarly, Russia reportedly exercises its nuclear forces against China. In the Far East in the *Vostok* (East) 2007 exercise a Russian press report stated, “The Russians reportedly used tactical nuclear weapons and planes of Long Range Aviation.”¹³⁰ The *Vostok* 2010 exercise saw several Russian press reports of simulated Russian nuclear weapons use. The official newspaper of the Far East Military District said, “To suppress a large center of the separatists’ resistance and to achieve minimal losses of the attacking troops a low-yield ‘nuclear’ attack was mounted against

¹²⁵ “Mikhaylov on Military Readiness,” *Moscow Profile*, No. 15, April 26, 1999, translated by Foreign Broadcast Information Service, Doc. ID: FTS19990513000112.

¹²⁶ Ibid.

¹²⁷ Aleksandr Koretskiy, “Russia Inflicted Nuclear Strike on United States. Only in Training for Now,” *Segodnya*, July 2, 1999, translated by Open Source Center, Doc. ID: FTS199907020007.

¹²⁸ Sardzhyan, *Russia’s Non-strategic Nuclear Weapons in Their Current Configuration and Posture: A Strategic Asset or Liability?*, op. cit., p. 18.

¹²⁹ “Sikorski’s Invitation Of U.S. Troops A ‘Cold War Reflex’- Ministry,” *Interfax-AVN Online*, November 6, 2009, translated by Open Source Center, Doc. ID: CEP20091106950181.

¹³⁰ Mikhail Lukanin, “Forward-Thinking Exercises: Russia Is With Military Strength Giving Notice of Itself as a Major Player in the Eastern Region,” *Trud*, October 31, 2008, translated by Open Source Center, Doc. ID: CEP20071031358009.

the enemy.”¹³¹ Pavel Felgengauer wrote that Russia used a nuclear-armed S-300 surface-to-air missile against a ground target.¹³²

Russia has also reportedly staged nuclear exercises in the Indian Ocean area. Viktor Litovkin, a well-known Russian journalist, wrote that “Tu-160 and Tu-95MS missile-carrying aircraft, after taking off from bases in Engels and Ryazan and working interactively with ships of the Black Sea Fleet and the Pacific Fleet, hit targets in the region of the Indian Ocean with cruise missiles.”¹³³ He also noted that these missiles “can carry...nuclear warheads.”¹³⁴ *Kommersant* reported, “The missile carriers executed launches of highly-accurate, long-range cruise missiles which successfully hit dummy targets in the Indian Ocean.”¹³⁵ It said that the targets were “two areas on the ocean surface each measuring 300 square kilometers.”¹³⁶ Russian arms control expert Viktor Myasnikov wrote that a mission of the exercise was “the optimizing of opposition to large naval forces.”¹³⁷ During the exercise a carrier task force was reportedly subject to a simulated attack by nuclear capable cruise missiles launched from *Backfire* bombers and the *Moskva* cruiser.¹³⁸ The Russian Navy reportedly launched a *Bazalt* long-range cruise missile.¹³⁹ In 2010, Russia again reportedly held a nuclear exercise in the Indian Ocean although very little detail was released about it.¹⁴⁰

¹³¹ John W. Parker, *Russia's Revival: Ambitions, Limitations, and Opportunities for the United States* (Washington, D.C.: Institute for National Strategic Studies, January 2011), p. 23, available at <http://www.dtic.mil/dtic/tr/fulltext/u2/a546683.pdf>; Spring, “New START: Increasing the Risk of Nuclear War,” op. cit.

¹³² Pavel Felgengauer, “Russia Seeks to Impose New ABM Treaty on the US by Developing BMD,” *Eurasia Daily Monitor*, Vol. 7, No. 136 (July 16, 2010).

¹³³ Viktor Litovkin, “The Entire Russian Military Line-Up--the Armed Forces of Russia Are Only Partially Ready to Meet the Challenges of the New Century,” *Vremya MN*, May 21, 2003, translated by Open Source Center, Doc. ID: CEP20030521000454.

¹³⁴ Ibid.

¹³⁵ Ivan Safronov, “Russian Strategic Bombers Strike Indian Ocean,” *Kommersant*, May 15, 2003, translated by Open Source Center, Doc. ID: CEP20030515000274.

¹³⁶ Ibid.

¹³⁷ Viktor Myasnikov, “New Indian Combination Move--Defense and Attack,” *Vremya MN*, May 16, 2003, translated by Open Source Center, Doc. ID: CEP20030516000395.

¹³⁸ “Russian strategic bombers conduct cruise missile launches over Indian Ocean,” *Nezavisimoye Voyennoye Obozreniye*, May 23, 2003, translated by Open Source Center, Doc. ID: CEP20030523000337.

¹³⁹ “DM Ivanov Says Naval Exercises With India To Begin 20-21 May,” *Agentstvo Voyennykh Novostey*, May 19, 2003, transcribed by Open Source Center, Doc. ID: CEP20030519000024.

¹⁴⁰ “Russian warships hold nuclear defense drills in Indian Ocean,” *RIA Novosti*, May 5, 2010, available at http://en.ria.ru/military_news/20100505/158884417.html.

Russian announces large-scale strategic nuclear exercises publicly (frequently on the Kremlin website). Pavel Felgengauer wrote that the 2008 nuclear exercise (*Stability 2008*) involved a major nuclear war with the U.S. He observed, with sarcasm, “The entire matter will conclude with a strategic nuclear missile strike against the United States. When the smoke clears, the sought after ‘stability’ will arrive – no one will have anything with which to fight anymore.”¹⁴¹ The October 2013 announced strategic nuclear exercise suggested execution of a nuclear strike against the U.S. because it involved the launch of an SS-18 heavy ICBM, Russia’s main weapon for counterforce attacks, and Russian SLBMs.¹⁴² (According to the 1987 edition of *Soviet Military Power*, the SS-18 “was designed to attack and destroy ICBMs and other hardened targets in the U.S.”)¹⁴³ Colonel General (ret.) Viktor Yesin, former Commander of the Strategic Missile Forces, has stated that Russian ballistic missile submarine missiles “hit targets that do not have any serious protection, such as cities and enterprises...”¹⁴⁴ During the announced May 2014 strategic nuclear exercise, the Russian leadership openly talked about a “massive” launch under attack.¹⁴⁵ Thus, Russia’s large strategic nuclear exercises seem to focus on the execution of a large-scale nuclear war.

Noted Army War College analyst, Dr. Stephen Blank, has summarized what has been reported in the Russian press about recent Russian nuclear exercises: “...Russia’s exercises since 2006 conclusively show Moscow sees nuclear weapons as war fighting weapons to be used

¹⁴¹ Felgengauer, “The Details: Stable Weapons: The Russian Army Has Rehearsed the Scenario of a Nuclear War with the West for the First Time in 20 Years,” op. cit.

¹⁴² Bill Gertz, “Moscow Conducts Large-Scale Nuclear Attack Drill,” *Washington Free Beacon*, October 30, 2013, available at <http://freebeacon.com/moscow-conducts-large-scale-nuclear-attack-drill/>; “TV shows missile launches as Russian nuclear forces hold major drill,” *Rossiia 24 TV*, October 30, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>; Pavel Podvig, “Russia conducts large-scale exercise of its strategic forces,” *RussianForces.org*, October 30, 2013, available at http://russianforces.org/blog/2013/10/russia_conducts_large-scale_ex.shtml.

¹⁴³ *Soviet Military Power 1987* (Washington, D.C.: Department of Defense, 1987), p. 29.

¹⁴⁴ “Interview with Viktor Yesin, consultant to the commander of Strategic Missile Troops, by Olga Bozhyeva: ‘Why We Will Be Building Missiles’,” *Moskovskiy Komsomolets*, September 13, 2007, translated by Open Source Center, Doc. ID: CEP20070913025001.

¹⁴⁵ “Russian military practices massive launch-under-attack strike under Putin’s supervision,” *Interfax*, May 8, 2014, available at <http://search.proquest.com/professional/login>; “Russian strategic offensive, defensive forces in high readiness - Putin (Part 3),” *Interfax*, May 8, 2014, transcribed by Open Source Center, Doc. ID: CER2014050844275817.

offensively.”¹⁴⁶ Russia nuclear doctrine, according to U.S. expert Dr. Jacob W. Kipp, then Senior Analyst with the Foreign Military Studies Center, Fort Leavenworth, involves a “nuclear escalation ladder from single nuclear strike, group nuclear strike, concentrated nuclear strike, to mass nuclear strike.”¹⁴⁷

This description is very similar to the way Russian generals of the Strategic Missile Troops openly describe their targeting options. Lieutenant General Vladimir Gagarin, then deputy commander of Russia’s Strategic Missile Troops, stated that after analysis of the situation, a decision would be made either “to launch a massive nuclear strike...or it could be group strikes...with part [of the forces] used; or it could be single strikes, one or two launch systems.”

¹⁴⁸ In December 2009, Commander of the Strategic Missile Troops, Lieutenant General Andrey Shvaychenko said, “In a conventional war, they [the Strategic Nuclear Forces] ensure that the opponent is forced to cease hostilities, on advantageous conditions for Russia, by means of single or multiple preventive strikes against the aggressors’ most important facilities. In a nuclear war, they ensure the destruction of facilities of the opponent’s military and economic potential by means of an initial massive nuclear missile strike and subsequent multiple and single nuclear missile strikes.”¹⁴⁹ Shvaychenko also has stated the missile troops in a nuclear war “will participate effectively in destroying targets of enemy military and economic potentials...”¹⁵⁰

Thus, the scenarios exercised in Russian nuclear force exercises appear consistent with what is described in their nuclear doctrinal literature concerning the first use of nuclear weapons in conventional warfare.

¹⁴⁶ Stephen Blank, “European Proposal on Tactical Nuclear Weapons Highlights Russian Nuclear Dilemmas,” *Eurasia Daily Monitor*, Vol. 7, No. 33 (February 18, 2010).

¹⁴⁷ Dr. Jacob W. Kipp “Russia’s Nonstrategic Nuclear Weapons,” May 2001, *Foreign Military Studies Office*, available at http://fmso.leavenworth.army.mil/documents/russias_nukes/russias_nukes.htm

¹⁴⁸ “Russian Strategic Missile Troops general details re-armament, structure – more,” *Ekho Moskvyy Radio*, September 5, 2009, translated by Open Source Center, Doc. ID: CEP20090911950207.

¹⁴⁹ “Russia may face large-scale military attack, says Strategic Missile Troops chief,” Moscow *ITAR-TASS*, December 2009, transcribed by Open Source Center, Doc. ID: CEP20091216950151.

¹⁵⁰ “Issue Topic: ‘Take Tender Care of the Hawks,’” *Ogonek*, February 22, 2010, translated by Open Source Center, Doc. ID: CEP1010022334.

Nuclear Threats

Since 2007, Russia has threatened the United States and its allies with nuclear strikes. These open threats include direct nuclear missile targeting, threats of preemptive nuclear attack, talk about the use of nuclear weapons in border wars, heavy bomber “combat patrols,” and threats of a nuclear arms race.¹⁵¹ For example, in 2008, Chief of the General Staff General Yuriy Baluyevskiy stated, “...all our partners must realize that for protection of Russia and its allies if necessary armed forces will be used, including preventively, including with the use of nuclear weapons.”¹⁵² President Putin has personally made several threats to target Russian missiles against U.S. friends and allies, especially allies who have agreed to host U.S. missile defense facilities.¹⁵³ And, as recently as December 2013, Deputy Prime Minister Rogozin threatened a nuclear response to a U.S. conventional missile attack.¹⁵⁴ Recent Russian nuclear threats, some seemingly rather flippant, appear to go beyond Soviet public threats even at the height of the Cold War.¹⁵⁵

Russian nuclear capable heavy bombers frequently fly unannounced into NATO and Japanese air identification zones with the apparent motive to intimidate. Since these bombers are not stealth aircraft and carry cruise missiles with ranges of thousands of kilometers, the close approaches to NATO and Japanese territory seem designed to send a message. Indeed, during the Ukrainian crisis, Russia announced that four *Bear H* bombers conducted a long “patrol” over the Arctic Ocean.¹⁵⁶ Three days later, a commentator on Russian State controlled TV declared, “Russia is

¹⁵¹ Keith B. Payne, “Prepared Statement” before the United States Senate Appropriations Subcommittee on Energy and Water Development, July 25, 2012, available at <http://nipp.org/National%20Institute%20Press/Current%20Publications/PDF/July%2025%20testimony%20for%20web.pdf>.

¹⁵² “Army chief: Russia may use nuclear weapons if necessary,” *Xinhuanet.com*, January 19, 2008, available at http://news.xinhuanet.com/english/2008-01/19/content_7452157.htm.

¹⁵³ Payne, “Prepared Statement” (2012), op. cit., pp. A1-A5.

¹⁵⁴ “Rogozin: Russia to use nuclear weapons if attacked,” *ITARiTASS*, December 12, 2013, available at <http://en.itar-tass.com/russia/711191>.

¹⁵⁵ Alexander Golts, “The Last Laugh Is on Rogozin,” *The Moscow Times*, May 19, 2014, available at <http://www.themoscowtimes.com/opinion/article/the-last-laugh-is-on-rogozin/500460.html>.

¹⁵⁶ Ramil Sitdikov, “Russia Sends 4 Strategic Bombers on 24-Hour Arctic Patrol,” *RIA Novosti*, March 14, 2014, available at <http://en.ria.ru/russia/20140314/188431204/Russia-Sends-4-Strategic-Bombers-on-24-Hour-Arctic-Patrol.html>.

the only country in the world that is realistically capable of turning the United States into radioactive ash.”¹⁵⁷

Russian Aerospace Defenses

Russia is in the process of deploying an “Aerospace Defense System.” The declared mission of this system is to intercept bombers, cruise missiles, hypersonic missiles, medium range missiles, and ICBMs and SLBMs. Three Aerospace Defense Force generals have said that Russian surface-air-missiles (two of them specifically referred to the new S-500 system) will intercept ICBMs (by which they appear to mean both ICBMs and SLBMs).¹⁵⁸ Russia’s announced plan involves 10 battalions of S-500 by 2020.¹⁵⁹ Russia has also said it will be deploying an improved missile defense system around Moscow (the A-235) and later will have sea- and air-based missile defenses.¹⁶⁰

¹⁵⁷ “Russia can turn US to ‘radioactive ash’: Kremlin-backed journalist,” *The Sidney Morning Herald*, March 17, 2014, available at <http://www.smh.com.au/world/russia-can-turn-us-to-radioactive-ash-kremlin-backed-journalist-20140317-hvj10.html>.

¹⁵⁸ “Russian air force to start intercepting ICBM from 2015, commander says,” *Ekho Moskvy News Agency*, September 9, 2011, <http://www.wnc.dialog.com/proquestdialog/>; “Interview with Major-General Sergey Popov, Air Force Deputy Chief Commander for the Air Defense, by Anatoliy Yermolin,” *Ekho Moskvy Radio*, September 10, 2011, available at <http://www.wnc.dialog.com/proquestdialog/>; “CO of Russia’s aerospace defences expects the S-500 within two years,” *Vesti TV*, November 29, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>; “S-500 to be Russia’s response to U.S. missile defense network - Defense Ministry,” *Interfax-AVN*, November 29, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>; “The New S-500 Air Defense Missile System Will Be Able To Effectively Combat Advanced Offensive Aerospace Weapons,-- RF Ministry of Defense,” *Interfax-AVN*, April 26, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>; “The Army: We Are Awaiting Assistance from Military Science and the Defense Industrial Complex: We Will not Manage to Create State-of-the-Art Armed Forces Without This,” *Voyenno-Promyshlennyy Kuryer Online*, February 19, 2012, available at <http://www.wnc.dialog.com/proquestdialog/>; M. Pyadushkin, “S-500’s 2020 Outlook,” *Aviationweek.com*, August 14, 2010, available at <http://www.aviationweek.com/aw/blogs/defense/index.jsp?plckController=Blog&plckScript=blogScript&plckElementId=blogDest&plckBlogPage=BlogViewPost&plckPostId=Blog:27ec4a53-dcc8-42d0-bd3a-01329aef79a7Post:db7ff832-349d-41ac-b590-a2ba23b93cc1>; Mark B. Schneider and Peter Huessy, “Russian Deployment of Missile Defenses Hidden in Plain Sight,” *Gatestone Institute*, February 18, 2013, available at <http://www.gatestoneinstitute.org/3590/russia-missile-defense>; “Dmitriy Yermolayev, “Triumph of Russia’s Air Defense,” *Rossiyskiye Vesti*, March 3, 2010, available at <http://www.wnc.dialog.com/proquestdialog/>.

¹⁵⁹ Pyadushkin, “S-500’s 2020 Outlook,” op. cit.

¹⁶⁰ Valerny Melnikov, “Future of Russian missile defense to be based in air,” *RIA Novosti*, August 5, 2011, available at http://en.rian.ru/military_news/20110815/165792644.html; “Russia to Create Sea-Based Missile Defense System?,” *NavalToday.com*, September 25, 2011, available at <http://navaltoday.com/2011/09/25/russia-to-create-sea-based-missile-defense-system/russia-to-create-sea-based-missile-defense-system/>; Michail Fomichev, “Russia ready to discuss all European missile defense proposals,” *RIA Novosti*, May 22, 2011, available at <http://en.rian.ru/world/20110504/163857157.html>; Oleg Lastochkin, “Russia to refit Admiral Nakhimov nuclear cruiser after 2012,” *RIA Novosti*, December 3, 2011, available at http://en.rian.ru/military_news/20111203/169272925.html; “Russia:

Unlike the U.S. missile defense system which is designed to defend against threats from rogue states, the Russian system seems aimed at providing a level of defense against the United States.¹⁶¹ To counter bombers and cruise missiles, Russia has announced plans to deploy 56 battalions of advanced S-400 SAMs and it is developing and deploying advanced interceptor aircraft including a 5th generation aircraft.¹⁶² In 2013, four well known Russian experts, Sergey Rogov, Colonel General (ret.) Viktor Yesin, Major General (ret.) Pavel Zolotarev and Vice-Admiral (ret.) Valentin Kuznetsov concluded that the force of 450-900 nuclear weapons proposed by the *Global Zero* organization “clearly is insufficient for destroying all strategic targets on Russian territory,” and, if the planned aerospace defense is implemented, damage expectancy from a U.S. nuclear strike against Russia would be reduced to approximately ten percent.¹⁶³ The Minimum Deterrence proposals for deep U.S. nuclear reductions typically ignore the potential of Russian missile and bomber defenses to degrade U.S. offensive capabilities.

Russian Conventional Modernization

Russia’s stated goal is modernizing 70% of its conventional forces by 2020.¹⁶⁴ Conventional modernization is intended to yield forces that while smaller, are more mobile, technologically advanced, combat-ready, and professional. In many areas of military technology, Russia’s conventional forces are not equal to that of the West, but generally are superior to those of its neighbors as is well illustrated by the situation in Ukraine.

Moscow Air Defense Improvements - Moscow Anti-Missile Defense System To Be Updated,” *VPK Voenno-Promyshlenny Kuryer Online*, May 6, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>.

¹⁶¹ Schneider and Huessy, “Russian Deployment of Missile Defenses Hidden in Plain Sight,” op. cit.

¹⁶² Valeriy Melnikov, “Russia to Deploy S-400 Air Defense Systems Near Borders,” *RIA Novosti*, February 14, 2012, available at http://en.ria.ru/military_news/20120214/171302617.html; Dmitriy Litovkin, “Flown to the Fifth Generation,” *Izvestiya Online*, May 16, 2011, available at <http://www.wnc.dialog.com/proquestdialog/>.

¹⁶³ Sergey Rogov, Viktor Yesin, Pavel Zolotarev, and Valentin Kuznetsov, “Compromises for a Solution to the Missile Defense Problem,” *Nezavisimoye Voyennoye Obozreniye Online*, September 20, 2012, available at <http://www.wnc.dialog.com/proquestdialog/>.

¹⁶⁴ Valeriy Melnikov, “Russia to prioritize modern weaponry in new arms acquisition program,” *RIA Novosti*, November 11, 2011, available at http://en.ria.ru/military_news/20110311/162956743.html; “Share of modern weapons, hardware in Russian armed forces to reach at least 70% by 2020 – plan,” *Interfax-AVN*, July 1, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>.

According to the Director of National Intelligence General, (ret.) James Clapper, planned conventional improvements “will allow the Russian military to more rapidly defeat its smaller neighbors and remain the dominant military force in the post-Soviet space, but they will not—and are not intended to—enable Moscow to conduct sustained operations against NATO collectively.”¹⁶⁵ Russia’s conventional force modernization appears designed to create options for Putin’s “gathering of Soviet lands.”

Russian Chemical and Biological Weapons

A 2005 State Department report stated that Russia, “continues to maintain an offensive BW [biological warfare] program in violation of the [BW] Convention,” and, “The United States judges that Russia “is in violation of its CWC [Chemical Weapons Convention] obligations because its CWC declaration was incomplete with respect to declaration of production and development facilities, and declaration of chemical agent and weapons stockpiles.”¹⁶⁶ A 2013 State Department report concluded that Russian activities were “unclear” as to whether they were in compliance with the BWC.¹⁶⁷ Also, Russia “still denies outsiders any access to key military biological facilities that were critical components of the Soviet germ weapons program.”¹⁶⁸ There is no comparable Western capability for CW or BW given strict compliance with arms control treaties.

¹⁶⁵ James Clapper, “Worldwide Threat Assessment of the US Intelligence Community,” before the Senate Select Committee on Intelligence, March 12, 2013, available at <http://www.dni.gov/files/documents/Intelligence%20Reports/2013%20ATA%20SFR%20for%20SSCI%2012%20Mar%202013.pdf>.

¹⁶⁶ U.S. State Department, *Adherence to and Compliance with Arms Control, Nonproliferation and Disarmament Agreements and Commitments* (Washington, D.C.: Department of State, 2005), pp. 31, 61, available at <http://www.state.gov/t/avc/rls/rpt/51977.htm>.

¹⁶⁷ U.S. State Department, *Adherence to and Compliance with Arms Control, Nonproliferation and Disarmament Agreements and Commitments* (Washington, D.C.: Department of State, July 2013), pp. 14-15, available at <http://www.state.gov/documents/organization/212096.pdf>.

¹⁶⁸ Testimony of Amy E. Smithson, “Prepared Statement,” House Armed Services Committee, Hearing on Biodefense: Worldwide Threats and Countermeasure Efforts for the Department of Defense, October 11, 2013, p. 3.

Potential for Conflict

Given Russia's leadership, foreign policy objectives and ongoing military buildup, the possibility clearly exists for significant crises and conflict with NATO, and there is no indication that this possibility will cease to exist in the future. While Putin's Russia does not have the massive military potential of the Soviet Union, it appears in some respects to be even more anti-Western and more willing to risk crises and conflict. As Russian expatriate Alexei Bayer observes, Putin's Russia is "bursting with negative energy, hatred of the outside world and enthusiasm for confrontation."¹⁶⁹

Twice in the last six years Russia has used force to achieve territorial objectives. While the invasion of Georgia was precipitated by Georgian actions, President Putin and then Chief of the General Staff General Yuriy Baluyevskiy have stated the war was preplanned and pre-authorized under specific conditions.¹⁷⁰ In contrast, the Russian invasion of the Crimea happened without any provocation.¹⁷¹ Alexander Golts, who had previously argued that Putin was more interested in money than conquest, admitted that he was completely wrong in his assessment of what guides Vladimir Putin in his decisions.¹⁷² Golts points out that Putin's new role of "gatherer of Soviet lands" creates the potential of conflict between NATO and Russia—particularly because of Russia's declared goal to "protect" all ethnic Russians, some of whom live in neighboring NATO nations.¹⁷³

There has been a widespread reassessment of Russia after its action in the Crimea. According to Secretary of State John Kerry, the invasion of Ukraine is "a threat to the peace and security of Ukraine, and the wider region."¹⁷⁴ Michael Bohm, editor of *The Moscow Times*, observed, "The

¹⁶⁹ Alexei Bayer, "Prepare for War, Not Peace," *The Moscow Times*, June 8, 2014, available at <http://www.themoscowtimes.com/opinion/article/prepare-for-war-not-peace/501720.html>.

¹⁷⁰ Pavel Felgenhauer, "Putin Confirms the Invasion of Georgia Was Preplanned," *Eurasia Daily Monitor*, Vol. 9, No. 152 (August 9, 2012).

¹⁷¹ Pavel Felgengauer, "Operation 'Russia's Crimea.' Whoever Opens Fire First Is the Loser," *Novaya Gazeta Online*, March 3, 2014, translated by Open Source Center, Doc. ID CEN2014030348327360.

¹⁷² Golts, "Putin Has Decided to Send Troops into Ukraine," op. cit.

¹⁷³ Golts, "Week's Results: Between Terrorists and Syria," op. cit.

¹⁷⁴ John Kerry, "Situation in Ukraine," (Washington, D.C.: U.S. Department of State, March 1, 2014), available at <http://state.gov/secretary/remarks/2014/03/222720.htm>.

real question, however, is whether Putin will stop with [the] Crimea.”¹⁷⁵ As already noted, Senior Russian Defense Ministry officials speak about a conflict with the West over natural resources or control of Arctic Ocean resources.¹⁷⁶ Alexander Golts points out that senior Russian military leaders, taking their cue from Putin, now assert that “Western intelligence agencies conspire to foment ‘color revolutions’ around the world.” This is a “new type of warfare,” requiring Russian use of “military forces to combat internal threats...”¹⁷⁷ Even before the Russian invasion and annexation of the Crimea and its subsequent threat of a larger invasion, some Eastern European nations were concerned about the possibility of a Russian attack and the Russian nuclear threat.¹⁷⁸ In the wake of the Russian invasion of Ukraine, Poland and Lithuania called for NATO Article Four consultations, which is very rare because this relates to a threat to the security, territorial integrity or independence of the member states.¹⁷⁹ NATO commander General Philip Breedlove called for additional military deployments to Eastern Europe to deter Russia.

Pavel Felgengauer has noted the threat of nuclear war posed by Russian territorial ambitions when linked to Russian views about the preemptive use of nuclear weapons in local conflicts.¹⁸⁰ He writes, “...our superiors are potentially ready to burn all of us in nuclear fire because of disputes over ice, rocks or South Ossetia.”¹⁸¹ Felgengauer points out that during the Ukraine

¹⁷⁵ Michael Bohm, “The real question, however, is whether Putin will stop with Crimea,” *The Moscow Times*, March 14, 2014, available at <http://www.themoscowtimes.com/opinion/article/putins-imperial-ambitions/496138.html>.

¹⁷⁶ Ibid.; Alexander Golts, “Colder War: The Militarization of the Arctic,” *The Moscow Times*, October 15, 2013, available at <http://www.themoscowtimes.com/opinion/article/colder-war-the-militarization-of-the-arctic/487839.html>; “Russia: Rearming for Resource Wars,” *RIA Novosti*, February 17, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>; “‘Hot Spots Near Our Borders’: Defense Minister Perceived Russia’s Danger ‘in a Number of Directions’,” *Vzglyad Online*, January 29, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>; Felgengauer, “Russia Preparing for Global Resource War,” op. cit.

¹⁷⁷ Alexander Golts, “Are Color Revolutions a New Form of War?,” *The Moscow Times*, June 2, 2014, available at <http://www.themoscowtimes.com/opinion/article/are-color-revolutions-a-new-form-of-war/501353.html>.

¹⁷⁸ Bruno Waterfield, “Russia deploys missiles on its border with Poland as prospects of an EU trade deal with Ukraine recede further,” *Telegraph.co.uk*, December 16, 2013, available at <http://www.telegraph.co.uk/news/worldnews/europe/russia/10521594/Europe-fears-over-Russian-nuclear-capable-missiles-on-border-of-EU.html>.

¹⁷⁹ “Poland requests more NATO consultations over Russia,” *Reuters*, March 3, 2014, available at <http://news.yahoo.com/poland-requests-nato-consultations-under-article-4-192129502.html>; “Lithuanian and Polish presidents call for NATO treaty Article 4 consultations,” *The Lithuanian Tribune*, March 2, 2014, available at <http://www.lithuaniantribune.com/64476/lithuanian-polish-presidents-call-for-nato-treaty-article-4-consultations-201464476/>.

¹⁸⁰ Felgengauer, “Russia Preparing for Global Resource War,” op. cit.

¹⁸¹ “Pavel Felgengauer and Novaya Gazeta,” *Esiweb.org*, June 9, 2011, available at http://www.esiweb.org/index.php?lang=en&id=281&story_ID=26&slide_ID=15esiweb.org.

crisis a popular Moscow weekly (*Argumenti.ru*) declared, “The Russian tactical nuclear arsenal dominates Europe, and Russian jets can sink any US Navy ships in the Black Sea at will.”¹⁸²

Russian views concerning the purpose of nuclear weapons may influence Putin’s calculation of his freedom to risk conflict with NATO and, if this happens, increase the risks of nuclear crisis and conflict. These perceptions are very different than those presumed by Minimum Deterrence proponents.

¹⁸² Pavel Felgenhauer, “Rebuilding the USSR,” *Eurasia Daily Monitor*, Vol. 11, No. 81 (May 1, 2014).

The People's Republic of China

Strategic Aims

While China's communist ideology is declining, there appears to be considerable emphasis on state-sponsored nationalism.¹⁸³ Since the demise of the Soviet Union, one of the most dangerous territorial disputes in the world has been the Chinese claim of sovereignty over Taiwan. China has said it will pay "any cost" to prevent the legal "independence" of Taiwan.¹⁸⁴ "Any cost" appears to include nuclear war.¹⁸⁵ Chinese expressions regarding Taiwan suggest that China could take military action against Taiwan if, for example, an election there goes against Chinese desires with regard to the issue of Taiwan's independence. Of increasing concern are China's many border disputes with its neighbors, including Japan and India. (Indeed, the only Chinese border dispute that has been more or less resolved has been with the nation that has thousands of nuclear weapons—Russia.)

China's proclaimed "Air Defense Identification Zone" is linked to Chinese sovereignty claims over the surrounding seas.¹⁸⁶ The daily newspaper of China's Central Military Commission (the main Defense Ministry decision making body) openly proclaimed that the Air Defense Identification Zone "is completely based on the objectives of protecting the security of national sovereignty and self-defense."¹⁸⁷ China is provoking an increasing number of incidents in the air and at sea with Japan and with the United States which could escalate into crises and conflict.¹⁸⁸ (Over the last decade, the number of Japanese fighter scrambles in response to intruding Chinese

¹⁸³ "Japan's new military thinking amid dispute with China," *Oman Observer*, December 24, 2013, available at <http://main.omanobserver.om/?p=42155>.

¹⁸⁴ "Xinhua: 'Full Text' of White Paper titled 'China's National Defense, 2004,'" *Xinhua*, December 27, 2004, transcribed by Foreign Broadcast Information Service, Doc. ID: CPP200412270000034.

¹⁸⁵ "Article on Rapid Growth of PRC Military Strength," *Hs*, October 1, 1999, translated by Foreign Broadcast Information Service, Doc. ID: FTS19991004001822.

¹⁸⁶ Wendel Minnick, Jung Sung-Ki, and Pual Kllender-Umezu, "More Chinese Air ID Zones Predicted," *Weekly Standard*, December 1, 2013, available at http://www.weeklystandard.com/blogs/biden-bows-china_769519.

¹⁸⁷ "Jiefangjun Bao Commentator: PRC Air Defense Identification Zone Protects Air Space Sovereignty," *Jiefangjun Bao*, November 28, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>.

¹⁸⁸ "3 Chinese ships enter waters off disputed islands," *Japan Today*, January 13, 2014, available at <http://www.japantoday.com/category/national/view/3-chinese-ships-enter-waters-off-disputed-islands>.

military aircraft increased from two to 306 per year.¹⁸⁹) According to the *People's Daily*, the Chinese Air Defense Identification Zone is aimed at “breaking through” the “first Island chain” which they see as containing China.¹⁹⁰

Improving Military Capabilities

Despite its extreme secrecy and “national-level military denial and deception programs,”¹⁹¹ it is clear that China has been making double-digit annual increases in its defense spending for two decades and rapidly increasing its military capabilities in a wide range of areas.¹⁹² According to the 2014 report of the U.S. Director of National Intelligence, “China’s military investments favor capabilities designed to strengthen its nuclear deterrent and strategic strike options, counter foreign military intervention in a regional crisis, and provide limited, albeit growing, capability for power projection.”¹⁹³

In several categories, China’s armed forces are numerically the largest in the world and its strategy of “active defense” is generally described as an “anti-access” strategy in the West.¹⁹⁴ Chinese “active defense” appears to involve building armed forces, including nuclear forces,

¹⁸⁹ Kyle Mizokami, “Inside Japan’s New Defense Plan,” *Combat Aircraft*, Vol. 15, No. 1 (March 2014), p. 28.

¹⁹⁰ “U.S.-China Relations,” *People’s Daily*, December 3, 2013, available <http://world.people.com.cn/n/2013/1203/c1002-23729935.htm>.

¹⁹¹ Michael T. Flynn, “Prepared Statement,” before the Senate Armed Services Committee, February 11, 2014, available at http://www.dia.mil/Portals/27/Documents/News/2014_DIA_SFR_SASC_ATA_FINAL.pdf; *FY04 Report to Congress on PRC Military Power Pursuant to the FY2000 National Defense Authorization Act* (Washington, D.C.: Department of Defense, 2004), available at <http://www.defense.gov/pubs/d20040528prc.pdf>.

¹⁹² “Japan’s new military thinking amid dispute with China,” *op. cit.*

¹⁹³ James R. Clapper, “Statement for the Record Worldwide Threat Assessment of the US Intelligence Community,” Senate Select Committee on Intelligence, January 29, 2014,” p. 22, available at <https://www.hsdl.org/?view&did=749413>.

¹⁹⁴ Roger Cliff, Mark Burles, Michael S. Chase, Derek Eaton, and Kevin L. Pollpeter, *Entering the Dragon’s Lair - Chinese Antiaccess Strategies and Their Implications for the United States*, (Santa Monica, CA: The RAND Corporation, 2007), available at http://www.rand.org/content/dam/rand/pubs/monographs/2007/RAND_MG524.pdf.

designed to fight and win local wars¹⁹⁵ and for information driven high intensity conflict against its neighbors and the U.S.¹⁹⁶

Nuclear Modernization and Expansion of Capabilities

China is increasing the quantity and quality of both its nuclear and conventional forces. It reportedly continues to expand its large force of ballistic missiles with both nuclear and conventional capabilities.¹⁹⁷ According to the Director of National Intelligence, China has continued to develop “multiple advanced ballistic and cruise missiles.”¹⁹⁸ In fact, China’s missile development program is the most active in the world.¹⁹⁹ The National Air and Space Intelligence Center (NASIC) lists 13 types of Chinese theater range ballistic missiles that are operational or under testing.²⁰⁰ Moreover, China has deployed a very large force of precision or near precision guided ballistic missiles.²⁰¹ It reportedly has as many as 1,600 missiles targeted on Taiwan.²⁰² The expansion and modernization of the PRC’s nuclear and conventional missile forces provide a very considerable warfighting capability, one that has been built up in a time period in which there have been no apparent threats to Chinese security.

Chinese theater missiles reportedly use Global Positioning System and Inertial Navigation Systems guidance,²⁰³ but China is building its own GPS-like satellite system called the

¹⁹⁵ Department of Defense, *Military and Security Developments Involving the People’s Republic of China 2012* (Washington, D.C.: Department of Defense, 2012, p. iv, available at http://www.defense.gov/pubs/pdfs/2012_cmpr_final.pdf.

¹⁹⁶ Ibid.

¹⁹⁷ Bill Gertz, “First Strike,” *Washington Free Beacon*, April 26, 2013, available at <http://freebeacon.com/first-strike/>; Brad Roberts, *China and Ballistic Missile Defense, 1955 to 2002 and Beyond* (Alexandria, VA: Institute for Defense Analysis, September 2003), p. 45, available at <http://www.fas.org/nuke/guide/china/doctrine/bmd.pdf>; Duncan Lennox, “Unraveling a Chinese puzzle,” *Jane’s Defence Weekly*, November 7, 2007.

¹⁹⁸ James R. Clapper, “Statement for the Record Worldwide Threat Assessment of the US Intelligence Community” op. cit., p. 22.

¹⁹⁹ NASIC, *Ballistic and Cruise Missile Threat* (Wright-Paterson Air Force Base, OH: National Air and Space Intelligence Centers, 2013), p. 3, available at <http://www.afisr.af.mil/shared/media/document/AFD-130710-054.pdf>.

²⁰⁰ Ibid., p. 13.

²⁰¹ Ibid., p. 10.

²⁰² J. Michael Cole, “China’s Second Artillery Has a New Missile,” *TheDiplomat.com*, August 7, 2013, available at <http://thediplomat.com/2013/08/chinas-second-artillery-has-a-new-missile/>.

²⁰³ John A. Tirpak, “Global Power on a Budget,” *Air Force Magazine*, Vol. 95, No. 1 (January 2012).

Beidou.²⁰⁴ According to noted U.S. analyst Richard Fischer Jr., the Chinese DF-21C “features a bi-conic maneuverable warhead similar in shape to the warhead stage used by [the] U.S. MGM-31 *Pershing-II* terminally-guided MRBM—which is also used by the DF-15B SRBM.”²⁰⁵ The new Chinese DF-15C, recently displayed by China, reportedly has a capability against underground bunkers.²⁰⁶ China is continuing to introduce new and improved theater missiles such as the DF-16 (CSS-11 Mod 1).²⁰⁷ According to the DIA Director’s 2014 annual report, “the DF-16...will improve China’s ability to strike regional targets.”²⁰⁸ Additionally, China is reportedly deploying the new DF-12 short-range missile.²⁰⁹ The Pentagon says China also continues to deploy growing numbers of the DF-21D anti-ship ballistic missile.²¹⁰ The DH-10 (CJ-10) cruise missile has already been deployed.²¹¹ China is also reportedly developing a new stealth cruise missile with a supersonic terminal flight phase and a range of 4,000-km.²¹² With reported accuracies ranging from 10 to 50 meters,²¹³ Chinese theater missiles may provide warfighting potential.

²⁰⁴ Ma Ho-Leung, “China Speeds up Networking of Beidou, Long-Range Guidance Can Accurately Annihilate Enemy,” *Ta Kung Pao Online*, January 5, 2011, translated by Open Source Center, Doc. ID: CPP20110105704001.

²⁰⁵ Mark B. Schneider, “Nuclear Weapons Modernization in Russia and China: Understanding Impacts to the United States,” prepared statement before the House Armed Services Subcommittee on Strategic Forces, October 14, 2011,” p. 7, available at <http://www.gpo.gov/fdsys/pkg/CHRG-112hhrg71449/html/CHRG-112hhrg71449.htm>.

²⁰⁶ “China releases first photos of DF-15C ‘bunker buster,’ short-range ballistic missile with deep-penetration warhead,” *Newcom.au*, June 4, 2014, available at <http://www.news.com.au/technology/china-releases-first-photos-of-df15c-bunker-buster-shortrange-ballistic-missile-with-deeppenetration-warhead/story-e6frfrnr-1226942286149>.

²⁰⁷ NASIC, *Ballistic and Cruise Missile Threat*, op. cit. p. 10; Rogge Chen and Sofia Wu, “Taiwan Concerned About China’s Df-16 Missile Deployment,” *Central News Agency*, March 20, 2013, available at http://focustaiwan.tw/news/aip/201303_200039.aspx.

²⁰⁸ Flynn, Prepared Statement, February 11, 2014, op. cit.

²⁰⁹ Cole, “China’s Second Artillery Has a New Missile,” op. cit.

²¹⁰ Ibid.

²¹¹ NASIC, *Ballistic and Cruise Missile Threat*, op. cit., p. 27.

²¹² Thomas R. McCabe, *China’s Air and Space Revolutions* (Washington, D.C.: The Mitchell Institute, April 2013), p. 7, available at http://higherlogicdownload.s3.amazonaws.com/AFA/6379b747-7730-4f82-9b45-a1c80d6c8fdb/UploadedImages/Mitchell%20Publications/MP10_China.pdf

²¹³ Mark Schneider, *The Nuclear Doctrine and Forces of the People’s Republic of China*, (Fairfax, VA: National Institute for Public Policy, 2007), p. 26, available at <http://nipp.org/Publication/Downloads/Publication%20Archive%20PDF/China%20nuclear%20final%20pub.pdf>; “CSS-5 Mod 2 (DF-21A/B),” available at http://www.missilethreat.com/missiles-of-the-world/id.25/missile_detail.asp; Richard Fisher Jr., “Testimony before the House Armed Services Subcommittee on Strategic Forces – ‘Nuclear Weapons Modernization in Russia and China: Understanding Impacts to the United States,’” October 14, 2011, p. 7, available at <http://www.worldaffairs.councils.org/2011/images/insert/Majority%20Statement%20and%20Testimony.pdf>.

Nuclear Weapon Numbers

Estimates of the current size of the Chinese nuclear arsenal range from a few hundred to over three thousand.²¹⁴ The U.S. estimate (100-240) is at the low end of the 2010 Taiwanese estimate (450-500) about twice the U.S. number.²¹⁵ Russian estimates are at the middle and the upper end of this range.²¹⁶ The difference between Russian, U.S. and Taiwanese estimates appears to follow from Russian experts crediting the Chinese with a much larger theater nuclear strike force. Former Soviet Strategic Missile Troops Commander, Colonel General (ret.) Viktor Yesin says that many Chinese medium-range missiles that are usually considered conventional also have nuclear warheads available,²¹⁷ and Yesin assesses that China has enough fissile material for 3,600 nuclear warheads and has produced 1,600-1,800 nuclear warheads of which 800-900 may be operationally deployed.²¹⁸ Professor Philip Karber, head of Georgetown University's Asian Arms Control Project, has suggested China could have as many as 3,000 nuclear warheads.²¹⁹ Noted U.S. analyst Colonel [ret.] Larry Wortzel, also points out that China puts "nuclear and conventional warheads on the same classes of ballistic missiles and collocate[s] them near each other in firing units of the Second Artillery Corps..."²²⁰

²¹⁴ U.S.-China Economic and Security Review Commission, *2012 Report to Congress* (Washington, D.C.: U.S. Government Printing Office, November 2012), p. 176. William Wan, "Georgetown students shed light on China's tunnel system for nuclear weapons," *The Washington Post*, November 29, 2011, available at http://articles.washingtonpost.com/2011-11-29/world/35280981_1_nuclear-weapons-georgetown-students-militaryjournals.

²¹⁵ Ibid.

²¹⁶ Ibid., Viktor Yesin, "On China's Nuclear Potential without Underestimation or Exaggeration," Georgetown University Arms Control Project, May 2012, p. 2, available at <http://www.scribd.com/doc/98667133/YESIN-China-s-Nuclear-Potential>; Arbatov, "Russia: Problems in Involving PRC in Nuclear Arms Limitation, Transparency Talks," *Voenno promyshlenyi. Kur'er*, July 8, 2012, available at <http://www.wnc.dialog.com/proquestdialog>.

²¹⁷ Yesin, "On China's Nuclear Potential without Underestimates or Exaggeration."

²¹⁸ Ibid., p. 3.

²¹⁹ Wan, "Georgetown Students Shed Light On China's Tunnel System for Nuclear Weapons," op. cit.

²²⁰ Larry M. Wortzel, *China's Nuclear Forces: Operations, Training, Doctrine, Command, Control, and Campaign Planning* (Carlisle, PA: U.S. Army Strategic Studies Institute, May 2007), p. ix, available at <http://www.strategicstudiesinstitute.army.mil/pdffiles/pub776.pdf>.

Strategic Nuclear Modernization

Chinese modernization of its ICBM force is well underway. According to the Pentagon, China has deployed an “enhanced” version of the DF-5 (CSS-4) which reportedly carries 4-6 MIRVed warheads.²²¹ The CIA, in an unclassified National Intelligence Estimate (NIE), said that this missile is large enough to carry multiple warheads of the type carried by the JL-2 SLBM.²²² Recent Pentagon China reports say China is deploying two new ICBMs, the DF-31 (CSS-10 Mod 10) and DF-31A (CSS-10 Mod 2), and is developing the newer and more capable road mobile DF-41 which reportedly carries 10 warheads.²²³ General Yesin writes that the yield of the DF-31 is up to 500-kilotons and the yield of the DF-31A is up to 300-kt.²²⁴ According to Russian expert Sergey Kherkherov, “The payload [of the DF-41] is 2,500 kg, which allows the accommodation of a MIRV with 10 warheads with a yield of 150 kilotons each.”²²⁵ The U.S. Air Force Global Strike Command expects this missile to be fielded within five years.²²⁶

²²¹ Schneider, “Nuclear Weapons Modernization in Russia and China: Understanding Impacts to the United States,” op. cit.

²²² “Hearing Before the International Security, Proliferation, and Federal Services Subcommittee on Governmental Affairs,” United States Senate, 106th Cong., 2nd Sess., February 9, 2000, (Washington, D.C.: Government Printing Office, 2000), p. 8.

²²³ Lt Gen James M. Kowalski Commander, “Air Force Global Strike Command,” May 7, 2013, p. 5, available at <http://fas.org/programs/ssp/nukes/nuclearweapons/AFGSC-CommandBrief-May2013.pdf>; Bill Gertz, “China Conducts Second Flight Test of New Long-Range Missile,” *Washington Free Beacon*, December 17, 2013, available at <http://freebeacon.com/china-conducts-second-flight-test-of-new-long-range-missile/>; “DF-41 (CSS-X-10) (China), Offensive weapons,” *Jane’s Strategic Weapon Systems*, June 21, 2011, available at <http://articles.janes.com/articles/Janes-Strategic-Weapon-Systems/DF-41-CSS-X10-China.html>; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2014* (Washington, D.C.: Department of Defense, 2014), p. 7, available at http://www.defense.gov/pubs/2014_DoD_China_Report.pdf.

²²⁴ V.I. Yesin, “The Nuclear Might of the PRC,” p. 30, in Aleksey Arbatov, Vladimir Dvorkin, and Sergey Oznobishchev, *Prospects for China Participation in Nuclear Arms Control* (Moscow: INEMO RAS, 2012), available at <http://www.scribd.com/doc/112572145/AAC-China-Nuclear-Limitations-Russian-English>.

²²⁵ Sergey Kherkherov, “PLA conducts 2nd test flight of DF-41 long-range missile,” *WantChinaTimes.com*, December 19, 2013, available at <http://www.wantchinatimes.com/news-subclass-ont.aspx?id=20131219000083&cid=1101&MainCatID=11>; “China is Building Up Nuclear ‘Muscle’: This Worries Not Only the USA, but Also Neighboring States,” *Vlasti.Net*, July, 4, 2008, translated by Open Source Center, Doc. ID: CEP20080710357001.

²²⁶ Kowalski, “Air Force Global Strike Command,” op. cit., p. 5.

In January 2014, China reportedly tested the Wu-14, a hypersonic boost glide vehicle.²²⁷ It apparently achieved a speed of Mach 10, which would be appropriate for theater targeting.²²⁸ Lee Fuell, a technical intelligence specialist with the Air Force's National Air and Space Intelligence Center, testified before the Congressional China Commission that, "At this point, we think that's associated with their nuclear deterrent forces," although it could also be used for conventional strikes.²²⁹ China, according to Congressional leaders, has apparently pulled ahead of the United States in this important technology.²³⁰ Bradley Perrett, Bill Sweetman, and Michael Fabey, writing in *Aviation Week*, state that the "test [of a hypersonic boost glide vehicle] appears to mark a step beyond China's anti-ship ballistic missile (ASBM) program, featuring a slower, shorter-range maneuverable reentry vehicle (RV)—and may point to a second-generation ASBM [Anti-Ship Ballistic Missile]."²³¹ Thus, there appear to be intensive Chinese programs to develop advanced nuclear capable missile systems.

The vast length of China's "Underground Great Wall," (the Chinese say 5000-km of missile tunnels), may suggest that a large force of nuclear-armed mobile missiles is planned.²³² Significantly, the tunnels are reported to be hundreds of meters underground and invulnerable to one or two nuclear weapons with yields in the few hundreds of kilotons range.²³³ The key point

²²⁷ Brent Scher, "Admiral: Chinese Hypersonic Weapons 'Complicate' Security Environment," *Washington Free Beacon*, January 23, 2014, available at <http://freebeacon.com/admiral-chinese-hypersonic-weapons-complicate-security-environment/>; Tom Rawle, "STAR WARS: China beats US to testing 9,127mph HYPERSONIC missile carrier," *Daily STAR Online*, January 14, 2014, available at <http://www.wnc.dialog.com/proquestdialog/>; Bill Gertz, "Chinese Defense Ministry Confirms Hypersonic Missile Test," *Washington Free Beacon*, January 15, 2014, available at <http://freebeacon.com/chinese-defense-ministry-confirms-hypersonic-missile-test/>; Bradley Perrett, Bill Sweetman, and Michael Fabey, "U.S. Navy Sees Chinese HGV As Part Of Wider Threat," *Aviation Week Online*, January 27, 2014, available at http://www.aviationweek.com/Article.aspx?id=article-xml/AW_01_27_2014_p18-657278.xml#.

²²⁸ Gertz, "Chinese Defense Ministry Confirms Hypersonic Missile Test," op. cit.

²²⁹ Bill Gertz, "Inside the Ring: Pentagon goes hypersonic with long-range rapid attack weapon," *The Washington Times*, March 19, 2014, available at <http://www.washingtontimes.com/news/2014/mar/19/inside-the-ring-pentagon-goes-hypersonic-with-long/?page=all#pagebreak>.

²³⁰ Gertz, "Chinese Defense Ministry Confirms Hypersonic Missile Test," op. cit.

²³¹ Perrett, Sweetman, and Fabey, "U.S. Navy Sees Chinese HGV As Part Of Wider Threat," op. cit.

²³² "ROK Daily: China Builds Underground 'Great Wall' Against Nuke Attack," *Chosun Ilbo Online*, December 14, 2009, <http://www.wnc.dialog.com/proquestdialog/>; Bret Stephens, "How Many Nukes Does China Have? Plumbing the secret Underground Great Wall," *The Wall Street Journal*, October 24, 2011, available at <http://online.wsj.com/article/SB10001424052970204346104576639502894496030.html>.

²³³ "China's 'Underground Great Wall' could swing nuclear balance," *Want China Times*, August 23, 2011, transcribed by Open Source Center, Doc. ID: CPP20110823312009; J. Michael Cole, "What Is the PLA Hiding

is that survivability of a small ICBM force does not require anything like 5,000-km of very expensive missile tunnels.

In addition to land-based nuclear missiles, the Pentagon says China is deploying the new Type 094 twelve tube ballistic missile submarine carrying the JL-2 (CSS-NX-14) SLBM and is developing the Type 096 missile submarine.²³⁴ The Type 094 is reported to be much quieter than its predecessor.²³⁵ The Pentagon also says China is expected to deploy five Type 094 missile submarines by 2020.²³⁶ In May 2008, the U.K. *Daily Telegraph* reported that submarine tunnels at the secret base at Sanya on Hainan Island would house up to 20 of the Type 094 submarines.²³⁷ There are also press reports about the development of MIRVed versions of the JL-2 and/or JL-3 SLBMs with the objective of deploying 576 nuclear warheads.²³⁸ The Pentagon has confirmed the existence of the Type 096 submarine program which is reported to be capable of carrying 16 missiles.²³⁹

Underneath Hebei?" *Taipei Times Online*, August 30, 2011, available at <http://www.taipeitimes.com/News/editorials/archives/2011/08/30/2003511997>; Li Mingri, Tao Bingfeng, Sun Jiaomin, and Zhang Qi, "Explore Mysteries of a Missile Cave That is Being Built by the Second Artillery Corps," Beijing *Zhongguo Guofang Bao*, November 24, 2009, translated by Open Source Center, Doc. ID: CPP20091215540002.

²³⁴ U.S. Department of Defense, *Annual Report to Congress, Military and Security Developments Involving the People's Republic of China 2013* (Washington, D.C.: Department of Defense, 2013), p. 6, available at http://www.defense.gov/pubs/2013_china_report_final.pdf.

²³⁵ "China's New-Type 094 Strategic Nuclear Submarines Reportedly Dock at Hainan Military Base," *Wen Wei Po Online*, February 12, 2014, translated by Open Source Center, Doc. ID: CHR2014021207783501.

²³⁶ U.S.-China Economic and Security Review Commission, *2013 Annual Report to Congress* (Washington, D.C.: Department of Defense, 2013), p. 214, available at http://origin.www.uscc.gov/sites/default/files/Annual_Report/hapters/Chapter%202%3B%20Section%201%20Military%20and%20Security%20Year%20in%20Review.pdf.

²³⁷ Thomas Harding, "Chinese Nuclear Submarines Prompt 'New Cold War' Warning," *Daily Telegraph*, May 3, 2008, available at <http://www.telegraph.co.uk/news/politics/local-elections/1920917/Chinese-nuclear-submarines-prompt-new-Cold-War-warning.html>.

²³⁸ Schneider, "The Future of the U.S. Nuclear Deterrent," op. cit. p. 350; J. Michael Cole, "Analysis: Questions remain on China's nuclear stance," *Taipei Times*, May 23, 2011, available at <http://www.taipeitimes.com/News/taiwan/archives/2011/05/23/2003503945/2>; Richard D. Fischer, *China Military Modernization*, (Westport, CT: Greenwood Publishing Group, 2008), p. 129; "Nuclear Weapons Modernization in Russia and China: Understanding Impacts to the United States," op. cit. p. 5; Tung Yi, "Range of Nuclear Warheads Can Cover Europe and America," *Sing Tao Jih Pao*, January 6, 2011, translated by Open Source Center, Doc. ID: CPP20010106000009; "New Nuclear Submarines To Be Launched by Year 2002," *Ming Pao*, December 8, 1999, translated by Open Source Center, Doc. ID: FTS19991207002001.

²³⁹ J. Michael Cole, "Analysis: Questions remain on China's nuclear stance," *Taipei Times*, May 23, 2011, available at <http://www.taipeitimes.com/News/taiwan/archives/2011/05/23/2003503945>.

China is reported to have an air-delivered nuclear weapons capability. According to the U.S. Director of the Defense Intelligence Agency, “China’s air force is transforming from a force oriented solely on territorial defense into one capable of both offshore offensive and defensive roles – including strike, air and missile defense, early warning, and reconnaissance.”²⁴⁰ About 20 H-6 bombers are reportedly devoted to a nuclear mission.²⁴¹ China is deploying the improved H-6K bomber which has longer range and is reportedly capable of carrying nuclear cruise missiles.²⁴² One Hong Kong publication states that the H-6K has an operational range of 12,000-km, but this appears exaggerated even with the cruise missile as a strike range extender.²⁴³ The U.S. Global Strike Command estimates that the Chinese CJ-20 nuclear ALCM will be operational within five years.²⁴⁴ There are also reports that China is developing a supersonic stealth bomber called the H-8 or H-10,²⁴⁵ that will carry cruise missiles.²⁴⁶ China has also displayed a model of the JH-XX which appears to be a high-speed, stealthy aircraft of medium bomber size.²⁴⁷

As many as 600 Chinese fighter aircraft are reported to be nuclear capable.²⁴⁸ China has acquired advanced Russian Su-27 and Su-30 fighters which have a longer strike range and could be adopted for nuclear weapons delivery.²⁴⁹ The Chinese stealth fighters, the J-20 and the J-31, are

²⁴⁰ Flynn, Prepared Statement, February 11, 2014, op. cit.

²⁴¹ Robert S. Norris and Hans M. Kristensen, “China nuclear forces, 2008,” *Bulletin of the Atomic Scientists*, Vol. 64, No. 3 (July/August 1008), available at <http://bos.sagepub.com/content/64/3/42.full.pdf+html>.

²⁴² U.S. Department of Defense, *Annual Report to Congress, Military and Security Developments Involving the People’s Republic of China 2013*, op. cit. pp. 5-6; U.S. Department of Defense, *Annual Report to Congress, Military and Security Developments Involving the People’s Republic of China 2012* (Washington, D.C.: Department of Defense, 2012), p. 24, available at http://www.defense.gov/pubs/pdfs/2012_cmpr_final.pdf; Kowalski, “Air Force Global Strike Command,” op. cit., p. 5.

²⁴³ Yang Mingqing, “Research and Development Initiated on Long-Range Bomber,” *Ta Kung Pao Online*, August 23, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>.

²⁴⁴ Kowalski, “Air Force Global Strike Command,” op. cit., p. 5.

²⁴⁵ “Minnie Chan, “Beiji H-8 Chinese Stealth bomber Flying High With New Fighter Jets,” *South China Morning Post Online*, February 15, 2011, translated by Open Source Center, Doc. ID: CPP20110215715009.

²⁴⁶ Mark Rutherford, “China baffles world with mystery bomber,” *C.net*, March 28, 2008, available at http://news.cnet.com/8301-13639_3-9894658-42.html.

²⁴⁷ Andreas Rupprecht, “A Glimpse of China’s Future Bomber,” *Combat Aircraft*, Vol. 14, No. 9 (September 2013), p. 32

²⁴⁸ Sumbatyan discusses a ‘modernizing’ People’s Liberation Army,” *Voyenno-Promyshlennyy Kuryer*, June 30, 2004, translated in Open Source Center, Doc. ID: CEP20040701000368.

²⁴⁹ Richard D. Fisher, Jr., “Chinese Air Force Modernizes On Dual Tracks,” *Aviationweek.com*, Mar 20, 2012, available at http://www.aviationweek.com/aw/jsp_includes/articlePrint.jsp?headLine=Chinese%20Air%20

obviously candidates for a future nuclear strike role. Colonel General (ret.) Yesin believes that Chinese fighters can deliver nuclear weapons with yields of 5-20 kilotons.²⁵⁰

Theater and Tactical Nuclear Weapons

China has a significant force of deployed theater nuclear missiles and new missiles reportedly are under development. These apparently include the CSS-2, two older versions of the CSS-5 (DF-21), the new DF-21D anti-carrier missile (ASBM), and a 4,000-km range IRBM and new cruise missiles.²⁵¹ All but the IRBM reportedly are already deployed.²⁵² According to American journalist Bill Gertz, the United States has confirmed the existence of the new IRBM program which the Chinese call the DF-26C.²⁵³ (The 2014 edition of the Pentagon's report on China confirms the existence of a new conventional IRBM.)²⁵⁴ There are also reports that the DF-25 MRBM is nuclear capable.²⁵⁵ An Indian publication says that the older versions of the DF-21 can carry nuclear warheads of 20, 90 and 150 kilotons, an EMP warhead, a chemical warhead and a conventional warhead.²⁵⁶ A Russian publication credits the DF-21A with a 250-kiloton yield.²⁵⁷

Force%20Modernizes%20On%20Dual%20Tracks&storyID=news/awst/2012/03/19/AW_03_19_2012_p61-431709.xml; Baohui Zhang, "The Modernization of Chinese Nuclear Forces and Its Impact on Sino-U.S. Relations," *Asian Affairs*, Vol. 34, No. 2 (August 7, 2010).

²⁵⁰ Yesin, "On China's Nuclear Potential without Underestimates or Exaggeration," op. cit., p. 3.

²⁵¹ U.S. Department of Defense, *Annual Report to the Congress Military and Security Developments of the Peoples Republic of China 2011* (Washington, D.C.: Department of Defense, 2011), p. 34, available at http://www.defense.gov/pubs/pdfs/2011_cmpr_final.pdf; Bill Gertz, "Chinese Defense Ministry Confirms Hypersonic Missile Test," op. cit.; Bill Sweetman and Richard D. Fischer, Jr., "Air Sea Battle Concept is Focused On China," *Aviationweek.com*, April 7, 2011, available at http://www.aviationweek.com/aw/generic/story.jsp?id=news/awst/2011/04/04/AW_04_04_2011_p.6; NASIC, *Ballistic and Cruise Missile Threat* (Wright-Patterson Air Force Base, OH: NASIC, 2009), p. 14, available at <http://www.fas.org/irp/threat/missile/naic/NASIC2009.pdf>.

²⁵² "Ballistic and Cruise Missile Threat," op. cit., p. 14.

²⁵³ Bill Gertz, "China Fields New Intermediate-Range Nuclear Missile," *Washington Free Beacon*, March 3, 2014, available at <http://freebeacon.com/china-fields-new-intermediate-range-nuclear-missile/>.

²⁵⁴ U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2014*, op. cit., p. 40.

²⁵⁵ "China's DF-25 medium-range ballistic missile revealed," *Want China Times*, February 17, 2014, available at <http://www.wantchinatimes.com/news-subclass-cnt.aspx?cid=1101&MainCatID=11&id=20140217000029>; "Dongfeng-25 Missile Exposed," *Sing Tao Jih Pao*, July 15, 2007, translated by Open Source Center, Doc. ID: CPP20070716710012.

²⁵⁶ Arjun Subramanian, "The Turning Point in China's Ballistic Missile Development Programme The Dongfeng-21," Centre for Air Power Studies, July 1, 2012, transcribed by Open Source Center, Doc. ID: SAP20121105513024.

The Chinese DH-10 ground-launched cruise missile is assessed by the Air Force's National Air and Intelligence Center (NASIC) as capable of delivering either a conventional or a nuclear warhead.²⁵⁸ Thus, all of the new Chinese medium- and intermediate-range ballistic missiles are reportedly nuclear capable. China is well positioned to attack targets within its area of reach with precision or near precision nuclear weapons as well as conventional weapons. In addition to China's land-based DF-21D ASBM, Admiral (ret.) James Lyons says that there are disturbing indications that China is deploying a naval ship-based ASBM.²⁵⁹

There is evidence that China has tactical nuclear weapons. The 2006 Chinese white paper on national defense says the Second Artillery has strategic missiles and "tactical operational missiles of various types."²⁶⁰ "Tactical operational" appears to be derived from the Soviet classification system that describes short range tactical nuclear missiles. Colonel General (ret.) Yesin characterized the DF-15 and the DF-11 as China's operational tactical nuclear missiles,²⁶¹ and notes that China has 5-20 kiloton nuclear warheads for the DF-15A, the DF-15B, the DF-11A and the DH-10 cruise missile.²⁶² An official at Taiwan's Defense Ministry has said that the Chinese M-11 (DF-11/CSS-7) missile "can fire a variety of warheads ranging from nuclear and chemical warheads to electromagnetic pulse warheads."²⁶³ A Russian publication credits this missile with nuclear warheads with yields of 2, 10 and 20 kilotons.²⁶⁴ Another Russian publication says that the yield of Chinese tactical and operational tactical nuclear weapons is 90-

²⁵⁷ Vyacheslav Baskakov and Aleksandr Gorshko, "Expertise. Beijing's Nuclear Missile Arsenal - Long-term Improvement Program Underway," *Nezavisimoye Voyennoye Obozreniye*, July 12, 2002, translated by Open Source Center, Doc. ID: CEP20020711000400.

²⁵⁸ "Ballistic and Cruise Missile Threat," (2009), op. cit., p. 29.

²⁵⁹ James A. Lyons, "Year of the dragon; China's military buildup necessitates a Navy upgrade, not cutback," *The Washington Times*, February 1, 2012, available at <http://www.washingtontimes.com/news/012/jan/31/year-of-the-dragon>.

²⁶⁰ "China's National Defense in 2006," *China.org.cn*, December 2006, available at <http://www.china.org.cn/english/features/books/194421.htm>.

²⁶¹ Yesin, "On China's Nuclear Potential without Underestimates or Exaggeration," op. cit.

²⁶² Yesin, "On China's Nuclear Potential without Underestimates or Exaggeration," op. cit., p. 3.

²⁶³ Mark B. Schneider, "Testimony Before the U.S., China Economic and Security Review Commission Hearing on 'Development in China's Cyber and Nuclear Capabilities'," March 26, 2012, available at <http://origin.www.uscc.gov/sites/default/files/3.26.12schneider.pdf>.

²⁶⁴ Kherkherov, "China is Building Up Nuclear 'Muscle'," *Vlasti.Net*, July 4, 2008, translated by Open Source Center, Doc. ID: CEP20080710357001.

100 kilotons.²⁶⁵ In 2002, Russian officers Lieutenant Colonel O. Moiseyenko and Captain 1st Rank A. Smolovskiy wrote that China had tactical nuclear missile warheads and artillery rounds.²⁶⁶ A similar report appeared in the Hong Kong press.²⁶⁷

Declassified CIA documents (discussed below) indicate that several of the last announced Chinese nuclear tests may have been related to tactical nuclear weapons. Chin Shao-yang, writing in a Hong Kong-based PRC government-owned internet publication, stated that “the PLA focuses on practicing attacks on carriers and that weapons intended for use against U.S. carriers included supersonic anti-ship missiles, submarines, aircraft and tactical nuclear weapons.”²⁶⁸ Chinese open sources have said that, by the 1980s, China had developed a neutron bomb.²⁶⁹ *Interfax* cites a Russian Foreign Ministry source as confirming Chinese claims that they had developed neutron bombs.²⁷⁰ Such a capability suggests the possibility of Chinese battlefield use of tactical nuclear weapons.

A few open sources report Chinese interest in very-low-yield nuclear weapons. For example, in 2000, Major General Wu, a former Associate Professor and Dean of the Chinese Antichemical Warfare Academy, reportedly made several proposals for low yield nuclear weapons “including a ground-penetrating nuclear weapon with an equivalent of 10 tons of TNT, an anti-missile nuclear weapon with an equivalent of 100 tons of TNT, and a ground-to-ground or air-to-ground nuclear weapon with an equivalent of 1,000 tons of TNT.”²⁷¹ The Chinese nuclear arsenal

²⁶⁵ “Expertise. Beijing’s Nuclear Missile Arsenal - Long-term Improvement Program Underway,” op. cit.

²⁶⁶ “China, Russia: PRC Navy Status, Development Prospects Detailed,” *Morskoy Sbornik*, August 17, 2003, translated in Open Source Center, Doc. ID: CPP20031120000002.

²⁶⁷ “HK Phoenix TV on PLA Infantry Training, PRC Nuclear Weapons Development,” *Feng Huang Wei Shih Chung Wen Tai*, September 2006, translated by Open Source Center, Doc. ID: CPP20060929715028.

²⁶⁸ “PLA Practices Strategy for Attack Taiwan, U.S. Carriers,” *Wen Wei Po*, August 27, 2001, translated in Open Source Center, Doc. ID: CPP20010827000050.

²⁶⁹ “PRC Chief Engineer of Neutron Bomb Interviewed on Nuclear Weapons Development,” *Chengdu Sichuan Ribao*, June 11, 2001, translated in Open Source Center, Doc. ID: CPP20010613000011.

²⁷⁰ “Moscow Knew ‘Unofficially’ PRC Had Neutron Bomb,” *Interfax*, July 16, 1999, transcribed by Open Source Center, Doc. ID: FTS19990716000736.

²⁷¹ Greg Giles, Candice Cohen, Christy Razzano and Sara Whitaker, *Future Global Nuclear Threats* (McLean, VA: SAIC Strategies Group, June 4, 2001), p. A-2, available at <http://www.globalsecurity.org/cgi-bin/texis.cgi/webinator/search/?pr=default&order=r&query=M+Zhenyu+%22tactical+nuclear+weapons%22&submit=Submit>.

reportedly includes fairly advanced thermonuclear warheads, enhanced radiation weapons, and tactical nuclear weapons including artillery and anti-ship weapons.²⁷²

Development of New Types of Nuclear Weapons

New nuclear weapons reportedly are being developed and deployed in China.²⁷³ The U.S. House of Representatives' Cox Committee report concluded that China is developing small nuclear warheads based on stolen U.S. weapons design information.²⁷⁴ According to the Committee report, this includes a design based upon the U.S. W-88 warhead for the Trident II SLBM.²⁷⁵ Development of small nuclear warheads is consistent with Asian press reports that China is planning on extensive MIRVing of its new strategic nuclear missiles. If so, the number of Chinese strategic weapons will certainly grow as China expands and MIRVs its missile force.

China appears to have prepared for the cessation of high-yield nuclear testing by staging a series of high-yield underground nuclear tests in the 1990s. According to a declassified CIA document, a nuclear test at Lop Nor in 1990 "may be related to development of a warhead for a Chinese short-range ballistic missile."²⁷⁶ A declassified *National Intelligence Daily (NID)* document from 1993 stated that accelerated Chinese testing expected by 1996 may also be related to "tactical systems to be developed in the future."²⁷⁷ A declassified September 1995 *NID* report said, "China could be seeking to confirm the reliability of a nuclear artillery shell designed in advance of a nuclear test ban" in order to defend against Russian invasion or an amphibious landing.²⁷⁸ It

²⁷² Ibid.

²⁷³ Rep. Christopher Cox, Chairman, *Report of the Select Committee on U.S. National Security and Military/Commercial Concerns with the People's Republic of China*, Volume I (unclassified), May 1999, pp. 69-76 and 241, available at <http://www.access.gpo.gov/congress/house/hr105851-html/ch2bod.html#anchor4309987>; Schneider, "The Future of the U.S. Nuclear Deterrent," op. cit., pp. 350-351.

²⁷⁴ Cox, *Report of the Select Committee on U.S. National Security and Military/Commercial Concerns with the People's Republic of China*, Volume I (unclassified), op. cit., p. viii.

²⁷⁵ Ibid.

²⁷⁶ Central Intelligence Agency, "China Nuclear Test," *Science and Weapons Review*, July 31, 1990, available at <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB200/19900731.pdf>.

²⁷⁷ "China Accelerated Nuclear Test Schedule," *National Intelligence Daily*, February 19, 1999, available at <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB200/19930219.pdf>.

²⁷⁸ "Possible Nuclear Artillery Test," *Proliferation Digest*, September 14, 1995, available at <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB200/19950914.pdf>; "Chinese Nuclear Event in September,"

also said that the weapon may have been a gun-assembled uranium device.²⁷⁹ Chinese nuclear tests in 1993, according to another declassified document, were driven “by its need to modernize its nuclear force, built largely using 1960 and 1970 technology.”²⁸⁰ A declassified *NID* item from 1993 stated that China planned seven nuclear tests, including “testing for new SLBM and ICBM warheads, by 1996...”²⁸¹ A declassified June 1994 *NID* report assessed that China was developing new nuclear weapons that “may use more advanced concepts such as aspherical primaries and possibly a type of IHE [Insensitive High Explosive].”²⁸² A declassified *NID* document from 1995 judged that Chinese nuclear testing was also aimed at developing a cruise missile warhead with possible safety upgrades to existing systems.²⁸³ Another declassified document states that a Chinese nuclear test planned for 1994 was aimed at “the completion of warhead development for new intercontinental and submarine launched ballistic missiles and the development of technologies to enhance confidence in warheads for an enduring stockpile under a nuclear test ban.”²⁸⁴

According to the Cox Committee report, China may have conducted covert nuclear tests after the declared end of their nuclear testing in 1996.²⁸⁵ It reported that “nuclear tests related to development of the PRC’s next generation of thermonuclear warheads may be continuing at the PRC test site at Lop Nur.”²⁸⁶ The Government of India reportedly takes the report of Chinese hydronuclear testing seriously.²⁸⁷ The implication of post-Cold War Chinese nuclear testing is

Proliferation Judgment, November 1995, available at <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB200/19951130.pdf>.

²⁷⁹ Ibid.

²⁸⁰ Central Intelligence Agency, “China More Nuclear Tests Likely,” *National Intelligence Daily*, October 7, 1993, available at <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB200/19931007.pdf>.

²⁸¹ “China Accelerated Nuclear Test Schedule,” op. cit.

²⁸² “China Nuclear Testing: Racing Against a Comprehensive Test Ban,” *Joint Intelligence Memorandum*, September 30, 1994, available at <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB200/19940930.pdf>.

²⁸³ “Nuclear Test,” *National Intelligence Daily*, March 7, 1995, available at <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB200/19950307.pdf>.

²⁸⁴ “China Nuclear Testing: Racing Against a Comprehensive Test Ban,” op. cit.

²⁸⁵ Cox, *Report of the Select Committee on U.S. National Security and Military/Commercial Concerns with the People’s Republic of China*, Volume I (unclassified), op. cit., pp. 69-76, 241.” “Nuclear Weapons,” *China Defense Today*, May 14, 2006, available at <http://www.sinodefence.com/strategic/nuclear/default.asp>.

²⁸⁶ Ibid., p. 241.

²⁸⁷ Ramesh Ramac, “Indian Focus on Disarmament as CTBT Debate Revs Up,” September 13, 2009, available at <http://www.wnc.dialog.com/proquestdialog/>.

not only that China is improving its nuclear weapons but also that a large part of the future Chinese nuclear force will consist of weapons developed and tested after the end of the Cold War.

Nuclear Weapons and Active Defense

Since the 1980s, nuclear weapons have played a larger role in China's strategy of "active defense." China claims it will use nuclear weapons only in a "self defense counter attack." However, "self defense counter attack" is a multipurpose formulation the Chinese use to describe many instances where they clearly have initiated the use force. It is worth noting that China described its 1962 invasion of India, its border war with the Soviet Union, and its invasion of Vietnam as self defense counter attacks.²⁸⁸ Thus, the Chinese formulation appears to be more propaganda than a policy restriction.

China's nuclear weapons policy appears to be a combination of countervalue and counterforce targeting.²⁸⁹ According to U.S. China expert Colonel (ret.) Larry Wortzel (Co-Chairman of the Congressional China Commission), Chinese nuclear targets apparently include:

- Enemy political and economic centers, especially important urban areas, with a goal of creating great shock in the enemy population's spirit and destroying their will to wage war;
- Critical infrastructure of the enemy with the objective of weakening the enemy's capacity for war (examples of targets are petroleum refining, storage and shipping links; electric power generation and transmission lines; and major heavy industry);
- Enemy transportation networks;
- Major military targets such as air force and navy staging areas and bases to degrade the ability of these services to wage war; and,
- Major deployed military forces.²⁹⁰

²⁸⁸ Chen Feng and Larry Wortzel, "PLA Operational Principles and Limited War," in Mark A. Ryad, David M. Finkelstein and Michael A. McDevott, *Chinese Warfighting, The PLA Experience Since 1949* (Armonk, NY: M.E. Sharpe, 2003), p. 188; Michael D. Swain and Ashley Tellis, *Interpreting China's Grand Strategy: Past, Present and Future* (Santa Monica, CA: RAND Corporation, 2000), p. 77.

²⁸⁹ Ibid., p. 248.

²⁹⁰ Wortzel, *China's Nuclear Forces: Operations, Training, Doctrine, Command, Control and Campaign Planning*, op. cit., p. 18.

Chinese Military Doctrine and the First Use of Nuclear Weapons

The Chinese say that nuclear capabilities play a significant role in China's strategy of "active defense."²⁹¹ The 2013 Chinese white paper on national defense, like other recent editions, says that China's strategic force, the Second Artillery, is tasked to "launch a resolute counterattack either independently or together with the nuclear forces of other services."²⁹² While the word "counterattack is used in this formulation, the Chinese policy regarding first use of nuclear weapons is not clear. As noted above, the Chinese no-first-use language was dropped from the 2013 edition of China's defense white paper.²⁹³ The 2014 Pentagon report on Chinese military power states that "...there is some ambiguity over the conditions under which China's NFU policy would apply, including whether strikes on what China considers its own territory, demonstration strikes, or high-altitude bursts would constitute a first use. Moreover, some PLA officers have written publicly of the need to spell out conditions under which China might need to use nuclear weapons first--for example, if an enemy's conventional attack threatened the survival of China's nuclear force or the regime itself.

China's supposed commitment to "no first use" of nuclear weapons was always dubious. As Colonel Wortzel first pointed out, the actual formulation used would not be violated by Chinese first use of nuclear weapons in a future conflict.²⁹⁴ Writing in January 2005, Colonel Wen Shang-hsien of the Taiwanese military said that, after the year 2000, the PRC adopted a nuclear doctrine which allowed for "a preemptive strike strategy" under which the PRC would use "its tactical nuclear weapons in regional wars if necessary."²⁹⁵

²⁹¹ "China's National Defense in 2006," op. cit.; "Xinhua Carries Full Text of PRC White Paper 'China's National Defense 2006'," *Xinhua*, December 29, 2006, transcribed by Open Source Center, Doc. ID: CPP20061229968070.

²⁹² "The Diversified Employment of China's Armed Forces," *Xinhua*, April 15, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>.

²⁹³ Gertz, "First Strike," op. cit.; James M. Acton, "Is China Changing Its Position on Nuclear Weapons?," *New York Times*, April 18, 2013, available at http://www.nytimes.com/2013/04/19/opinion/is-china-changing-its-position-on-nuclear-weapons.html?_r=0.

²⁹⁴ "Opinion: The Trouble With China's Nuclear Doctrine," *Jane's Defense Weekly*, February 22, 2006, available at: http://www.janes.com/defense/news/jdu/jdw060216_1_n.shtml.

²⁹⁵ Schneider, "The Future of the U.S. Nuclear Deterrent," op. cit. p. 352.

There is other evidence that supports this assessment. Since the 1990s, Chinese generals have made threats of first use of nuclear weapons, particularly in a Taiwan scenario.²⁹⁶ For example, in July 2005, at an official briefing for journalists organized in part by the Chinese Government, Major General Zhu Chenghu, a Dean at China's National Defense University, stated, "If the American[s] draw their missiles and position-guided ammunition on the target zone on China's territory, I think we will have to respond with nuclear weapons.... We Chinese will prepare ourselves for the destruction of all cities east of Xiam. Of course the American[s] will have to be prepared that hundreds of cities will be destroyed by the Chinese."²⁹⁷ Not only is this an obvious Chinese threat of first use, but the number of intercontinental nuclear warheads implied by the statement is significantly greater than most American analysts gave China credit for at the time.

Starting in November 2013, major Chinese state-owned publications began talking openly about nuclear attacks on the United States. Several Chinese publications ran the same story describing the capability of the Chinese JL-2 SLBM and the DF-31 ICBM to attack the United States. These articles said that a single submarine could cause 5-12 million U.S. casualties and illustrated the aim points and the fallout patterns from an attack.²⁹⁸ Soon after this, there was a similar story in the state-run Chinese media about the ability of China's H-6K bombers to launch nuclear armed cruise missiles against U.S. bases in South Korea and Japan.²⁹⁹

Japan's *Kyoto New Agency* says it obtained classified Chinese documents that say China "will adjust the nuclear threat policy if a nuclear missile-possessing country carries out a series of air strikes against key strategic targets in our country with absolutely superior conventional

²⁹⁶ Ibid., pp. 351-352; Jonathan Watts, "Chinese general warns of nuclear risk to US," *The Guardian (UK)*, July 15, 2005, available at <http://www.guardian.co.uk/world/2005/jul/16/china.jonathanwatts>.

²⁹⁷ Joseph Kahn, "Chinese General Threatens Use of A-Bombs if U.S. Intrudes," *The New York Times*, July 15, 2005, available at http://www.nytimes.com/2005/07/15/international/asia/15china.html?_r=0. Also see Alexandra Harney, Demetri Sevastoulo, and Edward Alden, "Top Chinese general warns US over attack," *The Financial Times*, July 14, 2005, available at <http://www.ft.com/intl/cms/s/2/28cfe55a-f4a7-11d9-9dd1-00000e2511c8.html#axzz2xBRu5rkZ>.

²⁹⁸ "China reveals its ability to nuke the US: Government boasts about new submarine fleet capable of launching warheads at cities across the nation," *Daily Mail (UK)*, November 2, 2013, available at <http://www.dailymail.co.uk/news/article-2484334/China-boasts-new-submarine-fleet-capable-launching-nuclear-warheads-cities-United-States.html>.

²⁹⁹ Yang Mingqing, "Research and Development Initiated on Long-Range Bomber," *Ta Kung Pao Online*, August 12, 2013, translated by Open Source Center, Doc. ID: CHO2013081224251901.

weapons...”³⁰⁰ There is other similar evidence along these lines. A 2004 publication of the PLA’s Second Artillery, *The Science of the Second Artillery Campaigns*, has become available in the West. The text is unclassified in the United States, but apparently it is classified as confidential in China and used for officer training. While parroting the “no first use” line, the text makes it clear that this policy will be abandoned in wartime. The document says, “The basic assault force,” which would be made up of several missile brigades, “should possess strong combat capability, be fully outfitted, and possess ranges that meet nuclear counter strike requirements, and be able to assure first strike effectiveness.”³⁰¹ It discusses “adjusting” or “reducing” the nuclear use threshold in wartime to deter conventional weapons attack.³⁰² Moreover, Chinese Major General Cai Yuqiu, Vice Principal of Nanjing’s Army Command College, reportedly stated in an interview, “As to whether we will use nuclear weapons first, the above principle can also be followed. If we have been repeatedly ‘attacked,’ then there should not be a limit for our counter-attack.”³⁰³

There also is concern about Chinese use of nuclear EMP weapons.³⁰⁴ The Congressional Commission on the Threat to the United States from Electromagnetic Pulse (EMP) reported, “China and Russia have considered limited nuclear attack options that unlike Cold War plans, employ EMP as the primary or sole means of attack.”³⁰⁵ U.S. expert on China, Dr. Michael Pillsbury has linked a nuclear EMP attack to the Chinese “Assassin’s Mace” concept of defeating the superior with the inferior.³⁰⁶ There appears to be concern in Taiwan and India about a Chinese EMP attack.³⁰⁷ The Pentagon’s report on Chinese military power and a Congressional

³⁰⁰ “China Could Consider Nuclear First Use, Documents Indicate,” *Global Security Newswire*, January 5, 2011, available at <http://www.nti.org/gsn/article/china-could-consider-nuclear-first-use-documents-indicate/>.

³⁰¹ *The Science of the Second Artillery Campaigns*, (Beijing: Press of the PLA, March 2004), pp. 119- 120, 150.

³⁰² *Ibid.*, p. 394.

³⁰³ *Ibid.*

³⁰⁴ William R. Graham, Chairman, *Report of the Commission To Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack, Volume I: Executive Report*, 2004, available at http://www.empcommission.org/docs/empc_exec_rpt.pdf.

³⁰⁵ *Ibid.*

³⁰⁶ Michael Pillsbury testifying before the U.S.-China Security Review Commission, “Security Issues: Strategic Perceptions,” August 3, 2001, p. 392, available at <http://origin.www.uscc.gov/sites/default/files/transcripts/8.3.0/HT.pdf>.

³⁰⁷ Mark Schneider, “The Emerging EMP Threat To The United States,” (Fairfax, VA: National Institute Press, November 2007), pp. 6-7, available at <http://www.nipp.org/Publication/Downloads/Publication%20Archive%20PDF/EMP%20Paper%20Final%20November07.pdf>; Wing Commander Raj Mongia, “Dragon’s Information

Research Service report by Ronald O'Rourke have also raised concerns about Chinese first use of nuclear weapons involving an EMP attack.³⁰⁸ A story on a Hong Kong web site owned by China's official news agency is consistent with these concerns. It quoted unidentified Chinese officials as saying that China might conduct "an announced nuclear EMP 'test' 1,200-km east of Taiwan to keep U.S. forces at bay."³⁰⁹

Missile and Air Defenses

China has also announced plans to deploy missile defenses, but has provided no details.³¹⁰ It reportedly has successfully tested a missile defense interceptor and may be working toward a nationwide missile defense system by the late 2020s.³¹¹ Its air defense system is being improved through domestic development and the import of Russian systems.³¹² The 2010 China defense white paper linked missile defense to its broader strategy of "Active Defense" saying, "The PLAAF [Peoples Liberation Army Air Force] is working to ensure the development of a combat force structure that focuses on air strikes, air and missile defense, and strategic projection, to improve its leadership and command system and build up an informationized, networked base support system."³¹³ It is possible that at some point U.S. nuclear deterrent force could face a significant Chinese missile defense capability in addition to improved air defenses. Minimum Deterrence proposals appear to dismiss such a possibility.

Warfare: Implications for India," *Air Power*, January, January-1-3, 2003. Transcribed by Open Source Center, Doc. ID: SAO2013061945238997.

³⁰⁸ *The Military Power of the People's Republic of China 2005* (Washington D.C.: Department of Defense, 2005), p. 40 available at <http://www.defense.gov/news/jul2005/d20050719china.pdf>; Ronald O'Rourke, *China's Naval Modernization: Implications for U.S. Navy Capabilities – Background and Issues for Congress* (Washington, D.C.: Congressional Research Service, November 18, 2005), p. 15.

³⁰⁹ "Netizens Discuss UK Espionage Against China, Taiwan War Plans on China," January 31, 2005, *China .com*, February 3, 2005, translated by Open Source Center, Doc. ID: CPP20050203000240.

³¹⁰ "Full Text of China's National Defense in 2010," *Xinhuanet*, March 31, 2011, available at http://news.xinhuanet.com/english2010/china/2011-03/31/c_13806851_9.htm.

³¹¹ Rick Fisher, "Testimony for the United States House of Representatives, Committee on Foreign Affairs, Oversight and Investigations Subcommittee, for the hearing 'Efforts To Transfer America's Leading Edge Science To China'," November 2, 2011, available at <http://www.gpo.gov/fdsys/pkg/CHRG-112hhr71037/html/CHRG-112hhr71037.htm>.

³¹² *2010 Report to Congress, U.S.-China Economic and Security Review Commission* (Washington, D.C.: U.S.-China Economic and Security Review Commission, November 2010), p. 80, available at http://www.uscc.gov/annual_report/2010/annual_report_full_10.pdf.

³¹³ "Full Text of China's National Defense in 2010," op. cit.

Potential For Conflict

China appears to have long planned its military forces for a war against the United States, originally because of U.S. defense policy with regard to Taiwan, but now possibly because of broader Chinese ambitions to dominate the Far East. As its nuclear and conventional power increase, the risks associated with Chinese expansionism are likely to grow.

China has outstanding territorial disputes with many of its neighbors, including nations that are U.S. friends and allies – Japan, South Korea, Taiwan, the Philippines and India.³¹⁴ In addition, confrontational Chinese military activities involving unresolved territorial and resource disputes have increased in frequency. For example, the Air Defense Identification Zone over the East China Sea and the claim of Chinese sovereignty over much of the South China Sea create the potential for serious crises and conflict. China's increasing deployments of military forces into disputed areas runs the risk of military miscalculations and confrontations and the Chinese Air Defense Identification Zone proclaimed in 2013 is an example of Chinese provocation backed by the threat of force. There have been resultant confrontations between Chinese and Japanese fighter aircraft that could result in a future shooting incident.³¹⁵

There is a bipartisan consensus that Chinese actions are increasing the risk of crises. Vice President Joe Biden stated that the ADIZ, “has raised regional tensions and increased the risk of accidents and miscalculation”³¹⁶ Defense Secretary Chuck Hagel characterized recent Chinese

³¹⁴ U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2013*, op. cit., p. 4; Jane Perlez, “As Dispute Over Islands Escalates, Japan and China Send Fighter Jets to the Scene,” *The New York Times*, January 18, 2013, available at http://www.nytimes.com/2013/01/19/world/asia/china-japan-island-dispute-escalates-to-air.html?_r=1&; “PRC Air Defense Identification Zone Protects Air Space Sovereignty,” *Jiefangjun Bao*, November 28, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>.

³¹⁵ Nobuhiro Kubo, Linda Sieg and Phil Stewar, “Japan, U.S. differ on China in talks on ‘grey zone’ military threats,” *Reuters*, March 9, 2014, available at <http://www.reuters.com/article/2014/03/09/us-japan-china-defence-idUSB.REA280RD20140309>.

³¹⁶ “Biden tells Xi U.S. has ‘deep concerns’ about air defense zone issue,” *Kyodo News International*, December 4, 2013, available at <http://www.globalpost.com/dispatch/news/kyodo-news-international/131204/biden-tells-xi-us-has-deep-concerns-about-air-defense->.

naval actions as “irresponsible.”³¹⁷ An editorial by the *New York Times* declared that China’s air defense identification zone “is a highly provocative move that has increased tensions and could make direct conflict with Japan more likely.”³¹⁸ Mark Thompson, writing in *Time*, noted that the ADIZ has “triggered fear of mistakes that could lead to war with neighboring Japan— and pull the U.S. in as Tokyo’s ally.”³¹⁹ Michael Crowley, also writing in *Time*, pointed out that a war over the Senkaku Islands, could be a “disaster for the global economy.”³²⁰

China is also taking aggressive actions in its border dispute with India.³²¹ Professor Brahma Chellaney has pointed out, “Let’s be clear: At stake in the East China Sea are not just some flyspeck islands, but regional power balance, a rules-based order, freedom of navigation of the skies and seas, and access to maritime resources, including seabed minerals. If China gets its way, the path to a Sino-centric Asia would open.”³²² In short, China is deliberately taking actions that could escalate into crises and conflict with multiple neighbors and the United States, and the scale of Chinese provocations may increase as the military balance shifts in its favor.

³¹⁷ Bill Gertz, “Hagel Calls Chinese Naval Action ‘Irresponsible’,” *The Washington Free Beacon*, December 5, 2013, available at <http://freebeacon.com/hagel-calls-chinese-naval-action-irresponsible/>.

³¹⁸ “China’s Coercive Play,” *New York Times*, November 25, 2013, available at <http://www.nytimes.com/2013/11/26/opinion/chinas-coercive-play.html?ref=territorialdisputes>.

³¹⁹ Mark Thompson, “Why China’s New Air-Defense Zone Matters,” *Time*, December 4, 2013, available at <http://swampland.time.com/2013/12/04/why-chinas-new-air-defense-zone-matters/?iid=sl-main-lead>.

³²⁰ Michael Crowley, “Why a Pacific War Is Possible: The Dangerous Hatred Between China and Japan,” *Time*, December 2, 2013, available at <http://swampland.time.com/2013/12/02/why-a-pacific-war-is-possible-china-and-japan-despise-each-other/>.

³²¹ Brahma Chellaney, “Beijing’s creeping aggression signals a challenge to U.S. presence in the Asian Pacific,” *The Washington Times*, December 8, 2013, available at <http://www.washingtontimes.com/news/2013/dec/8/chellaney-chinas-game-of-chicken/?page=all#pagebreak>.

³²² Ibid.

North Korea (DPRK)

Strategic Aims

The hereditary Kim dictatorship is a brutal Stalinist regime, having little to point to as accomplishments other than military power. The population is indoctrinated to worship and protect the leader.³²³ The fundamental objectives of the Kim regime are: 1) to retain power in the context of communism; 2) to be given the deference due to a “great power” and; 3) to reunify Korea under its control.³²⁴ However, in the apparent view of North Korean leaders, reunification almost certainly can’t be accomplished without a major war. North Korea’s international behavior is “prestige driven,” and it “perceives itself as the center of the universe...”³²⁵ These perceptions drive North Korea’s foreign policy toward extreme hostility toward South Korea and the United States.³²⁶

Military Capabilities

North Korea calls its security policy a “military first policy.” To that end, about 30% of North Korea’s small GNP reportedly is devoted to its armed forces.³²⁷ As Patrick DeRochie, a Canadian foreign affairs specialist, observes, North Korea “has brought militarism to permeate all aspects of North Korean life and has extended the military’s influence to sectors far beyond

³²³ Schneider, “The Emerging EMP Threat to the United States,” op. cit.

³²⁴ U.S. Department of Defense, *Military and Security Developments Involving the Democratic People’s Republic of Korea 2012 - A Report to Congress* (Washington, D.C.: Department of Defense, 2013), p. 1, available at http://www.defense.gov/pubs/report_to_congress_on_military_and_security_developments_involving_the_dprk.pdf.

³²⁵ Chung-in Moon and Ildo Hwang, “Identity, Supreme Dignity, and North Korea’s External Behavior: A Cultural/Ideational Perspective,” *Korea Observer*, Vol. 45, No. 1 (Spring 2014), p. 20.

³²⁶ Ibid., pp. 10, 12.

³²⁷ Republic of Korea Defense Ministry, *Defense White Paper 2004* (Seoul: Republic of Korea Defense Ministry, 2004), p. 39.

national security.”³²⁸ North Korea literally lives on the verge of starvation because of the effects of communism on production and its practice of extreme militarization.³²⁹

Because of its small and primitive economy, North Korea has made only modest improvements in its conventional military forces since the end of the Cold War when large-scale Soviet assistance ended.³³⁰ Indeed, although North Korea maintains an army twice as large as that of South Korea, it is assessed to be losing ground in conventional force capabilities.³³¹ Likely as a result, North Korea’s highest military priority is ballistic missiles, including ICBMs and weapons of mass destruction, particularly nuclear weapons.³³²

Growing Ballistic Missile Capability

North Korea has developed and tested ballistic missiles of all ranges – short, medium, intermediate and intercontinental missiles.³³³ These missiles include versions of the *Scud*, the *No Dong*, the BM-25 *Musudan* (2,500-4,000-km) and two ICBMs.³³⁴ North Korea has successfully tested nuclear weapons and the TD-2 ICBM/SLV (space launch vehicle).³³⁵ According to the Director of the Defense Intelligence Agency, North Korea “seeks to develop longer-range

³²⁸ Patrick DeRochie, “The Driving Factor: Songun’s Impact on North Korean Foreign Policy,” *International Affairs Review*, Vol. 20, No. 1 (Summer 2011).

³²⁹ Ibid.; Alexa Olesen, “U.N.: N. Koreans Scavenging for Food,” *Associated Press*, July 25, 2005, available at <http://www.apnewsarchive.com/2005/U-N-N-Koreans-Scavenging-for-Food/id-18ca23860b2c2516bfce9a7c02833b>.

³³⁰ Vice Admiral Lowell E. Jacoby, Director, Defense Intelligence Agency, “Projected National Security Threats to the United States,” statement for the record Senate Armed Services Committee,” March 17, 2005, p. 17.

³³¹ Richard B. Myers, “Posture Statement of Richard B. Myers, USAF Chairman of the Joint Chiefs of Staff Before the 109th Congress Senate Services Committee,” February 17, 2005, p. 14, available at <http://armed-services.senate.gov/statemnt/2005/February/Myers%2002-17-05.pdf>.

³³² Flynn, “Statement Before the Senate Armed Services Committee United States Senate 11 February 2014,” op. cit.; U.S. Department of Defense, *Military and Security Developments Involving the Democratic People’s Republic of Korea 2012 - A Report to Congress Pursuant to the National Defense Authorization Act for Fiscal Year 2012*, op. cit., p. 5.

³³³ U.S. Department of Defense, *Military and Security Developments Involving the Democratic People’s Republic of Korea 2012 - A Report to Congress Pursuant to the National Defense Authorization Act for Fiscal Year 2012*, op. cit., pp. 9, 16-17.

³³⁴ Ibid.; “BM-25 Musudan,” *MissileThreat.com*, November 15, 2012, available at <http://missilethreat.com/missiles/musudan-bm-25>; “Ballistic & Cruise Missile Threat,” (2013) op. cit., pp. 13, 17, 21; Kowalsi, “Air Force Global Strike Command,” op. cit., p. 5.; “KN-08,” *Missile Threat.com*, November 30, 2012, available at <http://missilethreat.com/missiles/kn-08/>.

³³⁵ Ibid.

ballistic missiles capable of delivering nuclear weapons to the United States, and continues efforts to bring its KN08 road mobile ICBM, which it paraded in July 2013, to operational capacity.”³³⁶ In February 2014, the annual report of the Director of National Intelligence stated, North Korea “has already taken initial steps towards fielding this system, although it remains untested.”³³⁷ Thus, the United States may in the future face the prospect of a North Korean nuclear-armed ICBM capability.

North Korea has a large force of ballistic missiles. In 2008, Lieutenant General B.B. Bell, then commander of U.S. forces in Korea, stated that North Korea had 800 ballistic missiles.³³⁸ North Korea reportedly has also invested heavily in building underground facilities.³³⁹ In 2014, Lieutenant General David Mann, Commander, United States Space and Missile Defense Command, stated, “North Korea possesses over 100 road mobile short-range ballistic missile launchers, as well as 50 mobile medium-range launchers, and 50 intermediate range launchers that are capable of ranging throughout the Asia-Pacific region.”³⁴⁰ An Air Force Global Strike Commander briefing dated May 7, 2013, given by Lieutenant General James M. Kowalski, indicated that North Korea also was developing a nuclear capable cruise missile.³⁴¹

North Korean Nuclear Weapons Capability

The legitimacy of the Kim family dictatorship is linked to nuclear weapons. Chung-in Moon (Professor of Political Science, Yonsei University, South Korea) and Ildo Hwang (staff writer of *Dong-A Ilbo* Media Group, South Korea) point out, “That is why poverty, hunger, and underde-

³³⁶ Flynn, “Statement Before the Senate Armed Services Committee United States Senate, February 11, 2014,” op. cit.

³³⁷ James R. Clapper, Director of National Intelligence, “Statement for the Record Worldwide Threat Assessment of the US Intelligence Community,” Senate Select Committee on Intelligence (January 29, 2014), op. cit., p. 6.

³³⁸ General B.B. Bell, Commander, United Nations Command, Commander, Republic of Korea-United States Combined Forces Command, “Prepared Statement” before the Senate Arms Services Committee, March 11, 2008, p. 15, available at <http://www.armed-services.senate.gov/statemnt/2008/March/Bell%2003-11-08.pdf>.

³³⁹ Douglas Jehl and David Singer, “North Korea Nuclear Goals: Case of Mixed Signals,” *The New York Times*, July 25, 2005, p. 1.

³⁴⁰ Lieutenant General David Mann, Commander, United States Space and Missile Defense, on “Strategic and Integrated Missile Defense,” available at http://higherlogicdownload.s3.amazonaws.com/AFA/6379b747-7730-4f82-9b45-a1c80d6c8fdb/UploadedImages/Events/Heussy/060414afamann_update.pdf.

³⁴¹ Kowalski, “Air Force Global Strike Command,” op. cit., p. 5.

velopment notwithstanding, the North has been seeking national pride and self esteem through the acquisition of nuclear weapons.”³⁴²

North Korea reportedly had nuclear weapons before it conducted its first nuclear test.³⁴³ The Defense Intelligence Agency (DIA) assesses that it now has missile-deliverable nuclear weapons,³⁴⁴ and the North Korean TD-2 is believed to be capable of carrying a nuclear weapon.³⁴⁵

Chinese nuclear weapons scientists told former Secretary of the Air Force Thomas Reed and former Director of Intelligence at the Los Alamos National Laboratory that the North Korean nuclear bomb was “a descendant of the [Chinese] CHIC-4 design, provided [by China] to the Pakistanis more than a decade ago and then franchised by Dr. [A.Q.] Kahn throughout the proliferation world.”³⁴⁶ Reed says the device North Korea tested in 2006 was probably a plutonium-based derivative of the Chinese CHIC-4.”³⁴⁷ A declassified U.S. Special National Intelligence Estimate indicates that China provided Pakistan with a “fairly comprehensive package of proven nuclear weapons design information” and a declassified National Intelligence Estimate says that the CHIC-4 was actually flight tested on the Chinese CSS-1 ballistic missile when it was detonated in 1966.³⁴⁸ Brigadier General (ret.) Feroz Khan of Pakistan has revealed that the weight of the CHIC-4 weapon was 1,180-kilograms.³⁴⁹ This matches well with Japanese

³⁴² Moon and Hwang, “Identity, Supreme Dignity, and North Korea’s External Behavior: A Cultural/Ideational Perspective,” op. cit., p. 28.

³⁴³ Mary Beth Nikitin, *North Korea’s Nuclear Weapons: Technical Issues* (Washington, D.C.: Congressional Research Service, April 3, 2013), p. 4, available at <https://www.fas.org/sgp/crs/nuke/RL34256.pdf>.

³⁴⁴ “Pentagon says North Korea can likely launch nuclear missile,” *Reuters*, April 11, 2013, available at <http://www.reuters.com/article/2013/04/11/us-korea-north-usa-idUSBRE93A15N20130411>.

³⁴⁵ U.S. Department of Defense, *Military and Security Developments Involving the Democratic People’s Republic of Korea 2012*, op. cit., p. 9.

³⁴⁶ Thomas C. Reed and Danny B. Stillman, *The Nuclear Express – A Political History of the Bomb and Its Proliferation* (New York: Zenith, 2009), p. 261.

³⁴⁷ Ibid., p. 262.

³⁴⁸ Director of Central Intelligence, “Chinese Policy and Practices Regarding Sensitive Nuclear Transfers,” Central Intelligence Agency, January 20, 1983, p. 7, available at <http://digitalarchive.wilsoncenter.org/document/116893>; Director of Central Intelligence, “Communist China’s Weapons Program for Strategic Attack,” NIE 13-8-71, October 28, 1971, p. 14, available at http://www.foia.cia.gov/sites/default/files/document_conversions/89801/DOC_000_1098170.pdf.

³⁴⁹ “Chinese Gave The CHIC-4 Nuclear Bomb Design To The Pakistanis - An Ex-Pakistani General Admits,” *YouTube*, February 12, 2013, available at <http://www.youtube.com/watch?v=J7IrOnAqxrs>.

press stories about what North Korean defectors say about North Korean nuclear weapons developed before the first nuclear test. These press reports say that North Korea had built one ton and 500-kg nuclear bombs before the first test.³⁵⁰ General Kahn's statement about the weight of the CHIC 4 is within the reported throw-weight of many North Korean missiles.³⁵¹ Thus, there are diverse open sources of information which support the DIA assessment that North Korea has missile deliverable nuclear weapons.

North Korea has now conducted at least three nuclear tests.³⁵² The announced U.S. estimates for the yield of these tests range from sub-kiloton for the first test to several kilotons for the second and third. However, almost all public estimates by other countries have been much higher, including Russian estimates of up to 20-30 kilotons.³⁵³ Concerning the second North Korean test,

³⁵⁰ Mark B. Schneider, "Does North Korea Have a Missile-Deliverable Nuclear Weapon?," The Heritage Foundation, May 22, 2013, available at <http://www.heritage.org/research/lecture/2013/05/does-north-korea-have-a-missile-deliverable-nuclear-weapon>.

³⁵¹ "Ballistic Missiles," *Missilethreat.com*, no date, available at <http://missilethreat.com/missiles-of-the-world/>; "Taepo Dong 2," *Missilethreat.com*, February 4, 2013, available at <http://missilethreat.com/missiles/no-dong-2/>; "Musudan (BM-25)," *Missilethreat.com*, November 15, 2012, available at <http://missilethreat.com/missiles/musudan-bm-25/>.

³⁵² Office of the Director of National Intelligence, "Statement of the Office of the Director of National Intelligence on the North Korean Nuclear Test," October 16, 2006, available at http://www.dni.gov/announcements/20061016_release.pdf; Office of the Director of National Intelligence, "Statement by the Office of the Director of National Intelligence on North Korea's Declared Nuclear Test on May 25, 2009," June 15, 2009, available at http://www.dni.gov/files/documents/Newsroom/Press%20Releases/2009%20Press%20Releases/20090615_release.pdf; Geoff Brumfiel, "Isotopes hint at North Korean nuclear test," *Nature*, February 3, 2012, available at <http://www.nature.com/news/isotopes-hint-at-north-korean-nuclear-test-1.9972>; "German expert suggests Iran tested nuclear bomb in North Korea in 2010," *BBC Monitoring International Reports*, March 7, 2012, available at <http://www.accessmylibrary.com/article-1G1-282411462/german-expert-suggests-iran.html>; Raphael Ahren, "A German nuclear proliferation expert claims Pyongyang performed two tests in 2010 on Iran's behalf, contradicting assertions by the US," *The Times of Israel*, March 5, 2012, available at <http://www.timesofisrael.com/report-iran-tested-nuclear-bombs-in-north-korea>.

³⁵³ Office of the Director of National Intelligence, "Statement of the Office of the Director of National Intelligence on the North Korean Nuclear Test," op. cit.; Office of the Director of National Intelligence, "Statement by the Office of the Director of National Intelligence on North Korea's Declared Nuclear Test on May 25, 2009," op. cit; Office of the Director of National Intelligence, "Annual Threat Assessment of the Director of National Intelligence for the Senate Select Committee on Intelligence," January 31, 2012, available at http://www.dni.gov/testimonies/2012013d1_testimony_at.pdf; Frank V. Pabian and Siegfried S. Hecker, "Contemplating a third nuclear test in North Korea," *The Bulletin of the Atomic Scientists*, August 6, 2012, available at <http://www.thebulletin.org/web-edition/features/contemplating-third-nuclear-test-north-korea>; Bharat Karnad, "NoKo/Pak H-bomb test superior to Indian S-1," February 12, 2013, available <http://bharatkarnad.com/2013/02/12/nokopak-h-bomb-test-superior-to-indian-s-1/>; Robert Farley, "North Korea's Nuclear Test," *TheDiplomat.com*, February 13, 2013, available at http://thediplomat.com/flashpoints-blog/2013/02/13/north-koreas-nuclear-test/?utm_source=eedburner&utm_medium=feed&utm_campaign=Feed%3A+the-diplomat+%28he+Diplomat+RSS%29&utm_content=Google+ReaderNuclear+Endgame+on+the+Korean+Peninsula%3F.

Frank V. Pabian (Los Alamos National Laboratory) and Siegfried S. Hecker (former Director of the Los Alamos National Laboratory) write, “A 2011 study by Los Alamos National Laboratory researchers, incorporating available seismic data and known geology but using a different analytic model, placed the minimal effective yield of the second test at about 5.7 kilotons.”³⁵⁴ Most published yield estimates of the 2013 North Korean nuclear test were at 6-7 kilotons although, as noted, there are reports of 20 kilotons or higher.³⁵⁵ Just before North Korea’s February 2013 nuclear test, General Jung Seung-jo, the Chairman of the South Korean Joint Chiefs of Staff, said the test would likely be a boosted fission weapon.³⁵⁶ A Japanese publication, *The Asahi Shimbun*, reported, the Japanese government concluded that North Korea is ready to test a “fusion-boosted fission bomb,” and that Pyongyang will be able to “put it to practical use after a single test.”³⁵⁷ Bharat Karnad, Research Professor in National Security Studies at the Centre for Policy Research, New Delhi, says there was Chinese involvement in review of the design for this boosted weapon.³⁵⁸ Boosting reportedly can be used to increase substantially the yield of a fission bomb up to potentially several hundred-kilotons.³⁵⁹

The Congressional Commission on Electromagnetic Pulse (EMP) reports that it was told by two retired Russian generals that Russian scientists assisted North Korea with the development of an enhanced EMP weapon.³⁶⁰ The South Korean Defense Ministry believes that North Korea has not yet developed EMP “bombs despite its push to secure related technology.”³⁶¹ An EMP

³⁵⁴ Pabian and Hecker, “Contemplating a third nuclear test in North Korea,” op. cit.

³⁵⁵ Farley, “North Korea’s Nuclear Test,” op.cit.; “N.Korea nuclear test may cause volcano eruption near Chinese border – report,” *RT*, February 8, 2013, available at <http://rt.com/news/north-korea-nuclear-volcano-757/>.

³⁵⁶ Kim Eun-jung, “Military Commander Hints At ‘pre-emptive Strike’ on N. Korea,” *Yonhap*, February 6, 2013, <http://www.wnc.dialog.com/proquestdialog/>.

³⁵⁷ Yoshihiro Makino, “N. Korea likely to test fusion-boosted fission bomb able to reach U.S.,” *The Asahi Shimbun*, January 25, 2013, available at http://ajw.asahi.com/article/asia/korean_peninsula/AJ201301250058.

³⁵⁸ Bharat Karnad, “Rogue Triad and H-Bomb Tests,” *bharatkarnad.com*, February 8, 2013, available at <http://bharatkarnad.com/2013/02/08/rogue-triad-and-h-bomb-tests/>.

³⁵⁹ Bruce W. Bennett, *Uncertainties in the North Korean Nuclear Threat* (Santa Monica, CA: The RAND Corporation, 2010), p. vii; “Development of the French Arsenal,” *NuclearWeaponsArchive.org*, May 1, 2001, available at <http://nuclearweaponarchive.org/France/FranceArsenalDev.html>.

³⁶⁰ Peter Vincent Pry, “North Korea EMP attack could destroy U.S. — now,” *The Washington Times*, December 19, 2012, available at <http://www.washingtontimes.com/news/2012/dec/19/north-korea-emp-attack-could-destroy-us-now/?page=all>.

³⁶¹ “N. Korea Yet to Develop ‘EMP’ Bombs: S. Korea,” *Yonhap News Agency*, July 28, 2014, available at <http://english.yonhapnews.co.kr/northkorea/2014/07/28/59/0401000000AEN20140728004300315F.html>.

warhead, or even a standard nuclear warhead used for an EMP attack, could eliminate the need for a reentry vehicle and have devastating effects on the U.S. economy.

Nuclear Weapon Numbers

North Korea probably has between ten and several dozen nuclear weapons,³⁶² and is estimated to have produced 30 to 50 kilograms of plutonium.³⁶³ Additionally, North Korea reportedly is assessed as capable of producing HEU.³⁶⁴ In 2008, the South Korean newspaper *Chosun Ilbo* said there had been discovery of “fresh traces of highly enriched uranium (HEU)...among 18,000 pages of North Korean documents” which were provided by North Korea in the context of the Six Party Talks.³⁶⁵ Former Los Alamos director Siegfried Hecker, Olli Heinonen, former Deputy Director of the International Atomic Energy Agency, and Colonel General Yesin have all estimated North Korea could produce 40-kg of HEU per year.³⁶⁶ The United States has said it believes that North Korea has followed through on its 2013 announcement that it intended to increase its HEU production capability.³⁶⁷ There is also a report that it obtained HEU from

³⁶² For information on the North Korean HEU program see, “ROK Daily: N.Korea Believed to ‘Possess Weapons-Grade HEU’,” *Chosun.com*, January 16, 2009, available at <http://www.wnc.dialog.com/proquestdialog/>; “North Korean Uranium Enrichment Issue Re-Emerges as Clinton Visits Seoul,” *CNSNews.com*, February 19, 2009, available at <http://cnsnews.com/news/article/north-korean-uranium-enrichment-issue-re-emerges-clinton-visits-seoul/>; “U.S. Troubled by Info about N. Korea’s Uranium Program,” *The Chosunilbo*, June 23, 2008, available at http://english.chosun.com/site/data/html_dir/2008/06/23/2008062361012.html; “Scientist: North Korea Secretly Built New Nuclear Facility,” *Associated Press*, November 21, 2010, available at <http://www.foxnews.com/world/2010/11/21/times-n-korea-secretly-builds-new-nuclear-facility/>; Bennett, *Uncertainties in the North Korean Nuclear Threat*, op. cit., p. 16.

³⁶³ Nikitin, *North Korea’s Nuclear Weapons: Technical Issues*, op. cit., p. 4.

³⁶⁴ Schneider, “Does North Korea Have a Missile-Deliverable Nuclear Weapon?,” op. cit.

³⁶⁵ “U.S. Troubled by Info about N.Korea’s Uranium Program,” op. cit.

³⁶⁶ “How Many Nuclear Bombs Can N.Korea Produce?,” *The Chosunilbo*, November 23, 2010, available at http://english.chosun.com/site/data/html_dir/2010/11/23/2010112300999.html; “N. Korea’s HEU Stocks May Exceed its Plutonium Stockpile in 3 Years,” *The Free Republic*, June 27, 2011, available at <http://www.freerepublic.com/focus/f-news/2740542/posts>; Aleksandra Beluza, “Within a Missile’s Throw. Korean Peninsula Awaits New War,” *Moskovskije Novosti Online*, April 8, 2013, available at <http://www.wnc.dialog.com/proquestdialog/>.

³⁶⁷ Clapper, “Statement for the Record Worldwide Threat Assessment of the US Intelligence Community,” (January 29, 2014), op. cit., p. 6.

Pakistan.³⁶⁸ In January 2009, then U.S. Secretary of State Condoleezza Rice alluded to the possible “importation” of HEU by North Korea.³⁶⁹

Nuclear Threats

North Korea has long publicly threatened nuclear attacks against its neighbors and the United States, including threatening the United States with preemptive nuclear strikes in 2013 and 2014. Its usual formulation is threatening to turn its neighbor’s capital cities into “a nuclear sea of fire.”³⁷⁰ In January 2014, North Korean’s new leader Kim Jong-Un said “the Korean peninsula would be engulfed by ‘massive nuclear disaster’ if war breaks out,” and warned the United States that “it will not be safe in the event of a conflict.”³⁷¹

Chemical and Biological Capability

A publication of the Government of South Korea states that North Korea has about 2,500-5,000-tons of toxic agents including nerve, blister, blood and vomiting agents.³⁷² North Korea also

³⁶⁸ “Opposition Group Says Pakistani Scientist Gave Iran Highly Enriched Uranium,” *Paris AFP (North European Service)*, November 17, 2004, available at <http://www.wnc.dialog.com/proquestdialog/>.

³⁶⁹ “ROK Daily: N.Korea Believed to ‘Possess Weapons-Grade HEU’,” *The Chosun Ilbo*, January 16, 2009, available at <http://www.wnc.dialog.com/proquestdialog/>.

³⁷⁰ “N. Korea Threatens U.S. with ‘a Sea of Fire’ if Attacked,” *Asia Political News*, April 2, 2002, available at <http://findarticles.com/p/articles/mim0WDQ/is2002April8/ai84640326>; Viktor Cha, “Nuclear Sea of Fire,” CSIS, available at http://www.csis.org/media/csis/pubs/0403qjapan_korea.pdf; “North Korea Threatens: U.S. Bases ‘Sea of Fire’,” *World Net Daily*, February 5, 2005, available at <http://www.worldnetdaily.com/news/article.asp?ARTICLEID=42733>; Nicholas D. Kristof, “‘A Sea of Fire,’ or Worse?,” *The New York Times*, February 5, 2005, available at <http://query.nytimes.com/gst/fullpage.html?res=9F03E0DF1138F937A35751C0A9659C8B63>; James A. Lyons, “LYONS: The right response to North Korea,” *The Washington Times*, April 22, 2013, available at http://www.washingtontimes.com/news/2013/apr/22/the-right-response-to-north-korea/?utm_source=RSS_Feed&utm_medium=RSS; David Blair, “North Korea warns of ‘thermonuclear war’ against US,” *Telegraph.com.co.uk*, March 7, 2013, available at <http://www.telegraph.co.uk/news/worldnews/asia/northkorea/9914725/North-Korea-warns-of-thermonuclear-war-against-US.html>; Tom Phillips, Malcolm Moore and David Blair, “Get ready for thermonuclear war, North Korea tells world,” *The Independent (UK)*, April 10, 2013, available at <http://www.independent.ie/world-news/get-ready-for-thermonuclear-war-north-korea-tells-world-29185840.html>; “Can a Vegetative Government Take on N Korea’s Nuke Threat?,” *Dong-A Ilbo Online*, March 13, 2007, translated by Open Source Center, Doc. ID: KPP20130307971004.

³⁷¹ “North Korea warns of nuclear disaster, threatens US,” *Agence France-Presse*, January 2, 2014.

³⁷² *Defense White Paper 2010* (Seoul: Republic of Korea Defense Ministry, 2010), p. 3, available at http://www.nti.org/media/pdfs/2010WhitePaperAll_eng.pdf?_id=1340662780.

reportedly has biological weapons.³⁷³ If so, the threat or use of these WMD could also be involved in a crisis or conflict involving North Korea.

Potential for Crises and Conflict

North Korea has repeatedly engaged in lethal military attacks against South Korea. Attacks of this kind have the potential to escalate into a major crisis or war. North Korea's conventional technology weaknesses results in its continued reliance on WMD, which will probably be used in the event of war. A war with North Korea could also create the possibility of escalation with Chinese intervention, as was the case during the Korean War. The threat of WMD use and the ability to launch massive artillery barrages against Seoul in the first hours of a war are key pillars of North Korean military power and frequently the subject of overt threats. North Korea may lack the ability to win a war, but can cause millions of casualties with WMD.³⁷⁴

In December 2013, North Korea sent a hotline message to the Government of South Korea, threatening "retaliatory measures without warning" in response to street demonstrations in Seoul in which effigies of Kim Il-sung, Kim Jong-il, and Kim Jong-un were being burned.³⁷⁵ Moreover, North Korea sees its nuclear weapons as "a revolutionary heritage of leadership."³⁷⁶ North Korea's sovereignty, security, and pride and self-esteem, appear to be manifested in the possession of nuclear weapons.³⁷⁷

Mirror imaging of prevalent Western views regarding war and nuclear weapons could result in dangerous miscalculations of the potential for crises and the actions by North Korean leaders during a crisis or conflict. North Korean worship of the leader results in an "obsession" with re-

³⁷³ Ibid., *Adherence to and Compliance with Arms Control, Nonproliferation and Disarmament Agreements and Commitments*, (July 2013), op. cit., p. 13; *Military and Security Developments Involving the Democratic People's Republic of Korea 2012 A Report to Congress*, op. cit., p. 17.

³⁷⁴ Mark Halperin, "Benghazi's Portent and the Decline of U.S. Military Strength," *The Wall Street Journal*, April 9, 2013, available at <http://online.wsj.com/article/SB10001424127887324100904578401083677703420.html>.

³⁷⁵ Moon and Hwang, "Identity, Supreme Dignity, and North Korea's External Behavior: A Cultural/Ideational Perspective," op. cit., p. 15.

³⁷⁶ Ibid., p. 27.

³⁷⁷ Ibid.

gard to the dignity of the leader. Such long-standing cultural perceptions by North Korean decision makers could lead to aggressive action over perceived slights to the leader or the nation to an extent that would be regarded as irrational in the West.³⁷⁸ Thus, North Korea's strategic aims, its heavy reliance on WMD, in particular nuclear weapons, and its cultural idiosyncrasies combine to pose a challenge for the United States and the potential for serious crises and conflict that include considerations of nuclear deterrence.

³⁷⁸ Ibid., pp. 28-32.

Iran

Strategic Aims

The Iranian government is a militant theocratic dictatorship and a major supporter of international terrorism. Its goals appear to include the geographic expansion and advancement of its militant interpretation of Islam, the political domination of the Persian Gulf region and the destruction of the “Great Satan” (i.e., the U.S.) and the “little Satan” Israel. One noted commentator, Charles Krauthammer, observes, “The Islamic Republic sees itself as an instrument of its own brand of Shiite millenarianism – the messianic return of the ‘hidden Imam.’”³⁷⁹ According to former CIA Director General Michael Hayden, Iran “is the single greatest destabilizing element right now with regards to global security.”³⁸⁰

Military Capabilities

While rich in oil, overall Iran is a relatively poor country. Currently, Iran is attempting to develop a defense industry capable of producing a wide range of armaments. Iran reportedly is acquiring some Russian arms and technology, but its acquisitions are constrained by financial limitations. Iran is also acquiring capabilities which could enable it to restrict oil tanker access to the Persian Gulf. To accomplish this objective, it apparently is putting emphasis on anti-ship missiles, sea mines, diesel-electric submarines and fast patrol boats.³⁸¹ A key element of Iranian foreign policy is the support of terrorism which it uses as an agent of influence. Taken together, these factors raise concerns about the potential for Iranian involvement in nuclear crises and terrorism. In addition, the acquisition of a nuclear weapons capability by Iran could spark further nuclear weapon proliferation by concerned states throughout the Middle East.

³⁷⁹ Charles Krauthammer, “The ‘Deterrence Works’ Fantasy,” *National Review Online*, August 30, 2012, available at <http://www.nationalreview.com/articles/315535/deterrence-works-fantasy-charles-krauthammer>.

³⁸⁰ Catherine Herridge, “Former CIA Chief: Iran ‘Single Greatest Destabilizing’ Force in 2012,” *Fox News*, January 5, 2012, available at <http://www.washingtontimes.com/news/2012/jan/5/israel-us-to-stage-major-defense-drill/>.

³⁸¹ “US fears major Iranian threat in Persian Gulf,” *Israel News*, July 27, 2012, available at <http://www.ynetnews.com/articles/0,7340,L-4261181,00.html>.

Growing Ballistic Missile Capability

Iran, with the reported help of North Korea, is increasing its ballistic missile capability and this cooperation reportedly extends to nuclear weapons.³⁸² In April 2014, Lieutenant General David L. Mann, commander of the U.S. Army Space and Missile Defense Command and the Joint Functional Command, told the Senate Armed Services Committee that Iran (and North Korea) are increasing “both quantitatively and qualitatively” their ballistic missile capabilities.³⁸³

Missiles are a key element of Iran’s military power. In addition to the short-range *Zalzal 2*, *Fatah* 110, *Scuds* B and C, Iran has both medium- and intermediate-range ballistic missiles capable of delivering WMD payloads.³⁸⁴ The Iranian *Shahab* 3 reportedly is an 800 to over 1,200 mile (2,000-km) range mobile ballistic missile based on the North Korean No Dong missile, but with improvements.³⁸⁵ This missile apparently was modified into a satellite launch vehicle referred to as the *Safir*.³⁸⁶ The progress Iran is making in long-range ballistic missiles is illustrated by their three successful satellite launches.³⁸⁷ Any payload that can be launched into earth orbit could also fly 9,000 miles on a ballistic trajectory. Iran has also unveiled the *Simorgh* missile, which

³⁸² Mark B. Schneider, “Has Iran Covertly Acquired Nuclear Weapons?,” *Comparative Strategy*, Vol. 32, No. 4 (September 2013), pp. 308-310.

³⁸³ Lieutenant General David L. Mann, USA Commanding General “Prepared Statement,” before the Committee on Armed Services Strategic Forces Subcommittee, U.S. Senate, April 2, 2014, available at http://www.armed-services.senate.gov/imo/media/doc/Mann_04-02-14.pdf.

³⁸⁴ Ronald Burgess, Director, Defense Intelligence Agency, “World Wide Threat Assessment,” March 20, 2011, p. 13, available at <http://armed-services.senate.gov/statemnt/2011/03%20March/Burgess%2003-10-11.pdf>; David Eshel, “Iran Claims Successful Test of a New Solid Fuel Missile,” *DefenseUpdate.com*, available at http://defense-update.com/analysis/151108iranian_missiles.html#more; William J. Broad, James Glanz and David E. Singer, “Iran Fortifies Its Arsenal With the Aid of North Korea,” *The New York Times*, November 28, 2010, available at <http://www.nytimes.com/2010/11/29/world/middleeast/29missiles.html>; Yoav Zitun, “Shahav-3 missile no cause for concern,” *Israel News*, November 5, 2011, available at <http://www.ynetnews.com/articles/0,7340,L-4144096,00.html>; U.S. Department of Defense, *Ballistic Missile Defense Review Report* (Washington, D.C.: Department of Defense, February 2010), pp. 3, 5, available at http://www.defense.gov/bmdr/docs/BMDR%20as%20of%2026JAN10%200630_for%20web.pdf.

³⁸⁵ “Shahab 3,” *Missilethreat.com*, September 25, 2012, available at <http://missilethreat.com/?s=Shahab+3&submit=Search>.

³⁸⁶ “Iran satellite launch signals missile push,” *UPI*, June 11, 2011, available at http://www.upi.com/Business_News/Security-Industry/2011/06/20/Iran-satellite-launch-signals-missile-push/UPI-99551308591084/.

³⁸⁷ Robert Tate, “Iran launches first domestically produced satellite,” *Guardian*, February 3, 2009, available at <http://www.guardian.co.uk/world/2009/feb/03/iran-satellite-launch-omid>; “Iran launches second satellite into orbit, claims state TV,” *Guardian*, June 16, 2011, available at <http://www.guardian.co.uk/world/2011/jun/16/iran-satellite-launch-orbit>; “Iran: Small Satellite Launched Into Orbit,” *The Huffington Post*, February 3, 2012, available at: http://www.huffingtonpost.com/2012/02/03/iran-small-satellite-launched_n_1253270.html.

Iran says will be used for space launch. It appears to be a derivative of the North Korean TD-2.³⁸⁸ Iran is assessed to have the capability of flight testing an ICBM by 2015 if it receives foreign assistance.³⁸⁹

According to then Defense Intelligence Agency Director Roland L. Burgess, Iran is attempting to improve the accuracy of its ballistic missiles.³⁹⁰ *The Jerusalem Post* reports that Iran is building “GPS-guided ballistic missiles with a homing sensor.”³⁹¹ The ballistic missile threat from Iran will likely continue to grow in both range and accuracy.

Iran has the largest arsenal of ballistic missiles in the Middle East and “can strike targets throughout the region and into Eastern Europe.”³⁹² According to U.S. Lieutenant General David Mann, Iran has “over 100 short-range ballistic missile launchers that can be reloaded, over 50 silo and mobile medium-range launchers capable of ranging targets throughout the Middle East.”³⁹³ In January 2014, Dr. Uzi Rubin, who ran Israeli’s missile defense program, said, “Iran possesses over 400 ballistic missiles that can reach Israel, with warheads of 750 kilograms.”³⁹⁴ He also notes the strategic significance of the *Ra’ad*, reportedly a 350-km range anti-ship cruise missile.³⁹⁵ Iran is also developing an anti-ship ballistic missile.³⁹⁶ *The New York Times* reports

³⁸⁸ “New Iran rocket launch site shows N. Korea links: Jane’s,” *AFP*, March 5, 2010, available at http://www.google.com/hostednews/afp/article/ALeqM5gAWVP3xP6Q0BruLWPULk6zeu_4pg.

³⁸⁹ “Unclassified Statement of Vice Admiral James D. Syring Director Missile Defense Agency,” before the House Armed Services Subcommittee on Strategic Forces, March 25, 2014, available at <http://docs.house.gov/meetings/AS/AS29/20140325/101945/HHRG-113-AS29-Wstate-SyringUSNavyJ-20140325.pdf>.

³⁹⁰ Ronald L. Burgess, “(U) Annual Threat Assessment,” *National Security Archive*, February 16, 2012, available at <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB372/docs/Underground-BurgessThreat.pdf>.

³⁹¹ Yaakov Lappin, “Missile defense expert warns of growing strategic threat,” *The Jerusalem Post*, January 15, 2014, available at <http://www.jpost.com/Defense/Precision-guided-rockets-missiles-becoming-strategic-threat-architect-of-missile-defense-system-warns-338299>.

³⁹² “Statement by M. Elaine Bunn Deputy Assistance Secretary of Defense for Nuclear Missile Defense Policy,” before the House Armed Services Committee, March 25, 2014, p. 3, available at <http://docs.house.gov/meetings/AS/AS29/20140325/101945/HHRG-113-AS29-TTF-BunnM-20140325.pdf>.

³⁹³ Lieutenant General David Mann, Commander, United States Space and Missile Defense, on “Strategic and Integrated Missile Defense,” op. cit.

³⁹⁴ Lappin, “Missile defense expert warns of growing strategic threat,” op. cit.

³⁹⁵ Uzi Rubin, “The Global Range of Iran’s Ballistic Missile Program,” The Jerusalem Center for Public Affairs, November 2, 2006, p. 55, available at <http://www.jcpa.org/text/iran-missile-rubin.pdf>.

³⁹⁶ “Statement by M. Elaine Bunn Deputy Assistance Secretary of Defense for Nuclear Missile Defense Policy,” (March 25, 2014), op. cit., p. 3.

Iran acquired 19 BM-25 *Musudan* MRBM/IRBMs from North Korea.³⁹⁷ The BM-25 is widely reported to be a derivative of the N-6 SLBM.³⁹⁸ Japan's *Kyodo News Agency* says that its range is 3,500-km.³⁹⁹

Iran's chief nuclear negotiator has stated that Iran will not negotiate about its ballistic missile program.⁴⁰⁰ The U.S. chief negotiator has confirmed that the Interim Agreement with Iran reached in November 2013 does not impact the Iranian ballistic missile program,⁴⁰¹ and there appears to be no indication that missiles will be included in a comprehensive agreement if one is reached. Thus, Iran's missile capabilities are likely to continue to mature and increase for the foreseeable future.

Iranian Nuclear Weapons Development

In November 2009, the International Atomic Energy Agency (IAEA) reportedly concluded that Iranian scientists have experimented with "an advanced nuclear warhead design" known as a "two-point implosion device" which reportedly allows for smaller nuclear warheads.⁴⁰² In February 2010, an IAEA report said Iran had conducted work "relating to the manufacture of components for high explosives initiation systems; and experiments concerning the generation and detection of neutrons."⁴⁰³ A November 2010 IAEA report said that Iran was making "efforts

³⁹⁷ Broad, Glanz and Singer, "Iran Fortifies Its Arsenal With the Aid of North Korea," op. cit.

³⁹⁸ Markus Schiller and Robert H. Schmucker, "Explaining the Musudan – New Insights North Korean SS-N-6 Technology," May 31, 2012, available at http://lewis.armscontrolwonk.com/files/2012/05/Explaining_the_Musudan_Schiller_Schmucker_v1.2.df; "Musudan BM-25," *Missilethreat.com*, November 15, 2012, available at <http://missilethreat.com/missiles/musudan-bm-25/>.

³⁹⁹ "N. Korea's new ballistic missile called 'Musudan': sources," *Kyodo News Agency*, May 14, 2007, available at <http://home.kyodo.co.jp/modules/fstStory/index.php?storyid=314555>.

⁴⁰⁰ Adam Kredo, "White House Draws Red Line on Iranian Ballistic Missile Program," *Washington Free Beacon*, February 10, 2014, available at <http://freebeacon.com/white-house-draws-red-line-on-iranian-ballistic-missile-program/>.

⁴⁰¹ Adam Kredo, "Iranian Ballistic Missile Program Can Continue Under Deal," *The Washington Free Beacon*, February 4, 2014, available at <http://freebeacon.com/national-security/iranian-ballistic-missile-program-can-continue-under-deal/>.

⁴⁰² Julian Borger, "Iran Tested Advanced Nuclear Warhead Design – Secret Report," *Guardian*, November 5, 2009, available at <http://www.guardian.co.uk/world/2009/nov/05/irantested-nuclear-warhead-design>.

⁴⁰³ Director General, 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

to shrink a Pakistani warhead design to fit atop its ballistic missiles...⁴⁰⁴ A May 2011 IAEA report contained information on a long list of Iranian weapons related activities, including work on initiators, high explosive testing, “Multipoint explosive initiation and hemispherical detonation studies involving highly instrumented experiments,” and missile reentry vehicle redesign activities.⁴⁰⁵ It is reported that A.Q. Khan proliferated the design of the Chinese CHIC-4 bomb and a smaller version tested by Pakistan in 2008.⁴⁰⁶ These reports appear to suggest that Iran’s progress on nuclear weapons design may be greater than generally expected in the West.

Iranian Fissile Material Production

The focus of Iran’s nuclear weapons program appears to be on the production of weapons grade uranium (HEU). The Interim Agreement with Iran apparently will not reduce Iran’s nuclear infrastructure.⁴⁰⁷ Blending down Iran’s 20 percent enriched uranium is useful but Iran’s top nuclear negotiator, Abbas Araghchi, said, “We can return again to 20 percent enrichment in less than one day and we can convert the [nuclear] material again. Therefore the structure of our nuclear program is preserved...”⁴⁰⁸ The IAEA says that the agreement would delay an Iranian bomb by one month.⁴⁰⁹ Thus, it appears that Iran may be able to achieve domestic production of weapons grade HEU in relatively short order should it decide to do so.

Iran,” IAEA, February 18, 2010, p. 9, available at <http://www.iaea.org/publications/documents/baord/2010/gov2010-10.pdf>.

⁴⁰⁴ Jonathan Tirone and Margaret Talev, “Iran Continued Nuclear Weapons Work Seeking Warhead Design,” *Business Week*, November 10, 2011, available at <http://www.businessweek.com/news/2011-11-10/iran-continued-nuclear-weapons-work-seeking-warhead-design.html>.

⁴⁰⁵ “Agreement and relevant provisions of Security Council Resolutions 1737 (2006), 1747 (2007) and 1803 (2008) in The Islamic Republic of Iran,” available at <http://www.iranwatch.org/international/IAEA/>.

⁴⁰⁶ David E. Sanger and William J. Broad, “Officials Fear Bomb Design Went to Others,” *The New York Times*, June 16, 2008, available at <http://www.nytimes.com/2008/06/16/world/asia/16nuke.html?pagewanted=all>.

⁴⁰⁷ Josh Feldman, “Iranian Foreign Minister: WH Misrepresenting Deal, ‘We Did Not Agree to Dismantle Anything,’” *Mediaite.com*, January 22, 2014, available at <http://www.mediaite.com/tv/iranian-foreign-minister-wh-misrepresenting-deal-we-did-not-agree-to-dismantle-anything/>.

⁴⁰⁸ Josh Rogin, “Iran Top Nuke Negotiator: Deal Reversible In One Day,” *The Daily Beast*, January 16, 2014, available at <http://www.thedailybeast.com/articles/2014/01/16/iran-top-nuke-negotiator-deal-reversible-in-one-day.html>.

⁴⁰⁹ Adam Kredo, “Nuke Deal Delays Iran Bomb by One Month,” *Washington Free Beacon*, January 23, 2014, available at <http://freebeacon.com/nuke-deal-delays-iran-bomb-by-one-month/>.

If Iran has covert HEU production facilities, the Interim Agreement may have little impact on the Iranian effort to obtain a nuclear weapons capability. David Albright, President of the Institute for Science and International Security (ISIS) and Andrea Stricker (also with the Institute), point out that Iran continues to have an “extensive and persistent nuclear smuggling” effort underway.⁴¹⁰ In December 2013, the Iranian parliament reportedly discussed enriching uranium to 60%.⁴¹¹

How many nuclear weapons could Iran construct over the next decade? In June 2014, Israel’s Strategic Affairs Minister Yuval Steinitz said that Iran could have 50 to 100 nuclear warheads in the next ten years.⁴¹² This development, if prescient, suggests the possibility for numerous crises and conflict scenarios in the Middle East that involve nuclear considerations.

Iranian Chemical and Biological Capability

In addition to its nuclear weapons potential, according to a 2005 State Department report, “Iran has an offensive biological weapons program in violation of the BWC [Biological Weapons Convention].”⁴¹³ The report also said, “Iran is in violation of the Chemical Weapons Convention obligations because Iran is acting to retain and modernize key elements of its CW infrastructure to include an offensive CW R&D capability and dispersed mobilization facilities.”⁴¹⁴ Thus, the United States faces the possibility that Iran might possess and threaten the employment of chemical and biological weapons, as well as nuclear weapons, in a future crisis or conflict.

⁴¹⁰ David Albright and Andrea Strick, “Busts Iranian Smuggling Scheme Involving a Nuclear-Related Good,” (Washington, D.C.: Institute for Science and International Security, January 31, 2014), available at http://isis-online.org/uploads/isis-reports/documents/Kaiga_case_study_31Jan2014-Final.pdf.

⁴¹¹ “Iranian Parliament Mulling Bill to Require Gov’t to Enrich Uranium to 60%,” *FNA*, December 14, 2013, available at <http://english.farsnews.com/newstext.aspx?nn=13920923001175>.

⁴¹² “Strategic affairs minister warns world powers against signing deal that allows Iran to remain a threshold nuclear power while granting it legitimacy; says extending talks better than rushing to sign deal at any cost,” *The Jerusalem Post*, June 9, 2014, available at <http://www.jpost.com/Iranian-Threat/News/WATCH-LIVE-Steinitz-to-discuss-Iranian-threat-at-Herzliya-Conference-355732>.

⁴¹³ Adherence to and Compliance with Arms Control, Nonproliferation and Disarmament Agreements and Commitments, op. cit., p. 21.

⁴¹⁴ Ibid., p. 56.

Potential for Conflict

There appears to be a significant risk of crises and conflict associated with Iran's militant Islamic millenarianism and its goal of the domination of the Persian Gulf region. Indeed, Iran's neighbors are seriously concerned about its nuclear potential.⁴¹⁵ In 2005, Iran's former President Akbar Hashemi Rafsanjani famously said, "application of an atomic bomb would not leave anything in Israel but the same thing would just produce damages in the Muslim world."⁴¹⁶ As noted already, Iran's acquisition of nuclear weapons could trigger a "proliferation cascade" in the region.⁴¹⁷ States which might seek their own nuclear weapons to counter a nuclear-armed Iran include Turkey, Saudi Arabia, and Egypt.⁴¹⁸ Iranian acquisition of a nuclear weapons capability could intensify its terrorist operations. At a minimum, Iran could use nuclear threats to coerce the countries of the Persian Gulf and attempt to deter U.S. military support to moderate Arab states and Israel in the event of war in the region. These possible developments, in addition to the possibility that Iran acts on its frequent public threat of cutting off oil shipments moving through the Strait of Hormuz, could lead to crises and conflict with the United States and its neighbors, including nuclear crises and conflict.

⁴¹⁵ Amos Harel, "Israel's relationship with the U.S. The good news: Tehran will be forced to reduce its involvement in terror activities," *Al Haaretz*, November 20, 2013, available at <http://www.haaretz.com/weekend/week-s-end/premium-1.560906>; "Iran's Nuclear Capabilities Fast Facts," *CNN*, November 26, 2013, available at <http://www.cnn.com/2013/11/07/world/meast/irans-nuclear-capabilities-fast-facts/>; Graham Allison, "A cascade of nuclear proliferation," *New York Times*, December 17, 2004, available at http://www.nytimes.com/2004/12/17/opinion/17iht-edallison_ed3_.html?_r=0.

⁴¹⁶ Krauthammer, "The 'deterrence works' fantasy," *op. cit.*

⁴¹⁷ Allison, "A cascade of nuclear proliferation," *op. cit.*; Peter Brookes, "The Post-Iran Proliferation Cascade," *The Journal of International Security Affairs*, No. 19 (Fall/Winter 2010).

⁴¹⁸ Caroline Glick, "Iran's bomb in the basement," *Carolineglick.com*, February 7, 2014, available at <http://carolineglick.com/irans-bomb-in-the-basement/>.

Bottom Line: The Implications of Russian, Chinese, North Korean and Iranian Nuclear Threats

Given the evidence, the Minimum Deterrence claims of a relatively benign and constant threat environment and reliable, easy deterrence, now and in the future, following from the presumption that rational leaders will calculate and behave reasonably and prudently (as defined in the West), are highly suspect.⁴¹⁹ The Minimum Deterrence dismissal of any serious threat emanating from Russia, China, North Korea, Iran, and potentially others is a speculative hope. The consequent recommendations for deep U.S. nuclear reductions in Minimum Deterrence reports appear to be based upon a fundamental misreading of potential adversaries and the scope and diversity of these countries' strategic aims, nuclear weapon programs, and views about the utility of nuclear weapons.

This hope-based presumption about the threat environment leads directly to the policy recommendations for substantial reductions in U.S. nuclear capabilities, including warhead numbers and the elimination of one or more legs of the Triad. These recommendations could result in an inability to hold at risk important strategic targets, lower damage expectancy against hard to destroy targets, and narrow the scope of options available to a U.S. President in case of a nuclear attack.

Unless Russia and China followed the U.S. lead toward further deep nuclear reductions, Minimum Deterrence recommendations would shift the nuclear balance toward Russia and China and likely degrade some allies' confidence in U.S. security commitments and extended deterrence.⁴²⁰ As is demonstrated in this analysis, there is no apparent interest in Russia or China in deep nuclear reductions—indeed, both countries' programs and doctrinal statements suggest the reverse.

⁴¹⁹ See a discussion of this Minimum Deterrence presumption in, Keith B. Payne and James R. Schlesinger, *Minimum Deterrence: Examining the Evidence* (Fairfax, VA: National Institute Press, 2013), pp. 9-27.

⁴²⁰ Mark B. Schneider, "The Triad's Uncertain Future," *The Journal of International Security Affairs*, No. 23 (Fall/Winter 2012), p. 27; Mark B. Schneider, "Zero Deterrent?," *Air Force Magazine*, Vol. 95, No. 8 (August 2012).

The events of 2014 in Ukraine illustrate the fundamentally speculative and highly optimistic presumptions of Minimum Deterrence about benign Russian intentions, goals and behavior, now and in the future. President Toomas Ilves of Estonia summed up the current situation:

“Everything that has happened since 1989 has been predicated on the fundamental assumption that you don’t change borders by force, and that’s now out the window.”⁴²¹ No contemporary Minimum Deterrence proposal appears to give any credence to the possibility that Russia would use force to annex territory. This is key because Minimum Deterrence nuclear force recommendations flow from optimistic presumptions about the threat environment.

Pavel Felgengauer reports, “At present, the Russian propaganda machine is telling the population that Obama and the North Atlantic Alliance are paper tigers and do not have sufficient military resources in Europe to stop Russia...” “Who will stop Russia? The Poles?” asks a popular Moscow weekly, adding, “The Russian tactical nuclear arsenal dominates Europe, and Russian jets can sink any US Navy ships in the Black Sea at will.”⁴²²

By dismissing apparent Russian goals, Russian views of nuclear weapons employment, and the significance of the nuclear balance, Minimum Deterrence proponents appear to miss or dismiss the implications of their recommendations for deterrence and the assurance of NATO allies and friends in Europe. Indeed, the *Global Zero* report recommended that the U.S. eliminate all its tactical nuclear weapons only weeks after the 2012 NATO decision to remain a nuclear alliance.⁴²³

Minimum Deterrence misperceptions concerning Russia may be the most significant in terms of the potential for crises and conflict. Russia has the world’s largest nuclear arsenal and Russian (not U.S.) views about the nuclear balance and the importance of nuclear modernization and the

⁴²¹ John R. Bolton, “NATO Is Still the Answer,” *Weekly Standard*, May 5, 2014, available at http://www.weeklystandard.com/articles/nato-still-answer_787373.html.

⁴²² Pavel Felgengauer, “Rebuilding the USSR,” *Eurasia Daily Monitor*, Vol. 11, No. 81 (May 1, 2014).

⁴²³ Cartwright, et. al., *Global Zero*, op. cit., pp. 9-10; “Chicago Summit Declaration Issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Chicago on 20 May 2012,” NATO, May 20, 2012, available at http://www.nato.int/cps/en/SID-5FA9EA63-48F5B397/natolive/official_texts_87593.htm; “Deterrence and Defense Review,” NATO, May 20, 2012, available at http://www.nato.int/cps/en/SID-5FA9EA63-48F5B397/natolive/official_texts_87597.htm.

role of nuclear weapons may determine whether Russian leaders are deterred from or willing to engage in nuclear brinksmanship in certain situations.

In addition to dismissing any serious threat from Russia, Minimum Deterrence proponents appear to have similar misperceptions of the potential threats posed by China, Iran and North Korea. These misperceptions again lead to force recommendations that could erode confidence in the U.S. nuclear umbrella and its ability to deter war, assure allies, and limit damage if deterrence fails.

Chinese actions in 2013 in the South and East China Seas also cast serious doubt on the Minimum Deterrence presumption that China represents little or no potential for crises and conflict pertinent to nuclear deterrence considerations. The scope of the Chinese military buildup, for both conventional and nuclear weapons, continue to create increasing military options for China. U.S. Asian allies see a serious threat from China. Japan's Prime Minister Shinzo Abe has "compared the state of relations between Japan and China with the relationship between Germany and Britain before the first world war."⁴²⁴ Philippine President Benigno Aquino "compared China's increasingly assertive stance in Asia with the situation in Europe before the second world war when Hitler appropriated land from Czechoslovakia."⁴²⁵ These allied views demonstrate their serious concern over the potential for military confrontation with China. As noted above, further deep U.S. nuclear cuts, as recommended by Minimum Deterrence advocates, could have a significant impact on the perceptions of our Asian allies as to the reliability of the U.S. nuclear umbrella, which potentially could lead to expanded nuclear proliferation and opportunities for crises and conflict.

The empirical evidence, presented here supports expectations of a much broader range of possible threat environments than the constant benign environment presumed in the Minimum Deterrence narrative. Because this presumption regarding the threat environment is central to

⁴²⁴ Demetri Sevastopulo, "China Ramps Up Rhetoric Battle With Japan re: Disputed Islands," *The Financial Times*, March 5, 2014, available at <http://www.ft.com/intl/cms/s/0/32f8c8d6-a40b-11e3-88b0-00144feab7de.html#axzz2v5erNIV3>.

⁴²⁵ Ibid.

Minimum Deterrence policy recommendations, those recommendations are as questionable as is this underlying presumption.