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Deterring a Nuclear Iran

Even as the United States continues to wage the global campaign against terrorism and prevent states from seeking to develop and acquire nuclear weapons, the extent of recent proliferation is becoming painfully apparent. Revelations of Libya's nuclear ambitions, the illicit activities of the Pakistan-based A. Q. Khan network, North Korea's recently declared nuclear capability, and Iran's quest for nuclear weapons all point to a sobering conclusion: in future crises with potential adversaries, U.S. policymakers and military planners must be prepared to confront nuclear-armed rogue states. If potential adversaries in the future do indeed possess nuclear weapons, the United States will need the proper mix of capabilities to deter those adversaries. Specifically, this mix may include deploying missile defenses to allies or partners and developing a new class of lower-yield nuclear weapons to enhance the credibility of U.S. deterrence in the midst of a nuclear crisis with a determined, nuclear-armed rogue state such as Iran.

Iran's emerging nuclear capability has led to a debate about U.S. diplomatic, military, and economic options for responding. Existing military options are few and far between, whether those options were to include precision strikes against specific nuclear sites or a full-blown assault to secure regime change.[1] If Iran were actually to gain possession of nuclear weapons and express the will to use them, the problem would be magnified.

One way to think about this future challenge is by using an illustrative scenario, similar to a war game, although not as detailed, portraying a rogue state (Iran) that actually has a nuclear capability, commits an act of aggression in a key region, and then threatens to employ its nuclear weapons to deter retaliation by the United States, Russia, or other external actors. Envi-

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sioning such a scenario essentially reconsiders a 1990 Persian Gulf War–style conflict but with a nuclear-capable Iraq that conventionally invades Kuwait and threatens to use nuclear weapons against any foreign forces or their homeland if countries such as the United States were to defend Saudi Arabia or seek to expel Iraq from Kuwait. How would U.S. leaders respond? How should the United States pursue its objectives against a state possessing at least a dozen operational warheads and missiles, including intercontinental ballistic missiles (ICBMs), that could conceivably threaten the U.S. homeland as well as its forces, friends, and allies with a seemingly credible nuclear deterrent? What role would U.S. nuclear weapons play in deterring that adversary, and what types of nuclear weapons, if any, would be appropriate? Finally, in a scenario in which the United States and another friendly nuclear state, such as Russia, perceive different interests during the same conflict, what role might U.S. nuclear forces and missile defenses have in offering effective security assurances to that friendly nuclear state?

Envisioning a Nuclear Iran

Suppose, for example, Iran took aggressive action in the Caspian Sea region sometime within the next 10–15 years. Although no evidence suggests an imminent conflict there, many specialists predict that the region will be a key center of geopolitical rivalry, with the interests of Russia, the United States, Iran, and Turkey colliding in a competition for oil and natural gas resources. For example, a 2003 RAND report outlines the myriad interests of foreign powers in the Caspian region and the emerging sources of potential future competition and conflict in that region.[2] Although some commentators have rightly suggested that threats to this region, with only about 3 percent of proven world oil reserves, do not and should not constitute a vital U.S. national interest, the potential for accelerated rivalry and perhaps even conflict has drawn increased attention during the past decade. This hypothetical scenario therefore introduces three main nuclear-armed actors—Iran, the United States, and Russia—all of which have interests, although they are not necessarily equivalent, in the region.

The stage is set when, in a bid to secure the oil and gas fields off the coast of Baku, Azerbaijan, Iranian units launch an attack across the Azeri border and along the Caspian Sea. Ostensibly, Tehran claims that its actions are a response to Azeri government attempts, with U.S. and Turkish support, to foment unrest among ethnic Azeris in northern Iran to destabilize the Iranian government. In reality, Iranian motives are to whip up domestic support for the hard-line regime by taking aggressive action against a perceived U.S. vassal state and to assume a dominant position in Caspian energy production.

With few Russian ground forces able to deploy quickly in the South Caucasus and inadequate numbers of U.S. rapid reaction forces able to intervene against large Iranian ground formations, Tehran claims victory and immediately declares its intention to resist any Russian or U.S. attempt to evict its forces from Azerbaijan with any and all means at its disposal. The supreme ayatollah reminds the world that Iran holds the power to strike any city in Russia or Europe with nuclear weapons and can threaten the U.S. homeland with nuclear weapons by a "variety of methods," including ICBM launches or alternative means of delivery. Implicit here is a threat to smuggle or launch a nuclear weapon or weapons into or at the United States and detonate in response to U.S. intervention.

In future crises, the U.S. must be prepared to confront nuclear-armed rogue states.

Within days, the Caspian region's oil and gas fields, as well as billions of dollars worth of Western- and Russian-financed investment, are at risk. Perhaps of greatest concern to Western leaders, world petroleum prices rise precipitously, a Western-leaning democracy is snuffed out, and a radical Islamic regime has crept closer to Turkey, Russia, and other fragile democracies in the region. Under these circumstances, the United States and Russia recognize the grave threat to their interests and demand that Iranian forces leave Azerbaijan or face military retaliation.

Identifying Russian and U.S. Interests

In this scenario, an Iranian attack would dramatically shift the balance of power in the Caspian Sea region. Russia would likely respond militarily because, regardless of the ebb and flow of Russian-Azeri relations since the dissolution of the Soviet Union, Azerbaijan is still a former Soviet republic and is firmly regarded by Russia as part of its near abroad. In addition, the advance of a hostile, nuclear-armed Islamic state to Russia's borders would threaten to inflame separatists in the North Caucasus region of Russia. Finally, such a step would ensure Iran's dominance of Caspian energy resources, allowing it to influence oil and gas prices unduly and render Russia's influence in the region negligible. Russia would thus likely react with outright hostility to Iran's Azerbaijan conquest and consider joining the United States in seeking to reverse Iran's gains.

Although it might hope to defeat Iran militarily, Russia's conventional forces would probably not be capable of mounting sustained deployments in defense of Azerbaijan. Low levels of investment into research and develop-

ment will likely plague Russian conventional forces into the near future, keeping them at a readiness level below NATO standards. Russia would nevertheless consider defeating Iran imperative to its national interests, such as maintaining energy security in the Caspian region and countering the perceived threat of Islamic radicalism on its southern periphery.[3]

Crisis deployment of missile defenses might not offer the assurances one might expect.

Given the acknowledged decrepit state of Russia's conventional forces, Moscow would likely rely on a variation of its 2000 military doctrine, which assigns nuclear weapons the role of stopping aggression "if all other methods of resolving the crisis situation are exhausted or have been ineffective."[4] As the Russian Ministry of Defense emphasized in 2003, limited and regional wars are the most likely types of conflict Russia will face in the future, and nuclear weapons must be prepared to "de-escalate" a conflict if deterrence fails.[5] In this scenario, given the new threat to Russia's North Caucasus region and its economic interests more broadly, the incentives for Russia to strike first would be high. As opposed to the geographically distant United States, an asymmetry of interests would exist in this scenario. Russia's weakness in conventional arms and vital national interest in a secure Azerbaijan and Caspian Sea would enhance its incentive for nuclear use. For the foreseeable future, Russia's key deterrent will clearly continue to be its ICBM, submarine-launched ballistic missile, and bomber force, backed by modest theater missile defense systems. Although missile defense cooperation with the United States is on the rise, this scenario assumes that current cooperation would have failed to produce joint systems, let alone a collaborative strategy or plans to act in coordination against ballistic missile threats arising from the south of Russia.

Russia may perceive its interests to be more threatened, but the United States would have its own concerns in the Caspian Sea region, both to protect energy investments and to use the area as a base of operations against rogue states and terrorist groups in Central Asia and the Middle East. Given Azerbaijan's membership in NATO's Partnership for Peace program and friendliness toward the United States, Washington would perceive Iran's attack to be on par with Iraq's invasion of Kuwait in 1990—a brutal attack by a hostile Middle Eastern state on a small state friendly to the United States and in possession of a critical strategic resource. In this case, however, the U.S. response must take into account Iran's ability to deter U.S. intervention through a nuclear and ICBM capability and consider the potential impact on U.S. global interests should a nuclear confrontation ensue.

Also, unlike the massive six-month buildup of ground forces in the Persian Gulf region in 1990, poor local infrastructure in Georgia and Azerbaijan would constrain the deployment of sufficient numbers of troops to roll back an Iranian invasion. As a recent RAND report cites, airfields in the South Caucasus are few and scattered and the only open seaport is located in Georgia, meaning that cargo must then travel over suspect road and rail links to Baku, about 600 miles away.[6] Local infrastructure is undoubtedly improving, but this analysis assumes that a large and timely U.S. conventional buildup would be extremely difficult.

Evaluating U.S. Policy Options

What would the United States do? What could it do? How would U.S. responses be perceived by Iran and Russia? U.S. intelligence would likely possess information on the location of some, though not all, of Iran's ballistic missile silos and mobile launchers, but what the United States could specifically do would be shaped by the capabilities it has, particularly in the region. Two options to deter Tehran from further regional aggression, compel Iran to retreat from Azerbaijan, and assure and prevent unilateral action by other regional actors, such as Russia, in this scenario are examined here, one utilizing traditional threats of massive retaliation coupled with missile defense and the second employing a new class of nuclear weapons.

Option 1: Retaliatory Threats and Missile Defenses

U.S. threats of nuclear retaliation may not be sufficient to deter Iran from using nuclear weapons in response to U.S. or Russian intervention. Given current U.S. nuclear capabilities, U.S. high-yield, strategic nuclear retaliatory threats or first strikes would target valued Iranian military targets and nuclear facilities. The potential risks of such action could include a retaliatory Iranian nuclear attack on a U.S. city and a massive U.S. second strike that would likely kill tens of thousands if not hundreds of thousands of Iranian civilians. Knowing that U.S. nuclear strikes in this option would involve weapons with huge yields that produce massive collateral damage, would Iranian leaders consider U.S. threats of nuclear retaliation credible? Would the United States really engage in such brinkmanship, hoping that Iran accedes to traditional notions of deterrence, when the potential cost is strikes against U.S. cities?

The answers to these questions will depend on how confident U.S. leaders could be in assessing what the Iranian regime valued and would be willing to risk. A hard-line regime in Iran would likely value the key trappings

of power—nuclear infrastructure and military assets—over cities and economic infrastructure, and thus the United States would probably seek to target those assets. The threat of U.S. strategic strikes supported by reasonably good intelligence against missile silos, nuclear production facilities such as reactors and factories, mobile missiles, and other targets may in fact deter a strike against the United States via Iran's handful of ICBMs. Such threats could potentially decrease the risk of Iranian first-use of nuclear weapons in response to U.S. conventional intervention in the Caspian scenario.

Iran might not regard threats from current nuclear weapons with high yields as credible.

If deterrence failed to prevent Iranian nuclear use, however, it would produce two serious vulnerabilities. First, Russian cities would be left open to short- and medium-range missile attack. Although U.S. global missile defenses might be able to prevent Iran's small numbers of ICBMs from reaching the United States, Iran's significantly larger arsenal of short- and medium-range ballistic missiles would place Russian cities at immediate risk. Assume that U.S. operational missile defenses in the region consist of both sea-based systems and ground-based defenses, mobile Theater High Altitude Area Defense (THAAD) launchers, and mobile, upgraded Patriot Advanced Capability (PAC) systems. Even if the United States quickly deployed those missile defenses to Russia and they succeeded in intercepting most incoming missiles, the size and strength of the Iranian arsenal, which includes concealable mobile launchers, greatly increases the prospect of missile penetration.

Therefore, missile defenses might not offer the assurances that one might expect. Even if Moscow would rely on the United States to deploy its missile defense systems to southern Russia, uncertainty about the capability of the missile shield would not allow Russian leaders to entrust such a system to protect the fate of highly populated cities within range of Iranian missiles. Besides the possibility that some missiles might leak through if several dozen or more were launched, there is also a risk that Iran might deliver a nuclear weapon by other means, such as infiltration or one of the cheap and hard-to-detect cruise missiles that it continues to develop.[7] Because missile defenses would be useless against weapons smuggled into the country and would likely be ineffective against cruise missiles, Moscow might be pressured into preemption with its own nuclear weapons, particularly given its previously mentioned deteriorating conventional options.

In sum, threats of massive retaliation would likely be necessary to deter Iran, just as they were arguably necessary to deter the Soviet Union during

the Cold War. Yet, the possibility that Iran would not regard such threats as credible due to the high yields of most U.S. nuclear weapons highlights the potential utility of missile defenses. Deploying those systems to Russia during this crisis would help assure its leaders to think twice at least about nuclear preemption. Doubts about the capability of U.S. systems, however, as well as the threat of alternative methods of delivery, suggest that other options beyond the current nuclear force and emerging missile defense systems would be necessary to deter Iran and dissuade Russia from attempting a preemptive strike.

Option 2: Deterrence with "Mini-Nukes"

If Iran did not consider U.S. threats to use the current, high-yield nuclear force credible in this scenario and if missile defenses provided inadequate security, a potentially effective means of deterrence for the United States, assuming that reasonably good intelligence could inform targeting, would be to threaten a preemptive strike against high-value Iranian targets with a new class of precision-guided, low-yield, and highly accurate nuclear weapons. For this option, assume that the United States has developed and deployed a new class of high-accuracy, lower-yield nuclear warheads below five kilotons (in comparison, the Hiroshima bomb had a yield of around 15 kilotons), capable of penetrating hard and deeply buried targets. Could these new, so-called mini-nukes, currently in the conceptual stage, do more than other existing nuclear or nonnuclear capabilities to deter Iran and avert nuclear war?

Credible arguments against the development of such weapons deserve serious consideration. The three principle objections are that new nuclear weapons run counter to U.S. obligations to move toward disarmament as stated in Article VI of the Nuclear Nonproliferation Treaty (NPT); by developing new nuclear weapons, the United States is signaling that nuclear weapons are legitimate war-fighting options for policymakers and military leaders, both in other countries and in the United States itself; and advances in conventional weapons have enabled them to destroy most targets, including those hardened and deeply buried, without resorting to nuclear use.

Although arms control advocates argue that developing new nuclear weapons defies provisions in the NPT that call on nuclear-armed states to take steps toward nuclear disarmament,[8] it is unclear whether a new class of nuclear warhead would constitute a repudiation of U.S. legal obligations to move toward nuclear disarmament, embodied in efforts such as threat reduction in the former Soviet Union and the START and SORT treaties with Russia, among others.[9] Given a world where global nonproliferation efforts have failed to the point where a rogue state, particularly an NPT signatory

such as Iran, is overtly threatening nuclear use, the justification for opposing a new class of nuclear warhead—a much less egregious arms control offense—that could possibly serve to deter adversary nuclear use is not persuasive.

Critics also argue that U.S. reliance on nuclear weapons also raises the value, or currency, of nuclear weapons, encouraging other states to build or even use nuclear weapons. States seek nuclear weapons for a variety of reasons, however, and the amount of influence that U.S. development of a new nuclear warhead has on their nuclear decisions is inconclusive. Such arguments likely inflate the influence of U.S. actions on other countries, particularly rogue states that are unlikely to tie their own nuclear evolution to U.S. nuclear developments and instead seek to offset U.S. (and other states') conventional advantages, enhance their regional and international prestige, placate domestic elites, and reap other perceived benefits from acquiring or developing nuclear weapons. Opponents of mini-nukes also contend that lower-yield nuclear weapons become more usable in this scenario. It is argued that they essentially blur the line between conventional and nuclear weapons because their supposedly lesser explosive power approaches that of very powerful conventional explosives. Nonetheless, even lower-yield nuclear weapons have distinct characteristics that distinguish them from conventional weapons, chief among them immense radiation, heat, and blast effects. Hence, they are likely to exert a powerful deterrent effect in the minds of many adversaries and introduce caution in the minds of U.S. leaders contemplating their possible use.

Lower-yield nuclear weapons could deter more effectively than large weapons

Similarly, critics assert that advanced conventional weapons can accomplish the same objectives as lower-yield nuclear weapons, thus making new nuclear weapons unnecessary. In a strict military sense, conventional weapons likely could accomplish the objective of destroying some hard and deeply buried targets, but nuclear weapons are likely to be more effective than conventional weapons against many widely dispersed targets, such as mobile missile launchers, because of the large radius of a nuclear-weapon blast.[10] In addition, conventional attacks by strike aircraft and cruise missiles against sites heavily protected by advanced air defense systems, as most high-value targets such as nuclear production facilities, silos, and bunkers in Iran likely are, cannot guarantee penetration. Unless conventional warheads are mated to ICBMs in the future, only ICBM-delivered nuclear warheads would hold a near 100 percent probability of reaching the intended targets.

Most importantly, conventional weapons lack the deterrent value of even the smallest nuclear weapons. Conventional weapons simply do not have the cachet of nuclear weapons, and whether a nuclear weapon is a large "city-buster" or of an order of magnitude smaller than the Hiroshima bomb, it will still produce intense heat and blast, as well as radioactive fallout. All states, including rouge regimes, develop nuclear weapons for myriad reasons, chief among them the psychological, symbolic, and deterrent value such weapons represent. It therefore stands to reason that states would regard the introduction during a crisis of nuclear weapons as far more significant than of conventional weapons and will modify their behavior accordingly. Even the introduction of lower-yield nuclear weapons would likely be a powerful tool.

In sum, although these three arguments against developing new nuclear weapons may have merit, on balance they appear fundamentally misguided. In a scenario such as the one posited here, precluding an established nuclear state from developing new classes of nuclear warheads while a rogue state effectively develops and deploys nuclear weapons appears nonsensical. In addition, by blurring the line between conventional and nuclear weapons and ending the reliance on "city-buster" weapons, mini-nukes may appear more usable and hence more credible as a deterrent to a rogue state with an appreciation of the destructive power of nuclear weapons.

Credible arguments against development of such weapons deserve serious consideration.

In fact, the key to the mini-nuke option is recognizing that it involves threats of use, not actual use. Threats are at the heart of deterrence, and against some adversaries, certain types of threats may help the United States achieve its objectives. Against Iran, threats to bomb key targets with conventional munitions may not be enough to dissuade the Iranian leadership because such weapons might not be up to the task. Iran is a very large country, and its nuclear facilities are in and around cities such as Bushehr, Natanz, and Arak.[11] Even accounting for advances in the stealth, precision, and lethality of cruise missiles, strike aircraft, and other capabilities, attacking these sites, which enjoy formidable air defenses, would pose immense challenges to U.S. conventional forces. Perhaps most importantly, threats of U.S. conventional attacks are unlikely to be an adequate deterrent against a determined Iran that, in this scenario, has already acted aggressively against U.S. interests and brandished nuclear threats. In contrast, a low-yield, highly accurate nuclear weapon capable of destroying hard and deeply buried targets and delivered by an ICBM (and therefore indefensible) could

have considerably more deterrent value than conventional weapons with similar accuracy.

Similarly, a low-yield nuclear U.S. option would be more credible than current reliance on a massive nuclear strike. Tehran would be more convinced of Washington's willingness to retaliate to protect U.S. interests while risking minimal collateral damage from a low-yield option instead of the overwhelming damage inherent in massive retaliation. An Iranian regime aware of the capability of such weapons would be hard pressed to perceive the United States as a power self-deterred by its own massive nuclear arsenal, which could inflict disproportionate collateral damage, or by conventional weapons, against which Iran could conceivably mount a credible defense. Iran would likely recognize that these new weapons pose a credible risk to its missile and weapons of mass destruction (WMD) assets that U.S. and Russian conventional weapons would be unlikely to generate. Backed by explicit threats of nuclear retaliation if Iran were to detonate a nuclear weapon in the United States or against U.S. forces, low-yield nuclear weapons that could destroy key targets while limiting collateral damage present an attractive deterrent option.[12]

The key to the mini-nuke option is that it involves *threats of use* and not actual use.

Possession of such weapons could help assure Russia that it could afford to forgo its own preemptive nuclear strikes. With Russian nuclear options limited in this scenario to high-yield strikes that likely would produce highly disproportionate collateral damage, it would be in the best interests of the United States to offer nuclear guarantees as well as assurances of missile defense deployments to protect Russian cities from Iranian attack. In fact, deployments or even pre-deployments prior to a crisis of missile defenses could have the crucial effect of signaling U.S. willingness to involve itself and thus enhance its credibility in the crisis. It would signal to Russia that the new U.S. nuclear weapons would be available to deter Iran from using nuclear weapons against Russian cities if Russia were to intervene in Azerbaijan.

Deterrence through explicit threats of nuclear first-use is, of course, a strategy rife with danger. Ideally, the implicit threat that the United States could escalate to low-yield nuclear weapons provided simply by possession of that capability would deter the initial Iranian intervention into Azerbaijan. If deterrence fails, however, and the United States is forced to actually use nuclear weapons, it would cause significant political damage and signal the start of an era of nuclear war fighting. More ominously, given imperfect intelligence, nuclear strikes would not be certain to destroy all Iranian targets,

and the deliberate location of many Iranian targets in or near population centers could confront the U.S. president with a wrenching political and moral dilemma. Finally, nuclear strikes risk provoking retaliatory nuclear strikes by either Iranian missiles or alternate delivery vehicles, unless the demonstration of U.S. nuclear weapons produced immediate capitulation.

Although possessing credible low-yield nuclear options to forestall Iranian nuclear use would produce a host of difficulties, such weapons have a potentially greater deterrent value than other nuclear or conventional weapons. They make deterrence credible by reducing doubt among adversaries and friends that the United States would refrain from issuing threats based on nuclear weapons because of their immense destructive power. New low-yield nuclear weapons would force adversaries such as Iran to consider the real possibility of losing valued military assets, while states with similar interests to the United States, such as Russia, would benefit from the improved, extended deterrence that such weapons could provide.

Lessons Learned

The Caspian Sea scenario suggests that U.S. decisionmakers could face tough choices in the future against a rogue state—in this case Iran—brandishing nuclear threats. Rogue leaders will not necessarily find traditional Cold War–style threats of massive retaliation credible, forcing Washington to seek other options. Although the supreme U.S. objective in this scenario is to deter nuclear use against the U.S. homeland and forces, as well as to avert nuclear war globally, achieving a secondary objective, such as reversing Iran's seizure of Azerbaijan, might require threatening nuclear use. In the end, flexible nuclear options could have the political effect of deterring a regime that places high value on its nuclear infrastructure, has demonstrated willingness in the past to use WMD and ballistic missiles in combat, and could respond unconventionally to U.S. threats. Along with robust missile defenses shared with aligned states such as Russia, lower-yield nuclear weapons could serve as a more effective deterrent than large "city-buster" weapons. They would also help assure Russia by introducing otherwise unavailable options and thus providing an alternative to conceding to Iran or utilizing its own nuclear weapons. Five key recommendations follow that could assist policymakers in deterring a potentially aggressive rogue state either already in possession of a mature nuclear capability or even ideally from acquiring that capability in the first place.

First, it is crucial to avoid the dilemmas depicted in this scenario in the first place by, if at all possible, preventing proliferation today and in the near term. As this hypothetical case and events in North Korea actually demon-

strate, unchecked proliferation could eventually force the United States to make tough choices when deciding how to counter nuclear-armed rogue states. Those choices shift from undesirable to potentially catastrophic in the midst of a full-blown crisis, particularly when arsenals have progressed to include a second-strike capability in the hands of a regime not altogether shaped by the experiences of Cold War–era fears of mutually assured destruction. The bottom line is that future U.S. leaders will not be certain that adversaries will ascribe to traditional deterrence concepts and be dissuaded from aggressive action just because of the existential presence of U.S. nuclear weapons and missile defenses. Efforts to stem proliferation today, through some combination of nonproliferation and counterproliferation measures, are therefore a primary national security objective. Yet, if the effectiveness of the global nonproliferation regime is such that rogue states such as North Korea and Iran are allowed to develop and deploy nuclear weapons with relative impunity, U.S. leaders need to consider how new nuclear weapons could serve to enhance deterrence, while still demonstrating commitment to nonproliferation objectives in other ways.

Second, flexible nuclear options maximize the ability to threaten an adversary's high-value targets credibly. The feasibility of researching and developing such capabilities has been the subject of intense debate in recent years. The 2001 U.S. Nuclear Posture Review reflects that debate by noting the need for new capabilities to meet new threats.[13] Not all adversaries, including a future nuclear-armed Iran, will necessarily respond predictably to threats of large-scale retaliation. Such retaliatory strikes, targeting troop concentrations or population centers, have the potential to kill hundreds of thousands of civilians, destroy a country's economy, and trigger a regional environmental catastrophe. Therefore, it should be recognized that, regardless of the vitally important contemporary debates on the morality, desirability, and treaty ramifications of developing and testing new types of nuclear weapons, warheads with low yields capable of penetrating hard and deeply buried facilities while producing minimal fallout could have clear advantages. In the Caspian scenario, a potential political benefit could also derive from these new nuclear weapons. U.S. threats to use its low-yield nuclear weapons if necessary could neutralize Iranian targets and avert nuclear war between Iran and a Russia that might otherwise unilaterally act and seriously consider nuclear use. That said, higher-yield nuclear weapons would always remain available to U.S. and Russian leaders and are unlikely to disappear from arsenals anytime soon.

Third, this scenario highlights the importance of solid WMD intelligence as a prerequisite to any of the options outlined above. If U.S. planners indeed seek to hold high-value rogue state targets at risk, they must have pre-

cise data on the location and characteristics of those targets. In particular, missile silos, mobile missile launchers, and nuclear-related infrastructure must be targeted with reasonable confidence to be held at risk. Otherwise, adversary leaders can act with confidence that U.S. strikes could fail to destroy key targets, rendering even the most accurate warheads useless.

Fourth, missile defense is a hedge against imperfect intelligence and a tool for assuring like-minded states. Although a global system would not promise 100 percent effectiveness in intercepting Iranian ICBMs, it would provide deterrent value and some protection if deterrence were to fail.[14] In addition, uncertainty regarding Iranian intentions would necessitate robust theater U.S. missile defenses, which could potentially push Iran to reconsider whether the United States would have an advantage over an undefended Iran in a nuclear standoff, spur efforts to find other means to deliver nuclear weapons against the United States, or limit threats to U.S. allies and friends. If that is the case, strategic missile defenses would seem necessary to limit the threats to the U.S. homeland, while theater defenses would help protect and assure U.S. friends and allies. Russia and the United States have already planted the seeds of missile defense cooperation and should be encouraged to continue their efforts.[15] Russian participation in the development of ongoing systems, possible predeployment prior to any crisis, or the joint development of new systems could be essential in convincing Russia that missile defenses actually work, so that in a crisis the confidence of Russian leaders regarding the effectiveness of U.S. missile defenses is as high as possible and recourse to nuclear weapons is a last resort.

Mini-nukes could help assure Russia that it could forgo its own preemptive strikes.

Finally, it is crucial to be able to communicate intentions and capability to an adversary before as well as during a crisis. During the latter half of the Cold War, open lines of communication between Soviet and U.S. leaders helped ensure that nuclear brinkmanship did not spiral out of control. No such lines exist now between U.S. and Iranian leaders, nor does this scenario assume any. Washington should therefore give attention to crafting public statements expounding the capabilities of any new class of nuclear weapons that is developed to deter a crisis, such as Iranian intervention, from occurring in the first place. The United States should make clear that, although it does not advocate nuclear first-use or seek to escalate any conflict to the nuclear level, it is prepared to destroy a wide range of targets with a wide variety of options at its disposal, to include various types of

lower-yield nuclear weapons. Although some analysts have suggested that testing new nuclear weapons may be unnecessary,[16] doing so prior to the onset of a crisis could be a last resort to signal potential adversaries as well as friends of U.S. credibility and capability.

In the end, the United States should seek to avoid all forms of nuclear use in a conflict. Nevertheless, as nuclear weapons spread to smaller powers with potentially nefarious aims, the possibility of nuclear use grows. To counter nuclear blackmail, the United States needs a wide range of tools, chief among them missile defenses. It also needs to cooperate closely with its friends and allies to develop new missile defense systems and strategies for employing such systems against states that would attempt to use nuclear weapons mated with ballistic missiles. Regrettably, new low-yield nuclear weapons are another key tool that the United States can threaten to employ in the direst circumstances. If the choice is between successful deterrence by threatening low-yield nuclear strikes against legitimate military targets with reduced fallout, casualties, and material and environmental damage or risking even a small chance of a war that could tragically escalate to a successful nuclear detonation in the United States by an adversary who initially calculates that U.S. leaders with a disproportionate nuclear arsenal will be unable to respond to a nuclear-capable aggressor in a conventional conflict, the United States needs to have the foresight to choose the former option. The hope therefore is that the credible threat of nuclear use in a regional conflict would be sufficient to deter potential adversaries, thereby avoiding the catastrophic future effects of a world in which nuclear weapons are accepted instruments of warfare.

Ideally, implicit threats provided by low-yield nuclear capabilities would deter.

Notes

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8. Andrew J. Gotto, "Nuclear Bunker-Busters and Article VI of the Non-Proliferation Treaty," February 22, 2005, http://www.americanprogress.org/site/pp.asp?c=biJRJ8OVF&b=378993.
9. See Stephen Rademaker, statement at the Third Session of the Preparatory Committee for the 2005 Review Conference of the Treaty on the Non-Proliferation of Nuclear Weapons, May 3, 2004, http://www.globalsecurity.org/wmd/library/news/usa/2004/usa-040503-32294pf.htm.
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13. Although the actual document is classified, see "Nuclear Posture Review [Excerpts]," http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm. See also Keith B. Payne, "The Nuclear Posture Review: Setting the Record Straight," *Washington Quarterly* 28, no. 3 (Summer 2005): 135–151.
14. See Victor Utgoff, "Proliferation, Missile Defense, and American Ambitions," *Survival* 44, no. 2 (Summer 2002): 90.
15. For discussion on the potential for U.S.-Russian missile defense cooperation, see Victor Mizin, "Russia's Approach to the U.S. Missile Defense Program," February 2003, http://nti.org/e_research/e3_26a.html; Pavel Podvig, "U.S.-Russian Cooperation in Missile Defense: Is It Really Possible?" *PONARS Policy Memo 316* November 2003, http://www.csis.org/ruseura/ponars/policymemos/pm_0316.pdf.
16. Robert W. Nelson, "Nuclear Bunker Busters, Mini-Nukes, and the U.S. Nuclear Stockpile," *Physics Today*, November 2003, http://www.physicstoday.org/pt/vol-56/iss-11/p32.html.