Addressing Military Nuclear Materials Beyond the 2016 Nuclear Security Summit

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Abstract: Non-civilian or military nuclear materials comprise the vast majority of the world's nuclear material stocks – yet they remain outside the scope of much of the existing global nuclear security architecture. Policymakers will need to consider ways to address this "military materials gap" through by advancing new mechanisms and strategies in order to develop and sustain a comprehensive global nuclear security architecture. Particular attention should be placed on developing confidence building measures and other transparency tools to build international assurance in the security of military materials. This paper will discuss the various strategies for addressing military materials security and propose recommendations for how the international community can address the concept of comprehensiveness in the global nuclear security architecture going forward.

INTRODUCTION

The vast majority of the world's nuclear materials are found in non-civilian programs – in armaments, on ships, and in government-owned research facilities and storage depots. The Nuclear Threat Initiative (NTI) estimates that non-civilian, or military, materials comprise approximately 83% of the world's weapons-usable nuclear material stocks.[2] The exact figure is unknown due to a lack of information on nuclear material stockpiles in certain countries, particularly Russia, China, Pakistan and India.[3]

While there have been significant advances in strengthening the global nuclear security architecture in recent years, "military materials" remain exempt from most international standards and confidence-building measures pertaining to nuclear security. The International Atomic Energy Agency's (IAEA) recommendations on physical protection of nuclear materials and facilities, as well as the suite of other nuclear security documents published by the IAEA, apply solely to materials in civilian programs. The Convention on the Physical Protection of Nuclear Materials (CPPNM), which entered into force in late 2015 and provides the only legally-binding requirements for nuclear materials security also exempts military nuclear materials from its scope. While UN Security Council Resolution 1540 does apply to all nuclear stocks around the world, its requirements are vaguely defined.

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[2] Des Browne, Richard Lugar and Sam Nunn, *Bridging the Military Nuclear Materials Gap: NTI Military Materials Security Study Group*, Nuclear Threat Initiative Report, November 2015, http://www.nti.org/media/pdfs/NTI_report_2015_e_version.pdf?_=1447091315

[3] Description of types and quantities can be found in the Browne, Lugar, Nunn report. Additional analysis of quantities can be found in *Global Fissile Material Report 2015: Nuclear Weapon and Fissile Material Stockpiles and Production*, International Panel on Fissile Materials, 2015, http://fissilematerials.org/library/ipfm15.pdf

Military Materials at the Nuclear Security Summit

Despite hopes for the Nuclear Security Summit process to meaningfully address the military materials security gap in the global nuclear security architecture,[4] the topic was raised by only a few countries and no multilateral commitments were made at the 2016 Summit to address this issue going forward. The 2016 Summit Communique did, however, reaffirm commitments made in previous Summit Communiques and specifically reaffirmed the fundamental responsibility of States to "maintain effective security of all nuclear and other radioactive materials, *including nuclear materials used in nuclear weapons."* [5]

For its part, the United States should be commended for its significant efforts to highlight the issue of military materials security at the 2016 NSS. The United States unilaterally issued a statement with a description of measures it is undertaking to implement effective military materials security across its nuclear complex.[6] The U.S. fact sheet, released on the eve of the Summit, included a description of measures related to material minimization, physical protection, material control and accounting, personnel reliability, training and certification, performance assessment, weapon design features, cyber threat, reporting and assurance, and security culture.[7] Importantly, the U.S. fact sheet also included an assurance that "U.S. security criteria and standards for protecting military materials and weapons in storage, use, and transport meet or exceed the recommendations for civilian nuclear materials contained in IAEA INFCIRC/225/Rev. 5."[8]

The United Kingdom also highlighted the issue of military materials security in its National Statement, noting that it implements "strict accountancy and control measures for military nuclear material which are based on UK legislation and industry best practice." The statement included assurances regarding cyber security, personnel reliability, and regular reviews of security arrangements for military materials.[9] Pakistan noted at the Summit that it had secured "all" nuclear materials,[10] but did not provide additional information to support this assertion.

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[4] See Foreword from the Browne, Lugar, Nunn NTI report; also Paul Quiles, Malcolm Rifkind, Des Browne, Bernard Norlain, and Herve Morin, "The 85%," European Leadership Network, 21 March 2014, http://www.europeanleadershipnetwork.org/the-85_1315.html

[5] 2016 Nuclear Security Summit Communique, https://www.whitehouse.gov/the-press-office/2016/04/01/nuclear-security-summit-2016-communiqu%C3%A9

[6] A more detailed overview of military materials security in the United States is found in Chapter 3.6 of *the FY 2017 Stockpile Stewardship and Management Plan Report to Congress*, March 2016, http://nnsa.energy.gov/sites/default/files/nnsa/inlinefiles/FY17SSMP%20Final_033116.pdf

[7] Many of the elements in the White House Fact Sheet align with recommendations for military materials security contained in the NTI Report.

[8] U.S. Fact Sheet on Military Materials Security, The White House, 31 March 2016, https://www.whitehouse.gov/the-press-office/2016/03/31/fact-sheet-united-states-military-nuclear-material-security

[9] National Statement of the United Kingdom at the 2016 Nuclear Security Summit in Washington, http://www.nss2016.org/document-center-docs/2016/4/1/national-statement-united-kingdom

[10] National Statement of Pakistan at the 2016 Nuclear Security Summit in Washington, http://www.nss2016.org/document-center-docs/2016/4/1/national-statement-pakistan

Despite these positive steps, other countries with military materials attending the Summit chose not to address this issue at all and no new commitments were made at the Summit to continue to address this issue going forward. As the Summit process comes to an end, the military materials gap in the global nuclear security architecture persists.

MILITARY MATERIALS SECURITY SHOULD NOT BE TAKEN FOR GRANTED

Until recently, conventional wisdom in the nuclear security community dictated that security at non-civilian nuclear installations was not a matter of urgent concern. That conventional wisdom was shattered in July 2012 when 82-year old Sister Megan Rice and three other peace activists staged a successful break-in at arguably the world's most secure nuclear facility in Oak Ridge, Tennessee – the Y-12 National Security Complex. The activists cut through four fence lines, triggered multiple alarms, reached the exterior of the highly-enriched uranium (HEU) storage facility, and spent nearly 90 minutes on the compound housing America's central repository of HEU.[11]

The Y-12 incident demonstrated that even the most sensitive military nuclear facilities can – and sometimes do – suffer from weak security culture and lax implementation of security protocols. The breach also served as a powerful reminder that the weak link in security isn't equipment failure. It can be human beings, whether or not sound procedures and systems are in place. After all, well-placed insiders can undermine some of the most sophisticated security equipment. This necessitates effective personnel reliability programs (PRPs) as well as other insider threat mitigation efforts, including effective material control and accounting, application of two-personnel rules, and routine evaluations of security culture and threat awareness.

The Y-12 incident is by no means the only security lapse involving military materials. Security incidents have been reported in virtually every country possessing military materials. Here are just a few of the incidents reported in the last several years:

- In June 2012, a director and two deputy directors of the Siberian Chemical Combine, one of Russia's largest HEU and plutonium production facilities, were arrested on charges of corruption and embezzling millions of dollars. Between 2009 and 2012, Rosatom fired 276 manager or executive-level employees on corruption charges.[12]

[11] A detailed overview of the 2012 security lapse at the Y-12 National Security Complex and the underlying security culture problems which contributed to it can be found in *Inquiry into the Security Breach at the National Nuclear Security Administration's Y-12 National Security Complex*, Special Report by the Department of Energy Inspector General, 29 August 2012, http://energy.gov/sites/prod/files/IG-0868_0.pdf

[12] Matthew Bunn and William Tobey, "Nuclear Security in Russia and Current State of Cooperation," Presentation at the U.S. Institute of Peace, September 2014, http://belfercenter.ksg.harvard.edu/files/nuclearsecurityinrussia.pdf

- In June 2013, a local newspaper reported on poor levels of security at the French nuclear submarine base on Ile Longe. The report exposed weak access controls "which a child of 12 could reproduce," poor inspection procedures for vehicles entering and leaving the base, and an inexperienced, poorly paid military police unit guarding the facility. The base is home to France's nuclear submarine fleet.[13]

- In 2013, as many as 50 law enforcement personnel from the U.K. Ministry of Defence were investigated for sleeping on the job and not completing patrols at the Atomic Weapons Establishment in Burghfield, Berkshire, a government-owned, contractor-operated site where nuclear warheads are constructed, maintained, and disassembled.[14]

- In July 2009, a Taliban suicide bomber rammed a motorcycle into a bus at a Rawalpindi intersection carrying workers returning home from Kahuta Research Laboratories, where uranium is enriched for nuclear weapons. Thirty workers were injured. Speaking of the attackers to the local press, a retired general and military analyst said, "It showed that their intelligence is current. It was a deliberate strike. They are trying to give a hint that they can strike the personnel who are working for the nuclear facilities."[15]

- Terrorist attacks on Indian and Pakistani military facilities, some of which reportedly contain nuclear weapons, have taken place over the last several years, including the 2014 attack by naval officers working with al Qaeda attempting to steal a Pakistani frigate and a heavily-armed attack on India's Pathankot Air Force Base in January 2016.[16]

Due to a lack of transparency, it is nearly impossible to characterize the state of military materials security in any particular country, even with these anecdotes of poor security. What these reports do tell us, however, is that there is considerable room for improving military materials security – and that achieving the goal of effective and sustainable security for all nuclear materials, including military, is not something to be taken for granted. Furthermore, they demonstrate that confidence-building measures and other international assurance

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[13] Herve Chambonniere, "Ile Longue. Les incroyables failles dans la sécurité," Le Télégramme, 11 June 2013, http://www.letelegramme.fr/ig/generales/fait-du-jour/ile-longue-des-failles-dans-la-securite-11-06-2013-2132250.php#QvdxjW8QH6uzi1Dg.99

[14] "Nuclear arms site police investigated over allegations they slept on duty" *The Guardian*, 14 December 2013, http://www.theguardian.com/uk-news/2013/dec/14/nuclear-weapons-site-police-investigated-slept-duty

[15] Salman Masood, "Attack in Pakistani Garrison City Raises Anxiety About Safety of Nuclear Labs and Staff, *The New York Times*, 4 July 2009, http://www.nytimes.com/2009/07/05/world/asia/05pstan.html?_r=0

[16] See Syed Shoaib Hasan, Saeed Shah, and Siobhan Gorman, "Al Qaeda Militants Tried to Seize Pakistan Navy Frigate: Al Qaeda Raid Foiled After Firefight Involving Rogue Naval Officers," Wall Street Journal, September 16, 2014, http://www.wsj.com/articles/al-qaeda-militants-tried-to-seize-pakistan-navyfrigate-1410884514 (accessed June 5, 2015); Kamaldeep Sing Brar and Navjeevan Gopal, "Probing Pathankot attack: Fence floodlights that didn't work, gaps in border control, patchy police response," *The Indian Express*, January 8, 2016, http://indianexpress.com/article/india/ india-news-india/probing-pathankot-attack-fence-floodlights-that-didnt-work-gaps-in-border-patrol-patchy-policeresponse/?google_editors_picks=true#sthash.bZHnH3Rp.dpuf

mechanisms can be means by which countries can (1) adopt best practices for the purposes of improving security and (2) assure the international community that the security of their military materials can effectively mitigate against current-day threats.

The following section describes several measures that governments could take to improve confidence in military materials security and begin to resolve the military materials gap in the global nuclear security architecture.

MIND THE GAP

Multilateral Approaches

There are several opportunities for addressing military materials security in multilateral institutions following the conclusion of the Nuclear Security Summit process. Though these measures will not close the military materials gap, they will help draw much-needed attention to the issue and become platforms for improving transparency and building confidence around military materials security.

- Considering that all five Permanent Members of the United Nations Security Council (the so-called "P5") possess military materials, a logical starting place for multilateral discussions on military materials is the "P5 Process" launched by the United Kingdom in 2009. Though the process has had fared modest success and by most accounts has fallen short of initial expectations, the P5 process could nevertheless be used as an umbrella mechanism for coordinating workshops and technical-level discussions on military materials security. If starting with the five is too difficult, a smaller group could be established and then built upon. **As an initial step, a P5 working group could be established in the coming months with a mandate to explore opportunities for P5 engagement on military materials security.**

- The United Nations Security Council Resolution (UNSCR) 1540 Committee, tasked with supporting implementation of UNSCR 1540 is a mechanism for discussions on military materials security. UN Security Council Resolution 1540 requires countries to have appropriate effective physical protection for *all* nuclear materials, including those in nuclear weapons – so military materials security is within the scope of the Committee's mandate. **As an initial step, the UNSCR 1540 Committee should form a Group of Governmental Experts to discuss military materials security, improve transparency measures, and build international confidence, and, over time, develop standards or guidelines for military materials security.**

- The Global Initiative to Combat Nuclear Terrorism (GICNT), now celebrating its 10th anniversary, could also be a forum for engagement on military materials

security – though countries have been reluctant to discuss this topic in this forum in the past. **The advantage of utilizing GICNT as a forum for engagement on military materials security is that the United States and Russia serve as co-chairs and are also the two countries with the vast majority of the world's military materials.** GICNT could sponsor tabletop exercises, discussions, workshops, and technical exchanges on military materials security. It could also be a forum for discussing and developing technical standards for military materials security.

Bilateral Approaches

In addition to multilateral approaches to building confidence in military materials security, States should strengthen or broaden key bilateral relationships to focus on military materials security. The following are several measures that should be implemented by countries with military materials as soon as practicable:

- **The United States and Russia should establish a new framework for preventing nuclear terrorism**. For more than 20 years, the two nuclear powers cooperated to improve nuclear security across the former Soviet Union, including security at facilities with non-civilian stockpiles. This cooperation has effectively stopped, albeit for a few areas of ongoing engagement such as HEU fuel returns from third countries. New cooperation should be implemented under the auspices of joint counterterrorism efforts, as combatting the threat of terrorism closely aligns with the core national interests of both countries. Furthermore, unlike in the past when cooperation amounted to unidirectional assistance to Russian nuclear sites which required site access for assurance visits, future cooperation should be based on a partnership model which does not necessarily require granting access to foreign nationals to sensitive nuclear sites. Mechanisms, however, should be in place to allow representatives from all nuclear facilities to attend best practices exchanges, trainings, workshops, and nuclear security peer reviews. Representatives from the U.S. Defense Department and the 12th Main Directorate of the Russian Ministry of Defense (responsible for protection of Russia's nuclear facilities) should be invited to participate or observe these meetings.

- **Broaden the nuclear security relationship between China and the United States to include military materials security.** In March 2016, China completed construction on and opened its Nuclear Security Center of Excellence in Beijing. The COE will be used for China's domestic nuclear security training needs, as well as a platform for bilateral and multilateral exercises, workshops, and technical exchanges. Both governments should also consider using the COE as a platform for discussions and technical engagements on military materials security, involving personnel from the various agencies responsible for military materials security from both governments. The United States and China should also include discussion of military materials security and enhancing Design Basis Threats in

their new Bilateral Dialogue on Nuclear Security, the inaugural meeting of which was held in February 2016.

- **The United States should expand nuclear security cooperation with India and Pakistan.** Both countries face acute nuclear security challenges, principally from non-state terrorist groups operating in South Asia. These challenges pertain to military installations, as well as civilian nuclear facilities. Nuclear security engagements with each country should include a dialogue on and other forms of engagement on military materials security. Workshops, technical exercises, and trainings on nuclear security should also include representatives from organizations responsible for military materials security.

Unilateral Approaches

Countries with military materials should also consider a suite of assurance options that could be taken unilaterally to build confidence in military materials security, particularly when political tensions bar any immediate progress on building bilateral nuclear security relationships. Measures could include:

- **Declarations at UNSCR 1540 Committee and other International Fora.** Countries with military materials could follow the U.S. lead by issuing similar statements regarding steps they are implementing to ensure effective military materials security. The statement should include a basic list of security measures at specific sites. In cases where it is too sensitive to reveal such information, a list of general security measures can be included. The statement could also address how facilities are addressing emerging threats.[17] They should also use the opportunity to declare that physical protection provided to military materials "meet or exceed" the recommendations set forth in IAEA INFCIRC 225/Rev 5, just as the United States did at the 2016 Summit. Countries could do so in their reports to the 1540 Committee, as well as at other for a including GICNT, INTERPOL, and at the IAEA Ministerial Conferences on Nuclear Security.

- **Reporting of Information about Military Materials Security Regulations.** Countries should publish certain information regarding regulations pertaining to the security of military materials. Such publications could include non-sensitive, unclassified content found within regulations, as well as the titles of regulations pertaining to certain aspects of military materials security. The publications would thereby demonstrate regulatory coverage of security topics such as materials control and accounting, cyber security, and transportation security.

[17] See, for example, U.S. Department of Energy*, Fiscal Year 2017 Stockpile Stewardship and Management Plan – Biennial Plan Summary*, March 2016.

Other measures states could take to build confidence in the security of military nuclear materials are found in NTI's 2015 report on military materials security, *Bridging the Military Nuclear Materials Gap* and the Belfer Center's March 2016 report *"Preventing Nuclear Terrorism: Continuous Improvement or Dangerous Decline?"*.

CONCLUSION

As the Summit process concludes, governments and civil society will have to find new ways of addressing military materials security. Fora such as the P5, the UNSCR 1540 Committee, and the GICNT are suitable venues for engagement on military materials security. Furthermore, governments with military materials could expand or resume bilateral nuclear security engagements to include military materials within the scope of their cooperation. Civil society, for its part, should continue to focus on the topic of military materials security – encouraging transparency and accountability regarding the security of 83% of the world's weapons-usable nuclear materials.