

The Suwalki Gap

A Proving Ground for Cluster Munitions

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Over fourteen years have passed since the United States last used cluster munitions in combat. Revered by artillerymen and despised by humanitarian groups, these combat multipliers are once again relevant due to a recent Department of Defense

(DOD) policy change and the reemergence of an adversarial Russia. The need for cluster munitions is growing as Russia poses a credible threat of a high-intensity conflict in the Polish/Lithuanian borderland called the Suwalki Gap (see figure, page 42).¹ However, the dangers and



A B-1B Lancer bomber aircraft drops cluster munitions 5 November 2002. Cluster bombs like these open in the air to release numerous explosive submunitions, or bomblets, that are effective against area targets such as troop formations, vehicle columns, airfields, command and control elements, and logistics concentrations. (Photo courtesy of the U.S. Air Force)



concerns of cluster munitions remain present. Before cluster munitions are deployed in this new “Fulda Gap,” there are several considerations to account for to ensure the Suwalki Gap does not become synonymous with the civilian tragedies that can occur from use of such munitions.²

Cluster Munitions Background

Cluster munitions are composed of a nonreusable canister or delivery body containing multiple conventional submunitions, or “bomblets.”³ They are delivered from aircraft, rockets, missiles, or artillery and come in anti-personnel, antiarmor, and antimateriel packages.⁴ These packages provide area effects on targets, with devastating results. The shaped-charge bomblets on antiarmor packages are especially effective on moving armor columns—much more so than conventional shrapnel produced by unitary munitions.⁵ Considered an “economy of force” weapon, cluster munitions create logistical advantages

Cluster munitions exploding over a target 14 September 2009 in an unknown location. Similar munitions were used in combat on 2 April 2003, demonstrating their capability against a tank column in Iraq. (Photo courtesy of the U.S. Air Force)

by requiring fewer weapons platforms (aircraft, artillery tubes, etc.) and munitions to achieve the same effects as unitary munitions.⁶ This allows a smaller force to engage and degrade a larger enemy force.⁷ As a testament to their efficacy, the short (four-day) duration of the first Gulf War of 1991 is, by some accounts, attributed to the effectiveness of cluster munitions.⁸

Legal and Humanitarian Concerns of Cluster Munitions

Yet, for all the military advantage they provide, cluster munitions’ potential violations of the principles of distinction and proportionality remain a concern both

during and after a conflict.⁹ They are designed to scatter their bomblets over a wide area in order to produce effects on targets such as troop and armor formations as well as airfields. This indiscriminate pattern presents a risk the munitions will fall on nearby civilian populations and produce collateral casualties.¹⁰ However, the risk is mitigated by the collective efforts of accurate targeting intelligence, the expertise of an experienced fires advisor that understands dispersal

patterns and area effects of cluster munitions, and the sound advice fed to a commander by an operational law attorney.¹¹ While this only *mitigates* the risk of collateral casualties, use of military force “need not be a perfect laser beam of lethality that will with 100 percent certainty destroy only the military objective, causing no collateral damage. If that were the case, there would be no need for commanders and soldiers to engage in the delicate and difficult balancing test that is the proportionality principle.”¹² To be sure, the legality of these munitions has been reviewed extensively over the years and been found to be, *per se*, not in violation of the law of war.¹³

The rate of unexploded ordnance (UXO) left in the wake of an artillery barrage also presents concerns. These rates vary between munitions, from 2 percent to 30 percent of submunitions—a significant number when accounting for tens of thousands of cluster munitions used during an armed conflict.¹⁴ This UXO poses a danger to civilians and is blamed for thousands of civilian deaths—even years after the fighting ends.¹⁵ Their often bright colors, designed for easy identification if they fail to explode, pose particular danger to children who are attracted to the colors and mistake the bomblets for innocent objects or toys.¹⁶ Though these munitions are not designed to target civilians, the concern is nonetheless real.

These dangers played out in recent history, both affecting movement on the battlefield and causing civilian casualties. Though devastatingly effective, UXO from



A cluster munition bomblet. (Photo courtesy of Voice of America)

an estimated one million bomblets into Lebanon.²⁰ Ninety percent were dropped in residential areas in the final seventy-two hours of the conflict, when a resolution to the conflict seemed imminent.²¹ While Israel denies any wrongdoing in its cluster munitions use, the decision was intensely scrutinized and led to war crimes allegations.

Motivated largely by these dangers, and particularly Israel’s use of cluster munitions in Lebanon, many actors in the international community moved to ban cluster munitions. This movement culminated in the Convention on Cluster Munitions (CCM), adopted in Dublin on 30 May 2008 and signed in Oslo, Norway, in December 2008. The signatory countries agreed to

Operation Desert Storm led to the deaths of twenty-five military personnel from the United States and delayed the Marines’ capture of the Kuwait City Airport.¹⁷ In 1999, NATO forces used 1,392 cluster bombs during the Kosovo conflict.¹⁸ The barrages left approximately thirty thousand UXO bomblets on the battleground that failed to explode due to the soft ground and rainy conditions.¹⁹ Perhaps the most consequential use of cluster bombs came in 2006, when Israel dropped

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“undertake never under any circumstances to (a) Use cluster munitions; (b) Develop, produce, or otherwise acquire, stockpile, retain or transfer to anyone, directly or indirectly, cluster munitions; (c) Assist, encourage or induce anyone to engage in any activity prohibited to a State Party under this convention.”²² To date, 119 states have joined the convention—including most NATO countries and, in particular, Lithuania. Notably absent, however, are the United States, Poland, Russia, and Belarus.

United States' Response to Cluster Munitions

Though not a signatory to the CCM, the United States imposed policies to move toward the CCM. In 2008, Secretary of Defense Robert Gates mandated the following: cluster munitions that exceed operational planning requirements be eliminated; after 2018, the military would only employ cluster munitions that do not exceed a 1 percent UXO rate; the military would maintain information relevant to facilitating the removal or destruction of cluster munitions.²³ Though this policy memo affirmed the value of cluster munitions, it also clearly set the United States on a path toward CCM compliance.

This policy was updated in October 2017—perhaps in response to a lack of readily available and adequate replacements for current cluster munitions. The new policy, signed by Deputy Secretary of Defense Patrick M. Shanahan, extends the use of the DOD's current inventory (with combatant commander approval) until sufficient quantities of munitions are acquired that meet certain standards.²⁴ Combatant commanders

may also accept transfer of cluster munitions that do not meet these standards to meet immediate warfighting demand. Procurement of cluster munitions is still limited, but the policy expands the criteria to include

cluster munitions designed with certain safety requirements (internal power source for arming and detonating that renders the bomblet inoperable after fifteen minutes or less; electronic self-destruct mechanism; bomblet cannot be armed or detonated by incidental handling, contact, or movement when it does not arm after deploying from the canister). While this policy does not necessarily bring the United States into compliance with the CCM, it goes a long way toward minimizing the dangers

of UXO and creating more manageable cluster munition development standards. Still, it leaves the United States with nothing more than its current inventory.

Suwalki Gap: An Impetus to Use Cluster Munitions?

In the meantime, a resurgent threat appears on the horizon. In 2008, Russia invaded the nation of Georgia, intervening on the side of pro-Russian rebels in the break-away provinces of South Ossetia and Abkhazia.²⁵ They again invaded a sovereign nation in 2014, when Russian forces annexed the Ukrainian province of Crimea and, later, parts of eastern Ukraine.²⁶ Each of these actions were preceded by Russian military movements under the guise of an exercise. Gen. Joseph Dunford, chairman of the Joint Chiefs of Staff, told the Senate Armed Services Committee in July 2015 that “Russia presents the greatest



(Figure by Arin Burgess, *Military Review*)

Figure. The Suwalki Gap



Surface-based munitions are critical due to Russia's air defense strength in the region, making air-delivered munitions dangerous and impractical.



threat to our national security.²⁷ He went on to describe Russia as an existential threat to the United States, and justified this statement by noting Russia's nuclear arsenal, its destabilizing role in Ukraine, the threat it poses to NATO nations on its borders, and its behavior.

The question then remains, "Where will they strike next?" While the possibilities are limitless, the Suwalki Gap is a likely target.

Similar to the Fulda Gap before it, the Suwalki Gap is both strategically located and militarily vulnerable.²⁸ It lies in the northeast corner of Poland in a marshy, lightly populated lowland that straddles the sixty-mile border of Poland and Lithuania. The narrow pass of land separates Kaliningrad, Russia's only Baltic port that does not freeze in the winter, from Russia's ally, Belarus. The region also contains the main rail link between Kaliningrad and Russia, which runs just north of the gap and relies on a tenuous short-term agreement with an apprehensive Lithuania. Russia's ability to bridge this gap would allow an unimpeded all-season direct land route from the Baltic Sea to Moscow, significantly improving Russia's ability to control the Baltic region and gain a logistical advantage over NATO countries. It would also cut off Lithuania, Latvia, and Estonia from the rest of their NATO allies, preventing these countries from receiving reinforcements should a Russian attack occur. This area keeps Lt. Gen. Ben Hodges, until recently the commander of U.S. Army Europe, awake at night.²⁹

Russia's military advantage in the region also makes the Suwalki Gap an appealing target. The Kremlin is spending approximately \$313 billion on defense upgrades to its military, including two new divisions in its western region.³⁰ In 2015, Russia began increasing its military presence in Kaliningrad, making it one of Europe's most militarized places.³¹ Before Zapad 17, a large-scale Russian military exercise that involved, by NATO estimates, upward of 100,000 Russian and Belarussian service members throughout Western Russia, Belarus, and Kaliningrad, the International Centre for Defence Studies estimated Russia had 57,500

troops in its Western Military District and another 11,000 stationed in Kaliningrad.³² It also has artillery forces that can match U.S. artillery in firepower, a formidable layered air defense force, and two air bases (Chernyakhovsk and Donskoye) located in Kaliningrad that house S-400 and S-300 air defense systems, a variety of fighters, strike aircraft, and more than 10,000 troops.³³ These forces create significant risks for U.S. aircraft and would turn the region into a de facto no-fly zone.³⁴

Contrast Russian forces with those of Lithuania, Latvia, and Estonia, whose combined size equals about 28,000 lightly armed troops with little air or sea fighting capability and little armor.³⁵ Though NATO has troops stationed in these Baltic States, a study by the RAND Corporation found a comparison of NATO forces to Russian forces to dramatically favor Russia.³⁶ Factors such as overwhelming tactical and operational fires superiority, numerical armor superiority, a lack of adequate NATO firepower, and Russia's close proximity and ease of access into the Baltic countries indicate that current NATO forces are insufficient to defend against a hypothetical Russian attack.³⁷

As indicated by the new DOD policy on cluster munitions, there are currently no adequate surface-based cluster munition alternatives that meet the CCM standards.³⁸ Surface-based munitions are critical due to Russia's air defense strength in the region, making air-delivered munitions dangerous and impractical. Lockheed Martin is developing an alternative warhead for its Guided Multiple Launch Rocket System, which explodes thirty feet above a target and provides an area effect with 182,000 inert preformed tungsten fragments.³⁹ While these munitions meet the standard of both the DOD cluster munitions policy and the CCM, there is no indication they adequately bridge the capability gap that cluster munitions (specifically, dual-purpose improved conventional munitions) provide.

The Suwalki Gap dilemma presents a compelling case for the use of cluster munitions. Russia, a peer nation, stands at the steps of a friendly country with



superior numbers of troops and armor—and with greater access and mobility to the battlefield than other NATO forces. U.S. forces would be forced to maximize their limited capabilities defending the Suwalki Gap until fellow nations could mobilize and reinforce their efforts in what would likely become a tough artillery fight.⁴⁰ Cluster munitions would do precisely that: maximize a force's limited firepower by saturating an area with armor-piercing munitions produced from a limited number of artillery platforms. These munitions would reduce the amount of submunitions required to have the same effects against a Russian invasion—an important factor when facing numerically superior forces. They would also allow the United States to fight on the same terms as Russia, who is not a signatory to the CCM and has shown its willingness in recent conflicts (Georgia, Ukraine, and Syria) to use cluster munitions.⁴¹

Cluster Munitions from the Lithuanian Perspective

A consideration in this decision lies in Lithuania, a party to the CCM. In contrast to Poland, who has not signed the CCM and maintains cluster munitions in its inventory, Lithuania may have stronger feelings about firing cluster munitions within its borders and potentially

A joint convoy en route to a departure area 1 April 2017 during a Russian-Belarusian exercise of airborne tactical units in the Vitebsk region, Belarus. Cluster munitions are ideal for maximizing the effects of artillery or air support on troop or vehicle concentrations such as the one seen here or similar targets NATO forces might encounter during a defense of the Suwalki Gap. (Photo by Maksim Blinov, Sputnik via Associated Press)

littering the countryside with cluster munition UXO, presenting dangers to its civilian population.⁴² This same concern has been shared by other NATO CCM signatories, some of whom have previously threatened to withdraw forces from conflicts were the United States to deploy cluster munitions.⁴³

However, the CCM was signed in 2008—before Russia became a true threat to Lithuania or NATO as a whole. This was seventeen years after NATO last faced the prospects of a peer adversary and sixty-three years since Europe last engaged in a high-intensity conflict. Until now, these conflicts were considered a thing of the past, making cluster munitions anachronistic for modern warfare. Would Lithuania and NATO allies feel the same about cluster munitions now that an existential threat that itself uses cluster munitions lies on their borders?

A CCM signatory may have legal concerns about authorizing another nation to use cluster munitions within its own borders. The CCM not only prohibits its signatories from using cluster munitions but also from assisting, encouraging, or inducing anyone to use cluster munitions.⁴⁴ There is also a duty to promote the Convention to other nonparty nations.⁴⁵

However, the CCM contemplated such dilemmas. It contains a provision that allows signatories to “engage in military cooperation and operations with states not party to this convention” that use cluster munitions so long as the signatory nation does not “expressly request the use of cluster munitions in cases where the choice of munitions used is within its exclusive control.”⁴⁶ In other words, Lithuania may allow the United States to use cluster munitions within its borders—as long as Lithuania does not request cluster munitions when other munitions are available.⁴⁷ While individual nations have their own laws implementing their own additional measures, Lithuania currently has no additional restrictions apart from the CCM. Though the United States should respect the wishes of a sovereign state and ally when operating within its borders, it should be prepared in the event Lithuania permits cluster munition use within its borders under the above circumstances.

Steps to Successfully Deploy Cluster Munitions

The first step to ensure the United States is prepared to deploy cluster munitions in a potential conflict against Russia is to ensure a sufficient stockpile of such munitions. Since 2008, in accordance with the previous DOD policy, cluster munitions that exceeded planning requirements were removed from the active inventory and demilitarized. Given that the United States has not used large quantities of cluster munitions in combat since 2003, it stands to reason that the planning requirements were exceptionally low.⁴⁸ Additionally, due to low demand, there are currently no cluster munitions producers in the United States.⁴⁹ Are there sufficient cluster munitions stockpiles for a likely artillery-heavy battle with a near peer? What is the UXO rate of our current aging inventory? The DOD should evaluate this requirement and determine whether current inventories are sufficient and do not result in unacceptable UXO rates. If current inventories are

unsatisfactory and replacements that meet the new DOD policy standard are unavailable, the DOD should be prepared to procure off-the-shelf technology to fill the void until new technology is available.

The DOD should also be leery that its forces have not practiced regularly with cluster munitions for almost fifteen years. Do we still have the expertise to safely deploy these munitions in combat? Though the Advanced Field Artillery Tactical Data System allows artillerymen to observe likely bomblet distribution patterns, how will weather conditions affect this distribution? Technology can only compensate so much for real-world experience and application. Today’s artillery should train on cluster munitions and observe their distribution patterns and effects in all conditions, thus reducing the likelihood of bomblets dispersing onto civilian populations.

The same goes for deployment on all-terrain types. The Baltic States are covered with a thick mud during the autumn and spring months. This weather and terrain condition, called *rasputitsa*, is caused by the poor drainage of underlying clay soil in the region.⁵⁰ It can consume vehicles and is often credited with stopping both Napoleon and the Wehrmacht during their respective invasions.⁵¹ From an artillery standpoint, this softer ground would increase the UXO rate of cluster munitions. Identifying the likely UXO rate in such terrain would assist commanders in determining whether the risk of UXO and, as such, collateral casualties, is excessive in relation to the concrete and direct military advantage gained from the use of cluster munitions. To identify this UXO rate, U.S. forces should conduct live fires with their Polish allies in Poland during *rasputitsa* conditions to identify the effects such terrain has on both the UXO rate and ordnance-clearing abilities.

Conclusion

Cluster munitions beget many concerns and inflame passions on both sides of the debate. They may result in collateral casualties from both their bomblet distribution pattern as well as the UXO left on the battlefield long after the last shell is fired. However, the utility of these weapons is undeniable, and when faced with a peer threat capable of conducting a high-intensity conflict, it would be foolish to send our troops into battle without the means to successfully prosecute the fight. Russia and

the Suwalki Gap present this growing threat. Like all weapons, their use may result in tragedy if used irresponsibly. However, tragedy can be minimized through the use of legal and intelligence assets before deploying, responsible explosive ordnance disposal practices after their use, and continued research

and development in the interim. These safeguards work best through training and, as such, the military should ensure it is ready and competent to fight in future battlefields such as the Suwalki Gap by evaluating its current inventory and reincorporating cluster munitions into its training program. ■

Notes

1. Max Bearak, "This Tiny Stretch of Countryside Is All that Separates Baltic States from Russian Envelopment," *Washington Post* (website), 20 June 2016, accessed 23 February 2018, <https://www.washingtonpost.com/news/worldviews/wp/2016/06/20/tiny-stretch-of-countryside-is-all-that-separates-baltic-states-from-russian-envelopment/>. Lt. Gen. Ben Hodges, former commander of U.S. Army Europe, stated, "You get thousands of Russian troops in exercises on both ends of the Suwalki Gap, and now everybody's in the field. ... They have equipment—so there's a potential for them to transition from an exercise to an operation—that's our concern."

2. Agnia Grigas, "Putin's Next Land Grab: The Suwalki Gap," *Newsweek* (website), 14 February 2016, accessed 23 February 2018, <http://www.newsweek.com/putin-russia-suwalki-gap-426155>. The Fulda Gap is a reference to the pass near the border of the former East Germany and West Germany that was regarded as the most likely area where the Soviet Union would invade the West.

3. General Counsel of the Department of Defense (DOD), *Law of War Manual [LOW Manual]* (Washington, DC: DOD, June 2015), para. 6.13.1, accessed 27 March 2018, <http://archive.defense.gov/pubs/law-of-war-manual-june-2015.pdf>.

4. Thomas J. Herthel, "On the Chopping Block: Cluster Munitions and the Law of War," *Air Force Law Review* 51 (2001).

5. Mike Jacobson, "Cluster Munitions No More: What This Means for the U.S. Military," *eArmor* (October-December 2014), accessed 21 March 2018, http://www.benning.army.mil/armor/earmor/content/issues/2014/OCT_DEC/jacobson.html.

6. Mark Hiznay, "Operational and Technical Aspects of Cluster Munitions," *United Nations Institute for Disarmament Research Disarmament Forum* 4 (2006): 16.

7. *Ibid.*

8. *A Guide to Cluster Munitions*, 3rd ed. (Geneva: Geneva International Centre for Humanitarian Demining, May 2016), 21.

9. *LOW Manual*, paras. 2.4 and 2.5. Proportionality is the principle that even where one is justified in acting, one must not act in a way that is unreasonable or excessive. Distinction, or discrimination, requires belligerents to distinguish between the armed forces and the civilian population, and between unprotected and protected objects.

10. "Time to Take Stock: The U.S. Cluster Munition Inventory and the FY 2006 Department of Defense Budget," Human Rights Watch Briefing Paper, July 2005, 2, accessed 26 February 2018, <https://www.hrw.org/legacy/backgrounder/arms/cluster0705/cluster0705.pdf>.

11. *LOW Manual*, para. 2.4.1.2. While enemy engagement in armed conflict always presents the risk of collateral casualties, the standard commanders must follow is found in Additional Protocol I to the Geneva Conventions, art. 51(5)(b), 1977: "An attack which may be expected to cause incidental loss of civilian life, injury to civilians,

damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated" violates the rule of proportionality. While the United States has not ratified Additional Protocol I, it follows this same principle in practice.

12. Michael O. Lacey, "Cluster Munitions: Wonder Weapon or Humanitarian Horror," *The Army Lawyer* (May 2009): 29.

13. Deputy Judge Advocate General, Memorandum to the Commander of Marine Corps System Command, "Legal Review of the High Mobility Artillery Rocket System and Compatible Munitions from the Multiple Launch Rocket System Family of Munitions," 7 June 2002; see also Herthel, "On the Chopping Block."

14. Hiznay, "Operational and Technical Aspects of Cluster Munitions," 22.

15. Andrew Feickert and Paul Kerr, "Cluster Munitions: Background and Issues for Congress," CRS [Congressional Research Service] Report No. RS22907 (Washington, DC: CRS, 29 April 2014), 1.

16. International Committee of the Red Cross (ICRC), *Cluster Bombs and Landmines in Kosovo: Explosive Remnants of War* (Geneva: ICRC, August 2000 [revised June 2001]), 36.

17. Herthel, "On the Chopping Block."

18. ICRC, *Cluster Bombs and Landmines in Kosovo*, 6.

19. *Ibid.*, 8.

20. Mark Tran, "US Studies Israel's Cluster Bomb Use in Lebanon," *The Guardian* (website), 29 January 2007, accessed 26 February 2018, <https://www.theguardian.com/world/2007/jan/29/israelandthepalestinians.usa>.

21. *Ibid.*

22. "Convention on Cluster Munitions [CCM]," Diplomatic Conference for the Adoption of a Convention on Cluster Munitions, 30 May 2008, accessed 21 March 2018, [https://www.unog.ch/80256EDD006B8954/\(httpAssets\)/CE9E6C29A6941AF-1C12574F7004D3A5C/\\$file/ccm77_english.pdf](https://www.unog.ch/80256EDD006B8954/(httpAssets)/CE9E6C29A6941AF-1C12574F7004D3A5C/$file/ccm77_english.pdf).

23. Secretary of Defense, Memorandum to the Secretaries of the Military Departments, Chairman of the Joint Chiefs of Staff, Under Secretaries of Defense, Commanders of the Combatant Commands, General Counsel of the DOD, and Director of Cost Assessment and Program Evaluation, "DoD Policy on Cluster Munitions," 30 November 2017, accessed 27 February 2018, <https://www.defense.gov/Portals/1/Documents/DOD-POLICY-ON-CLUSTER-MUNITIONS-OSD071415-17.pdf>.

24. Deputy Secretary of Defense, Memorandum to Secretaries of the Military Departments, Chairman of the Joint Chiefs of Staff, Under Secretary of Defense for Acquisition, Technology and Logistics, Under Secretary of Defense for Policy Commanders of the Combatant Commands, and General Counsel of the DOD, "DoD Policy on Cluster Munitions and Unintended Harm to Civilians," 13 June 2008.

25. CNN Library, "2008 Georgia Russia Conflict Fast Facts," CNN, last updated 26 March 2017, accessed 27 February 2018, <http://edition.cnn.com/2014/03/13/world/europe/2008-georgia-russia-conflict/index.html>.

26. CNN Library, "Ukraine Fast Facts," CNN, last updated 14 October 2017, accessed 27 February 2018, <http://edition.cnn.com/2014/02/28/world/europe/ukraine-fast-facts/index.html>.

27. Jaime Crawford, "Joint Chiefs Nominee: Russia Greatest Threat to U.S.," CNN, 10 July 2015, accessed 27 February 2018, <http://edition.cnn.com/2015/07/09/politics/joseph-dunford-russia-greatest-threat/index.html>.

28. Grigas, "Putin's Next Land Grab." While the Fulda Gap was heavily militarized during the Cold War, both "gaps" are strategically located relative to their time period.

29. Jim Maceda, "Why the Suwalki Gap Keeps Top U.S. General in Europe Up at Night," NBC News, 7 December 2015, accessed 27 February 2018, <https://www.nbcnews.com/news/world/why-suwalki-gap-keeps-top-u-s-general-europe-night-n469471>.

30. Henry Meyer, "Putin's Military Buildup in the Baltic Stokes Invasion Fears," Bloomberg (website), 6 July 2016, accessed 27 February 2018, <https://www.bloomberg.com/news/articles/2016-07-06/putin-s-military-buildup-in-the-baltic-stokes-invasion-fears>.

31. Tony Wesolowsky, "Kaliningrad, Moscow's Military Trump Card," Radio Free Europe (website), 18 June 2015, accessed 27 February 2018, <https://www.rferl.org/a/kaliningrad-russia-nato-west-strategic/27079655.html>.

32. Daniel Boffey, "NATO Accuses Russia of Blocking Observation of Massive War Game," *The Guardian* (website), 6 September 2017, accessed 27 February 2018, <https://www.theguardian.com/world/2017/sep/06/nato-russia-belarus-zapad>; Meyer, "Putin's Military Buildup in the Baltic Stokes Invasion Fears."

33. Dave Majumdar, "U.S. Air Force Fears Russia's Lethal S-400 in Europe," *The National Interest* (website), 12 January 2016, accessed 27 February 2018, <http://nationalinterest.org/blog/the-buzz/us-air-force-fears-russias-s-400-europe-14883>.

34. Ibid.

35. Meyer, "Putin's Military Buildup in the Baltic Stokes Invasion Fears."

36. David A. Shlapak and Michael W. Johnson, *Reinforcing Deterrence on NATO's Eastern Flank* (Santa Monica, CA: RAND Corporation, 2016), 4–7, accessed 29 March 2018, https://www.rand.org/content/dam/rand/pubs/research_reports/RR1200/RR1253/RAND_RR1253.pdf.

37. Ibid. Though the study considers access through other means than the Suwalki Gap (e.g., Latvia and Estonia), the message is the same: NATO forces are outmatched by Russian forces.

38. John Hudson, "Last Remaining US Maker of Cluster Bombs Stops Production," *Stars and Stripes* (website), 1 September 2016, accessed 27 February 2018, <https://www.stripes.com/news/us/last-remaining-us-maker-of-cluster-bombs-stops-production-1.426738>.

While the BLU 105 sensor-fuzed air-dropped bomb arguably complies with the CCM (0 percent unexploded ordnance rate, GPS guided, target sensors, and self-destruct mechanism), critics argue this cluster munition, in practice, failed to live up to the safety

standards required by the CCM. These arguments, due, in part to Saudi Arabia's use of the BLU 105 in Yemen and the alleged resulting collateral casualties, led to a significant decrease in demand for these munitions. As a result, Textron, producer of the BLU 105, no longer produces these munitions. There are currently no U.S. producers of cluster munitions.

39. RDECOM [Research, Development, and Engineering Command] Public Affairs, "Army Tests Safer Warhead," *Army Technology*, 2 September 2014, accessed 27 February 2018, <http://armytechnology.armylive.dodlive.mil/index.php/2014/09/02/army-tests-safer-warhead/>; "Guided Multiple Launch Rocket System—Alternate Warhead (GMLRS-AW) M30E1," DOD Office of the Director, Operational Test and Evaluation, accessed 27 February 2018, <http://www.dote.osd.mil/pub/reports/FY2015/pdf/army/2015gmlrs.pdf>.

40. Gail Curley, "Austere Challenge 17: Lessons Learned," *The Operational Law Quarterly* 17, no. 3 (30 June 2017): 2–4.

41. Jonathan Marcus, "Russian Cluster Munitions: Now You See Them, Now You Don't?," BBC News, 20 June 2016, accessed 27 February 2018, <http://www.bbc.com/news/world-europe-36578281>; "Ukraine: More Civilians Killed in Cluster Munition Attacks," *Human Rights Watch*, 19 March 2015, accessed 27 February 2018, <https://www.hrw.org/news/2015/03/19/ukraine-more-civilians-killed-cluster-munition-attacks>; Reuters Staff, "Russia Used Cluster Bombs in Georgia: Rights Group," Reuters, 14 April 2009, accessed 27 February 2018, <https://www.reuters.com/article/us-russia-georgia-cluster-bombs-sb/russia-used-cluster-bombs-in-georgia-rights-group-idUSTRE53D43520090414>. Though Russia denies the use of cluster munitions, evidence from various sources suggests otherwise for them and their allies.

42. "Cluster Munitions," Republic of Poland Ministry of Foreign Affairs (website), accessed 27 February 2018, http://www.msz.gov.pl/en/foreign_policy/security_policy/conventional_disarmament/cluster_munitions/.

43. Sean Naylor, *Relentless Strike: The Secret History of Joint Special Operations Command* (New York: St. Martin's Press, 2015), 181.

44. CCM, art. 1(1)(c).

45. Ibid., art. 21(1).

46. Ibid., art. 21(3) and (4).

47. "Convention on Cluster Munitions Interoperability and National Legislation: The View of the International Committee of the Red Cross" (Geneva: ICRC, 12 September 2012), accessed 28 February 2018, <https://www.icrc.org/eng/assets/files/2012/cluster-munitions-interoperability-icrc-2012-09-12.pdf>.

48. Thomas Gibbons-Neff, "Why the Last U.S. Company Making Cluster Bombs Won't Produce Them Anymore," *Washington Post* (website), 2 September 2016, accessed 27 February 2018, <https://www.washingtonpost.com/news/checkpoint/wp/2016/09/02/why-the-last-u-s-company-making-cluster-bombs-wont-produce-them-anymore/>.

49. Hudson, "Last Remaining US Maker of Cluster Bombs Stops Production."

50. Lewis H. Siegelbaum, *Cars for Comrades: The Life of the Soviet Automobile* (Ithaca, NY: Cornell University Press, 2011), 128.

51. Ibid.