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# Russia's Limit of Advance

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Analysis of Russian Ground Force Deployment  
Capabilities and Limitations

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## Preface

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This report documents research and analysis conducted as part of the project *Defeating Russian Deployed Joint Forces*, sponsored by the Office of the Deputy Chief of Staff, G-3/5/7, U.S. Army. The purpose of the project was to assess challenges that deployed Russian forces pose to U.S. Army forces; identify opportunities to defeat Russian deployed forces in a range of environments and at various levels of conflict; identify limitations to Russia's ground force deployment capabilities, including logistics, lines of communication, deployed force protection, air defense, system ranges, command and control, and joint integration; and recommend ways for the U.S. Army and the joint force to defeat Russia's deployed forces in multiple prospective combat scenarios. A companion report, *Russia's Limit of Advance: Scenarios*, available online at [www.rand.org/pubs/research\\_reports/RR2563z1](http://www.rand.org/pubs/research_reports/RR2563z1), presents additional details on the scenarios described here.

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## Summary

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By the time of its 2014 incursion into Crimea, Ukraine, Russia had regained a significant portion of the military power it lost after the fall of the Soviet Union, reemerging as a perceived threat to democracy. It soon became clear that Russia had broader interests than Europe—and perhaps a capacity to realize wider-ranging military objectives. Since the mid-2000s, Russia has been quietly accelerating its global engagements and has, more recently, increased its interests in Venezuela, various African states, and Asia. These developments have spurred renewed interest in Russian capabilities in the analytic community.

The focus of this research, Russia’s ground combat deployment capability, stemmed primarily from sponsor requirements and resource limitations. But the insights from this analysis help fill an important knowledge gap that extends beyond an understanding of Russia’s ability to support ground deployments. We argue that the capacity to deploy ground combat units is a better measure of overall conventional power projection than air or naval power alone. Air and naval forces are limited by an array of overflight and passage restrictions, but they also benefit from international agreements that guarantee considerable freedom of movement. In contrast, ground deployment depends on and reflects global and regional diplomatic influence or, alternatively, brute force to obtain on-the-ground access. Air and naval forces can be deployed independently, but ground forces require joint and, often, combined operations that tax a broader cross-section of the Russian military infrastructure.

Our research, conducted between 2016 and 2018, explored the ability of the Russian Ground Forces (RGF) to deploy combat capabilities outside Russia’s borders. The RGF is Russia’s equivalent of the Soviet Army. We considered other ground combat elements in our assessment, including special operations forces and airborne units. The overarching purpose of this research was to help U.S. and allied analysts and policymakers determine the extent of Russia’s ability to project ground combat power, control geographic space, and threaten U.S. and allied interests around the world. We specifically addressed the following questions:

1. How far and how fast can Russia deploy a capable ground force?
2. What effects would such variables as distance, terrain, political accessibility, and the availability of logistics assets have on a Russian deployment?

The notional scenarios and findings presented here focus on these primary questions, but we also offer some analytic observations on Russian force capacity, lift capacity, and deployment speed.

*Deployment* is the rotation of forces into and out of an operational area. Our analysis addressed movement *to* an operational area: Can the Russians get there? If so, how fast, and

with what type of support? We addressed sustainment as a limiting requirement in our qualitative analysis but did not include sustainment or redeployment in our quantitative analysis. Note that our analysis also does not include the movement of all classes of supplies and supporting equipment. Adding all prospective materiel to our notional scenarios would greatly increase lift requirements and reduce the overall speed of deployment. The priority of this research was the movement of ground combat forces.

A companion report, *Russia's Limit of Advance: Scenarios*, presents additional details on the notional scenarios that informed our analysis.<sup>1</sup>

## Key Finding: The RGF Has a Sharply Limited Effective Deployment Range

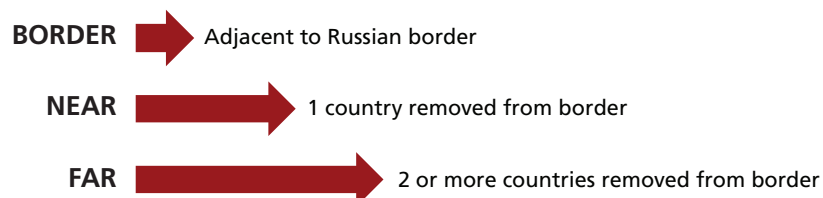
A variety of factors limit Russia's ability to deploy its ground forces worldwide, including lack of materiel capacity; a shortage of organic lift capacity; conscript service limitations; inadequate international overflight, transit, and basing access; inadequate long-range sustainment; and vulnerability to interdiction beyond the range of Russia's integrated air defense system (IADS). Although our assessment did not consider the entire Russian joint force or Russia's overall ground combat capability, our key finding suggests that present and future estimates of Russian military power should not extrapolate perceived close-in strengths to worldwide force projection capabilities.

## Assessment Criteria for Deployment: Distance and Intensity

Working from these overarching analytic criteria and historical case studies, we focused on distance from the Russian border to the objective area as the central variable for analysis. This distance classification allowed us to describe RGF projection capabilities and limitations over time and space. We aggregated these distances into three ordinal increments. We assessed each historical case and notional scenario as *border*, *near*, or *far* (see Figure S.1).

A border scenario occurs directly adjacent to the Russian border. A near scenario occurs one country removed from the border or fewer than 500 kilometers away across a narrow body of water. A far scenario occurs more than two countries removed from Russia's borders, both

**Figure S.1**  
Distance Variable for Deployment Capability Analysis



<sup>1</sup> Ben Connable, Abby Doll, Alyssa Demus, Dara Massicot, Clinton Reach, Anthony Adler, William Mackenzie, Matthew Povlock, and Lauren Skrabala, *Russia's Limit of Advance: Scenarios*, Santa Monica, Calif.: RAND Corporation, RR-2563/1-A, 2020.

one country removed and across a significant body of water more than 500 kilometers from Russia's border, or on an ocean-separated continent.

## Deployment Calculator and Notional Scenarios

To assess RGF deployment capacity, we built an unclassified order of battle (OOB) for the Russian armed forces, focusing on ground force capability.<sup>2</sup> We used these data and other data to build an RGF deployment calculator. This calculator, presented in Chapter Two, is a series of simple formulas derived from the OOB and from other analyses of logistics and sustainment operations. We applied the calculator to seven notional deployment scenarios and analyzed six to help identify strengths and weaknesses in Russian ground force deployment capability. Table S.1 summarizes these scenarios.

## Stresses on Deployment Capability Across Six Notional Scenarios

Table S.2 presents the findings from the RGF deployment calculator for each of the six notional scenarios that we analyzed: Kazakhstan, Kuril Islands, Tajikistan, Serbia, Syria, and Venezuela. For each scenario, we designed a notional political situation and mission, built an OOB, and calculated the lift and speed of the deployment using the RGF deployment calculator. Our analysis centered on the stress that each deployment would place on organic Russian military transport networks and lift assets.

Rows in Table S.2 are divided into three sections. The first two describe the forces to be moved, the impact of the transport asset demand on Russia's overall military transportation capacity, and the number of days required to transport the force to closure using only military equipment in the first and second waves of the deployment, respectively. Note that the closure

**Table S.1**  
**Summary Scenario Descriptions**

Scenario	Description	Range
Kazakhstan	Russia and China engage in conventional combat in Kazakhstan	Border
Kuril Islands	Russia deploys to repel Japanese forces, conventional combat	Near
Tajikistan	Islamic State threat spills over into Tajikistan, Russia deploys to defend	Near
Serbia	Deployment to help put down an anti-government revolt in Serbia	Far
Syria	Rescue of surrounded Spetsnaz and Syrian military forces at Palmyra	Far
Venezuela	Stability operation in support of the Venezuelan government	Far
<i>Ukraine</i>	<i>Seizure of parts of Ukraine for incorporation into the Russian state</i>	<i>Border</i>

NOTE: The Ukraine scenario involved too many forces to allow precise analysis. However, we included it as an additional, informative scenario. Thus, we refer to it as a "+1" case throughout this report.

<sup>2</sup> An OOB is generally understood to be a list, accompanied by brief descriptions and locations, of the units, equipment, and personnel in a military organization.

times include only movement from ports of embarkation to the ports of debarkation. Actual closure time from the issuance of the combat order would include additional days. The companion report provides additional detail on these calculations. The final row presents analytic notes on the major stress points.

Stress points are color-coded according to the level of demand placed on Russian lift capabilities or the time required to deploy to an area of operations (closure time). These ratings required some subject-matter expertise in interpreting the data. Given the structural differences between the scenarios, it was not possible to develop a precise numeric rating scale. Our color-coding is therefore descriptive rather than empirically conclusive.

For asset availability, green indicates that the required force does not stress the overall force availability of the RGF, the airlift requirement does not stress overall available air transport aircraft availability, and the sealift requirement does not stress overall available sea transport asset availability. Yellow indicates low-moderate stress on any of these three assets. In other words, the deployment would cause Russian leaders to carefully consider asset availability for other mission requirements. Orange indicates high-moderate stress on any of these assets: The deployment would force Russian leaders to make practical trade-offs with other missions and, perhaps, lower operational tempo elsewhere.

Red indicates high stress or excess demand on any of the three assets. For example, the red shading for airlift to Venezuela in wave 1 shows high stress on Russian military airlift capabilities. The tyranny of distance, restrictive overflight access, inadequate refueling stopover access, and long routes require transport aircraft to carry less cargo. This deployment would use so many assets that it would necessarily require the cancellation of other national missions and would make additional missions requiring airlift deployment untenable. In our analysis of sealift requirements for the Kuril Islands case, we determined that organic sealift was insufficient to meet the mission requirement: The 60 or more days required to move forces in the second wave made the deployment all but untenable using organic military sealift.

Assigning colors to closure times required slightly more subjectivity than the assessments of calculated lift requirements. The central requirement for green coding was mission demand: Did the closure time allow the commander to execute the assigned mission in a timely and effective manner? In the Kazakhstan case, the force closed in seven days from port of embarkation to port of debarkation. We assessed this to be timely and sufficient to allow the commander to effectively employ the force. In the Syria case, in which the RGF deployed a ground force to rescue an encircled Russian ground combat element, we determined that the estimated 32-day closure time placed the mission at high-moderate risk.

There are clear disparities between the cases, resulting primarily from the unique mix of forces, distance, route availability, and geography that can affect deployment. For example, there are far more red (highly stressing) factors in the *border* Kazakhstan scenario than in the *near* Tajikistan scenario. Although straight-line distance favors Russia in the Kazakhstan scenario, the larger number of forces, the geography, and the types of forces required for movement place greater strains on the RGF and supporting organizations.

Table S.2 was derived from notional scenarios with real-world lift and closure-time estimates drawn from reasonably accurate data. Therefore, it speaks directly to RGF deployment and, more broadly, Russia's power projection capability. There are 43 assessment cells in the table. Of these, 18 indicate high-moderate (orange) or severe (red) stress on a capability or timeline. More importantly, all the scenarios had at least one orange or red assessment—mean-

**Table S.2  
Summary Analysis of Scenarios**

Wave	Scenario							
	Kazakhstan (border)	Kuril Islands (near)		Tajikistan (near)	Serbia (far)		Syria (far)	Venezuela (far)
Wave 1	6 VDV battalions 2 Spetsnaz battalions	4 VDV battalions	1 Naval Infantry brigade	1 Spetsnaz battalion 2 rotary-wing squadrons	1 Spetsnaz battalion	1 VDV battalion	1 VDV battalion 1 Spetsnaz battalion	1 VDV battalion 1 Spetsnaz detachment 0.5 Naval Infantry battalions
Asset demand	Exceeds airlift <sup>a</sup>	Stresses airlift <sup>a</sup>	Stresses sealift <sup>a</sup>	Stresses airlift <sup>a</sup>	No stress on airlift	Slightly stresses airlift <sup>a</sup>	Slightly stresses airlift	High stress on airlift <sup>a</sup>
Closure time (days)	~8	~4	~5	~2	~2	~5	~4	~7
Wave 2	10 mechanized infantry BTGs 3 air defense battalions 4 motor transport battalions	4 motorized rifle BTGs 1 motor transport battalion		6 motorized rifle BTGs 4 border troop detachments 1.5 artillery brigades 3 anti-aircraft battalions 2 motor transport battalions	1 motorized rifle brigade 1 motor transport brigade		2 motorized rifle BTGs 2 artillery battalions	4 motorized rifle BTGs
Asset demand	Slightly stresses rail	Exceeds sealift <sup>b</sup>		Slightly stresses rail	Exceeds sealift <sup>b</sup>		Exceeds sealift <sup>a</sup>	Exceeds sealift <sup>b</sup>
Closure time (days)	~7 <sup>b</sup>	~60		~9 <sup>b</sup>	~15		~32 <sup>a</sup>	~18 <sup>b</sup>
Major time drivers and stressors	<sup>a</sup> Uses all available inventory; multiple sorties <sup>b</sup> On border, but large Kazakh land mass increases travel times	<sup>a</sup> Large percentage of inventory used; threat of interdiction <sup>b</sup> Uses all available Pacific Fleet inventory; multiple sorties; amphibious landings (no nonmilitary assets); interdiction threat		<sup>a</sup> Rotary-wing; large demand on assets, self-deploy would take ~20 days <sup>b</sup> Southern east-west line not secure; must rely on northern east-west rail line; congestion	<sup>a</sup> Rerouting required because of NATO denial of overflight <sup>b</sup> Uses all available inventory; multiple sorties; amphibious landings (no nonmilitary assets)		<sup>a</sup> Organic deployment would take 32 days; must rely on nonmilitary assets, cutting closure time to ~8 days; requires Bosphorus Strait access	<sup>a</sup> Few friendly en route refueling options; range requires smaller payloads and more airlift assets <sup>b</sup> Cannot use organic sealift; must rely on nonmilitary vessels

- Low stress on resources and generally sufficient speed.
- ● Moderate stress on resources or restrictions on speed and forces.
- High stress on resources and restrictions on speed and forces.

NOTE: VDV = Vozdushno-Desantnye Voyska [Russian Airborne Forces]. BTG= battalion tactical group. NATO = North Atlantic Treaty Organization.

ing that the commander would have difficulty executing the mission or that the operation would place other global military activities at risk as a result of the stress on forces or lift assets.

These conclusions do not mean that the RGF could not, or would not, seek to execute the given mission. In each case, we note that the Russian military could choose to hire or acquire civilian transport capability, potentially decreasing the closure time. For example, in Chapter Three, we describe the difference in closure time between organic and civil transport–augmented movements at approximately 58 days (five to six days versus ~63). All military forces, including the U.S. military, make wide use of civilian transport. Russia has demonstrated the effective use of civilian transport in Syria.

However, reliance on civilian transport comes with trade-offs. These assets are not specifically designed for military use. They are not camouflaged, they do not carry organic self-defense or military damage-control measures, and they are primarily crewed by civilian workers who may or may not have experience working under combat conditions. Furthermore, military forces do not carry spare parts for nonmilitary lift assets, and these assets are not designed to carry the wide variety of military equipment that accompanies a standard BTG.<sup>3</sup>

The goal of this analysis was not to identify the point at which lift limitations make deployment impossible. Rather, the analysis was designed to show the limits of Russia's organic lift capability and to highlight trade-offs between organic and civilian lift assets. It is also important to consider potential improvements to Russia's organic military transportation fleet, such as the acquisition of new aircraft and ships.

### **What the Deployment Calculations Say About Russian Ground Force Deployments**

Applying our RGF deployment calculator and determining the draw from each deployment on the overall force suggests three findings relative to Russian ground force deployment. First, the size and capability of the organic military transportation fleet is a major limiting factor in Russia's ability to deploy ground combat units. Organic asset availability—even given our best-case assumptions—is inadequate in two-thirds of our cases.

Second, although Russia has a large number of ground combat forces, its limited number of *immediately ready* ground forces makes large combat deployments difficult. In the Kazakhstan case, which requires a deployment along the Russian border, the size of the force required places significant stress on the overall force vis-à-vis other requirements.

Third, far cases are particularly challenging for the RGF. Each case demands the use of commercial assets to close the force. Venezuela, the only far case that exceeded 1,000 nautical miles from the Russian border (at approximately 5,000 nautical miles), places high stress on organic airlift and exceeds organic sealift capacity. Excessive closure time for the wave 1 deployment, the combat-ready airborne force, puts the mission at risk at approximately seven days, not taking into account a likely additional five days on either end of the port-to-port movement.

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<sup>3</sup> The issue of civilian crew limitations can be (and often is) moderated by the use of military augments or military replacement crews. The United States uses its Merchant Marine force for this purpose during times of war, and it routinely augments civilian ships with military liaison and logistics officers during exercises and noncombat movements. Russia took a different approach in the Syria case by purchasing civilian ships and incorporating them into the Russian fleet for the specific purpose of resupplying its expeditionary force. Russian civilian airlines and transportation companies often use military-designed transport equipment (e.g., the An-124), so there are some opportunities to match civil assets to specific military equipment measurements and spare-part requirements.



These calculations and overall findings only reflect the application of the RGF deployment calculator and the ratio-of-forces analysis. We were able to draw several additional observations and conclusions from our research concerning Russia's ability to deploy ground combat units and Russian military capabilities overall.

## **Russian Deployment Strengths**

Military reforms under Russian President Vladimir Putin, structural reorganization, equipment modernization, and combat experience in places like Chechnya, Georgia, and Ukraine have helped reshape the RGF from the immediate post-Soviet doldrums to become what many analysts believe is an effective combat force with at least a moderate capacity for deployment. Our analysis of historical cases, the OOB, and the notional scenarios highlights other strengths of Russia's ground force deployment capability.

### **Excellent Deployment Capability Near the Western and Southern Military Districts**

The RGF can execute rapid, effective, and efficient road, rail, and short-range air transportation within, between, and from Russia's Western and Southern military districts using primarily organic transportation capabilities. Operations within and from these districts are also far less vulnerable to interdiction than deployments from the Central and Eastern military districts and to areas far beyond Russia's western border. Relatively flat and open terrain also gives the RGF an advantage in these districts.

### **Generally Lightweight and Compact Equipment for Deployment**

For the most part, Russian armored and support vehicles are lighter and smaller than many of their Western counterparts. When the RGF or missile forces *do* build a large vehicle for static defense, they often produce a complementary mobile version. An average motorized or mechanized BTG would be difficult to deploy by air. Even with relatively low-weight equipment, air movement is inefficient and costly for units with significant numbers of vehicles. However, ground, rail, and sea deployment are fairly straightforward. For sea transport, the relatively small physical dimensions of Russian vehicles are also an advantage.

### **Some Highly Capable Light Units That Are Ready for Deployment**

Russian special operations forces (primarily Spetsnaz) and airborne forces (VDV) are generally highly capable and ready to deploy on short notice. Spetsnaz are the go-to units for Russian political and military leaders, and, at the time of this research, were engaged in Syria, possibly eastern Ukraine, and other combat zones.

## **Russian Deployment Limitations**

At the outset of this research effort, we surmised that the RGF was not as capable of deploying far outside Russia's Western and Southern military districts as it was within or near those two districts. Analysis confirmed this assessment; however, we needed to consider several serious limiting factors when assessing Russia's ability to deploy ground combat units beyond its

borders—particularly beyond the two districts with the highest level of Russian air defense cover.

### **Conscript Personnel Restrictions Limit Unit Deployability**

Russia's armed forces comprise a mix of contract and conscript personnel. Contract personnel are usually volunteers who are available for worldwide deployment without major restrictions. Conscripts are civilians who serve 12-month tours in the armed forces by law, typically as junior enlisted soldiers. Short terms of service prevent conscripts from perfecting their military specialties, including the noncombat transportation duties that are essential to successful deployments. Units that include large numbers of conscripts often suffer from degraded performance because conscripts are generally less experienced, less qualified, and less capable than most contract soldiers.

Due in great part to lingering social and political blowback from the 1979–1989 Soviet-Afghan War and the disastrous First Chechen War in the mid-1990s, Russian political leaders generally try to avoid deploying conscripts beyond Russia's borders or into combat. Russian civil society is highly sensitive to conscript casualties. Russia cannot practicably deploy all—or likely even most—of its available RGF units to an overseas conflict without risking significant domestic disapproval. Therefore, although we found that 215 BTGs may be available for combat deployment, in practice, it is possible that Russian political leaders would consider deploying only a small percentage of those units that are not already committed to homeland defense or other operations.

### **Comparative Drop in Capability Since the Soviet Period**

At the height of its late-period power, the Soviet Army and other ground forces had approximately 2.1 million personnel out of an overall military force of more than 4 million.<sup>4</sup> At the time of our research, the RGF had approximately 350,000 personnel, equivalent to 20 percent of the Soviet Army near its peak.<sup>5</sup> In 1992, just after the collapse of the Soviet Union, the Russian Federation military had more than 500 transport aircraft of all types, which were capable of lifting 29,630 metric tons.<sup>6</sup> By 2017, there were just over 100 available transport aircraft in the inventory, capable of lifting 6,240 metric tons, or approximately one-fifth of the 1992 capacity. A comparable drop in organic sealift accompanied these declines in force strength and air transport capacity. In 1992, the military had just over 80 organic strategic transport and amphibious ships, which were capable of moving 603 tanks at one time. By 2017, it had fewer than 20 organic ships capable of lifting only 203 tanks, or approximately one-third of the 1992 capacity. Figure S.2 presents this comparative analysis.

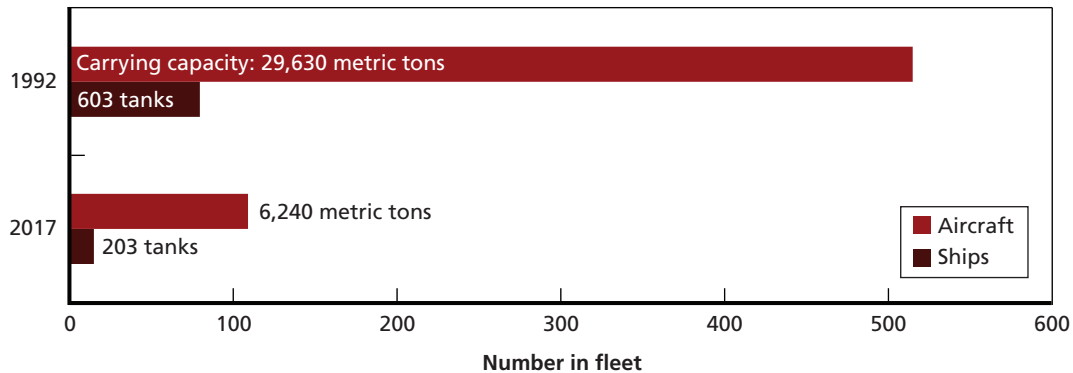
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<sup>4</sup> These estimates by U.S. intelligence agencies, often disputed, can be considered only generally accurate. See, for example, U.S. Central Intelligence Agency, Directorate of Intelligence, *Soviet Military Manpower: Sizing the Force*, declassified intelligence analysis report, Langley, Va., August 1990, and Steven W. Popper, *The Military Manpower Burden and the Estimation of Soviet Force Size*, Santa Monica, Calif.: RAND Corporation, P-7542, March 1989.

<sup>5</sup> This includes the VDV and Spetsnaz. Unclassified sources estimate RGF manpower at approximately 350,000. See, for example, Defense Intelligence Agency, *Russia Military Power: Building a Military to Support Great Power Aspirations*, Washington, D.C., DIA-11-1704-161, 2017, p. 50.

<sup>6</sup> This information is drawn from our literature review and OOB analysis and was compiled and verified using more than 20 sources.

**Figure S.2**  
**Comparative Analysis of Russian Organic Airlift and Sealift Capacity, 1992 and 2017**



### Inefficient and Inadequate Sustainment Capability

Collectively, our historical case studies, deployment calculations, OOB analysis, and notional scenarios reveal a significant gap in the sustainability of ground force deployments beyond Russia's borders, as well as outside the *border* deployment area around the Western and Southern military districts. Figure S.3 summarizes our assessment of Russia's sustainment capability for ground force deployments. Drawing on the collective analysis presented in this report—including a comparative analysis between real-world cases and our notional cases—we determined that Russia is highly capable of deploying forces along its border, but this capability drops off quickly as the distance increases.

Border deployment capacity using organic assets is limited primarily by military district: It is stronger in the west and weaker in the east. But the impact of distance in the border cases is primarily related to time: Russia can still effectively sustain a deployment in the east if it has more time to prepare. It demonstrated this capacity with Exercise Vostok 2018, in which it moved large forces from west to east to conduct large-scale joint and combined maneuvers. As shown in Figure S.3, the RGF can readily sustain a reinforced army-sized component along Russia's border. This drops sharply to a reinforced brigade for near cases as the ground element becomes increasingly reliant on air and naval sustainment, and it plummets to a reinforced battalion-sized force in far cases.

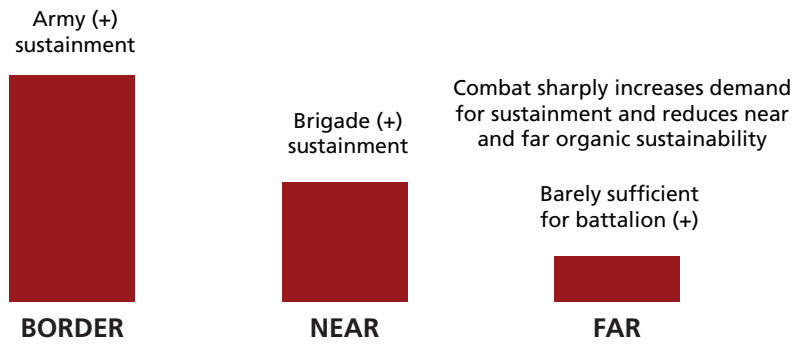
Sustainment can be improved by using nonorganic assets, with the time and distance caveats noted here. Figure S.3 also notes that combat sharply increases sustainment requirements and further reduces organic sustainability.

### Poor International Basing, Overflight, and Naval Access Support

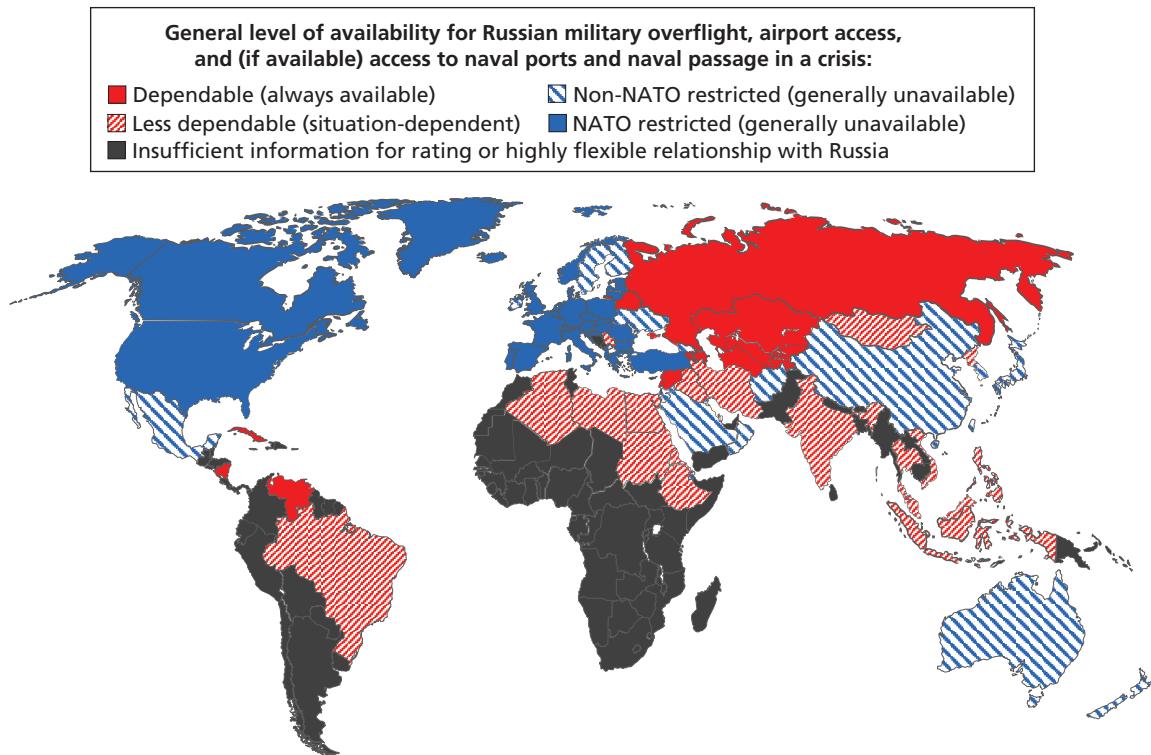
Russia has few consistent and reliable international allies. This is particularly true beyond Central Asia, where it retains considerable influence and even, as in Tajikistan, an ongoing military presence. Russia's western border is effectively bounded by inhospitable NATO states. A large part of its southern border is bounded by China, a nation that is unlikely to provide overflight or basing rights to Russia in situations that do not directly benefit Chinese interests.

Figure S.4 summarizes our assessment of Russian international access, with each country color-coded according to its availability to support Russian military operations. Our subject-matter expert interpretation of each relationship is characterized in one of the following

**Figure S.3**  
**Assessment of Russian Ground Force Sustainability, by Case Distance**



**Figure S.4**  
**Assessment of International Basing, Overflight, and Naval Access**



SOURCE: Ratings derived from subject-matter analysis, interviews, and historical case studies.  
NOTE: Afghanistan is restricted due to the presence of U.S. military forces.

ways: (1) dependable, or always available; (2) less dependable, with availability being situation-dependent; (3) non-NATO restricted but generally unavailable; or (4) NATO restricted and generally unavailable.<sup>7</sup> “Dependable” implies a firm, consistent alliance. “Less dependable” implies a good but inconsistent relationship that might or might not generate access depending on the scenario. “Non-NATO restricted” indicates that these non-NATO states would be unlikely to provide access to Russia in most situations. And “NATO restricted” applies to NATO states that would be unlikely to provide access to Russia in most situations. For many countries, we had insufficient information for coding.

The map suggests that Russia must navigate narrow sea channels, execute torturous air routes, and rely on insufficient long-term organic air and sea sustainment assets to move and sustain its forces beyond the border deployment range.

### Vulnerable Lines of Communication in Beyond-Border Scenarios

Figure S.5 shows our assessment of the vulnerability of Russian lines of communication—ground, air, and sea transit routes. Russia can defend its lines of communication successfully in border cases. However, there are differences between western and eastern deployments: Western deployments are less vulnerable due to capability differences. In near cases, Russian forces are vulnerable along their lines of communication in that they can extend air and naval escort to protect assets but only with great difficulty, due to sustainment and access limitations. Vulnerability in near cases increases as assets move beyond the shore-based umbrella. Far cases are highly vulnerable due to the challenges of extending escort, a lack of sustainment for escorts, and a lack of political access to supporting installations. Figure S.5 visualizes the framework for our assessment of the vulnerability of Russian lines of communication, by distance.

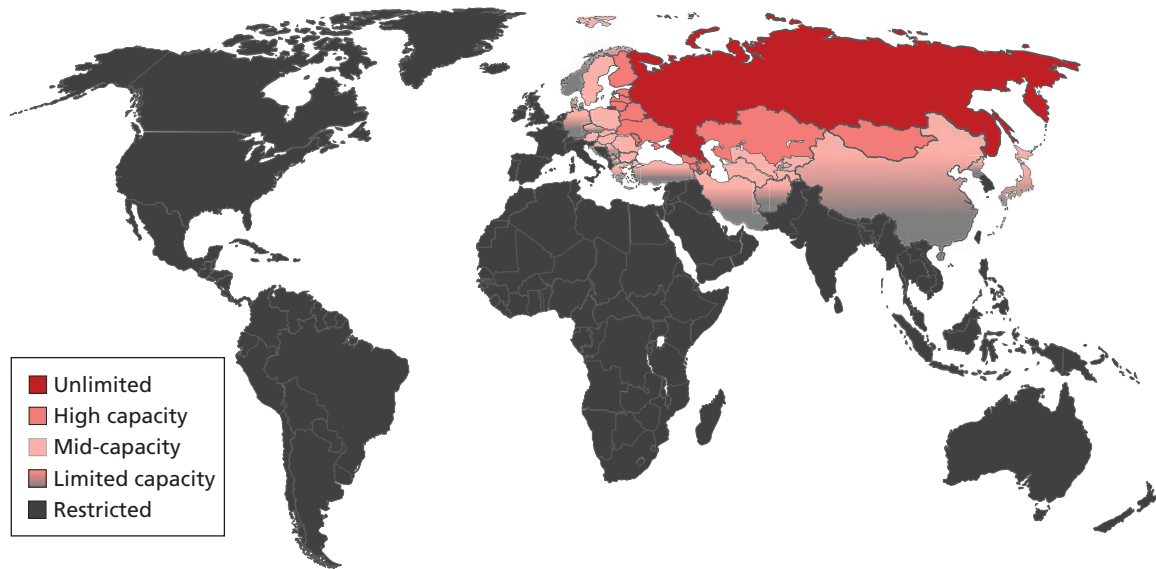
**Figure S.5**  
**Assessment of Line-of-Communication Vulnerability,**  
**by Distance**



NOTE: Vulnerability varies depending on deployment location and differences in capabilities. For example, western deployments are less vulnerable than other deployments.

<sup>7</sup> Coding was based on analyst subject-matter expertise and on documentation related to Russian international alliances and overflight. Some of this material was drawn directly from the case research. For example, Russia’s difficulty obtaining refueling rights for its deployed aircraft carrier during the Syria campaign indicated the lack of access for Russian shipping throughout the Mediterranean Sea. See Camila Domonoske, “After NATO Objections, Russian Warships Won’t Refuel at Spanish Port,” National Public Radio, October 27, 2016.

**Figure S.6**  
**Assessment of RGF Effective Deployment Ranges**



### Assessment of Russian Ground Combat Deployment Capability

Figure S.6 presents our concluding assessment of RGF deployment capability. It is derived from all of the sources and analyses presented in this report and is designed to consolidate the strength and weakness assessments described in Chapter Four. This figure does not take military or political opposition into account. For example, it shows an equal capacity to deploy through northern China as through Iran, but, in practice, these would be two very different propositions. Understanding actual power projection capability—the ability to effectively deploy and fight against a known opposing force—would require separate analysis. However, this research helps lay the foundation for those types of analyses.

This summary assessment shows that Russia can deploy its ground forces in a relatively limited area adjacent to its western border. We rated its ability to deploy ground forces as *unlimited* within its own borders, *high-capacity* in 13 countries outside of Russia, *mid-capacity* in 12 countries, *limited-capacity* in 17 countries, and *restricted* in the remaining countries.<sup>8</sup> In all cases of limited and restricted capacity, the RGF would be hard pressed to sustain its deployed force without substantial local assistance from an ally or partner.

We defined RGF deployment capacity as follows:

- *Unlimited:* Rapid deployment of a large ground force is possible with minimal operational risk.
- *High capacity:* Time and terrain are the only serious limiting factors.
- *Mid-capacity:* Russian forces are vulnerable to interdiction, adding time and terrain limitations.

<sup>8</sup> We were not able to accurately rate every country. The total number of countries in the world is in flux, at least at the margins.

- *Limited capacity*: There is a significant risk of interdiction, and forces must travel longer distances from Russian bases.
- *Restricted*: Slow timelines for all but the smallest forces, lack of capacity, and significant risk.

Capability weakens within Russia from west to east, but this is primarily a factor of time: Sufficient lead time can reduce the west-east power differential. Capability drops off sharply beyond the border cases. We did not find a strong Russian ground force deployment capability in any prospective far case anywhere in the world: In each of these cases, Russia would be constrained by its lack of organic assets, lack of access, and vulnerability to interdiction. Removing the possibility of interdiction from the equation still does not give Russia a significant capability with its organic assets. The limits imposed by conscript forces and lack of sustainment make far cases exercises in risk and cost. Syria is once again a benchmark: That operation has proven to be sustainable, but only with one of Russia's handful of international fixed-port networks, a willing allied government, and a major investment in nonorganic sustainment capacity.

### **Recommendation: Develop a Model for RGF Power Projection**

Our analysis provides only one part of the answer to a question of great complexity, one that is perhaps of existential interest to some allies of the United States: What is Russia's current capacity to project ground combat power? We show how many forces Russia can physically move over a given distance and a given period of time. Power projection includes deployment, but also the ability to fight at the far end of the deployment arc.

For example, Russia might be able to deploy a ground combat brigade to the Kuril Islands, but how capable would this deployed force be against a given adversary? What if it had to fight the Japanese Self-Defense Forces, even for a limited period? What if the United States intervened with all its military power in an extended conflict? Understanding power projection requires a deeper analysis of force composition, training, will to fight, and physical capabilities, as well as a comparative analysis of effectiveness against a given adversary in a given context.

Some generalizations could then be drawn about intrinsic Russian ground combat power. These generalizations—integrating deployment capacity and combat capability—could be used to create a ground combat power projection model that could be applied to many different scenarios.





## Acknowledgments

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We are grateful to RAND colleagues Raphael Cohen and Ryan Schwankhart and to our external reviewer, Kimberly J. Marten, chair of the Department of Political Science at Barnard College, all of whom provided insightful reviews and feedback that helped shape this report and its companion volume.



## Abbreviations

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APC	armored personnel carrier
APOD	aerial port of debarkation
APOE	aerial port of embarkation
ARV	armored reconnaissance vehicle
BTG	battalion tactical group
DoD	U.S. Department of Defense
IADS	integrated air defense system
IFV	infantry fighting vehicle
NATO	North Atlantic Treaty Organization
OOB	order of battle
RGF	Russian Ground Forces
RZD	Rossiyskie Zheleznye Dorogi [Russian Railways]
SAM	surface-to-air missile
SPA	self-propelled artillery
SPOD	sea port of debarkation
SPOE	sea port of embarkation
VDV	Vozdushno-Desantnye Voyska [Russian Airborne Forces]
VTA	Voyennaya Transportnaya Aviatsiya [Russian Military Transport Aviation Command]



## Analyzing Russian Ground Forces Deployment Capability

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This research, which concluded in late 2018, examined the ability of the Russian Ground Forces (RGF) to deploy ground combat units outside of Russia's borders. The overarching purpose was to support broader analyses and assessments of Russia's ability to project conventional ground combat power, control geographic space, and threaten U.S. and allied interests around the world. Our analysis specifically addressed the following questions:

1. How far can Russia deploy a capable ground force, and at what cost?
2. What effects would such variables as distance, terrain, political accessibility, and the availability of logistics assets have on a Russian deployment?

We addressed several related issues that emerged during our research, including the vulnerability of deployed Russian ground forces and lines of communication; the collateral impact of notional deployments on overall RGF capacity and other, ongoing missions; and the impact of geographic variations in Russia's internal transportation network and military force density on its global deployment capabilities. This report presents findings from our research and introduces the six (+1) notional scenarios developed to support the analysis. See the accompanying report, *Russia's Limit of Advance: Scenarios*, for more detail on each scenario.<sup>1</sup>

### What Is the RGF?

In brief, the RGF is the military land component of the Russian Federation. Its predecessor is the Soviet Army. The RGF consists of 300,000–400,000 personnel and employs equipment ranging from infantry rifles to main battle tanks and long-range artillery.<sup>2</sup> Deploying elements of the RGF by air or sea requires joint support from the Russian Air Force and the Russian Navy. Russian Airborne Forces (Vozdushno-Desantnye Voyska, or VDV), Naval Infantry, and special operations forces (primarily Spetsnaz) may be considered separate branches or elements of the armed forces of the Russian Federation, but we included them in our analysis alongside the RGF because they are typically deployed as ground combat forces. This report includes

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<sup>1</sup> Ben Connable, Abby Doll, Alyssa Demus, Dara Massicot, Clinton Reach, Anthony Adler, William Mackenzie, Matthew Povlock, and Lauren Skrabala, *Russia's Limit of Advance: Scenarios*, Santa Monica, Calif.: RAND Corporation, RR-2563/1-A, 2020.

<sup>2</sup> Estimates of the total number of RGF troops in the public domain vary—often to a significant degree. See, for example, the blog post “Where Conscripts Serve,” *Russian Defense Policy*, May 6, 2017, for low, medium, and high force-count estimates.

a detailed order of battle (OOB) to help describe RGF components and capabilities, which informed our analysis and findings.

### Why Analyze Russian Deployment Capabilities?

In the immediate aftermath of Russia's 2014 incursion into Crimea, Ukraine, the national security community sharply accelerated its analysis of Russian military capabilities. Russian President Vladimir Putin's bold gambit snapped Western analysts and policymakers out of their post-Cold War quiescence: By 2014, Russia had regained a significant portion of the military power it had lost after the fall of the Soviet Union, and it had reemerged as a perceived threat to democracy—at least in Eastern Europe. Russia's 2015 deployment to Syria to bolster the regime of President Bashar al-Assad prompted renewed fears of Russian military might. Although the Syria deployment was troubling to observers, Europe was the more immediate concern. Many Western policy and military analyses centered on Russia in Ukraine and on the Russian threat to the Baltic states of Estonia, Latvia, and Lithuania. During this same period, a range of experts on Russia and the military threat in Europe wrote extensively on Russia's military capacity in Eastern Europe.<sup>3</sup> But, by mid-2016, it had become clear that Russia had broader interests than Europe—and, perhaps, it also had the capacity to realize wider-ranging military objectives.

In March 2016, Putin announced the withdrawal of Russian combat forces from Syria.<sup>4</sup> This announcement was either a political ruse or a propaganda message, or perhaps a combination of both. Within months, Russia had instead accelerated its military operations in Syria. Between September 2015 and August 2016, it deployed and activated a reinforced mixed-capacity fighter-bomber squadron that flew missions from Syrian airfields, a ground combat element consisting of a reinforced joint brigade of troops and armored vehicles, combat advisors and special operators, electronic warfare systems, a dense network of mobile air-defense assets, and a naval force with the capability to strike ground targets deep in rebel-held territory. Although the scope of the operation was limited—and the adversary could not present a serious threat to the force—Russia demonstrated a long-range deployed logistics capability that had not been evident since the mid-1980s. This included the establishment of the “Syrian Express,” a combination of military shipping, merchant shipping, and airlift that delivered thousands of tons of munitions and other supplies to Russia's deployed task force.<sup>5</sup> Russia also made temporary use of an Iranian air base to fly combat missions in Syria, revealing its ability to establish temporary “lily pad” bases in allied countries.<sup>6</sup> Russia's effort to support its

<sup>3</sup> See, for example, Keir Giles, *Russia's "New" Tools for Confronting the West: Continuity and Innovation in Moscow's Exercise of Power*, London: Chatham House, March 2016, and Timothy L. Thomas, *Russia Military Strategy: Impacting 21st Century Reform and Geopolitics*, Ft. Leavenworth, Kan.: Foreign Military Studies Office, U.S. Army Combined Arms Center, 2015.

<sup>4</sup> Patrick Wintour and Shaun Walker, “Vladimir Putin Orders Russian Forces to Begin Withdrawal from Syria,” *The Guardian*, March 15, 2016.

<sup>5</sup> See, for example, Southfront, “How the Russian Navy Provides ‘Syrian Express,’” translated from Russian, December 28, 2015.

<sup>6</sup> RT News, “Russia Used Iranian Airfield for Syrian Operation at Tehran's Invitation—Official,” August 23, 2016; Erin Cunningham and Karen DeYoung, “Strikes from Iranian Air Base Show Russia's Expanding Footprint in the Middle East,” *Washington Post*, August 2016.

combat operations in Syria demonstrated that it could project power both near and far beyond its borders.<sup>7</sup>

Russia's renewed interest in power projection emerged long before its excursions into Syria and Ukraine. Beginning in the mid-2000s, Russian leaders quietly accelerated their global engagements, targeting arms sales and aid to nations previously allied with the Soviet Union. In 2006, Russia began an aggressive engagement program with Nicaragua, expanding early trade and agricultural agreements to eventually include tens of millions of dollars in military sales and aid. By 2016, Russia sought to open an intelligence station in Nicaragua, and it had already established bilateral military relations and gained access to Nicaraguan bases.<sup>8</sup> More recently, Russia increased its interests in Venezuela, various African states, and Asia. In early October 2016—just as this research project began—Russian Deputy Defense Minister Nikolai A. Pankov announced that Russia was considering requests to reopen its former naval base at Cam Ranh Bay, Vietnam, and an intelligence station in Lourdes, Cuba.<sup>9</sup>

While it remains to be seen whether Russia will succeed in establishing or maintaining a dense network of far-ranging formal bases, it has retained and sought to expand bases closer to home. It garrisons several thousand troops at the 102nd Military Base in Armenia, operates an air base and naval communication center in Kyrgyzstan, and maintains a network of capabilities in Belarus and a motorized rifle division headquarters in Tajikistan.<sup>10</sup> Border basing in former Soviet states has allowed Russia to recreate—albeit on a very small scale—some of the buffer zone once afforded by the Warsaw Pact. More importantly, it provides the Russian military with a supply, communication, facilities, and forces network that can facilitate deployments in Eastern Europe and Central Asia.

As we conceptualized this project, it had become clear that Russian leaders have also sought to regain their capacity for worldwide military deployment to directly influence global affairs through the threat or use of conventional force. It follows that the U.S. national security community will require a more thorough understanding of Russian deployment capabilities, with an analytic emphasis on the real strengths and limits of Russian power abroad. Can Russia replicate the advantage it holds in Eastern Europe in places like Syria, Central Asia, or even such far-flung places as Venezuela? If Russia can deploy a credible ground force, can it sustain and secure its lines of communication? What is the extent of its global network of bases in the post-Soviet era, and what are its limits? These uncertainties raise a crucial, overarching policy question: How far has Russia progressed toward regaining the great-power status of the Soviet state?

### **Focus on Ground Combat Deployment Capability**

This report specifically addresses ground force deployment while acknowledging and peripherally incorporating the joint force. Russia has a large joint force capable of extending air, naval,

<sup>7</sup> As discussed later in this chapter, this report uses three terms to code the distances of Russian deployments: *border*, *near*, and *far*.

<sup>8</sup> Daniel Dolan, "Opinion: Russian Tank Deal with Nicaragua 'Back to the Future' Moment for U.S.," U.S. Naval Institute, May 9, 2016; Brenda Fiegel, "Growing Military Relations Between Nicaragua and Russia," *Small Wars Journal*, December 5, 2014; John R. Haines, "Everything Old Is New Again: Russia Returns to Nicaragua," Foreign Policy Research Institute, July 22, 2016.

<sup>9</sup> Ivan Nechepurenko, "Russia Seeks to Reopen Military Bases in Vietnam and Cuba," *New York Times*, October 7, 2016.

<sup>10</sup> As discussed later in this chapter, we relied on multiple sources for our collective OOB analysis.

and space power around the world. An ideal study would examine all aspects of Russian conventional force deployment—air, naval, ground, and space. We recommend that follow-on research pursue this holistic analysis, but our focus and objectives are narrower.

This focus on ground combat deployment stems primarily from both sponsor requirements and resource limitations. We also argue that the capacity to deploy ground combat units is a better measure of overall conventional power projection than air or naval power alone. Although air and naval forces are limited by an array of overflight and passage restrictions, they also benefit from international agreements that guarantee considerable freedom of movement. Ground deployment depends on and reflects global and regional diplomatic influence or, alternatively, brute force, to obtain on-the-ground access. Air and naval forces can be deployed independently, but ground forces require joint and, often, combined operations that tax a broader cross-section of the Russian military infrastructure. Air and naval units can influence physical terrain and people, but only ground units can persistently control terrain and people. We address Russian air and naval capabilities in the context of support to deployed ground units.<sup>11</sup>

Our research is informed by, but does not directly address, Russian military and international policy. We do touch on international policy as it relates to military deployment, but primarily in the context of limitations on military overflight and naval passage rights and agreements.

### Criteria for Assessing Russian Ground Combat Deployment Capability

We use the U.S. Army definition of *deployment*. It is “the rotation of forces into and out of an operational area.”<sup>12</sup> According to the Army, deployment “is composed of activities required to prepare and move forces, supplies, and equipment to a theater.”<sup>13</sup> Ground combat deployment capability can therefore be described and assessed in terms of available forces, lift capacity, the viability of lines of communication to and from the area of operations, sustainment over time, and speed of deployment from initial order to the point at which a capable force is assembled and ready to fight.<sup>14</sup> While deployment is defined as rotational, due to limitations in research

<sup>11</sup> RAND has conducted a significant number of studies on Russian air, naval, space, cyber, and special operations and nuclear power projection, including a range of joint capability assessments. See, for example, Keith Crane, Olga Olikier, and Brian Nichporuk, *Trends in Russia's Armed Forces: An Overview of Budgets and Capabilities*, Santa Monica, Calif.: RAND Corporation, RR-2573-A, 2019; Quentin Hodgson, Logan Ma, Krystyna Marcinek, and Karen Schwindt, *Fighting Shadows in the Dark: Understanding and Countering Coercion in Cyberspace*, Santa Monica, Calif.: RAND Corporation, RR-2961-OSD, 2019; and Bruce McClintock, “The Russian Space Sector: Adaptation, Retrenchment, and Stagnation,” *Space and Defense*, Vol. 10, No. 1, 2017.

<sup>12</sup> Army Techniques Publication 3-35/Army Field Manual 3-35, *Army Deployment and Redeployment*, Washington, D.C., March 2015, p. 1-1.

<sup>13</sup> Army Techniques Publication 3-35/Army Field Manual 3-35, p. 1-2. For more on the use of the term *power projection*, see Francis Fukuyama, Scott Bruckner, and Sally W. Stoecker, *Soviet Political Perspectives on Power Projection*, Santa Monica, Calif.: N-2430-A, 1987, and W. Scott Thompson, *The Projection of Soviet Power*, Santa Monica, Calif.: RAND Corporation, P-5988, 1977. Also see Defense Intelligence Agency, *Russia Military Power: Building a Military to Support Great Power Aspirations*, Washington, D.C., DIA-11-1704-161, 2017.

<sup>14</sup> Lift capacity is the combination of available transportation assets and the physical space within those assets to move ground combat equipment and supplies. Combat effectiveness is the ability of a military unit to accomplish its combat mis-



funding and timelines, as well as the many vagaries associated with rotational movements over time, our analysis focuses on movement to the objective area.

The ability to secure lines of communication is highly sensitive to the given mission and the locations and capabilities of opposing forces. Small-scale, locally focused combat, such as the ongoing mission in Syria, requires almost no specialized security for lines of communication, while a regional or global war against the United States and its allies might place all Russian deployed forces at considerable risk if robust security measures are not in place. Sustainment can also vary by mission type, but it can be estimated under combat and noncombat conditions. For example, it is possible to estimate the burn rate of munitions, fuel, and other classes of supply on a per-day basis in a notional high-intensity combat situation.

Although all these factors are interrelated, only lift capacity and speed of deployment can be effectively quantified and generalized for baseline analysis. We were able to develop a general but grounded starting point for lift and speed calculations for any given scenario. Force capacity, which we define in terms of available battalion tactical groups (BTGs), can be measured adequately at the unclassified level. Our analysis of deployment capability therefore focused on force capacity, lift capacity, and speed but also considered the requirements for securing and sustaining lines of communication (see Table 1.1). Thus, our findings focus on these primary criteria, but we also offer some analytic observations on the secondary criteria.

Working from these overarching analytic criteria and our historical case-study analysis, which we discuss in the next section, we determined that the most useful analytic variable was the distance of a given operation from the Russian border, allowing us to best describe RGF projection capabilities and limitations over time and space. Distance lends itself to relatively easy classification. Framing deployment capability in terms of distance facilitated our more detailed analysis of force capacity, speed of deployment, and sustainment challenges. Other variables that might be relevant include equipment type, equipment availability, relative combat power, adversary type, mission type, deployment cost, and sustainment cost. However, data on these variables are not always accessible. For example, we could not accurately and consistently determine the cost of any past, current, or prospective Russian deployment. We did include other variables in our scenarios and analyses as appropriate and when data were available. For example, we included equipment type, adversary type, and mission type in our OOB and notional scenario descriptions.

**Table 1.1**  
**Primary and Secondary Case Analytic Criteria and Emphases**

Focus of Analysis	Factors Considered
Primary	Force capacity
	Lift capacity
	Deployment speed
Secondary	Security
	Sustainment

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sion, including defeating an opposing military force. The goal of securing lines of communication is to prevent opposing forces from disrupting the transit of air, naval, or ground assets to and from the area of operations.

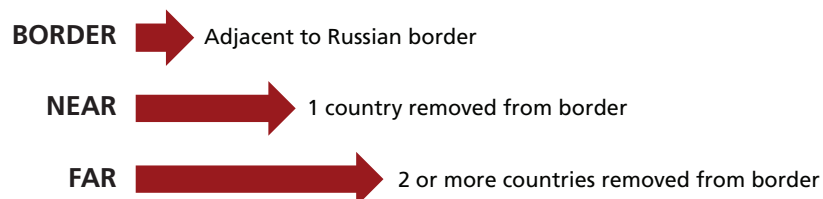
We aggregated distance into three ordinal increments. We assessed each historical case and notional scenario as *border*, *near*, or *far* (see Figure 1.1). A border scenario occurs directly adjacent to the Russian border. A near scenario occurs one country removed from the border or fewer than 500 kilometers away across a narrow body of water. A far scenario occurs more than two countries removed from Russia's borders, both one country removed and across a significant body of water more than 500 kilometers from Russia's border, or on an ocean-separated continent.

Force capacity assessment is a potentially fraught undertaking. Without knowing the exact number of Russian troops, their equipment, and their readiness for deployment, it is not possible to accurately determine the overall impact of any given deployment on the total force. Compounding the data challenge—which we describe in greater detail in the following section—is the diversity of unit types in the RGF. There are motorized infantry battalions made up primarily of foot soldiers and trucks; mechanized infantry battalions centered on infantry fighting vehicles; armored, artillery, and electronic warfare battalions; and an array of airborne, support, and other ground units that are not technically affiliated with the RGF but possibly available for deployment.

We settled on using the BTG as the unit of measurement for force capacity.<sup>15</sup> A BTG is an infantry battalion combined with an artillery unit and other enablers to form a miniature version of a combined arms brigade. According to Russian military leadership and unclassified U.S. intelligence analysis, the BTG is the centerpiece of the RGF.<sup>16</sup>

A Russian BTG consists of approximately 750 soldiers divided into infantry, artillery, headquarters, and enabling elements, such as medical and transportation units. There does not appear to be one consistent format, however. A motorized group in one division may not look exactly like a motorized group in another division, and a mechanized group will never look exactly like a motorized group. In general, a BTG consists of a headquarters element, three infantry companies, a tank company, a company of anti-tank guided-missile troops, at least one mixed company equipped with air defense missiles and guns, at least one battery of mixed

**Figure 1.1**  
**Distance Variable for Deployment Analysis**



<sup>15</sup> There is precedent in RAND research for this decision. See, for example, David A. Shlapak and Michael W. Johnson, *Reinforcing Deterrence on NATO's Eastern Flank: Wargaming the Defense of the Baltics*, Santa Monica, Calif.: RAND Corporation, RR-1253-A, 2016.

<sup>16</sup> See, for example, Oleg Salyukov and Oleg Falichev, “Возвращение дивизий” [“Return of Divisions”], VPK News, February 8, 2016; “Число батальонных групп, состоящих из контрактников, в российской армии через два года достигнет 125—начальник Генштаба ВС РФ” [“The Number of Battalion Groups Consisting of Contractors in the Russian Army Will Reach 125 in Two Years—Chief of the General Staff of the Russian Federation Armed Forces”], Interfax, September 14, 2019; and Defense Intelligence Agency, 2017.

cannon and rocket artillery, and support elements. Figure 1.2 depicts a generic BTG using military operational graphics.<sup>17</sup>

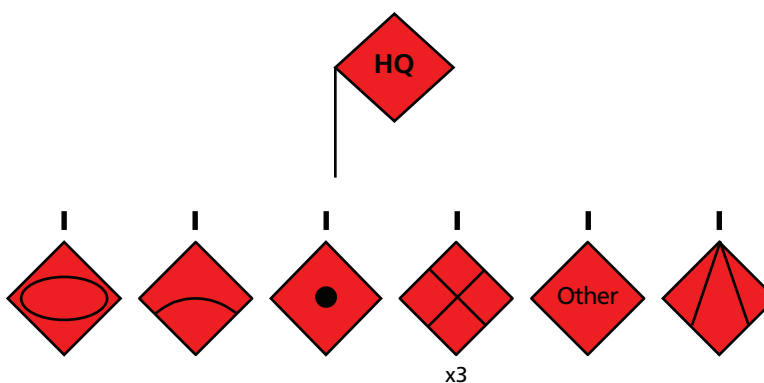
At the top of the figure is the headquarters element, or command group. Under the command group, from left to right, are an armor company, air defense company, artillery battery, three infantry companies (x3), other support units, and an anti-tank guided-missile company.<sup>18</sup> These generic icons leave open the possibility for motorized, mechanized, or a mix of transport types. Some BTGs might have twice as much support from artillery, air defense, or other units, depending on the mission, available assets, and perhaps even the preference of the division commander. We describe our method for counting available BTGs for a given mission in the next section.

## Methodology

This section briefly summarizes our methodology. Chapter Two presents further detail on our RGF deployment calculator, Chapter Three includes a longer discussion of our notional scenario selection, Appendix A outlines the motivation and process for our historical case selection, and Appendix B presents the OOB that informed our analysis and describes its development.

This research proceeded in three sequential phases, with a parallel effort to list and describe contemporaneous Russian joint military capabilities in a holistic OOB analysis (see Table 1.2). First, we conducted a baseline analysis of Soviet and post-Cold War Russian ground force deployment cases to identify previous deployment patterns. Then, we built on this baseline of historic cases through expert elicitation to identify a set of notional scenarios that could capture the conditions of various Russian deployments. The project culminated

**Figure 1.2**  
Generic Battalion Tactical Group Organization



<sup>17</sup> We developed this generic organization from several sources, including Lester W. Grau and Charles K. Bartles, *The Russian Way of War: Force Structure, Tactics, and Modernization of the Russian Ground Forces*, Fort Leavenworth, Kan.: Foreign Military Studies Office, U.S. Army Combined Arms Center, 2016; and Defense Intelligence Agency, 2017.

<sup>18</sup> For a primer on reading operational graphics, see Army Doctrine Publication 1-02, *Terms and Military Symbols*, Washington, D.C., August 14, 2018, ch. 3.

**Table 1.2**  
**Analytic Methodology Steps**

Phase I	Phase II	Phase II
Historic case analysis	Notional case selection, analysis	Completion of cases, calculator
Develop Russian joint force OOB		Complete and integrate OOB

with the development of an RGF deployment calculator and the integration of our OOB analysis into the notional scenarios.

### Historic Case Selection and Analysis

We created a database of all significant Soviet and Russian ground combat force deployments during the period from 1945 (the end of World War II) to 2017. We selected cases based on two criteria: (1) a minimum of 1,000 troops, including, in some cases, Soviet or Russian naval personnel, and (2) actions beyond peacetime advising, such as irregular warfare support or conventional combat. See Appendix A for a more detailed explanation of our methodology and selection process.

### Notional Scenario Selection

Building from our historical case-study analysis, deployment calculation estimates, and refined assessment criteria, we selected and designed notional RGF deployment scenarios. The goal was for the scenarios to be (1) research-grounded and able to facilitate analytic forecasting, (2) unclassified and suitable for wargaming and simulation, and (3) controlled test cases drawn from a transparent and unclassified OOB that would allow us to implement our RGF deployment calculator. Our selected scenarios

- illustrate Russian joint task force deployments of more than 1,000 ground personnel<sup>19</sup>
- place a contingent of combat-ready RGF troops on the ground outside Russia's borders
- capture a range of deployment distances
- require different types of ground, overflight, and naval capabilities and levels of access
- could be reasonably described using our OOB
- are plausible even if they are not likely, given current political conditions.

Building from our historic case studies and subject-matter expert input, and applying these criteria, we selected six cases for analysis: (1) Kazakhstan, (2) Kuril Islands, (3) Tajikistan, (4) Serbia, (5) Syria, and (6) Venezuela. We also included the additional case of Ukraine. We refer to this as our "+1" case throughout this report. See Chapter Three for a more detailed explanation of our methodology and selection process.

<sup>19</sup> Our historical case review suggested that this was a reasonable level. Most cases below 1,000 personnel were purely advisory missions. None of the cases below 1,000 personnel involved a significant ground combat deployment capability, while some cases just above this threshold met our other criteria. It is useful to reiterate here that the data on personnel per deployment are inconsistent and not provable.

### **Creating and Applying the RGF Deployment Calculator**

We developed a deployment calculator as a method to determine the time and lift requirements to move a given RGF contingent via isolated, point-to-point road, air, and sea routes as part of the deployment process. The calculator was both a method of analysis and an output of this research. Its transparent design and generalizability make it potentially useful for future applications and follow-on work. To this end, we have dedicated Chapter Two to describing the deployment calculation methodology, its data baselines, and its formulas.

### **Developing an Unclassified Order of Battle**

An OOB is generally understood to be a list, accompanied by brief descriptions and locations, of the units, equipment, and personnel in a military organization. We developed an unclassified OOB of the Russian military to inform our notional scenarios. It includes details on air transport, sea transport, and ground military units, their locations, and their equipment and personnel. It also provides a general understanding of Russian military capabilities that is sufficient for broad strategic discussions or notional calculations of capability and movement. See Appendix B for an overview of the OOB and Chapter Three for a more in-depth discussion of the OOB's role in our notional scenarios.

### **Counting Battalion Tactical Groups**

Using our compiled OOB, we counted brigades or brigade equivalents in the RGF, VDV, Naval Infantry, and Spetsnaz. We then derived our count of BTGs from the brigade total. This count assumes that commanders can generate, at most, three BTGs per RGF brigade, two groups per Naval Infantry brigade, and one group per Spetsnaz brigade. Our group count includes motorized rifle, tank, artillery, and rocket artillery units. We did not count air defense, logistics, or engineer units. Our analysis, derived from the unclassified OOB with necessarily imperfect data, suggests that Russia could generate a maximum of 215 BTGs from its RGF, VDV, Naval Infantry, and Spetsnaz forces.<sup>20</sup>

Given Russia's limited personnel availability and operational preferences, it is unlikely that an RGF commander would seek to break a brigade down into three complete groups for expeditionary operations. Our literature review and OOB analysis suggest that Russian commanders instead prefer to deploy one group from each brigade, allocating the best personnel, equipment, and maintenance and logistics capabilities to that group as an elite unit. We assumed that each brigade had one BTG immediately available for deployment within 48 hours. Based on Russia's contract manning levels as of 2017, we also estimated that each brigade could produce 1.5 BTGs of contract personnel, although we do not know how a commander would choose to spread professional enlisted personnel among these groups. In a typical Russian unit, for example, only one group might be manned with contractors and kept at high readiness, while a second group might comprise mostly conscripts, and a third BTG may be only partially manned or used as a training set. Thus, readiness is likely to vary by unit. Committed units are defined as Russia's military bases in Central Asia, Georgian separatist republics, and Transnistria. Assumptions for units fighting in Ukraine or Syria are notional.

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<sup>20</sup> Estimates of the total number of possible BTGs across the force vary considerably. Our discussions with subject-matter experts generated a range of counts that did not help us refine our analysis. Without considering airborne, special forces, or naval infantry capabilities, the RGF have far fewer BTGs.

### Comparative Analytic Baseline: Deploying from Western Russia

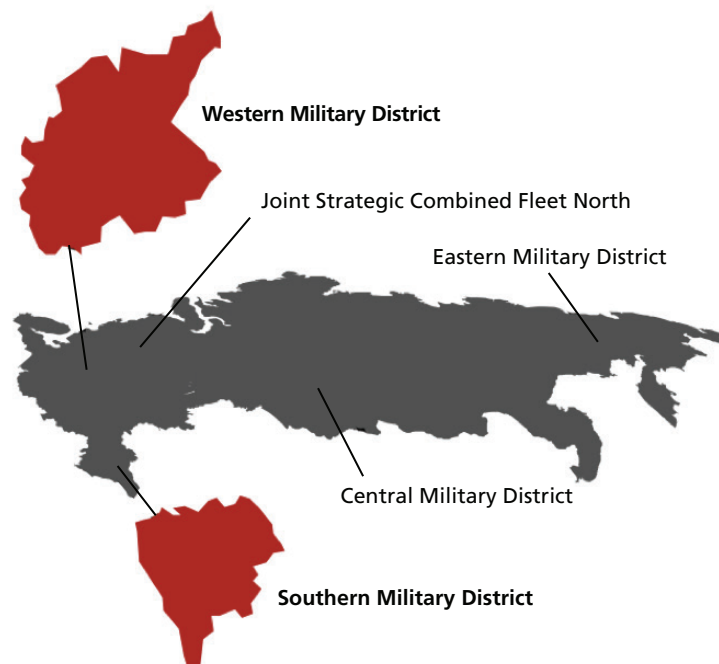
The majority of Russian military power is located in its Western and Southern military districts. Figure 1.3 shows the general locations of Russia's military district command-and-control structure, highlighting these two districts.

This western-southwestern emphasis resulted from an array of geopolitical realities and security requirements. Most of Russia's population and transportation networks are in the western and southwestern parts of the country. Moscow is located in the Western Military District. Russia's primary security concern is the threat posed by the North Atlantic Treaty Organization (NATO) along its western border with Europe. Force density and security demands in western Russia led to the creation of a dense integrated air defense system (IADS) in both the Western and Southern military districts. This air defense system provides exceptional security for the entirety of the Russian basing and transportation network under its umbrella, as well as for several hundred kilometers from Russia's border into Eastern Europe. Deployment from western Russia is comparatively safe and easy. We include this important distinction in our analysis in Chapters Three and Four to highlight the idiosyncratic lift and speed challenges posed by Russia's interior dimensions and variations in network and hub density.

### Structure of This Report

The remainder of this report is organized as follows. Chapter Two describes the development and application of our RGF deployment calculator. Chapter Three describes our notional scenarios and presents a detailed example of their structure and parameters using the Kuril

**Figure 1.3**  
Russian Military Districts



Islands deployment. Chapter Four presents our summary analysis of the data and scenarios, along with our findings and a recommendation for extending this research. Appendix A presents a baseline assessment of historical Soviet and Russian deployments from 1945 to 2017 to show how the Soviets and Russians have deployed and to explore both continuity and change in deployment patterns and capabilities over time. Appendix B presents a summary of the OOB. An accompanying report, *Russia's Limit of Advance: Scenarios*, presents a more comprehensive review of each of the six (+1) notional scenarios.<sup>21</sup>

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<sup>21</sup> Connable et al., 2020.





## The RGF Deployment Calculator

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This chapter has a narrow aim: to present our methodology for determining lift requirements and closure times for the delivery of Russian ground combat forces to operational areas outside of Russia. We created an RGF deployment calculator to support our scenario development and to facilitate our analyses of RGF deployments. We therefore describe the calculator in the context of the notional scenarios. However, the calculator can be applied to any scenario: It can be used with the same data for logistics calculations, or it can be used for the same purpose with different data, with minor modifications—for example, if new data on the same types of Russian military equipment become available. The approach to building an equivalent calculator for Iranian, Chinese, or other ground combat forces would be similar to the process described here.

The primary audience for this chapter is the community of analysts with expertise in the Russian military capabilities. It therefore assumes some expert knowledge of the RGF, Russian military equipment, and military logistics concepts. Sources for descriptions of specific military equipment are cited throughout this chapter. The accompanying report includes a more comprehensive list of readings on the background and context for our scenarios and Russian airlift, sealift, and rail transport capabilities.

The RGF deployment calculator was informed by the OOB presented in Appendix B. It was designed to assess Russian, not U.S., equipment and deployment methods and standards. Calculations in this chapter and in the scenarios do not address the movement of all classes of supply. The calculations also do not take into account all the vagaries of military deployment, such as adverse weather conditions or breakdowns.

### The Benefits and Limits of a Deployment Calculator

A calculator is generally understood to be a machine, set of tables, algorithm, or some other mechanism used to execute mathematical equations. Our calculator is a set of basic equations and algorithms derived from our analysis of the RGF, Russian transportation networks, and our subject-matter expertise on logistics networks. It provides the ability to forecast and analyze the number and type of transportation assets and the amount of time necessary to move a Russian ground combat force from point to point in isolated movement sequences. By itself, the calculator cannot provide an estimate of an entire movement from the issuance of a combat order to closure on the assembly area. This kind of comprehensive analysis would require additional analytic steps.

As we demonstrate in our notional scenarios, these point-to-point calculations lend some stability and reasonable accuracy to our deployment timeline forecasts. With the calculator, transportation network data, and the OOB, it was possible to estimate the number of days required to deploy a Russian ground task force from the issuance of a warning order to closure.<sup>1</sup> In turn, this allowed for predictive analysis of Russian deployment capabilities and limitations.

Full movement analysis might benefit from a computer simulation, similar to U.S. Transportation Command's Analysis of Mobility Platform or Joint Flow and Analysis System for Transportation. However, even these simulations fail to capture the many factors that can affect deployment timelines, including political access challenges, contractor availability, force readiness limitations, and route changes.<sup>2</sup> Although our calculator does not permit a system-wide assessment of a large-scale deployment, it provides an accurate, minimum baseline estimate that is repeatable, enables direct comparison across scenarios or data sets, and reflects differences in timeline magnitude or required weights of effort for the transportation enterprise. Compared with a computer simulation requiring specialized software, our approach also allows for greater transparency of the calculations and assumptions, and it is readily transferrable.

Calculators are only as good as the equations they employ and the data they process. Our calculator is designed to give precise but only generally accurate results because (1) it relies on an unclassified OOB, which is necessarily inaccurate to some degree, and (2) the equations are generated from publicly available technical military equipment data, transportation network data, and lift requirement estimates. These types of data rarely reflect the challenges of real-world movement or variations in equipment, human behavior, and the operational environment. For example, a ten-year-old Russian transport truck with worn tires driven by an inexperienced junior soldier through snow on imperfect roads will not reach its objective at precisely the time forecasted by our generalized calculations.<sup>3</sup> Logistics forecasting is an uncertain art, even with given unit weights and known distances. The precise results from the calculator should not be confused for precisely accurate results. However, they are generally useful for estimation.

## A Note on Sources for the Calculator

This chapter builds from our OOB analysis and our related analysis of the Russian transportation network and hubs. Each estimate, such as the carrying capacity of an An-22 military cargo aircraft, is composed of aggregated and analyzed data. We identified the best available information, compared it with other data, and derived our estimates from what we found to be the most accurate sources. For example, the data on the An-22 in Table 2.2 were drawn primarily from *Moscow Defense Brief*, a publication produced by the Moscow-based Centre for Analysis of Strategies and Technologies. In contrast, the maximum range of the Ropucha amphibious ship, presented in Table 2.4, was aggregated from several sources. To avoid unwieldy citations in the text that follows, we generally note the origin of single-source estimates and provide one

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<sup>1</sup> *Closure* is generally understood to be the completion of a movement.

<sup>2</sup> This observation is derived from many discussions with deployment analysts and planners at U.S. Transportation Command and Military Surface Deployment and Distribution Command.

<sup>3</sup> In addition, official equipment data are often inaccurate or even intentionally misleading. Manufacturers sometimes overstate or understate performance characteristics.

or two sources for our aggregated estimates; more source data can be found in Appendix B of this report and in the references, organized by topic, in the companion report.<sup>4</sup>

## Overview of Notional Scenarios

Our notional scenarios are described in more detail in the companion report, *Russia's Limit of Advance: Scenarios*. Table 2.1 presents a brief description of each scenario to provide context for the assumptions and estimates that follow. We include the Ukraine scenario in this table, but it was not included in our scenario analysis.

We applied the calculator to each scenario and later refined the calculator based on our completed scenario analysis. This iterative process ensured that the calculator input was reasonable and—at least in these notional cases—tested.

## Description of the RGF Deployment Calculator

Because we tailored the calculator for the RGF and built it from our OOB, we necessarily describe its use in the context of our notional RGF deployment scenarios. The calculator consists of a series of assumptions, data baselines, and calculations for three categories of RGF transport: air, sea, and ground. In the discussion that follows, we also address state defense structure, diplomatic challenges, and emerging capabilities to help analysts understand the institutional dynamics that are likely to affect force movements.

### Scenario Drivers

All deployments—and particularly rapid, long-distance movements of large units—are complex undertakings involving many simultaneous activities. Parallel movements of units using limited infrastructure assets through an overlapping network require tight planning and syn-

**Table 2.1**  
**Summary Scenario Descriptions**

Scenario	Description	Intensity	Range
Kazakhstan	Russia and China engage in conventional combat in Kazakhstan	High	Border
Kuril Islands	Russia deploys to repel Japanese forces, conventional combat	High	Near
Tajikistan	Islamic State threat spills over into Tajikistan, Russia deploys to defend	Low	Near
Serbia	Deployment to help put down an anti-government revolt in Serbia	Low	Far
Syria	Rescue of surrounded Spetsnaz and Syrian military forces at Palmyra	Medium	Far
Venezuela	Stability operation in support of the Venezuelan government	Low	Far
<i>Ukraine</i>	<i>Seizure of parts of Ukraine for incorporation into the Russian state</i>	<i>High</i>	<i>Border</i>

NOTE: The Ukraine scenario involved too many forces to allow precise analysis. However, we included it as an additional, informative scenario. Thus, we refer to it as a “+1” case throughout this report.

<sup>4</sup> Connable et al., 2020.

chronization to execute smoothly and efficiently. Although many of these processes can be examined using physics-based modeling, intangibles, such as policies, procedures, coordination across organizations, and human error—not to mention deliberate interference by an outside party—will introduce uncertainty into deployment time calculations.

To begin unwrapping this complexity, we identified the most stressing deployment time drivers in each of our scenarios, which are summarized in Table 2.2. We examined major transportation modes and added stressors to reach general conclusions about Russia's potential deployment performance.<sup>5</sup> Note that the deployment timelines do not take into account the amount of time required for units to transition from an unready state to a ready, predeployment state.<sup>6</sup>

**Table 2.2**  
**Key Stressors Examined in the Scenarios**

Scenario	Stressors on Deployment Capability or Deployment Time
Kazakhstan	<ul style="list-style-type: none"> <li>• Close timeline trade-offs between relying primarily on airlift or ground transport for large force packages</li> <li>• Rail movement of major combat forces to highlight route and infrastructure limitations</li> <li>• Road marches of forces over long distances</li> </ul>
Kuril Islands	<ul style="list-style-type: none"> <li>• Airlift of VDV equipment to highlight platform limitations and risk of interdiction</li> <li>• Sealift of Naval Infantry, BTGs, and support units to highlight platform inventory and route limitations and security risks</li> </ul>
Tajikistan	<ul style="list-style-type: none"> <li>• Airlift of Spetsnaz and rotary-wing equipment to highlight platform limitations</li> <li>• Rail movement of motorized rifle/truck-mounted infantry, artillery, missile, and support assets to highlight platform, route, and facility limitations</li> <li>• Ground movement from staging area to five tactical assembly areas to highlight route limits and security implications</li> </ul>
Serbia	<ul style="list-style-type: none"> <li>• Airlift of VDV and Spetsnaz forces to highlight platform and route limitations</li> <li>• Sealift of motorized rifle/truck-mounted infantry and support units to highlight platform, route, and facility limitations</li> <li>• Ground movement from port of debarkation to objective areas to highlight route security implications</li> </ul>
Syria	<ul style="list-style-type: none"> <li>• Airlift of Spetsnaz and VDV forces to highlight platform and route limitations</li> <li>• Sealift of motorized rifle/truck-mounted infantry and support assets to highlight platform, route, and facility limitations</li> <li>• Ground movement from port to objective areas to highlight security implications</li> </ul>
Venezuela	<ul style="list-style-type: none"> <li>• Airlift of VDV, special operations forces, and Naval Infantry forces to highlight platform and route limitations</li> <li>• Sealift of motorized rifle/truck-mounted infantry and special paramilitary police assets to highlight platform, route, and facility limitations</li> <li>• Ground movement from port to objective areas to highlight route security implications</li> </ul>

<sup>5</sup> Each scenario also includes an array of scenario-specific assumptions and calculations.

<sup>6</sup> In some cases, this could add days or even weeks to deployment timelines. We could not generalize these additional timelines because each unit is in a different state of readiness at any given point in time, and military planners may be willing to accept more risk concerning the readiness of deploying units in certain circumstances. For example, a quickly developing crisis may lead planners to accept greater risk in terms of unit performance by deploying units before they reach full capability. Mission intensity also matters for determining required readiness levels: High-intensity combat preparation differs significantly from preparation for stability operations.

## Airlift

Air is the least economical and least efficient way to transport ground combat forces. Most Russian equipment is designed primarily for rail transport.<sup>7</sup> In addition to cost and effectiveness considerations, Russian political leaders are concerned with security threats on the European and Asian continents. Given that rail is particularly accommodating for heavy and out-sized equipment, many RGF tanks, self-propelled artillery, air defense assets, and engineering equipment will only fit onto large transport aircraft, such as the An-22 or An-124.<sup>8</sup> However, due to limited fleet inventory and readiness, Russia's Military Transport Aviation Command (Voyennaya Transportnaya Aviatsiya, or VTA) is capable of airlifting only a single VDV regiment at a time, limiting the size of the force that can be deployed on a short timeline.

Table 2.3 outlines the key performance parameters of Russia's strategic lift aircraft as of late 2017. In addition to this military inventory, Russia's Internal Troops operate more than 100 transport aircraft, including around ten Il-76s and 20 medium-lift aircraft.<sup>9</sup> Flight Squadron 223, a state airline detachment that is subordinate to the Russian Ministry of Defence, also has several medium- to small-lift aircraft.<sup>10</sup>

Maintenance issues and other mission requirements will always limit the availability of aircraft for a given movement. Russia's armed forces have a mixed record when it comes to

**Table 2.3**  
**Characteristics of Military Fixed-Wing Transport Aircraft in Russia's Inventory**

Aircraft	Number	Cargo Capacity (metric tons)	Range (km) with Maximum Payload	Landing Field Requirements (m)
An-124	9	120.0	4,500	900
An-22	2	60.0	4,500	1,000
Il-76MD/MF	100	50.0	3,650	2,500
An-12BK	65	20.0	1,900	500
An-148	9	15.0	1,100	1,070
An-72	25	10.0	800	465
Tu-134	54	8.2	1,000	2,200
An-140	5	6.0	930	530
An-26	115	5.5	60	1,740
L-410	27	1.8	240	520

SOURCES: Derived from multiple sources, including "Russia and the CIS," *Jane's Sentinel Security Assessment*, February 23, 2017, and "Russia to Fill Gap Left by An-70 with More Il-76MD-90A Airlifters," *Jane's Defence Weekly*, January 13, 2016.

NOTE: Aircraft ranges increase as cargo payload decreases due to the ability to carry more fuel within the maximum takeoff weight.

<sup>7</sup> Airborne units are specifically designed for air transport and rapid reaction.

<sup>8</sup> The Anatov An-22 Antei and newer An-124 Ruslan are heavy transport aircraft.

<sup>9</sup> *Interior Troops* refers to the Russian Federation Ministry of Internal Affairs force.

<sup>10</sup> Mikhail Barabanov, "Flight Unit 224: Russian MoD's Commercial Airline," *Moscow Defense Brief*, No. 3 (25), 2011.

maintaining aircraft in a mission-ready state. In 2017, one analyst estimated that the readiness of the country's strategic airlift fleet was 50–60 percent.<sup>11</sup> Aircraft repair facilities were cut from 57 to approximately 20 locations after the end of the Cold War in response to financial constraints or as a result of the transfer of ownership to former republics. This contributed to an ongoing backlog in aircraft maintenance and service life extension upgrades. Russia has restructured its aircraft maintenance enterprise four times since the early 2000s.<sup>12</sup> The current federal corporation has five management companies, including United Aircraft Corporation—Transport Aircraft, United Aircraft Corporation—Antonov, and subsidiaries Yakovlev Design Bureau and Ilyushin.<sup>13</sup> Currently, its fixed-wing aviation repair plants are in Komsomolsk-on-Amur, Novosibirsk, Irkutsk, Nizhny Novgorod, Voronezh, and Ulyanovsk.<sup>14</sup>

Again, due to limited fleet inventory and readiness, the VTA is capable of airlifting only a single VDV regiment at a time. This curtails short-timeline force availability. The Russian Ministry of Defence announced that it intended to enhance the VTA organization so that it could lift an entire division in one movement by 2020. However, our assessment of existing and emerging capabilities suggested that this timeline was unlikely.<sup>15</sup> Development and procurement efforts over the past decade have been challenged by production and other limitations. These frictions have been exacerbated by the location of production facilities in former Soviet territories outside of Russia.

It is worth noting that the Ukrainian government has owned the Antonov State Company—producer of the An-124, An-22, and other, smaller transport aircraft—since its independence from the Soviet Union in 1991. Russia's annexation of Crimea and ongoing military operations in eastern Ukraine led the owned company to cut ties with Russia.<sup>16</sup> Two joint Russia-Ukraine air transport development projects were canceled: the An-70, a medium-range transport aircraft with a maximum payload of 47 tons, and a restart of An-124 production. To offset this loss, Russia accelerated its modernization and production of the Il-76, with production facilities shifting from Uzbekistan to western Russia. Although it was behind schedule, Ilyushin was under contract to upgrade a portion of the Il-76MD to Il-76-MD-M standards at the time of this research. Aviastar was also under contract to build 39 additional Il-76MD-90A aircraft by 2020, although, by mid-2017, only three had been delivered.<sup>17</sup>

### **Airlift Scenario Methods**

We developed our deployment calculator to describe Russian transport sorties. Airlifts are executed in sorties, or the individual mission movements of one or more aircraft. Typically, it

<sup>11</sup> Russian Defense Policy, “The State of VTA,” February 26, 2017.

<sup>12</sup> Aleksey Prushinskiy, “Repair and Upgrade of Russian Non-Commercial Aircraft in 2011–2012,” *Moscow Defense Brief*, No. 6 (44), 2014.

<sup>13</sup> “Объединенная авиастроительная корпорация. Досье” [“United Aircraft Corporation: Dossier”], TASS, February 20, 2016.

<sup>14</sup> “ОАК берется за ремонт шасси и крыльев” [“United Aircraft Corporation Takes on Chassis and Wing Repair”], *Kommersant*, October 28, 2013.

<sup>15</sup> See Mikhail Barabanov, ed., *Новая армия России [Russia's New Army]*, Moscow: Centre for Analysis of Strategies and Technologies, 2010.

<sup>16</sup> Oleg Varfolomeyev, “Ukrainian Aircraft Manufacturer Antonov Diversifies Away from Russia,” *Eurasia Daily Monitor*, Vol. 13, No. 149, September 15, 2016.

<sup>17</sup> Tom Waldwyn, “Russian Military Lift Risks Atrophy,” blog post, International Institute for Strategic Studies, July 6, 2017.

takes many sorties to deploy a single ground combat unit. A sortie can be executed using multiple aircraft or using the same aircraft multiple times.

To ensure consistent comparisons across scenarios, we based our sortie calculations on equipment weight and personnel capacity. In reality, airlift plans for contingencies must take into account several other variables when determining the mix of lift platforms, as well as the actual configuration of cargo and personnel aboard the individual platforms. Force-flow priorities, spread-loading combat capabilities to minimize the impact of platform loss, and individual platform constraints in terms of total weight, weight distribution, volume, dimensions, and safety regulations will affect asset demands and closure rates. Because we did not have data on Russian airlift standards and procedures, we used maximum weights in all scenarios except for Venezuela.

Given the readiness challenges and future procurements highlighted earlier in this chapter, we assumed that 60 out of 110 Il-76s and six out of nine An-124s were available in each of the six notional scenarios. We did not include the An-22 because of low inventory and readiness and because medium-lift air platforms were generally not appropriate for the scenario needs. We used the following calculations to determine fleet mix and demands. Large and small nonmilitary aircraft are large civilian airliners used for military deployment purposes; use of civilian aircraft for troop movements is common in Russia and in other military forces.

For personnel transport,<sup>18</sup>

$$\begin{aligned} \text{number of large nonmilitary aircraft } (\delta) &= \frac{(\text{total personnel})}{150} \\ \text{number of small nonmilitary aircraft } (\gamma) &= \frac{(\text{total personnel})}{50} . \end{aligned}$$

For equipment transport,<sup>19</sup>

$$\begin{aligned} \text{IL-76 } (\alpha) &= \frac{(\text{total combat and support vehicle weight in metric tons})}{(50 \text{ metric tons})} \\ \text{An-124 } (\beta) &= \frac{(\text{total combat and support vehicle weight in metric tons})}{(120 \text{ metric tons})} \\ x \text{ IL-76} &= \frac{(\text{total combat and support vehicle weight in metric tons}) - 720}{(50 \text{ metric tons})} . \end{aligned}$$

In all scenarios, we assumed that Russia would choose flight legs that would maximize cargo capacity. For Venezuela, however, the leg across the Atlantic Ocean exceeded the ranges at maximum cargo weight of both the An-124 and Il-76. Therefore, using data on platform cargo weight versus range trade-offs, we used the payloads and ranges listed in Table 2.4. The restricted payloads increased the number of sorties required and thus affected closure times.

<sup>18</sup> Large nonmilitary aircraft were used in all fleet mixes across scenarios for personnel transport, when applicable.

<sup>19</sup> Generally, the total fleet mix used was all six An-124s with  $x$  Il-76s carrying the remainder. These personnel and equipment transport equations are derived from multiple sources, including Volga-Dnepr, "An 124-100 Cargo Calculator," webpage, undated; Volga-Dnepr, "IL-76 Cargo Calculator," webpage, undated.

**Table 2.4**  
**Range-Payload Trade-Offs Used in the Venezuela Scenario**

Aircraft	Maximum Range (minimum metric tons of cargo)	Range Used in Scenario (metric tons of cargo)	Minimum Range (maximum metric tons of cargo)
An-124	12,500 km (25)	6,600 km (95)	4,500 km (120)
Il-76	7,300 km (20)	6,600 km (26)	3,650 km (50)

SOURCES: Calculation input derived from Volga-Dnepr, "An-124-100," fact sheet, undated, and Military-Today.com, "Ilyushin Il-76 Candid," webpage, undated.

Route length and leg number determinations depended on assumptions about overflight and refueling access. Restrictions in several scenarios led to less-direct routes and, thus, additional legs and refueling requirements. We determined time spent at refueling stops and at aerial ports of embarkation (APOEs) and debarkation (APODs) using the total number of sorties required and maximum-on-the-ground capacity at the airfields. Across scenarios, we assumed that there would be a maximum of four aircraft on the ground at each airfield at any given time for 24-hour operations. We incorporated the number of sorties, maximum aircraft on the ground, and hours of operation into a RAND model designed for C-17 cargo aircraft using the method described in U.S. Air Force Pamphlet 10-1403, *Air Mobility Planning Factors*, as a proxy for large Russian transport aircraft.<sup>20</sup> Calculations to determine closure times were as follows:<sup>21</sup>

$$\text{refueling time } (\theta \text{ hours}) = (\text{total refueling stops}) \times \frac{(\alpha + \beta + \delta) \times 2.2}{4}$$

$$\text{closure time (hours)} = 24 + \frac{\text{total km}}{763} + \theta + \frac{(\alpha + \beta + \delta) \times 3.2}{4}$$

Loading at APOE
Refueling time
Flight time
Unloading time

### Sealift

The Russian Navy lacks sufficient organic sealift assets to adequately transport and support expeditionary ground combat forces beyond Russia's borders. Post-Cold War divestment and limited immediate access to the merchant fleet has left Russia with a small sealift capability that is primarily concentrated in the Black Sea. Table 2.5 shows Russia's large landing ship capacity. In addition to the ships listed in the table, Russia has an estimated 28 smaller landing craft with a much more limited capacity of approximately one to three main battle tanks—the core element of a robust ground combat force.

<sup>20</sup> U.S. Air Force, *Air Mobility Planning Factors*, Air Force Pamphlet 10-1403, December 12, 2011.

<sup>21</sup> Air Force Pamphlet 10-1403.



**Table 2.5**  
**Large Landing Ship Inventory**

Ship	Number	Capacity	Maximum Range (nm)
Project 775/M ( <i>Ropucha I/II/III</i> )	15	Either 10 main battle tanks and 190 troops or 24 APCs and 170 troops	8,000
Project 1171 ( <i>Tapir/Alligator</i> )	4	20 main battle tanks or 300 troops	6,000

NOTE: APC = armored personnel carrier. *Project* is the official naming convention for Russian sealift assets. Ship classes appear in parentheses; in the case of the *Tapir/Alligator* class, *Tapir* is the Russian class designation and *Alligator* is the NATO designation.

The Syria Express effort to transport and resupply Russian units engaged in operations in Syria highlighted the need for Russia to enhance its capabilities to transport large numbers of troops and equipment by sea. Russian Minister of Defense Sergey Shoigu stated in August 2017, “Our main efforts must be directed into building large-tonnage ships and other universal and multi-functional ships capable of meeting the needs of the armed forces in distant maritime areas.” He went on to identify a requirement for 60 or more new ships by 2020.<sup>22</sup> This enthusiastic advocacy did not appear to have translated into formal development and procurement decisions at the time of our research. The cancellation of a delivery of French Mistral amphibious ships in August 2015 represented a setback for Russia’s amphibious capability.<sup>23</sup> Although Russia is procuring Project 11711 *Ivan Gren*–class tank landing ships to replace the aging *Ropucha* class, the first platform delivered had hull stability issues, delaying its commission into the Russian Navy.<sup>24</sup> Russia’s shipbuilding industry is also reaching maximum capacity and has been stymied by a reliance on outside suppliers for critical parts, such as gas turbines for large vessels from Ukraine, that have been affected in the aftermath of the Ukraine crisis.<sup>25</sup> In the immediate future, Russia will need to rely on leased or procured commercial vessels reflagged under the Russian Navy, such the *Alexandr Tkachenko* and other vessels obtained from Turkey for the Syria Express.

In addition to lift asset constraints, Russia also faces potential risks to route and port access. The Bosphorus Strait is the only way for Russia’s Black Sea fleet to reach Syria and beyond. Although the 1936 Montreux Convention guarantees access to the strait, such guarantees may be waived during times of war.<sup>26</sup> And although Turkey cannot legally deny access in peacetime, it can increase security and administrative requirements to effectively choke Russian traffic. The Islamic State has also threatened attacks on ships transiting the strait in retaliation for Russia’s operations in Syria.<sup>27</sup> Naval base access outside the Russian mainland is also a potential vulnerability. Russia and Syria agreed to expand and modernize the Tartus

<sup>22</sup> Andrew Osborne, “Russia Expands Military Transport Fleet to Move Troops Long Distances,” Reuters, March 7, 2017.

<sup>23</sup> Sabrina Tavernise, “Canceling Deal for 2 Warships, France Agrees to Repay Russia,” *New York Times*, August 5, 2015.

<sup>24</sup> Waldwyn, 2017; “Ivan Gren Landing Ship: No Hope to Join Navy before March Due to Reverse-Run Problems, Insider Says,” *mil.today*, January 18, 2018.

<sup>25</sup> Norman Polmar and Michael Kofman, “‘New’ Russian Navy, Part 2: One Step Forward, Two Steps Back?” *Proceedings*, Vol. 143, No. 1, January 2017.

<sup>26</sup> League of Nations, *Convention Regarding the Régime of Straits*, July 20, 1936.

<sup>27</sup> John C. K. Daly, “Russia’s Syria Resupply Route Through the Turkish Straits: Vulnerable to Terrorist Attack?” *Eurasia Daily Monitor*, Vol. 14, No. 7, June 5, 2017.

port facility. As of mid-2018, Tartus and a resupply facility in Vietnam were Russia's only reliable foreign-based ports.<sup>28</sup> In some contingencies, Russia may face denied access to ports for refueling, resupply, and maintenance due to political pressure from NATO or other Western organizations. This risk was underscored in August 2017, when Spain refused refueling access at the Port of Ceuta (off the coast of northern Morocco) to Russian ships heading to Syria, a response to international pressure concerning Russian operations in Aleppo.<sup>29</sup>

### **Sealift Scenario Methods**

For a more efficient comparison across scenarios, we based sortie calculations on equipment numbers. In all cases except the Naval Infantry in the Kuril Islands scenario, personnel were transported primarily by air. As noted earlier, load plans for lift assets involve diverse considerations. For sealift, tiedown provisions, available floor space, possible detrimental maritime effects, and predetermined cargo compartment configuration standards are also potential limitations.<sup>30</sup> To simplify our analysis and allow us to present comparable results across scenarios, we chose to determine sealift asset demand by the required number of tanks, large vehicles, and smaller vehicles. These assumptions are listed in Table 2.6.

In scenarios using Novorossiysk as the port of embarkation, we assumed that seven of 15 total Project 775 and three of four total Project 1171 ships would be available for use.<sup>31</sup> In the Kuril Islands scenario, we assumed a total Pacific Fleet transport ship inventory of three Project 775s and 1176s and one each of Project 1171, 21820, and 11770. Nonorganic, non-

**Table 2.6**  
**Sealift Asset Demand, by Vehicle Capacity**

Ship	Tanks and Larger Vehicles	Other Vehicles
Project 775 ( <i>Ropucha</i> )	10	17
Project 1171 ( <i>Tapir/Alligator</i> )	20	52
Project 21820 ( <i>Dyugon</i> )	3	5
Project 11770 ( <i>Serna</i> )	1	2
Project 1176 ( <i>Akula/Ondatra</i> )	1	2

SOURCES: Derived from multiple sources.

NOTE: Estimates of the number of other vehicles take into account average vehicle size, including large support vehicles.

<sup>28</sup> "Russia, Syria Sign Agreement on Expanding Tartus Naval Base," Radio Free Europe, January 20, 2017.

<sup>29</sup> Ben Farmer, James Badcock, and Roland Oliphant, "Russia Withdraws Request to Refuel Battle Group Heading to Bomb Aleppo, After Intervention from Spain's Foreign Ministry," *The Telegraph*, October 26, 2016.

<sup>30</sup> Tiedown provisions are planning factors for strapping equipment to ship or aircraft decks. *Floor space* is the available space on a ship or aircraft deck to position equipment. Detrimental maritime effects include accelerated metal rusting, corrosion of electronic equipment, and other salt-air and -spray effects. Other limitations include overhead space restrictions; oddly shaped equipment; bulkhead, deck, or overhead irregularities; and hazardous material regulations or concerns.

<sup>31</sup> These assumptions were derived from anticipated maintenance requirements and anticipated additional mission requirements outside the scenario. Novorossiysk is a Russian Black Sea port.

military ships have much greater capacity, although this varies by ship type. In our scenarios, we generally assumed that commercial sealift would be unavailable due to the short required response times, interdiction dangers, or denied access to adequate ports. These assumptions, in addition to reflecting potential real-world risks, also sought to highlight the limited organic capacity of Russia's fleet. This limited capacity led to requirements for multiple sorties by available vessels. An example sortie load plan is highlighted in Table 2.7. Each column represents one sortie for the vessels listed carrying the number of vehicles in each corresponding cell.

To determine sealift closure times, we assumed a 24-hour initial load time at the sea port of embarkation (SPOE). Unload times once ships reached the sea port of debarkation (SPOD) depended on the number of ships and the capacity of the ports in each scenario. When data were not available, we generally assumed that developed ports could handle four roll-on/roll-off ships over a 24-hour period, and we did not assign unload limits to those amphibious landing sorties. Finally, we assumed that the steam rate for vessels was 18 knots. However, due to Russia's limited organic capacity, vessels may be required to make multiple sorties back and forth between the SPOE and SPOD.

### Rail and Road

Given Russia's large geographic expanse, rail transport is essential for rapid deployment and sustainment of troops, particularly in the areas around its borders. In fact, rail is so vital to contingency and even steady-state operations that there is a separate branch of Railway Troops, consisting of ten brigades and several independent battalions that provide maintenance, opera-

**Table 2.7**  
**Example Sealift Sortie Load Plan**

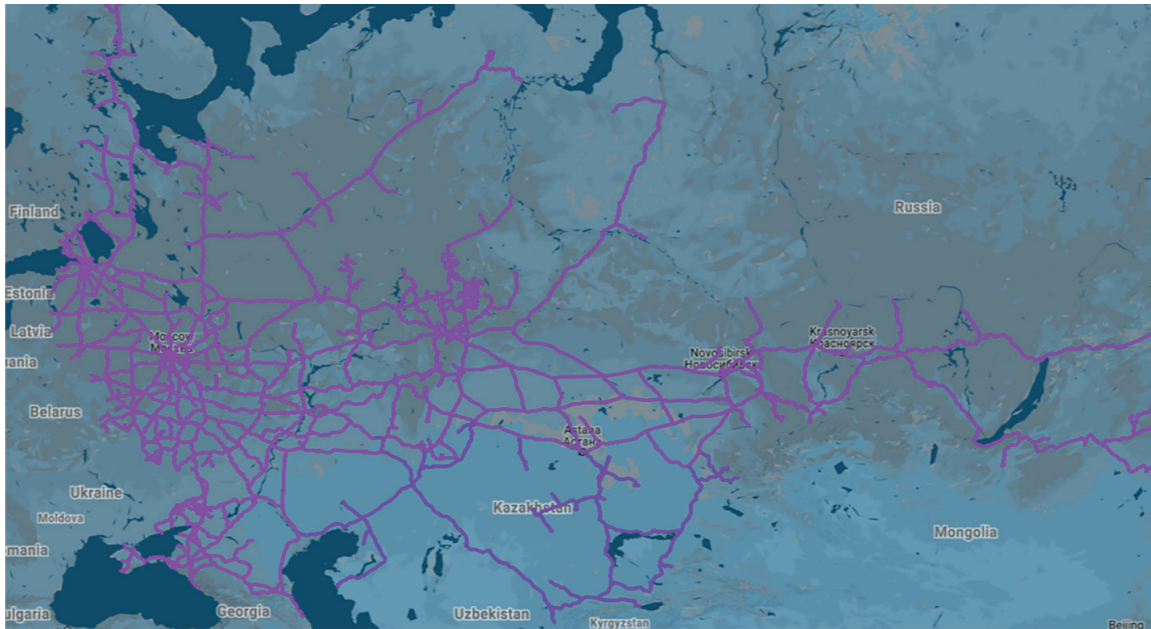
Ship	Tanks	Loadout (by sortie)							
		Other Vehicles							
<i>Oslyabya</i>	10	17	17	17	17	17	17	17	17
<i>Admiral Nevelskoy</i>	10	17	17	17	17	17	17	17	17
<i>Peresvet</i>	10	17	17	17	17	17	17	17	17
<i>Nikolay Vilkov</i>	20	52	52	52	52	52	52	52	22
<i>Ivan Kartsov</i>	3	5	5	5	5	5	5	5	—
D-107	1	2	2	2	2	2	2	2	—
D-704	1	2	2	2	2	2	2	2	—
D-70	1	2	2	2	2	2	2	2	—
D-57		2	2	2	2	2	2	2	—
Total vehicles transported	56	116	116	116	116	116	116	116	73
Number remaining	0	769	653	537	421	305	189	73	0

NOTE: The requirement was to move 56 tanks and 884 other vehicles.

tions, and security support in their assigned military districts.<sup>32</sup> Although the rail network is very dense in the west, the central and eastern regions of Russia have limited rail line availability (see Figure 2.1).

Efforts to construct new rail lines in those areas have encountered mixed results. For example, in 2016, Russian authorities put plans to reconstruct the Trans-Siberian line and the Baikal-Amur Mainline on hold.<sup>33</sup> On the other hand, Russia completed the Zhuravka-Millerovo high-speed rail line to provide a new route to the Black Sea and the Luhansk Oblast in Ukraine without the need to pass through undisputed Ukrainian territory.<sup>34</sup> The Russian military is given priority for railcars and trains.<sup>35</sup> The majority of Russia's rail infrastructure is owned by Russian Railways (transliterated as Rossiyskie Zheleznye Dorogi, or RZD), a state-owned company. RZD owns the majority of Russian locomotives (20,300 out of 21,463), while private rail companies own the majority of freight cars (1,123,012 out of 1,218,169).<sup>36</sup> There have been reports that Russia plans to take small steps toward RZD privatization through

**Figure 2.1**  
**Russian Rail Network**



SOURCE: Google Earth with RAND overlay.

<sup>32</sup> Grau and Bartles, 2016, p. 327.

<sup>33</sup> Paul Goble, "The End of the Line for the Trans-Siberian Railroad?" *Eurasia Daily Monitor*, Vol. 13, Issue 159, October 4, 2016. Russia did complete construction of the Zhuravka-Millerovo high-speed railway, which provides an additional route to the Black Sea and the Luhansk Oblast without cutting through Ukrainian territory. See Digital Forensic Research Lab, Atlantic Council, "Choo-Chooska? New Russian Railway and Military Movement on the Ukrainian Border," *Medium*, August 15, 2017.

<sup>34</sup> Digital Forensic Research Lab, 2017.

<sup>35</sup> For a primer on the Russian Railways and the structure and planning for rail development, see Russian Railways, "The Company," webpage, undated.

<sup>36</sup> U.S. Department of Commerce, International Trade Administration, data from 2017.

partial sales.<sup>37</sup> Such privatization may affect the availability of railcars and trains for Russian military uses in the future.

### **Rail and Road Scenario Methods**

For easier comparison across the scenarios, we based our rail calculations on equipment and personnel. These calculations assumed that railcar availability would not be not a limiting factor, although, in practice, there may be delays in redirecting railcars to load points. To determine railcar demand, we assumed a railcar length of 15.4 meters and a maximum axle weight of 23.5 metric tons.<sup>38</sup> Using compiled vehicle characteristics for each force package, we determined that vehicles exceeding weight restrictions or those longer than 7.7 meters would require an entire car. In reality, other considerations, including combat-configured vehicles, tiedown provisions, and immediate availability of lower-density heavy-load freight wagons, would also affect overall railcar demand. We left out these detailed and often idiosyncratic variables to better enable comparisons across scenarios. Finally, we assumed that one military trainload would consist of 57 railcars. The calculations used to determine railcar and train demand are as follows. See Table B.5 for a complete list of the vehicle characteristics used in our calculations.

$$\begin{aligned} \text{number of railcars} = & \sum(\text{vehicles} > 7.7 \text{ m long or } > 23.5 \text{ metric tons}) \\ & + \left( \frac{\sum(\text{vehicles} \leq 7.7 \text{ meters long or } \leq 23.5 \text{ metric tons})}{2} \right). \end{aligned}$$

For rail closure times, we assumed a speed of 40 km/hr and that the destination rail point could unload one train every four hours. Routing was determined by assumptions made in the scenarios regarding security or access. Data on bridging and tunnel envelope restrictions that could restrict routes for certain train loads were not available. The calculation we used to determine rail closure time was as follows:

$$\begin{aligned} \text{closure time (hours)} = & 24 + \underbrace{\left( \frac{\text{total km}}{40} \right)}_{\text{Travel time}} + \underbrace{\left( \frac{\text{number of trains}}{4} \right)}_{\text{Unloading at destination}}. \end{aligned}$$

We calculated convoy closure times using an unclassified Microsoft Excel tool available through the U.S. Army Combined Arms Support Command Deployer's Toolbox for road marches, inputting requirements for the number of vehicles, vehicle spacing (day and night),

<sup>37</sup> "No Privatization for Russian Railways Until 2020, Deputy Prime Minister Claims," *Moscow Times*, February 7, 2017.

<sup>38</sup> For an overview of rail-loading assumptions, see Pavel Kovalev, "Западные страшилки или мифы о российских вагонах" ["Western Horror Stories and Myths About Russian Military Trains"], *Военно-политическое обозрение [Military and Political Review]*, August 10, 2017.

speeds (day and night), and time spent halted for rest or maintenance.<sup>39</sup> Generally, the tool assumes a linear formation along a single road. The use of parallel roads or staggered or diamond-shaped convoy formations on wider roads would reduce travel times, although adversary attacks, weather, terrain, communication-on-the-move challenges, or vehicle breakdowns would cause delays. We also assumed that tracked vehicles would be loaded onto heavy equipment transporters, such as the KT-7428.

### **Advice for Using the RGF Deployment Calculator**

We designed the calculator for our notional scenarios, but we built it with real-world data. It provides a practical and reasonably accurate tool to determine baseline lift requirements and closure times for the movement of Russian ground combat forces from point to point. With the OOB, any user could apply the calculator to a notional scenario and develop a reasonable estimate of RGF deployment activities. However, given the aforementioned data caveats, we recommend relying on more-accurate data, if available. Note that changes in data for lift platforms would necessarily change the calculations: Each calculation is derived from unclassified OOB assumptions about each type of equipment.

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<sup>39</sup> The tool was derived from planning factors described in Army Field Manual 55-15, *Transportation Reference Data*, Washington, D.C., October 27, 1997.

## Notional Scenario Example: Kuril Islands

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This chapter presents one of our notional scenarios, the Kuril Islands, to illustrate the scenario development process. The companion report provides similar but less comprehensive background and context for the other scenarios.<sup>1</sup>

### Six (+1) Russian Deployment Scenarios

Building from our case-study analyses, deployment calculation estimates, and refined assessment criteria, we selected and designed notional cases of RGF ground force deployment. The goal was for these scenarios to be (1) research-grounded and able to facilitate analytic forecasting, (2) unclassified and suitable for wargaming and simulation, and (3) controlled test cases drawn from a transparent, unclassified OOB that would allow us to implement our RGF deployment calculator. It is important to note that we emphasized plausibility over likelihood to generate a variety of deployment conditions: We prioritized testing RGF deployment capabilities across a range of scenarios at various distances and intensity levels over selecting only those scenarios that seemed very likely to occur. For example, we selected what we determined, in consultation with subject-matter experts, to be a low-likelihood but generally plausible low-intensity Venezuela deployment to stress test Russian long-range deployment capabilities.<sup>2</sup>

We engaged with a range of professional experts to obtain input on notional case selection, including several U.S. government officials and five RAND researchers.<sup>3</sup> All six research team members—each with varied but significant military analysis experience—also proposed scenarios. This process generated a collective set of approximately 20 prospective cases. Our case selection process ensured that we captured a wide array of deployment scenarios. Our selected scenarios

- illustrate Russian joint task force deployments of more than 1,000 ground personnel<sup>4</sup>

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<sup>1</sup> Connable et al., 2020.

<sup>2</sup> The idea that Russia would deploy forces at this distance or to this region should not be rejected out of hand. The Soviet Union deployed thousands of ground troops to Cuba in the early 1960s, including approximately 5,000 troops that the Central Intelligence Agency described as “armored groups” (Central Intelligence Agency, “Soviet Forces in Cuba,” declassified memorandum, Langley, Va., May 7, 1963).

<sup>3</sup> These professional engagements were conducted informally and anonymously. All experts understood the notional and unclassified nature of our scenario development process.

<sup>4</sup> Our historical case review suggested that this was a reasonable level. Most cases below 1,000 personnel were purely advisory missions. None of the cases below 1,000 personnel involved a significant ground combat deployment capability.

- place a contingent of combat-ready RGF troops on the ground outside Russia's borders
- capture a range of deployment distances
- require different types of ground, overflight, and naval capabilities and levels of access
- could be reasonably described using our OOB
- are plausible even if they are not likely, given current political conditions.

Building from our historic case studies and subject-matter expert input, and applying these criteria, we selected six cases for analysis: (1) Kazakhstan, (2) Kuril Islands, (3) Tajikistan, (4) Serbia, (5) Syria, and (6) Venezuela. We also included the additional case of Ukraine, referred to as our "+1" case. Ukraine generated considerable interest during our selection process, but it included too many ground forces for the kinds of detailed calculations we applied to the other cases. We consider Ukraine an informative case but did not include it in our collective analysis of the notional scenarios.

### Format of the Scenarios

Each scenario starts with a notional 2019 road to war briefly describing a plausible series of events leading to the Russian deployment. We selected 2019 for two reasons. First, two years from 2017 was far enough into the future to help suspend disbelief that might emerge in a nearer-term notional event. Second, two years was also a sufficiently brief period to ensure that the underlying assumptions about the notional political situations and in the unclassified OOB remained relevant: We would not have to account for notional major improvements or degradation of Russian military or civilian transport capabilities.

To the extent possible, we built each notional scenario from real-world information. For example, the entire OOB, including the locations of bases and patterns of movement, represent real-world analysis. We extrapolated only to generate the notional sequence of events. This included creating reasonable political and deployment conditions in team discussions and in scenario review sessions with our subject-matter experts. Given our analytic focus on capacity, lift, and speed, the scenarios capture pre-combat movement and not the combat that occurs after deployment. Russian military units in the scenarios were drawn directly from the OOB. Distances were obtained using Google Earth Pro. The process for developing the Kuril Islands scenario, discussed next, is representative of our approach.

### Example: Kuril Islands Scenario

In the Kuril Islands scenario, Russia is faced with a perceived threat from Japan in this archipelago located approximately 350 kilometers from Russia's Sakhalin Island and approximately 650 kilometers from Russia's territorial coastline. Russia and Japan have long argued over the sovereignty of the southern Kuril islands of Iturup and Kunashir. In the scenario, Japan postures forces on Kunashir; Russia deploys to Iturup to disrupt a prospective invasion and, possibly, to attack the Japanese forces on Kunashir.

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while some cases just above this threshold met our other criteria. It is useful to reiterate here that the data on personnel per deployment are inconsistent and not provable.

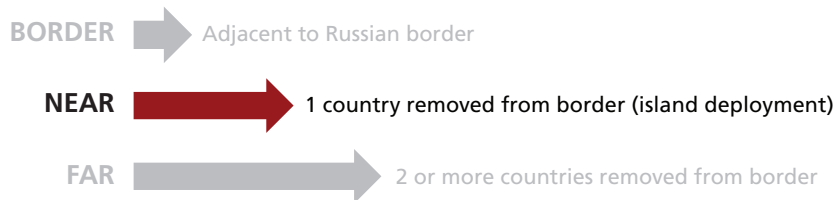


The following four figures present background and context for the scenario. Figure 3.1 presents the distance coding for the Kuril Islands case.

Figure 3.1 highlights the going-in assumption about the criticality of rail and basing infrastructure in Russia’s Eastern Military District, a challenge we validated with the scenario analysis. We rated the scenario *high* combat intensity due to the size and type of the notional Japanese opposing force. We rated the deployment range as *near* based on our self-defined criteria: The operational area is separated from the Russian border by water but not at an extreme range like Venezuela. We note that although the deployment is relatively close to the Russian border, it is far from the Western and Southern military districts that are so heavily weighted with Russian logistics capabilities and RGF combat assets.

Figure 3.2 describes the notional scenario in greater detail, including the balance of forces and the mission of the Russian joint task force. In this scenario, the Russian force is tasked with securing lines of communication to the Kuril island of Iturup. The threat in the scenario

**Figure 3.1**  
Kuril Islands Scenario Range




**Figure 3.2**  
Kuril Islands Scenario Overview

**Situation**


On October 10, 2019, Japanese forces, currently deployed at the end of exercises, attack the four southern Kuril Islands and successfully land limited forces on the southernmost three. On October 11, Russia’s Eastern Military District establishes a joint task force to regain control of all Russian territory in the east.

**Russian mission**

The Eastern Military District joint task force reinforces Iturup and seizes the islands of Kunashir, Shikotan, and Habomai to defeat Japanese forces and reclaim the sovereign integrity of Russian territories before the hard freeze of winter.



**Enemy forces ~10,000**  
with MV-22s (Osprey tiltrotor aircraft), infantry combat vehicles, APCs, and limited amphibious assault vehicles



**Russian forces ~8,550**  
18th Machine Gun Artillery Division and border guards

Supporting units:  
Long-range aviation; aerial resupply; national-level intelligence, surveillance, and reconnaissance; and Spetsnaz

**Concept of operation phases**

1. Establish secure air and sea lines of communication from mainland Russia to Iturup to support resupply and flow of reinforcement forces onto the island.
2. Reinforce Russian forces on Iturup to deny further Japanese force expansion and build forces in preparation for the next phase.
3. Seize Kunashir, Shikotan, and Habomai islands.

is Japanese fires into the area of operations and against Russian forces on the ground at Iturup. Political decisions, resource limitations, and military exigency often upset rational planning models. Our notional forces included ground, air, and sea forces with long-range defensive and offensive missile capabilities.

Figure 3.3 provides political context for the scenario. Although this context was not strictly relevant to our calculations, we found it useful to help explain the scenario and a necessary inclusion to establish the scenario as a stand-alone product. It describes a situation in which a hardline Japanese government seizes the Kuril Islands. This causes Russia to deploy the joint task force, providing a rationale for RGF movement to the objective area.

Figure 3.4 shows geographic orientation of the Kuril Islands scenario area. This orientation focuses on the distances to and from the Russian mainland and, specifically, to and from the SPOD at Magadan in Russia to the airfield on Iturup. It also shows the distances that the Japanese Self-Defense Forces would have to travel to deploy from Hokkaido. Note that we decided not to use Russia's Sakhalin Island, located just west of the Kurils and east of mainland Russia, as a port of embarkation because of its proximity to ground-based Japanese strike forces and because movement to Sakhalin from the Russian mainland would constitute a second, unnecessary deployment step that would slow RGF movement.

Figure 3.5 describes the strategic considerations for the scenario. We generated these considerations to help us capture and analyze the geopolitical impact on the RGF deployment: How would issues like basing rights, port access, and (in this case) the desire to control natural resources affect both RGF movement and political pressures to take a military risk?

Figure 3.6 shows the limited strain that this deployment would place on the overall availability of RGF BTGs. We estimated the total number of BTGs available for combat from our OOB analysis. Based on the number of ground force brigades, we determined that the Russian military could assemble a total of 215 BTGs across the RGF, VDV, Naval Infantry, and

**Figure 3.3**  
**Kuril Islands Road to War**



An ultranationalist Japanese government comes to power in 2019 vowing to uphold territorial claims, such as to the "northern territories" of Etorofu (Iturup), Kunashiri (Kunashir), Shikotan, and Habomai islands.



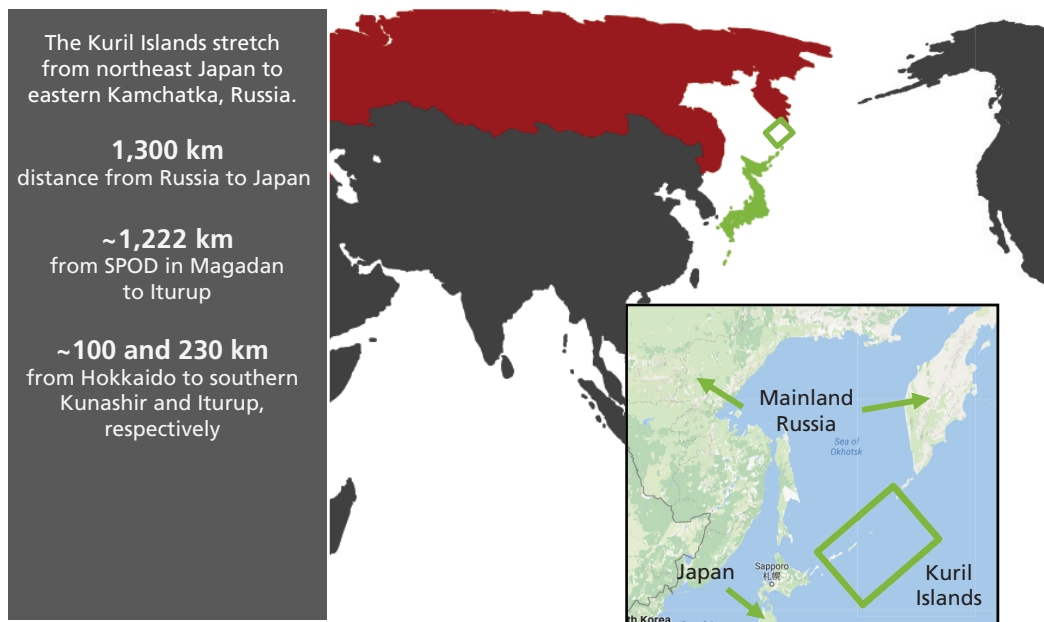
After the election, Russia bolsters its presence on Kunashiri, which hosts part of its 18th Machine Gun Artillery Division and coastal defense cruise missile systems. It also conducts Naval Infantry rotational deployments.

After conducting joint exercises with U.S. forces in October, Japanese forces launch surprise air- and sea-based attacks. Japanese aircraft strike while destroyers and frigates patrol Kunashiri. Japan deploys short-range air defense assets to the island. The United States claims it is unaware of Japan's plans but reaffirms its treaty commitment to defend the Japanese homeland if it is attacked.



Russia establishes a joint task force from its Eastern Military District to regain control of its former land in the east.

**Figure 3.4**  
Kuril Islands Geographic Orientation



**Figure 3.5**  
Kuril Islands Scenario Strategic Considerations



**Access to Okhotsk**

With its current claims of the islands, Russia can block access to the Sea of Okhotsk, Russia's Pacific fleet SSBN bastion. Russia can control access by surface and subsurface ships in wartime.



**U.S. basing rights**

Russia believes that if Japan controls even part of the island chain, the United States could negotiate basing rights to the Kurils. This would directly threaten Russia.



**Strategic assets**

Iturup is the only Russian source for the rare metal rhenium, which is critically important for electronics production.

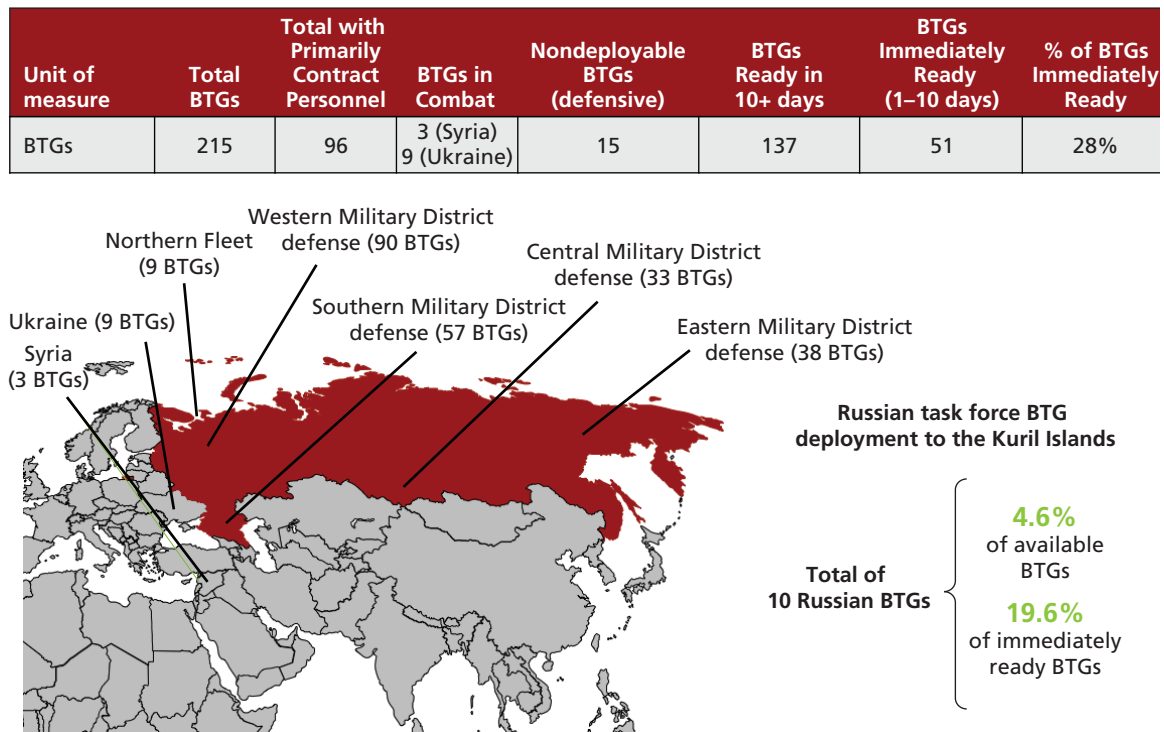


**Geopolitical factors**

U.S. treaty commitments to Japan will influence Russian decisionmaking about strikes on Japan (e.g., ballistic missile defense, air power, sea power).

NOTE: SSBN = ship, submersible, ballistic missile, a nuclear missile-equipped submarine.

**Figure 3.6**  
**Kuril Islands Scenario BTG Analysis**



Spetsnaz.<sup>5</sup> We further broke down the number of BTGs composed primarily of contract soldiers rather than conscripts. As we explain in Chapter Four, contract soldiers tend to be more effective than conscripts, so these groups are more relevant to high-order combat than primarily conscript-manned units. Our analysis identified 96 primarily contract-manned BTGs, keeping in mind that Russia seeks to man all groups with contract soldiers to maximize both deployability and capability.

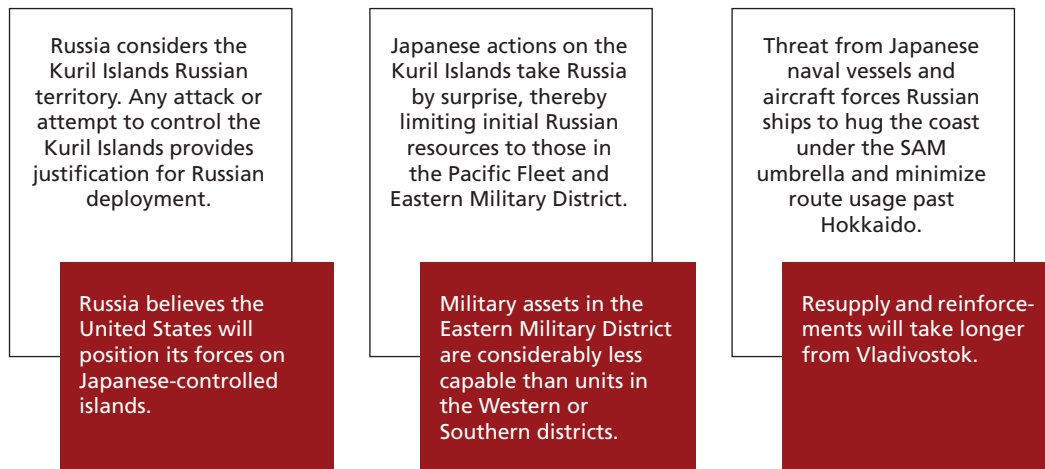
We also identified the number of BTGs already engaged in combat deployments. In this case, there were 12: three in Syria and nine in Ukraine.<sup>6</sup> We also determined that 15 BTGs would be firmly committed to home defense, regional defense, or other missions that would tie them to bases. Our OOB analysis showed that 137 of the remaining 179 BTGs would be ready to deploy after a ten-day notification period. That left 51 groups available for immediate deployment. Therefore, the Kuril deployment requires 4.6 percent of all BTGs and 19.6 percent of immediately ready BTGs.

Figure 3.7 presents assumptions that we generated through our research of the geopolitical and military situations circa 2017. They project only slightly into the realm of notional construct: It is true today that Russia considers the Kuril Islands Russian territory, it is true that Russian military forces in the Eastern Military District are weaker than those in the west, and it is true that the Japanese Maritime Self-Defense Force could hold the Russian deployment

<sup>5</sup> The total number within the RGF alone is probably far smaller—perhaps only 100.

<sup>6</sup> This number changes for the Syria and Ukraine scenarios.

**Figure 3.7**  
**Kuril Islands Scenario Assumptions and Notional Impact**



at risk.<sup>7</sup> The dark red boxes to the lower right of each assumption describe the likely, notional impact of each assumption on the RGF deployment in the notional scenario.

Figure 3.8 is the request for forces from the Russian government to RGF commanders. It reflects the political request to the RGF for ground combat capabilities to be deployed to the area of operations. We present the request for forces in the form of a task-organized OOB chart derived from our unclassified OOB. We used subject-matter expert analysis to determine appropriate force requirements based on the notional mission, the real-world geographic location, and the notional enemy forces. We show the number and percentage of BTGs required by the scenario to show the deployment's impact on the total RGF inventory of BTGs and on notional existing missions, including those in Syria and Ukraine.

For this scenario, Russia has notionally decided to deploy a combination of Naval Infantry, air assault, air defense, and motorized rifle troops as the core of the ground combat contingent within the larger joint force. The ground deployment is supported by a mix of combat aviation, submarines, and naval escort ships to secure the lines of communication and to provide close air support and deep interdiction strikes as needed. Each unit symbol is shown on the map. These symbols are U.S. military operational graphics depicting unit type, size, and, in some cases, unit designator.<sup>8</sup>

Figure 3.9 uses the same operational graphics to show the forces on the Kuril Islands at the beginning of the notional scenario. Here, the Russians have two partial regiments of mechanized infantry, while the Japanese have a brigade-sized joint task force consisting of infantry, naval infantry, aviation, and SAMs. The inset map shows the two airfields available to the Russian joint task force.

<sup>7</sup> See, for example, Dmitri Trenin and Yuval Weber, *Russia's Pacific Future: Solving the South Kuril Islands Dispute*, Washington, D.C.: Carnegie Endowment for International Peace, December 2012; for background on Japanese capabilities, see Japanese Maritime Self-Defense Force, "About JMSDF," webpage, undated.

<sup>8</sup> For a primer on reading operational graphics, see Army Doctrine Publication 1-02, 2018, ch. 3.

**Figure 3.8**  
**Russian Unit Sourcing in the Kuril Islands Scenario**

Unit	Source
Naval Infantry	40th Naval Infantry Brigade
2 VDV BTGs	83rd Air Assault Brigade
2 VDV BTGs	11th Air Assault Brigade
2 BTGs	64th Motorized Rifle Brigade
2 BTGs	57th Motorized Rifle Brigade
Air defense	1530th SAM Regiment
Landing ships	100th Landing Ship Brigade
Fighter aircraft	23rd Fighter Regiment
Fighter aircraft	120th Aviation Regiment
Ground attack aircraft	277th Bomber Regiment
Long-range aviation	Ukrainka Air Base
Long-range aviation	Belaya Air Base
Fast-attack submarines	19th Submarine Brigade and 10th Submarine Division
Naval escorts	36th Brigade and 165th Division (surface vessel)

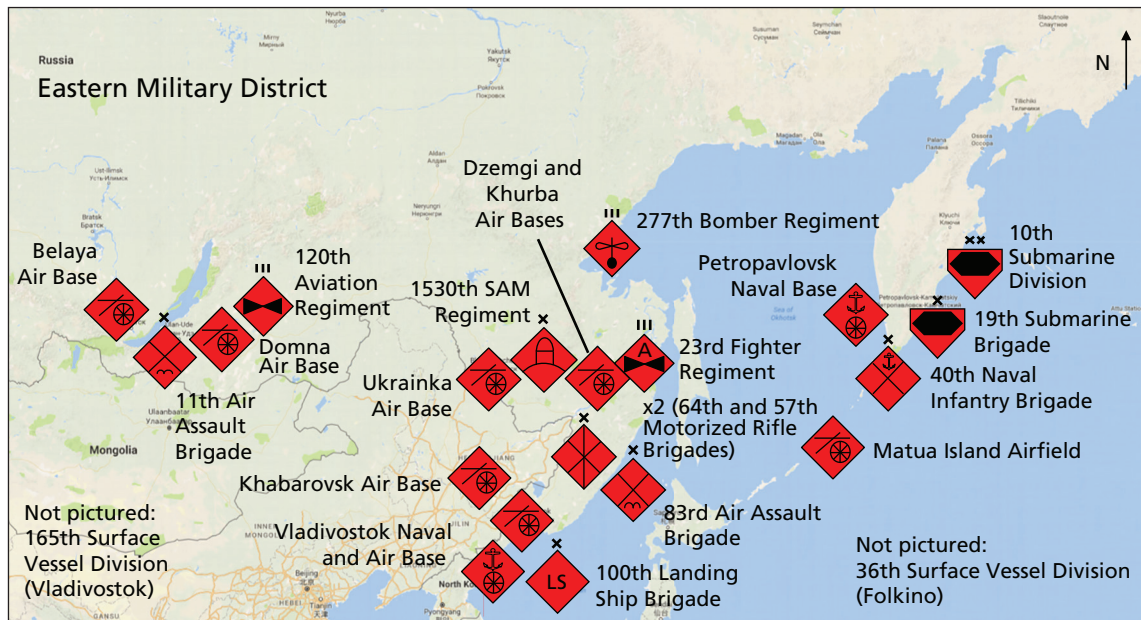
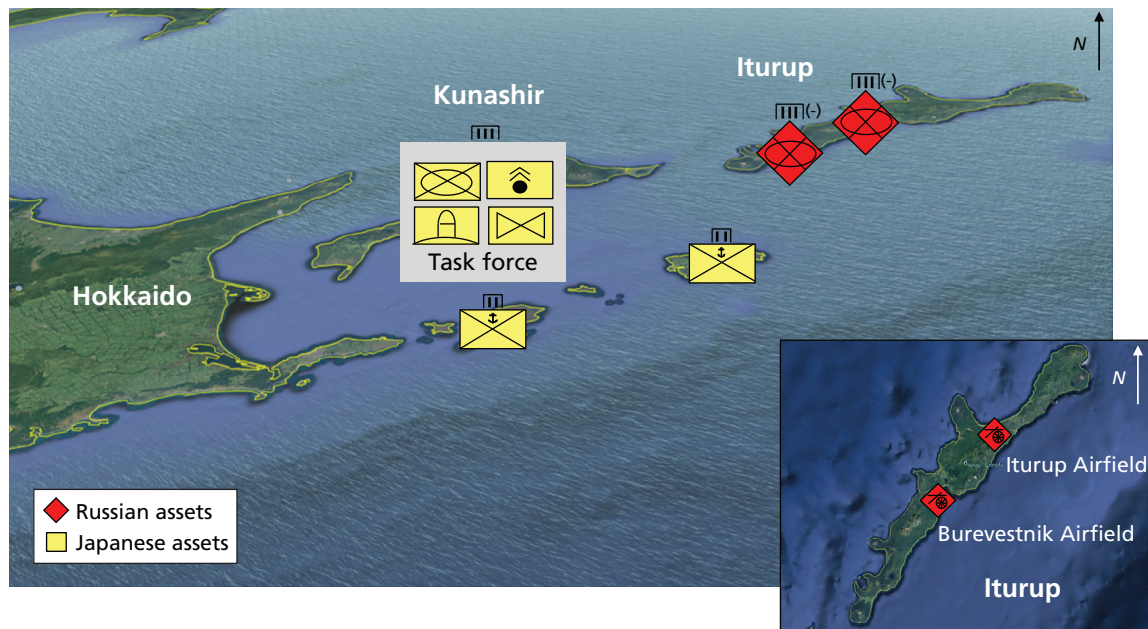


Figure 3.10 depicts the Russian joint force that deploys to the Kuril Islands. It consists of a task-organized joint task force headquarters drawn from the 5th Combined Arms Army and the 68th Army Corps, four motorized rifle BTGs, a task-organized artillery group attached to the BTGs, an airborne battalion, an air defense battalion, a support battalion, the equivalent of an understrength aviation regiment, a naval task group, and an understrength Naval Infantry brigade. The ground force includes more than 500 combat vehicles.

**Figure 3.9**  
**Notional Predeployment Force Laydown in the Kuril Islands Scenario**



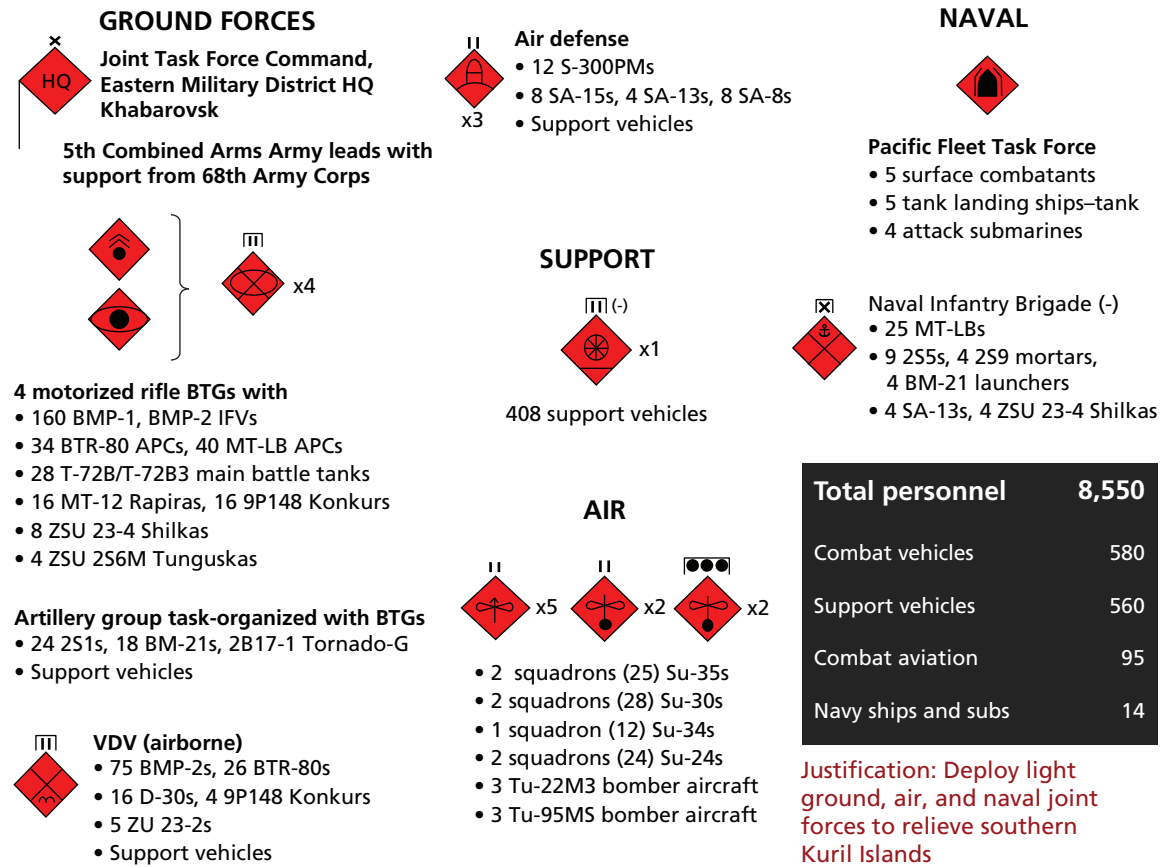
Figures 3.11–3.13 provide an overview of the movement plan to the Kuril Islands area of operations. Figure 3.11 summarizes the deployment approach, broken down into three successive waves of movement from the Russian mainland to the Kuril Islands. Wave 1 consists of an initial movement of advance ground forces. Wave 2 is the primary ground force movement from the Russian mainland. Wave 3 is the operational movement of Russian forces into combat against the Japanese Self-Defense Forces. The requested timelines for each wave initiation are, sequentially, 24 hours, 36 hours, and on order from the moment of initial notification that would immediately follow the civilian authority’s request for forces.

Figure 3.12 depicts the wave 1 ground force movement. In this wave, one battalion of VDV (airborne) forces, one understrength Naval Infantry brigade, and one company of mobile SAMs deploy to Iturup. This advance force will seize control of the local area around the airfields and set up an air defense zone to facilitate the safe movement of follow-on forces in waves 2 and 3.

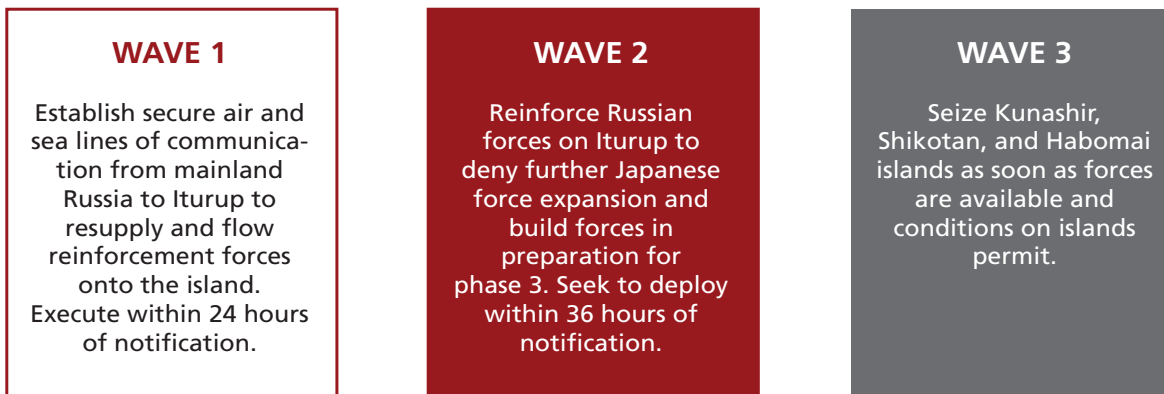
Figure 3.13 shows the wave 2 movements. In the second wave, Russia deploys a sustainment battalion and four mechanized infantry battalions. Units move by both air and sea. Forces in this wave expand the security bubble established in wave 1, build up supplies for the eventual combat phase, and establish the forward joint task force headquarters.

The following figures illustrate the movement plan in greater detail. Figure 3.14 is a flow chart of the process, from the release of the combat order to the initiation of ground combat. The combat order is the order to deploy following the request-for-forces acknowledgement. Once this order is given by the Russian Ministry of Defence, senior RGF leaders select ground forces for deployment. Even in an exigent situation, it could take a day or more to select units that are not already on high alert. Once units are selected, they are issued orders to deploy, which then starts the clock on their deployment cycle.

**Figure 3.10**  
Russian Forces in the Kuril Islands Scenario



**Figure 3.11**  
Kuril Islands Scenario Deployment Waves





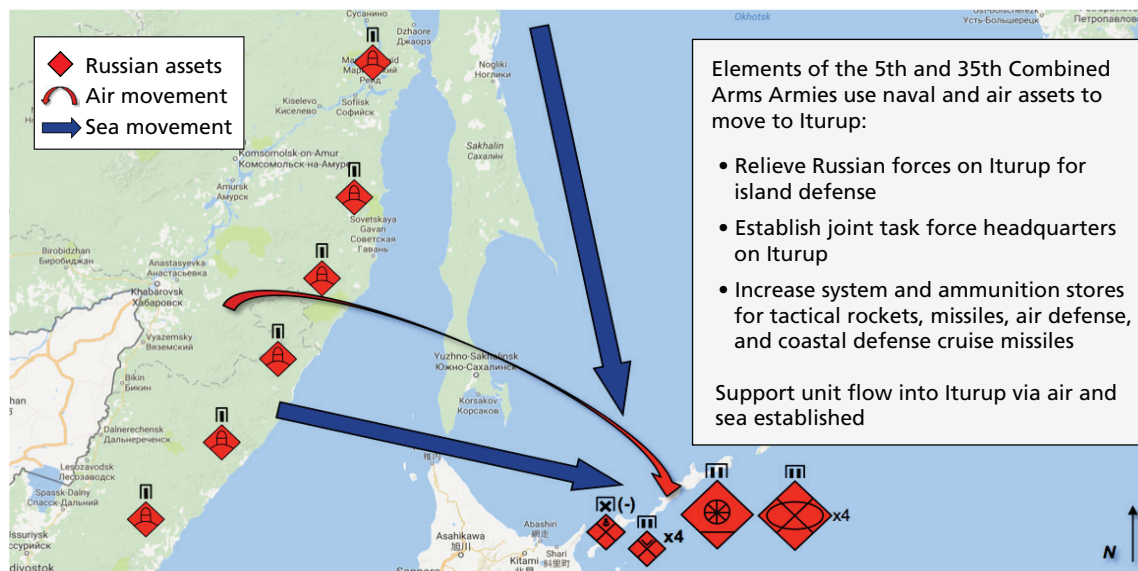
**Figure 3.12**  
Kuril Islands Scenario, Wave 1 Movement

**Establish secure lines of communication to and from Iturup, resupply, and move reinforcements to Iturup**



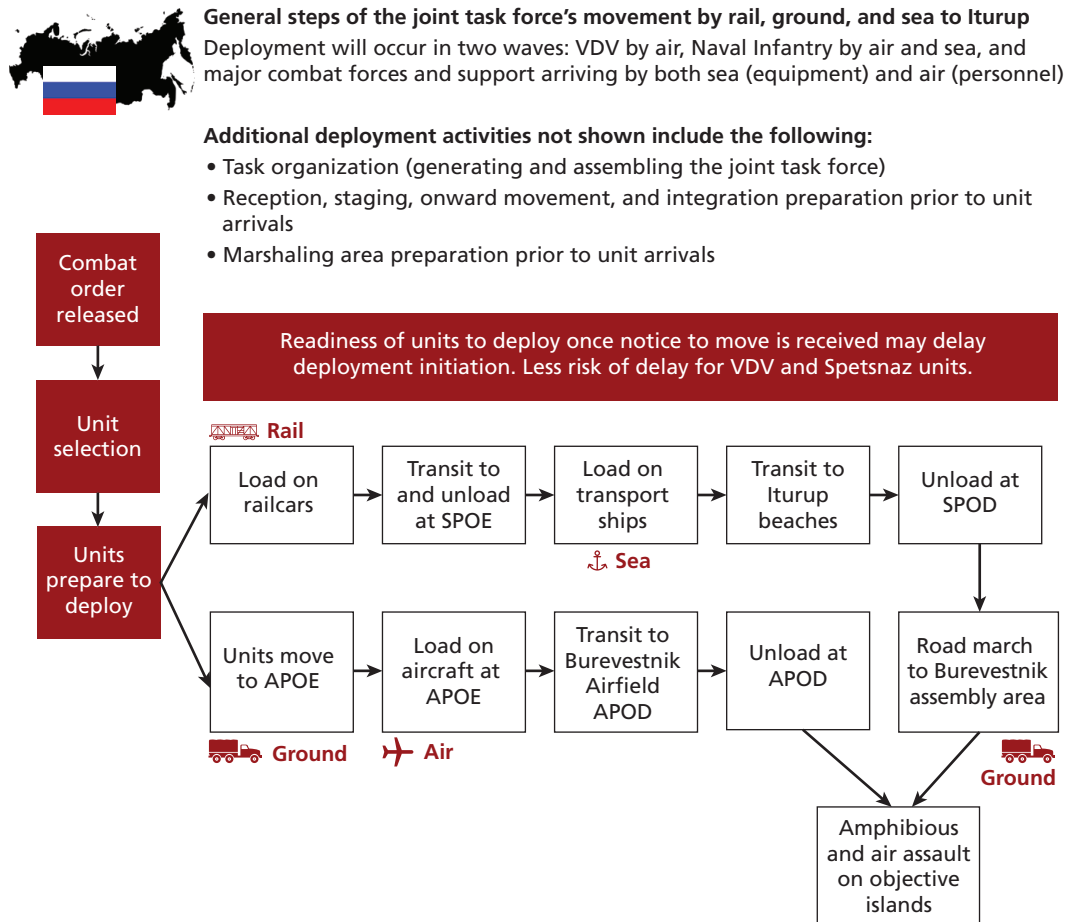
**Figure 3.13**  
Kuril Islands Scenario, Wave 2 Movement

**Establish secure lines of communication to and from Iturup, resupply, and move reinforcements to Iturup**



NOTE: Smaller icons denote units that arrived in wave 1.

**Figure 3.14**  
**Kuril Islands Scenario Movement Plan**



All units will conduct some road or rail movement to either an SPOE or an APOE. From there, they load onto ships or aircraft, move to the debarkation area, and offload at an SPOD or APOD. In this scenario, the units that move by sea require additional ground movement to the joint assembly area to prepare for the combat assault.

Our analysis of this air movement suggests that multiple sorties would be required using organic military transport aircraft alone. It would take approximately 3.5 days to move the entire force from the APOE to offload at the APOD. Note that this 3.5-day estimate does *not* include the time it would take to release a combat order, select units, prepare for deployment, and move units by ground from their bases to the port of embarkation. For nonairborne units, this could add days, weeks, or even months to a deployment. For a ready-alert airborne unit on 72-hour deployment notice, this might result in a best-case air closure time of 8.5 days (3.5 days from APOE to APOD plus five additional days) from the point at which the Russian political leadership decided to conduct the operation. Table 3.1 provides rough estimates of the number of days necessary for each additional event. These estimates are derived from subject-matter expert analysis of historical U.S. and Russian deployments and firsthand experience with historical deployments.

**Table 3.1**  
**Estimated Additional Days to Close a Ready Airborne Unit, Kuril Islands Scenario**

Action	Additional Days
Release combat order	0.5
Select units	0.5
Prepare for deployment	3.0
Move to APOE	1.0

These rough estimates of additional time apply only to the most-ready VDV units. A Russian BTG in an organization like the 5th Combined Arms Army might be at any point in its normal training and readiness cycle when the unit selection process is completed. It might be prepared to deploy within 72 hours but, in all likelihood, it would take up to ten days to prepare for deployment—hence our “immediately ready” category in Figure 3.6. Even this is an optimistic, best-case timeline. In a real case of immediate, no-notice deployment orders, troops would have to be recalled from leave, equipment in depot maintenance would have to be recalled or replaced with equipment from other units, supplies (including unique ammunition items that might not be locally available in sufficient quantity) would be gathered from many different bases, and some combat rehearsals would have to be performed. A reinforced mechanized or even motorized battalion has far more vehicles to embark, transport, and debark than an airborne unit. In developing our scenarios, we assumed some advance warning to the RGF to allow for deployment preparation, but due to the many vagaries associated with deployment preparation, we did not assign a specific number of days to each unit for the *prepare-to-deploy* phase.

Figure 3.15 presents assumptions and basic calculations for air movement in the Kuril Islands scenario. We assumed that, in this scenario, the airborne force would move its personnel and some equipment by air; this is standard operating procedure for these units. We also assumed (1) that China would allow overflight by Russian aircraft, (2) that Japan would not be inclined to (or could not) interdict the transport aircraft, (3) that loading at the APOE would take one full day, (4) that there could be a maximum of four aircraft on the ground at any one time at the APOE, and (5) that the Russian airfield at Burevestnik would operate 24 hours to speed up the deployment.

Closure can take even longer as movement friction and deviations compound the normal challenges associated with deployment preparation. Figure 3.16 shows friction points and possible deviations from the best case for airlift, as well as mitigating options available to Russian leadership. Aircraft availability is a significant potential deviation. As we discussed in Chapter Three, equipment wear, environmental conditions, situation-dependent combat degradation, and other issues will erode best-case estimates of asset availability to some degree in every case. If there is significant asset loss—say, 10 percent or more—major changes in the deployment plan might be required. Mitigating options in the Kuril Islands air movement case include the use of commercial aircraft, a shift to slower sea movement, or the use of additional airfields.

Figures 3.17 and 3.18 present assumptions and possible deviations for sealift. Figure 3.17 describes two sealift waves. Each wave has associated assumptions. For the first wave, we assumed that the Naval Infantry would use organic amphibious shipping to move significant

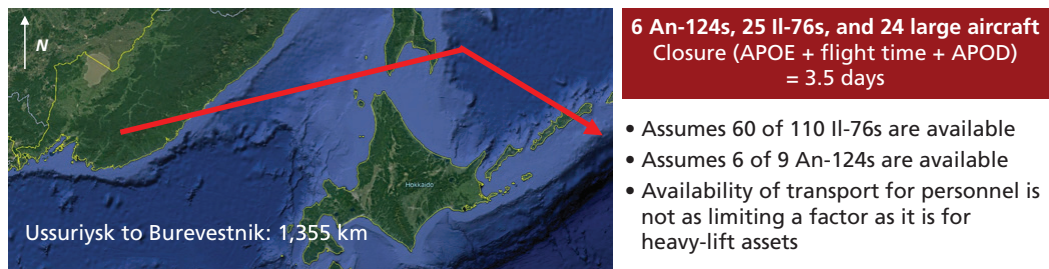
**Figure 3.15**  
**Kuril Islands Scenario Transport Assumptions**

**Assumptions about air asset demand in wave 1:**

- VDV moves personnel, equipment, and some classes of supply by air.
- China allows overflight, and Japan does not interdict Russian transport aircraft.
- 1-day load time required at the APOE with a maximum of 4 aircraft on the ground, assuming 24-hour operations at Burevestnik.

Assets to lift	Equipment and supplies	Personnel
83rd Air Assault Brigade	3 Il-76s or 15 An-124s	26 small or 12 large aircraft
11th Air Assault Brigade*	4 Il-76s or 2 An-124s	26 small or 12 large aircraft
Sortie totals	40 Il-76s or 17 An-124s	52 small or 24 large aircraft
% of estimated available fleet	66% of Il-76s 283% of An-124s	Not relevant: Availability for personnel lift is not a limiting factor; Russia has used civilian and other government aircraft to transport troops to Syria.

\* 11th Air Assault Brigade consists primarily of personnel.



NOTE: Sortie calculations are based on weight and do not include class supplies. Class supplies and unforeseen loading factors would increase the number of sorties required.

portions of its ground combat assets. There is a planned one-day load time at the SPOE, three days of offload at the SPOD (including ground marshaling, which is time-consuming), and a consistent ship speed of 18 knots.

Wave 2 is more complicated and potentially debilitating to the joint task force's mission. This is the movement of the main ground force and almost 1,000 combat and sustainment vehicles. We assessed a significant risk for the commander in this movement. If the commander chooses to use organic naval lift, the full closure time will be more than two months from the issuance of the combat order. This would effectively eliminate any strategic surprise against the Japanese and place the entire operation at risk. A much faster closure rate of five to six days could be achieved with nonorganic roll-on/roll-off commercial shipping. However, vulnerability rises sharply with this option: The loss of a single large commercial ship could reduce ground combat power by 25 percent, putting Russia well below the initial 1:1 combat ratio estimated in the best case.

This trade-off between speed and risk presents something of a no-win situation for the Russian commander. There is a choice between closing the force so slowly that it loses all surprise and momentum or closing the force quickly at the risk of losing any reasonable chance of success in combat. *Second-wave sea movement is the critical weak point in the Russian ground force deployment.*

**Figure 3.16**  
Possible Deviations from the Best Case for Airlift in the Kuril Islands Scenario

**From APOE**

**Potential risks**

- Limited number of heavy-lift aircraft (An-124) across force required by multiple sorties
- Increasing maintenance delays/time
- Nonmilitary aircraft not available due to risk of interdiction

**Mitigating options**

- Additional commercial aircraft can be used for cargo and personnel if risk is low.
- If risk of interdiction is high, there will be increased reliance on organic assets with slower closure times.
- Alternative: High risk of air interdiction requires shift to sealift, which will slow closure; ships are also vulnerable.

**En Route**

**Potential risk**

Japan attempts to interdict transport aircraft as they fly past Hokkaido.

**Mitigating option**

Fighter escorts, additional sorties to distribute cargo and minimize loss of combat power per aircraft lost

**At APOD**

**Potential risks**

- Degraded maximum number of aircraft on the ground at APOD
- APOD service crew limits
- Maintenance availability
- Spare parts availability

**Mitigating options**

- Deploy additional contractor or military personnel to assist with airfield operations and security
- Deploy additional equipment, capabilities, and maintenance supplies as insurance
- Use Iturup Airfield as well

Burevestnik Airfield and nearby marshaling areas



**Realistically, airlift timelines may be delayed by one or more days beyond initial estimates by extenuating circumstances.**

Also note that the loss of any organic amphibious ships would undercut the Russian amphibious operation from Iturup to Kunashir. Movement of the ground force elements from the assembly area to the objective area—a phase of the operation that we did not assess in our scenario—would be quite challenging even with all available amphibious ships.

As with air movement calculations, the sea movement calculations represent only the port-to-port shipment of RGF units. Using the same calculations in Table 3.1, Table 3.2 shows how the pre-embarkation and post-debarkation movements for the sea units might accrue an additional seven days from the political decision to close the force at the assembly area for the offensive combat operation. We estimated an optimistic three days for deployment preparation, assuming the units had been given a general deployment warning prior to the release of the combat order. In the case of an immediate, no-notice order, deployment preparation would take up to ten days for an immediately ready brigade combat team or additional weeks or months for less-ready units.

Figure 3.18 provides further detail on the risk posed by Japanese interdiction. It shows range rings for Russian air defense missiles, as well as the range of Japanese land-based, long-range anti-ship missiles. In addition to these anti-ship missiles, the Japanese Maritime Self-Defense Force can deploy aircraft, surface ships, and submarines from bases on both the northernmost main island of Hokkaido and the central main island of Honshu to strike Rus-

**Figure 3.17**  
**Kuril Islands Scenario Sealift Assumptions**

**Assumption set 1 (first wave to Iturup)**

- Naval Infantry equipment and some personnel travel by sea using organic assets and land near the Burevestnik Airfield marshaling area. Personnel who do not fit on amphibious ships travel by air.
- Fleet is adequate for initial wave and does not require roundtrips to close the force.
- Force needs 1 day to load to SPOE, 36 hours to unload at beaches near Burevestnik Airfield, with sea travel at 18 knots.

<b>Total cargo</b>	50 vehicles, 1,066 personnel*
<b>SPOE</b>	Petropavlovsk-Kamchatsky
<b>Sorties</b>	3 by Project 775, 1 by Project 1171 ships

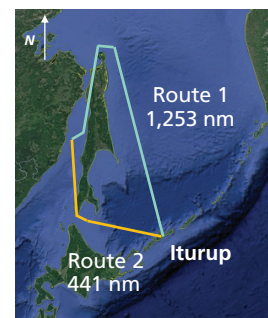
**Force closure time:**  
**4.5 days**

\* The remaining 1,084 personnel travel by air on ~8 large aircraft.

**Assumption set 2 (second wave to Iturup)**

- Motorized rifle BTGs, sustainment units, equipment, and class supplies travel by sea, personnel by air.
- Forces unload at beaches near Ozero Kuybyshevskoye to minimize at-sea vulnerability and road march across the island to Burevestnik Airfield
- Japanese interdiction threat requires ships to hug the coast under the SAM umbrella and minimize use of the Hokkaido route.

<b>Total cargo</b>	56 tanks, 885 other vehicles
<b>SPOE</b>	Sovetskaya Gavan
<b>Sorties</b>	Smaller amphibious vessels (moving 97 vehicles total): 8 round trips each  Larger amphibious vessels (moving 844 vehicles total): 9 round trips each



We assume that route 1 is taken by longer-range vessels, route 2 for short-range movement to avoid use of Vladivostok.

**Using only organic amphibious vessels, it will take at least 62 days to close the force. If large nonmilitary roll-on/roll-off ships are available, it could close in 5–6 days. But slower-moving vessels requiring a capable port increases vulnerability to interdiction. Using fewer vessels reduces sorties, but the loss of one ship could reduce combat power by 25%.**

NOTE: The analysis did not include motor transport or other support units. Adding these units would increase lift demands and closure times. Because of the short reaction time required, it is assumed that the only amphibious assets available are those in the Pacific Fleet, including two Project 775/II, one Project 775/I, one Project 1171, one Project 21820, one Project 11770, and three Project 1176 vessels. Smaller vessels are faster than larger vessels but have shorter operational ranges.

sian shipping en route to the Kuril Islands.<sup>9</sup> Japanese F-15–class fighter-bombers operating out of Chitose Air Base on Hokkaido are also within strike range of Iturup Airfield and the surrounding waters.<sup>10</sup> Japanese commanders could choose to forward deploy aircraft to Mendeleyevo Airfield in central Kunashir Island, located approximately 100 nautical miles

<sup>9</sup> Japan has three submarine bases on the northern end of Hokkaido, well within short-range interdiction distance of the shipping lanes to Iturup (Japanese Air Self-Defense Force, “Distribution of JASDF, Northern Area,” webpage, undated).

<sup>10</sup> Japanese Air Self-Defense Force, undated.

**Table 3.2**  
**Estimated Additional Days to Close by Sea, Kuril Islands Scenario**

Action	Additional Days
Release combat order	0.5
Select units	0.5
Prepare for deployment	3.0
Load on rail cars	1.0
Move to APOE	1.0
Road move: APOD assembly area	1.0

**Figure 3.18**  
**Possible Deviations from Best Case for Sealift in the Kuril Islands Scenario**

**From SPOE**

**Potential risks**

- All military shipping availability in the Pacific Fleet may not be available or at high readiness.
- It would take days or weeks to charter nonmilitary ships.
- Smaller ports will slow loading times if they are selected.
- Japan might attack ports during loading.

**Mitigating options**

- Divert additional military vessels from Black Sea
- Air-deliver lighter vehicles from APOE to APOD (still at risk of interdiction, still a slow closure rate)
- Ensure that the port is covered by SAMs and defensive counter-air assets.

**At SPOD**

**Potential risks**

- Large-scale amphibious landing (Russia has limited recent experience)
- Limitations on personnel reception, staging, onward movement, and integration

**Mitigating options**

- Increase reception, staging, onward movement, and integration capability and deploy additional port operations personnel (commercial or military)
- Deploy additional drivers (commercial or military) to assist in clearing beaches for other traffic

**En Route**

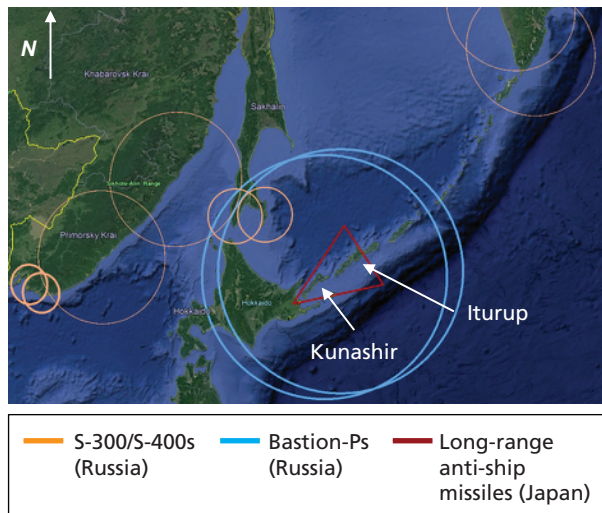
**Potential risk**

- Japan (or the United States) may attempt to interdict sealift vessels with aircraft or long-range missiles.
- Weather may slow travel times.

**Mitigating option**

- Fighter and naval escorts can reduce vulnerability.
- Additional nonmilitary sorties (if available) could distribute cargo and minimize loss of combat power per aircraft lost
- Supplement air defense umbrella, defensive counter-air capabilities, and combat air patrols.

**High risk of interdiction and large attrition rates**



NOTE: The S-300 and S-400 are Russian air defense missile systems. The K-300 Bastion-P is a mobile coastal defense anti-ship missile system. Range rings for these systems were estimated by averaging ranges from multiple sources during our OOB analysis.

from the Iturup Airfield.<sup>11</sup> They could also deploy advanced multiple-launch rocket systems to the northern tip of Kunashir to range Iturup airfield at approximately 100 kilometers.<sup>12</sup>

If the Japanese choose to interdict the Russian force, they could strike the SPOD marshaling areas. Large vehicle parks, vulnerable command and control nodes, and immobile ships at the port would offer up compelling targets. Robust Russian air and sea defenses could offset this risk and force the Japanese commander to reconsider an interdiction strike, but this might require offsetting early ground combat force deployment to include more air and sea defense assets.

Each of our scenarios focuses on Russian ground combat deployments to conflicts against local forces. We treated U.S. interdiction as a separate variable. In the Kuril Islands scenario, we examined the threat posed by the Japanese Self-Defense Forces and only indirectly addressed the possibility of U.S. interdiction. Although we do not present a detailed analysis of U.S. involvement in the scenario, reconnaissance and strike elements based in Japan would be well positioned to make the Russian operation all but untenable without significant reinforcement of strategic air and naval assets.

### Summary of the Notional Kuril Islands Scenario

In this notional scenario, the Russian commander was able to quickly deploy sufficient forces to secure the few built-up areas on Iturup and establish a reasonably capable air defense umbrella. However, massing sufficient forces to attack and seize Kunashir would be significantly more challenging. Wave 2 of the sea movement highlights the general shortcomings in contemporary RGF deployment capability outside of Russia's Western and Southern military districts. Lack of sufficient organic transport and amphibious vessels makes the operational concept untenable if the commander assumes the possibility of Japanese interdiction. Thus, Russia must accept a safe but slow two-month closure of its ground force or risk a Japanese attack en route on large commercial ships. The threat of Japanese interdiction could be mitigated but not eliminated by the use of escort vessels and aircraft operating out of the Eastern Military District.

Even with escort, screening, and air defense, it would be almost impossible to prevent just one Japanese aircraft, land-based missile, or submarine from striking a vulnerable non-military roll-on/roll-off ship and sending a quarter of the Russian force to the bottom of the Sea of Japan or the Sea of Okhotsk. Loss of two or three organic naval ship assets over the course of the two-month deployment might set Russia back, but we assume that it would move additional ships into place over the two-month deployment to make up for maintenance and combat losses.

This scenario examined only one of many possible operational approaches to securing Iturup. Another approach would be to attack the Japanese to the south, on Kunashir, to dis-

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<sup>11</sup> Aircraft crews typically measure distance in nautical miles. Ground artillery crews typically measure distance in kilometers. Therefore, we use nautical miles for the air distance measurement and kilometers for the ground distance measurement.

<sup>12</sup> These forces would also be vulnerable to Russian long-range strike. Distances were calculated using Google Earth. Japanese Ground Self-Defense Force M-270 multiple-launch rocket systems could be equipped with long-range missiles capable of firing more than 100 kilometers. See, for example, Mary Kate Aylward, "Then and Now: Long Range for the Modern Age," *Army AL&T*, April–June 2018.



rupt attacks on the Russian deployment. This could be accomplished with direct amphibious assault, airborne assault from the Russian mainland, or both. Direct assault on Kunashir (or perhaps even raids into northern Hokkaido) would significantly improve Russia's prospect of surprise. If executed vigorously with the support of air, naval, and, perhaps, long-range ground-based missile strikes, it could succeed.

However, this approach has many significant limiting factors, including the small number of available Russian amphibious ships and transport aircraft, the relative size of the Japanese defending force against the initial wave of Russian forces, and the difficulty of reinforcing and resupplying the initial invasion force from safe Russian ports (outside the range of Japanese interdiction and well within the main Russian SAM network). Moving directly to Iturup with air defense, electronic defense, and immediate resupply capabilities for the attacking force is the only logical approach. Unfortunately for the Russians, in this notional scenario, the logical approach appears to be operationally unsound.

Although Chapter Four draws findings from our notional scenarios, we do not present the other cases in the same detail as this one. For a more thorough treatment of the five other scenarios that informed our analysis, as well as our +1 Ukraine scenario, see the companion report, *Russia's Limit of Advance: Scenarios*.<sup>13</sup>

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<sup>13</sup> Connable et al., 2020.



## Analysis of RGF Deployment Capability

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This chapter presents our analysis of RGF deployment capabilities. It is derived from the three components of our research: (1) the historical case studies, (2) OOB analysis, and (3) notional scenarios. We viewed the notional scenarios as an analytic tool to derive real-world conclusions about Russian deployment capability. All the calculations in the scenarios were made using real-world planning considerations and actual—if only generally accurate—Russian equipment and transportation network data. Our analysis focused on the movement of forces to the area of operations.

The first part of this chapter presents aggregated results from the six notional scenarios, showing where the RGF and the military transport system were stressed by operational requirements. Then, we examine observed strengths and weaknesses in the ground combat deployment system. We conclude with our summary analysis of the RGF's overall deployment capability.

### Stresses on Deployment Capability Across Six Notional Scenarios

Our notional scenarios ranged from high- to low-intensity, with deployment distances ranging from border to far. In each scenario, Russia was required to deploy a joint task force centering on an RGF BTG.

Table 4.1 presents findings from the application of the RGF deployment calculator to each of the six scenarios developed for this research effort and used in our analysis: Kazakhstan, Kuril Islands, Tajikistan, Serbia, Syria, and Venezuela.<sup>1</sup> Each scenario structure generally replicated the Kuril Islands model presented in Chapter Three, although the scenarios are quite diverse in terms of mission, force, and lift requirements. For each scenario, we designed a notional political situation and mission, built an OOB appropriate to the task, and calculated the lift and speed of the deployment using the RGF deployment calculator. Analysis of these calculations centered on the stress that each deployment would place on organic Russian military transport networks and lift assets.

Rows in Table 4.1 are divided into three sections. The first two describe the forces to be moved, the impact of the transport asset demand on Russia's overall military transportation capacity, and the number of days required to transport the force to closure using only military equipment in the first and second waves of the deployment, respectively. Note that the closure

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<sup>1</sup> Recall that the Ukraine scenario involved too many forces to allow precise analysis and therefore was treated as an additional, informative scenario.

times include movement from ports of embarkation to the ports of debarkation only. Actual closure time from the issuance of the combat order would include additional days. See examples of how we calculated additional days of movement in Tables 3.1 and 3.2 in Chapter Three.

The final row in the table presents analytic notes on the major stress points. These stress points are color-coded according to the level of demand placed on Russian lift capabilities or the time required to deploy to an area of operations (closure time). These ratings required some subject-matter expertise in interpreting the data. Given the structural differences between the scenarios, it was not possible to develop a precise numeric rating scale. Our color-coding is therefore descriptive rather than empirically conclusive.

For asset availability, green indicates that the required force does not stress the overall force availability of the RGF, the airlift requirement does not stress overall available air transport aircraft availability, and the sealift requirement does not stress overall available sea transport asset availability. Yellow indicates low-moderate stress on any of these three assets. In other words, the deployment would cause Russian leaders to carefully consider asset availability for other mission requirements. Orange indicates high-moderate stress on any of these assets: The deployment would force Russian leaders to make practical trade-offs with other missions and, perhaps, lower operational tempo elsewhere.

Red indicates high stress or excess demand on any of the three assets. For example, the red shading for airlift to Venezuela in wave 1 shows high stress on Russian military airlift capabilities. The tyranny of distance, restrictive overflight access, inadequate refueling stopover access, and long routes require transport aircraft to carry less cargo. This deployment would use so many assets that it would necessarily require the cancellation of other national missions and would make additional missions requiring airlift deployment untenable. In our analysis of sealift requirements for the Kuril Islands case, we determined that organic sealift was insufficient to meet the mission requirement: The 60 or more days required to move forces in the second wave made the deployment all but untenable using organic military sealift.





Assigning colors to closure times required slightly more subjectivity than the assessments of calculated lift requirements. The central requirement for green coding was mission demand: Did the closure time allow the commander to execute the assigned mission in a timely and effective manner? In the Kazakhstan case, the force closed in seven days from port of embarkation to port of debarkation. We assessed this to be timely and sufficient to allow the commander to effectively employ the force. In the Syria case, in which the RGF deployed a ground force to rescue an encircled Russian ground combat element, we determined that the estimated 32-day closure time placed the mission at high-moderate risk.

Table 4.1 was derived from notional scenarios with lift and closure-time estimates drawn from reasonably accurate data. Therefore, it speaks directly to RGF deployment capability as of mid-2018. There are 43 assessment cells in the table. Of these, 18 indicate high-moderate (orange) or severe (red) stress on a capability or timeline. More importantly, all the scenarios had at least one orange or red assessment, meaning that the commander would have difficulty executing the mission or that the operation would place other global military activities at risk by stressing force or lift capacity.

There are clear disparities between the cases, resulting primarily from the unique mix of forces, distances, route availability, and geography that affect the deployments. For example, there are far more red (highly stressing) factors for the *border* Kazakhstan scenario than for the *near* Tajikistan scenario. Although the straight-line distance favors Russia in the Kazakhstan scenario, the larger number of forces, the geography of the movement, and the types of

**Table 4.1**  
**Summary Analysis of Scenarios**

Wave	Scenario							
	Kazakhstan (border)	Kuril Islands (near)		Tajikistan (near)	Serbia (far)	Syria (far)	Venezuela (far)	
Wave 1	6 VDV battalions 2 Spetsnaz battalions	4 VDV battalions	1 Naval Infantry brigade	1 Spetsnaz battalion 2 rotary-wing squadrons	1 Spetsnaz battalion	1 VDV battalion	1 VDV battalion 1 Spetsnaz battalion	1 VDV battalion 1 Spetsnaz detachment 0.5 Naval Infantry battalions
Asset demand	Exceeds airlift <sup>a</sup>	Stresses airlift <sup>a</sup>	Stresses sealift <sup>a</sup>	Stresses airlift <sup>a</sup>	No stress on airlift	Slightly stresses airlift <sup>a</sup>	Slightly stresses airlift	High stress on airlift <sup>a</sup>
Closure time (days)	~8	~4	~5	~2	~2	~5	~4	~7
Wave 2	10 mechanized infantry BTGs 3 air defense battalions 4 motor transport battalions	4 motorized rifle BTGs 1 motor transport battalion		6 motorized rifle BTGs 4 border troop detachments 1.5 artillery brigades 3 anti-aircraft battalions 2 motor transport battalions	1 motorized rifle brigade 1 motor transport brigade		2 motorized rifle BTGs 2 artillery battalions	4 motorized rifle BTGs
Asset demand	Slightly stresses rail	Exceeds sealift <sup>b</sup>		Slightly stresses rail	Exceeds sealift <sup>b</sup>		Exceeds sealift <sup>a</sup>	Exceeds sealift <sup>b</sup>
Closure time (days)	~7 <sup>b</sup>	~60		~9 <sup>b</sup>	~15		~32 <sup>a</sup>	~18 <sup>b</sup>
Major time drivers and stressors	<sup>a</sup> Uses all available inventory; multiple sorties <sup>b</sup> On border, but large Kazakh land mass increases travel times	<sup>a</sup> Large percentage of inventory used; threat of interdiction <sup>b</sup> Uses all available Pacific Fleet inventory; multiple sorties; amphibious landings (no nonmilitary assets); interdiction threat		<sup>a</sup> Rotary-wing; large demand on assets; self-deploy would take ~20 days <sup>b</sup> Southern east-west line not secure; must rely on northern east-west rail line; congestion	<sup>a</sup> Rerouting required because of NATO denial of overflight <sup>b</sup> Uses all available inventory; multiple sorties; amphibious landings (no nonmilitary assets)		<sup>a</sup> Organic deployment would take 32 days; must rely on nonmilitary assets, cutting closure time to ~8 days; requires Bosphorus Strait access	<sup>a</sup> Few friendly en route refueling options; range requires smaller payloads and more airlift assets <sup>b</sup> Cannot use organic sealift; must rely on nonmilitary vessels

-  Low stress on resources and generally sufficient speed.
-   Moderate stress on resources or restrictions on speed and forces.
-  High stress on resources and restrictions on speed and forces.

forces required for movement in that scenario place greater strains on the RGF and supporting organizations.

These conclusions do not mean that the RGF could not or would not seek to execute a given mission. In each case, we note that the Russian military could choose to hire or acquire civilian transport capability to help close the force. In some cases, this would make the closure time far more efficient. For example, in Chapter Three, we described the differences in closure time between organic and civilian transport–augmented movements at approximately 58 days (five to six days versus 63). All military forces, including the U.S. military, make wide use of civilian transport. Russia has demonstrated the effective use of civilian transport in Syria.

However, reliance on civilian transport comes with trade-offs. These assets are not specifically designed for military use. They are not camouflaged, they do not carry organic self-defense or military damage-control measures, and they are crewed by civilian workers who might or might not have experience working under combat conditions. Furthermore, military forces do not carry spare parts for nonmilitary lift assets, and these assets are not designed to carry the wide variety of military equipment that accompanies a standard BTG.<sup>2</sup>

The goal of this analysis was not to identify the point at which lift limitations make deployment impossible. Rather, the analysis was designed to show the limits of Russia's organic lift capability and to highlight trade-offs between organic and civilian lift assets. It is also important to take into account potential improvements to Russia's organic military transportation fleet, such as the acquisition of new aircraft and ships. However, as we noted in Chapter Three, some of the more optimistic acquisition plans might be aspirational rather than practical.<sup>3</sup>

Applying the RGF deployment calculator and determining the draw from each deployment on the overall force suggests three findings relative to Russian ground force deployment. First, the size and capability of its organic military transportation fleet is a major limiting factor in Russia's ability to deploy ground combat forces. Organic asset availability—even given our best-case assumptions—was inadequate in two-thirds of our scenarios. Second, although Russia has a large number of ground combat forces, its limited number of *immediately ready* ground forces make large combat deployments difficult. In the Kazakhstan case, which required a deployment along the Russian border, the size of the force required placed significant stress on the overall force vis-à-vis other requirements. Third, far deployments are particularly challenging for the RGF. Each scenario demanded the use of commercial assets to close the force. Venezuela, the only far case that exceeded 1,000 nautical miles from the Russian border (at approximately 5,000 nautical miles), placed high levels of stress on organic airlift, exceeded organic sealift capacity, and put the mission at risk with an excessive closure time

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<sup>2</sup> The issue of civilian crew limitations is often moderated by the use of military augments or military replacement crews. The United States uses its Merchant Marine force for this purpose during times of war, and it routinely augments civilian ships with military liaison and logistics officers during exercises and noncombat movements. Russia took a different approach in Syria by purchasing civilian ships and incorporating them into the Russian fleet for the specific purpose of resupplying the Syria expeditionary force. Russian civil airlines and transportation companies often use military-designed transport equipment (e.g., the An-124), so there are some opportunities to match civil assets to specific military equipment measurements and spare-part requirements.

<sup>3</sup> See, for example, Roger N. McDermott, *Russia's Strategic Mobility: Supporting 'Hard Power' to 2020?* Stockholm, Sweden: Swedish Defence Research Agency, April 2013..

for the deployment of the wave 1, combat-ready airborne force at approximately seven days, not taking into account the likely additional five days on either end of the port-to-port movement.

These calculations, case analyses, and overall findings only reflect the application of our RGF deployment calculator and ratio-of-forces analysis. We were able to draw several additional observations and conclusions from our research concerning Russia's ability to deploy ground combat forces. We were also able to draw additional conclusions about Russian capabilities. The remainder of this chapter describes various strengths and weaknesses in Russian ground combat deployment capability, with a continuing emphasis on force capacity, lift capacity, and speed of deployment.

## Russian Deployment Strengths

Military reforms under Russian President Vladimir Putin, structural reorganization, equipment modernization, and combat experience in places like Chechnya, Georgia, and Ukraine have helped reshape the RGF from the immediate post-Soviet doldrums into what many analysts believe to be an effective combat force with at least a moderate capacity for worldwide deployment.<sup>4</sup> Our historical case studies, OOB, and notional scenarios highlight other strengths of Russia's ground force deployment capability.

In this section, we make some comparisons between Russian and U.S. military equipment. These comparisons are presented to provide context for the primary audience of this report—U.S. military leaders, staff planners, and analysts—and a better understanding of the mobility of Russian equipment.<sup>5</sup>

### Excellent Deployment Capability Near the Western and Southern Military Districts

Russia developed its modern military capabilities with the express purpose of defending against a NATO ground invasion, nuclear attack, or both. This motivation necessarily led to a force and military base distribution that prioritized the western border area that now runs generally from Murmansk in the north to Dagestan in the south. Requirements to move efficiently along interior lines of communication, to rush forces to the front, and, if necessary, to mass forces to attack westward all demanded the creation of a dense network of rail, road, and airport links and nodes in western Russia. This western emphasis aligned with the natural development of Russia's population centers and civil transport networks. Russian ground forces can execute rapid, effective, and efficient road, rail, and short-range air movements within, between, and from the Western and Southern military districts using primarily organic transportation capabilities.

Operations within and near the Western and Southern military districts are also far less vulnerable to interdiction than deployments from the Central and Eastern districts and to areas far beyond the western border region. The Soviet Union viewed NATO air-delivered precision strike as a central threat. To counter this threat, Soviet (and, later, Russian) military

<sup>4</sup> For example, see Grau and Bartles, 2016; Michael Kofman, Katya Migacheva, Brian Nichiporuk, Andrew Radin, Olesya Tkacheva, and Jenny Oberholtzer, *Lessons from Russia's Operations in Crimea and Eastern Ukraine*, Santa Monica, Calif.: RAND Corporation, RR-1498-A, 2017. For a slightly different perspective, see McDermott, 2013.

<sup>5</sup> We did not conduct a full comparative analysis of Russian and U.S. equipment, nor is our overall analysis comparative by design. However, we include some limited comparative analysis in this chapter.

leaders built up a dense IADS running along the western border and centered on the area west of Moscow.<sup>6</sup> This defense network makes air interdiction operations against Russian forces in the western border area highly challenging, even unlikely, except in the event of high-order conventional war.

Terrain also gives the RGF an advantage in these districts. A lack of major terrain features, such as mountains or seas, between the border with Norway in the north and the edge of the Caucasus Mountains in the south has always made western Russia vulnerable to ground invasion. However, the relatively flat, open expanses that characterize many parts of Eastern Europe also provide an advantage in enhancing the speed and efficiency of ground deployments to these areas. Some river crossings might be required in an extreme combat situation, but, in general, bridge availability, bridge capacity, ground water saturation in low-lying areas, and urban buildup are the only significant terrain-limiting factors to east-west ground movement. There are no seas or mountain ranges to cross to move Russian forces into Eastern Europe. Matters grow a bit more complex in the Southern Military District, where the Caucasus Mountains straddle Russia's border. However, Russia proved capable of overcoming this barrier during its 2008 Georgia campaign.

### **Generally Lightweight and Compact Equipment for Deployment**

Our OOB analysis shows a trend toward Russian acquisition of larger and, in some cases, outsized military rolling stock.<sup>7</sup> The RGF, like the Soviet Army before it, has purchased some equipment that cannot be deployed efficiently, even by the largest transport aircraft.<sup>8</sup> However, for the most part, Russian armored and support vehicles are lighter and smaller than many of their Western counterparts. For example, the Russian T-90A main battle tank weighs approximately 47 tons, while the comparable U.S. M1A2 weighs nearly 70 tons.<sup>9</sup> When the RGF or Russian missile forces do develop a large vehicle for static defense, they often build a complementary mobile version. For example, the Pantsir S-1 air defense platform can be mounted on a large truck that is not practical for air transport, or it can be mounted on a BMP-3 IFV platform designed for air transport.<sup>10</sup> An average motorized or mechanized BTG would be quite difficult to deploy by air. Even with relatively low-weight equipment, air movement is inefficient and costly for units with significant numbers of vehicles. However, ground, rail, and sea deployments are fairly straightforward. For sea transport, the relatively small physical dimensions of Russian vehicles are also an advantage. The T-90A is approximately 22.5 feet

<sup>6</sup> Elliot M. Bucki, "Flexible, Smart, and Lethal: Adapting US SEAD Doctrine to Changing Threats," *Air and Space Power Journal*, Spring 2016; Paul Bernstein and Deborah Ball, *Putin's Russia and U.S. Defense Strategy*, workshop report, Washington, D.C.: National Defense University, August 2015.

<sup>7</sup> For example, the overall height of the 9K331 Tor-M1 air defense system may exceed the height of the access door on the An-124 transport aircraft. See U.S. Army Training and Doctrine Command, *Worldwide Equipment Guide, Volume II: Air and Air Defense Systems*, Fort Leavenworth, Kan., 2015b, p. 437, and "Volga-Dnepr," undated, p. 2.

<sup>8</sup> For example, the 2S7 Pion 203mm tracked howitzer was approximately 35 feet long.

<sup>9</sup> U.S. Army Training and Doctrine Command, *Worldwide Equipment Guide, Volume I: Ground Systems*, Fort Leavenworth, Kan., 2015a, ch. 4, p. 4; U.S. Army Program Executive Office Ground Combat Systems, *Program Executive Office Ground Combat Systems Equipment Portfolio 2015*, Warren, Mich., 2015, p. 10.

<sup>10</sup> U.S. Army Training and Doctrine Command, 2015b, p. 419.



long, while the current U.S. M1A2 Abrams is approximately 32 feet long.<sup>11</sup> Small vehicles take up less space, which allows more vehicles to deploy per ship.

### **Some Highly Capable Light Units Are Ready for Deployment**

Russian special operations forces (primarily Spetsnaz) and airborne forces (VDV) are generally highly capable and ready to deploy on short notice. Spetsnaz are the go-to units for Russian political and military leaders, and, at the time of this research, they were engaged in Syria, possibly eastern Ukraine, and other combat zones. Russia has a long history of developing capable airborne forces. This development process, which began during the Soviet period, has culminated in the present-day VDV.<sup>12</sup> Our notional scenarios relied heavily on the VDV for immediately ready units that could deploy primarily by air.<sup>13</sup> VDV equipment, such as the BMD-4M IFV, is specifically designed for air loading and delivery.<sup>14</sup>

### **Russian Deployment Limitations**

At the outset of this research effort, we surmised that the RGF was not as capable of deploying far outside of Russia's Western and Southern military districts as it was within or near those two districts. We believed that the Syria deployment included in our historical case studies was impressive on its face but revealed weaknesses that might reflect broader limitations across the force. Analysis confirmed this assessment: Several serious limiting factors need to be considered when assessing Russia's ability to deploy ground combat forces beyond its borders, and particularly beyond the two most heavily weighted military districts under the cover of the Russian air defense network. These factors pertain to organization and movement; in considering them here, we can gain insights that complement or expand upon the findings from the application of our RGF deployment calculator. Executing the notional scenarios in a wargame or military combat simulation would help answer further questions about the combat effectiveness of deployed RGF units.

### **Conscript Personnel Restrictions Limit Unit Deployability**

Russia's armed forces comprise a mix of contract and conscript soldiers. Contract soldiers are usually volunteers who are available for worldwide deployment without major restrictions.<sup>15</sup>

<sup>11</sup> U.S. Army Training and Doctrine Command, 2015a, ch. 4, p. 4; "M1A2 SEP," *Military-Today*, undated.

<sup>12</sup> David M. Glantz, *The Soviet Airborne Experience*, Fort Leavenworth, Kan.: Combat Studies Institute, U.S. Army Command and General Staff College, November 1984; Rod Thornton, *Organizational Change in the Russian Airborne Forces: The Lessons of the Georgian Conflict*, Carlisle Barracks, Pa.: Strategic Studies Institute, U.S. Army War College, December 2011.

<sup>13</sup> Recent reporting indicates that the VDV may acquire main battle tanks. This would increase airborne firepower but significantly decrease mobility. See "Источник: танковые роты ВДВ с 'биатлонными' Т-72Б3 начнут создавать до конца года" ["VDV Tank Companies with 'Biathlon' T-72B3 Will Be Created Before the End of the Year"], TASS, March 11, 2016.

<sup>14</sup> For information on the BMD-4M, see U.S. Army Training and Doctrine Command, 2015a, p. 167.

<sup>15</sup> There have been reports that Russian authorities have coerced or forced conscript soldiers to sign contracts in an effort to shift the manpower balance toward contract service. We were not able to verify the accuracy of this claim or determine whether this is a widespread phenomenon. See Iva Savic, "The Russian Soldier Today," *Columbia Journal of International Affairs*, April 18, 2010, and Zoltan Barany, "Resurgent Russia? A Still-Faltering Military," *Policy Review*, January 29, 2008.

Contract soldiers often serve several years and form the backbone of the noncommissioned officer corps. Conscripts are civilian-soldiers serving in the armed forces by law for 12-month tours, typically as junior enlisted soldiers.<sup>16</sup> Ostensibly, all Russian men age 18–27 are required to serve, but, in practice, many obtain deferments or dodge the draft, and the Russian military does not necessarily have the capacity to induct all possible candidates. Pay is low, and although treatment of conscripts is reportedly improving in the RGF, there is a long history of abuse that has made conscript service undesirable.<sup>17</sup> Short terms of service prevent conscripts from perfecting their military specialties, including the noncombat transportation duties that are essential to successful deployments. Units that include significant numbers of conscripts often suffer from degraded performance because conscripts are generally less experienced, less well qualified, and less capable than most contract soldiers. Between 25 and 50 percent of VDV personnel are conscripts.<sup>18</sup> Most other RGF units consist of a mix of conscripts and contract personnel.<sup>19</sup>

Beyond the practical challenges of limited capability, the very presence of conscripts constrains unit deployability. Due in great part to lingering social and political blowback from the 1979–1989 Soviet-Afghan War and the disastrous First Chechen War in the mid-1990s, Russian political leaders generally try to avoid deploying conscripts beyond Russia's borders or into combat. Russian civil society is highly sensitive to conscript casualties.<sup>20</sup> In 2013, Vladimir Putin issued a presidential decree prohibiting conscripts from deploying into conflict within four months of accession into service. This same decree also set policy exempting conscripts from serving in combat zones except in the case of general mobilization for large-scale war.<sup>21</sup> Under the decree, even most VDV units would be restricted from deploying in our six notional scenarios, and perhaps even in our +1 Ukraine scenario. If applied to the letter, restrictions like this would sharply limit Russia's deployment capability.

In practice, these policies appear to be rather flimsy. It is not clear that a presidential decree carries the same weight as a law, and, in any event, it is possible that Putin could violate his own decree as he sees fit. Hesitation seems to be more closely associated with the risk of domestic disapproval that attended the reliance on poorly trained conscripts in the Afghanistan and Chechnya deployments. Although evidence is thin, there have been many reported

<sup>16</sup> Demyan Plakhov, "Russia's Military Conscription Policies," NATO Association of Canada, November 5, 2016; "Where Conscripts Serve," 2017; Andrew L. Spivak and William Alex Pridemore, *Conscription and Reform in the Russian Army*, Washington, D.C.: National Council for Eurasian and East European Research, May 7, 2004.

<sup>17</sup> See, for example, Human Rights Watch, *The Wrongs of Passage: Inhuman and Degrading Treatment of New Recruits in the Russian Armed Forces*, October 19, 2004.

<sup>18</sup> VDV units reportedly receive high-quality conscripts. This percentage range is aggregated from multiple sources and from multiple data points within each source. For an example of detailed research on the role of conscripts in the VDV, see Thornton, 2011.

<sup>19</sup> There are exceptions to this general rule. For example, public reports indicate that the military police units deployed to Syria were contract-only. It is not clear whether any of these soldiers were conscripts who had been coerced into signing contracts. See Mark Galeotti, "Not-So-Soft Power: Russia's Military Police in Syria," *War on the Rocks*, October 2, 2017.

<sup>20</sup> Central Intelligence Agency, Directorate of Intelligence, *USSR: Domestic Fallout from the Afghan War*, declassified intelligence analysis report, Langley, Va., February 1988; Roger McDermott, "Russian Military Problems in Chechnya," *North Caucasus Weekly*, Vol. 5, No. 42, 1970; Committee of the Soldiers' Mothers of Russia, homepage, undated.

<sup>21</sup> "Военнослужащие по призыву не будут участвовать в боевых действиях" ["Military Conscripts Will Not Participate in Hostilities"], *Russia Today*, February 14, 2013.

cases of conscripts quietly deployed to operations in Ukraine.<sup>22</sup> It seems likely that at least some of the approximately 50,000 troops who have taken part in the Syria campaign since 2015 were conscripts.<sup>23</sup> A 2016 law may have helped Russian leaders pressure conscripts to sign contracts for deployment, a practice that was probably already underway.<sup>24</sup> It also appears that Russia is using mercenary forces, such as the Wagner Group in Syria and, perhaps, similar groups in Ukraine, to compensate for the restrictions on conscript deployment.

All these efforts to work around or compensate for deployment restrictions suggest that, barring a massive conventional war with a peer competitor, Russia cannot practicably deploy all—or perhaps even most—of its available RGF units overseas into combat without risk of significant social and political blowback. Therefore, while we assess that 215 BTGs may be available for combat deployment, in practice, it is possible that Russian political leaders would consider deploying only a small percentage of those units not already committed to homeland defense or other operations.<sup>25</sup> Generally, Russian commanders consolidate their contract soldiers in BTGs to ensure that they are ready for deployment. This approach, if applied consistently, might reduce available BTGs by one-third. Leaders in deploying units might need additional predeployment time to coerce conscript soldiers to sign contracts or to exchange conscripts for contract soldiers from other (potentially faraway) units. Wargaming and simulation of RGF deployment might reasonably incorporate random delays or other challenges posed by conscription.

Analysis of the Soviet military in the 1980s, during the period of the Afghanistan War and the eventual decline of the Soviet Union, showed a marked drop in popular enthusiasm for military service. This coincided with a decline in conscription and an increase in conscription dodging and both legal and illegal deferments.<sup>26</sup> It seemed that the Soviets would not be able to fill the military's ranks by the time President Mikhail Gorbachev announced a 500,000-person cut in the armed forces. Arguably, this was more *fait accompli* than reform. Late Soviet decline does not necessarily constitute a pattern, but current weaknesses in Russia's conscription system have caused concern at the highest levels: In late 2017, Putin called for an end to conscription and a transition to an all-contract force.<sup>27</sup> However, it appears that the RGF is still heavily dependent on conscripted soldiers. If Putin seeks to push through a transition to an all-contract force, he may have to accept a smaller RGF and a comparatively smaller pool of assets to draw from for worldwide deployment.

<sup>22</sup> See, for example, "Ukrainian Army Kills Russian Officer, Captures Russian Contract Soldier in Donbas," Euro-maidan Press, June 29, 2017, and Paul Richard Huard, "The War in Ukraine Is Killing Lots of Russians," *War is Boring*, November 18, 2014.

<sup>23</sup> The official estimate of participating troops in late 2017 was 48,000. See "48,000 Russian Troops Took Part in Syrian Campaign—Defense Minister," *South Front*, December 22, 2017.

<sup>24</sup> "Duma Committee Passes Bill on Short-Term Military Contracts," RT, November 2, 2016; Valentyn Badrak, Lada Roslycky, Mykhailo Samus, and Volodymyr Kopchak, "Russia's Desperation for More Soldiers is Taking It to Dark Places," Atlantic Council, April 24, 2017.

<sup>25</sup> In all likelihood, Russian leaders have not thought through where these limits might be. We will not risk conjecture; it is sufficient to note the existence of this additional, if poorly defined, restraint.

<sup>26</sup> See, for example, Steven W. Popper, *The Military Manpower Burden and the Estimation of Soviet Force Size*, Santa Monica, Calif.: RAND Corporation, P-7542, March 1989; Central Intelligence Agency, Directorate of Intelligence, *Soviet Military Manpower: Sizing the Force*, declassified intelligence analysis report, Langley, Va., August 1990; and U.S. Department of Defense, *Military Forces in Transition*, Washington, D.C.: Government Printing Office, 1991.

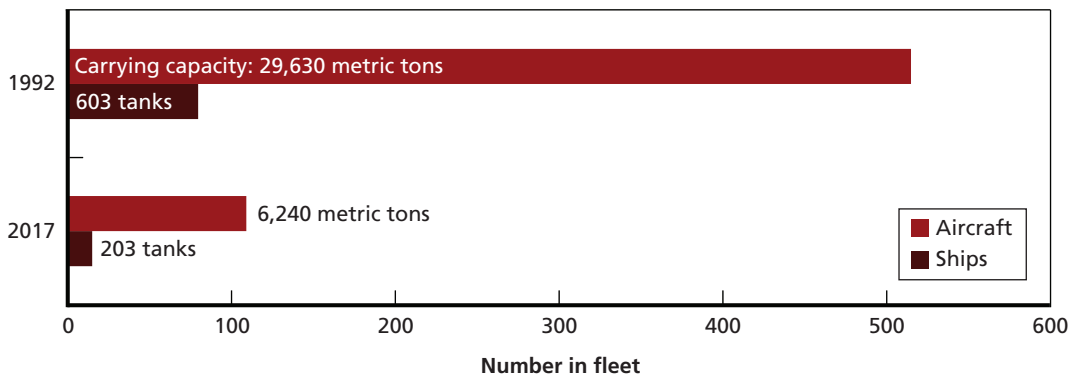
<sup>27</sup> "Putin: Russia Will Abjure Conscription Service in a Short While," *Pravda*, October 24, 2017.

### Comparative Drop in Capacity Since the Soviet Period

One might think back to dire U.S. assessments of Soviet military power during the Cold War and draw unreliable comparisons with today's RGF. At the height of its late-period power, the Soviet Army and other ground forces numbered approximately 2.1 million personnel out of an overall military force of more than 4 million.<sup>28</sup> At the time of this research, the RGF had approximately 350,000 personnel, equivalent to about 20 percent of the Soviet Army's manpower near its peak.<sup>29</sup> In 1992, just after the collapse of the Soviet Union, the Russian Federation military had more than 500 transport aircraft of all types, which were capable of lifting 29,630 metric tons.<sup>30</sup> By 2017, there were just over 100 available transport aircraft in the inventory, capable of lifting 6,240 metric tons, or approximately one-fifth of the 1992 capacity. A comparable drop in organic sealift accompanied these declines in forces and air transport. In 1992, the military had just over 80 organic strategic transport and amphibious ships, which were capable of moving 603 tanks at one time. By 2017, it had fewer than 20 organic ships capable of lifting only 203 tanks, or approximately one-third of the 1992 capacity. Figure 4.1 presents this comparative analysis.

As noted earlier, civilian or nonmilitary government assets can help compensate for a lack of organic military lift capacity. Civil transportation and state mobilization assets certainly support deployability. However, organic asset availability best reflects immediate deployment capacity: If the military owns it, it can use it for any purpose. Military aircraft and ships can be deployed to combat areas with far fewer considerations than civilian assets. Nonmilitary assets are less reliably available and more physically vulnerable, particularly under combat conditions. Looking solely at organic capability, less is less. In other words, fewer troops—and, specifically, fewer contract troops—on the RGF payroll equates to fewer deployable troops and less deployment capability. Less organic lift means less capability to move troops and equipment, a lower

**Figure 4.1**  
Comparative Analysis of Russian Organic Airlift and Sealift Capacity, 1992 and 2017



<sup>28</sup> These numbers, which were estimated contemporaneously by U.S. intelligence agencies, are often disputed and can be considered only generally accurate. See, for example, Central Intelligence Agency, 1990, and Popper, 1989.

<sup>29</sup> This includes the VDV and Spetsnaz. Unclassified estimates generally place the RGF at approximately 350,000 personnel. See, for example, Defense Intelligence Agency, 2017, p. 50.

<sup>30</sup> This information is drawn from our literature review and OOB analysis. It was compiled and verified using more than 20 sources.

threshold for maintenance breakdowns, and less resilience to asset loss in combat. Fewer metric tons airlifted and fewer armored vehicles shipped means less deployment capability.

Lower capacity in comparison to the late and immediate post-Soviet periods may be reflected in the case studies discussed in Appendix A. The Soviet military was quite active well beyond its borders, routinely deploying to far locations and often with fairly large force packages. Soviet leaders twice deployed division-sized elements to far locations and twice deployed corps-sized elements to near locations. Since the fall of the Soviet Union, the Russian Federation has executed only one far deployment consisting of approximately one ground combat brigade. It is not clear that lowered activity is directly related to lower capacity. Political considerations and decisions certainly factored into the lower operational tempo of the Russian armed forces after 1991. However, lower capacity also affects political decisionmaking: Less capacity equates to limited options and increased risk. Putting aside the impossible task of assigning causality to this trend, it is sufficient to say that sharply lowered capacity coincided with sharply lowered long-range deployment capability.

### **Inefficient and Inadequate Sustainment Capability**

Collectively, our case studies, OOB analysis, and notional scenarios revealed a significant gap in ground force sustainability beyond Russia's borders, as well as outside of the border deployment area around the Western and Southern military districts. Lack of an overarching deployment authority equivalent to U.S. Transportation Command makes deployment a devolved and often inefficient process; there is no unifying institutional function for joint deployment. Standards for sustainment, identification of joint transportation gaps, transportation intelligence, detailed studies targeting deployment improvements, and other sustainment activities that U.S. Transportation Command conducts for the United States are dispersed across various Russian military organizations and programs.

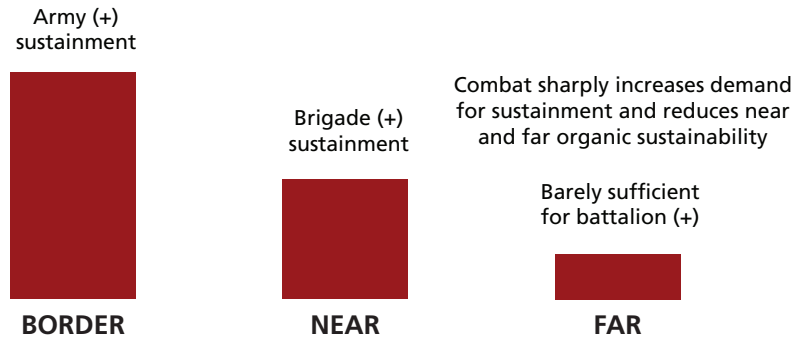
This report detailed significant gaps in Russia's organic sustainment capability. Its recent deployment to Syria highlighted a lack of organic naval sustainment. This gap is more acute for forces afloat: The lack of sufficient organic naval resupply and refueling ships is a known shortfall.<sup>31</sup> Air resupply is inefficient and, because of the lack of available overflight routes, ineffective in many prospective far cases. Figure 4.2 presents our assessment of Russia's sustainment capability for ground force deployments. Drawing on the collective analysis presented in this report—including a comparative analysis between real-world cases and our notional cases—we determined that Russia is highly capable of deploying forces along its border, but this capability drops off quickly as the distance increases.

Border deployment capacity using organic assets is limited primarily by military district: It is stronger in the west and weaker in the east. But the impact of distance in the border cases is primarily related to time. Russia can effectively sustain a deployment in the east if it has more time to prepare. As shown in Figure 4.2, the RGF can readily sustain a reinforced army-sized component along Russia's border. This drops sharply to a reinforced brigade for near

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<sup>31</sup> This lack of capability was highlighted during the Syria campaign as Russian ships struggled to find sufficient refueling ports. See, for example, Camila Domonoske, "After NATO Objections, Russian Warships Won't Refuel at Spanish Port," National Public Radio, October 27, 2016. This is a long-standing challenge. A 2001 analysis of the Russian navy also highlighted the lack of organic resupply capability; see Brian T. Mutty, *The Russian Navy and the Future of Russian Power in the Western Pacific*, thesis, Monterey, Calif.: Naval Postgraduate School, December 2001.

**Figure 4.2**  
**Assessment of Russian Ground Force Sustainability, by Case Distance**



cases as the ground element becomes increasingly reliant on air and naval sustainment, and it plummets to a reinforced battalion-sized force in far cases.

Sustainment can be improved by using nonorganic assets, with the time and distance caveats noted earlier. Figure 4.2 also notes that combat sharply increases sustainment requirements and further reduces organic sustainability.

#### **Poor International Basing, Overflight, and Naval Access Support**

Russia has few consistent and reliable international allies. This is particularly true beyond Central Asia, where it retains considerable influence and even, as in Tajikistan, an ongoing military presence. Russia's western border is effectively bounded by inhospitable NATO states. A large part of its southern border is bounded by China, a nation that is unlikely to provide overflight or basing rights to Russia in situations that do not directly benefit Chinese interests. With the collapse of the international communist order, and given Russia's current nonideological approach to policy, there is little incentive for nation-states to fully commit to Russian alliance or hegemony.<sup>32</sup> However, Russia may have some prepositioned equipment on Cyprus, it may have consistent access to the port of Cam Ranh Bay in Vietnam, and it can rely on its bases in Syria. In far cases, it can count on support from Nicaragua, Venezuela, and Cuba.<sup>33</sup> Otherwise, we assess that Russia has no *consistently* available allies, overflight rights, or base access.

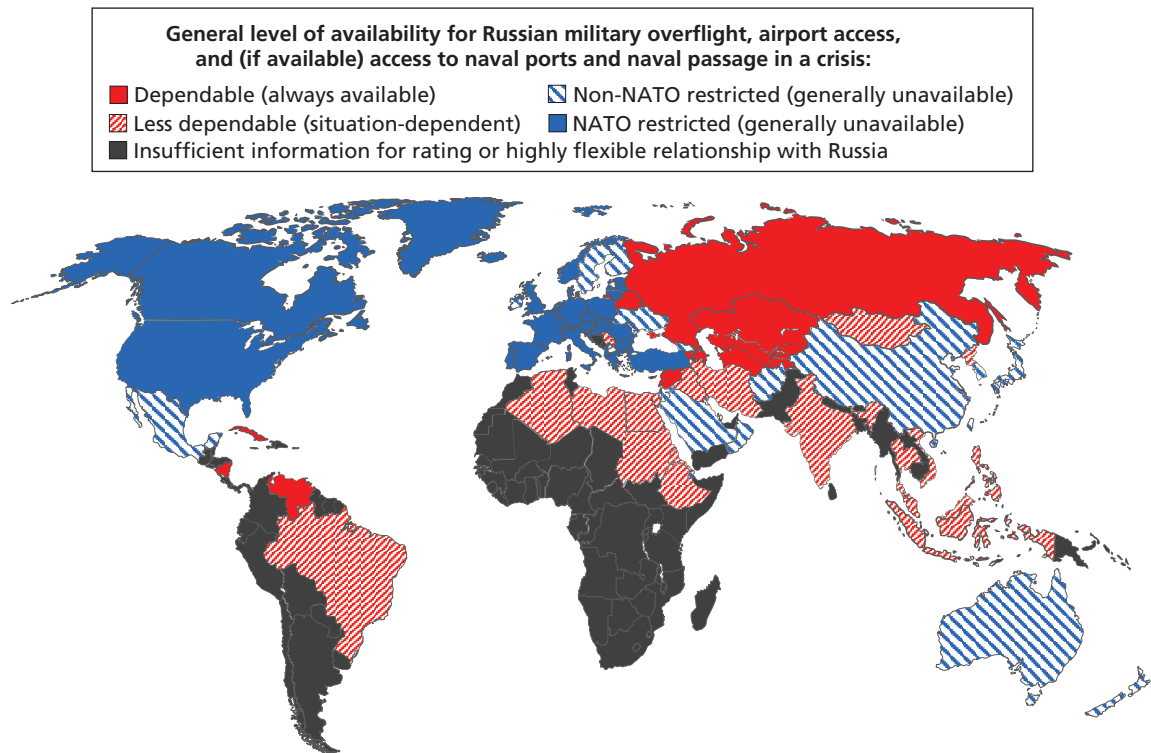
Figure 4.3 summarizes our assessment of Russian international access, with each country color-coded according to its availability to support Russian military operations. Our subject-matter expert interpretation of each relationship is characterized in one of the following ways: (1) dependable, or always available; (2) less dependable, with availability being situation-dependent; (3) non-NATO restricted and generally unavailable; or (4) NATO restricted and generally unavailable.<sup>34</sup> "Dependable" implies a firm, consistent alliance. "Less dependable"

<sup>32</sup> For an analysis of the impact of this approach in the Middle East, see James Sladden, Becca Wasser, Ben Connable, and Sarah Grand-Clement, *Russian Strategy in the Middle East*, Santa Monica, Calif.: RAND Corporation, PE-236-RC, 2017.

<sup>33</sup> "Russia, Cyprus Sign Military Deal on Use of Mediterranean Ports," Reuters, February 26, 2015; Prashanth Parameswaran, "A Vietnam 'Base' for Russia?" *The Diplomat*, October 15, 2016; W. Alejandro Sanchez, "Forget Venezuela, Russia is Looking to Nicaragua," *National Interest*, September 25, 2017.

<sup>34</sup> Coding was based on analyst subject-matter expertise and documentation related to Russian international alliances and overflight. Some of this material was drawn directly from the case research. For example, Russia's difficulty obtaining

**Figure 4.3**  
**Assessment of International Basing, Overflight, and Naval Access**



SOURCE: Ratings derived from subject-matter analysis, interviews, and historical case studies.

NOTE: Afghanistan is restricted due to the presence of U.S. military forces.

implies a good but inconsistent relationship that may or may not generate access depending on the scenario. “Non-NATO restricted” indicates that these non-NATO states would be unlikely to provide access to Russia in most situations. And “NATO restricted” applies to NATO states that would be unlikely to provide access to Russia in most situations. For many countries, we had insufficient information for coding.

The map suggests that Russia must navigate narrow sea channels, execute torturous air routes, and rely on insufficient long-term organic air and sea sustainment assets to move and sustain its forces beyond the *border* deployment range in any scenario that might involve diplomatic restrictions on movement or an outright threat to Russian transportation assets.

#### **Vulnerable Lines of Communication in Beyond-Border Scenarios**

Absent a comprehensive analysis of Russian sea and air combat power and a comparative analysis of U.S. and allied military power, we can provide only a subject-matter expert assessment the vulnerability of Russian lines of communication, shown in Figure 4.4. We offer this assessment based on the collective research presented in this report—specifically, the notional scenarios representing a mix of border, near, and far deployments. Russia can defend its lines of

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refueling rights for its deployed aircraft carrier during the Syria campaign indicated the lack of access for Russian shipping throughout the Mediterranean Sea. See Domonoske, 2016.

**Figure 4.4**  
**Assessment of Line-of-Communication Vulnerability,**  
**by Case Distance**



NOTE: Vulnerability varies depending on deployment location and differences in capabilities. For example, western deployments are less vulnerable than other deployments.

communication successfully in border cases. However, there are differences between western and eastern deployments: Western deployments are less vulnerable due to capability differences.

In near cases, Russian forces are vulnerable along their lines of communication in that they can extend air and naval escort to protect assets, but only with great difficulty due to sustainment and access limitations. For example, in the Kuril Islands scenario, Russian shore-based air defense assets provide limited security at their maximum range, and Russia has the organic capability to sustain guided-missile ships and other combat platforms outside of the shore-based defense umbrella. Vulnerability in near cases increases as assets move beyond the shore-based umbrella.

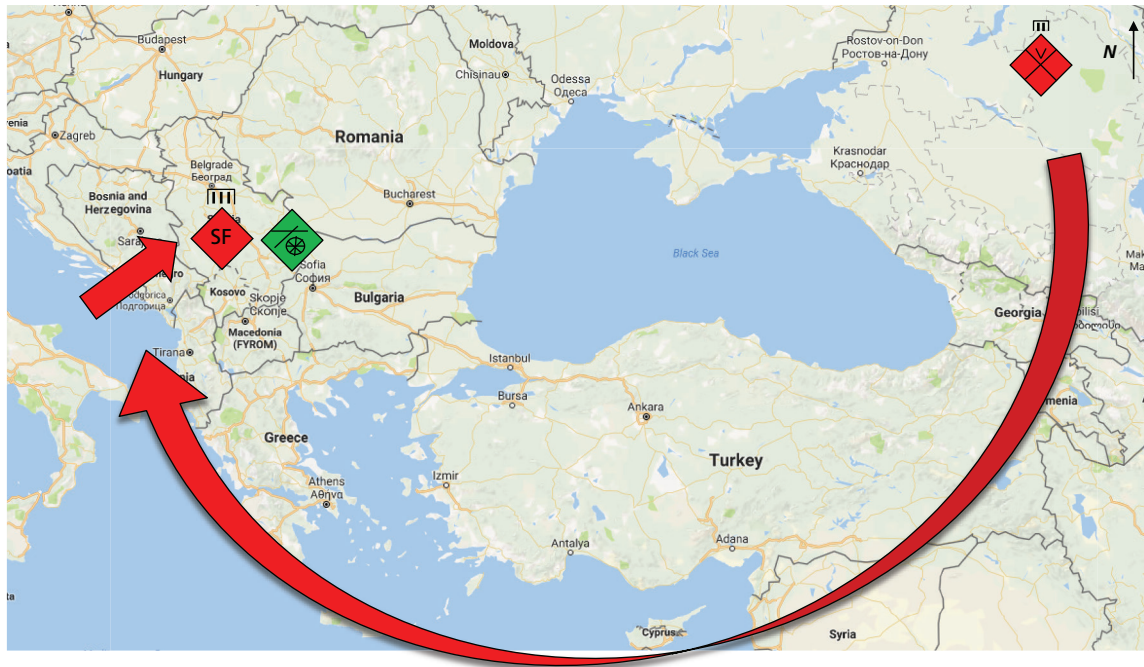
Far cases are highly vulnerable. National assets, such as IADS, protect lines of communication for only a short portion of the port-to-port journey. Access limitations that result in narrow and torturous transit routes apply to both sustainment and combat assets, and narrow channeling through NATO (e.g., Bosphorus) or non-NATO but U.S. allied air and shipping lanes (e.g., Japan) creates vulnerabilities by proximity: Russian assets may have the right to move through narrow channels close to hostile states, but in doing so they expose their assets to strike. Flying over or transiting through waters controlled by hostile states is always an option, but it is quite dangerous for obvious reasons. Figure 4.4 visualizes the framework for our assessment of the vulnerability of Russian lines of communication, by distance.

We offer two examples to help illustrate our vulnerability assessment. Figure 4.5 shows Russian air movement in our notional Serbia scenario, in which Russia deploys a military force to support the Serbian regime in Belgrade. First-wave forces fly commercially through NATO airspace, but once NATO identifies the movement, it shuts down air access. This restricts Russia's access to Serbia. Although NATO does not seek to strike Russian transport aircraft in this scenario, the alternative option exposes the Russian transportation network to significant vulnerability. In this case, Russia executes an air movement around the NATO states of Romania, Bulgaria, Greece, and Turkey to insert a Spetsnaz unit through a narrow international corridor at Neum, Bosnia-Herzegovina, into Serbia. This route is feasible but highly exposed to interdiction.

Figure 4.6 presents a comparative vulnerability assessment of notional scenarios representing each distance criterion: Ukraine as a border case, Tajikistan as a near case, and Venezuela as



**Figure 4.5**  
**Example of Highly Vulnerable Air Movement in the Serbia Case**



SOURCE: Google Earth with RAND overlay.

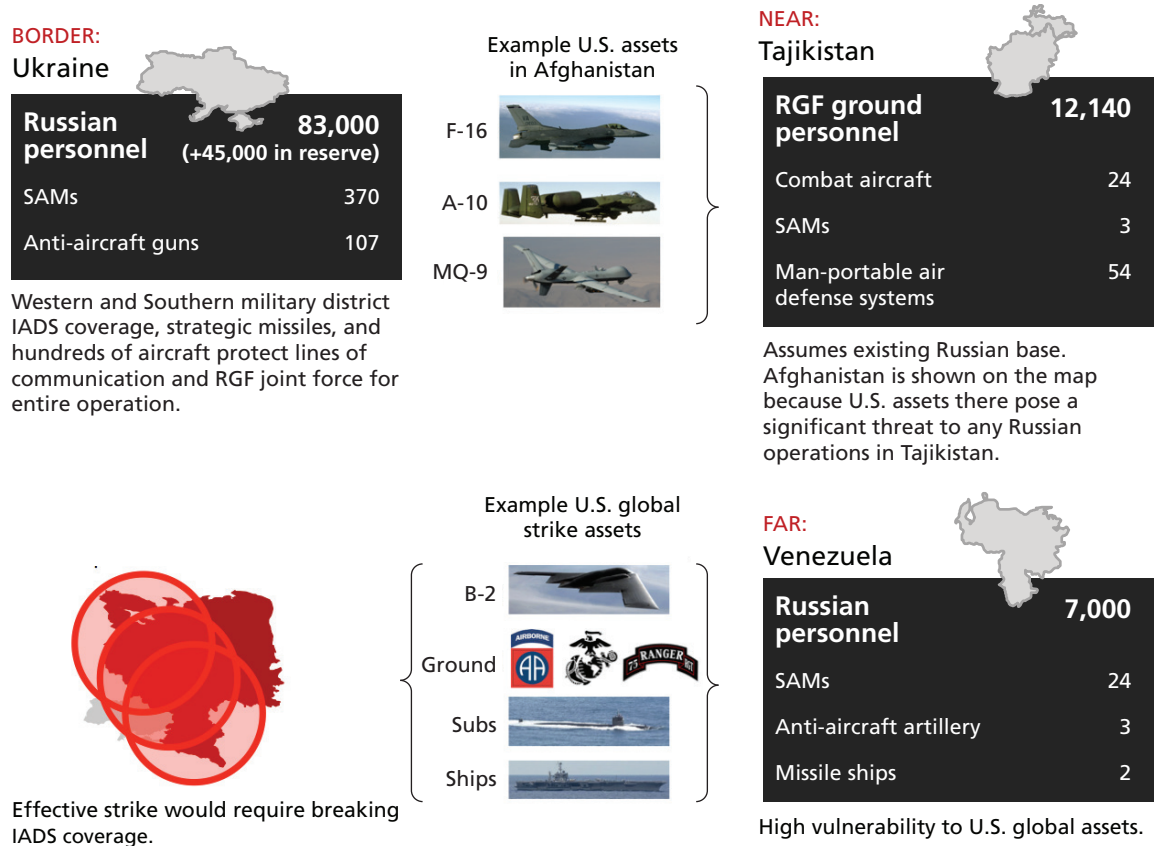
a far case. Russian line-of-communication security in the Ukraine case is excellent: Forces are operating primarily by ground and wholly under the IADS.<sup>35</sup> Furthermore, the RGF is able to deploy considerable mobile security assets, including 370 SAM systems and 107 anti-aircraft guns. NATO aircraft would be hard pressed to interdict the ground force in this case.

In the Tajikistan case, Russia reinforces its existing, albeit relatively small, military presence. As in the Ukraine border case, Russia deploys primarily by ground, but the distances and terrain make the deployment more difficult. Tajikistan is closer to the Central Military District, which has relatively less capability than the Western and Southern districts. This area is protected by some organic long-range air defense assets, but it is not under the umbrella of the dense western IADS. In this case, Russia can use 24 combat aircraft, 13 SAM systems, and 54 man-portable air defense systems to defend the force and secure the sustainment corridors. In this notional scenario, we assumed the continuing presence of U.S. airpower in Afghanistan, including F-16 and A-10 strike aircraft capable of conducting strikes against the Russian force.

High vulnerability becomes apparent in the Venezuela case. Russia would be very hard pressed to deploy long-range fighter aircraft to support this deployment at each leg of the journey. It would be equally hard pressed to deploy combat ships to escort its transport vessels from Russia to Venezuela. Even a limited escort capability would be highly vulnerable to the worldwide strike assets available to the United States, should it choose to intervene. These threats include B-2 stealth bombers that can attack globally from the continental United

<sup>35</sup> Note that the IADS rings in the figure are purposely imprecise and included for illustration only.

**Figure 4.6**  
**Comparative Vulnerability Assessment with Notional Scenario Examples**



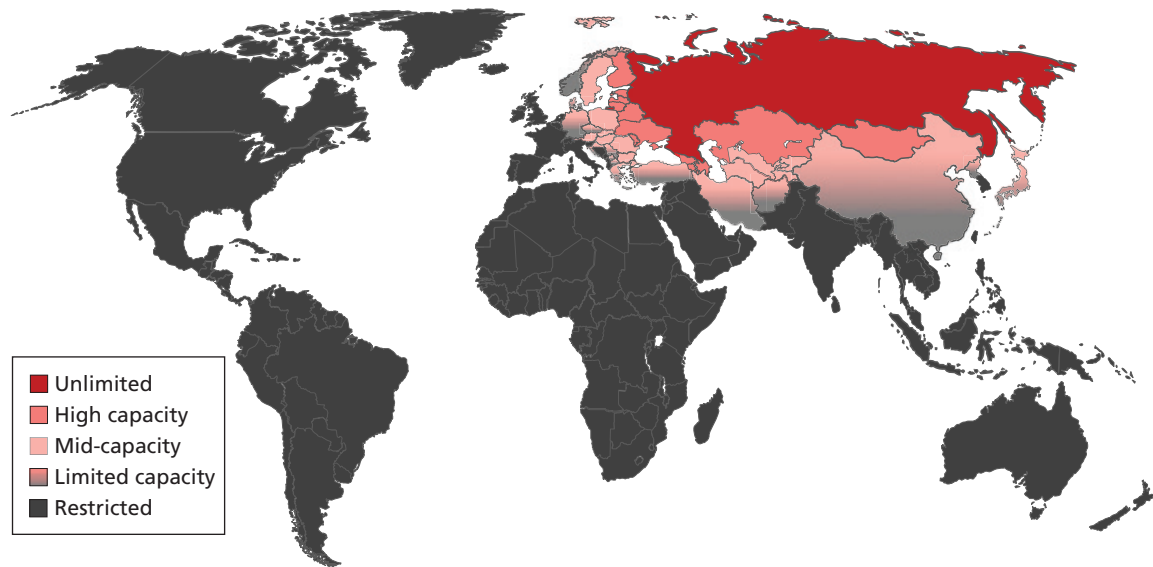
States; combat ships, including aircraft carriers supporting strike aircraft and refuelers; and long-range attack submarines. In the notional Venezuela scenario, Russia deployed 24 SAM systems, three anti-aircraft artillery systems, and two missile ships. This firepower is inadequate to defend against a dedicated U.S. military strike. The figure includes examples of U.S. expeditionary ground combat forces—the 82nd Airborne Division, the Marine Corps, and the 75th Ranger Regiment—to highlight the vulnerability of the deployed Russian force at the objective area.

**Assessment of Russian Ground Combat Deployment Capability**

Figure 4.7 presents our concluding assessment of RGF deployment capability, which consolidates the strength and weakness assessments presented in this chapter. Here, *capability* refers to a collective assessment of capacity, access, speed, and sustainability during the initial phase of a deployment; we did not assess Russia’s ability to sustain a deployed force over time. *Vulnerability* is a combination of physical vulnerability to strike and the stress of access restrictions on line-of-communication security.

This summary assessment shows that Russia can deploy its ground forces in a relatively limited area adjacent to its western border. Based on the preceding analyses, discussions with experts on the Russian military, and our own subject-matter expertise, we rate Russia’s ability to deploy ground forces as *unlimited* within its borders, despite some east-west limitations;

**Figure 4.7**  
**Assessment of RGF Effective Deployment Ranges**



*high-capacity* in 13 countries outside of Russia; *mid-capacity* in 12 countries; *limited-capacity* in 17 countries; and *restricted* in the remaining countries.<sup>36</sup> Note that the RGF would be hard pressed to sustain a deployed force in any limited- or restricted-capacity deployment without significant support from an ally or partner.

We defined RGF deployment capacity as follows:

- *Unlimited*: Rapid deployment of a large ground force is possible with minimal operational risk.
- *High capacity*: Time and terrain are the only serious limiting factors.
- *Mid capacity*: Russian forces are vulnerable to interdiction, adding time and terrain limitations.
- *Limited capacity*: There is a significant risk of interdiction, and forces must travel longer distances from Russian bases.
- *Restricted*: Slow timelines for all but the smallest forces, lack of capacity, and significant risk.

Deployment capacity degrades within Russia from west to east, but this is in great part a factor of time: sufficient lead time can reduce the west-east power differential. Deployment capacity drops off sharply beyond the border cases. We do not find that Russia has effective ground force deployment capability in any prospective far case anywhere in the world: In each of these cases, it would be constrained by its lack of organic assets, lack of access, and vulnerability to interdiction. Removing the possibility of interdiction from this equation still does not give Russia a significant capability with organic assets: The limits imposed by conscript forces

<sup>36</sup> We were not able to accurately rate every country. The total number of countries in the world is in flux, at least at the margins.

and lack of sustainment still make far deployments exercises in risk and cost. Syria is once again a benchmark. Russia's ongoing campaign there has proven to be sustainable, but only with one of Russia's handful of international fixed-port networks, a willing allied government, and a major investment in nonorganic sustainment capacity.

### **Key Finding: The RGF Has a Sharply Limited Effective Deployment Range**

A variety of factors sharply limit Russia's ability to deploy the RGF worldwide, including lack of materiel capacity; shortage of organic lift capacity; conscript service limitations; inadequate international overflight, transit, and basing access; inadequate long-range sustainment; and high vulnerability to interdiction beyond the Russian IADS.

To present a credible, well-rounded global threat to its adversaries, shore up allies and partners, effect forcible entry, and hold territory in contested spaces, Russia needs to be able to move ground combat task forces around the world. The RGF is the core of Russia's conventional ground combat power. If the Russian joint force has a sharply limited ability to deploy the RGF outside the immediate area around the Western and Southern military districts, our analysis suggests that Russia's status as a reemerging global military power is at least questionable.

### **Recommendation: Develop a Russian Ground Power Projection Model**

Our analysis provides only one part of the answer to a question of great complexity, one that is perhaps of existential interest to some allies of the United States: What is Russia's current capacity to project ground combat power? We showed how many forces Russia can physically move over a given distance and a given period of time. Power projection includes deployment, but also the ability to fight at the far end of the deployment arc. For example, Russia might be able to deploy a ground combat brigade to the Kuril Islands, but how capable would this deployed force be against a given adversary? What if it had to fight the Japanese Self-Defense Forces, even for a limited period? What if the United States intervened with all its military power in an extended conflict? Understanding power projection requires a deeper analysis of force composition, training, will to fight, and physical capabilities, as well as a comparative analysis of effectiveness against a given adversary in a given context. Some generalizations could then be drawn about intrinsic Russian ground combat power. These generalizations—integrating deployment capacity and combat capability—could be used to create a ground combat power projection model that could be applied to many different scenarios.

Such a model would be a valuable planning tool for the U.S. military—and for the U.S. Army in particular—and it would be worth the investment required to build an accurate and realistic one.

## Case Analyses of Russian Deployments

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This appendix presents our analysis of Soviet and Russian Federation ground force deployment cases from 1945 to 2017. It begins with a summary assessment of the 15 selected cases and concludes with observations about historical trends and the implications for the analysis of Russia's current deployment capabilities.

### Why Describe Historical Cases?

The purpose of examining these historical cases was to provide a brief comparative assessment to help analysts put present-day RGF power into context. Rather than present a comprehensive analysis—which would require considerably more detail and structure—this quick overview is intended to serve as a guide for ongoing and prospective research. These cases can help address such questions as (1) the degree to which Russia can achieve the global influence once held by the Soviet Union, (2) the RGF's relative force deployment capability in comparison to the Soviet Army and other armed forces, and (3) the true global threat of Russian ground combat power. For example, it is useful to consider Russia's current *far* deployment to Syria, which involves approximately one reinforced brigade, alongside the failed Soviet corps-level *near* deployment to Tajikistan or the partially successful *far* division-sized deployment to Yemen.

### Historical Case Selection and Analysis

We created a database of all significant Soviet and Russian ground combat force deployments from the end of World War II to 2017, a period of modernization for Soviet and, later, Russian deployment capabilities and policies.<sup>1</sup> Bounding this data set required establishing reasonable cutoff points. Based on an initial review of possible cases, we selected two criteria: (1) a minimum of 1,000 troops, including, in some cases, Soviet or Russian naval personnel, and (2) actions beyond peacetime advising, such as irregular warfare support or conventional combat.<sup>2</sup> There is a significant caveat to this analysis: It is unlikely that our sources on deployed

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<sup>1</sup> We made this selection based on a literature review and the collective subject-matter expert opinions of the research team.

<sup>2</sup> The 1,000-troop cutoff distinguished most of the advisory missions from the combat missions. Soviet deployments to advising missions without direct combat action tended to fall under this number, while combat deployments tended to involve more than 1,000 troops. For examples of Soviet-era deployments, see Alex P. Schmid, ed., *Soviet Military Interventions Since 1945*, New Brunswick, N.J.: Transaction Books, 1985.

personnel numbers are wholly accurate or consistent. In all likelihood, even Russian military leadership has an incomplete understanding of exactly how many troops deployed in each historical case.<sup>3</sup>

We set our baseline case as the Manchurian offensive of 1945. This Soviet operation against Japan involved approximately 1.5 million soldiers and a massive internal force deployment across thousands of miles within the Soviet Union. Manchuria marked the last Soviet or Russian conventional, combined arms combat operation against a peer or near-peer competitor. All operations since then, whether irregular or conventional, have been against lesser foes, such as Georgia's armed forces in 2008. The Soviets executed many advisory missions that did not constitute deployments under our selected criteria.<sup>4</sup> We did include large deployments that were primarily advisory in nature but also showcased long-range logistics capabilities, including Soviet support to Egypt in North Yemen from 1963 to 1967. These cases highlighted Russia's capacity to support and sustain allies and proxy forces. Coding these cases revealed trends in deployment over time.<sup>5</sup>

## Summary Analysis of 15 Russian Ground Deployments

Building from the case selection process, we rated 15 Russian ground deployments from the Manchuria case in 1945 to the Syria case that was ongoing as we concluded this research. In Table A.1, we list the conflict location, general dates of the deployment, and the ground force mission. We also rate each case using our range scale (border, near, or far deployment distance) and provide a general assessment of the size of the ground force deployed, to assist with case comparison.<sup>6</sup>

<sup>3</sup> In separate, ongoing research, we discovered that a U.S. military service has incomplete, inconsistent, and generally inaccurate records of its own deployments even through 2017. We have no reason to believe that the Russian military has substantially better records than the U.S. military, or that all deployment data have been shared publicly.

<sup>4</sup> This analysis draws heavily from two edited volumes on Soviet deployments: Schmid, 1985, and Bradford Dismukes and James M. McConnell, eds., *Soviet Naval Diplomacy*, Elmsford, N.Y.: Pergamon Press, 1979. It also draws from a range of declassified intelligence reports, technical reports, individual case histories, and other U.S. government documents on Soviet and Russian military activity. For additional sources related to these historical cases, see the companion report, *Russia's Limit of Advance: Scenarios* (Connable et al., 2020).

<sup>5</sup> Schmid, 1985 (p. 123), offered a comparative 22-point chart that helped us distinguish between advisory, or "military assistance," and military interventions.

<sup>6</sup> For background, see, for example, Russian General Staff, *The Soviet-Afghan War: How a Superpower Fought and Lost*, Lester Grau and Michael Gress, trans. and ed., Lawrence, Kan.: University Press of Kansas, 2002; Schmid, 1985; Dismukes and McConnell, 1979; Lilita I. Dzikals, "Lightning War" in Manchuria: *Soviet Military Analysis of the 1945 Far East Campaign*, Santa Monica, Calif.: RAND Corporation, P-5589, January 1976; Alexander R. Alexiev, *The New Soviet Strategy in the Third World*, Santa Monica, Calif.: RAND Corporation, N-1995-AF, June 1983; Alexandre Benningson, *The Soviet Union and Muslim Guerrilla Wars, 1920–1981: Lessons for Afghanistan*, Santa Monica, Calif.: RAND Corporation, N-1707/1, August 1981; Timothy C. Dowling, ed., *Russia at War: From the Mongol Conquest to Afghanistan, Chechnya, and Beyond*, Santa Barbara, Calif.: ABC-CLIO, 2015; Fritz Ermarth, unpublished RAND Corporation research, 1968; Francis Fukuyama, *Soviet Civil-Military Relations and the Power Projection Mission*, Santa Monica, Calif.: RAND Corporation, R-3504-AF, April 1987; Mark Galeotti, *Russia's Wars in Chechnya 1994–2009*, New York: Osprey, 2014; Harry Gelman, *The Soviet Military Leadership and the Question of Soviet Deployment Retreats*, Santa Monica, Calif.: RAND Corporation, R-3664-AF, November 1988; Arthur J. Klinghoffer, *The Soviet Union and Angola*, Carlisle, Pa.: Strategic Studies Institute, U.S. Army War College, May 10, 1980; Olga Olikier, *Soft Power, Hard Power, and Counterinsurgency: The Early Soviet Experience in Central Asia and Its Implications*, Santa Monica, Calif.: RAND Corporation, WR-547-RC, February 2008; Ellen P. Stern, ed., *The Limits of Military Intervention*, Beverly Hills, Calif.: Sage Publications, 1977; Thompson, 1977; Pavel

**Table A.1**  
**Analysis of Soviet and Post-Soviet Ground Combat Cases**

Conflict	Dates	Mission	Range	Approximate Size
Manchuria	1945	Defeat enemy	Border	Multiple corps
Baltics	1944–1952	Counterrevolt	Border	Division or higher
Hungary	1954	Counterrevolt	Border	Division or higher
Cuba	1960–1962	Ally support	Far	Division or higher
North Yemen	1963–1967	Counterrevolt	Far	Battalion
Czechoslovakia	1968	Counterrevolt	Near	Corps or higher
Egypt	1970–1974	Ally support	Far	Division or higher
Sudan	1970–1971	Counterrevolt	Far	Battalion or below
Bangladesh	1971–1972	Aid revolt	Far	Battalion or below
Ethiopia	1977–1978	Ally support	Far	Battalion or below
Tajikistan	1979–1988	Counterrevolt	Near	Corps or higher
Chechnya	1994–2001	Counterrevolt	Border	Division or higher
Georgia	2008	Aid revolt	Border	Corps or below
Ukraine	2014–	Aid revolt	Border	Division or higher
Syria	2015–	Ally support	Far	Brigade or higher

Whereas the Soviet Union frequently deployed forces well beyond its borders, the Russian Federation has deployed to only a single *far* case.<sup>7</sup> That case—Syria since 2015—was, at the time of this research, effectively an uncontested logistics exercise to support ground forces that were engaged primarily in base security, patrol, and intelligence collection; it was an air mission with ground support.<sup>8</sup> Although it represented a substantial commitment relative to other post-Soviet deployments, as we argue in Chapter Four, this relative success should not be extrapolated to characterize a broader Russian capability for far ground combat deployments.<sup>9</sup>

Felgenhauer, “Russia’s Secret Operations,” *Perspective*, Vol. 12, No. 1, September–October 2001; Robin Higham and Frederick W. Kagan, eds., *The Military History of the Soviet Union*, New York: Palgrave, 2002; David R. Stone, *A Military History of Russia: From Ivan the Terrible to the War in Chechnya*, Westport, Conn.: Praeger, 2006; David M. Glantz, *August Storm: The Soviet 1945 Strategic Offensive in Manchuria*, Fort Leavenworth, Kan.: Combat Studies Institute, U.S. Army Command and General Staff College, February 1983.

<sup>7</sup> In Chapter Five, we describe the major changes to lift capacity that affect Russia’s ability to deploy larger forces over longer distances.

<sup>8</sup> This does not account for the widely reported but not officially confirmed link between the Russian armed forces and Russian mercenary ground combat forces, such as the Wagner Group. See, for example, Adam Taylor, “What We Know About the Shadowy Russian Mercenary Firm Behind an Attack on U.S. Troops in Syria,” *Washington Post*, February 23, 2018.

<sup>9</sup> Table A.1 notably does not include the Sino-Soviet border conflict of 1969. We determined that this conflict did not constitute an extraterritorial deployment. Although Soviet forces deployed to the border with China and conducted raids into disputed territory (specifically, Zhenbao Island), they did not deploy for extended operations across the Russian border. There are many excellent recountings of this conflict. One of the most informative is Yang Kuisong, “The Sino-Soviet

None of the adversaries in the post-1945 cases threatened Russian ground troops or transport vessels with massed long-range artillery; multiple-sortie precision aerial strikes; high-level electronic, electro-optical, or space reconnaissance capabilities; cruise missile attacks; submarine-launched anti-ship missiles and torpedoes; or other components of advanced military forces. With the exception of the U.S. sea embargo of Russian transport shipping during the 1962 Cuban Missile Crisis, since 1945, no near-peer adversary has seriously threatened or struck the ground, sea, or air lines of communication needed to support a Russian ground combat deployment.<sup>10</sup> We can learn many things from Russia's post-World War II deployments, but its ability to deploy ground forces against a peer adversary is untested.

### What Do the Cases Tell Us?

Since World War II, Russia has, albeit with notable inconsistencies, maintained one of the world's premier ground combat forces. For most of the Cold War, the Soviet Army was the dominant land force in Europe. Soviet leaders routinely deployed ground combat forces around the world ranging from small advisory groups to corps-sized land armies. In many cases, the Soviets were able to secure their lines of communication using large surface and subsurface warfare fleets, long-range air arms, and a network of allied states willing to host Soviet military assets. Since the fall of the Soviet Union, the Russian military has waned and then waxed. Operations in the early to mid-1990s were few and disastrous. The 1994 attack on Grozny, Chechnya, marked a historic low point. The Second Chechen War, beginning in 1999, marked a turning point. Operations there, in Georgia, and now in Ukraine and Syria have demonstrated Russian resilience and military power.

But recent successes in places like Crimea and Syria should be viewed through an objective lens. In comparison with Chechnya in 1994, the post-2000 operations give the impression of a rapidly improving and expanding Russian ground force power projection capability. Comparisons with the late Soviet period offer a different perspective. Russia's military deployments in the post-Soviet period are anemic compared with Soviet activity. Even the well-publicized success in Syria looks middling next to the massive (albeit *near*) ground operation in Tajikistan or even the *far* ground advisory operation in Egypt in the 1960s. Peeling back Russian propaganda reveals the single beyond-border, post-Soviet deployment—Syria—to be as much a story of inadequacy as it is a story of potency and global power. The RGF is strong, capable, and dangerous when it is closely pinned to its western and southwestern military infrastructure. Thus far, Russia has not demonstrated an ability to globally project its ground combat power while sustaining the levels of strength and capability that it enjoys within its borders. In other words, Syria is no Manchuria.

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Border Clash of 1969: From Zhenbao Island to Sino-American Rapprochement," *Cold War History*, Vol. 1, No. 1, August 2000. Also see Central Intelligence Agency, Directorate of Intelligence, *The Evolution of Soviet Policy in the Sino-Soviet Border Dispute*, declassified intelligence analysis report, Langley, Va., April 1970.

<sup>10</sup> See U.S. Department of State, Office of the Historian, *Cuban Missile Crisis, October 1962*, Washington, D.C., webpage, undated, and Alan Taylor, "Fifty Years Ago: The Cuban Missile Crisis," *The Atlantic*, October 15, 2012.



## Order of Battle

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This appendix summarizes the OOB that we developed for the RGF and the associated forces that we considered in our analysis, as well as these equipment characteristics that we used for our RGF deployment calculator. These tables are drawn from a variety of sources, which are listed in the topical bibliography in the companion report.<sup>1</sup> In the following section, we briefly described how we used this information to compile our OOB.

### Creating the Order of Battle

An OOB is generally understood to be a list, accompanied by brief descriptions and locations, of the units, equipment, and personnel in a military organization. The fullest and most accurate OOBs are derived from classified intelligence. We began this endeavor knowing full well that an OOB built from open-source information could never compete with the accuracy, detail, or reliability of a classified analysis. However, our objectives were less demanding: We needed a sufficiently realistic and detailed Russian military OOB to help generate sufficiently realistic and detailed notional scenarios. Here, we define *sufficiency* in terms of generalizability and acceptability:

1. Are the data sufficient to calculate generalizable estimates of deployment lift and speed?
2. Would policy consumers accept the data as reasonably accurate and complete?
3. Would experts on the Russian military accept the data as reasonably useful?

Although we could not capture every detail of every unit, our initial literature review and discussions with subject-matter experts suggested that we could come up with a reasonable and sufficient description of the RGF structure down to the BTG level and produce a similarly detailed description of supporting air and naval capabilities.

There are hundreds of Russian military units at the battalion level and above. The development of the database was a supporting and not a central research effort, so we could not build the OOB from the ground up. Resource limitations demanded a reliance on some existing aggregated data. Given these restrictions and our limited objectives, we took three steps to develop an imperfect but sufficient OOB drawn from open-source materials. The OOB included air and naval forces to help us determine Russian deployment capabilities and secu-

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<sup>1</sup> Connable et al., 2020.

rity requirements for lines of communication. It also included assessments of road, rail, sea-port, and airport hubs and networks in Russia.<sup>2</sup>

First, we identified existing official and scholarly efforts to generate unclassified Russian OOBs. Unsurprisingly, the Russian government is not entirely forthcoming about its military forces, so details are rare in the public literature and online. However, official Russian sources offered confirmatory material for spot-checking the data. The best U.S. government sources available at the time of this research were *Russia Military Power*, published by the Defense Intelligence Agency, and *The Russian Way of War*, published by the U.S. Army's Foreign Military Studies Office.<sup>3</sup> Neither provided sufficiently detailed OOB information. Therefore, we could rely on official Russian and unclassified U.S. government sources for confirmatory data only. We did consult the ground systems volume of U.S. Army Training and Doctrine Command's *Worldwide Equipment Guide* for specific equipment data characteristics.<sup>4</sup>

Scholarly work on the Russian military has proliferated in recent years, most notably with *Russia's Military Posture: Ground Forces Order of Battle*, published by the Institute for the Study of War.<sup>5</sup> The most reliable analytic works that we consulted during this research included the Swedish Defence Research Agency's *Russian Military Capability in a Ten-Year Perspective* and the *Military Balance 2016* report, published by the International Institute for Strategic Studies.<sup>6</sup> However, both were insufficiently detailed for our purposes: They did not provide unit breakdowns to the battalion level. There was only one detailed OOB in the public domain. Its provenance was uncertain, its creators were not clearly identified, and its accuracy was unclear.<sup>7</sup> However, at the time of our research, that self-described blog was considered to be reasonably accurate by the community of non-Russian experts on the Russian military. None of the experts we spoke with questioned its value as a starting point for analysis.<sup>8</sup> Thus, it met our baseline criteria for general expert acceptance.

Building from this useful but imperfect baseline, we referenced a wide array of other Russian- and English-language sources to fill gaps and check for accuracy. This effort leaned on many additional sources, which are listed by topic in the companion report.<sup>9</sup> They included materials from the Russian Ministry of Defence, IHS Jane's, defense journals, news reports that identified Russian military units, and blog posts from the Moscow-based Centre for

<sup>2</sup> Each scenario analysis also included ports of debarkation and, as necessary, road, rail, and other networks in the objective area.

<sup>3</sup> Defense Intelligence Agency, 2017; Grau and Bartles, 2016.

<sup>4</sup> See, for example, U.S. Army Training and Doctrine Command, *Worldwide Equipment Guide, Volume 1: Ground Systems*, Fort Leavenworth, Kan., 2015.

<sup>5</sup> Catherine Harris and Frederick W. Kagan, *Russia's Military Posture: Ground Forces Order of Battle*, Washington, D.C.: Institute for the Study of War, March 2018. This work was published after we concluded our research and thus was not incorporated into our OOB.

<sup>6</sup> Gudrun Persson, ed., *Russian Military Capability in a Ten-Year Perspective—2016*, Stockholm, Sweden: Swedish Defence Research Agency, 2016; International Institute for Strategic Studies, *The Military Balance 2016*, London, 2016.

<sup>7</sup> The "About Us" section of the Russian-language site refers to the creators as "a group of enthusiasts" and states that the contents are based on open-source information. See Вооружённые силы России [*Armed Forces of Russia*], webpage, last updated 2017.

<sup>8</sup> The research team engaged with approximately 15 experts on the Russian military during the OOB development process between late 2016 and early 2018.

<sup>9</sup> Connable et al., 2020.

Analysis of Strategies and Technologies. We spot-checked the data in a non-random manner; the available sources did not allow us to test for accuracy using a stratified, scientifically random sample. In the final phase of this research, we reengaged with our community of experts to check for new developments and reconfirm the sufficiency of our baseline data.

This effort spanned more than a year, and the result is an OOB that should be sufficient for developing and analyzing notional, unclassified scenarios similar to the ones described in this report. It provides detail on air transport, sea transport, and ground military units; their locations; and their equipment and personnel. It offers a reasonable, general understanding of Russian military capabilities that is sufficient for broad strategic discussions or notional calculations of capability and movement. Given the challenges with source material and the limits of knowledge in the unclassified domain, it is also inaccurate and incomplete to some degree. It does not include the full array of Russian military forces, such as fighter squadrons, missile batteries, or combat ships. U.S. and allied government analysts should not use this OOB for official analysis and reporting. However, these analysts may benefit from having a reasonably sufficient unclassified database for other uses.

Tables B.1–B.4 present the OOB by military district. Each table begins with the units' overarching command. It then lists the major unit (e.g., 1st Guards Tank Army) and subunits for main battle tanks, infantry fighting vehicles (IFVs)/APCs, and artillery.

**Table B.1**  
**Russian Order of Battle, Western Military District**

Subunit	Main Battle Tank	IFV/APC	Artillery	Base Location
<b>Ground Forces</b>				
<b>1st Guards Tank Army</b>				
4th Guards Tank Division, 12th Guards Tank Regiment	T-80U x94 T-80K x4	BMP-3 x30	2S33 Msta-SM x18	Naro-Fominsk, Moscow Oblast
4th Guards Tank Division, 13th Guards Tank Regiment	T-80U x94 T-80K x4	BMP-3 x30	2S33 Msta-SM x18	
4th Guards Tank Division, 257th Guards Self-Propelled Artillery Regiment			2S19 Msta-S SPA x18 2S34 Hosta SPAX 6 2B17-1 Tornado G multiple-rocket launcher x18	
2nd Guards Motorized Rifle Division, 1st Guards Motorized Rifle Regiment	T-72B3 x41	BTR-80/82A x140	2S1 Gvozdika x18	Kalininets, Naro-Fominsk Region, Moscow Oblast
2nd Guards Motorized Rifle Division, 15th Guards Motorized Rifle Regiment	T-72B3 x41	BMP-2 x123	2S1 Gvozdika SPA x18	
2nd Guards Motorized Rifle Division, 1st Tank Regiment	T-72B3 x41			
27th Independent Guards Motorized Rifle Brigade	T-90A x40 T-90AK x1	BTR-82A x129 BTR-80A x27 BRDM-2 x4	2S3 Akatsiya x18	Mosrentgen, Moscow Oblast

Table B.1—Continued

Subunit	Main Battle Tank	IFV/APC	Artillery	Base Location
6th Independent Tank Brigade	T-72B3 x94	BMP-3 APC x37 BTR-80 x6	2S3 Akatsiya SPA x18	Dzerzhinsk, Nizhegorodskaya Oblast
<b>20th Guards Combined Arms Army</b>				
3rd Motorized Rifle Division, 252nd Motorized Rifle Regiment	T-72B3 x40 T-72BK x1	BMP-2 IFV x120 MT-LB APC x15 BTR-82A/80 x 36 BRDM-2 x4	2S3 Akatsiya SPA x36	Boguchar, Voronezh Oblast
3rd Motorized Rifle Division, 752nd Motorized Rifle Regiment	T-72B3 x40 T-72BK x1	BMP-2 IFV x120 MT-LB APC x15 BTR-82A/80 x 36 BRDM-2 x4	2S3 Akatsiya SPA x36	Valuyki and Solotni, Belgorod Oblast
144th Motorized Rifle Division, 28th Independent Motorized Rifle Brigade	T-72B3 x40 T-72BK x1	BMP-2 IFV x120 MT-LB APC x15 BTR-80 APC x36 BRDM-2 x12	2S19 Msta-S x36	
<b>6th Combined Arms Army</b>				
138th Independent Guards Motorized Rifle Brigade	T-72B3 x40 T-72BK x1	MT-LB APC x159 BTR-80 APC x11 BRDM-2 x4	2S3 Akatsiya SP Artillery x36	
25th Independent Guards Motorized Rifle Brigade	T-72B3 x40 T-72BK x1	MT-LB APC x159 BTR-80 APC x11 BRDM-2 x4	2S1 Gvozdika SPA x36	
9th Guards Artillery Battalion			9P140 Uragan multiple-rocket launcher x8 2S19 Msta-S SPA x18	
<b>Other Elements</b>				
2nd Independent Spetsnaz Brigade		BTR-80 x25 GAZ Vodnik x4 Tigr-M x12		Promezhitsa, Pskov Oblast
16th Independent Spetsnaz Brigade		BTR-80 x25 GAZ Vodnik x4 Tigr-M x12		Tambov
<b>VDV Forces</b>				
<b>76th Guards Air Assault Division</b>				
104th Guards Air Assault Regiment	2S25 Sprut-SD x6	BMD-3 x31 BMD-2 x77 BTR-D x42 BMD-1P x1 BMD-1KSh x6 R-149 BMPD x1 BTR-RD/ZD x15 1V119 Reostat x10	2S9 Nona-S x24 2S25 Sprut-SD x6	Pskov

Table B.1—Continued

Subunit	Main Battle Tank	IFV/APC	Artillery	Base Location
234th Guards Air Assault Regiment	2S25 Sprut-SD x6	BMD-4 x28 BMD-3 x5 BMD-2 x75 BTR-D x42 BMD-1P x1 BMD-1KSh x6 R-149 BMPD x1 BTR-RD/ZD x15 1V119 Reostat x10	259 Nona-S x24	Pskov
1140th Guards Artillery Regiment	2S25 Sprut-SD x3	1V119 Reostat x10 BMD-1KSh x1 BTR-RD x6	259 Nona-S x18	Pskov
<b>98th Guards Air Assault Division</b>				
217th Guards Parachute Regiment		BMD-2 x105 BTR-D x28 BMD-1P x1 BMD-1KSh x6 R-149 BMPD x1 BTR-RD/ZD x15 1V119 Reostat x8	259 Nona-S x18	Ivanovo
331st Guards Parachute Regiment	2S25 Sput-SD x6	BMD-2 x105 BTR-D x28 BMD-1P x1 BMD-1KSh x6 R-149 BMPD x1 BTR-RD/ZD x15 1V119 Reostat x8	259 Nona-S x18	Kostroma
1065th Guards Artillery Regiment	2S25 Sput-SD x3	BTR-D/RD x10 1V119 Reostat x10 BMD-1KSh x1	259 Nona x18	Kostroma
<b>106th Guards Air Assault Division</b>				
51st Guards Parachute Regiment		BMD-2 x55 BMD-1 x50 BTR-D x28 BMD-1P x1 BMD-1KSh x6 R-149 BMPD x1 BTR-RD/ZD x15 1V119 Reostat x8	259 Nona-S x18	Tula
137th Guards Parachute Regiment		BMD-4M x32 BMD-2 x77 BTR-D x28 BMD-1P x1 BMD-1KSh x6 R-149 BMPD x1 BTR-RD/ZD x15 1V119 Reostat x8	259 Nona-S x18	

Table B.1—Continued

Subunit	Main Battle Tank	IFV/APC	Artillery	Base Location
45th Independent Special Operations Brigade		BTR-82A x6 Tigr-M MKTK REI PP Leer-2		
1182nd Guards Artillery Regiment		BTR-D/RD x13 1V119 Reostat x10 BMD-1KSh x1	2S9 Nona-S x18	

NOTE: SPA = self-propelled artillery.

**Table B.2**  
Russian Order of Battle, Southern Military District

Subunit	Main Battle Tank	IFV/APC	Artillery	Base Location
<b>Ground Forces</b>				
<b>49th Combined Arms Army</b>				
20th Independent Guards Motorized Rifle Brigade	T-90A x40 T-90K x1	BMP-3 IFV x120 BTR-80/82A x36 GAZ Tigr x6 MT-LB APC x15 BRDM-2 x4	2S19 Msta-S SPA x18 2S34 Hosta SPA x18	Volgograd
205th Independent Motorized Rifle Brigade	T-72B3 x40 T-72BK x1	MT-LB APC x159 BTR-80 APC x11 BRDM-2 x4	2S3 Akatsiya SPA x36	Budyonnovsk, Stavropol Krai
34th Independent Motorized Rifle Brigade		MT-LB x80 BTR-80 x9	2S1 Gvozdika SPA x18	Storozhevaya, Orlovskaya Oblast
7th Military Base	T-72B3 x40	BTR-82AM APC x130 BTR-80A APC x26 MT-LB APC x15 BRDM-2 x4	2S3M Akatsiya SPA x36	Gudauta, Abkhazia
102nd Military Base	T-72B x40 T-72BK x1	BMP-2 x120 MT-LB APC x15 BTR-70/80 APC x36 BRDM-2 x4		Yerevan and Gyumri, Armenia
25th Independent Special Operations Regiment		Tigr		Stavropol
<b>58th Combined Arms Army</b>				
8th Independent Guards Motorized Rifle Brigade		BTR-82A APC x130 BTR-80 APC x26 Tigr x6 MT-LB APC x15	2S1 Gvozdika SPA x18	Borzoi, Chechnya

Table B.2—Continued

Subunit	Main Battle Tank	IFV/APC	Artillery	Base Location
17th Independent Guards Motorized Rifle Brigade	T-72B3 x40 T-72BK x1	MT-LB x159 Tigr x6 BTR-80 APC x11 BRDM-2 x4	2519 Msta-S SPA x36	Shali, Chechnya
18th Independent Motorized Rifle Brigade	T-90A x40 T-90K x1	BMP-3 IFV x120 BTR-82A x9 BTR-80 x27 Tigr x6 MT-LB x15	2519 Msta-S SPA x36	Sputnik, Vladikavkaz
136th Guards Motorized Rifle Brigade	T-72B3 x40 T-72BK x1	BMP-3 IFV x120 BTR-82A x9 BTR-80 x27 Tigr x6 MT-LB x15 BRDM-2 x4	253 Akatsiya SPA x36	
4th Guards Military Base	T-72BM x40 T-72BK x1	BMP-2 APC x120 BTR-80 APC x36 MT-LB x15 BRDM-2 x4	253 Akatsiya SPA x36	Tskhinvali and Java, South Ossetia
291st Artillery Brigade		PRP-4M x3	257M Malka SPA x12 254 Tyuplan SPA x8	
<b>Other Elements</b>				
10th Independent Special Forces Brigade		BTR-80 x25 Tigr/Lynx x12 Ural Typhoon-U x10		
22nd Independent Guards Special Forces Brigade		Tigr x12 Ural Typhoon-U x10		
<b>VDV Forces</b>				
<b>7th Guards Air Assault Division</b>				
108th Guards Parachute Regiment		BMD-2 x108 BTR-D x42 BMD-1P x1 BMD-1KSh x6 R-149 BMPD x1 BTR-RD/ZA x15	259 Nona-S x18	Novorossiysk, Krasnodar Krai
247th Guards Air Assault Regiment		BMD-2 x108 BTR-D x42 BMD-1P x1 BMD-1KSh x6 R-149 BMPD x1 BTR-RD/ZA x15	259 Nona-S x18	Stavropol
1141st Guards artillery Regiment		BTR-D/RD x15 BMD-1KSh x11	259 Nona-S x18	Anapa, Krasnodar Krai

Table B.2—Continued

Subunit	Main Battle Tank	IFV/APC	Artillery	Base Location
56th Independent Guards Air Assault Brigade		BMD-2 UAZ Hunter 315108 Tigr-M MKTK REI PP Leer-2		Kamyshin, Volgograd Oblast

Table B.3  
Russian Order of Battle, Central Military District

Subunit	Main Battle Tank	IFV/APC	Artillery	Base Location
<b>Ground Forces</b>				
<b>2nd Guards Combined Arms Army</b>				
21st Independent Motorized Rifle Brigade	T-72B3/BA x84	BMP-2 x132	2S19 Msta-S x36 2S34 Khosta x12	Totskoye, Orenburg Oblast
15th Independent Motorized Rifle Brigade	T-72BM x40 T-72BK x1	BTR-82AM x130 BTR-80 x10 MT-LB x15 BRDM-2 x4		Roshchinsky, Samara Oblast
385th Guards Artillery Brigade	9P149 Shturm-S x18		2S19 Msta-S x18	Totskoye, Orenburg Oblast
<b>41st Combined Arms Army</b>				
90th Guards Tank Division, 9th Tank Brigade	T-72B3 x90 T-72BK x4	BMP-2 x40 BTR-80 x6 BRM-3K x3	2S3M Akatsiya x18	
90th Guards Tank Division, 32nd Independent Motorized Rifle Brigade	T-72BM x40 T-72BKx 1 9P149ShturmS x12	BTR-80 x156 MT-LB x15	2S3 Akatsiya x36	
35th Independent Guards Motorized Rifle Brigade	T-72BM x40 T-72BK x1 9P149 Shturm-S x12	BMP-2 x120 MT-LB x15 BTR-80 x36 BRDM-2 x4		Aleysk, Altai Krai
74th Independent Guards Motorized Rifle Brigade	T-72B3 x40 T-72BK x1	BMP-2 x120 MT-LB x15 BTR-80 x36 BRDM-2 x4	2S3 Akatsiya x36	
201st Military Base, 149th Guards Motorized Rifle Regiment	T-72B1 x9	BMP-2 x120		Dushanbe, Tajikistan
201st Military Base, 92nd Motorized Rifle Regiment	T-72B1 x9	BTR-82A x120	2S1 Gvozdika x18	Dushanbe, Tajikistan
201st Military Base, 191st Motorized Rifle Regiment	T-72B1 x9	BTR-82A x120	2S3M Akatsiya x18	Qurghonteppa, Tajikistan



Table B.3—Continued

Subunit	Main Battle Tank	IFV/APC	Artillery	Base Location
<b>Other Elements</b>				
3rd Independent Special Operations Brigade		BTR-80 x25 Tigr x12		Tolyatti, Samara Oblast
24th Independent Guards Special Operations Brigade		BTR-80 x25 Tigr x12		
<b>VDV Forces</b>				
31st Guards Independent Air Assault Brigade		BMD-2 x108 BTR-D x52 BTR-RD/ZD x23 1V119 Reostat x6 BMD-1KShx9		Ulyanovsk

Table B.4  
Russian Order of Battle, Eastern Military District

Subunit	Main Battle Tank	IFV/APC	Artillery	Base Location
<b>Ground Forces</b>				
<b>5th Combined Arms Army</b>				
70th Independent Guards Motorized Rifle Brigade	T-72B x40 T-72BK x1	MT-LB x159 BTR-80 x11 BRDM-2 x4 BTR-80 x11 BRDM-2 x4	2S19 Msta-S x36	Barabash, Primorsky Krai
59th Independent Motorized Rifle Brigade	T-72BM x40 T-72BK x1	BMP-1 x120 MT-LB x15 BTR-80 x36 BRDM-2 x4	2S3 Akatsiya x36	Sergeevka, Primorsky Krai
57th Independent Guards Motorized Rifle Brigade	T-72B x40 T-72BK x1	BMP-1 x120 MT-LB x15 BTR-80 x36 BRDM-2 x4	2S1 Gvozdika x36	Vostochnyy Gorodok, Bikin, Khabarovsk Krai
60th Independent Motorized Rifle Brigade	T-72B x40 T-72BK x1	BMP-1 x120 MT-LB x15 BTR-80 x36 BRDM-2 x4	2S19 Msta-S x36	
<b>35th Combined Arms Army</b>				
64th Independent Motorized Rifle Brigade	T-72B3 x40 T-72BK x1	BMP-2 x120 MT-LB x15 BTR-80 x36 BRDM-2 x4	2S1 Gvozdika x36	Knyazye-Volkonskoye, Khabarovsk Krai
69th Independent Border Section Brigade	T-72 x41	BMP-1 x123	2S19 Msta-S x18	Babstovo, Jewish Autonomous Region

Table B.4—Continued

Subunit	Main Battle Tank	IFV/APC	Artillery	Base Location
38th Independent Guards Motorized Rifle Brigade	T-72B3 x40	BMP-1 x123	2S3 Akatsiya x36	Belogorsk, Amur Oblast
	T-72BK x1	MT-LB x15		
		BTR-80 x36		
		BRDM-2 x4		
<b>36th Combined Arms Army</b>				
5th Independent Guards Tank Brigade	T-72B x90	BMP-1 x49	2S3M Akatsiya x18	Ulan-Ude, Buryatiya
	T-72BK x4	BTR-80 x6		
		BRM-3K x3		
37th Independent Guards Motorized Rifle Brigade	T-72B3 x40	BMP-2 x120	2S3M Akatsiya x36	Kyakhta, Buryatia
	T-72BK x1	MT-LB x15		
	9K113 Shturm-S x12	BTR-80 x36		
		BRDM-2 x4		
<b>29th Combined Arms Army</b>				
36th Independent Guards Motorized Rifle Brigade	T-72B x40	BMP-2 x120	2S3 Akatsiya x36	
	T-72BK x1	MT-LB x15		
	9K113 Shturm-S x12	BTR-80 x36		
		BRDM-2 x4		
<b>Other Elements</b>				
14th Independent Special Operations Brigade		BTR-80 x25 Tigr x12		
<b>VDV Forces</b>				
11th Independent Air Assault Brigade		BTR-80 x30		Possibly Sosnovy Bor, Amur Oblast
83rd Independent Air Assault Brigade		BMP-2 x112 BTR-80 x24 Tigr-M MKTK REI PP Leer-2		Ussuriysk, Primorsky Krai

## Russian Equipment with Characteristics for Deployment Calculation

Table B.5 lists the nomenclature, type, weight in metric tons, and length in meters of selected Russian military equipment used in our calculations and notional scenarios. It also notes whether the selected equipment is tracked or not tracked and how many individual pieces of that equipment can fit on a single, standard Russian rail transport car.

**Table B.5**  
**Selected Russian Military Equipment Characteristics for Deployment Calculator**

Vehicle	Type	Weight (metric tons)	Length (m)	Tracked?	Number per Railcar
ZSU 23-4 Shilka	Anti-aircraft gun	19.0	6.50	Y	2
ZSU 2S6M Tunguska	Anti-aircraft gun	34.0	7.93	Y	1
ZU-23-2	Anti-aircraft gun	1.0	4.57	Y	2
MT-12 Rapira	Anti-tank gun	2.7	9.48	N	1
9K123 Khризantema-S	APC/IFV/ARV	18.7	7.14	Y	1
9P148 Konkurs	APC/IFV/ARV	7.0	5.75	N	2
9P149 Shturm-S	APC/IFV/ARV	12.3	6.45	Y	2
BMD-1	APC/IFV/ARV	7.5	5.41	Y	2
BMD-2	APC/IFV/ARV	11.5	7.85	Y	2
BMD-3	APC/IFV/ARV	12.9	6.36	Y	2
BMD-4	APC/IFV/ARV	13.6	6.36	Y	2
BMP-1	APC/IFV/ARV	13.2	6.70	Y	2
BMP-2	APC/IFV/ARV	14.3	6.70	Y	2
BMP-3	APC/IFV/ARV	18.7	7.14	Y	2
BRDM-2	APC/IFV/ARV	7.0	5.75	N	2
BREM-2	APC/IFV/ARV	41.0	9.53	Y	1
BTR-80	APC/IFV/ARV	13.6	7.55	N	2
BTR-82A	APC/IFV/ARV	15.0	7.70	N	2
BTR-D	APC/IFV/ARV	8.5	6.74	N	2
BTR-MDM Rakushka	APC/IFV/ARV	13.2	6.10	N	2
MT-LB	APC/IFV/ARV	11.9	6.45	Y	2
Murmansk-BN	Electronic warfare	11.4	9.30	N	1
R-330Zh "Zhitel"	Electronic warfare	7.2	5.70	Y	2
R-934BMV	Electronic warfare	10.7	8.00	N	1
RB-531B "Infauna"	Electronic warfare	13.6	7.55	N	2
RP-377LA "Lorandit"	Electronic warfare	13.6	7.55	Y	2
"Leer-3" system	Electronic warfare	11.4	9.30	N	2
1RL257 "Krasukha-4"	Electronic warfare	11.4	9.30	N	1
Tigr-M MKTK REI PP Leer-2	Electronic warfare	7.2	5.70	N	2
T-72 variants	Main battle tank	45.0	9.53	Y	1
2S25 Sprut-SD	Main battle tank	18.0	9.77	Y	1
T-80U	Main battle tank	42.5	9.90	Y	1

Table B.5—Continued

Vehicle	Type	Weight (metric tons)	Length (m)	Tracked?	Number per Railcar
T-90A	Main battle tank	46.5	6.86	Y	1
2B17-1 Tornado	Multiple-rocket launcher	43.7	12.10	N	1
9K79-1 Tochka-U	Multiple-rocket launcher	18.7	9.14	N	1
9P140 Uragan	Multiple-rocket launcher	20.0	9.27	N	1
BM-21 Grad	Multiple-rocket launcher	13.8	7.35	N	2
TOS-1A	Multiple-rocket launcher	45.3	9.50	Y	1
9K270 Iskander-M	Rocket artillery	42.9	13.10	N	1
9K37 Buk-M1	SAM	35.0	9.30	Y	1
BM 9A34(35) Strela-10	SAM	12.3	6.60	Y	2
BM 9A331 Tor M1	SAM	34.0	7.50	N	1
BM 9A33BM2(3) Osa	SAM	17.5	9.14	N	1
2S1 Gvozdika	SP artillery	15.7	7.26	Y	2
2S19 Msta-S	SP artillery	42.0	11.91	Y	1
2S3 Akatsiya	SP artillery	27.5	7.65	Y	1
2S34 Hosta	SP artillery	16.0	7.57	Y	2
2S9 Nona-S	SP artillery	8.7	6.02	Y	2
D-30	SP artillery	3.2	5.40	N	2
Tigr-M	Support	7.2	5.70	N	2
MT-55A	Support	36.0	9.80	Y	1
MTU-20	Support	37.0	11.64	Y	1

SOURCES: Derived from U.S. Army Training and Doctrine Command, 2015; IHS Jane's equipment guides for the specific vehicles listed; and corroboration with relevant industry sources.

NOTE: Some vehicles in the orders of battle are variants of the main vehicles listed in the table. In those cases, we used the main vehicles' measurements. Abbreviations in this table, such as ZU, MT, BMD, BMP, and BRDM, are transliterated acronyms commonly used by the U.S. defense analytic community. For example, BRDM is *boyevaya razvedyvatelnaya dozornaya mashina*, or *combat reconnaissance patrol vehicle*. Zhitel, Infauna, and other systems are listed by their transliterated Russian names. ARV = armored reconnaissance vehicle.

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**B**y the time it invaded Crimea in 2014, Russia seemed to have regained a significant portion of the military power it lost after the fall of the Soviet Union, reemerging as a perceived threat to democracy. But how capable is Russia of deploying and sustaining ground combat forces farther from its borders?

An analysis of notional ground deployment scenarios constructed from real-world, open-source data, along with a review of historical cases spanning the Soviet and post-Soviet eras, reveals strengths and limitations of Russia's military infrastructure. In fact, despite Russia's status as a reemerging global military power, its ground force deployment capability is strong only near its western border and within range of its air defenses. Although it poses a credible threat to Eastern Europe, its ability to deploy ground combat units drops off sharply as geographic distance increases. Limited forces and transportation assets, a lack of international support, and an insufficient ability to sustain its deployed forces also prevent Russia from regaining its Soviet-era deployment capacity.

This research was aided by a detailed order of battle for Russian ground forces and a specially designed calculator, which help advance understanding of the factors that stress Russia's ability to deploy forces and project power locally and globally. A companion report, *Russia's Limit of Advance: Scenarios*, presents more detail on the context and characteristics of the notional scenarios that underpin this research.

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