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NATIONAL CENTRE FOR STRATEGIC STUDIES

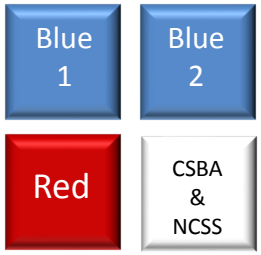
Poland-U.S. Crisis Planning Seminar and Strategic Choices Exercise

Exercise purpose

- **Assess operational concepts, plans, and capability options that provide a basis for evaluating future force and acquisition decisions for Poland, the United States, and NATO**
  - Build on results from the Poland-U.S. October 2015 exercise in Warsaw
- **Desired outputs of the May 2016 exercise:**
  - Potential operational concepts to deter or raise the cost of aggression against Poland and other European frontline states
  - Inform thinking about capabilities that would be most useful and relevant to supporting these concepts
  - Potential changes to the U.S. military's force posture (including prepositioning) in Poland and other front-line states

Exercise structure

Two "Blue" (Poland-U.S.) Teams and one "Red" (Russia) Team played three moves



Teams consisted of experts from Poland and the U.S. with a mix of experience (policy/strategy, naval, air, ground, special operations)

Day 1, Move 1
Article V conventional conflict set in year 2027

- **Teams first assessed strengths, capability shortfalls, and approaches to gain advantages relative to adversary**

Day 2, Move 2
Strategic choices exercise 2017-2026

- **Informed by insights from Move 1, teams then rebalanced Poland's forces and capabilities (Red Team rebalanced Poland's forces from Red's perspective)**

Day 3, Move 3
Article V conventional conflict set in year 2027

- **Teams assessed strengths, capability shortfalls, and new operational approaches relative to Move 1 baseline forces and posture**

Day 4

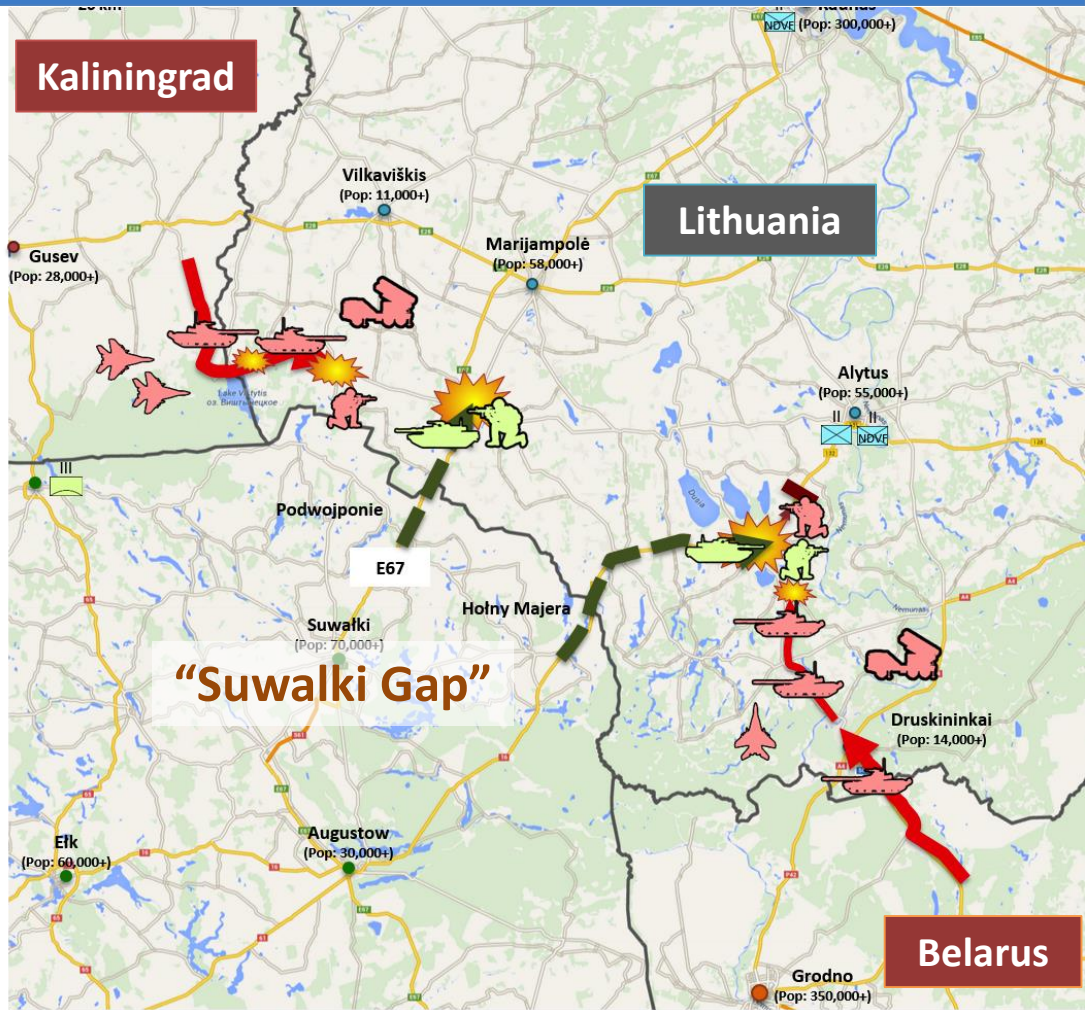
- **Final plenary session**

Scenario: Gray zone aggression in the Baltics

- **Red-instigated protests by Russian ethnic groups in Latvia led to outbreaks of violence in Riga**
- **Red little green men and SOF inserted into Latvia in support of Russian separatist groups skirmished with government forces**
- **Small military units without insignia from Belarus and Kaliningrad conducted small-scale raids into Lithuania to disrupt critical nodes along NATO's ground lines of communication to Latvia**
- **NATO air and sea lines of communication to the Baltics were similarly threatened by Red forces; Red combat aircraft frequently intruded into Allied airspace**

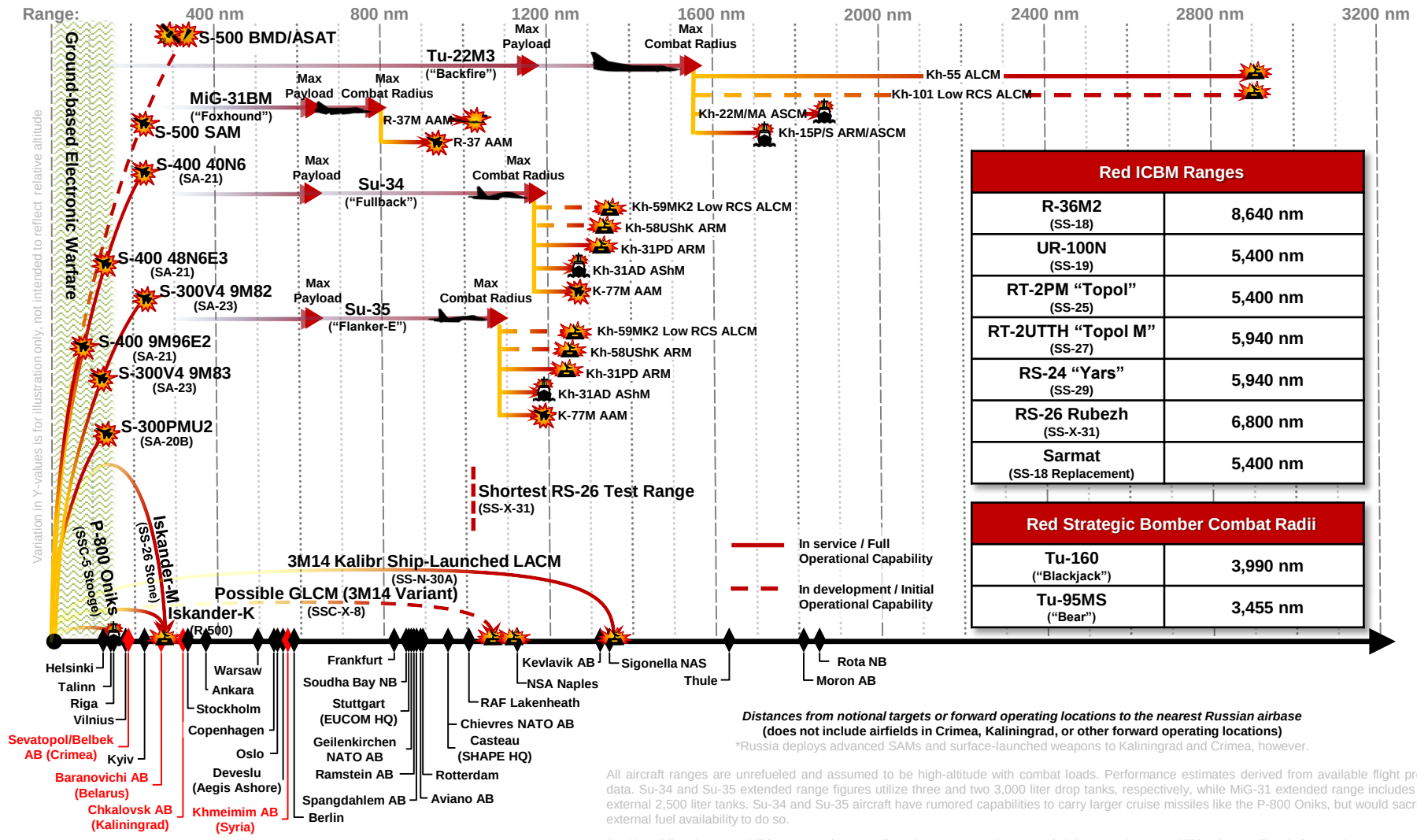
Escalated to an Article 5 conventional conflict

- **Red ground forces assaulted into Lithuania to create a secure land corridor between Belarus and Kaliningrad**
  - Also sought to create air & sea "no-go" zones to defend Kaliningrad, support Red ops in Lithuania, and prevent NATO from reinforcing the Baltic states
- **NATO quickly approved a military response after Lithuania declared Article 5**
- **Blue engaged Red proxies and special forces along Poland's borders with Belarus and Kaliningrad; Red ground forces in Belarus began massing along Poland's borders**



- **Sporadic Red cruise missile and air attacks into Poland; Allied C2 elements throughout the AOR suffered continuous cyber-attacks**

Red's air and missile complex designed to cover aggression and degrade Blue's airpower advantage



Red ICBM Ranges	
R-36M2 (SS-18)	8,640 nm
UR-100N (SS-19)	5,400 nm
RT-2PM "Topol" (SS-25)	5,400 nm
RT-2UTTH "Topol M" (SS-27)	5,940 nm
RS-24 "Yars" (SS-29)	5,940 nm
RS-26 Rubezh (SS-X-31)	6,800 nm
Sarmat (SS-18 Replacement)	5,400 nm

Red Strategic Bomber Combat Radii	
Tu-160 ("Blackjack")	3,990 nm
Tu-95MS ("Bear")	3,455 nm

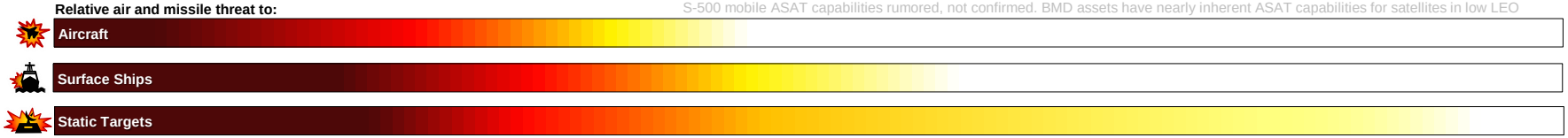
Distances from notional targets or forward operating locations to the nearest Russian airbase (does not include airfields in Crimea, Kaliningrad, or other forward operating locations)

*Russia deploys advanced SAMs and surface-launched weapons to Kaliningrad and Crimea, however.

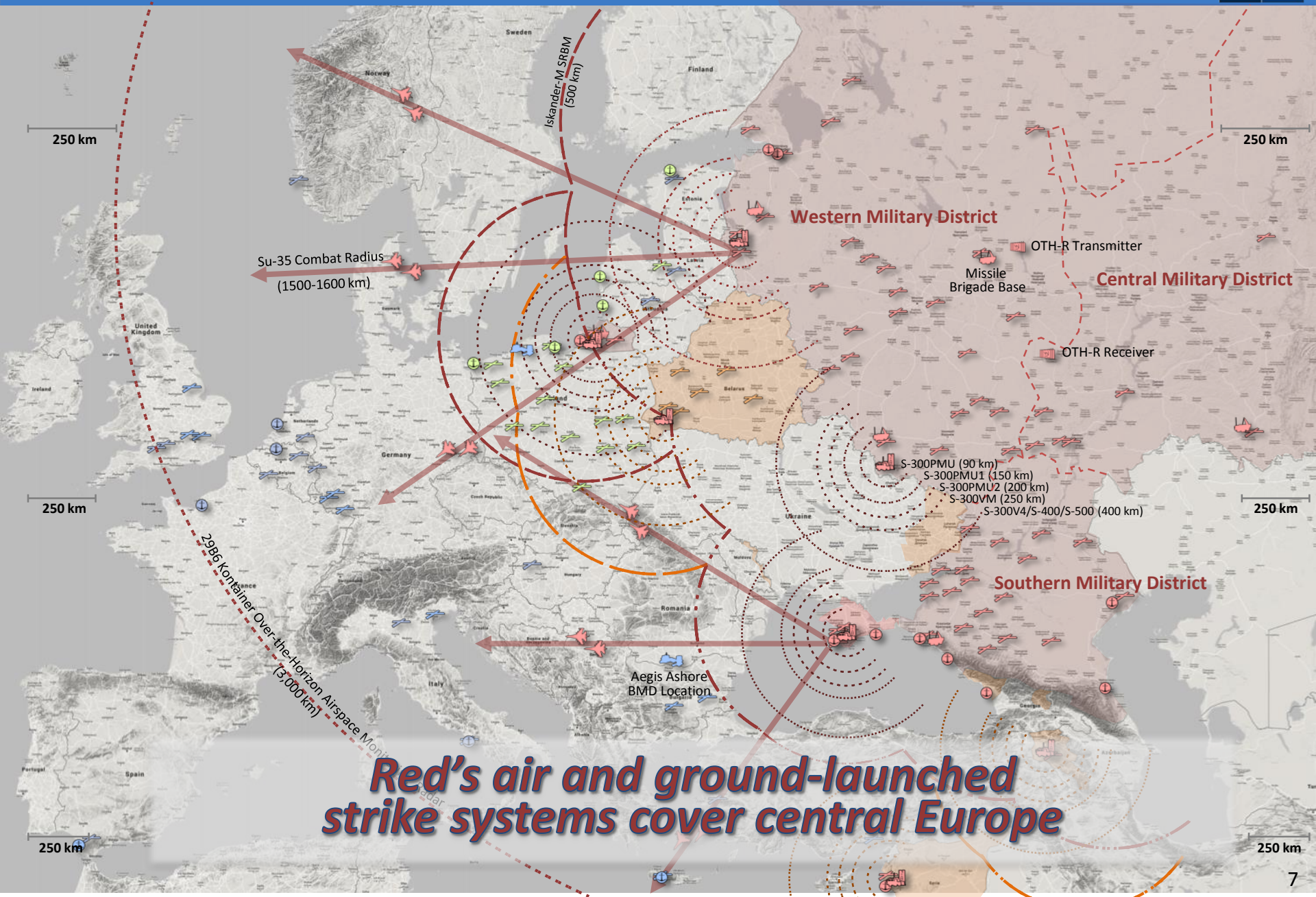
All aircraft ranges are unrefueled and assumed to be high-altitude with combat loads. Performance estimates derived from available flight profile data. Su-34 and Su-35 extended range figures utilize three and two 3,000 liter drop tanks, respectively, while MiG-31 extended range includes two external 2,500 liter tanks. Su-34 and Su-35 aircraft have rumored capabilities to carry larger cruise missiles like the P-800 Oniks, but would sacrifice external fuel availability to do so.

S-500 mobile ASAT capabilities rumored, not confirmed. BMD assets have nearly inherent ASAT capabilities for satellites in low LEO

Relative air and missile threat to:



No sanctuaries for Allied forces in Europe



Red's air and ground-launched strike systems cover central Europe

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Key Insights from Day 1

Teams played baseline forces for Poland and the United States

Blue lines of communication at risk

- **U.S. forces deploying to Europe will need to use airfields and ports located in Germany and other European states before moving to the fight**
  - Red attacks on these facilities could significantly delay force movements to Poland and the Baltics
- **Red able to hold at risk NATO reception, staging, onward movement, and integration (RSOI) sites as well as key bases and chokepoints along LOCs to the Baltics**
  - Airfields and ports in Poland and the Baltics are well inside the range of Red fighters and Iskander SRBMs/LACMs; Blue forces could use abandoned Soviet-era airfields in eastern Poland as dispersal sites
  - Challenges for Blue forces deploying to the Baltics also include few roads, multiple rivers, and the Suwalki Gap chokepoint
- **Defending major nodes along ground LOCs will require NATO point defense systems and/or resiliency capabilities such as amphibious logistics vehicles + rapid bridging**
  - Insufficient capacity in the U.S. military
  - Due to harsh terrain, multiple rivers, and probable Spetsnaz sabotage activities, Poland's armed forces should provide road engineering capabilities and acquire bridging capabilities – will be essential to keeping the LOC through Suwalki Gap open

CSBA Air & missile defense capacity shortfall

NATO lacks sufficient capacity to defeat large PGM salvos

- **Unable to defend airfields, ports, RSOIs, and other critical infrastructure against multiple salvos of ballistic missiles, cruise missiles, and air-launched PGMs**
- **Unable to protect ground forces operating inside Red's A2/AD envelope**

Example

Throw weight of Su-35 regiment + Su-34 regiment = **up to 700+ PGMs per mission cycle**

- 36 aircraft each, assume 75% availability, 6 hour turnaround time, 50% of Su-35s used for OCA and 25% of Su-34s used for SEAD, leaves about 13-14 Su-35s + 20 Su-34s for strike missions
- If each aircraft carries a payload of 6 standoff weapons = total of about 200 standoff weapons; alternatively, 18-24 direct attack weapons per aircraft = total of about 700+ weapons
- Babyrusk, Belarus to Malbork (~280 km from Belarussian border) and cycle every 8 hours; from Andreapol or Kotilovo (Russia proper) to Malbork cycle every 9 hours

Illustrative airbase salvo defense capacity = **136 interceptors against a 2-minute salvo**

- 2 Patriot batteries: 64 total interceptors (2 PAC-2 GEM-T launchers and 2 PAC-3 MSE launchers per battery)
- 4 NASAM batteries = 72 total interceptors (3 launchers per battery)
- Note: magazines should be deep enough to ensure defensive capacity after the first salvo

Insufficient Allied air early in the conflict

- **Red air defenses in Kaliningrad and Belarus, including late-generation S-300s, new S-400s, and future systems will be major threats to Blue aircraft**
  - Hybridization of modern radars and mobility upgrades with Soviet-era S-200s and early model S-300s deepen Red's SAM reserves and have been exported to partners
- **Red IADS likely to prevent Blue air from providing sufficient support to friendly ground forces operating at the leading edge of battle early in the conflict**
  - Likely that Allied ground forces will need to operate for some period of time under Red's A2/AD bubbles

Blue ground force's freedom of maneuver challenged

- **Combination of insufficient air and missile defense capacity and lack of air cover may create an unacceptable level of risk for Blue ground forces operating under Red's A2/AD umbrella early in a conflict**
  - Maneuver forces will be subject to the full range of Red's strike capabilities, including precision and non-precision (unguided artillery) fires
- **Will take a major, sustained effort to suppress Red's integrated air defense system (IADS) and degrade its strike complex**
- **Pursuing a sequential CONOPs to first "roll-back" Red threats before launching Blue offensive operations would create a window of opportunity for Red to achieve its objectives**

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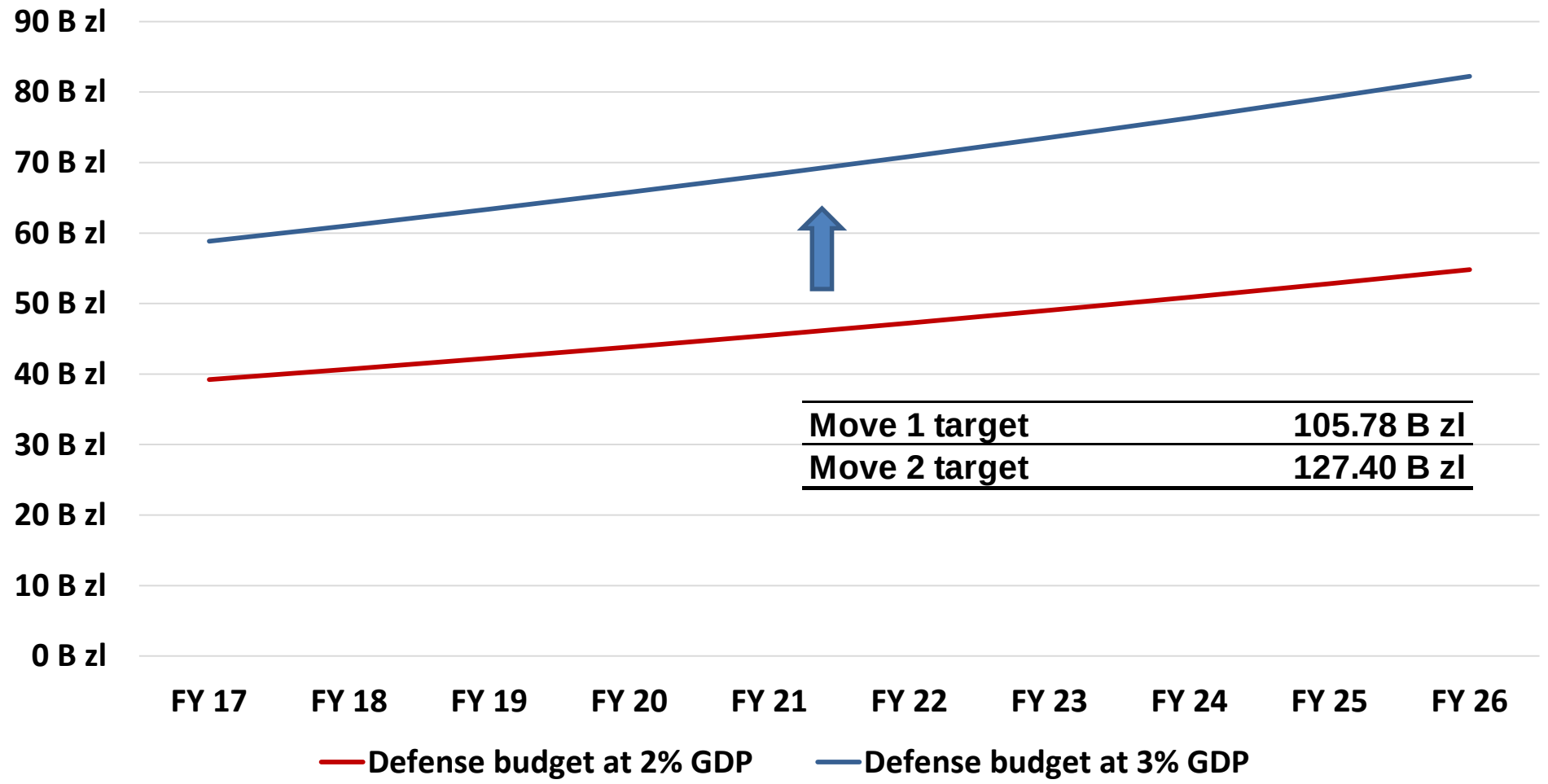
Day 2
Strategic Choices Exercise

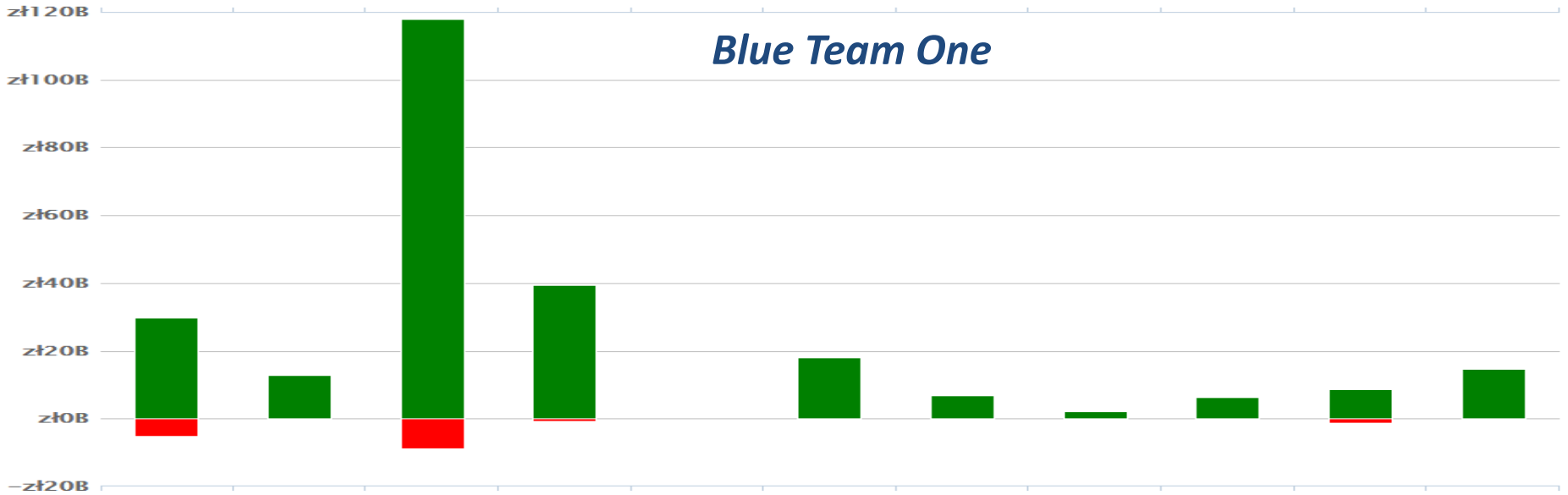


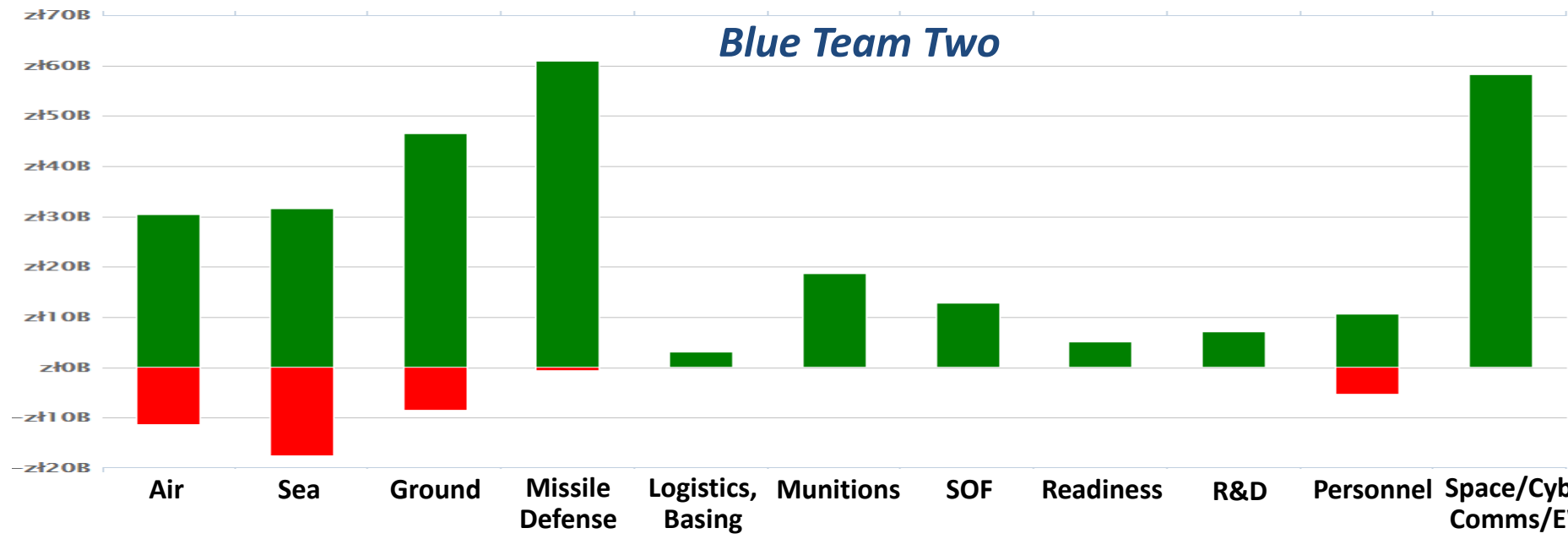
Budget scenario

Teams were asked to rebalance Poland's forces over a 10-year period assuming Poland's defense budget increased to 3% of GDP per year

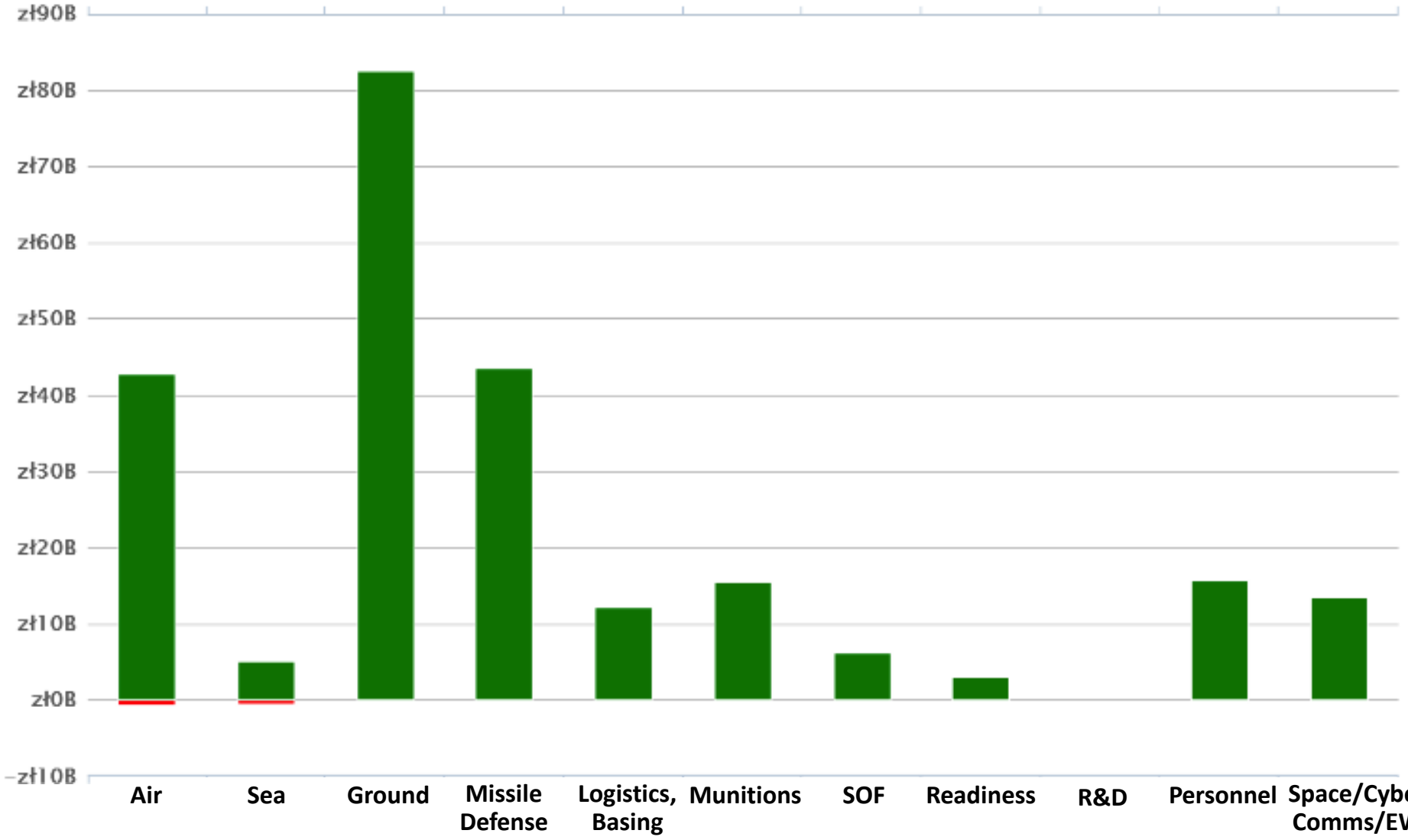


Blue Teams' adds & cuts





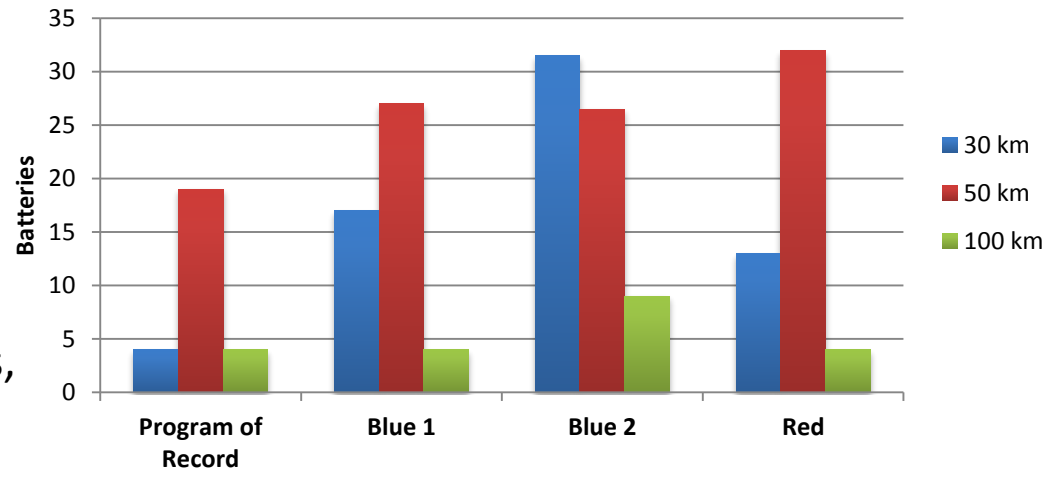
Red Team's adds & cuts



All teams increased Poland's air and missile defense capacity above the planned baseline

- **Blue Team 1** bought 8 NASAMS batteries, 10 HEL batteries, and equipped 3 155-mm artillery (like the Krab SP Howitzer) batteries to launch hypervelocity projectiles (HVPs)
- **Blue Team 2** bought 10 PAC-3 batteries, 5 MEADS batteries, 5 NASAMS batteries, 10 HEL batteries, equipped 10 155-mm artillery batteries for HVP use, and added 100 air-launched hit-to-kill BMD weapons
- **Red Team (acting as Blue players)** bought 10 MEADS batteries, 8 NASAMS batteries, 2 HEL batteries, and equipped 2 155-mm artillery batteries for HVPs
- **All teams agreed 360 degree threat coverage and ability to accompany maneuver forces were important**

Air & Missile Defense Batteries by Range Bands



Notes

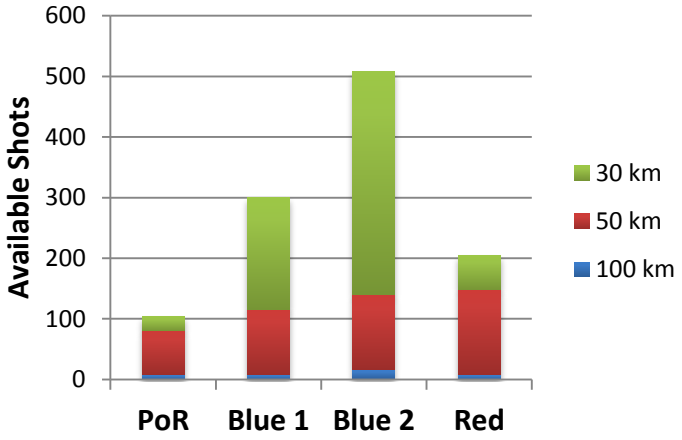
- MEADS batteries counted half towards 50 km and half towards 30 km defense range bands; Patriot batteries counted half towards 100 km and half towards 30 km range bands
- HTK interceptors effective >100 km but likely require air-launch from inside denied areas
- GROM MANPADS ineffective for missile defense but helpful to deter Red helicopter and CAS ops

All teams prioritized increasing medium-range defensive capacity

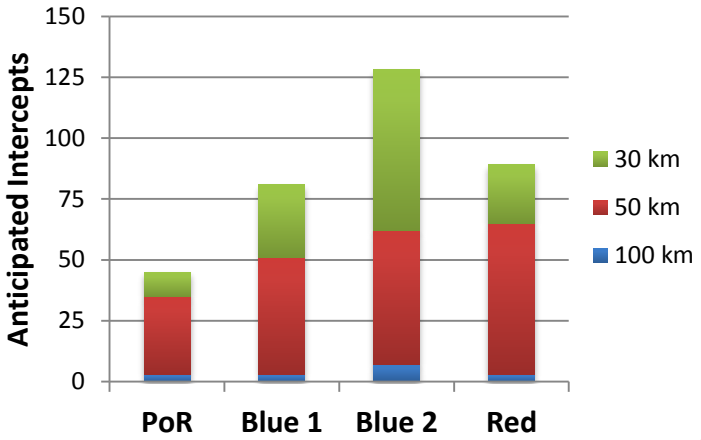
Mobile medium-range air and missile defenses for ground forces

Illustrative increases in Poland's fixed location air and missile defense capacity (2 min. period)

Available Shots by Range



Anticipated Intercepts by Range



ILLUSTRATIVE ONLY, SENSITIVE TO FORCE LAYDOWNS, OPERATIONAL CONCEPTS, AND ACTUAL PROBABILITY OF KILL (Pk)

Shot Capacity Within 2 Minute Period (assumes 25% of Team's total missile defense capabilities available)

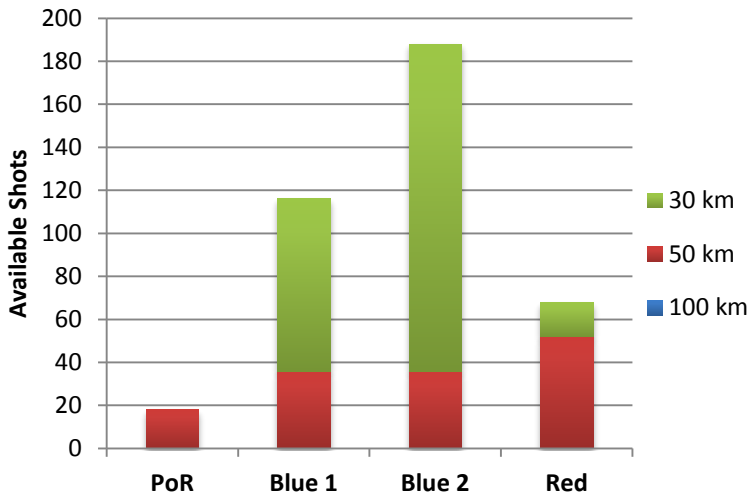
	100 km Program of Record	100 km Blue 1	100 km Blue 2	100 km Red Team	50 km Program of Record	50 km Blue 1	50 km Blue 2	50 km Red	30 km Program of Record	30 km Blue 1	30 km Blue 2	30 km Red Team
Patriot	8	8	16	8					24	24	48	24
MEADS							16	32			16	32
NASAMS					72	108	108	108				
HEL Defense										160	160	
HVP											144	
	Density of base defenses				Density of base defenses				Density of base defense			
Total	***8***	***8***	***16***	***8***	***72***	***108***	***124***	***140***	***24***	***184***	***368***	***56***

Anticipated Intercepts (assumes S-L-S Pk = 0.95 for interceptors, Single Shot Pk = 0.25 for all other defenses)

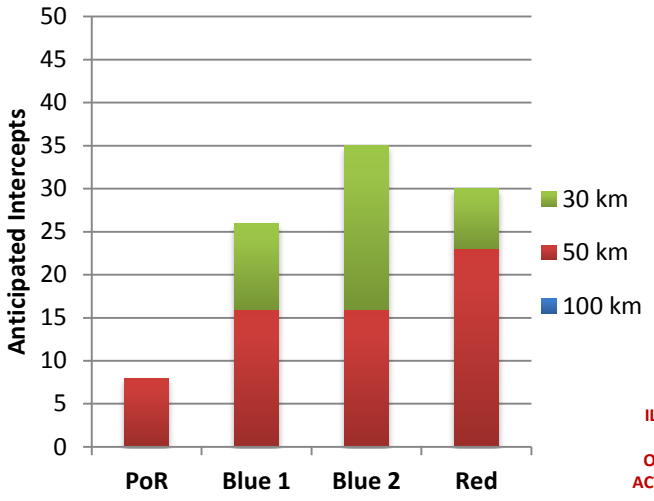
	100 km Program of Record	100 km Blue 1	100 km Blue 2	100 km Red Team	50 km Program of Record	50 km Blue 1	50 km Blue 2	50 km Red	30 km Program of Record	30 km Blue 1	30 km Blue 2	30 km Red Team
Patriot	3	3	7	3					11	11	22	11
MEADS							7	15			7	15
NASAMS					34	51	51	51				
HEL Defense										20	20	
HVP											18	
	Density of base defenses				Density of base defenses				Density of base defense			
Total	***3***	***3***	***7***	***3***	***34***	***51***	***58***	***66***	***11***	***31***	***67***	***26***

Illustrative increase in Poland's maneuver unit air and missile defense capacity (2 min. period)

Available Shots by Range



Anticipated Intercepts by Range



ILLUSTRATIVE ONLY, SENSITIVE TO FORCE LAYDOWNS, OPERATIONAL CONCEPTS, AND ACTUAL PROBABILITY OF KILL (Pk)

Shot Capacity Within 2 Minute Period (assumes 10% of team's total missile defense capabilities)

	100 km Program of Record	100 km Blue 1	100 km Blue 2	100 km Red Team	50 km Program of Record	50 km Blue 1	50 km Blue 2	50 km Red	30 km Program of Record	30 km Blue 1	30 km Blue 2	30 km Red Team
MEADS								16				16
NASAMS					18	36	36	36				
HEL Defense										80	80	
HVP											72	
	Density of maneuver defenses				Density of maneuver defenses				Density of maneuver defense			
Total					***18***	***36***	***36***	***52***		***80***	***152***	***16***

Anticipated Intercepts (assumes S-L-S Pk = .95 for interceptors, single shot Pk = .25 for all other defenses)

	100 km Program of Record	100 km Blue 1	100 km Blue 2	100 km Red Team	50 km Program of Record	50 km Blue 1	50 km Blue 2	50 km Red	30 km Program of Record	30 km Blue 1	30 km Blue 2	30 km Red Team
MEADS								7				7
NASAMS					8	17	17	17				
HEL Defense										10	10	
HVP											9	
	Density of maneuver defenses				Density of maneuver defenses				Density of maneuver defense			
Total					***8***	***17***	***17***	***24***		***10***	***19***	***7***

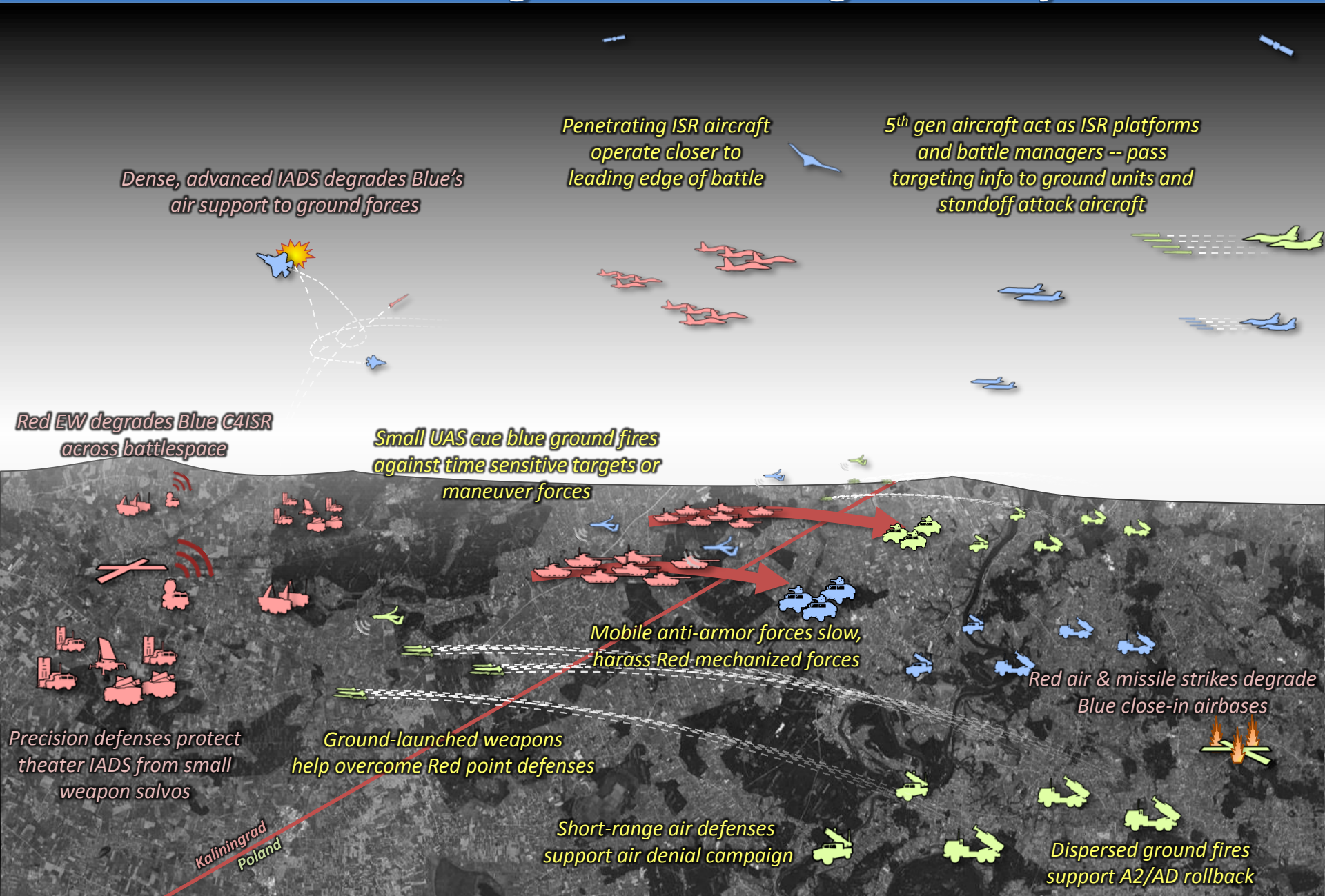
Teams agreed a combination of active and passive passive salvo defense measures are needed

- **Other active and passive initiatives to enhance force survivability:**
  - Counter-C4ISR operations
  - Hardening/sheltering
  - Local and area dispersal
  - Camouflage, concealment, and deception
- **Increased active and passive countermeasures + increased defensive capacity may cause Red to:**
  - Use more stand-off weapons with unitary warheads and seekers (that are also more costly)
  - Allocate more resources to ISR, SEAD and post-strike battle damage assessment operations
- **Poland's efforts alone cannot offset Red's precision strike throw weight overmatch**

Teams invested in capabilities needed for a ground-based precision fires system-of-systems

- **Suppressing Red's IADS and missile launchers in Kaliningrad and Belarus may require Blue forces to employ integrated, long-range ground-based precision fires, standoff and penetrating air strikes, and SEAD/DEAD sorties**
  - Could include new ground-launched cruise missiles, theater ballistic missiles, artillery with guided munitions, and gun-launched hypervelocity projectiles (HVPs)
  - Blue fire units in Poland could reach all Red targets in Kaliningrad, Lithuania, and Latvia; considering the AOR's compact geography, future ground-launched systems could have ranges below the INF Treaty threshold
  - Will need to be highly mobile, employ camouflage and deception to counter Red fires
- **Longer range, ground-based precision fires could provide adequate support to maneuver units operating under Red's A2/AD umbrella early in the fight (compensate for lack of Allied air coverage)**
  - In combination with increased air and missile defense capacity, could restore ground force freedom of maneuver
- **UAVs of various sizes needed to provide ISR support to ground fire units**
  - Locate targets, transmit data to fire units in communications-degraded environment, etc.

A notional precision fires system-of-systems including UAVs and 5th gen aircraft



Investments in ground fires

Choices reflected concern that Allied air forces will be unable to provide sufficient fires early in the fight

	Baseline	Blue One	Blue Two	Red
Coastal Defense	2	3	6	2
Tube Artillery	16	22	16	35
Rocket Artillery	7	13	19	22
TOTAL	25	+ 13	+16	+ 34

(Blue numbers = 2 or more teams bought)

Upgrading Poland's air forces and investing in longer range strike

	Blue 1	Blue 2	Red
Non-stealthy fighters	+20 F-16 E/F	+ 50 EW F-16	+70 F-16 E/F +20 EW F-16
Stealthy fighters	+20 F-35		+10 F-35
Helicopters	+52 AH-64Es		+32 AH-64Es
Stealthy UCAVs	+30 (Harpy)	+10 (MQ-X) +50 (Harpy)	+10 (MQ-X)
Non-stealthy UAVs	+35	+40	
Stealthy UAVs	+30	+50	+25
JASSM-ER	+200	+100	+100
SRBMs	+1,100 (450 km)	+1,000 (450 km)	+1,000 (350 km) +1,100 (450 km)

Example: Blue Team 1's precision strike artillery regiments

Created 3 new independent artillery regiments, each with:

(2) Battalions of 24 WR-300 Homars Multiple Rocket Launch Systems (MLRS)

- 70-120 km GMLRS rockets
- 450 km short-range ballistic missiles (SRBMs); could deliver brilliant anti-tank sub-munitions
- Role for decoys (e.g., ground-launched MALD) to aid NATO airstrikes on IADS and other high-value targets

(1) Battalion of 24 Krab 155-mm Self-Propelled Howitzers (6 rounds per minute)

- 30 km 155-mm NATO artillery shells
- 40 km 155-mm NATO artillery shells (base bleed round)
- 40-57 km Excalibur guided 155-mm rounds
- Hyper Velocity Projectiles point defense capabilities

Several units of stealthy tactical ISR UAVs equipped with:

- EO/IR, real-time video, or limited SAR
- SIGINT or low-power jamming capabilities
- Capabilities to act as communications relays

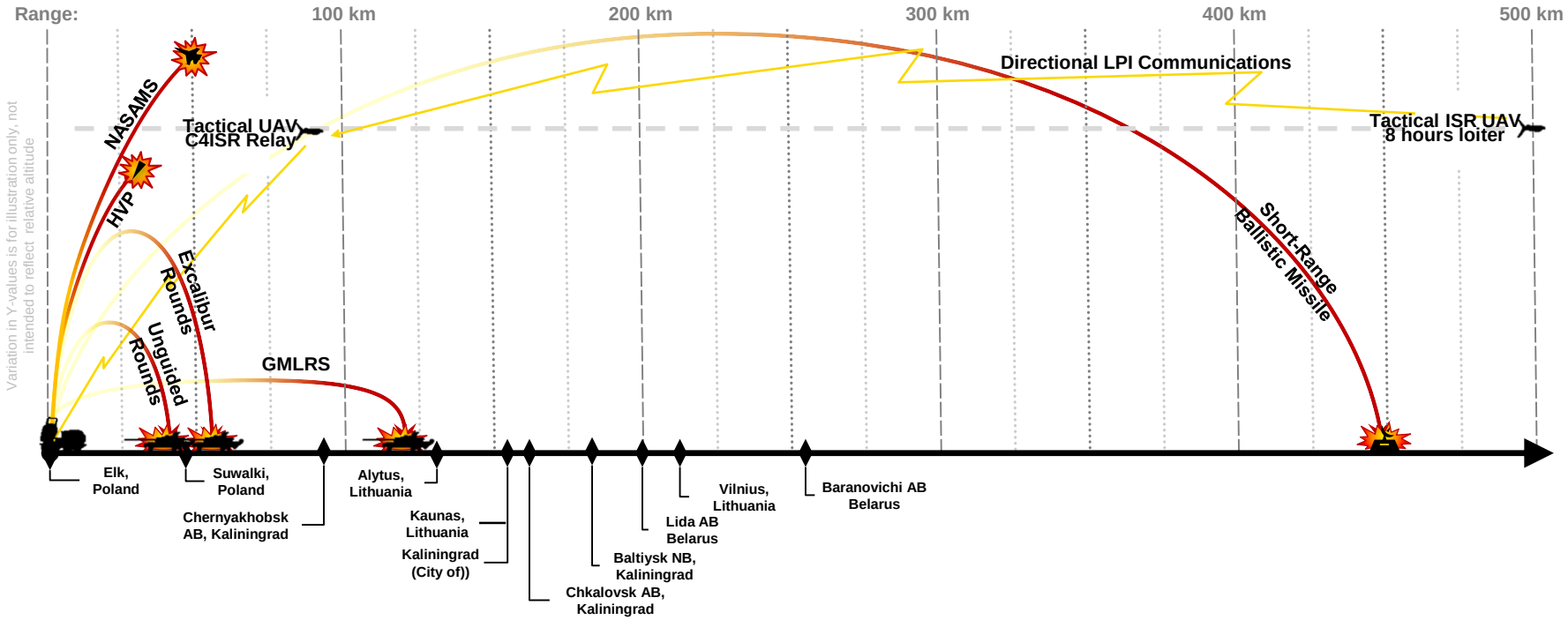
Air defense capabilities

- One or more NASAMS battery
- One or more POPRAD or shoulder-fired MANPADS units
- Ground-based EW capabilities to degrade adversary C4ISR

Illustrative regimental strike throw weight

Potential within a 5 minute period:

- **288 GLMRS rounds** 70-120 km (25,920 kg of warhead/submunitions) or **96 LRPF-like SRBMs** 450 km (11,040 kg of warhead/submunitions) and
- **720 artillery rounds** 30-57 km (7,776 kg of warhead/submunitions) of unguided rounds, Excalibur precision-guided rounds, or hypervelocity projectiles



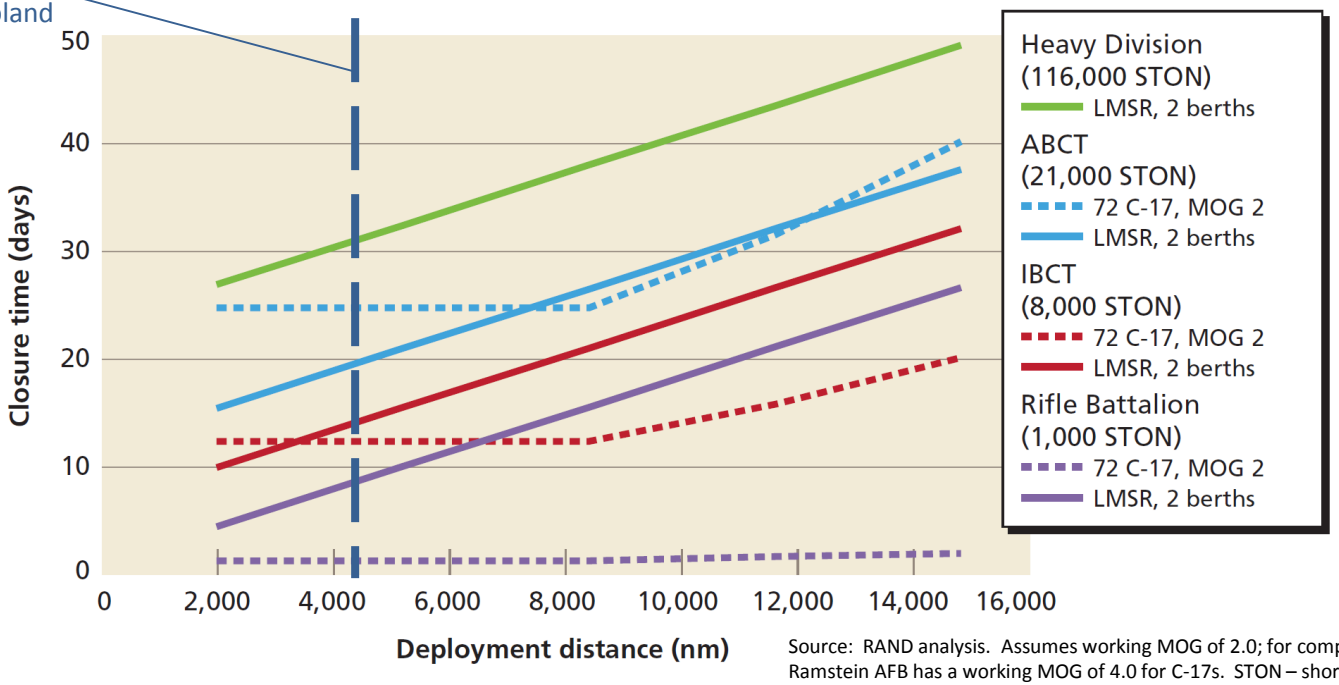
Teams' European posture initiatives added early warfighting capacity

Enhancements to Continuous Presence in Europe (Green = Team Enhancement)
• 1 x F-16C/D Squadron (Spangdahlem AFB) • 3 x F-15E Squadrons at RAF Lakenheath replaced by **3 x F-22 Squadrons** (note there are only 137 PMAI F-22s in the U.S. inventory) • **B-52s, B-1s, F-35s/F-22s**

+72 Hours	*+96 Hours*	*+120 Hours*
• 1 x 173rd Airborne Brigade(-) • **1 x SOF CO (*)** • **1 x Patriot BN (*)**	• **1 x Engineering BDE**	• **1 x Armor BCT (from Germany)** • **1 x MLRS BN (from Germany)**

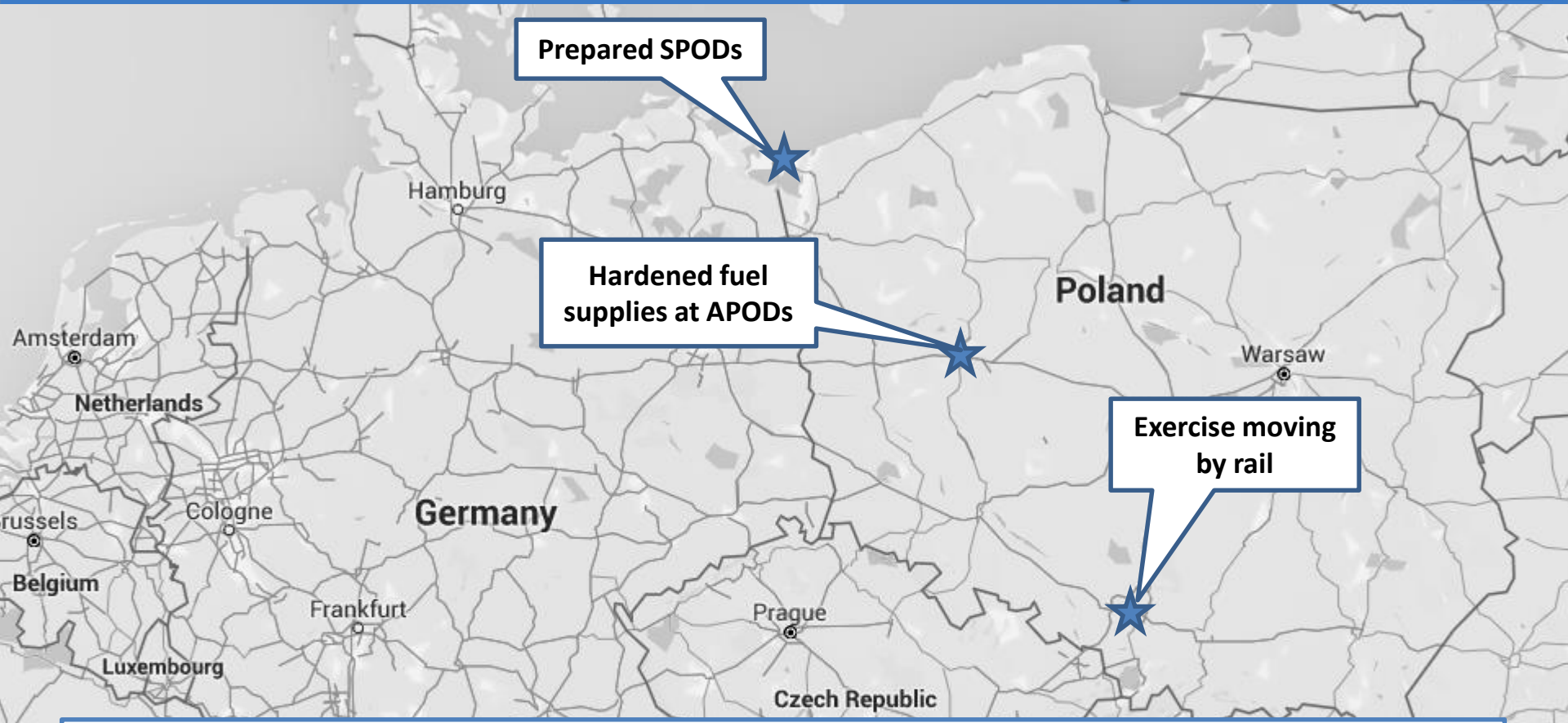
Approx. distance from Ft. Bragg to Southern Poland

Illustrative effect of unit and lift type on closure times



Source: RAND analysis. Assumes working MOG of 2.0; for comparison, Ramstein AFB has a working MOG of 4.0 for C-17s. STON – short tons.

Even small-scale infrastructure initiatives would have an impact



- **Unit deployment times decreased by:**
  - Improvements in transportation infrastructure and agreements on their use
  - Combined forces exercises and training events
  - Higher unit readiness levels
- **Despite infrastructure improvements, in an abbreviated crisis timeline (<120 hours) unlikely that substantial heavy forces from Germany could arrive in northern Poland**

Locations are illustrative

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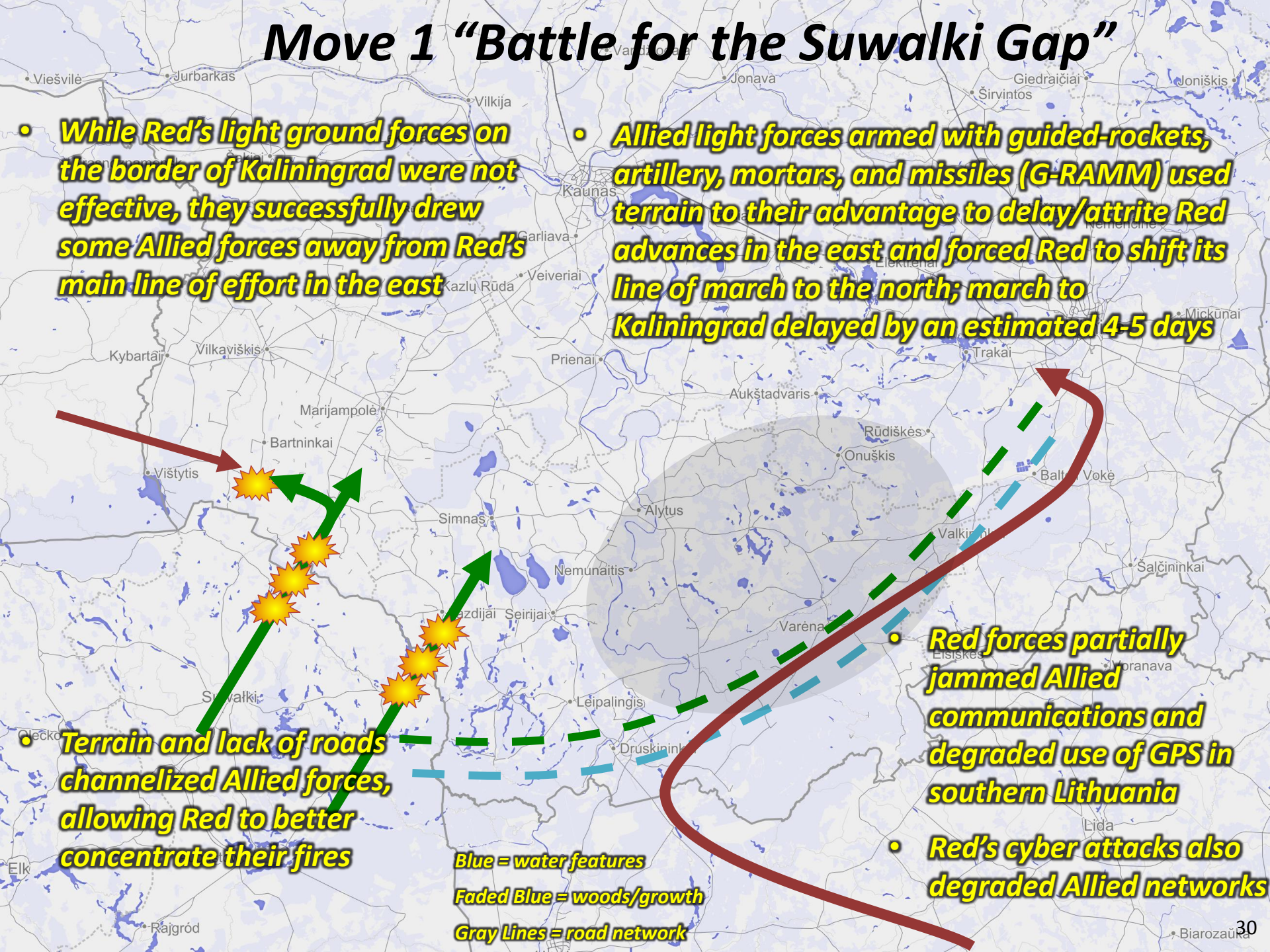
Comparing Results from Move 1 (baseline force) with Move 3 (enhanced force)

Move 1 "Battle for the Suwalki Gap"



- While Red's light ground forces on the border of Kaliningrad were not effective, they successfully drew some Allied forces away from Red's main line of effort in the east
- Allied light forces armed with guided-rockets, artillery, mortars, and missiles (G-RAMM) used terrain to their advantage to delay/attrite Red advances in the east and forced Red to shift its line of march to the north; march to Kaliningrad delayed by an estimated 4-5 days
- Terrain and lack of roads channelized Allied forces, allowing Red to better concentrate their fires
- Red forces partially jammed Allied communications and degraded use of GPS in southern Lithuania
- Red's cyber attacks also degraded Allied networks

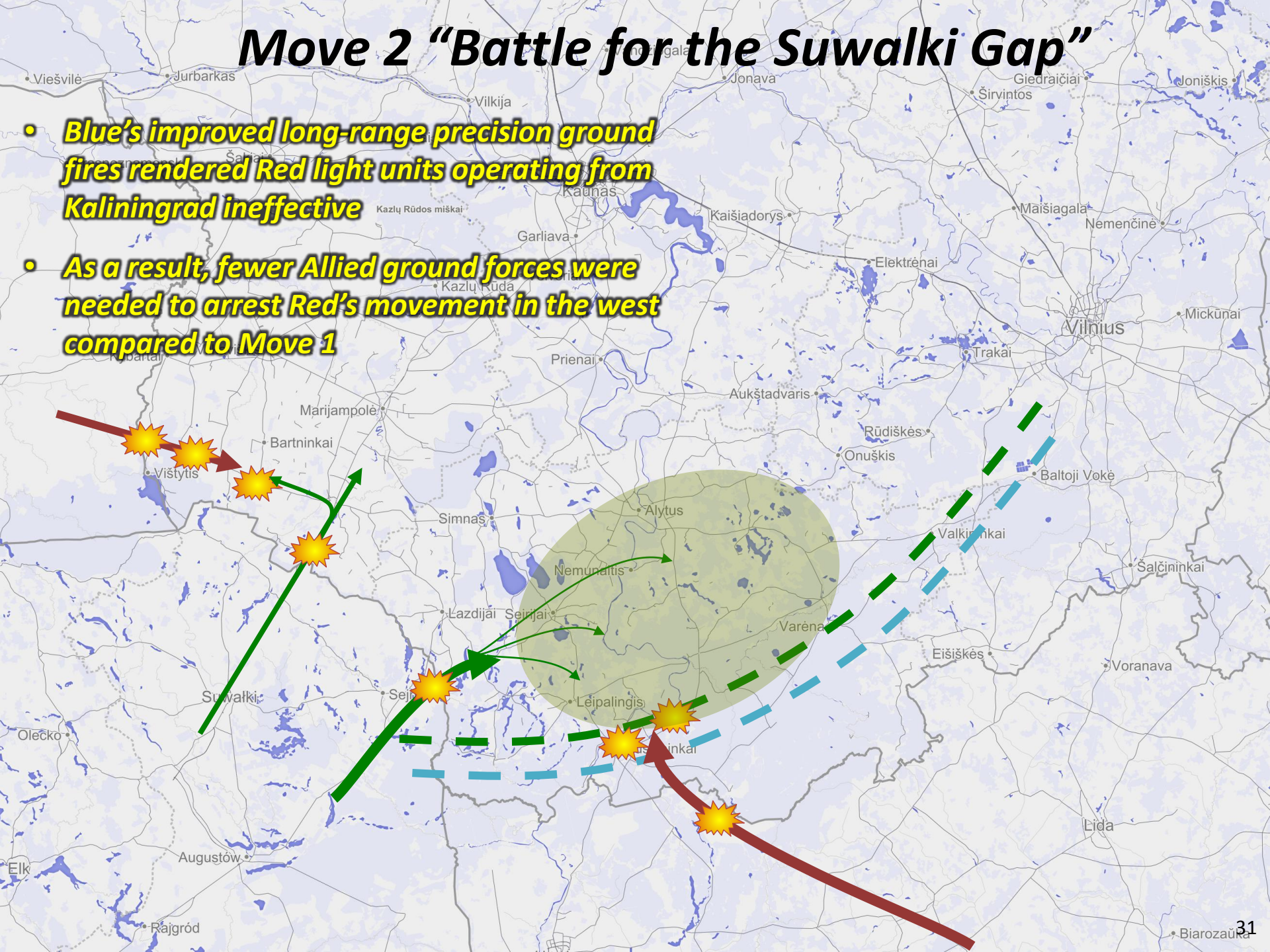
Blue = water features

Faded Blue = woods/growth

Gray Lines = road network

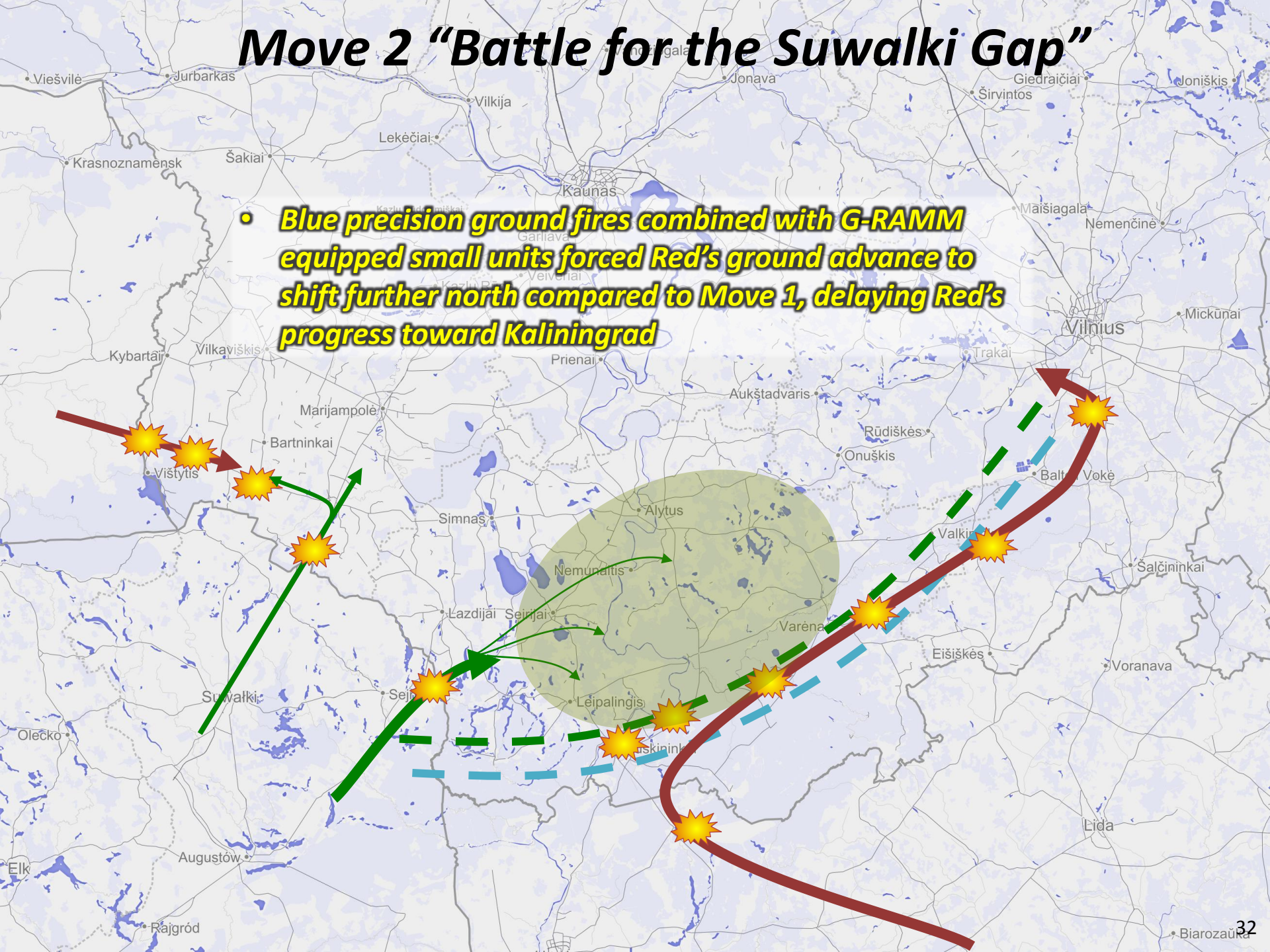
Move 2 "Battle for the Suwalki Gap"

- ***Blue's improved long-range precision ground fires rendered Red light units operating from Kaliningrad ineffective***
- ***As a result, fewer Allied ground forces were needed to arrest Red's movement in the west compared to Move 1***



Move 2 "Battle for the Suwalki Gap"

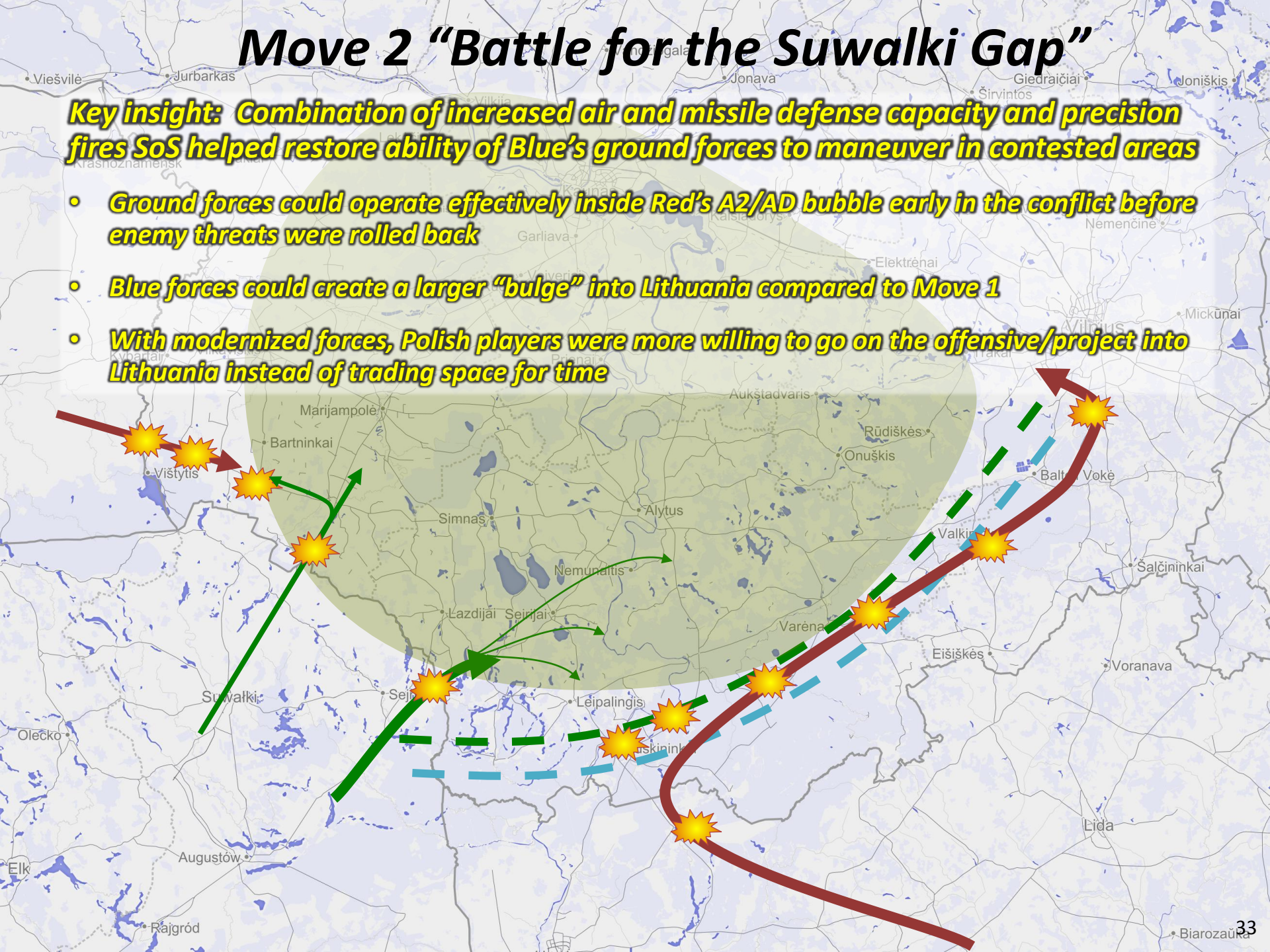
- **Blue precision ground fires combined with G-RAMM equipped small units forced Red's ground advance to shift further north compared to Move 1, delaying Red's progress toward Kaliningrad**



Move 2 "Battle for the Suwalki Gap"

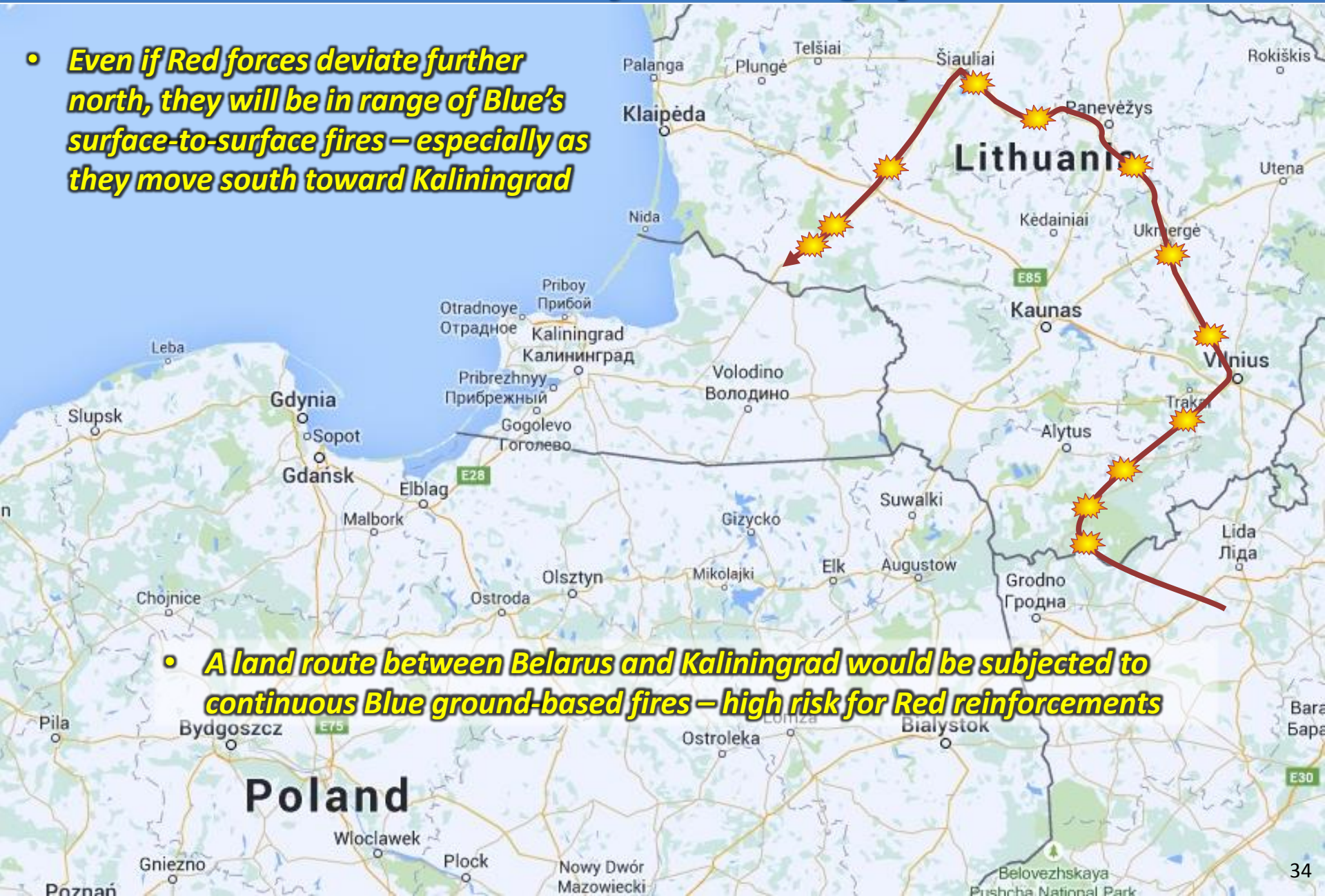
Key insight: Combination of increased air and missile defense capacity and precision fires SoS helped restore ability of Blue's ground forces to maneuver in contested areas

- ***Ground forces could operate effectively inside Red's A2/AD bubble early in the conflict before enemy threats were rolled back***
- ***Blue forces could create a larger "bulge" into Lithuania compared to Move 1***
- ***With modernized forces, Polish players were more willing to go on the offensive/project into Lithuania instead of trading space for time***



Poland's enhanced strike capabilities created a major challenge for Red

- ***Even if Red forces deviate further north, they will be in range of Blue's surface-to-surface fires – especially as they move south toward Kaliningrad***



- ***A land route between Belarus and Kaliningrad would be subjected to continuous Blue ground-based fires – high risk for Red reinforcements***

Other insights

- **Force survivability:**
  - Survivability of rotary-wing aircraft in contested areas was a major concern
  - Tension between improved/heavier armored vehicles versus lighter, faster, more maneuverable units for Poland
- **Increasing U.S. forces permanently stationed in Euro frontline states:**
  - Could increase the threshold for Red to commit Gray Zone acts of aggression
  - Could serve as a trip wire
  - Could greatly reduce time needed for the U.S. to bring forces to bear in the Baltics (would also create additional options for the U.S. to act while waiting for NATO approval)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