Technology and the Second Chechen Campaign: Not all new and not that much
by Lester W. Grau

During the First Chechen Campaign, Russian losses were particularly heavy in close combat–out to 300 meters. Within that space, Chechen forces "hugged" Russian forces to avoid Russian supporting artillery fire and air strikes while Chechen small arms and RPG fire exacted a blood tax on those same Russian forces. Reluctant Russian conscripts were frequently engaged by older, seasoned Chechens in uneven close fighting. The Chechens knew the territory, were supported by much of the population and (in their perspective) were fighting for their homeland. Although Chechnya is part of the Russian Federation, the average Russian conscript usually did not share the same zeal in retaking this part of the motherland. What zeal the conscript had diminished as the fight got closer.

As the Russian military planners prepared for the next campaign, they realized that, whenever possible, it was to the Russian Army's advantage to keep the Chechens at least 300 meters away from the conscript Russian ground force. Three hundred meters is the maximum effective range of the Kalashnikov assault rifle and the RPG-7 antitank grenade launcher when fired against a stationary target. Maintaining this 300 meter distance was not too difficult when advancing across the northern Chechen plain up to the Terek river. However, once the Russian Army crossed over into difficult terrain, such as forests, cities or mountains, it became increasingly difficult to maintain this separation.

Many analysts considered the old Soviet Army an "artillery army with a lot of tanks". The Soviet and Russian Armies have long given special emphasis to the "God of War"–the artillery. The Russians had the clear advantage in artillery and other long-range technology. During the Second Chechen Campaign, the Russians assigned an expanded role to this technology as they attempted to limit the fight to long-range combat (similar to the goal of NATO's air campaign over Kosovo). This Russian concern with the near 300 meters was not new, however. The Soviet Army had run into the same problem with hostile Kalashnikovs and RPG-7s during their war in Afghanistan. There, the Soviets cleared the sides of roadways and outpost perimeters out to 300 meters and employed massive air and artillery strikes against the Afghan *Mujahideen* in an attempt to avoid close combat. These Soviet actions forced the *Mujahideen* to acquire heavier weapons with longer ranges such as recoilless rifles, mortars, heavy machine guns and tactical rockets. The addition of these heavy weapons and their heavy ammunition imposed a transport and mobility penalty on the *Mujahideen* and slowed the pace of the war. Despite these tactically-successful counter-measures, the Russian Army did not incorporate the lessons of Afghanistan into its training and force structure. Consequently, many of the lessons applied to the Second Chechen Campaign were not new. They were earlier lessons already paid for in blood–in Afghanistan.

The Russians used a combination of much old and some new technology to avoid the close battle. They used much of it differently than during the first campaign. Technology, and the change in its application, played an important tactical role in the Second Chechen Campaign –particularly in artillery, air power, and logistics support.

Unleashing the "God of War"

Artillery was used extensively and fairly conventionally during the Second Chechen Campaign. The Russians increased artillery use during this campaign in an attempt to reduce Russian casualties through the massive application of firepower. Russian artillery was very effective in the advance across the Chechen plains to the Terek river. Chechnya's terrain changes south of the Terek as the dry, open plains give way to forests, hills and towering mountains. Most of Chechnya's towns and cities border on or are south of the Terek. Employing artillery against cities, forests and mountains is not easily done by conscript cannoneers. Artillery fires are harder to adjust, accurate distances are harder to determine and accurate damage assessments of artillery strikes are harder to make. However, artillery was central to keeping the battle at long-range. In order to support the maneuver forces, much of the artillery was placed in direct support with an artillery battalion in direct support of a tank, motorized rifle or parachute battalion and an artillery or mortar battery in direct support of a tank, motorized rifle or parachute company. Other artillery was retained in brigade and division artillery groups for general support.

South of the Terek river, conventional artillery fire planning changed to include fire missions peculiar to the Afghanistan War--missions such as fire blocks, artillery fire sweeps, defensive box barrages and fire sectors. However, since the Afghanistan lessons were not incorporated into the Russian Army, these artillery techniques were generally regarded as new.[1] Fire blocks are standing barrages designed to keep an enemy force from escaping. Artillery fire sweeps are the systematic use of evenly-spaced long-range artillery fire to harass and damage an enemy located in an inaccessible area. Defensive box barrages are artillery fires which ring a forward defensive position to prevent an enemy from overrunning it. Fire corridors integrate the fires of several artillery battalions to shell possible enemy mortar and artillery sites systematically while conducting barrage fires on areas of possible enemy action. All of these missions require extensive amounts of artillery ammunition. High-precision laser-guided artillery ammunition was deployed against selected targets to a greater extent than during the first campaign. However, much of the cannon artillery fire used massive amounts of ammunition to saturate a target box, rather than to destroy single targets with precision fire. This was even the case when targets were acquired using radar, ground sensors and other technical reconnaissance assets.

Artillery multiple rocket systems, such as the venerable BM21 Grad with its 40 122mm rockets, the BM22 Uragan with its 16 220 mm rockets and the 9K-58 Smerch with its 12 300 mm rockets, also rained destruction on Chechnya. Russian surface-to-surface missiles, such as the Scud B and SS21 Scarab were also fired against targets in Chechnya. Besides these systems, the Russians deployed fuel-air weapons.

What is fuel-air?

Fuel-air weapons work by initially detonating a scattering charge within a bomb, rocket or grenade warhead. The warhead contents, which are composed of either volatile gases, liquids or finely powdered explosives, form an aerosol cloud. This cloud is then ignited and the subsequent fireball sears the surrounding area while consuming the oxygen in this area. The lack of oxygen creates an enormous overpressure. This overpressure, or blast wave, is the primary casualty-producing force. In several dozen microseconds (10^{-6} second), the pressure at the center of the explosion can reach 30 kilograms/centimeter^2 [427 pounds/inch^2 –normal atmospheric pressure at sea level is 14.7 pounds/inch^2] with a temperature between 2,500-3,000 degrees Centigrade [4532-5432 degrees Fahrenheit]. This is 1.5 to 2 times greater than the overpressure caused by conventional explosives. Personnel under the cloud are literally crushed to death. Outside the cloud area, the blast wave travels at some 3,000 meters per second [9843 feet per second].[2] The resultant vacuum pulls in loose objects to fill the void.

As a result, a fuel-air explosive can have the effect of a tactical nuclear weapon without residual radiation.[3] Since a fuel-air mixture flows easily into any cavities, neither natural terrain features nor non-hermetically sealed field fortifications (emplacements, covered slit trenches, bunkers) protect against the effects of fuel-air explosives. If a fuel-air charge is fired inside a building or bunker, the cloud is contained and this amplifies the destruction of the load-bearing components of the structure. Fuel-air can be an effective weapon against exposed enemy personnel, combat equipment, fortified areas and individual fighting positions. It can be used to clear minefields and to clear and prepare landing zones for assault forces and helicopters. It can be used to destroy communication centers and urban strong points. It can be used to defend against anti-ship missile attacks and against surface and submarine naval attacks. Fuel-air explosions can also be used as a herbicide, destroying crops and vegetation.[4] Thermobaric is another term for fuel-air.[5]

Several countries, including the United States, China, India and Russia, have a variety of thermobaric weapons in their arsenals. They were initially developed in the late 1960s. Russian thermobaric weapons are now third-generation.[6] Apparently, Soviet designers originally designed their thermobaric weapons for clearing mine-fields. Then, it became apparent that Soviet artillery, massed for break-through fires in Europe, was at risk. Soviet thermobaric weapons were subsequently designed to substitute for phase 2 artillery fires, where thousands of rounds of artillery fire would force a gap in NATO'S forward defensive positions. The Soviets then applied the thermobaric principle to smaller tactical weapons to be used against point targets, such as bunkers and strong points. After the Soviets invaded Afghanistan, they combat-tested several of their thermobaric systems there.

At the 1993 Nizhny Novgorod arms show, the Russians spotlighted several weapons systems which are equipped with thermobaric warheads and are for sale. These included the KAB-500 kilogram bomb, the ODAB-500PM bomb, the RAKhS-203 air-launched chemical rocket projectile, the 300mm "Smerch" multiple rocket launcher, the 220 mm 16 tube multiple

rocket-launcher 9P140 (Uragan), the 220mm TOS-1 multiple rocket launcher, the 9M133 "Kornet" ATGM, and the RPO portable flame thrower.[7] At the low end of the tactical spectrum, the Russians even developed a thermobaric round for the for the venerable RPG-7 launcher. The Bulgarian Vazov Machine-Building Works, located in the city of Sopot, is also producing the RPG-7 thermobaric round for international customers.[8] In addition to the thermobaric weapons for sale, there are other Russian thermobaric weapons available, including a Russian 1,500 kilogram bomb, the ODS-OD BLU dispenser, with ODS-OD BLU cluster bombs, the Shturm helicopter-launched ATGM, the ATAKA helicopter-launched ATGM, the S-8D (S-8DM) 80 mm aircraft rocket, the S-13D 122 mm aircraft rocket, and the AS-11 and AS-12 rocket warheads.[9]

Russia had used thermobaric weapons sparingly during the First Chechen Campaign. These were used outside the city of Grozny against villages and mountain positions. Only the RPO-A flame thrower, which has a thermobaric round, was used in fighting in Grozny itself. When the fighting rekindled in the fall of 1999, Russian forces bombed some villages in Dagestan with thermobaric bombs, but initially limited their use. The Russian Army was then committed to fight in Chechnya itself, and slowly advanced across Chechnya's plains, preceded by conventional artillery fire. When the advance finally reached Grozny and the mountains, the advance stalled. Conventional artillery could not force out the Chechens and the Russian Army looked for other ways to move them. Two methods were apparently proposed–chemical weapons and thermobaric weapons. The Russian political leadership apparently vetoed the use of chemical weapons, but allowed the use of ground-delivered thermobaric weapons. Air-delivered thermobaric systems were only used outside the city.

Enter the Buratino[10]

The"Buratino" was the main thermobaric delivery system that the Russians used against Grozny. It was first combat-tested in Afghanistan's Panjshir valley in the early 1980s during the Soviet- Afghan War. Built by the Omsk Transmash design bureau, Buratino is a 30-barrel 220mm multiple rocket launcher system mounted on a T-72 tank chassis. It is found in the chemical troops' separate flame thrower battalions. It is an observed-fire system with a maximum effective range of 3.5 kilometers (other sources say it has a maximum range of five kilometers). The minimum range is 400 meters. The rocket mounts an incendiary or a thermobaric warhead. The zone of assured destruction from a Buratino salvo is 200 x 400 meters.[11] The official designation of the Buratino is the TOS-1.[12] The thermobaric warhead is filled with a combustible liquid. The liquid is most likely filled with powdered tetranite.[13] When the warhead explodes, the liquid is vaporized creating an aerosol cloud. When the cloud mixes with oxygen, it detonates, first creating a high temperature cloud of flame followed by a crushing overpressure.

The Buratino fire control system consists of a sight, laser range finder, ballistic computer and roll sensors.[14] Although it is a chemical troop system, the Buratino was often attached to artillery battalions as a pair or in fours to a brigade artillery group during the fight for Grozny. Apparently, the Buratino was not attached to motorized rifle battalions since the Buratino could effectively support the infantry from a safer distance from the fight. Still, the armored chassis

would allow the Buratino to approach relatively close to the Chechen defenders if infantry soldiers provided a security screen. The Buratino proved a devastating system during the fight for Grozny.

The highly-accurate mega-mortar

During the Great Patriotic War (World War II), the Red Army fielded 160mm and 240mm large-caliber mortars. Their OB-29 240mm mortar weighed 3,500 kilograms (7,718 pounds) and fired a 125 kilogram (276 pound) round out to 7,000 meters. After the war, the Soviets developed the M-240 240mm mortar and fielded it in 1953. This breach-loading mortar fired a 100 kilogram (221 pound) high explosive round out to 9,650 meters.[15] At that time, its intended role was to smash through heavily-fortified regions and prepared defensive positions.

In 1960, the Soviets mounted the M-240 mortar on a tracked, self-propelled chassis. A hydraulic system raises and lowers the tube from the carrying position to the firing position. As was customary, the self-propelled artillery system was christened with an alpha-numeric designator (the 2S4) and the name of a flower (the tulip).[16] The tulip has a variety of rounds. The 130 kilogram (287 pound) fragmentation-blast round fires out to a range of 9650 meters. The 228 kilogram (503 pound) rocket-assisted projectile fires out to a range of 18,000 meters.[17] In addition, it has special munitions (concrete-piercing, chemical and nuclear).[18] Due to its nuclear capability, the 2S4 was assigned to the nuclear-capable High-Powered Artillery Brigades.[19]

Along with the *Krasnopol* laser-guided projectile which the Soviets designed for their 152mm family of guns and howitzers[20], the Soviets developed a laser-guided projectile for their 240mm mortar. They christened this precision-guided munition the *Smel'chak* (daredevil). It weighs a hefty 125 kilograms (276 pounds)[21] and is breach-loaded like all other 240mm rounds.[22] The "Daredevil" has a maximum range of 9,200 meters. It was used in Afghanistan combat starting in 1985. The "tulip" is clearly very-heavy artillery useful for leveling stubborn field fortifications and strong points. The Russians used these in the Second Chechen Campaign to help level Grozny.

The Russian battle for Grozny was very different in the Second Chechen Campaign. In the first campaign, armored columns pushed inside the city in an attempt to seize critical sites and buildings and capture the city in a *coup de main*. During the second campaign, the Russian forces surrounded the city but did not enter it in force. Tanks and artillery ringed the city while dismounted infantry and special forces personnel, accompanied by artillery forward observers and snipers, slowly crept into the city searching for Chechen strong points. When they found them, artillery and long-range tank fire was directed to eliminate the strong point and crush the building. Large segments of the city were flattened before ground forces moved into the city. The damage to Grozny was much more severe during the second campaign.

Air power in Abundance

The firepower of the artillery and tanks was supplemented by Russian air power. High-precision missiles and bombs, with a one-meter CEP, were used against targets in Grozny. Conventional ordnance was used against Chechen forces operating in the forests and mountains. Russian regulations prohibited the use of conventional aerial ordnance closer than 3 kilometers from a village or town. SU-24 and SU-25 aircraft were the primary air force platforms in the fight. Newer aircraft, such as the MIG-29, SU-27 and SU-30, were not used since they had not been procured. The SU-25 close support aircraft was favored for supporting the ground force. The Russian Air Force experienced some problems during the second campaign. There was an acute shortage of aviation armament specialists. Aviation resupply could not keep up with the demand for fuel, ordnance and lubricants. Communications support of the air effort experienced difficulties. Air command and control suffered and there were critical problems with search and rescue efforts.[23]

During the first campaign, the Russians used practically no high-precision aerial weapons (the ordnance which killed President Dudaev being the apparent exception). Russian air dropped quantities of iron bombs and "dumb" ordnance, but hoarded their high-precision aerial weapons for use in a conventional theater war. During this campaign, more high-precision aerial weapons were employed– indicating that the Russians felt either that the threat of conventional war had receded or that there are now sufficient stocks of such weapons so that they can be used in Chechnya while maintaining a strategic reserve.

Helicopter aviation was particularly useful during the second campaign. Older helicopters, such as the Mi-8 HIP and Mi-24 HIND, provided the bulk of rotary wing support, although there were reports that the KA-50 Black Shark was combat-tested during the campaign. When working over mountains, helicopter lift decreases significantly while fuel consumption increases dramatically. This was another lesson from Afghanistan that had to be relearned.[24]

Chechen air defenses were not modern but demanded respect. Their air defenses were normally designed to protect specific points, rather than broad areas. Their air defenses were based on the twin 23-mm antiaircraft gun, heavy machine guns, small arms and even an occasional RPG-7 antitank grenade launcher. Some man-portable surface-to-air missiles, such as the US Stinger, the British Javelin and the Russian SA-7 and SA-14 were available. Chechen air defenders camouflaged their positions carefully and changed them often. Their favorite shot was made at the rear of an aircraft as it was turning to prevent the pilot from observing where the fire was coming from. Anti-aircraft fire was conducted in short bursts to avoid detection. Tracer ammunition was usually not used, again to avoid detection. In the mountains, anti-aircraft fire was conducted at the leading aircraft from the flank, rear and often from above.[25]

Although Chechen air defense has not downed that many aircraft, it may be the reason that many of the latest aviation systems were not used in the current fighting. Russian depends on foreign military sales and sales would not be helped if the latest fighter bomber or helicopter were shot down.

Pushing logistics forward

The First Chechen Campaign taught the Russians that the demands of ammunition resupply, maintenance, transport, general supply and medical support in urban combat surpassed the capabilities of table of organization and equipment (TO&E) logistics units. Logistics demands were further increased by the requirement to provide humanitarian relief during the course of the fighting.[26] During the Second Chechen Campaign, Russia fielded a lot more soldiers and, consequently, a lot more logistics units. As before, the bulk of material was moved by railroad. Two years prior to the Second Chechen Campaign, Russian railroad troops built a new main railroad line in Dagestan from Kizlyar to Karlan Yurt (south of Khasav Yurt) to support their efforts in the region. This line has been critical to Russian logistics support. Russian railroad troops have restored destroyed sections of track and railroad bridging in order to push supplies forward into Chechnya in support of the advancing forces. Hospital trains and mortuary cars have supplemented the logistics and effort.[27]

Air and truck transport remained important elements of the logistics effort. As during the first campaign, armored personnel carriers were pressed into resupply duties in city fighting. There are ample opportunities to upgrade logistics with new technology, but there is little evidence that this has happened.

When it comes down to the close fight

Russian units conducted urban combat training in the rubbled suburbs before they entered the city. Squads were reformed, using the successful Chechen model from the first campaign, around the *boyevaya troika* [combat trio] consisting of an RPG gunner, a machine gunner and a sniper. Two riflemen, armed with AK-74 assault rifles supported the combat trio-presumably as assistant gunners and ammunition bearers. These teams were taught movement and engagement drills and rehearsed them thoroughly. When first-term conscript snipers proved unequal to the counter-sniper battle, "professional snipers" from the Spetsnaz and other special forces were incorporated into the combat trio. Motorized rifle battalions, reinforced with engineers, scouts, artillery forward observers and forward air controllers were used as assault detachments. During the second campaign, tanks and BMPs which supported the assault detachment stayed well back in the formation where they could support with long-range fires while remaining out of RPG-7 range. These vehicles were able to engage Chechen positions which were in the upper stories of tall buildings provided they remained far enough back. Dismounted infantry protected the vehicles and tried to avoid becoming decisively engaged at close quarters.[28]

The RPO-A *Schmel* [Bumblebee] was widely used in the second campaign. Another veteran of Afghanistan, the RPO-A flamethrower is a shoulder-fired, single-shot, disposable weapon with a maximum range of 1,000 meters, a maximum effective range of 600 meters and a minimum range of 20 meters. The round is 93 mm in diameter. It has three types of projectile: thermobaric (RPO-A), incendiary (RPO-Z)and smoke (RPO-D).[29] It weighs 11 kilograms [24.25 pounds]. The Schmel's zone of destruction is 50 meters^2 in the open and 80 meters^3 inside a structure.[30]

The RPO-A is also a chemical troop system and is found in chemical troop flamethrower platoons. These platoons are attached to motorized rifle battalions as needed. In Afghanistan, RPO-A flamethrower platoons were permanently attached to motorized rifle battalions. The Russian Army is considering making a flamethrower platoon part of every motorized rifle battalion. A proposed TO&E flamethrower platoon would consist of a platoon leader, two drivers, two vehicle/squad commanders, 14 gunners, two armored personnel carriers, ten portable radios and 28 RPO launchers.[31]

The RPO-A is best used as a bunker buster. It's two-kilogram warhead readily knocks out bunkers and strongpoints. However, when used against dispersed troops in the open, it will normally kill no more than one or two per burst. When the RPO-A is used against armored vehicles, it usually damages the vehicle, but the crew survives and is able to return fire. The Russians learned to assign an RPG-7 gunner with an RPO flamethrower gunner when operating as a "hunter-killer" team. The RPG-7 gunner stops the enemy vehicle and then the RPO gunner uses the RPO-Z incendiary round to set the vehicle on fire.[32]

Combat in the forests and mountains has proved most challenging. After several bloody excursions into these regions, the Russian Army has established a series of garrisons in the cities and towns and a string of outposts to guard the roads. The present Russian plan (May 2000) appears to be to deny the Chechen resistance access to the towns and roads while making sporadic raids into the mountains and forests. Air and artillery strikes continue against suspected Chechen sites and mountain strongholds. The Chechen resistance sees its strength in the mountain peoples and the mountain strongholds. The Russian Army sees control of the cities, towns and roads as control of the political and economic power of the region. With these diametrically opposed attitudes, a protracted guerrilla war is almost inevitable.

ENDNOTES:

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4. Frolov.
5. The Russians use fuel-air and thermobaric interchangeably though there may be a technical distinction in the scientific community.

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8. Nayden Iliev: "United States Stops Our Arms Deals With Syria and Sudan", Chasa , 29 May-4 June 1998, 18. [FBIS translation] . The authors do not know whether or not the Russians used the RPG-7 thermobaric round in the fighting in Grozny. The Russian TBG-7V thermobaric warhead is blunt-nosed, is 105mm in diameter and weighs 4.5 kilograms (10 pounds). It has a maximum effective range of 200 meters and a maximum range of 700 meters. It has a two-meter lethal radius. The Bulgarian designation is GTB-7BG. Terry J. Gander, Jane’s Infantry Weapons 1998-1999, Surrey: Jane’s Information Group, 1998, 354-355.
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10. Buratino is a wooden puppet in a Russian fairy tale. Although Buratino resembles Pinochio, Buratino must rescue his creator from a castle dungeon by finding a golden key. After several adventures, a helpful turtle finds the key in the castle moat and Buratino is able to rescue his creator.
11. Materials furnished to Mr. Grau from Russian General Staff archives.
12. *Tyazhelnaya ognemetnaya sistima* [heavy flame-thrower system], Pavel Felgengauer, "Pavel Felgengauer Commentary of the Week, 2 January 2000: Heavy Rocket-Propelled Flamethrower in Chechnya.", Ekho Moskvy, 2 January 2000. [FBIS translation]
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25. Ibid and Andrei Smolin and Viktor Kolomiyets, "Only mountains are worse than mountains", Armeyskiy sbornik [Army digest], March 2000, 45-46.
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28. Aleksandr Bugay, Oleg Bedula and Viktor Shershnev, "So each person knows his maneuver", Krasnaya zvezda [Red star], 3 May 2000, internet version.
29. RPO information extracted from Grau and Smith. For another use of thermobaric weapons, see Lester W. Grau and Ali Ahmad Jalali, "Underground Combat: Stereophonic Blasting, Tunnel Rats and the Soviet-Afghan War", Engineer, November 1998.
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32. Ibid.