

All-Terrain, All-Gain



A coalition soldier provides security with an all-terrain vehicle inside a school in Jalrez, Afghanistan, 11 November 2009. The school was the site for an Afghan Medical Personnel Skills Improvement Mission taking place between, 12 and 13 November. (Staff Sgt. Teddy Wade)

Tanks are the quintessential combat vehicles, but big isn't the only way to go on the battlefield. SOCOM employs a varied fleet of small vehicles capable of transporting its warriors over any terrain.

By George Jagels, TDM Editor

The DoD fields some of the most capable and deadly armored vehicles in the world, able to traverse diverse terrain and defeat well-trained opponents. The Abrams Tank and Bradley Fighting Vehicle were built to fight major engagements against the Soviet Union, and though they are still quite useful today, their large size, weight, and maintenance needs render them inappropriate for certain scenarios. For missions demanding more finesse, these shiny, expensive, and large martial “Cadillacs” must stay at home. An Abrams tank, after all, is not quite a paragon of subtlety.

Even medium and lighter heavy platforms such as the HMMV, Ground Mobility Vehicle (GMV), and Mine Resistant Ambushed Protected (MRAP) vehicle were built mainly to drive on roads and survive explosives. They might be too bulky or noticeable for clandestine operations. Occasionally, warfighters require what

civilians think of as recreational vehicles—and we're not talking about the Winnebago.

All-terrain vehicles (ATVs) are particularly valuable to Special Operations Forces, who often work quickly, quietly, and with a minimal logistics tail. Infiltration and exfiltration on rotary and fixed-wing aircraft, for example, might be most easily accomplished when the cargo is small and light. SOF specialize in long missions in austere conditions partly because they do not need constant resupply to stay effective. Moreover, the ability to easily travel off road can make up for a lack of armor (as roadside bombs are aptly named).

In these ways, among others, a variety of all-terrain vehicles have filled a crucial niche in the family of Special Operations vehicles (FOSOV) and in the military's fleet as a whole.

ATVs: Not Just for the Weekend

Often used by farmers and hunters, SOCOM purchases traditional “quads” and modifies them. It seems that the commercial-off-the-shelf (COTS) model will not change: Last year, SOF Warrior announced that it will replace its aging fleet—a typical vehicle lasts for three years—with new COTS models. In FY 14, SOF components will be able to purchase their own vehicles to match

their specific needs. In 2012, SOCOM owned just under 600 modified-COTS ATVs.

As a platform used to seize the initiative and furnish rugged, replaceable mobility to operators, in 2012 SOF Warrior had the following objectives for its future ATVs: They must be air-droppable, fit into a CH-47 and V-22, have a 100-mile range, operate at 10,000 feet and in a 160-degree temperature range, weigh no more than 700 pounds, and have a payload of 800 pounds. It appears that some of these goals have already been attained.

The Polaris MV 850 Sportsman was selected in 2012 to become the principal SOF ATV. Taking into account military feedback from previous models, Minnesota-based Polaris built a very capable machine. Its cargo racks can hold up to 600 pounds, while a dual fuel tank setup allows the Sportsman to hold 11.75 gallons of fuel. The vehicle also features keyless ignition, blackout lighting, IR wire harnesses, fixed front winches, and a top speed of 50+ mph from an 850 cc engine (unmodified).

For its part, the British Army uses the Yamaha Grizzly 450. While the Grizzly is lighter than the Sportsman and can't carry as much it brings other attributes to the table. For example, Yamaha claims its redesigned frame and tires reduce weight and boost handling. A single cylinder engine—displacing 421 cc—sheds more weight, while the manufacturer boasts that a “redesigned intuitive wet brake system even prevents clogging when mud or stones are thrown up by the wheels.” Other military modifications include winch and lighting systems.

Can Am, owned by Bombardier, recently released a new version of its Outlander XT-P ATV. The vehicle, according to Can Am, is “equipped with front and rear FOX Infinity HPG piggyback dual-speed compression adjustable shocks, [giving] riders the flexibility of tuning the suspension to fit the terrain and riding style.” The Outlander, which features an upgraded lighting system and tows 1,300 pounds, contains a hefty 976 cc engine.

LTATVs: Side-by-Side in Combat

The Lightweight ATV (LTATV) resembles a traditional vehicle more so than the ATV, as it is larger, equipped with a roll cage, and has more cargo capacity. Pictures of it might bring to mind another recreational vehicle—the dune buggy—but the LTATV is deadly serious: These small, agile, armed, and durable platforms have so impressed SOCOM that they have an inventory of 651, with about 170 currently fielded. The LTATV can fill combat and logistical support roles as well as aid in casualty evacuation. As of last year, the command plans on acquiring nearly 300 of them annually.

With comparable engine size (most LTATV engines displace between 750 and 875 cc), LTATVs also share similar future requirements with their smaller counterparts: They must fit into a CH-47 and V-22, have a 150-mile range, and operate at 10,000 feet and in a 160-degree temperature range. SOCOM is aiming for a two-seat weight of 1,000 pounds and a four-seat weight of 1,800 with a payload of 1,000 and 1,500 pounds, respectively. As with the



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Soldiers with Special Operations Task Force – South prepare to load an LTATV on to a CH-47 Chinook helicopter in preparation for a rapid offload during operations in the Maruf District, Kandahar Province, Afghanistan. (Spc. Jesse LaMorte)

ATV program, some of these requirements have already been met.

SOCOM selected the Teryx in 2009 as its principal LTATV. Made by Kawasaki and popular with its SOF operators, the Teryx can travel up to 48 MPH on its 750 cc engine, flip a U-turn in a 14-foot radius, and weighs less than 1,500 pounds. With a mounted belt-fed machine gun and the ability to hump 500 pounds, one cannot question its utility. It also sports a four-point shoulder harness, four-wheel drive, run-flat tires, and infrared headlamp filters. And—as with all LTATVs—the Teryx fits into SOF aircraft.

All Terrain Vehicle Corporation, a Division of Phoenix International System, Inc., was awarded the patent for the Prowler LTATV in 2002. For CEO Amos Deacon, the Prowler is something special: “In addition to being the fastest [and] most powerful and having the highest payload/towing capacity of any vehicle [in its class], Prowler is constructed of the highest quality materials (chromealloy steel roll over protection system and cargo racks).” Originally used for communications and reconnaissance, the Prowler has evolved into a more lethal platform. “Applications now include that of being a weapons light strike platform with anti-armor missile launchers and Gatling mini-guns to laser targeting test beds such as the VENOM for target location and laser designation,” says Deacon.

RP Advanced Mobile Systems designs and upfits a family of fast response LTATVs: StrikeCommander, StrikeMaverick, and SCC2. The StrikeCommander’s most attractive attribute, according to RPAMS, is its navigation ability. Through an automotive-style rear differential system and a powertrain that provides a sufficient power-to-weight ratio, says Chief Technical Officer Terry Wilmeth, “the StrikeCommander can negotiate complex terrain and maintain mobility at gross vehicle weight across all types of environments.” To gain a tactical edge, RP integrated an advanced programmable suspension to “open the maneuver space.” Wilmeth also noted that the company’s designs consider SOF operators’ direct needs, which results in constantly evolving vehicle systems. Having developed its own fatigue-mitigation LTATV seats, SOF run-flat tires, PowerExtenders, and multi-modal payload modules, RPAMS claims it can quickly match the SOF tempo.

Polaris Defense produces a popular LTATV called the MRZR, which comes in two- and four-seat models capable of carrying one and two litters, respectively. “Unlike most others, Polaris Defense

designs, develops, and manufactures products for the military as the OEM,” says company Manager of Advanced Mobility Platforms Jed Leonard. “Thus, our vehicles are seamlessly developed, tested, manufactured, fielded, and supported to ensure performance and reliability.” Leonard cited the low center of gravity, night operation capability, ease of air transport, and mission versatility as ways with which the MRZR models differentiate themselves from the competition. “The unique cargo system,” he notes, “allows for modular kitting of fuel containers, spare tires, litters, rearward facing seats, 500 pounds of gear, etcetera, as needed by the users.”

John Deere’s M-Gator has been a favorite of the DoD for a number of years, and the company recently introduced the Gator RSX 850i (two seats) and XUV 825i S4 (four seats) to compete in the LTATV area (though Deere prefers the term Utility Vehicle). The RSX 850i reaches a top speed of 53 MPH with its twin cylinder 62-HP engine. To Mark Bodell, Military Utility Vehicles manager at John Deere, the company’s global presence is itself an advantage: “Our products can be supported around the globe with an unmatched parts and service infrastructure. This worldwide parts distribution network sets John Deere apart from the competition and provides an excellent fit with military usage.”

Looking Ahead

Regardless of ongoing budget uncertainty and further defense spending cuts, innovation continues in other ways not specified by the DoD. RPAMS and Polaris are working to improve and replace current run-flat tire systems. ATV Corp is looking into hybrid propulsion systems. Meanwhile, John Deere is exploring the possibilities for autonomous vehicles, having already introduced the optionally manned R-Gator in 2005.

Individual and light military vehicles like the ATV and LTATV have cemented their place as part of the force. With their versatility, transportability, and reasonable cost, SOF operators will find them valuable in both the campaigns of today and tomorrow, and the private sector is poised to respond to SOCOM requests for lighter, faster, more capable vehicles. While neither awe-inspiring in their sophistication nor imposing in size, these small vehicles pass the test of utility with flying colors.

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