

Special Operations and Light Role Mobility More than an SUV?



Special operations forces engaged in the Global War on Terrorism rely upon purpose-built wheeled vehicles to provide tactical mobility in harsh terrain. “Special operations forces (SOF) ground tactical vehicles are used for counter-proliferation, foreign internal defence, special reconnaissance, direct action, and unconventional warfare missions, and serve as a weapons platform throughout all areas of the battlefield and/or mission area,” according to the 2009 us budget request. While not a revolutionary finding, this has profound implications for Asian special operations and infantry mobility.

by Ian Kemp

*VPS seen mounting a 5.56mm
Minimi and .50 M2 HMG.*

The primary tactical vehicle employed by US special operations forces (SOF) is the ubiquitous AM General High Mobility Multipurpose Wheeled Vehicle (HMMWV) which the US Special Operations Command (USCOCOM) modifies into four Ground Mobility Vehicle (GMV) variants to meet the unique needs of different SOF units. The GMV-R (Ranger) and GMV-S (SOF) are used by the army's 75th Ranger Regiment and Special Forces groups; the GMV-N (Navy) equips the Sea, Air, Land teams of the Naval Special Warfare Command; and, the GMV-M (Marine Corps) has been developed for the recently formed Marine Corps Special Operations Command. According to the USSOCOM modifications to these vehicles include "auxiliary fuel bladders, ammo storage racks, rear floor reinforcement, roll bars, rear bench seats, smoke and grenades system, recovery strap kits, jacking and skid plates, spare tire carriers, side rails, and various types of weapon mounts. Add-on armour provides 360 degree protection for the vehicle plus gunner protection (turret)." For most missions GMVs are armed with a turret-mounted M2HB .50 caliber heavy machine gun or a 40 mm automatic grenade launcher as well as 7.62 mm machine guns mounted on arms that swing out from the doors. Storage racks are provided for support weapons

such as the Javelin anti-tank guided weapons, mortars and .50 caliber rifles.

Both the US Marine Corps and USSOCOM plan to field the Light Strike Vehicle, a variant of the Internally Transportable Vehicle (ITV) developed by American Growler tow vehicle the USMC's Expeditionary Fire Support System (EFSS), a towed 120 mm mortar. The complete EFSS is designed to be carried inside the narrow cabin of the Bell-Boeing V-22 Osprey tilt-rotor aircraft. The vehicle is based on American Growler's commercial UV 100 DB off-road vehicle and features a 132 bhp turbo diesel engine coupled to a 4 speed automatic transmission, four wheel drive and four wheel steering. The LSV will be fitted with a Mk 175 pintle mount to accommodate weapons such as the 12.7 mm M2 heavy machine gun or a Mk 19 Mod 4 automatic grenade launcher. It will also accommodate a 10-day mission kit for the marines or a 3

Although SOF units can generally be regarded as 'light' forces there are, nevertheless, operational situations when they require a higher level of protection

day mission kit for USSOCOM.

The USSOCOM has modified a number of Stewart & Stevenson (now owned by BAE Systems) 2.5 ton Light Medium Tactical Vehicles to provide logistics support for SOF long-range patrols thus significantly extending the endurance of such patrols. Lockheed Martin is developing a 4 x 4 'Armored Proof of Concept Vehicle' which is expected to be of interest to USSOCOM both as a long range patrol vehicle and a support vehicle. The demonstrator has a gross vehicle weight of 15,400 lb, including a payload of 4,400 lb, and can tow a trailer of at least 10,000 lb. Options include various levels of armour protection, weapons mounts, air conditioning, central tire inflation system, run-flat tires, automatic fire suppression and a C4I suite.

At the other end of the weight spectrum USSOCOM fields hundreds of small 4- and 6-wheeled all terrain vehicles (ATVs) that "allow SOF operators the ability to navigate terrain that is normally inaccessible to standard vehicles". Under the terms of a \$10.3

Serval is based on an extended DaimlerChrysler G-Class chassis.





million 5-year contract awarded in April 2004 Polaris Industries will have supplied 333 vehicles by September 2008 with options for a further 370. The majority are the Sportsman MV (Military Version) based on the company's commercial Sportsman 700 Twin 4 x 4 ATV. Modifications include a reinforced steel exoskeleton and enhanced suspension; enlarged front and rear stowage racks which allow the MV to carry twice the load of the civilian Sportsman; an auxiliary fuel tank; infrared lights; and, electronically activated front and rear winches each capable of towing 1,134 kg. Goodyear Extended Mobility Technology Mud Runner run-flat tires enable the vehicle to continue for 85 km after a puncture. Three Sportsman MVs can be carried inside a CH-47 Chinook helicopter. The contract also includes the Sportsman 6 x 6 ATV which is can lift 363.6 kg of cargo in a rear dump box.

The All Terrain Vehicle Corporation designed the Prowler Rugged Terrain Vehicle to provide USSOCOM with a vehicle that can be carried internally by helicopters for deployment on reconnaissance, direct action and logistics missions. Weapons such as a 7.62 mm machine gun can be mounted on the roof, which incorporates an integral roll bar to protect the driver and front seat passenger. The Prowler has a payload of more than 454 kg, can tow up to 1,066 kg and an optional third seat, which faces to the

Tokeh's extremely small size makes it internally transportable in NH-90 and CV-22

rear, is available. As an alternative to the present gasoline engine ATV Corp is developing an engine for the Prowler, and subsequent vehicles, that uses JP8 aviation fuel.

USSOCOM announced in early 2006 that it plans to field a new generation of advanced Lightweight Tactical All Terrain Vehicle (LTATV) in 4 x 4 and 6 x 6 configurations. The command detailed seven areas of "specific" interest: advanced ergonomics to enhance safety and operational capabilities in tactical and administrative environments; optimised power plant capability including multi-fuel/hybrid electric; transportability via all current and envisioned SOF fixed and rotary wing cargo aircraft; night vision device compatibility; improved safety features such as roll-over protection;

capable of worldwide deployment in all terrains and climates; and, single and multiple-passenger variants as part of the proposed family of vehicles. Selection of a winning design is imminent as USSOCOM has received funding to acquire an initial 90 vehicles by the end of September 2008.

Although SOF units can generally be regarded as 'light' forces there are, nevertheless, operational situations when they require a higher level of protection than offered by patrol vehicles derived from light utility vehicles such as the HMMWV or Land Rover. In 2005 the US Army loaned 16 General Dynamics Land Systems - Canada 8 x 8 Stryker armoured vehicles - 14 infantry carrier vehicles, a command variant and a medical evacuation vehicle - to the 75th Ranger Regiment for operations in Afghanistan. Since then the USSOCOM has bought the RG-31 Mk 5 from General Dynamics Land Systems-Canada that sub-contracts production to BAE Land Systems OMC of South Africa. The all-welded armoured shell of the RG-31 defeats small arms fire up to 5.56 x 45 mm with an optional protection level of up to 7.62 x 51 mm armour piercing while the V-shaped hull can withstand a double TM57 level mine explosion (14 kg of TNT) under any wheel and a single detonation (7kg) under the cen-

Based on the Supacat HMT 400 series 4 X 4 vehicle the MWMIK provides longer range, greater payload and greater mobility than the 4 x 4 WMIK Land Rovers now in use.

tre of the vehicle. Under the joint service Mine Resistant Ambush Protected (MRAP) programme the DoD has authorised the purchase of 333 MRAP vehicles, a mix of RG-31s and BAE Systems RG-33s, for USSOCOM.

Australia

The Australian Army special forces task group that has been operating in Afghanistan since September 2005 is equipped with a small number of Thales Australia Bushmaster Infantry Mobility Vehicles for security patrols while Land Rover 6 x 6 long-range patrol vehicles and Land Rover 110 4 x 4 Surveillance Reconnaissance Vehicles (SRVs) are used for 'classic' patrol missions. Land Rover of the UK developed the 6 x 6 vehicle for the Australian Defence Force's Project Perentie in the late 1980s and 1,000 vehicles were assembled in Australia under licence along with almost 3,000 Land Rover 110 4 x 4 models. The 6 x 6 variants included a long-range patrol vehicle for the Special Air Service Regiment and these were later supplemented through the Bushranger Phase 1 programme by the SRV. The Australian Army plans to replace its Special Forces vehicles through Project Redfin.

At DSEi 2007 Land Rover displayed its

Panhard has developed the Vehicule d'Action dans la Profondeur (VAP), a deep penetration variant of its successful 4 x 4 Vehicule Blindè Legèr (VBL) reconnaissance vehicle which is used by at least 15 countries.

new 6 x 6 prototype that combines the all terrain capability of its 4 x 4 light utility vehicles (LUVs) with greater payload and volume capacity. In its basic form the 6 x 6 vehicle has a chassis cab and is designed for modular rear bodies to meet customer requirements. With an overall length of 6001 mm the vehicle is 1,400 mm longer than the Defender 110 and 190 mm wider at 1,980 mm. It has a gross vehicle weight of 7,000 kg including up to 4,000 kg in payload. Two vehicles can be driven without preparation

The Panhard VAP is based on the famous VBL

onto a C-130 Hercules. The vehicle, which is in permanent 6 x 6 drive, is powered by a Defender 2.4 litre common rail diesel engine.

UK Developments

The UK Ministry of Defence announced in late June 2007 the purchase of 130 Medium Weapons Mounted Installation Kit (MWMIK) patrol vehicles from Babcock Marine under an Urgent Operational Requirement to bolster fire support for units in Afghanistan and Iraq. Based on the Supacat HMT 400 series 4 X 4 vehicle the MWMIK provides longer range, greater payload and greater mobility than the 4 x 4 WMIK Land Rovers now in use. Land Rover and Ricardo Specialist Vehicles, also of the UK, developed the WMIK for the army's Land Rover Defender XD 110 to accommodate machine guns, grenade launchers or anti-tank guided weapons. The two companies used their experience of this project to develop the Land Rover Rapid Deployment Vehicle, the latest in a series of attack vehicles based on the Land Rover design.

The open top MWMIK carries a crew of up to four and can be fitted with a range of weapons including the M2HB .50 calibre heavy machine gun, the Heckler and Koch 40mm Grenade Machine Gun and 7.62 mm





UK Land Rover Based WMIKs seen passing US SOCOM armoured HMWVs.

general-purpose machine guns. The vehicle has a top road speed of 130 km/h. Deliveries are scheduled to be completed by May 2008 and an additional order for 72 vehicles is anticipated. The MoD refused to confirm speculation the MWMIK is fielded with the Special Air Service.

UK company Roush Technologies has recently produced two ATV for the UK's rapid reaction forces. The LAS-100RE lightweight all-terrain platform was designed under a £3.5 million MoD contract. A lightweight aluminium honeycomb construction keeps the 6 x 6 vehicle's weight to about 800 kg while still allowing it to carry a 1,000 kg payload. The rear platform is designed to accommodate a wide variety of demountable bodies and equipment. Roush is developing the LAS-200RE and -300RE derivatives for other operational requirements.

Roush and Arctic Cat have developed the Arctic Cat Diesel Reconnaissance Vehicle (also known by the Roush designation LAS-50RE). This ATV, in production since 2006, can carry 45 kg on the front rack, more than 90 kg on the rear rack and a tow a 500 kg trailer or other equipment up to 500kg.

The New Zealand Special Air Service deployed its newly delivered Pinzgauer 6 x 6 special operations vehicles for the first time in June 2005 to conduct long-range reconnaissance and direct action missions in Afghanistan. The UK company (which is now owned by BAE Systems) built 13 special operations variants as part of the New Zealand Army's Light Operational Vehicle project to acquire 321 Pinzgauers. The company is offering the latest model, dubbed the X-treme Mobility series, for Australia's Project Redfin.

Germany's special forces have recently been equipped with the Rheinmetall Landsysteme Serval Light Infantry Vehicle (Special Operations) and a 'small number' of Serval were delivered to an unspecified European customer in 2007. The company

developed the Serval using an extended wheelbase DaimlerChrysler G-Class chassis. In German service the vehicle carries a four-person crew. The Serval mounts an RLS 609 K weapon station that can be armed with weapons such as the Heckler and Koch 40mm GMG or the .50 calibre HMG and general-purpose machine guns can be fitted at the front passenger's seat and the rear of the vehicle. The weapon station can be folded to lower the vehicle's profile for air transport inside the army's CH-53 heavy-lift helicopters.

European Developments

At Eurosatory 2006 Rheinmetall unveiled the Tokeh 4 x 4 light tactical vehicle feasibility demonstrator that is designed to meet a German Army requirement for a vehicle that can be carried inside the NH Industries NH90 tactical transport helicopter. A second demonstrator was completed in 2007 incorporating design changes as a result of early trials. The 1,800 kg Tokeh is able to carry up to 600 kg in cargo including a two-person crew.



HMMV: Versatility and protection for today's Special Operations Forces

HMMV's are the only light tactical vehicles specifically designed to provide the coordination, mobility, and payload to provide the tactical flexibility required by today's Special Operations Forces. Field-installable armor also allows HMMV's to be upgraded for protection to meet changing mission requirements.

HMMV's: Providing tactical flexibility in mission success.

www.amgeneral.com

FIELD-INSTALLABLE ARMOR / FRAG KITS / FIRE SUPPRESSION SYSTEM / HIGH-OUTPUT AIR CONDITIONING

Driving the Force



The USSOCOM has modified a number of Stewart & Stevenson 2.5 ton Light Medium Tactical Vehicles to provide logistics support for SOF long-range patrols thus significantly extending the endurance of such patrols

An Iveco 2.3 litre-diesel engine gives a maximum speed of 120 km/h and Tokel features a height-adjustable suspension system. The vehicle commander can mount a 5.56 mm or 7.62 mm machine gun. Rheinmetall is evaluating the Tokel's suitability for internal deployment by the Bell-Boeing V-22 Osprey tilt-rotor aircraft that is entering service with the USSOCOM and USMC.

The French Army's Brigade des Forces Speciales Terre (BFST) has recently been equipped with 41 4 x 4 Vehicule Patrouille SAS (VPS) designed by Panhard General Defense. The VPS is based on a short wheel base DaimlerChrysler G 270 CDI G-Class LUV that Panhard modified to meet the army's requirement for a vehicle that can be carried internally by a variety of rotary wing and fixed wing aircraft without special preparation. The VPS has a combat weight of 4,000 kg and measures 4.74 m in length, 2.21 m in width and a 1.92 m to the top of the roll cage enabling one vehicle to be air-

lifted inside a medium helicopter, two inside a Transall C-160 and three in C-130J-30 stretched Hercules. Seating is provided for a four-strong crew. A manually operated ring mount is fitted on the roll cage over the rear compartment and is able to accommodate a .50 cal HMG or 40 mm AGL while a 7.62 mm machine gun can be installed at the commander's position in the right forward seat. An armoured floor under the hull provides protection against anti-personnel mines. The vehicle has a maximum speed of 120 kph on roads and a maximum road range of 800 km with its 96 litre fuel tank. Standard equipment includes a self-recovery winch on the front bumper and storage for 30 litres of water and rations, two 20 litre fuel cans and two spare wheels.

Panhard has developed the Vehicule d'Action dans la Profondeur (VAP), a deep penetration variant of its successful 4 x 4 Vehicule Blindé Léger (VBL) reconnaissance vehicle which is used by at least 15 countries. The company estimates the export potential for the VAP at about 200 vehicles. By eliminating the VBL's armoured hull the empty weight of the VAP has been cut to 2,500 kg and it can carry a payload of 1,500 kg including four crew. The VAP has an armoured floor that according to Panhard provides 'good' mine protection. Powered by a 2.1 litre Steyr turbo diesel engine the VAP has a maximum range of 700 km and can reach a top speed of 120 kph. Panhard is proposing that the VAP be equipped with a range

of weapons, observation devices and communications equipment enabling it to undertake direct action, reconnaissance, target designation and similar missions.

The Al-Thalab (Fox) long range patrol vehicle was unveiled at the September 2005 DSEi exhibition by Jankel Armouring of the UK and Jordan's King Abdullah II Design and Development Bureau. The team used a tropical specification Toyota 1979 4 x 4 chassis as the basis for the vehicles thus enabling users to obtain spare parts from Toyota's network of civil dealers around the globe. The Al-Thalab carries a maximum payload of 1,700kg including a driver, commander and two crewmembers in the rear. A 7.62mm machine gun can be mounted for the commander's use and a heavy machine gun or AGL can be fitted on the rear mounted ring platform. Jordan's special forces have received at least 20 vehicles and another 15 were built for an undisclosed African customer for use on border patrol duties.

South Africa's airborne and special forces operate the Gecko 8 x 8 Rapid Deployment Logistical Vehicles (RDLV). South Africa's LMT Products modified the Argo Centaur 8 x 8 ATV, manufactured by Ontario Drive and Gear, to meet demanding local requirements. Modifications included fitting a militarised top structure, weapon mounts, storage space, 12V/24V electrical system, communication harnesses and a strengthened lower structure to allow air delivery and helicopter lifts. The vehicle can carry a 900 kg payload, tow a 600 kg trailer and achieve a top speed of 47 kph. The Gecko is fully amphibious with a 230 kg payload and this can be improved by fitting flotation bags. 

Adapted truck chassis have some use in carrying re-supply payloads to support other vehicles

