

Jane's Defence Weekly

Briefing: Wheels of the elite

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The mobility needs of the world's evolving special forces now call for far more than the ubiquitous gunship-style Land Rover. Shaun Connors reports

Specialised elite units of talented and highly motivated men appear in the writings of Jiang Ziya, an 11th-Century Chinese military strategist, which suggests the troops now universally labelled as special forces have a far more ancient provenance than many might expect.

An evolutionary trail of handpicking the 'best of the best' weaves through the Roman Empire, Japan's ninjas, and even the British Army in India. However, what we now recognise as special forces emerged at the start of the Second World War - arguably with the formation of the United Kingdom's Commandos in 1940, although some might lean towards the Long Range Desert Group and others might single out the high-profile Special Air Service (SAS) Regiment, formed in July 1941.

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Mobility options

Special forces of the Iraq/Afghanistan era have been seen with vehicles of varying size and capability, in many cases sharing a common vehicle type with regular personnel. Inventories now stretch from motorcycles to mine-resistant ambush-protected (MRAP)-class designs and even armoured personnel carriers (APCs).



A motorcycle and ATV highlight the range of lighter-weight vehicles used by Australian special forces in support of traditional long range patrol-type vehicles such as the Land Rover. (Australian DoD)

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Motorcycles (originally 250 cc Suzuki motorbikes), while clearly of limited use in the greater scheme of things, can offer short-range scout/reconnaissance and line-of-communication opportunities in radio-silent environments. Australia's special forces are a seasoned exponent of this, transporting

motorcycles in purpose-designed carriers at the rear of Australian Land Rover 6x6 Perentie Long-Range Patrol Vehicles (LRPVs).

A recent addition to the inventory of increasing numbers of special forces is the all-terrain vehicle (ATV) or quad bike. Despite its limited payload and range, the ATV has become nearly indispensable for certain roles. Polaris Defense is the only manufacturer that offers a truly militarised ATV, with users including German and US special forces.

Slightly larger overall and more capable than an ATV is the side-by-side: a cross between a single-seat ATV and a more utilitarian two-seat (side-by-side) John Deere Gator class vehicle. US special forces are the most significant users of these, with the Special Operations Command (SOCOM) placing an order with Polaris Defense in September 2013 for up to 1,500 MRZR2 (2-seat) and MRZR4 (4-seat) machines.



US special forces in Jalrez, Afghanistan, drive a Polaris MV700 ATV mounted with a MK47 40 mm grenade launcher. The soldier at the rear is armed with a MKII 7.62 mm x 51 mm sniper rifle. (US DoD)

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The biggest drawback of these smaller models is that most retain their original petrol engines, which are incompatible with standard military JP8 fuel. In terms of logistics, two fuel types are clearly less than ideal. As few such machines see military use, and civilian users are uninterested in running them on diesel, significant changes are unlikely in the near future.

Standard-fare mobility for post-Second World War special forces was for many years a light 4x4

version of the Jeep, Toyota Land Cruiser, or Land Rover, the most famous of which were probably the UK SAS's Pink Panthers. Like their contemporaries, the Pinkies, as they were affectionately known, resembled standard vehicles under the skin aside from stiffened suspension and a few other relatively simple user-specific modifications.

The SAS entered Iraq in Land Rover Weapons Mount Installation Kit (WMIK) vehicles: successors to the Pinkie. Rated at the same 3,350 kg gross vehicle weight (GVW) as all standard green army Land Rover XDs, these were little different to the WMIKs used by mainstream UK forces such as 16 Air Assault Brigade.



The Land Rover WMIK in standard pre-Iraq/Afghanistan configuration has been used by the UK's special and conventional forces and is transportable internally by CH-47 helicopter. (Shaun C Connors)

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Iraq and Afghanistan, however, would change many things. These insurgency-based conflicts initially required more to be carried over longer distances in an environment far removed from temperate Europe. Additionally, as an unprotected design the WMIK - or any vehicle of this type - proved vulnerable to attack from guerrilla-style ambushes and roadside bombs. To address such issues, payload, protection, and mobility requirements all increased. The WMIK fleet was much-modified by UK specialist auto engineering firm Ricardo and in final RWWMIK+ configuration would return from Afghanistan with integral crew protection and a GVW of 4,700 kg.

Other manufacturers also offer comparable higher-than-standard-capacity solutions based on a

modified commercial off-the-shelf (COTS) light utility vehicle platform. The United Kingdom's Jankel developed the Land Cruiser-based Al-Thalab and Jeep J8-based Pegasus Special Operations Vehicle (SOV), while ACMAT entered the fray in 2008 with the ALTV (ACMAT Light Tactical Vehicle): a Nissan-based product given enhanced durability by the veteran French special forces supplier.

Original equipment manufacturer Daimler has continually evolved the Mercedes-Benz G-Class range of vehicles, offering special forces-configured G-Class variants with GVWs in excess of 5,000 kg since 2003. These are supplied either directly or via third-party contractors including Norway's Arctic Trucks, Germany's Rheinmetall MAN Military Vehicles (RMMV), and Panhard of France (now Renault Trucks Defense).

More recently, a 6x6 variant of the G-Class was developed for an Australian Army requirement and one can speculate that this 6,500 kg GVW vehicle may soon appear configured for a special forces unit.

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Traditionally, special forces have used mother ships to support lighter vehicles on extended patrols. While the ACMAT VLRA is an established favourite for this role, other known platforms have included Mercedes-Benz Unimogs, Tatra T815s (Czech Omegas), and M1078 FMTV LTVs. It is not uncommon for these mother ships to be devoid of cabs, split at waist level, and at least as well armed as the vehicles they support.

Bigger is not always better, however, and requirements remain for lightweight, small, and agile special forces vehicles. The elusive users of such designs have a common requirement for the vehicle to fit inside a CH-47 Chinook helicopter. That can be a moveable feast - technically, an unladen Supacat Jackal will fit inside a CH-47 - but health and safety considerations can limit options.

Standard military light utility vehicles of the Land Rover, Jeep or Mercedes-Benz G-Class types can all, in special forces configurations, be transported internally by CH-47, albeit with limited preparation in some cases and/or without a full payload allowance. The other light utility vehicle icon, the AM General Humvee, is not considered internally transportable by CH-47 on the basis of width.

While they will fit, few COTS vehicles make the most of the compact dimensional and strict weight allowances of the CH-47 and those adopted can struggle to meet the all-terrain capability currently demanded of such vehicles by their users. Some manufacturers - Jankel and Arctic Trucks, for example - offer extensively modified standard platforms. However, with a user that always pushes requirements to the limit, quite often the only option is a purpose-designed platform.

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The most sizeable CH-47-transportable requirement to emerge in recent years is SOCOM's Ground Mobility Vehicle (GMV) 1.1 programme. It is understood that under a seven-year indefinite-delivery/indefinite-quantity (ID/IQ) contract SOCOM wishes to procure 1,297 GMV 1.1s to replace its 1,072 AM General Humvee-based GMVs. While there were conceptual differences between the

known GMV 1.1 candidates, none of the vehicles offered could be considered COTS in any way.

For the requirement General Dynamics Land Systems Force Protection (GDLS FP) offered Spectre: the latest development of the Joint All-terrain Modular Mobility Asset (JAMMA). Northrop Grumman, as prime contractor, offered the Medium Assault Vehicle - Light (MAV-L) in partnership with engineering firm Pratt & Miller Engineering and BAE Systems. Oshkosh Defense offered its Special-Purpose All-Terrain Vehicle (S-ATV).

However, these three purpose-designed machines failed to make the shortlist, which features three designs arguably covering the widest conceptual spectrum of all offerings, from AM General, Navistar, and General Dynamics Ordnance and Tactical Systems (GD-OTS).

GD-OTS was awarded GMV 1.1 in August 2013 for its Flyer Advanced Light Strike Vehicle (ALSV): a derivative of the latest Flyer Defense Flyer II. Post-award, both AM General and Navistar filed protests with the Government Accountability Office (GAO). After these protests were denied, AM General filed a lawsuit in the Court of Federal Claims, which remains outstanding at the time of writing.

AM General's GMV 1.1 proposal was a much-modified Humvee. Based on an M1100 series chassis, modifications include a width reduction for internal CH-47 transport. The standard Humvee wheels are replaced to meet GMV 1.1's mobility requirements (specifically speed across rough ground) and the suspension has been upgraded. Motive power is provided by AM General's Optimizer 3200 3.2-litre 6-cylinder monoblock diesel engine, developing 270 hp and coupled to an uprated 4L85 Humvee automatic transmission. Earlier this year AM General announced (in right-hand-drive configuration) the M-1165 Deployable Reconnaissance Ground Network Vehicle (DRGN-V), which is essentially the company's GMV 1.1 offering optimised for the export market.

For its GMV 1.1 offering, Navistar teamed with Indigen Armor and SAIC to offer the Special Operations Tactical Vehicle (SOTV). The SOTV is a development of Indigen's Non-Standard Tactical Truck (NSTT), which, despite resembling a COTS pick-up truck of the Toyota Hilux type, is built on a purpose-designed frame fitted with fully independent suspension.

On the borderline of special forces applications, but an excellent example of commercial high-performance race/off-road expertise crossing over into the military arena, is HDT Global's Storm Search and Rescue Tactical Vehicle (SRTV). Based around off-road racing and rock-crawling technology, the Storm was selected to meet the USAF's Guardian Angel Air-Deployable Rescue Vehicle (GAARV) requirement. HDT Global also offers the Sword, which is similar in design/appearance to the Storm but configured for transport inside a V-22 Osprey tilt-rotor aircraft.

Vehicles configured for internal transport by V-22 with its 60-inch (152.4 cm) width restriction and restrictive height and weight limits are considerably more specialised than designs transportable by CH-47. The US marines procured the M1161 Growler, an Internally Transportable - Light Strike Vehicle (ITV-LSV), to meet its V-22 requirement. In October 2013 SOCOM opted for a V-22-specific variant of the GD-OTS Flyer to meet its V-22 ITV requirement.

With users of the V-22 expanding to include Israel, Japan, and possibly the UAE - two of which are looking at special forces roles - the opportunities for V-22 specialist designs look set to increase. This could be one reason why Boeing entered the vehicle market with the purpose-designed and V-22-



specific Phantom Badger.

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SOCOM's most recent awards for what are categorised as non-standard commercial vehicles (NSCVs) include a contract in March 2013 to Battelle for about 270 Toyota Land Cruiser and Hilux models over three years, with deliveries expected to commence later this year. The award covers armoured NSCVs, fitted with internal protection to retain a benign and COTS appearance. Internal durability is enhanced and suspension is upgraded. Ultra Armoring was recently awarded the contract to deliver the standard (non-protected) NSCV variant to SOCOM.

For special forces requiring levels of durability and mobility that might be beyond a standard commercial product without uneconomic modifications, an option is Navistar's previously mentioned SOTV in its base NSTT configuration.

One recent trend with most designs adopted by special forces is protection. For the traditional open-type style of vehicle, this was initially basic add-on ballistic protection such as Jankel's MAPIK, fitted to British Army WMIKs. This was followed by a more vehicle-specific blast and protection kit, typified by the protection offered on the final production RWMIK+ or Supacat's UOR Jackal deliveries. The add-on option worked better on some designs than others, as many lack spare capacity or growth potential for the added weight.

A more recent trend has been to essentially 'cabriolet' what began life as a fully armoured vehicle, or a vehicle for which a purpose-designed appliqué kit already existed. Examples include ACMAT's VLRA 2-based Bastion Patsas, Nimr, General Dynamics' Foxhound/Ocelot, Iveco's LMV, Thales' Hawkei, Otokar's Cobra, Panhard's Petit Véhicule Protégé (PVP) and Véhicule Blindé Léger (VBL), Penman's Metras, and Renault's Sherpa Light.

Only the Bastion Patsas is known to be in service, although little has been disclosed except that its users are African and include Chad. With a 12,000 kg GVW and about 3,000 kg of payload, the Bastion Patsas is a sizeable heavy vehicle, but in recent years bigger, heavier, fully enclosed MRAP-class designs have been pressed into service by special forces.

SOCOM has undisclosed quantities (but known to be hundreds) of MRAP vehicles in its inventory, including the BAE Systems RG-31 and RG-33, the latter including a batch in the 6x6 armoured utility vehicle configuration. A sizeable percentage of SOCOM's MRAPs were upgraded post-delivery with fully independent suspension to address mobility issues in the challenging Afghan terrain.

Addressing the mobility issues with MRAP designs in Afghanistan, TACOM developed the MRAP - ATV (M-ATV): a design intended to offer MRAP levels of protection with significantly greater mobility. About 460 of about 8,700 M-ATVs delivered by Oshkosh went to SOCOM. Post-Afghanistan, it was recently announced that SOCOM will retain 250 M-ATVs in its vehicle inventory.

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Excluding oversnow designs such as the Hägglunds Bv206, no special forces unit to date is known to





have operated a fully tracked vehicle, although the recent evolution of special forces vehicle holdings suggest this may be only a matter of time.

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