Light Armored Vehicles Predominate at British Show

by Peter W. Brown

The Defence Systems and Equipment International 1999 show at Chertsey, Britain's main ground and naval defense industry show, has undergone a transformation. As well as changing both name and venue, there has also been a major change of style, with more non-British companies taking part. The move builds on trends of international cooperation which have been growing over many years, as more and more we see components from "abroad" used in British equipment, as well as various co-production arrangements.

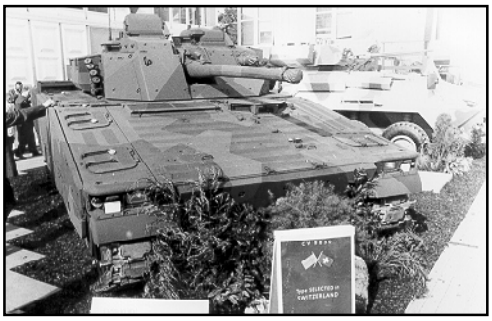
This report concentrates on armored vehicles, although all types of equipment, from boots to helicopters, were on exhibit. Even naval vessels were part of the overall display, but on a separate site.

Vickers Defence Systems, as usual, had a large, comprehensive display, and included the only main battle tank at the show. The 2E model of **Challenger 2** offered for the export market differs somewhat from the British Army version. Main armament is the same 120mm rifled gun, but it was shown fitted with two SFIM sights giving full "hunter-killer" capability. The 2E carries the Europack power pack, which is a German MTU 883 U-12 diesel engine operating through a Renk automatic transmission. Other changes include a .50 caliber M2 heavy machine gun that can be operated by the loader. (Vickers also showed a remotely-controlled version with its own video camera suitable for this and other vehicles.) The Challenger had armored skirts with rubber flaps on the bottom edges and another rubber flap across the hull front. Several potential customers, including Greece, have seen demonstrations of the export Challenger 2.

Vickers partnership with the Swiss company, Mowag — now owned by Diesel Division, General Motors Canada — resulted in two very different wheeled vehicles on show. The larger of the two was the **Piranha** in its 8x8 form, which is perhaps its most common configuration. The USMC operates this version as the LAV in several roles, although it is also available in 6x6 and even 10x10 layouts. Vickers has a license for the latest Piranha IV series, which has adjustable hydro-pneumatic suspension, central tire pressure regulation, and anti-lock brakes, a good feature for a 13.5 ton vehicle capable of 100km/h on the roads.

For roles where size is not needed or may be a hindrance, **Eagle II** is a 4x4 armored scout and utility vehicle. Based on the AM General Hummer chassis, it is armored against small arms fire and designed to carry four people with the capability for more if needed. What looks like a turret is a fully rotating armored observation cupola that allows all-round observation. Armament is defensive only, with a light machine gun and smoke grenade launchers. Other wheeled armor appeared at the Vickers exhibit as a result of Vickers' acquisition of Reumech OMC of South Africa. This firm manufactures a range of specialist vehicles with protection against mines, and also the **Rooikat** armored cars and the **G6** wheeled 155mm self-propelled howitzer, although neither was on display. Their exhibit did include the lighter **Nyala** series, including **RG-12** configured as a riot control vehicle and the **RG-32** scout, which looks like a conventional 4x4 off-road vehicle, but gives good protection to anyone not wanting an obviously armored vehicle. The purposeful **RG-31** is already used around the world in various peacekeeping missions; as a personnel carrier, it carries up to ten people plus the

The Eagle II, upper left, is essentially a HMMWV chassis with an armored body. The MOWAG Piranha IV, at left, shown in the 8x8 configuration. The Nyala RG-31 has been used in various peacekeeping missions around the world.



Light Armor... ...in Profusion

On the Alvis stand was Hagglunds CV9030, upper left, which will equip Swiss Army units.

Hagglunds BvS10, lower left, offers protection coupled with very high mobility on marginal terrain.

WARRIOR 2000, at upper right, was a contender for the Swiss Army but lost out to the CV9030 despite winning high praise from the troops who tested it.

BIONIX 25, at lower right, is optimized for the Pacific Rim nations, and shows how the older, traditional suppliers will face increasing competition in the coming years.

driver, who are all well protected. It can be fitted out with a range of weapons or as a specialist equipment carrier.

Another vehicle on the Vickers stand had made the long journey from Singapore to attend. Manufactured by Singapore Technologies Automotive (STA), **Bionix** is a compact design optimized for conditions in the Pacific Rim countries where small size is a positive feature when traveling among rubber plantations and forests, or over roads and bridges not designed for heavy vehicles. It comes in two forms; the **Bionix 25** at the show carried a two-man turret with stabilized 25mm Bushmaster cannon plus coaxial and external machine guns and a full range of day and night sights. But the vehicle can also be fitted with a one-man, open-top 40/50 turret with the Chartered Industries of Singapore 40mm automatic grenade launcher and .50 cal. Browning heavy machine gun. Either version also carries seven infantry.

This vehicle is supported by the unusual **Advanced Logistics Proactive System**, which STA's own stand demonstrated using a palmtop computer. It can access a full vehicle operator's manual and a fault-finding system that shows where components are located and demonstrates how to find and fix problems using animated displays, voice commands, and even video. Integrated with a vehicle repair and upgrade logging system and a spares package which can be linked to a central location using standard email and phone links, it doubles as a task trainer. All this is fully upgradable via online links, so doing away with bulky and expensive paper manuals.

Britain's other main armor producer is Alvis, whose ownership of the British GKN and Swedish Hagglunds companies gives them a wide range of medium and light vehicles. This brought about what must be a unique event on one stand. Alvis' own contender for the Swiss infantry combat vehicle competition, **Warrior 2000**, is an evolution of the GKN Warrior which proved itself in British service in the Gulf and Bosnia. With improved armor and a 30mm cannon, plus various changes to meet Swiss requirements, it performed well in trials but lost out to Hagglunds' **CV9030,** which was shown on another part of the same stand. This vehicle also carries a 30mm cannon and is similar to the current Swedish Army vehicle, though that mounts a 40mm cannon.

In common with most modern AFVs, **CV90** is available in several forms — infantry vehicle, mortar carrier, command post vehicle, scout vehicle, recovery versions, and also antitank vehicles, with 105mm and 120mm guns. The need to keep the vehicle's weight low means it cannot offer main battle tank levels of protection, but its mobility, and especially its firepower, could fill the large gap between light vehicles with automatic cannons and heavy MBTs. This makes it very suitable for rapid reaction forces.

Also emphasizing mobility while still offering protection is the **BvS10,** a development of the **Bv206S** series of vehicles designed for marginal terrain. Originally developed to be useful in deep snow, they offer mobility in all areas of poor terrain where the advantages of their two-part layout with two-axis articulation keeps its four tracks in contact with the ground at any one time. **BvS10** has almost twice the carrying capacity of earlier vehicles and offers all-around protection against small arms, unrivaled mobility, plus low maintenance costs.

Alvis naturally showed their own designs, including their highly successful **Scorpion** light tank fitted with 90mm gun and diesel engine. While not a new design, it makes a good choice for anyone seeking a small vehicle with high firepower. Another strong selling point is its range of associated vehicles — troop carrier, command, and recovery — based on common components. Here, Scorpion-sized **Spartan**-based types and the longer and wider **Stormer** series give two ranges of options. Two different **Stormer** versions were shown. **Shielder** has just entered service with Britain's Royal Engineers. It is a vehicle-launched scatterable mine system using the basic **Stormer** chassis fitted with an Alliant Techsystems mine-launching system. Designed to lay an antitank minefield, it should not be confused with the not dissimilar GIAT Minotaur system used in the Gulf. **Shielder** may be seen as defensive in nature, while **Stormer 30** is a reconnaissance vehicle or light tank. As its title suggests, it carries a 30mm automatic cannon and TOW missile launchers on either side of its two-man turret. This

A minelaying vehicle, the Shielder (upper left) is in service with the British Army. It is based on the Alvis Stormer chassis.

Scorpion 2000, lower left, is an overhaul and upgrade product that includes a new diesel engine, better sights, and a 90mm gun.

The British Aerospace 120mm armored mortar system, at right, combines a Swiss vehicle, based on Piranha, with a British mortar in an American turret. This breech-loader will fire in both direct and indirect modes.

results in a small, highly mobile, light three-man vehicle with impressive firepower. Performance includes speeds up to 80 km/h forward or reverse down to a minimum speed of 4 km/h, both of which could be very useful in different situations. Armor is light, but it can be carried by helicopter, either combat-ready by CH-53 or unladen by CH-47. One unusual item taking part of the mobility display was a **Spartan** fitted with one-piece rubber tracks. This is a private venture, the British Army having recently awarded a large contract for conventional tracks. They can be fitted to new or existing **Scorpion** or **Stormer** ranges and reduce ambient noise levels dramatically.

Other light armor from Alvis confirms their versatility. **Scarab** is based on widely available Mercedes Unimog parts and is a go-anywhere scout and liaison vehicle well protected against .50 cal. and 14.5mm machine gun fire, shell splinters and mines. Armament can be fitted as required, with a .50 cal. M2 Browning on a remotely-controlled mounting being only one of many possibilities.

Alvis are UK licensees for the **Piranha II and III** series of these versatile vehicles, stemming from the former GKN/ Mowag collaboration, which resulted in vehicles being manufactured in England for sale to Saudi Arabia and Oman. They showed one not unlike an LAV, with an AC Delco 25mm cannon turret carrying two TOW launchers. To confuse matters still further, another Piranha was on the British Aerospace stand. This one had an armored mortar fitted with the **Royal Ordnance 120AMS**, which is a turret-mounted, breech-loaded 120mm mortar. In this form, it has been supplied to the Saudi Arabian National Guard. The mortar turret has also been fitted on M113s in both standard and stretched configurations, which offers light forces very effective supporting fire in indirect and direct modes.

Also not on the parent stand were two **Alvis CVR(T)** variants. One was on the ABRO display, this being a 30mm cannon-armed **Scimitar** fitted with a new diesel engine. Britain is retrofitting its fleet with these new engines to improve their safety and extend their operational range and service life. ABRO performs deep maintenance and repairs on a wide range of vehicles — armored and otherwise — for the British Army, as well as carrying out other unusual tasks. (This organization did the modifications to the funeral carriage of the late Diana, Princess of Wales, and is restoring the RAC Tank Museum's Tiger tank.) Another rebuild package broke new ground. Most defense manufacturers are cagey when discussing prices, but Repaircraft were quoting a price of £200,000 (or $320,000) for Scorpion 2000, a major rework of the basic Scorpion that inclues a new diesel engine and modernized sights. They offer a general overhaul and upgrade package which can be tailored to specific requirements, which include a 90mm gun, among others. The large auxiliary power unit on the rear of the hull powers the vehicle systems without the need to run the main engine, resulting in a considerable extension of the engine's life. Similar upgrades can also be made to other CVR(T) vehicles, Repaircraft can supply both refurbished vehicles from stock or upgrade an existing user's vehicles as required.

If there was such, awards for the most unusual and ugliest vehicles would both have to go to the **Chieftain AVRE** (Armored Vehicle Royal Engineers). These old gun tanks have been given a new lease on life as engineer vehicles, fitted with a top rack for carrying fascines and able to be fitted with a range of devices for obstacle creation or clearance. The one which took part in the mobility display carried several items produced by Pearson Engineering Ltd., specialists in dozer blades, mine plows, and other such add-on equipment for several series of armored vehicles.

Among all this new equipment, the good old "Fifty Browning" appeared in several places. It will no doubt continue to give strong support for many years to come. It would be interesting to see which of the other weapons on show will still be around in another three quarters of a century.

Peter William Brown is a computer programmer with a lifelong interest in armored vehicles. For four years, he edited *Tracklink,* the magazine of the Friends of the Tank Museum at Bovington, England. He has reported on new equipment and trends for many military magazines, including *TANK, ARMOR, AFV News, the Journal of Military Ordnance* and other journals.