

Logistics vehicles carry ammunition, fuel, water, rations, replacement people and fighting vehicles, spare parts and equipment, from the rear area of conflict zone to the units fighting at the battle front. As has been seen since Russia's invasion of Ukraine, logistics have been a decisive factor in successes and failures on the battlefield.

To address shortcomings in its ageing logistics vehicle fleet, in January 2023 the US Army launched its Common Tactical Truck (CTT) programme. It has invited Mack Defense (owned by Volvo), Navistar Defense (owned by Traton, which



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also owns Scania and MAN), Oshkosh Defense, and the American Rheinmetall Vehicles/GM Defense to each provide a prototype of three variants of the new CTT family of vehicles. Initially the new vehicles will replace the in-service 6x4 Freightliner (owned by Daimler) M915 Line Haul Tractor, the 6x6 Stewart & Stevenson/Oshkosh M1088 Medium Tractor, the 10x10 Oshkosh Palletized Load System (PLS, pictured above right) and the 8x8 Oshkosh Heavy Expanded Mobility Tactical Truck (HEMTT, above right, inset).

Detroit Diesel (owned by Daimler), Caterpillar and Cummins engines power the in-service fleets and the vehicles use a variety of chassis, suspension systems and drivetrains. Common to most of the latest versions of the in-service vehicle ranges is transmission manufacturer, Allison.

The 395bhp M915 line haul tractor is basically a militarised version of a typical commercial US 48-tonne semi-trailer tractor and is designed for use on made roads. The 286bhp 5-tonne M1088 medium tractor is air-portable

Military logistics vehicles, the 'Tonka Toys' of the truck world, vary enormously. Peter Shakespeare reports on the US Army's aim to take a single marque off-the-shelf approach to design and procurement in the future

and is commonly mated with M871 semi-trailer. Capable of carrying a 11.5-tonne payload, the M1088 can tow it on and off road, making the combination suitable for use within tactical areas of operations up to the lead formations. The M1088 has been continuously upgraded. It features Rockwell axles, hub reduction, a central tyre inflation system, full-time all-wheel drive and a self-recovery winch. The latest (Oshkosh-built) variant is fitted with an armoured cab that protects the three-man crew from small arms fire and mines. A 6x6 rigid version is used as the platform for the HIMARS medium-range rocket launcher that the US has supplied to Ukraine.

The US Army currently relies on the HEMTT and PLS to deliver combat supplies to the forward battle area. Over 35,000 HEMTTs have been built since their introduction in 1982. The 31-tonner is powered by a 493bhp Cat C15 engine, has an Allison 4500SP five-speed automatic transmission, an Oshkosh 25-tonne rated two-speed transfer case, armoured cab and can move its 12-tonne payload across the most difficult terrain and up 30% gradients. On-road it is capable of 60mph. The PLS is based on a similar platform and takes its inspiration from the British Army's former DROPS hook-lift 8x8 vehicle built by Leyland and Foden. It has a 592bhp engine, Allison 4500SP transmission, an Oshkosh 36000-series two-speed transfer case, fully independent suspension on axles one and two, with Hendrickson RT-400 walking beam suspension on the rear bogie with air-ride suspension on axle three. Capable of handling and carrying a 20-tonne ISO container, it can also pull a second ISO on a trailer, giving it a gross combination weight of 61.5 tonnes.

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Claire Gregory



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The US Army says the \$24.5 million CTT replacement programme aims to leverage best commercial practices, lower procurement cost (commercial economies of scale) and technology.

UK EXPERIENCE

Excepting its Oshkosh-built heavy equipment (tank) transporter and Oshkosh combat support tanker, the British Army's logistics support vehicle fleet is provided by MAN Rheinmetall. It is based on a common platform that features a great deal of technology – engines, transmissions, chassis, suspension, electrics and vehicle control systems – also found on MAN's commercial vehicle ranges. Its British vehicles use either ZF manual or automated manual transmissions.

As part of the US CTT programme, the US Army has announced that the CTT prototype programme will be supported by the Allison 4000-series (speciality range) fully automatic transmission. American Rheinmetall Vehicles/GM Defense is basing its prototypes (HX3, pictured above left)

on Rheinmetall's HX range of logistics support vehicles, as used by the British Army and several other European militaries, albeit with fully auto Allison transmission.

That is best suited to heavy go-anywhere military logistics vehicles, contends Claire Gregory, Allison's global external communications director. She says: “Automated manual transmissions (AMTs) require torque to be controlled or limited at launch to extend the life of the starting clutch. They also require a reduction of engine throttle at each shift, causing torque interrupts. These interrupts result in more shifts and lower

vehicle speeds, requiring more time to do the same job. Allison's torque converter creates an infinitely variable gear ratio, allowing drivers to easily manage power to the wheels. Using just the accelerator pedal, drivers can control vehicle speed to smoothly creep with precision, manoeuvre more easily and have more control on grades – all while protecting the driveline from shock and reducing vehicle wear and tear.

“Without a torque converter, AMTs cannot deliver power to the wheels smoothly, creating more opportunities for inefficient operation. AMTs attempt to mimic the inherent capabilities of an automatic at the expense of clutch wear and driveline failures.

“Automatics are also superior because the torque converter experiences very little wear. While the manual clutch pedal is removed on an AMT, its mechanical clutch still facilitates the vehicle's launch and will wear and eventually burn out, requiring traditional maintenance and replacement.”

The US Army says the CTT prototypes are expected to be delivered for testing before the end of 2023, with trials starting in 2024. Design evaluation is expected to be complete a year later. An open competition and further trials will follow before a contract is issued. [TE](#)

ANALYSIS

MAN Rheinmetall has proved that a commercially based vehicle platform for go-anywhere military logistics vehicles does work. Mack and Navistar are predominantly commercial vehicle manufacturers with commercial economies of scale. It will be interesting to see whether speciality vehicle manufacturer Oshkosh Corp can match its rivals' 'off-the-shelf' potential, and whether Navistar and Mack can match the ruggedness and capability of Oshkosh's proven military vehicle pedigree. -Peter Shakespeare