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# EDITORIAL.

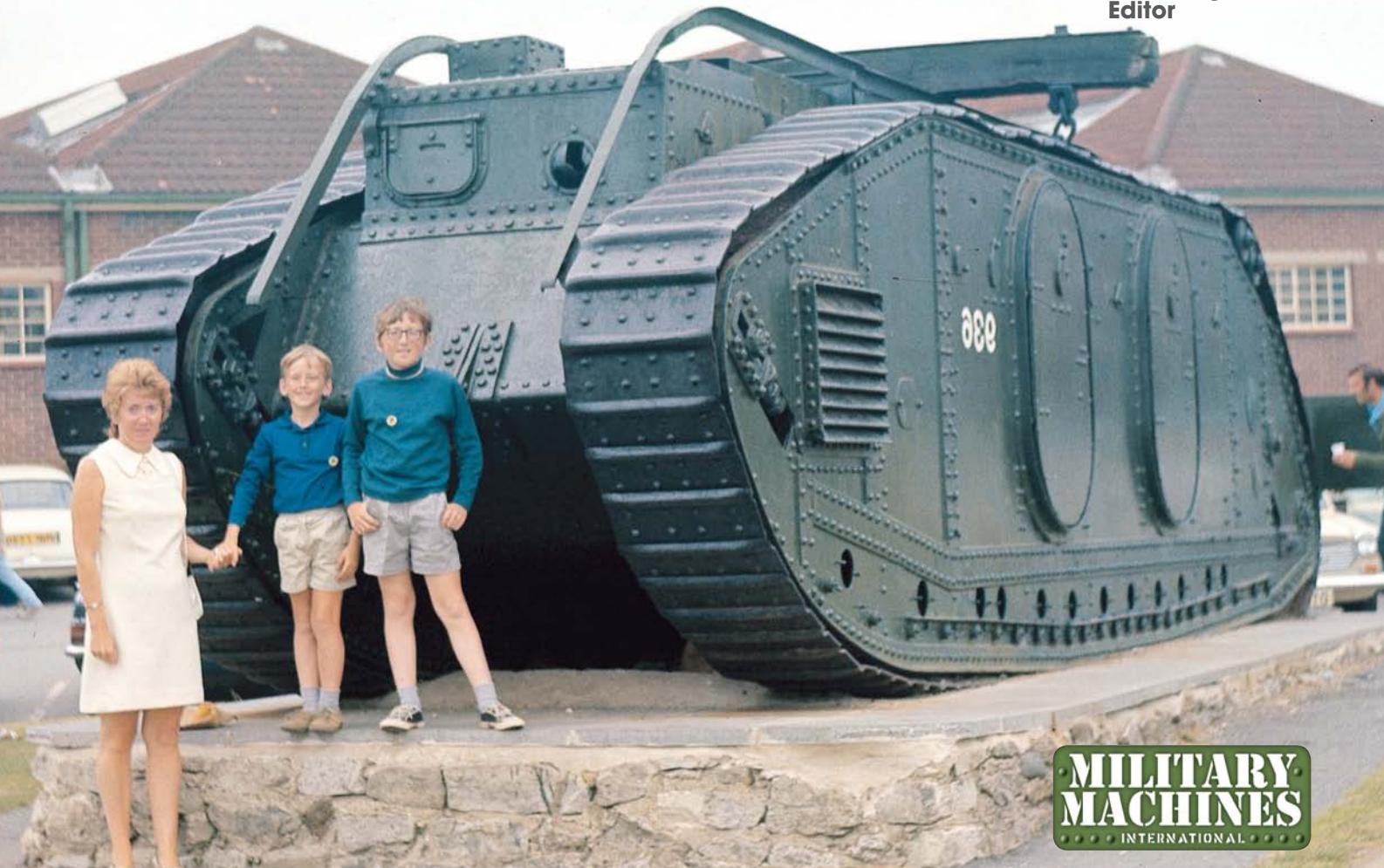
I'm afraid that this month you're going to have to put up with seeing my ugly mug on more than one occasion, but I hope that this won't put too many people off! When we're young it's the accepted norm that doting parents take snaps of us for posterity, and while some hate the idea of having our photos taken, myself included, it does have the occasional benefit. In this issue you'll find a feature that sees me looking back at my numerous visits to the Tank Museum over the years, and the photo below is from one the earliest visits I remember, and while I don't even

remember having the photo taken, I'm now glad that my dad took it, showing as it does one of the many tanks on display outside the museum back in the 1960s. Putting my embarrassment aside, I hope the photos included in the feature will be of interest to readers, offering a brief glimpse into the past history of the Tank Museum, and it may even encourage others to rummage through their old photos to see what treasures they have lurking there, and if you do we, and the museum, would love to hear from you, but until then please enjoy this issue - Ed.



*Ian Young*

Ian Young  
Editor



**MILITARY  
MACHINES**  
INTERNATIONAL

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LECLERC ARV**

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# UP FRONT

## NEWS and REVIEWS...

### Military Vehicle Day at Brooklands

What is unique about the Military Vehicles Day at Brooklands? Well, upon entering the historic 32-acre site in Weybridge, Surrey you realise that you are walking through a place that is inextricably linked with two world wars, is the birthplace of British Motorsport and Aviation. It still bears the scars of German attacks with air raid shelters, a defence pill box, a Bofors gun tower and of course, the mighty Wellington Hangar; inside here is a treasure trove of early aircraft and artefacts, Barnes Wallis' bouncing bomb, Grand Slam and Tall Boy and earlier examples like the Sopwith Camel.

Re-enactors find Brooklands a place like no other as the place is largely as it was since racing ceased there in 1939. The Clubhouse boasts beautiful period interiors, the Motoring Village is packed with vintage racing cars, classic motorcycles and bicycles whilst the Paddock provides the perfect photo opportunity.

Spectators are also invited to venture across to witness the vehicles here on the day to try the punishing 4x4 course at neighbouring Mercedes-Benz World. This really is a full day out and once you see London Bus Museum or take an incredible virtual flight aboard Concorde you won't want to leave.

Military Vehicles Day takes place on Sunday 17th November 2013 between 10am and 4pm. For further details check out the website at:

[www.brooklandsmuseum.com](http://www.brooklandsmuseum.com)



# World War One Presentation Tank

I received this email from Peter Garwood regarding a photo he came across showing a presentation tank in Bury St Edmunds. This is what Peter had to say – Ed.

Dear MMI,

I attach a photograph that belonged to my late Grandmother. She had several photographs showing the Red Cross Hospital where she was a nurse in World War One, but some random photos of aircraft and a solitary image of a tank, all taken in West Suffolk. I had always assumed it was taken at some unidentifiable military location, but the articles earlier this year on presentation tanks made me think again, as it looked like a Mk IV Female, the number 8093 in the right range.

During an Internet search for similar images, I found one of the same tank from a different angle, showing some similar trees in the background, but crucially in the foreground was an archway in the ruins of Bury St Edmunds Abbey. After a few minutes walking around the ruins, I found the very same archway and through it was clearly visible a square of concrete big enough to park a Mark IV tank on, much too large for the park bench now resting on it.

I assume this tank was presented in 1919, I found a reference suggesting it was scrapped in the 1930s so it looks like it went the way of the majority of presentation tanks. I hope this is of interest to you.

Regards - **Peter Garwood**

Well Peter it's certainly of interest to me with my particular fondness for WW1 tanks, and I'm sure that our readers will find it of interest too, so thank you for taking the trouble to send it in – Ed.



# British Wartime Vehicles Wanted

The Coventry Transport Museum (as featured in Up Front last month) are to have a Wartime Family Day on Sunday 3rd November 2013 between 10.00am and 4.30pm, and the organisers would like to fill Millennium Place outside the museum with British wartime vehicles for the day.

It's a Free day for everyone including vehicles, and interested owners can either email the organizer Clive Skelhon at:

[clive.skelhon@transport-museum.co.uk](mailto:clive.skelhon@transport-museum.co.uk)

or Clive's colleague, Chris van Schaardenburgh at:

[christiaan.vanschaardenburgh@transport-museum.co.uk](mailto:christiaan.vanschaardenburgh@transport-museum.co.uk)

Alternatively you can telephone either of them on: 02476 234295

# Colourful CET

Peter Garwood of Ipswich, Suffolk sent along a couple of photos he took of a rather colourful Combat Engineer Tractor he came across being used as a gate guard at Diggerland at Rochester in Kent. Peter tells us that by chance we booked a hotel just round the corner while exploring the Medway area, but unfortunately there was no time to play at Diggerland, which looked like great fun, a hands-on JCB experience.

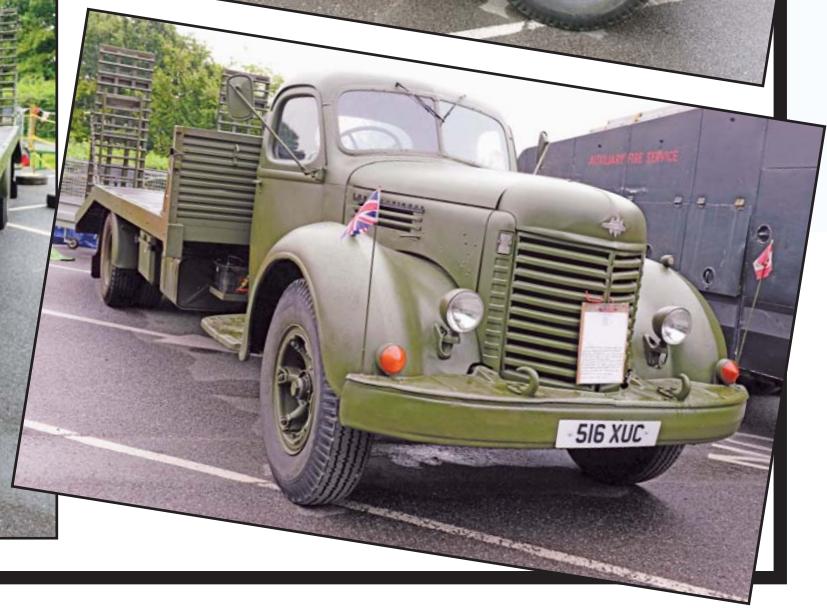
Our thanks to Peter for sending in the photos – Ed.



## Canadian International

Simon Thomson travelled from his home on the Isle of Wight to attend a show on the mainland and came across this unusual Canadian International K8 belonging to local man Dave Hall. According to the data sheet it came to the UK in 1944 and was used as a privileged vehicle by Tate & Lyle. Since then it has undergone a number of changes, but is currently finished in the original army green.

Our thanks to Simon for sending in the photos – Ed.



## FV432 - Fifty and still Going Strong!

I had an email the other from Chas Blenkinsop, together with a couple of photos of FV432s spotted by Chas during a break in training for learner drivers. This is what Chas had to say. Our thanks to Chas for getting in touch – Ed.

Hi Ian,

I noticed in the most recent issue of MMI that the FV432 has now been in service for 50 years and in recent road journeys totalling some 800 miles, I

have seen only two military vehicles on the road, one Land Rover and one 4-tonner. To my surprise on the 2nd September 2013, on pulling into Scotch Corner services, I found this unusual FV432 (posing for me to photograph). I have never seen the most noticeable attachment on any other 432 before – L Plates!

I enjoyed the moment, hope you enjoy the pics.

Regards - *Chas Blenkinsop*



# Peopleton Village Show

My local village show may be a modest little event in comparison to some, but it does attract more than its fair share of interesting vehicles and is always worth a visit. This year the event saw numerous, rare Rolls-Royce cars amongst the many superbly restored classic cars on display, and while the cars were fascinating, I couldn't help but find myself migrating towards the military vehicle section, which is organized by local man John Sargeant. It may sound ridiculous, but despite living just a few miles away, it was only this year that I actually got to meet John face to face for the first time – who says it's a small world! This year the military vehicles included a number of wartime Jeeps, an Austin Champ, Austin Tilly, TACR2 crash tender, Canadian Dodge Weapons Carrier and a Kubelwagen belonging to a local man, and a vehicle I wasn't even aware of having never seen it before!



## Unheard Voices of World War One

The last words of many of Britain's fallen heroes from World War One (WW1) are now available online. Her Majesty's Court and Tribunal Service (HMCTS) has worked with Iron Mountain to digitise its historic archive of 230,000 WW1 wills.

In the first month of WW1, the British Government asked for 100,000 volunteers to step forward. The call up for what was to prove one of the bloodiest conflicts in modern history was answered by 750,000 volunteers.

Before departing for the frontline, servicemen completed a personal, often hand-written will to keep in the pocket service book, which was tucked into their uniform. More than half of the soldiers would be wounded and one in four destined for the Western Front would not return home. The precious documents were key to ensuring that the soldiers' estates were administered in accordance with their last wishes, should the unthinkable happen.

The WW1 wills form just part of the huge archive of 41 million wills preserved by Iron Mountain on behalf of HMCTS. The wills are being made available online in time for next year's centenary of the Great War as part of a larger project to digitise all war wills dating from the Boer War to the Falklands. The wills of English and Welsh soldiers who fought and died in the Great War will be digitised and made available through an online portal, enabling members of the public to request copies of the documents easily.

John Aphorpe, Director of Business Services at Iron Mountain said: "The archive is not only a valuable source of information for historians, it gives the general public, here and overseas, the chance to get closer to their lost ancestors. The original paper records are preserved for future generations in a secure, temperature-controlled environment. We have scanned everything contained in the pocket books so that people will be able to see the soldiers' wills along with any personal messages that the wills may contain. For many of the soldiers, these were the last words they sent home."

As part of a 25-year contract with HMCTS, Iron Mountain stores all the English and Welsh grants of probate and wills dating back to 1858. The digitisation of soldiers' wills marks the first step in making the entire index available online.

Courts Minister Helen Grant said: "This fascinating project has opened the door to a whole new insight on our war heroes – it has given us the opportunity for the first time to hear the thoughts and emotions of the brave soldiers who died for this country in their own words.

"It is a great example of the innovation going on throughout Her Majesty's Courts and Tribunal Service to provide a modern and efficient service to the public."

Scanned copies of The First World War wills can be ordered online from: [www.gov.uk/probate-search](http://www.gov.uk/probate-search)

## KFS 1/24 L118 105mm Light Gun...

This unique & highly successful British designed artillery piece has been purchased by the USA (where it is known as the M119) and Australia (where it is known as the Hamel) amongst many others. Accepted for service in the early 70s, it first saw extensive active service in the Falklands campaign, firing up to 400 rounds per day and is still in service today. The model allows for any firing angle, for both towing options (barrel forward/barrel reversed), and comes complete with a demountable base plate turntable and its securing straps. Shells, charges and ammo boxes complete with decals are also included. Consisting of 46 parts moulded in high quality resin, plus 36 parts in white metal and 61 parts in brass etch, the 105 Light Gun forms the perfect stable mate for the KFS TQ-204 1-tonne Forward Control Land Rover. The UK price is £75.00 (export outside EU @ £62.50) For further details see the Kit Form Services website at: [www.kitformservices.com](http://www.kitformservices.com)





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# Leclerc ARV

**Eric Cunat profiles the Dépanneur du Char Leclerc, the French Army's latest armoured recovery vehicle**

## ARMoured RECOVERY VEHICLE



**Above:** Here we see the prototype of the DCL. (Photo - Nexter)

**Main Photo:** During a visit to Mourmelon the DCL "Ville de Reims" was photographed, which belonged to the 501e RCC based at Mourmelon.

**T**he DNG/DCL is an armoured recovery vehicle built around the chassis of the Leclerc gun tank. The DCL comes as a replacement for the AMX-30 D in the role of a recovery and repair for battle tanks over 50-tonnes. Nexter designates it DNG (Dépanneur Nouvelle Génération - Next Generation ARV); the French Army uses the term DCL (Dépanneur du Char Leclerc, "Leclerc Tank ARV"). The main role of the DCL is to tow disabled tanks out of a battle zone, while its secondary roles include repairing damaged tanks, and helping in military engineering. For these roles, it is fitted with a crane, which allows the removal of a tank turret, and a bulldozer blade.

In the late 80s, in order to present a complete commercial offer, GIAT Industries had studied the development of an armoured recovery vehicle on the standard chassis that the company then offered for export, namely, the AMX-40. The solution adopted was to use the MaK equipment of the Bergepanzer 3 (crane, dozer blade, winch) mounted on an extended chassis with an additional roller to accommodate the crane and despite the French Army adopting the new Leclerc tank, the production of a new armoured recovery vehicle was not assured.

## NEW GENERATION

The first serial production Leclerc tanks were delivered to the French Army in January 1992. The same year, tests were conducted in UAE to select the new tank of UAE armed forces. The GIAT proposal to UAE included 46



**“...in 1999 it was decided to deploy Leclerc tanks to Kosovo, and for their first operational engagement the French took urgent delivery of two DNG ARVs...”**

armoured recovery vehicles, under the name DNG, to act as a new generation recovery vehicle based on the equipment fitted to the German Bergepanzer 3, using a chassis with seven road wheels and a MTU Europowerpack 883 powertrain (as used on the Challenger 2E and the Merkava 4), as used by the UAE for their Leclerc tanks. The Leclerc tank was declared the winner of the competition in 1993 and the production of the DNG armoured recovery vehicles began soon after in 1995.

Although France had not yet finalised its decision on the vehicle that would act as ARV to the new Leclerc tanks, in 1999 it was decided to deploy Leclerc tanks to Kosovo, and for their first operational engagement the French took urgent delivery of two DNG ARVs originally destined for the UAE. Following the successful use of the Leclerc ARVs, it was decided that the French armoured recovery vehicles would be a simple adaptation of the



#### ABOVE...

Front view of the first DNG destined for the United Arab Emirates. (Photo - Nexter)

#### LEFT...

The heavy duty straight tow bars are carried at the rear of the hull. Note the smoke dischargers exiting below the two

#### BELLOW...

rear stowage boxes. The recovery of a Leclerc tank in UAE by a DNG in service with the UAE armed forces. (Photo - DR)



## LECLERC ARV INTERIOR

Below: various views of the interior compartment of the Leclerc DCL. The driver controls include a steering wheel rather than outdated tillers, a rise and fall seat and automatic gearbox. Like all modern tanks, the systems are highly computerised with numerous information panels sited around the interior of the vehicle.



"...The Dépanneur du Char Leclerc is d



Top: View looking over the roof of the DCL showing the various items of equipment stowed there, plus the tubes for the GALIX smoke grenade launcher system.

Above Left: Close-up of the driver's top hatch... with the commander's cupola behind (shown above).

Below: A Leclerc DCL photographed during a recovery operation involving a Leclerc gun tank whilst participating in United Nations operations in Lebanon. (Photo - DR)





DNG of UAE, including the MTU powertrain. Twenty vehicles, two of which were from the batch originally procured as an emergency measure for service in Kosovo and later retrofitted to DCL's standards, were acquired by the French army. The DCL deployed to Kosovo supported the squadron of 15 Leclerc tanks deployed there between 1999 and 2002, while another was deployed with the Leclercs of UNIFIL in Lebanon from 2006 to 2010.

#### LEFT...

View of the huge dozer blade positioned at the front of the vehicle that can be used for a variety of tasks, including debris removal and as a ground anchor for winching.

#### BOTTOM...

#### DCL IN SERVICE

The DCL is designed to recover and evacuate tanks over 50-tonnes from battlefield. The equipment carried also allows it to participate in heavy maintenance, and to engage in general

A DCL of the French Army is seen here towing an older AMX-30 D using a straight bar. The straight bars are stowed on the rear of the DCL's hull. (Photo - SIRPA TERRE)

designed to recover and evacuate tanks over 50-tonnes from battlefield..."



*Above Left:* Here we see the upper cupola, which can be fitted with a 12.7mm mg for self protection.

*Above Centre:* A pulley block for use with the main winch is carried on the front of the vehicle.

*Above Right:* close-up of the GALIX smoke grenade launchers mounted either side of the front hull.



## FAR RIGHT...

A DCL conducts a powerpack change on a Leclerc gun tank. Note the large spreader frame above the powerpack. (Photo - DR)

## BELOW LEFT...

A Nexter's ARV lowers the rear hamper for the mine-clearing kit that is being fitted to transform the vehicle from the ARV role to the armoured engineer role. (Photo - Nexter)

## BOTTOM....

A French army DCL comes to the aid of a Leclerc gun tank during training exercises at the Mourmelon training area. (Photo - Nexter)

## Specifications

**Crew:** 3

**Weight:** 56-tonnes

**Length:** 9.35 m

**Width:** 3.40 m

**Height:** 3.15 m

**Engine:** MTU 883 V12 turbodiesel developing 1500 hp

**Suspension:** Oleopneumatic

**Gearbox:** automatic Renk HSWL 295

TM, 5 forward and 3 reverse

**Crane:** MaK, lifting capacity: 30 tonnes, controlled from the cockpit or by remote control

**Main winch:** 35-tonnes pulling

capacity, 180-metres steel rope, can be used in single or dual reeving

**Secondary winch:** 1.3-tonne pulling

capacity, 230-metres steel rope

**Bulldozer blade:** 3.40-metres width

**Armament:** 12.7 mm MG & Galix

grenade launchers

**Fuel:** 1400-litres of diesel

**Range:** 700 km

**Maximum speed:** 65 km/h



engineering tasks. The vehicle's recovery components can be remotely controlled from outside the crew compartment and includes a crane with a lifting capacity of 30-tonnes, which allows the changing of an engine unit, the removal of a tank turret or the lifting of the tank to allow for repair. The winch has a capacity of 35-tonnes in single strand can reach 70-tonnes in single reeving and up to

140-tonnes with dual reeving. A total of twenty DCL are currently in service with the French Army in the four Leclerc regiments, a further forty-six DNG are in service in the United Arab Emirates armed forces.

Acknowledgements to NEXTER SYSTEMS, Photos by Éric Cunat unless otherwise stated

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# Irish Fords

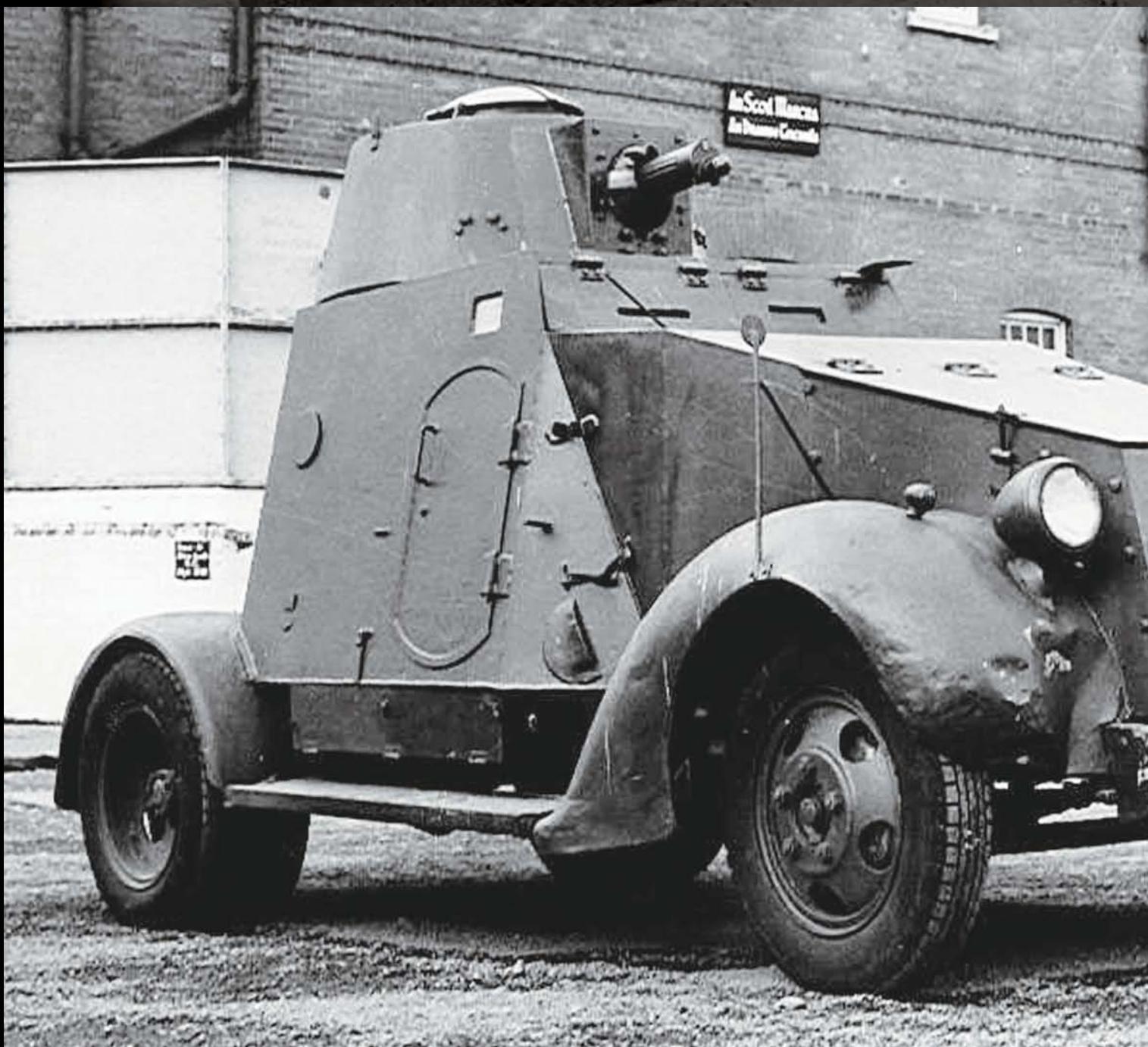
Colin Stone takes a look at early Ford Armoured Cars in Irish Army service

*Main Photo Below: Ford Armoured Car Mk VI outside the Cavalry School, Curragh. (Photo - Military Archives)*

With the looming war clouds on the horizon, Ireland, although neutral, sought to arm herself and turned to the UK, Sweden and even the USA for armaments, but in the event it was too late and the outbreak of war curtailed any pending deals. As a result of this, Landsverk had an order for five Landsverk L180 Armoured Cars, plus spare parts (for the cars already in service with Ireland) impounded by the Swedish

Government. This was due in part to the outbreak of war, together with the fact that the clearinghouse for the funds was in the UK, and at the time Landsverk had strong ties to Germany.

The usual suppliers of armaments, the UK, were in no position to provide Ireland with armour and President Roosevelt gave Ireland's Minister for Defence Frank Aiken a cold response when he went to the USA to appeal for the supply of armaments.





### MOTHER OF INVENTION

Desperation is the mother of invention or so the saying goes, and this proved to be true in the Irish Defence Forces case. Unable to procure any armoured cars, the Great Southern Railways Workshop was given the task of designing and building an armoured car based on a Ford 1.5-ton light truck chassis. The two draughtsmen who designed the GSR (or Ford Mk IV as it was to be known), drew heavily on the Rolls-Royce armoured car, which was then in service due, but found themselves constrained by the fact that the steel plate to hand was restricted in size, which accounts for the angular appearance of the car, especially the turret.

The 3/8" steel plate had been salvaged from police barracks around the country from the War of Independence. After construction the prototype went head to head with the Army-designed Ford Mk V but was found to be lacking. Even so, such was the shortage of armour that a total of eight armoured cars, including the prototype, were produced and went on to be used as mobile pill boxes to protect Dublin's strategic points such as the current site of Dublin Airport.



They were armed with a turreted Hotchkiss machine gun, and due to all the weight being over the undriven front axle, were fitted with 9cwt of cast iron over the back axle to improve traction, but that wasn't the only flaw in the design, and one veteran I spoke to told me how difficult it was to fire the main weapon from under armour. After WW II the cars were stripped of all armour and weapons and the chassis were sold on to civilian companies.

### TOP RIGHT...

Ford Mk VI Armoured Cars photographed outside Thompson's Carlow Factory. Note the weapon has yet to be fitted to the turret. (Photo - Thompsons)

### ABOVE RIGHT...

A small number of Ford Armoured Lorries were also produced. It's clear to see that the front of the vehicle is essentially the same as the armoured car variants. (Photo - Military Archives)

### NEW GENERATION

At the same time Commandant J.V. Lawless had been designing a clandestine rival in the Cavalry Workshops in the Curragh. Lawless had previous form having designed the Leyland 6x4 armoured cars, but his nose was put slightly out of joint when



### LEFT..

Here we see Mk V Ford Armoured Cars coming off the production line at the Carlow Plant around 1940-41. Three examples can be seen at various stages of construction from a bare chassis at the rear to an almost complete vehicle with just the turret armament needing fitment. (Photo - Thompsons)



**TOP RIGHT...**

Crewmembers load gun chests into a Ford Armoured Car Mk VI. (Photo - Sean O'Sullivan)

**TOP LEFT...**

Photo showing the cramped Ford's crew compartment and the gunner's position. The ball mount for the gun is clear to see. (Photo - Military Archives)

**ABOVE LEFT...**

The lever for the radiator shutters is operated by the lever in the footwell to the left of the driver. Close-up of the turret on

**ABOVE RIGHT...**

the Mk VI showing the machine gun mount. The driver controls on the

**RIGHT...**

Ford Mk VI armoured car are rudimentary to say the least!



he wasn't selected to sit on the Board to design the new armoured car, which was pretty extraordinary considering he was the only man in the country who actually had pedigree in armoured car design!

The Lawless-designed Mk V prototype was built by Thompson's of Hanover Works, Carlow, who are still in existence today. The front end of the car was similar to the Mk IV, but the chassis was shortened and the turret used was from the retired Peerless armoured cars. The Peerless had two Hotchkiss equipped turrets and with seven spare Peerless bodies it allowed fourteen Mk V's to be completed. Whereas the Mk IV had used a framework onto which the plates were riveted, the Mk V was constructed of mild steel plate and was welded. Mild steel plate would not inspire

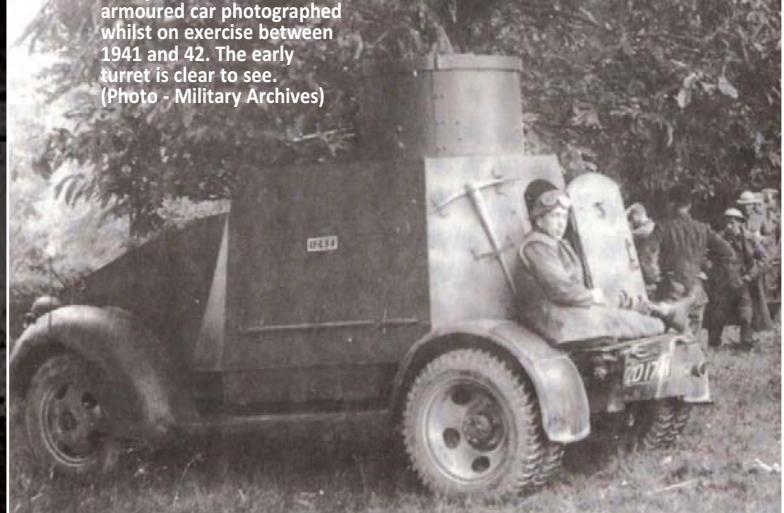
confidence even when facing an infantry section, and again after the war the cars were stripped and sold onto civilians who probably worked them hard for many years to come.

What turned out to be the definitive model of the Ford family was the Mk VI. It was again based on the Mk V, but due to the fact that all the Peerless turrets had been used, it meant that a new turret needed to be designed. The new turret was made of boilerplate and was loosely based on the Landsverk turret, which was in service at the time.

The jam prone Hotchkiss machine guns were replaced by Vickers and the problem of the spherical boss and its production was solved by Mr. Tommy Kinsella, the foreman of Thomsens, who took a piece of steel piping and used a press to compress it until the



Rare photo of a Mk V Ford armoured car photographed whilst on exercise between 1941 and 42. The early turret is clear to see. (Photo - Military Archives)





LEFT...

A rare photograph showing Ford Mk V (foreground) and Mk VI armoured cars (at rear) in Curragh Camp during WWII. A number of other vehicles are visible, including numerous Rolls-Royce armoured cars and on the back row you can just see one of the armoured trucks.

## "What turned out to be the definitive model of the Ford family was the Mk VI..."

round boss was achieved at both ends. Armour plate remained a problem to source, but the issue of the Ford chassis had been solved because at the time Fords were assembled in the Ford factory in Cork City. The Dublin Dockyards Company was searched in an effort to find enough boilerplate, and while plate from Montreal was sourced, no room could be found on ships to allow it to reach Ireland. Desperate measures were needed, and shipwrecks as far around the coast as

Donegal in the north were scoured for suitable plate, but in the end pressed steel was used in the construction of the cars.

In total 28 cars of the Mk VI model were produced by Thompsons and over the course the design was improved with stronger springs on the front axle. The Ford was a basic delivery truck whose designers never saw the need for four-wheel drive and the double tyre set up on the rear driven axle must have restricted their

off-road ability. The one thing that every Cavalryman remembers about the Ford was the beautifully smooth 3,621cc V8 engine that never let you down no matter what. I have heard this engine in operation and it is as sweet as a nut.

The one way of entering and exiting the cars was via the large back door, however, the problem with this was that the fuel tank was incorporated into the rear platform, meaning that if the vehicle caught fire it effectively blocked the main exit and the only alternative way out for the crew was through the turret. Later a door was cut in the driver's side of the cars.



BELOW LEFT...

Troops awaiting a GOC's inspection with the cars and kit neatly laid out. Notice the locally produced Ford scout car to the right.

BELOW RIGHT...

A new recruit is introduced to his new charge by an NCO. Armament on the vehicle is removed for security reasons in camp.





The side door is seen here, which was added later due to the risk of the rear door being blocked by fire due to the location of the fuel tank at the rear.



### AFTER SERVICE

The Ford armoured cars served until the early Seventies and only the lack of spare parts forced their retirement. The only examples of the Ford armoured cars that survive today are all of Mk VI variant. The Irish Defence Forces historical vehicle section has a running model, which is used around the country at shows and fairs and another model is on show in Collins Barracks Museum, just a stones throw from the Guinness Storehouse, which is on every tourists visit list on a trip to Dublin. This vehicle had been with the Cobbaton Combat Collection in Devon for years and was returned to Dublin for the impressive Soldiers and Chiefs exhibition in Collins Barracks. It's a bit of a one off as it was converted to a

command car configuration with a No.19 wireless set. At least one more Ford armoured car is thought to have survived in the UK, while another has recently undergone a ground up restoration in Northern Ireland, of course if you know differently we would love to hear from you.

Thanks to Cmdt. Art Magennis DSM (retired) a true Cavalry Man, Sgt. Ned Kelly, Military Archives Dublin, Capt. John Fitzgerald, CVBW Curragh and Mr. Gwynne Thomas of Thompson Engineering, Carlow for their help with the production of the article.

#### TOP LEFT...

The 3,621cc V8 Ford engine was beautifully smooth and never let you down no matter what.

#### ABOVE LEFT..

The Cavalry Museum's Ford armoured car returns to Dublin's famous Cathal Brugha Barracks where it would have served in the past.

#### RIGHT..

The Mk VI Ford turned out to be the definitive variant of the Ford-based armoured cars used by the Irish Army. This Ford Armoured Car Mk VI belonging to the Cavalry Museum was photographed during Lt. Gen Sean McCann's Stand Down at Plunkett Square, Curragh, July '13.



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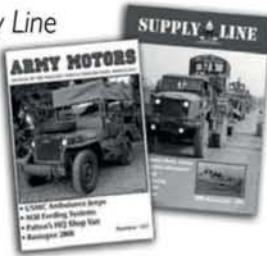
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# Designed For Purpose

## SHAUN CONNORS TAKES A LOOK AT THE MERCEDES-BENZ ZETROS RANGE OF MILITARY TRUCKS

In recent years the number of long-term peacekeeping/enforcing style deployments undertaken by the world's military has increased considerably. These deployments have seen the life cycles of military trucks accelerate considerably, trucks now required to operate globally during what are classed as prolonged low intensity operations.

Mercedes-Benz market research identified to the company an emerging need for a new generation of military trucks that could replace the often

ageing and unsuitable fleets that were becoming ever more expensive to maintain on such operations. Company research concluded that most potential customers were looking for a true tactical truck, not a militarised commercial product. Mobility, protection and an ability to operate extensively in austere and/or extreme climatic conditions were high priorities, with durability, commercial operating costs and standards of reliability and maintainability equally as desirable.





#### FAR LEFT...

Promotional image of the first S2000 (4x4) prototype, which at this point in time had no engine fitted.

#### LEFT...

The first S2000/Zetros (6x6) prototype was shown in July 2003 and is seen here at Millbrook in the UK.

#### LEFT...

Another early S2000 promo image, however, by this stage the radiator grille had been revised and the familiar three-pointed star made more prominent.

Germany's Bundeswehr placed its much-anticipated initial Zetros order on May 14th 2012, this calling for 110 Zetros 1833A. Contract value is quoted as >€70 million, this including a €3 million ILS package. All trucks are delivered with armoured cabs, this having air-conditioning, an NBC overpressure system, being FFR, and with provision to mount a remote weapon station (RWS). Some vehicles (such as this one) are fitted with a self-recovery winch.

The first (4x4) prototype of what was known as the S2000 throughout the development process was shown publicly in June 2000, this followed by the first (6x6) prototype in July 2003. Lessons learned working with the Bundeswehr on earlier military vehicle projects were carried into the development process of this fourth generation military truck, however, from the outset the aim had been to design a product that was also suited to commercial applications such as operations in open cast mines and on disaster relief operations.

Following development, serial production models were shown publicly in June 2008, and at this time the Zetros name was disclosed. The Zetros family is now manufactured at Daimler's Woerth facility, and alongside the Unimog and Econic refuse chassis.



ABOVE RIGHT: This DÖLL-bodied Zetros 2733A (6x6) demonstrates considerable chassis twist and is fitted with what is essentially the production-standard softskin cab.

BELOW: This Zetros 2733A (6x6) is fitted with a Schmitz-supplied cargo body. Bulgarian and undisclosed North African customer trucks have EMPL bodies, German trucks have DÖLL bodies.

#### ZETROS 6X6...



# Early CGI Renditions

S2000/Zetros was originally targeted at the UK MoD's Support Vehicle programme, this an early computer generated rendition of the (4x4).

S2000/Zetros was to be the basis of a family of military trucks, here we see an early rendition of the 6x6 variant.

A four-axle chassis was proposed, but this is no longer under consideration. Despite visual differences, the engine remained located centrally between the chassis frame.



## PARTS BOX...

Mercedes-Benz concluded that commercial operating/reliability concerns and the desired levels of tactical mobility could be achieved at an affordable price for the Zetros range by using a 'parts box' approach to commercial aggregates. However, strategic mobility, crew protection and other requirements could not be achieved using commercial cabs.

Voluminous commercial cabs do not fit the C-130 Hercules transport aircraft envelope, primarily by reason of height. Similarly, height poses problems when transport by rail is required, and can also have concealment issues. On the basis of this, and if ergonomic and internal space criteria were to be met, the development of a new modular cab for the under-development family was undertaken.

The Zetros cab was designed from the outset to be fitted with armour,

and without compromising other design criteria. The initial solution was one of a 'fit as required' benign in appearance internal appliqué kit, this developed to meet a German Army requirement and subsequently fitted to Mercedes-Benz trucks of the Norwegian and German armies during 1995.

As threat levels on deployed operations have escalated, so have protection requirements, and together with LMT of South Africa Mercedes-Benz developed a fully armoured 'drop-in' exchange cab solution to meet current protection requirements. This cab formed part of Mercedes' bid for Australia's Land 121. A second generation armoured cab has since been developed in partnership with Indikar GmbH of Germany, and this cab is fitted to German Army Zetros.

Free from engine intrusion, the bonneted Zetros cab offers a true three-seat environment for fully equipped soldiers (plus radio/ECM equipment). The cabin interior is based on components and controls from the Axor/Atego ranges, this helping to ensure that legislative and ergonomic criteria are met, while also providing the reliability advantages of proven components.

Panels for the base softskin cab were to be manufactured in the UK (as part of the Support Vehicle sweetener) by the collapsed Mayflower, but are now understood to be manufactured in Germany by Wagon Automotive.

The current Zetros family comprises two- and three-axle all-wheel drive variants. A four-axle chassis was proposed during the development process, but according to Mercedes-Benz this is no longer under consideration.

Zetros is built around a C-section chassis frame that is used as the basis for Actros all-wheel drive commercial construction variants. These have laden weights of up to 41-tonnes and use chassis frames constructed from



## TOP RIGHT...

Delivered under the GTF project, this German Army Zetros 1833A is fitted with the optional winch.

## ABOVE LEFT...

Displayed at Eurosatory 2006, this (6x6) is fitted with a Multilift load handling system and was clearly targeted at Canada's continuing Medium Support Vehicle System (MSVS) requirement.

## RIGHT...

Bulgarian Army Zetros 1833A (4x4); Bulgaria is thought to have received around 50 1833A and 30 2733A, with additional deliveries considered likely.



## ZETROS CAB OPTIONS...



9.5 mm thick steel, the norm for road use being 7 mm or 8 mm steel for. In addition to providing a mounting for the enlarged cooling system, the only new component required for Zetros is chassis reinforcement at the front end to mount snow ploughs or meet the military requirement for suspended towing.

Two wheelbases are currently available, 4.8 m for the 1833A (4x4) and 4.75 + 1.45 m for 2733A (6x6). The standard platform body length on the 1833A is 5.1 m, the standard platform body length on the 2733A is 6.2 m. In standard Mercedes-Benz style, 27 denotes 27-tonnes GVW, 33 denotes engine power out (hp ÷ 10), while A denotes all-wheel drive (allrad).

With the exception of the automatic gearbox option, all major driveline aggregates used throughout the Zetros range are Daimler designed, developed and manufactured items.

An in-line multivalve six-cylinder turbocharged and intercooled diesel engine was selected to power the Zetros family, this engine developed progressively over a number of years

and capable of meeting current emission standards if required. This engine was selected as a Daimler 'world engine' as these are deployed around the globe in numerous arduous duty applications, on- and off-highway, with support available from any of Mercedes-Benz's 5,000-plus dealerships.

The selected engine is the 7.2-litre OM 926 LA from the 900 Series, these having been in production since 1995 and currently fitted to all Mercedes-Benz light and medium trucks, including the Unimog. They are also fitted in tracked construction vehicles, ski slope maintenance vehicles, mobile cranes and other off-highway vehicles.

For both current Zetros models power output (at EURO 5) is 326 hp and 1,300 Nm torque at 1200-1600 rpm. A EURO 3 option is available. Manual or automatic gearbox options are available. Manual option is a Mercedes-Benz G-131 nine-speed unit. Allison provide the automatic units. The selected gearbox is coupled to a Mercedes-Benz VG 1700-3W/1.6 two-speed transfer box.

All Zetros variants are sprung by multileaf parabolic steel springs on all axles, the (6x6) fitted with a high-articulation rear bogie; shock-absorbers and anti-roll bars are fitted as required. Axles are of the heavy-duty planetary hub reduction type as supplied by Mercedes-Benz to third party truck and military vehicle manufacturers. Front axle rating is up to 9-tonnes, rear axle(s) rating is up to 10.5-tonnes (depending on tyre and rim arrangements), and all axles are fitted with pneumatically operated differential locks.

The 1833A is fitted with a 9-tonne rated AL 7/56 steer drive front axle and HL 7/56 10.5-tonne rear drive axle. The 2733A is fitted with a

### TOP LEFT...

A crew protection option is now virtually a prerequisite on military trucks, and the Zetros cab was designed from the outset to be fitted with armour.

### TOP RIGHT...

The Zetros 2733A was the only vehicle to qualify for the GTF 9-tonne category. It is understood the 9-tonne category will no longer be procured and absorbed by the 15-tonne category, with a (6x6) tractor unit being procured for any capability shortfall.

### ABOVE RIGHT...

Following an order believed to have included around 900 Zetros in various configurations, an undisclosed North African country is understood to have a requirement for at least 400 more.

### LEFT...

A pair of Zetros 1833A, the RH truck fitted with an Indikar armoured cab (and Michelin XML tyres), the LH truck fitted with the standard softskin cab (and 1400R 20 Continental HCS tyres).





### TOP RIGHT...

Numerous examples of the Mercedes-Benz LA1113 continue to serve with armies around the world.

### ABOVE LEFT...

Commercial models of the Mercedes-Benz Zetros are also available, as seen here. From an early stage it was decided that Zetros would be available for arduous and heavy duty roles, and in all operational environments.

### BELOW...

A tight fit height-wise even for a bonneted configuration, but Zetros does fit the C130 transport envelope.



9-tonne rated AL 7/56 steer drive front axle, and HL 7/56 rear drive axles. Commercial variants can have a 7.5-tonne rated front axle.

The Zetros family uses ZF 8098 power steering and in common with all Mercedes-Benz off-road trucks is fitted with a dual circuit air pressure 'S' cam drum braking system supplemented by a combined engine and exhaust brake. The service brake system is fitted with ABS with an off-road cut-out function and a load-sensing valve on the rear axles to optimise braking power under different load conditions.

Fitted as standard are 14.00R 20 high profile Michelin XZL off-road tyres, although options are available: Germany Army trucks are fitted with lower profile 395/85 R20 XZL tyres. A central tyre inflation system (CTIS) and tyres with a run-flat capability may be fitted as options to enhance mobility in extremely soft conditions or following a puncture.

All Zetros variants are capable of unprepared fording to a depth of 800 mm, with 1.2 m as an option. To ensure a global operating capability, the Zetros family has been designed to

operate through a -32°C to +49°C temperature range. Winterised variants can operate down to -45C without compromising hot climate operations.

### USERS...

Zetros was initially targeted at the UK MoD's Support Vehicle requirement, this awarded to MAN (now RMMV) in 2005. The launch customer for Zetros would be Bulgaria which in 2003 awarded the then DaimlerChrysler a contract that was initially quoted at €256 million for the replacement of 15,000 assorted military vehicles by 2015. Post global financial collapse, it was disclosed in December 2010 this deal (which had already been further revised) had been renegotiated to reduce the extent of procurements. Further details have not been made available, but it is believed that around 500 vehicles of all types have been delivered to date, these deliveries including 50 Zetros 1833A and 30 Zetros 2733A, the latter in June 2011. Further small quantities of all types may follow.

Germany's Bundeswehr placed its much-anticipated initial Zetros order on May 14th 2012, this calling for 110 Zetros 1833A. The first 25 vehicles were contracted for delivery during 2012, and the first of these were deployed to Afghanistan early-2013. All 110 vehicles ordered are to be fielded by mid-2014.

All trucks are delivered with armoured cabs, this having air-conditioning, an NBC overpressure system, being FFR, and with provision to mount a remote weapon station (RWS). Some vehicles will be fitted with a self-recovery winch.

The German Army award is part of the long-running GTF (Geschützte Transportfahrzeuge) project, this the replacement programme for Germany's aging MAN Kat 1 fleet. The Zetros 1833A was the only vehicle to qualify for the GTF 5-tonne category, while the Zetros 2733A was the only vehicle to qualify for the GTF 9-tonne category. It is understood the 9-tonne category will no longer be procured and primarily because of front-axle weight/mobility concerns. It is believed the 9-tonne category will be absorbed by the 15-tonne category, with a (6x6) tractor unit being procured for any capability shortfall. Mercedes-Benz has displayed a Zetros 2733AS (S denoting tractor truck) in anticipation of this.

There will be additional purchases under the GTF requirement.

In other markets, some sources suggest that Chile has purchased a small number of Zetros, while others suggest that Saudi Arabia will receive a quantity of Zetros as part of a deal for MBDA air defence systems.

The most substantial Zetros order to date is understood to have been placed by an undisclosed North African country. An initial 1000-truck order that is thought to have >90% Zetros (the bulk of these 1733A 5-tonne) is understood to have been followed up by a follow-on order for around 400 more. Commercial models of the Zetros are also available.



IMAGES: Victor M.S. Barreira, German Bundeswehr, Shaun Connors, Google, Mercedes-Benz, Cesar Cruz Tantalean.

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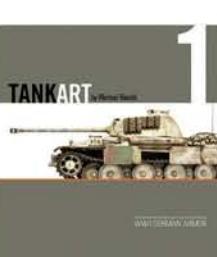


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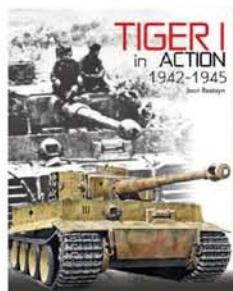
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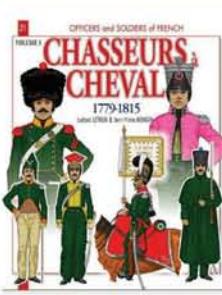
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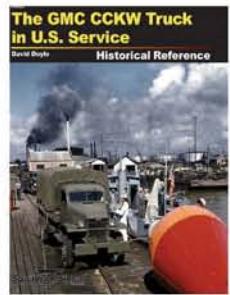
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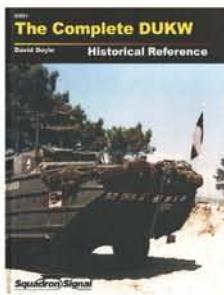
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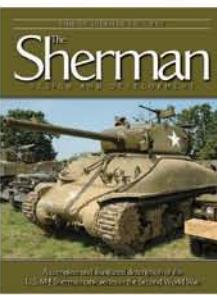
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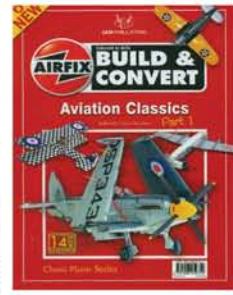
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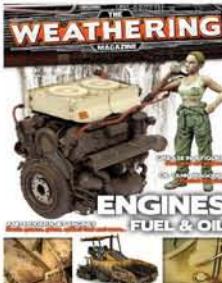
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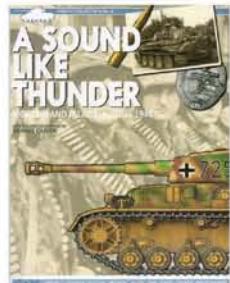
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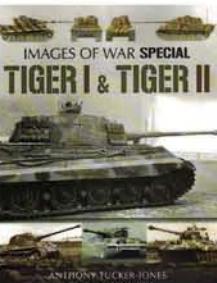
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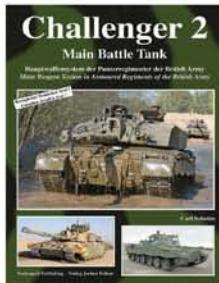
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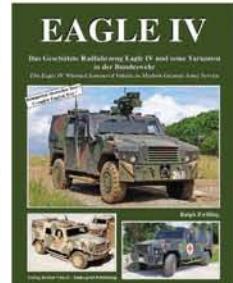
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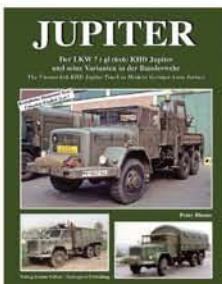
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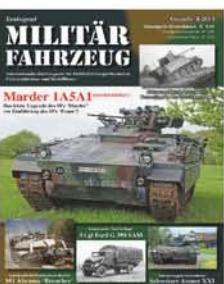
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# Tankfest 2013



MMI WAS ON HAND TO CAPTURE ALL THE ACTION FROM THE ANNUAL 'HEAVY METAL SHOW HELD AT THE DORSET-BASED TANK MUSEUM

The Challenger 2 from the Bovington-based Armoured Trials and Development Unit was the heaviest tank at the show, due in part to a full suite of add-on armour, as used in Afghanistan.



Anyone who's attended Tankfest before will know that it's an event that becomes highly addictive and once you've been, it's the sort of event that will bring you back year after year. This year Military Machines International took a greater interest in the show than usual, supporting the event and even appearing on the cover of the show guide, and we would like to take this opportunity to thank everyone at the Tank Museum for their help and the many readers who visited the MMI stand outside the museum.

While some of the exhibits on display may have been familiar to regular show goers, mainly due to them being 'crowd pleasers', the museum does aim to include a selection of 'different' vehicles to thrill the crowds and this year's show was no different,

with an eclectic mix of tanks and armoured fighting vehicles covering a number of eras, and as in recent years, included a number of the very latest regular Army vehicles brought along to the show by the local Armoured Trials and Development Unit based quite literally up the road from the museum.

Additionally there was a varied selection of privately owned military vehicles on static display around the site, with some parked outside the newly completed Vehicle Conservation Centre building, which by the time you read will be open to the public.

Outside the Vehicle Conservation Centre visitors to the show were



ABOVE...

To compliment their British Mk.IV tank replica, the museum recently acquired this replica of a German A7V.

LEFT...

The Tank Museum's own Rolls-Royce armoured car was joined by another example brought to the show by the Irish Cavalry Museum in Ireland.

BELLOW...

The Panzer III joined the Tiger in the arena.





treated to a rare sight, not one, but two Rolls-Royce armoured cars, with the museum's own Roll-Royce being joined by the beautifully restored example belonging to the Curragh Military Museum, namely 'Sliebh na mBan', as mentioned in Up Front in the September 2013 issue, and featured in the August 2012 issue. Both are beautifully restored vehicles in their own right, but it made a nice change to see the two of them together at the show, and certainly attracted the attentions of visitors to the show judging by the crowds around the two vehicles.

Amongst the privately owned vehicles were armoured vehicles of both the wartime and post-war eras, including a stunning American half-track mortar carrier and a missile-armed variant of the Russian BRDM-2 armoured car, but not everything on display was armoured, and close by

was a beautifully restored Dodge Command Car, and a little further away by the refreshment and market area was Dale Johnson's 1933 Austin 7 Home Guard van, a regular exhibitor at Tank Museum events, even if it is frequently dwarfed by the heavy metal machinery around it!

Amongst the many trade stands at the show was one Devon-based company that has made something of a name for itself in recent years, producing 1/6 scale metal replicas of famous tanks. The company is of course Armortek, who have a long standing relationship with the Tank Museum, having reproduced their famous Tiger tank in miniature, as well as other museum favourites like the King Tiger, Panzer III, Centurion and the soon to be released Mk IV World War One tank. On display were a number of tanks, including the recently released Centurion and a Stug III assault gun in

## "Quote"

### TOP LEFT...

Armortek brought along a selection of their products, including the new Centurion and Stug III (shown above).

### RIGHT...

Amongst the privately owned vehicles on display was this fine example of an American half-track mortar carrier.

### ABOVE CENTRE...

Dale Johnson's 1933 Austin 7 van in Home Guard livery was dwarfed by many of the other exhibits.

### ABOVE RIGHT...

Dust was something of a problem due to the hot and dry weather, and the press enclosure took the brunt of it!

### RIGHT...

No Tankfest would be the same without an appearance by the Tank Museum's Tiger 1, which remains the star attraction at the show, bringing in visitors from right around the world. Apparently the regular driver was sidelined just before the show with an injury, causing him to miss the event.





LEFT...

The Challenger 1 is an impressive tank by any stretch of the imagination and has been one of the regulars at Tankfest for some time now.

BELLOW RIGHT...

Other vehicles brought along by the ATDU included this Challenger Armoured Repair & Recovery Vehicle with add-on armour and the Scimitar 2, also fitted with add-on armour and shown bottom right.

BELLOW LEFT...

Other museum tanks in the arena display included the Stuart and Valentine, both dating from WW2.

BOTTOM LEFT...

The newly restored PAK L43/41 anti-tank gun was towed by a late model Sd.Kfz. 7 belonging to the Crompton Military Vehicle Collection.

bare metal, which showed off perfectly the precision with which these miniature masterpieces are produced, but it's the forthcoming Mk IV World War One tank that I really fancy, being a particular favourite of mine since I first set eyes on the Mk IV in the museum. Sadly these are 'Big Boys Toys' that are a little out of my price range and I fear I'll have to win the lottery before I can buy one for myself!

## ARENA ACTION

A full programme of arena action captivated the huge crowds for many hours throughout the day, but the baking temperatures enjoyed by the show this year did create a dusty environment, and unfortunately the

prevailing wind led to the press enclosure being swathed in dust for much of the performance. The battle-hardened members of the press stuck it out in the enclosure, whereas I chickened out when I realised what was going to happen and trekked off to the opposite end of the arena to find some clear air. It wasn't ideal in terms of optimum angles for photography and the direction of the sun, but I felt that it was better than wrecking my brand new camera by covering it in dust and hopefully the photos featured here aren't too bad.

Besides the regular show favourites being demonstrated, such as the M548 tracked carriers, the various British and German tanks, which of course included Tiger 131 and the museum's

Panzer III, there were a few newcomers and one of the visitors to the show was the late model Sd.Kfz. 7 half-track belonging to the Crompton Military Vehicle Collection, which was towing the museum's recently restored PAK L43/41 88mm anti-tank gun.

With the 100th Anniversary of the start of WW1 coming up in 2014 there was a reminder of the conflict in the form of the museum's Mk IV replica, which featured in the Hollywood film 'War Horse' and the recently arrived German A7V replica, built by long time Tank Museum supporter and helper, Bob Grundy and his team at British Military Vehicles.





Two teams of Royal Engineers thrilled the crowds with their bridge challenge, with the two teams racing to construct a Medium Girder Bridge against the clock, which was quite some feat given the weather conditions, but carried out with speed and precision and a little help from the cheering crowds. As you might expect the lads did themselves proud, proving that the British Army is still the best in the world, even if it is a little smaller than it used to be.

The REME parachute display team quite literally 'dropped in' to kick off the afternoon's arena displays, and this year a number of vehicles put in appearance that haven't been seen for

a few years, including some of the Russian wheeled armoured cars and the Swedish Centurion, which I last saw on the move in 2006 when the weather was quite different to 2013, with torrential rain dampening the festivities.

2013 was a good year for Tankfest, the weather was fantastic, the crowds were huge and the exhibits were, as ever, everything we have come to expect from the world's best tank museum. If you're still a Tankfest virgin I would thoroughly recommend a visit, the only trouble is that it can become addictive! Next year's show will be on the weekend of the 28th and 29th June 2014.



#### TOP LEFT..

It wasn't all 'Heavy Metal' at the tank museum, this ACAPV was an experimental 'Plastic Tank' built from composite materials!

#### ABOVE RIGHT...

The Tank Museum has many foreign tanks in its collection, and this Centurion isn't British, but Swedish, with numerous differences between it and its British counterpart.

#### ABOVE LEFT...

Some of the museum's older exhibits were shown the light of day, including this Russian BTR-60 APC, and the BRDM-1 scout car (shown right).



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# Two of a Kind

## GORDON ARTHUR COMPARES SINGAPORE'S ST KINETICS' TERREX IFV AND TAIWAN'S CM32 CLOUD LEOPARD

**BELOW:** A frontal view of an in-service Terrex IFV of the Singapore Army. Note the trim vane mounted on the bow for amphibious operations. The Terrex features eight 395/85 R20 XZL tyres equipped with run-flats.

In the past decade or so, the 8x8 armoured personnel carrier (APC) has grown increasingly popular amongst many militaries. The same trend holds true in Asia, and two countries to have developed their own APC designs are Singapore and Taiwan. This article examines the Terrex and CM32 side by side from these two respective countries. In actual fact it makes sense to look at them this way because the two designs are similar in many respects and both benefitted from technical assistance from the Irish company Timoney Technology. Furthermore, the two countries cooperate

militarily in that Singapore uses training facilities and keeps armoured vehicles in Taiwan on a permanent basis.

### SINGAPORE'S TERREX

ST Kinetics, part of the Singapore Technologies stable, was responsible for developing the Terrex. The company began designing the AV81 (the nomenclature alludes to an eight-wheeled armoured vehicle, the first such type developed by ST Kinetics) in 1999 as a private venture, although it

anticipated a Singapore Army requirement. While the Singapore Armoured Corps had the Bionix Infantry Fighting Vehicle (IFV), the infantry had nothing but trucks for mobility, so a wheeled APC was inevitable. ST Kinetics' technical partner was Timoney Technology, and a prototype was first exhibited at DSEI in London in 2001.

The first AV81 design featured conventional coil springs but this transformed into hydropneumatic struts. ST Kinetics' second prototype was built in Turkey by Otokar in mid-

### INFANTRY COMBAT VEHICLE





2003 and called the Yavuz. The AV81 was evaluated by various European and Asian militaries in the mid-2000s. Soon it was supplanted by the Singapore-built AV82 in 2005 that featured improvements based on earlier trials – for example, it had a more advanced driveline and hydropneumatic suspension. It completed trials in Singapore and Turkey, including mine-blast and amphibious tests.

With funding from the Singapore Armed Forces (SAF), the Terrex was further developed to meet Singaporean operational requirements and the first production-standard vehicle was shown in September 2009. It had a brand new hull, redesigned front, and featured a modular design so that various levels of armour protection can be achieved according to threat levels. The first Singapore Army contract was for 135



#### TOP LEFT...

Terrex Infantry Carrier Vehicles (ICV), enough to equip three infantry battalions with 45 vehicles each. The first unit, the Second Battalion, Singapore Infantry Regiment (2 SIR), was declared fully operational in May 2011. 5 SIR has also since been equipped. By early 2013 it was believed the initial order had been fulfilled and that another contract had been placed to equip further infantry units.

#### ABOVE RIGHT...

Troops disgorge from a Terrex ICV. The vehicle is fully amphibious, with a remotely-operated front trim vane and two rear propellers that offer a water speed of 10km/h.

## ARMoured PERSONNEL CARRIER



A range of CM32 versions are envisaged: APC, IFV, 105mm Gun, Air Defence, Ambulance, Command Post, 120mm Mortar Carrier and Recovery. Presently, production is concentrating on the basic CM33 APC variant.

## RIGHT...

This Terrex loaded with troops is taking part in a dynamic demonstration by the Singapore Army in mid-2012. The 8x8 vehicle is air-portable within a C-130 Hercules.



LEFT: A close-up of the R-600 RCWS made by EOS in Australia. The 246kg RCWS mounts an ST Kinetics 40mm AGL.

BELOW: This Terrex carries the name 'Trojan' on its side.

BOTTOM LEFT: A glimpse of the Terrex troop compartment.



the frontal arc. Standard equipment includes a nuclear, biological and chemical (NBC) system; power steering on the front four wheels; central tyre inflation system (CTIS); 16kW air-conditioning system; and anti-lock braking system (ABS). A skid-steer capability reduces the turning circle, which is useful in urban terrain. The driver, commander and passengers benefit from an All-Round Surveillance System (ARSS) of eleven cameras that gives 360° situational awareness via flat-panel displays.

The driver sits to the front left with the commander behind him. Up to eleven infantrymen occupy the rear troop compartment on two rows of individual seats lining the hull walls. Soldiers enter and exit through a large power-operated rear ramp. The Terrex is propelled to a top speed of 105km/h by a 450hp Caterpillar C9 turbocharged diesel engine coupled to

an Allison 4500SP automatic transmission. A Vehicle Navigation System (VNS) consists of GPS and dead-reckoning module. The Terrex is fully amphibious, driven by rear-mounted water jets.

The ICV variant is armed with the Australian EOS R-600 remote-controlled weapon station (RCWS). This typically contains a 7.62mm General-Purpose Machine Gun (GPMG) and CIS 40mm Automatic Grenade Launcher (40AGL). The latter is capable of firing air-bursting munitions, and 60 ready rounds are carried. Alternatively, a solitary .50-cal CIS 50 machine gun can be fitted. The stabilised RCWS has an integrated day/thermal sight and laser rangefinder. A gunshot detection system, referred to as a Weapon Detection System (WDS) and cued to the RCWS, is mounted on the left rear of the roof.



An overhead shot, note this vehicle has no RCWS fitted.



## LEFT...

'Rave' and 'Trojan' are lined up ready for action. The vehicles are painted in the standard olive-grey colour common to all Singapore Army tactical vehicles.

As an important element of the SAF's network-enabled force, the Terrex is filled with high-tech systems such as a Battlefield Management System (BMS) and Blue Force Tracking and Red Force Marking (BFT/RFM) system.

There are two BMS terminals for the vehicle and troop commanders, while the Command, Control and Information System (CCIS) links dismounted infantry to higher headquarters. It can interact with other ground-based systems as well as aerial platforms.

The SAF's high-tech Terrex can be simplified for export markets. Otokar offered the Yavuz for the Turkish Army but no orders were received. However, a promising competition is the Marine Personnel Carrier (MPC) requirement of the US Marine Corps (USMC).

The Terrex is one of four shortlisted vehicles and it is currently participating in the Demonstration and Studies phase of the MPC programme.

Under the terms of the competition, ST Kinetics and local partner Science Applications International Corporation (SAIC) will deliver a modified Terrex to the USMC by March 2014.

Thus far the author has witnessed only one Terrex variant – the ICV. However the SAF has revealed other planned types:

**1.** Anti-Tank Guided Missile (ATGM) will have a Spike missile system operated from the rear roof hatch on a pintle mount;

**2.** Command equipped with state-of-the-art data and communication systems;

**3.** Medical with a Fast Stretcher Loading System for two-man operation. It can carry a maximum of two lying and five seated patients. The stretchers are on the left in two layers;

**4.** Pioneer will have a front blade for obstacle-clearing and Heavy Short Trackway Bridge (HSTB) for crossing gaps;

**5.** Reconnaissance, Surveillance and Target Acquisition (RSTA) has sensors integrated onto a mast for surveillance. With its fusion and networked capabilities, it acts as a 'mother ship';

**6.** STrike ObserveR Mission (STORM) for artillery observers who execute fire missions from direct and indirect assets. The STORM variant has integrated mast-mounted sensors.

STORM teams can operate dismounted or from within their vehicle.

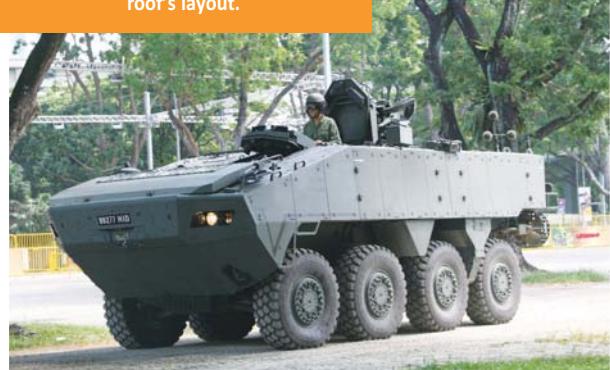
Another potential variant has ST Kinetics' 120mm Super-Rapid Advanced Mortar System (SRAMS). A one- or two-man turret could be fitted with a weapon of up to 30mm calibre.

**BOTTOM LEFT:** An acoustic Weapon Detection System is mounted on the roof at the left rear.

**BOTTOM RIGHT:** Stowage baskets are usually fitted to the hull sides for the external carriage of soldiers' packs and equipment. However, these racks are not fitted on vehicles pictured in this article.

**BOTTOM RIGHT:** This overhead view of the Terrex provides a good idea of the hull roof's layout.

**"As an important element of the SAF's network enabled force, the Terrex is filled with high-tech systems..."**





These CM33s of the ROCA are participating in a military parade celebrating Taiwan's Double-Ten Day (10 October) in 2011 - the country's 100th anniversary occurred that year.

## CLOUD LEOPARD

We next turn our attention to a similar type of 8x8 vehicle, Taiwan's CM32/CM33. The CM32 is nicknamed 'Cloud Leopard' (Yunpao in Chinese), a species of large cat found in remote parts of Taiwan. The name was selected because the cloud leopard epitomises stealth and agility. The Republic of China (ROC) wanted to indigenously develop its own vehicle so it would be less reliant on foreign sources for defence equipment.

The Yunpao's development owes a lot to an earlier CM31 6x6 project, though work on it was abandoned apparently because of stability issues and the worldwide trend towards 8x8 vehicles. Efforts shifted to the CM32 in 2002 and the first pre-production batch of four CM32s was officially unveiled at the state-run Ordnance Readiness Development Centre (ORDC) in the central province of Nantou on 11 January 2005. By 2007, mobility and firepower trials on the prototypes had been completed and the manufacture of a pre-production



### ABOVE LEFT...

The CM33 APC, seen here painted in an urban camouflage scheme of various grey tones, employs a 450hp Caterpillar C9 diesel power pack and locally-made fully automatic transmission similar to an Allison HD4070 unit.

### ABOVE RIGHT...

This pre-production Cloud Leopard IFV, seen here stretching its legs at the ORDC in 2007, features a two-man turret mounting a 25mm M242 Bushmaster cannon and coaxial 7.62mm machine gun.



This CM33 APC is painted in an urban camouflage scheme of various grey tones. The 40mm AGL has just been fired.

batch of 15 vehicles commenced at the ORDC under the Combined Logistics Command. It is believed seven of these were in baseline APC configuration while eight vehicles had a two-person turret. They featured a number of improvements as a result of earlier trials. It is pertinent here to make a comment on nomenclature: the CM32 is a Command Vehicle while the CM33 is a standard APC. The exterior of the CM32 differs little from the CM33 but it has a different communication suite inside.

Overseas subcontractors assisted with various components, and in the early stages Taiwan secretly despatched military engineers to Timoney Technology in Ireland to help design a suitable chassis. However, the Cloud Leopard's development has been protracted and at one point its survival was under threat when funding was frozen.

Another serious problem related to the quality of steel armour plate being produced locally by China Steel. Hull armour plates suffered cracking and it took considerable time before this problem could be surmounted. In early 2011, assembly was taking place on the first main production batch and a China Steel spokesman stated, "It's as good as any other foreign-made steel material." A series of improvements in the steel plate's heat treatment process allowed the ORDC to obtain the necessary quality to keep the assembly line running.

The initial order is thought to be for 368 vehicles due for completion by 2018. It was originally envisaged 1,400 CM32s would be built, but this figure has been drastically scaled down to 550. To date, at least 24 vehicles have



Series production of the turreted IFV variant has not yet started.

been built for the army, including the military police and infantry schools.

The CM32 family is designed explicitly to meet ROC Army (ROCA) requirements. The manufacturer claims the CM32 was "designed for Taiwan's distinctive terrain and military environment", its qualities including "rapid mobility, light weight and strong firepower". Threatened by its large neighbour, China, the island nation faces unique challenges. Taiwan is extremely mountainous and crisscrossed by rivers. In any conflict situation with superior Chinese forces, Taiwan's military would rely on its well-developed road network to move troops around. Thus, a wheeled vehicle like the CM32 is more suitable than existing tracked CM21/M113 APCs. The Cloud Leopard will replace the CM21/M113 family as well as V-150 4x4 vehicles.

## "The Yunpao's development owes a lot to an earlier CM31 6x6 project..."



### ABOVE...

This is an early prototype of the CM32 8x8 vehicle. Even a quick examination of vehicle reveals many differences in design and detail compared to subsequent production types. (Photo - Colt Ho)

### LEFT...

A CM33 painted in an urban camouflage scheme of various green tones, moves at speed at the ORDC. This example has not been issued to an army unit, but has been retained by the ORDC. The air inlet and outlet louvers are on the vehicle's roof. (Photo - Colt Ho)



#### TOP LEFT...

This vehicle bears the standard camouflage scheme of the ROCA Army, the same NATO three-colour camouflage scheme used by countries like the USA.

#### RIGHT...

This prototype of the 105mm low-recoil turret for the CM32 was shown at the TADTE defence show in the capital Taipei in 2011.

#### ABOVE LEFT...

No vehicles have an amphibious capability as water jets are not yet fitted on the rear. The number '9-46015' stencilled on the hull side indicates this vehicle was the final vehicle of the pre-production batch of fifteen vehicles.



#### CM32/33 DESCRIPTION

The layout of the Cloud Leopard is standard with the driver sitting in the front left with the engine to his right. Originally the engine chosen was a Caterpillar C9 diesel producing 450hp, but it is rumoured this was later upgraded to a C12 unit. The engine is connected to a locally assembled 6-speed automatic transmission. The driver has a hatch with three periscopes, of which the middle one can be replaced with a passive device for night driving. Final vehicles are expected to be amphibious, powered to a top speed of 8km/h by two water jets mounted on the rear of the hull.

The CM32 family features power steering, CTIS, fire suppression system and wishbone independent suspension. The CM33 is the basic APC configuration and this is where production is now concentrating. The APC has an indigenous roof-mounted RCWS mounting a locally made T91 40mm grenade launcher and T74 7.62mm machine gun. A smoke grenade launcher system is part of the RCWS. The APC accommodates three crewmen (driver, commander and gunner) and six passengers who enter and exit the rear compartment via a large rear ramp (or smaller inset door). There are two roof hatches over the rear compartment and occupants are protected by an NBC overpressure system. The armour is modularly designed so it can be augmented when threat levels rise. The armour can withstand 7.62mm armour-piercing rounds, while the better-protected frontal arc resists 12.7mm rounds. A V-shaped hull protects against landmines 12kg in size.

Apart from the aforementioned APC, an IFV variant weighing 24-tonnes and with a two-man power-operated turret is expected soon. Original turrets for test purposes had a 25mm M242 Bushmaster cannon plus coaxial 7.62mm machine gun, but it is believed future variants will have an ATK 30mm Mk44 Bushmaster II cannon because of the influence exerted by a local weapon broker. However, Taiwan's defence authorities have been reluctant to make any decision until now. The weapon is slaved to a day/night sight system.

The CM32/33 will also eventually be issued to the ROC Marine Corps (ROCMC). This will include a version fitted with a licence-produced 105mm M68A1 low-recoil gun that will replace currently used M60A3 TTS tanks. This gun with distinctive pepper can muzzle brake can fire APFSDS-T, HEAT-T and TP-T ammunition. A 7.62mm machine gun is mounted coaxially while a .50-cal machine gun can be roof-mounted. There are also two banks of six smoke grenade dischargers on the 6,500kg turret that accommodates three crewmen. It has an electrical traverse and elevation (-3° to +15° range) system with manual backup.

A full family of CM32 variants is expected to simplify logistics and reduce investment costs. Other types on the cards include: Air Defence (fitted with locally produced Tien Chien 1 surface-to-air missiles), Ambulance, Command Post, Mortar Carrier (with 120mm breech-loaded mortar), and Repair and Recovery. The Mortar Carrier is the next project, and the type is presently undergoing tests to integrate a locally made 120mm mortar system.



A pair of CM33s in APC configuration sits side by side. They are painted in unique camouflage patterns that have not been adopted by the ROCA in general.

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# Jeep Rebuild Pt.3

In our third feature we start to reassemble the Jeep

**Above & below:** over the years Bob James has rebuilt many Jeeps as well as numerous other vehicles like his DUKW shown above and Jeeps remain a popular vehicles in private ownership, with many turning up for military shows.

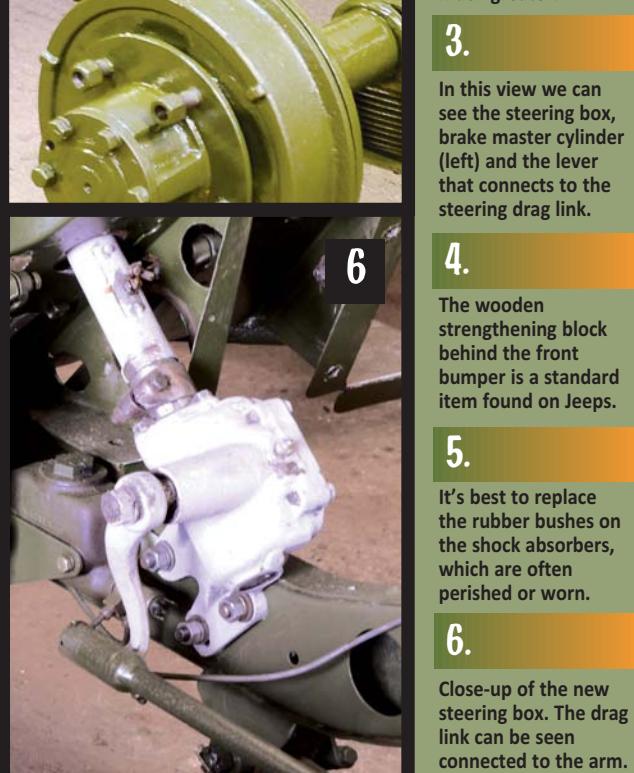


**H**aving repaired the damage to the chassis and prepared and repaired the body tub and associated parts, the reassembly of the chassis can begin, which will ultimately allow the body to be replaced. During this process Bob checked over the front and rear axles and replaced any seals and bearings as required, and in the case of this particular Jeep, fitted new brake assemblies as the original parts were too far gone to renovate. Ordinarily it's only the wheel cylinders and linings that tend to need replacing, but the corrosion in this case was too far gone to justify trying to keep the original parts.

When refitting the axles to the chassis the original leaf springs were used as they were still in good

condition and hadn't cracked or softened over the years, but if using replacements it's quite common for them to need to be compressed when fitting the shock absorbers, the rears especially. The front springs aren't such of a problem as they carry the weight of the engine and gearbox once the vehicle is stood on the floor, but the rears have very little weight over them and normally stand too high to begin with. The new springs will settle down after a while, but initially it's perfectly normal for them to stand too high, however, one way of getting around this is to carry some significant weight in the rear while they settle down to the correct height, and a few bags of sand in the back will normally be enough to do the trick.

# Work Continues - Painting and Assembly...



1.

4

2.

5

1.

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With the repair work on the chassis complete and some assemblies already added, such as the axles and suspension, it was time to add some paint. It's so fresh here it hasn't had time to dry to the familiar matt finish.

Here you can see the shock absorber does not line up with the mounting on the chassis. With new springs the distance is much greater.

In this view we can see the steering box, brake master cylinder (left) and the lever that connects to the steering drag link.

The wooden strengthening block behind the front bumper is a standard item found on Jeeps.

It's best to replace the rubber bushes on the shock absorbers, which are often perished or worn.

Close-up of the new steering box. The drag link can be seen connected to the arm.

7.

The brake back plates, wheel cylinders and linings had to be replaced on this Jeep as the originals were too badly corroded and couldn't be salvaged.

8.

Here we can see the steering arm on top of the front axle which is connected to the steering arms and drag link. Note also the new brake pipes and flexi pipe.

9.

Even with the body tub fitted to the chassis, there's plenty of room to fit the engine with the wings and front grille removed.

10.

Bob refurbished the gearbox himself, having many years of experience, but if in doubt use a specialist gearbox repair firm. Note the paper pushed into the top of the housing where the gear lever would be to prevent dirt getting in while the work is going on.

11.

If the bell housing (right of photo) were to be removed, the Jeep gearbox and transfer box is remarkably small in size. Worn bushes, damaged synchromesh and leaking oil seals are just some of the common faults found on the gearbox.

12.

The Jeep is essentially a military kit car, and a lot can be accomplished with a basic set of spanners and tools, so don't be scared of getting your hands dirty.



7



10



11



8



12



9



13.

As the restoration of the Jeep nears completion you can turn your attentions towards the various accessories available for the Jeep, however, the British weather may mean that a full set of weather gear, including doors and side panels is high on the list of priorities!

necessary replace, both the fixed metal piping clamped to the chassis and axles and the flexible rubber hoses, again these are cheap things to replace so if there's any doubt whatsoever as to their condition replace them, and it's a lot easier to do that while the body is off the chassis.

Engine mountings can also wear and break as the rubber deteriorates, so check the condition and if necessary fit new parts. As with most parts on the Jeep, replacements are easily sourced from a number of specialist suppliers, and it's far simpler to change them with engine out of the vehicle than to do it later on when the vehicle has been reassembled.

The gearbox, transfer box and engine were removed from the vehicle at the start of the strip down, and unless you know for sure that all these major mechanical components are in

perfect condition, it doesn't pay to scrimp by refitting them without any further checks. If you're an expert then servicing the engine and gearbox shouldn't present any great problems and service parts and replacement bearings, seals and the like are readily available.

If you're not confident with checking over the engine and box yourself there are many specialist companies who will offer rebuild services, but it does pay to shop around as the prices of such services can vary enormously, and location may well play a part if you need to deliver the units to the company. If possible try to use a company that specialises in Jeep restorations or mechanical repairs, an preferably one that comes with recommendations from previous customers to ensure that you're getting a good, value-for-money service.



14.



15.



16.

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# Dennis the Menace

Tim Gosling describes the

**"M**ick's put his Great War Dennis restoration project up for sale, shall we take it on?" was the question my brother Steve confronted me with one day. I had recently got married, bought a house, started a new job, the first baby was on its way, money was tight, and we still had three restoration projects yet to start. The answer to such a question at this very difficult time in my life should have been obvious, however, the lure of yet another restoration project dating from my favourite period of history was just too much to resist, but then we all have those moments of madness – don't we?

## TAKING STOCK

When the delivery lorry arrived and we had unloaded the more vulnerable parts into the shed with the heavier parts into the field of a friendly neighbour, we had an excellent opportunity to examine what we had just bought. Looking around at the pile of rusty metal we took a quick inventory of what had arrived.

We had three chassis, one of which was quite poorly. We had robbed anything that might be of possible use from two other chassis, which had been left at Mick's place for scrap. We had a good selection of front and back

axles (in varying conditions), some wheels and an assortment of small parts and fittings, but best of all we had the correct White and Poppe engine along with clutch, bonnet and radiator that Mick had sourced from a Birmingham lock up! It had previously been used to pump water to a ring main at a local factory in case of fire. Unfortunately, the bronze water pump had been taken many years earlier and this would be hard to replace.

On the plus side we had three gearboxes, however, on the downside they were all in very poor condition with the cases either broken or rotten



# not so simple restoration of a World War One Dennis truck



The restoration of this "Subsidy type" Dennis took 10 years. For a three-ton lorry on solid rubber tyres its cross-country ability is better than would be expected.

where the aluminium had deteriorated over the years. The two cases that were open had very rough-looking gears and it was doubtful they could be used again. The only large components that were missing, which did cause us some concern, were the steering column, prop shaft, torque tube and the differential. We could of course get these made, but that would be very expensive, but we decided to start the restoration anyway in the hope that these would turn up.

## STARTING POINT

It seemed logical to start with the chassis and thankfully two of these were in excellent condition and that's partly due to their previous existence having been incorporated into the upstairs floor of a Huddersfield garage! When the building was demolished Mick had bought them.

A close examination of the chassis revealed that one had a slight crack in it (a common problem with Dennis



**"the lure of yet another restoration project from my favourite period of history was just too much to resist..."**

### TOP LEFT...

Unloading the chassis was much easier than expected. As ever it is all about having the right tools for the job.

### TOP RIGHT...

The Dennis kit of parts arrived in Devon in 2000. As with most restoration projects we did wonder what we had taken on!

### ABOVE RIGHT...

Although nearly 100 years old, the White and Poppe engine was in good condition having only been used to pump water.

### LEFT...

This scruffy looking Dennis was lent to the Americans during WW1. You can make out the British 'WD' letters, which have been over-painted on the body.



**"The differential, such a crucial part of the restoration that Mick and I had searched for for so long, had at last been found..."**

#### TOP RIGHT...

the best chassis was sandblasted and painted and can be seen here with front axle, sub frame and springs having been fitted. Tony also travelled to Winchester to take a look at the chassis recently recovered from the Cornish beach and was thrilled to see the differential was still present (below left).

subsidy lorries) but the other was perfect and the chassis number 12005 could be traced back to July 1918, which was very pleasing.

After finishing off the restoration of our 1918 FWD Model B we took the Dennis chassis to a friend who sand blasted it. It was a nice sunny day so we painted it with a primer, put it up on axle stands and took out a kink in the rear cross member by getting it red hot and leaning on it with a giant adjustable spanner. Despite having the remains of five chassis we didn't have one single usable spring. We bit the bullet and had a new set made by "Brost Forge" of Holloway. With these collected and with refurbished dumb irons, spring shackles and eight new shackle pins made by our father Tony, the springs were hung back on to the chassis. We had two correct pattern "Butler" front axles (these being made in two parts and riveted together) and a selection of back axles. We examined them closely and selected the best before restoring them and hanging them from the springs.

The engine and gearbox are mounted on a sub frame suspended from the chassis to allow the drive train an element of flexibility if the



chassis twists while crossing rough ground. We had just the one sub frame and unfortunately the front of this was severely corroded necessitating cutting out large chunks and welding in new steel. As we removed the sub frame from the chassis we were rather surprised to find a crushed US army button from the Great War jammed between the two. Subsequent research showed that the American Expeditionary Force were unable to supply enough of their own Motor Transport and had to borrow large numbers of British trucks including those made by Dennis and which were returned at the war's end.

this and although the chassis was in quite poor condition it did have a number of useful parts. Money changed hands and we came back with another back axle (without differential sadly), rear wheels, track rod and brake linkage. The wheels were a good find as we now had a complete set of the attractive "Y" shaped spoke wheels, which we wanted to put on the lorry.

Solid tyres are pressed on to the wheels, and putting them on and off requires the assistance of a very large press. Thankfully we have a friend who has one so we loaded all the wheels on to a trailer and took them up to the Midlands to press the tyres off. Replacement solid rubber tyres are very hard to find, but luckily we had two new old stock ones for the front. We would require four more for the rear and with no sign of these turning up we had four new ones made. These were made from Polyurethane by

#### ANOTHER CHASSIS

Four years had passed since we had taken delivery of the Dennis parts from Mick when another chassis came up for sale in Cardiff. We went to look at

#### New Tyres...

*Right:* Although we had new front tyres we were unable to find any original rears so we commissioned Jobel engineering to make us four new ones from Polyurethane.

*Far right:* Getting the old tyres off is easy if you have the right tools. Here we are making use of a friend's 100-year old hydraulic tyre press.





company specialising in fork lift truck tyres, having virtually the same properties as rubber but were about one fifth of the cost, although they did look a little bit shiny.

With the wheels sand blasted and painted we took them back up to the midlands to get the new tyres pressed on and once back in Devon, the stub axles were refurbished and fitted to the front axle, the brakes were fitted to the back axle and the wheels finally put back on, allowing the chassis to stand on its wheels for the first time in many years. Unfortunately, we could see a gap had appeared between the tyres and the wheels, which meant the tyre was too big for the wheel and would drop off. They would have to come off again and then be pressed back on again with a shim between the two, but that would be a job for a later day as we still had plenty more to do.

## RADIATOR

We were initially very pleased to have such a good radiator, but as we examined it closer we realised that despite the core being very good, one of the side members had a large crack and both the bottom and top tanks were perforated with holes. The inside of the tanks was paper thin in places due to oxidisation, but we thought we should have a go at patching them rather than making new ones.



The tanks were thoroughly cleaned, then soaked in citric acid. Aluminium reinforcement plates were bolted to the inside with the gaps between the two packed with Devcon, which bonds to aluminium. The inside was then painted with an epoxy resin and the radiator was reassembled using new side members cast from the originals. The end result was very pleasing but it seems that despite our best efforts water does seep out in a few places. We will therefore have to get a new top tank cast at some stage.

## THE DIFFERENTIAL

We had been hunting for a differential for five years without success when we received a very interesting letter with photographs from a man in Winchester. Another Dennis chassis had turned up, this time on a Cornish beach where it had been used as the foundations for a chalet. The chalet had been demolished and the chassis was to go to a scrap merchant. The person engaged to clear the old chassis thought that his friend in Winchester might be interested in saving it and the friend who was not doing anything that day drove down from Winchester and took the chassis away just to save it.

The photographs with the letter showed that the differential cover was still in place and we wondered if the differential could still be inside? Tony



drove up to Winchester the next day to look at the chassis. Someone had obviously tried to remove the differential to get the bronze out for scrap as most of the bolts had been removed, but luckily for us it looked as if the last few had defeated them. The inspection cover on the worm was unbolted and he could see the worm inside. By turning the end of the shaft he heard the clunking sound of the worm engaging with the wheel. The differential, such a crucial part of the restoration that Mick and I had searched for so long had at last been found.

Next month - Tim Gosling continues with the story of the restoration of a 1918 Dennis, but now with a fast approaching deadline.

## TOP LEFT...

together the tyres and wheels are incredibly heavy and we had to use an engine hoist to fit them on to the axle.

## TOP RIGHT...

the top radiator tank still proudly carries the name Dennis (alongside quite a few holes) and the inside of the radiator top tank (shown left) was badly corroded and required a great deal of effort to be able to salvage it.

## BOTTOM LEFT...

the cover off the differential proved to be far from easy, perhaps part of the reason why the scrap man gave up on it...

## BOTTOM RIGHT...

...but with the inspection hatch removed the worm could be seen, which was a great relief as we really did not want to have to make one of these.

## BELow...

we were very lucky to find the correct model Claudel-Hobson carburettor, photographed here after a complete rebuild.



# Those Were the Days



For the best part of fifty years The Tank Museum has played a big part in the life of **MMI's Editor and the Young family**, Ed sheds some light on why





**A**n item in the most recent issue of Tank Times, the in-house newsletter of the Tank Museum, saw the museum's current curator David Willey asking people to send in their early photos of visits to the museum, and even featured a photo of David himself back in 1969 sat astride the gun barrel of the museum's Tiger tank, and that item gave me the idea for this article.

I've been visiting the Tank Museum in Bovington, near Wareham in Dorset since a young child, and since then the Tank Museum has played a big part in my life, and to a certain extent it even influenced the direction of my career. While photography wasn't high on the agenda in those early years, I do have a

number of holiday snaps (some of which are quite embarrassing for me) that show the Tank Museum as it was during its early days, and I thought it might be of interest to gather together some images of various exhibits as they were then, and compare them with the vehicles as they are now. Obviously this is only scratching the surface of the magnificent collection of tanks and armoured vehicles within the museum collection, but for those not fortunate enough to have visited the museum in those early years, it does provide a flavour of just how much the museum has changed over the past four or five decades, and may well remind people of their early memories of the Tank Museum.

**Opposite left & below:** Posing in front of the museum's Mk IX Supply Tank that was once displayed outside the main entrance to the Tank Museum are my late mom, younger brother Mark, and a young bespectacled MMI Editor sporting a natty line in shorts! Since those early days in the 60's and 70's, the Mk IX, along with the other outside exhibits, has been moved indoors and repainted and now resides in the World War One Hall.



## Popular Jagdtiger...

**Below:** These three photos show several ages of the Tank Museum's Porsche Jagdtiger, which has been displayed at the Tank Museum for many decades. The photos also show several generations of the Young family. The bottom photo is interesting in that it clearly shows the railings on top of the Jagdtiger (then painted overall dark grey) that turned it into a very impressive observation platform in the early days of the museum. I'm not very good on ages, especially when going by photos, but would estimate it to be late 60's early 70's. My dad is pictured here leaning on the rail with my brother, I presume I had refused to pose for the camera - again!

Below is the Jagdtiger many years later having had the railings removed and a fresh coat of paint and a three colour camo scheme with my sons James (climbing) and Sam (standing) on the tracks of the Jagdtiger in the early 1990s, and clearly still a hit with the kids. In the centre is the Jagdtiger as it stands today, having undergone yet another makeover and now sporting a third camouflage scheme!



## RIGHT & FAR RIGHT...

If you can look past the ridiculous 70s fashion statement my brother and I are making, these photos show how visitors to the museum exhibits used to be free to clamber over them. A number of the tanks had stairs beside them and viewing platforms to allow visitors to access them, and there were even 'Kodak Viewing Platforms' dotted around the museum as cameras started to enjoy mainstream use. The photos also show the industrial feel to the old museum building, with the many roof girders, trusses and pitched roof arrangement that is distinct to the museum.

## RIGHT...

In addition to the tanks on display, this remarkable exhibit captured my imagination as a young boy. I found it incredible that such a thick piece of armour could be pierced!



## FIRST MEMORIES

I estimated that over the past forty or so years I have visited the museum well in excess of sixty times, and while this may not be a world beater in terms of attendance, it does represent a six hour round trip each time I visited, so I was, and still am, hardly local to the Tank Museum.

My first memories date back to the mid sixties when I was around six years old and the Tank Museum was still a comparatively new attraction. The

museum collection, thought formed in the 1920s, didn't really take shape until it moved to the present location in the early 1950s when the original building that forms the nucleus of the current museum was brought into use, and has been expanded numerous times over the intervening years. The original MoD building has a distinct industrial air about it, with the exposed roof girders, pitched roof sections and vast open spaces now filled with all manner of exhibits, and this distinctive interior is instantly recognisable to anyone who

## TOG II



## RIGHT...

TOG II was an experimental tank used for trials between 1940-43, and in appearance at least, drew heavily on the designs of tanks in the Great War. TOG stood for 'The Old Gang' and for many years TOG II stood outside the museum. I can be seen here clambering down the rear end of TOG II with my brother (in matching T-shirt and shorts) stood by the turret. That was back in the late 60s but the vehicle was brought indoors to the Tamiya Hall (above left) and in the early 90s still displayed the broken track. Since then the tank has undergone a revamp and currently sports a new, much brighter camouflage scheme (above right).



**"...Health & Safety didn't have a strangle hold on things in the 60s and 70s and kids could clamber on tanks..."**

has ever been to the museum.

The Tank Museum gained popularity in the 50s and 60s as car ownership increased and family holidays became commonplace, with the Tank Museum seeking to take a slice of the burgeoning holidaymaker trade. Back then the museum was far from the polished, hi-tech museum it is now, and a lack of control by health and safety officials meant that for a time it was perfectly alright for children (and

adults) to clamber over many of the exhibits, and photos of visitors sat astride the gun barrels of these redundant metal monsters are commonplace in this era. Sadly I wasn't one of those who had my photo taken astride a gun barrel, mainly due to my aversion to having my photo taken (I was very camera shy), and anyone who knows me well will appreciate just how rare these early photos of me are!



## Panther Tank

*Below: Three photos of the museum's Panther tank showing the original overall grey scheme when displayed next to the Tiger, a little later in life with a 3-colour scheme in the 90s (centre), and as it is today (bottom).*



### ABOVE LEFT...

In the past there was a viewing platform in the WW1 Hall to allow visitors to take lofty shots such as this.

### ABOVE CENTRE...

The Tank Museum's Mk 1 WW1 tank is now much harder to photograph having been incorporated into a display.

### LEFT...

Three tanks once stood guard outside the main entrance, the Mk IX Supply Tank, a Mk IV Female (now in a museum in Lincoln) and this Mk VIII.

**RIGHT...**

This unremarkable photo will be of interest to those who have only recently discovered the Tank Museum. The stairs leading to the walkway seen to the left of the photo were once open to the general public, allowing them to get aerial shots of the British Steel Hall. In the foreground you can just see the two halves of the cut in half Centurion, with the Conqueror and Chieftain tanks also visible.



**"In the early days of the Tank Museum, there were more than twenty exhibits on display outdoors. Later they were brought indoors and out of the elements..."**

**RIGHT...**

The Infantry Tank A43 'Black Prince', was a development of the wartime Churchill, and this rare exhibit stands in the British Steel Hall. Above the tank you can see the walkway that was once open to visitors that allowed them to get a bird's eye view of the vehicles on display.

**MUSEUM EXPANSION**

Since the museum first opened several named halls have been opened, such as the Alan Jolly Hall, the British Steel Hall, the Tamiya Hall, the Tank Story Hall, and of course the most recent hall to be constructed, the Vehicle Conservation Centre, which we'll be covering in more detail in the future.

In the early days of the museum many exhibits were displayed outdoors, including some vehicles that are now considered highly prized exhibits within the museum's collection. Included in this feature is a photo of myself with my younger brother and late mom clambering over the TOG IIA heavy tank, which once sat outside the museum before being brought indoors and housed in the

## Porsche King Tiger

The museum's Porsche turreted King Tiger has since been joined by a Henschel turreted example. The Porsche version has now moved, but is seen here in the early 90s with my then five year old son James giving an idea of scale!





Museum exhibits were often displayed in the same state in which they arrived.

Tamiya Hall. It seems incredible now, but even as late as the 1970s there were more than twenty vehicles displayed outdoors, including many of the vehicles now considered to be rarities, such as the Jagdpanther, Tortoise and TOG IIA, most of which are now housed within the museum and protected from the elements.

The Tank Museum has a world-renowned collection of World War One tanks and yet some of these extremely rare tanks were amongst those displayed outdoors at the time of my early visits to the museum. Another of the photos shown here features the 1918 Mk IX supply tank, which is now housed within the museum, but at the time was displayed at the front of the museum, together with a Mk VIII and Mk IV Female, the latter having been loaned to the Imperial War Museum in London.

Although I hadn't realised it until searching out the photos for this feature, the museum's Jagdtiger has actually played a part in my family history. Here you'll see a photo of my dad and my brother stood on top of the Jagdtiger in the late sixties when it was

fitted with steps and a viewing platform (yes I know it's hard to believe, but the words 'Health & Safety' hadn't spoiled things back then), and you'll also see a photo of my two lads James and Sam when they were around the same age, clambering over the tracks of the Jagdtiger more than thirty years later.

The fact that these hugely fascinating machines were so accessible had a massive influence over my later life, and tanks soon became an obsession of mine. Like many children in the sixties I was building Airfix models, but they were always tanks, and as I grew older I moved on to more intensive research, eagerly gathering books and magazines that had anything to do with tanks and military vehicles.

As I neared the end of my school education I even sent a letter to David Fletcher at the Tank Museum asking how I could get a job designing tanks, although in the end I got a job designing Jaguar cars, which I suppose still has a tenuous link with tanks as Jaguar then made the engines for the CVR(T) family, but the interest was still there and the amount of models of tanks I was building had increased.



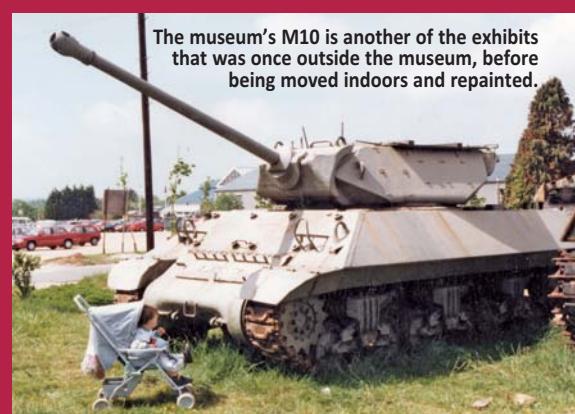
The vehicles outside the main entrance to the museum have changed over the years, like the entrance itself. This Chieftain was photographed in the early 90s.

## Medium Tank Mk II\*



The Tank Museum has seen many wrecks arrive over the years, and it was often the case that visitors were free to examine them very closely. The Tank Museum's restored example of the Mk II\* Medium Tank (currently displayed in the Tank Story hall and shown top) provides a stark contrast to this wreck that was at the museum in the early 90s (centre) and was barely recognisable as a Mk II\* Medium Tank. It also provided my two-year old son James with something to play with, as shown below. Obviously in these days where everything is governed by health & safety this sort of thing couldn't happen, but did it really do any harm? What it did do is create fond memories.

## M10 Achilles



The museum's M10 is another of the exhibits that was once outside the museum, before being moved indoors and repainted.



# Infantry Tank Mk 1

This range wreck of an Infantry Tank Mk 1 was once in the children's play area! At this year's Tankfest it served as a backdrop for German re-enactors.



## NEXT GENERATION

After spending twelve-years designing cars I made a career move to become Editor of Military In Scale magazine, giving me the opportunity to build model tanks for a living, but it also gave me the chance to spend more time pursuing my interest in tanks and military vehicles and even better, more visits to the Tank Museum in an official capacity.

Having started my own family it wasn't long before I was taking my two lads down to the museum, even from a very early age, and that introduction to the world of tanks seemed to have rubbed off on at least one of them, with my eldest son James accompanying me to the annual War & Peace show each year. At that time there were a number of what can probably be best described as 'wrecks' to be found at various locations, providing them with a proper hands on experience! Return visits were frequent in their early years, and hopefully that interest will be passed on to the next generation in years to come.

A further career move to edit Military Modelcraft International some years later created an unexpected opportunity when in 2001 Wheels & Tracks ceased publication due to the sad death of Bart Vanderveen and it was decided to create Military Machines International, which as you all know has been my baby for the past twelve years plus, and once again created numerous opportunities for me to indulge in my passion for tanks.

On average I still visit the Tank Museum at least twice a year, sometimes more often, but the sense of excitement as I near the museum, passing by the Bovington training areas, straining for a glimpse of anything on the move, is still as strong as it was when I first visited the museum nearly fifty years ago. The museum itself may have changed, but the sights and smells of these magnificent armoured monsters still excites me today. If I have one regret it's that I hadn't taken up photography earlier and captured more images of the museum in those early days, but nowadays my camera never leaves my side and over the years I've amassed thousands of photos from the museum, many of which trace the changes the museum has undergone in its long history.

The Tank Museum is a truly remarkable place, and thanks to the foresight of the founders, is a fabulous record of this great British invention and a place I cannot recommend highly enough. If you've never been and have an interest in tanks and the history behind their development and use, you really ought to plan a visit, I can guarantee you will not be disappointed, and I doubt it will be your last visit! For details check out their website at:

[www.tankmuseum.org](http://www.tankmuseum.org)



## ABOVE...

The Museum entrance has changed in design and location over the years, this is the entrance in the 90s with the Sherman and Churchill parked outside.

## RIGHT...

The Tank Museum's most recent multi-million pound revamp saw the addition of the commentators tower, the relocation of the arena with spectator area, and the addition of the new Tank Story Hall.



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# WAR & PEACE REVIVAL

## SIMON THOMSON FILES HIS FIRST REPORT FROM THIS YEAR'S WAR & PEACE REVIVAL



As one might expect there was a large number of Jeeps at the War & Peace Revival this year, and this fine example seen here in the arena represents a modified special forces Jeep complete with twin Vickers K and Bren machine guns.

Following the announcement that Rex Cadman was moving the War and Peace Show to Folkestone, some people wondered if the magic of "Beltring" that we have enjoyed for the past thirty years was gone forever? The answer was most definitely no and at the magic was still there in a big way for the 2013 show! The same faithful team of officials toiled for weeks before the show, in order that the 225-acre Folkestone race course, which is actually the former site of RAF Westenhanger, could be converted into the site for the War and Peace Revival event, not to mention clearing up afterwards, which everyone conveniently forgets about!

The many thousands of owners of military vehicles that bring their vehicles to the show now had new large fields with new names to set up and display their vehicles, with many choosing to incorporate them in displays, some of which were certainly imaginative. Traditionally the show fields at the War & Peace site have been given names, if only to help people navigate the huge show site. For 2013 the new fields at the new site were given the names Patton, Dannatt, Col H. Jones, Haig and Kitchener, with many great military leaders being honoured.

Despite a fast and steep learning curve on the new site, problems were sorted by the organisers thanks to a co-ordinated approach and dedicated team, but lessons learnt and suggestions from this year's show following any teething troubles will be programmed into next year's event. Given all the complexities of the new site and all the "Officialdom" courtesy of central and local Government, Rex's team of Officials still delivered a stunning event.

### BARGAIN HUNT

The trade stalls area, a key and very popular feature of the show, was as big as ever with traders from the UK, Europe and the USA selling everything from a single tunic button to a



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One of the more interesting and certainly one of the rarer vehicles at the show was this four-wheel steer Jeep.

A stunning collection of wartime vehicles was to be found at the show, including this CMP Quad.



complete and running tank! We would not expect anything else from the War and Peace Show and I for one found some NOS Bedford spares and several vehicle reference books that I had long given up on. And, did you see the book bargain of the show – Bart Vanderveen's Fighting Vehicles of World War Two with Bart's signature on the inside cover for a tenner! This truly was a 'Bargain Hunt' find for the military enthusiast.

The model tent, another popular feature of the show, which attracts many thousands of model makers each year, had been replaced by a hall and was filled with military vehicles in all scales. The skill of the builders on display has to be admired by all, with the builders putting in just as much

time and effort as those rebuilding and restoring the real thing, but try as I might, the one thing I couldn't find (and here's a suggestion for you model manufacturers) was a large scale Bedford MWR, mainly because I own the real thing and my wife, lovely as she is, won't let me keep it in the living room, so a scale model would be a better option!

After several hours of intensive searching around the stalls in the blazing sunshine, the 1940's Tea Room was calling me for a welcome cuppa. The Tea Room turned out to be a popular gathering point for all who wanted to rest their feet and have a very British cup of Tea. The venue was excellent and ambiance was tremendous and also happened to be

**"Rex's team of Officials delivered a stunning event..."**



ABOVE...

This year the Bart Vanderveen Challenge Shield went to Richard Beddall, seen here (left) being congratulated by Winston Ramsey from After the Battle Publications.

LEFT...

The attempt to gather the most military Jeeps together in one place went well as you can see by the amount of vehicles crowded in front of the main grandstand of the new location at Folkestone Racecourse. (Photo - Mark Barnes)



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**RIGHT...**

Exhibitors often put on displays for the crowds and this year was no different. Here we see a rare Brockway Model 666 crane loading a crate onto a Chevrolet tractor unit coupled to a 5-ton stake platform trailer.

**BELOW...**

An East German GAZ-69 leaves the arena followed by a GAZ-67B, as you can see the sun certainly shone for the show!  
(Photo - Mark Barnes)



**"...The living history area always impresses the public and this year was no exception..."**

Traditionally War & Peace has attracted a number of rare and unusual vehicles, and this pair of WW2 American tractor units fall into that category, namely an Autocar U-7144T (left) and Federal Model 94x43, both with soft cabs.



Flying the flag - do you think this DUKW is an American vehicle?



**RIGHT...**

Each year the living history groups try and outshine each other, building bigger and better displays at the show. This year the Great War era groups upped their game, bringing with them a working German flamethrower and a working British Simplex train complete with track!  
(Photo - Mark Barnes)



Interesting wartime Mercedes staff car complete with a full compliment of booty strapped to the roof rack!





the meeting point for the various Press Teams, offering them the chance to catch up with each other and exchange stories in between typing or using the internet in Georgina's Press Centre.

The living history area always impresses the public and this year was no exception. The superb World War One area comprising the 'Kent's' and the German infantry was very realistic with a fully working British Simplex railway. Whilst the Germans had a fully working flame thrower and trench system! A Second World War Field Hospital was the best I have ever seen with every detail perfect, right down to the authentic paper in the "Matron's" typewriter! The Desert War, Vietnam, Cuba, Malaya, Iraq and Afghanistan were just a few of the many conflicts depicted within the living history area, but the Officer's Desert Tent, complete with carpets, furniture and an armoured car and captured 40's sports car outside was definitely the place to be, and the dates were delicious!

## ARENA ACTION

The arena at the new venue was quite different to the old one at the Hop Farm in that the public were closer and had a long, user-friendly view of what was going on during the Show. Run by the highly experienced WPR Arena Crew, a full catalogue of events was organised every day. The learning curve was steep and the team adapted to the new venue, which will no doubt be improved upon for next year to give us an even better panoramic view of the events, and while there's no doubt it was great for the paying public, it did make life a little difficult for the press

photographers at times, mainly due to the exceptionally hot weather conditions and the dust created. Maybe an NBC suit is the answer for next year?

Two special events took place in the arena, firstly there was a tribute to the 50th Anniversary of the Alvis Stalwart, and secondly there was a mass gathering of the ubiquitous wartime Jeep. Stalwarts have graced War & Peace shows for many years and remain a popular vehicle with collectors, and in the arena a convoy of all marks and models displayed, as only Stalwarts can, for the public.

The mass gathering of Jeeps was impressive by any standards with around 200 examples of all makes, models, and colours and with owners from countries around the world pouring into the arena followed by several laps of the site. For me two vehicles stood out, firstly the very rare and interesting four-wheel steer Jeep, and a bright yellow Jeep advertising "War Bonds" that you simply couldn't fail to miss and came all the way from Germany. The owners dressed in their Hawaiian Shirts complete with surfboards certainly stood out from the drab colours normally seen on Jeeps. Their camping site even boasted a bright yellow paddling pool where the surfboards were available for testing!

As usual the number of vehicles at the show was impressive and the number of visitors from outside Europe was equally impressive, and this year included a large party of Australians arriving in Pith Helmets and Slouch hats. British and American Veterans were on the site in large numbers, together with those from other nations.



## LEFT...

...and the award for the brightest paint job on a Jeep goes to... This 'War Bonds' Jeep certainly caught the eye!

## BELOW LEFT...

The number and variety of wartime motorcycles at the show was a good as ever.

## BELOW RIGHT...

The battle re-enactments were as exciting as ever. (Photo - Mark Barnes)

## BOTTOM LEFT...

If you're going to have a military vehicle why not have one with style?

## BOTTOM RIGHT...

The Race2recovery.com Rally Team showed off their driving skills in the dusty arena, attracting much applause from the watching crowds.

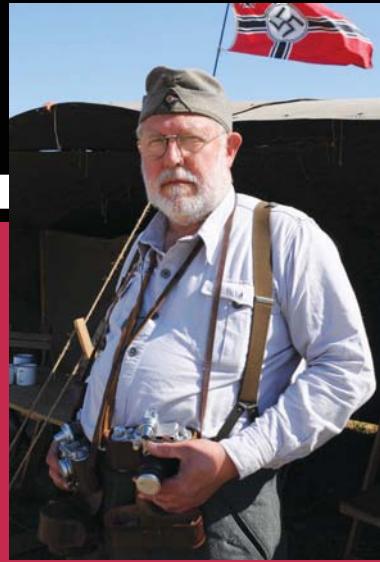


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The regular press team of photographers had some competition at the show! (Photo - Mark Barnes)

**TOP RIGHT...**

If this were a black and white image and the number plate on the Jeep were removed you'd be hard pressed to tell it from a wartime photo!



**BELOW...**

The arena certainly saw some action this year. (Photos - Mark Barnes)

**BOTTOM LEFT...**

Not a real emergency, but realistic all the same! (Photos - Mark Barnes)



Dust - need I say more!



the selection of Autocar's. An FWD SU-COE appeared with an "army" of American vehicles, and a very nice World War Two Mercedes staff car from Poland paraded in the Arena too. Interestingly a number of restored British post-war light vehicles attended the show including a rare Humber FV1601 artillery tractor.

Despite the many thousands of vehicles at the show, the star of the arena, in my opinion, was the rally modified Land Rover driven by members of our Armed Forces who have lost limbs in Afghanistan. Their

skill and determination was there for all to see and the driving demonstration was superb, showing off their undoubted skills as rally drivers, with their skills now honed having competed in many rallies around the world. The Race2recovery.com Team showed us all that the men and women of our Armed Forces are the finest.

*I'll be back next month with my second report from the War and Peace Revival Show in which I'll be taking a closer look at the tracked and armoured vehicles in attendance.*

The Paras make their presence known! (Photos - Mark Barnes)



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# Industry Update...

## New Zealand to Replace Medium & Heavy trucks

Under a Defence Force Land Transport Capability Programme project to replace its current Medium and Heavy Operational Vehicle Fleet (MHOV) that is made up of primarily Mercedes-Benz Unimog (4x4) and NG series trucks, the New Zealand Army had ordered 194 RMMV/MAN HX trucks. The New Zealand delivery will be new-build and not include some UK Support Vehicle surplus as had previously been suggested by some commentators.

The complete order is understood to include HX60 (4x4), HX58 (6x6) and HX77 (8x8) in ten variants, these including Enhanced Palletised Load System (EPLS). Deliveries will be to essentially UK Support Vehicle spec, but with some revisions/modifications that include a New-Zealand-specific cargo body, an HX58 tractor-trailer combination, and a dumper variant on the HX60 chassis. Deliveries are expected to run from October 2013 through to October 2014.

New Zealand has previously received three HX77 converted to EPLS configuration for use with the GDELS Rapidly Emplaced Bridge System (REBS), these supplied late-2012 FMS-style from UK stocks. A fourth new-build chassis has since been supplied direct from the Austrian production line. (Primary Source – Battlespace)



## Qatar Orders Leopard 2 Tanks

Qatar has ordered 62 Leopard 2 main battle tanks (MBTs) and 24 PzH 2000 155 mm/52-calibre tracked self-propelled artillery systems from Krauss-Maffei Wegmann (KMW). KMW said the total value of the contract, which includes peripheral equipment as well as crew training and other support activities, is €1.89 billion (\$2.46 billion). Deliveries are expected to commence in late 2014 or early 2015, although training could begin earlier in Germany.

The new vehicles will replace Qatar's fleet of obsolete French-supplied Nexter Systems AMX-30 MBTs and 155 mm Mk F3 self-propelled artillery systems. It is understood these vehicles will be new-build and not upgraded surplus vehicles.

The MBTs will be built at KMW's Munich facility and will be latest Leopard 2A7 series, although the specific build standard has not been disclosed.

Developed, tested and qualified by KMW in close co-operation with the German Army, the Leopard 2A7 has been optimised for the full spectrum of operations, including urban combat, and has a modular design that allows it to be customised to meet users' specific requirements. The 2A7 is armed with the longer Rheinmetall 120 mm L/55 smoothbore gun that can fire the latest Rheinmetall High Explosive DM12 round that is already in service with the US Marine Corps.

The German Army ordered a batch 20 Leopard 2A7 MBTs, which will be delivered in 2013-14. These are conversions of ex-Royal Netherlands Army Leopard 2A6 NL vehicles.

The most capable Leopard 2A7+ version was shown for the first time in June 2010 and later that year underwent a series of hot weather firing and mobility demonstrations in Qatar before being shown at the IDEX exhibition in the United Arab Emirates (UAE) in February '11.

The PzH 2000 production line closed several years ago after sales had been made to Germany (185), Greece (24), Italy (70 including licensed production) and the Netherlands (57), and for the Qatari order, KMW will re-open the PzH 2000 production line in Kassel.

This capability was demonstrated to the now-disbanded Royal Swedish Coastal Artillery as far back as 1996. It also leverages work carried out when the PzH 2000 turret was being offered for installation on German Navy surface vessels. This is the first time the German government has approved the export of the Leopard 2 and PzH 2000 to a Middle Eastern state and could open the door for additional sales to the region, including to Saudi Arabia, which has expressed an interest in acquiring 270 Leopard 2A7 tanks.

(Primary Source – Jane's Defence Weekly)



# Turkey's Otokar Releases Details of Two New Light Armoured Vehicles

Turkey's Otokar has recently released basic details of two new light armoured vehicles, the Cobra II and the Ural. The Ural is the smallest and lightest of the two. According to a report in Jane's Defence Weekly (JDW), the Ural will come in both three- and five-door versions, and depending on variant will seat up to 10 including a driver. Weighing 6122 kg, the Ural is 5.33 m long, 2.2 m wide and 2.19 m high (not including a weapon station). Motive power is provided by an unspecified 3.2-litre diesel engine, this coupled to an unspecified automatic gearbox.

The larger Cobra II is essentially a follow-on to the earlier Cobra, this sold to 15 countries and based on AM General Humvee automotives. The Cobra II offers greater volume, payload and protection than the original, and can seat nine. GVW is around 12,000 kg. Motive power is provided by an unspecified 281 hp diesel coupled to an unspecified automatic gearbox. (Primary Source – 4WD Magazine)



## Hungary to Sell Equipment

Hungary has announced plans to sell off its old Soviet-made armour and fighter aircraft. Saying they were in "very good condition" but expensive to maintain. Zoltan Borbiro, state secretary for the defence ministry, said MIG 29 fighter jets and T-72 tanks, military equipment and clothing would all be up for sale later this year.

"Since Hungary's transition from communism in 1990, the Army has been organized on a professional and modern basis, and a part of our military inventory is no longer compatible with NATO requirements," he said. "It won't be an easy sale," he admitted.

Hungary scrapped conscription in 2004 and now maintains an army of some 19,000 soldiers, down from around 140,000 during the Warsaw Pact era. Hungary sold 77 of its stock of 180 T-72 tanks to the newly formed Iraqi army in 2005. (Source: Defense News)



## US Marine Corps Order Oshkosh MTVR Trucks

The US Marine Corps has awarded Oshkosh Defense a delivery order valued at approaching \$8 million for an additional 32 Medium Tactical Vehicle Replacement (MTVR) trucks. The order is placed under an existing indefinite-delivery/indefinite-quantity contract, and delivery under this latest award is expected to be completed by Sept 2014. (Source – Trucking)



## Fuchs Modernisation



The Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support (BAAINBw) in Koblenz has awarded Rheinmetall a €36 million. Contract to modernize 25 more Fuchs/Fox armoured transport vehicles for the Bundeswehr.

To date, BAAINBw has contracted with Rheinmetall to upgrade a total of 152 Fuchs/Fox 1 vehicles to the new 1A8 version. By February 2013, 123 of these had been delivered. With the latest order the total number of Fuchs/Fox 1A8 vehicles in the Bundeswehr inventory is set to rise to 177.

The Fuchs/Fox 1A8, which the Bundeswehr mainly deploys in Afghanistan, is the best-protected wheeled armoured vehicle in its weight class now in service with the German armed forces. Compared with previous versions of the vehicle, the new 1A8 offers enhanced protection from landmines and IEDs, which continue to pose a widespread threat in Afghanistan. It also offers enhanced protection from ballistic fire. Infantry section vehicles are equipped with an unmanned weapon station, for an enhanced self-defence capability.

The 25 vehicles that form this order come in five different configurations, three of which the Bundeswehr is procuring for the first time: 7 HRM communication vehicles equipped with high-frequency HRM radio systems; 5 command and fire control vehicles for indirect fire/joint operations tactical fire support; 4 combat weather section vehicles for indirect fire/joint operations tactical fire support (weather data collection and analysis); 6 armoured reconnaissance vehicles; 3 EOD section vehicles.

This increases the number of different Fuchs/Fox 1A8 variants in service with the Bundeswehr to 16. Delivery of the vehicles will commence in the fourth quarter of 2014, and is scheduled for completion in 2016. (Primary Source – RMMV)

## USA Textron

Textron Marine & Land Systems (TM&LS) has been awarded a \$3.29 million firm-fixed price contract from the US Army Tank-Automotive and Armaments Command for work on the Modernized Expanded Capacity Vehicle Survivability (MECV-S) system. TM&LS is teaming with Granite Tactical Vehicles to deliver crew protection and vehicle survivability enhancements for the Army's HMMWV vehicles. The program's follow-on potential is for work on up to 5,750 vehicles.

The Army is seeking technical solutions to address current and future threats to its HMMWV tactical vehicle fleet through the use of scalable armour technologies. The TM&LS/Granite team will install its MECV-S protection system, a production-ready Technology Readiness Level 8 system, on two government-furnished HMMWVs and deliver them to Aberdeen Proving Ground, Md. for Improvised Explosive Device testing. Computer Aided Design models also will be submitted for analysis.

## Poland to replace BRDM-2

Poland has begun a programme to replace its ageing GAZ BRDM-2 4x4 amphibious scout cars, in service since the late 1960s. The Polish Armament Inspectorate has initiated a technical dialogue with potential suppliers of light armoured reconnaissance vehicles (Lekki Opancerzony Transporter Rozpoznawczy - LOTR) to replace Poland's fleet of around 450 BRDM-2 vehicles, only 376 of which are believed operational.

By 2004 Military Mechanical Works (WZM) Siemianowice Slaskie had upgraded 120 Polish BRDM-2s to the new BRDM-2M96/BRDM-2Bs version. According to the terms of the technical dialogue, the vehicle to replace the BRDM-2 will be amphibious, with either 4x4 or 6x6 drive and a 3-4 person crew. The LOTR should feature NATO STANAG 4569 Level 3 ballistic protection, Level 2a mine protection and Level 4 artillery protection.

The new vehicle is to boast a maximum road speed of 90-110 km/h and 40-50 km/h off-road, while having a minimum road range of 600-1,000 km and minimum off-road range of 300-500 km. The ground clearance is set at 400-450 mm, with a slope approach and departure angle of 40-45°. The vehicle has been requested to be equipped with a remote controlled weapon station with 360° traverse.

Poland's most recent search for a BRDM-2 replacement started in 2012 when the Polish Ministry of Defence drafted requirements for the light amphibious reconnaissance vehicle for the Polish Army under the programme name Kleszcz ('Tick'). Under those terms, the Polish National Centre for Research and Development (an implementing agency for Ministry of Science) awarded a contract in 2012 to AMZ Kutno for designing a 10-tonne amphibious vehicle technology demonstrator called Bobr ('Beaver'), which is expected to be finished this year. Previously, Poland had intended to purchase a 6x6 variant of the Rosomak (Patria AMV) 8x8 vehicle to replace the BRDM-2 within Poland's mechanised brigades, although this purchase was later cancelled. (Source – Jane's Defence Weekly)

## Spain Abandons AIFV Project Procurement

The latest victim of Spain's defence spending cutbacks is understood to be a project to procure a new fleet of (8x8) Armoured Infantry Fighting Vehicles. The now-abandoned project was expected to procure an initial 300 AIFVs for around €1.5 billion. The new AIFVs were to replace Spain's current BMR (6x6) fleet (shown right), which after more than 30 years of service no longer meet current protection and payload requirements. (Source – Trucking)





# Latin American News

Juan Carlos Cicaleci brings us updates on the latest defence equipment news from right around the Latin American region

## New Brazilian Vehicle



The Ejército do Brasil (EB), ordered the first ten units of the Vehículo Liviano de Empleo General AeroTransportable (VLEGA), "Chivunk", designed in the Technical Center of the Brazilian Army, and the Brazilian Company Columbus, located in São Paulo, who will not be the constructor of this vehicle. This is the same company who designed the Marrua Jeep, produced by Agrale, using ex ENGEZA technicians. The Chivunk is a 4x4 vehicle, and because of its small size, four vehicles can be transported in a C-130 Hercules transport plane.

## New Version of the VLEGA Gaucho



The VLEGA (Vehículo Liviano de Empleo General AeroTransportable) 4x4 Gaucho, is a vehicle produced in a joint venture between Argentina and Brazil, with pre-series vehicles in service with a variety of units with the Argentine Army for tests and evaluations.

This vehicle will include a number of different versions, with the last one configured as an ambulance, for MedEvac duties on the front line and can transport two wounded and a medic. In Argentina, the decision as to where the vehicle will be mass-produced is still pending due to budgetary reasons.

## Chile Receive Sentinel AN/MPQ-64F1 Radar from the United States

Chile received two Sentinel AN/MPQ-64F1 radar systems, purchased last March through the FMS (Foreign Military Sales) plan. This new system will improve Chile's Air Defense Capacity.

The radar was sent by air transport, in a Chilean Air Force (FACH) C-130H on the 1st July, from Edwards AFB, located in California, USA. The radar system will have a strategic role for the US South Command



## Argentine Army TAM 2C Tank Upgrades still on Target

According to some specialized media, the planned upgrades on the Argentine TAM 2C tank were stopped, due in part because the Government had decided to reallocate the planned budget for alternative work to other areas, however, this has been found not to be correct and the project is continuing according to the projected schedule. What has paused is the work on the new prototypes, due to the Army evaluating the first unit to be modernized. These tests will involve the vehicle being tested in all terrain conditions, including the firing tests. This homologation will continue to the end of this year, and initial reports suggest that they are going better than expected.



## New Tactical trucks for Brazil



The Brazilian Army, is waiting to receive (starting in December), a total of 860 5-tonne VW Worker 15.210 4x4 militarized tactical trucks, assembled by MAN, at their Latin American Division, company who also build the Volkswagen trucks in Rezende, Rio de Janeiro, Brazil. The contract worth is US\$ 113M. Last April the company also signed an agreement worth US\$ 68M, to transfer 300 militarized 10-tonne VW Constellation 31.320 6x6 model trucks.

## Gepard to be used by Brazilian Army

A number of Brazilian Army personnel, have been in Hardheim, Germany, home of the 12th German Army Battalion for a period of three months, where they have been learning the employment and maintenance on the 35mm Anti-Aircraft KMW Gepard anti-aircraft system. The AAA system was previously tested on the Formosa firing range, in Goias, Brazil and the Army has planned to purchase 36 units, including a simulator and spares. These vehicles were recently modernized, which is the main difference between these and the vehicles sent by the SABIEX Company to Chile. The Gepard chassis are the same as those used on the Brazilian Army Leopard 1A5 main battle tanks.



## Russian Tigre to be built in Brazil?

Members of the Brazil–Russia Commerce Chamber, announced that a study is underway to assemble the Tiger 4x4 armoured vehicle locally. A vehicle was tested in Brazil, but despite the good results, the vehicle wasn't purchased.

The Uruguayan Police have five units currently in service, which were purchased some time ago. This vehicle was also offered to the Gendarmería Nacional Argentina, but they decided against purchasing them.

As a consequence of the renewal of different Police units, and the possible joint-venture with local companies, the chance to assemble the vehicle locally emerged, making it more likely that the vehicle will be adopted for use. In Russia, the vehicle is manufactured by the Military Industry Company, in the Mechanical Constructions of Arzamas Plant, located in the Nizhni Nóvgorod Province.



## More Armoured Vehicles for Colombia



In August, the Ejército Nacional de Colombia purchased eight new units of the 8x8 General Dynamics Land Systems GDLS LAV III. The new GDLS LAV III will be equipped with the Rafael Advance Defense System Samson RCWS Mini, like the previous 24 units purchased in December 2012 by Colombia, and are part of the modernisation process for the Mechanized Units of the Columbian military.

# Into the Archives



## LES FREATHY DELVES INTO THE ARCHIVES AND HE IS LOOKING AT BEDFORD TM TRUCKS OF THE BRITISH ARMY

This issue looks at a subject that has seen the last serving vehicles pensioned off within the last decade. The Bedford TM was first designed as a commercial heavy goods vehicle and built from 1974 for the purpose of long haul loads. From the late 1960s the British Army had been considering a replacement vehicle for its ageing fleet of 10-ton trucks such as the AEC Militant, and part of the requirement was for a more agile vehicle. Proposals were put forward for an 8-tonne truck with four-wheel drive, but resulted in a shorter body than the Militant and a reduced payload with little more load space than the 4-tonne Bedford MJ.

The military deemed the project as worthwhile and Bedford, Foden and Leyland were requested to supply prototypes for testing the outcome of which resulted in Bedford winning the contract to supply 2000 units using a Bedford 500 ohv engine. The 4x4 vehicles supplied were in the main general service (cargo) models, some with a winch fitted, a CALM (Crane Appliance Lorry Mounted) and a tipper with a slightly shorter chassis length. Whilst the TM 4x4 proved itself to be up to the jobs required the body space available began to cause some concern especially in the case of the Royal Engineers' bridging equipment, where much of the material was too long to be carried safely within the body.

The MVEE had converted a 4x4 to a 6x6 by introducing a further axle and although tested, no production was forthcoming as there was little advantage in terms of the body dimensions so the older Militants were obliged to carry on, and by the 1980s were indeed on their last legs! The army approached Bedford to supply a longer wheelbase 6x6 version of the TM for trials, which were successful and a single order for 1000 vehicles was secured in 1985. Once again the majority were general service trucks and flat beds with CALM, but the longer body enabled a payload of 14-tonnes, which allowed the loading of twelve standard NATO pallets or a 20ft ISO container plus the bridging equipment.

Both 4x4 and 6x6 models were supplied in LHD and RHD for use in the UK and abroad, and when in service both types were adapted for a variety of roles, including the fitment of UBRE (Unit Bulk Refuelling Equipment) and various containers to the 4x4 and the Phoenix unmanned aerial vehicle on the 6x6. At the time of producing this article all of the 3000 TM that were in service had been disposed of, but few have been seen in preservation, some found their way into the civilian market but I can only assume that many went abroad to locations such as the African continent where the trucks and components would have been most welcome.

**BELOW LEFT:** The standard 8-tonne 4x4 TM general service truck with tilt, first deliveries were carried out in 1981 commencing with a hand over parade of the first vehicles held at Travers Barracks, Aldershot. Bodies for the G.S version were supplied by Marshalls of Cambridge.

**MAIN PHOTO BELOW:** One of the adapted roles for the flat bed TM was for transporting the UBRE refuelling system, previously fitted to the redundant Alvis Stalwart. This role was also carried out by the light 4-tonne Bedford MJ.



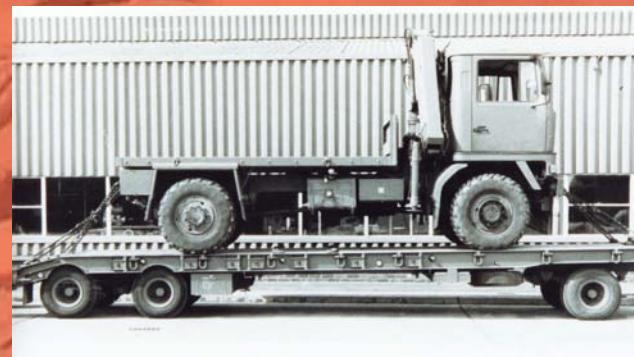
**MAIN PHOTO:** The CALM version of the 6x6 with flat body and Atlas crane with a 9-tonne lift capacity, this Bedford publicity image shows the crane fully extended with stabilisation jacks deployed.

**BELOW:** The 14-tonne long wheelbase 6x6 TM, 1000 were ordered in 1985 in both LHD and RHD versions, these models were supplied as general service and flatbed CALM with Atlas mounted cranes.



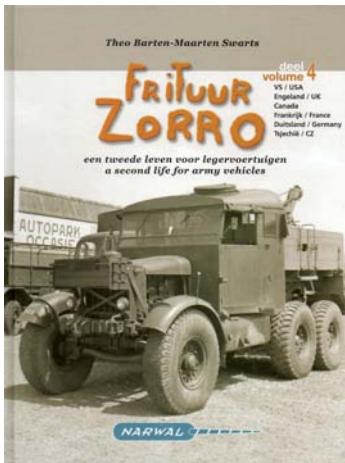
RIGHT: The flat bed CALM version with Edbro bodies and Atlas hydraulic cranes. These vehicles were fitted with stabilising legs on each side of the chassis located between the cab and body, this vehicle appears to be used as a test bed for the 20-ton 3-axle recovery trailer.

BELOW: Demountable containers have become a popular military requirement within the last 20 to 30 years, most of which are based on a small number of designs, but all are able to fulfill a wide variety of roles such as this REME body mounted on a Bedford TM 4x4 photographed at Arborfield.



ABOVE: Smaller numbers of the tipper variant of the TM were required within the contract for 2000 vehicles, all of which had a steel heavy duty tipping body supplied by Edbro.





## A second life for Military Vehicles recorded in photographs

The latest volume in this popular series of books gathers together another impressive collection of images showing former military vehicles enjoying a second life in civvy street. For Volume 4 authors Theo Barten and Maarten Swarts have provided images of trucks and vehicles from WW2 and some post-war, with inclusions from manufacturers such as AEC, Albion, Bedford, Skoda, Ford, Berliet, Citroen, Tatra, Scammell, Leyland, Morris-Commercial, GMC,

Chevrolet, Diamond T, Euclid, Mack, and Oshkosh to name a few. As usual the photos are fascinating, showing the many ways these vehicle were modified by civilian users and fans of old trucks will love this latest issue. The 172-page hardback book is well produced, with all images in black and white, or to be more correct, a sepia tone, which adds the beautiful presentation of the subject. The book is available direct from the publishers, see web for details.

**Title:** Frituur Zorro Volume 4

**By:** Theo Barten & Maarten Swarts

**ISBN:** 9789081711029

**Price:** 38.50 Euro

**Format:** Hardback

**Available From:**

Narwal  
[www.frituurzorro.nl](http://www.frituurzorro.nl)

**Title:** Light Car Patrols 1916-19

**By:** Russell McGuirk

**ISBN:** 9781900971157

**Price:** £24.99

**Format:** Softback

**Available From:**

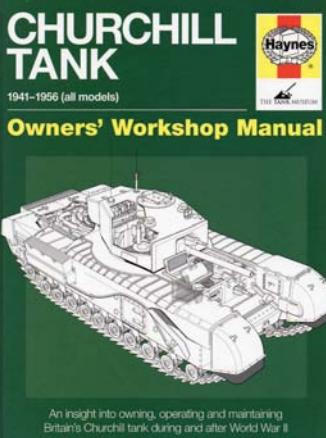
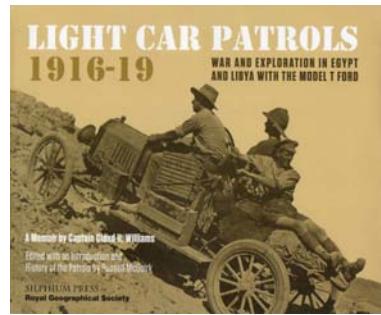
Sulphur Press  
[www.societyforlibyanstudies.org](http://www.societyforlibyanstudies.org)

## War and Exploration in Egypt and Libya with the Model T Ford

I was alerted to the presence of this new book by Kuno Gross, himself a publisher, and boy am I glad he did. The 276-page softback book looks at the use of Light Car Patrols, more specifically the Model T Ford, during various early wars as well as exploration in Egypt and Libya, and as such includes a fascinating selection of early images showing the vehicles used. While this is primarily a written account of the history

with the photos playing a secondary role, it doesn't get away from the fact that the subject is both fascinating and illuminating, dealing as it does with these early pioneer days of desert exploration.

Russell McGuirk has done a fabulous job of relating the memoirs of Captain Claud H. Williams, who took part in these adventures, ensuring a terrific read and well worth a look. The book is available direct from the publishers.



## The Great British Churchill Tank described in unprecedented detail

The latest military-related book to come from well-known publishers Haynes, is this superb book on the British wartime Churchill tank. Written by Nigel Montgomery, himself an expert in the field, owning as he does several restored examples of the Churchill, the book is crammed with information that will be fascinating to military vehicle enthusiasts and indeed military model makers. Nigel has worked closely with the Tank

Museum, and the book includes a number of wartime archive images, as well as numerous colour images of restored examples, which includes a number showing vehicles under restoration. The combination of using historic photos, exerts from user manuals and contemporary photos offers an excellent, rounded account of what was arguably the best British tank of the war, and as such is well worth a read.

**Title:** Churchill Tank

**By:** Nigel Montgomery

**ISBN:** 9780857332325

**Price:** £21.99

**Format:** Hardback

**Available From:**

Haynes Publishing Ltd.  
[www.haynes.co.uk](http://www.haynes.co.uk)

## The Main Weapon System in use with British Army Armoured Regiments

**Title:** Challenger 2 MBT

**By:** Carl Schulze

**ISBN:** N/A

**Price:** £13.99

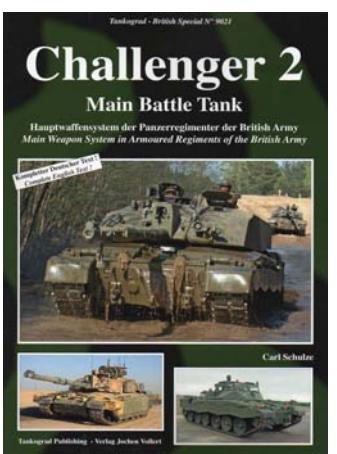
**Format:** Softback

**Available From:**

Bookworld Wholesale Ltd.  
[www.bookworldws.co.uk](http://www.bookworldws.co.uk)

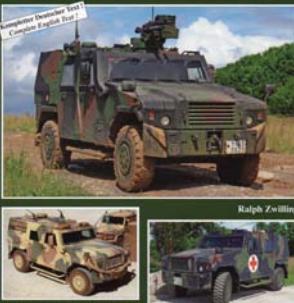
Following on from his book on the Challenger 1 MBT for Tankograd, Carl Schulze has turned his attention to the Challenger 2. The book (No.9021) is from Tankograd's 'British Special' series and comprises of 64-pages crammed with numerous in-service colour photos showing the different variants, which includes the up-armoured Challenger 2s used in both Kosovo and Op Telic in Iraq. While the exterior of the

vehicle is well covered, with numerous detail shots to keep the model makers happy, including engine bay shots, it should be noted that there are no interior shots due to the classified nature of the subject. In addition to the gun tanks there are also details of the Driver Training Tanks. All in all this is another well rounded book dealing with the UK's current Main Battle Tank, and at £13.99 is good value for money.



# EAGLE IV

**Das Geschützte Radfahrzeug Eagle IV und seine Varianten in der Bundeswehr**  
*The Eagle IV Wheeled Armoured Vehicle in Modern German Army Service*



Verlag Jochen Vollert - Tankograd Publishing

Ralph Zwilling

## Eagle IV Wheeled Armoured Vehicle in Modern German Army Service

As a military vehicle the Mowag Eagle wheeled armoured vehicle has been around for many years in one form or another, but this new book from Ralph Zwilling looks specifically at the latest variant, the Eagle IV, and its service with the modern German Army. The 64-page book covers the different variants in detail, with numerous detail shots and plenty of coverage of the interior as well. The Eagle IV has been serving with the German Army in Afghanistan

and a number of the images contained within the book show a number of Eagle IV variants during service there. Interestingly there's also a very short piece on the Eagle IV's potential replacement, namely the Eagle V.

The quantity and quality of the photographs and information contained within the book will no doubt appeal to those with an interest in modern German armoured vehicles, and is sure to attract the attentions of model makers

**Title:** Eagle IV

**By:** Ralph Zwilling

**ISBN:** N/A

**Price:** £13.99

**Format:** Softback

**Available From:**

Bookworld Wholesale Ltd.  
[www.bookworldws.co.uk](http://www.bookworldws.co.uk)

## The 7-tonne Jupiter Truck in Modern German Army Service

**Title:** Jupiter Military Trucks

**By:** Peter Blume

**ISBN:** N/A

**Price:** £13.99

**Format:** Softback

**Available From:**

Bookworld Wholesale Ltd.  
[www.bookworldws.co.uk](http://www.bookworldws.co.uk)

The modern German Jupiter 6x6 truck is little known in the UK, but in Germany it's a common sight and well known to military enthusiasts. This new book by Peter Blume is an ideal opportunity to get up on the Jupiter 7-tonne truck and learn more about this long serving military truck. Using a combination of black and white and colour images as well as some extracts from a variety of technical manuals, and four-view scale plans, the

book looks at the Jupiter in quite some detail and covers a wide range of the variants built over the years, which includes the standard cargo truck, fire tender, mobile crane and even the LARS 1 light rocket launch system. As with most of the Tankograd titles, the book is printed in both German and English with dual language captions. At £13.99 it's good value for money, so if you want to learn more about the Jupiter check it out.

## JUPITER

*Der LKW 7 t gl (6x6) KHD Jupiter und seine Varianten in der Bundeswehr*  
*The 7-tonne 6x6 KHD Jupiter Truck in Modern German Army Service*



## The French Somua S35 in German Service

The Germans used a wide range of captured tanks and vehicles throughout World War Two and a great many of them were of French origin. This book looks at the French Somua 35 S in German Army service, and makes for a fascinating look at this unusual tank that owes its origins more to WW1 than WW2. The 72-page softback book looks at the history behind the Somua, providing technical details of

the vehicle before moving on to the story of how the captured tanks were renamed under German use under the general term of 'Beutepanzer'. The quality and quantity of the images contained within this book is superb, with many rarely seen photos, offering a unique insight into the use of the Somua in German service. This is a great book and a fascinating subject that is well worth checking out.

**Title:** Panzerkampfwagen (Somua) 35S - 739(f)

**By:** Jochen Vollert

**ISBN:** N/A

**Price:** £13.99

**Format:** Softback

**Available From:**

Bookworld Wholesale Ltd.  
[www.bookworldws.co.uk](http://www.bookworldws.co.uk)

## Topical military related stories from right around the world

**Title:** Militär Fahrzeug 4/2013

**By:** Jochen Vollert

**ISBN:** N/A

**Price:** £9.99

**Format:** Softback

**Available From:**

Bookworld Wholesale Ltd.  
[www.bookworldws.co.uk](http://www.bookworldws.co.uk)

The latest issue of Militär Fahrzeug covers an interesting mixture of subjects, covering both wartime and post-war topics. Amongst the numerous features within the 56-page book are items on the modernised German Marder 1A5A1, Panzerjägerabteilung (Sfl) 228, the modern American M1 Abrams ABV (Armoured Breaching Vehicle), the British Centurion tank, Danish MAN heavy recovery truck, Jägerregiment 1 on exercise,

the German Ford G 398 3-tonne 4x4 truck, Swiss Panzertruppe on exercise, and a look at the action from this year's War & Peace Revival. There's bound to be something in this latest issue for everyone, however, it should be noted that the book is only published in German now, and doesn't have the English summary anymore. That said it doesn't deter from the super images packed within this latest issue.

**MILITÄR FAHRZEUG**  
*Ausgabe 4/2013*  
*Ein monatliches Forum für Militärfahrzeuge, Fahrzeugtechnik und Modellbau*



Verlag Jochen Vollert - Tankograd Publishing

Marder 1A5A1 (modernisiert)

Das letzte Update des SPz "Marder" vor Einführung des SPz "Puma"?

Panzerjägerabteilung (Sfl) 228

Imperial War Museum Duxford

3 t gl Ford G 398 SAM

Panzerjägerabteilung Schweizer Armee XXI

# MISSION BRIEFING

## DATES FOR YOUR DIARY

### OCTOBER 2013

**Friday 4 to Sunday 6 October 2013: Military Revival:** new show in alliance with Bunker Bash, and Old Buckenham Airfield and Battlefront; The East England Military Museum. In addition to military vehicles we will have military campsites presenting a living history displays plus mock battles, tank rides, militaria and other trade stalls. Contact Touchdown Aero Centre: Tel: 01953 860 806 [airfield@oldbuck.com](mailto:airfield@oldbuck.com)

**Saturday 5 Sunday 6 October 2013: Holme 1940's Weekend:** held in association with Holmewood Hall and Holme Village. Located near Peterborough, PE7 3PA. Featuring tank rides, vintage vehicles, vintage ploughing, stalls and displays. Re-enactors welcome. For details call: Tel: 07887 817031 [chriscardell@googlemail.com](mailto:chriscardell@googlemail.com) [www.holmewoodhall.co.uk](http://www.holmewoodhall.co.uk)

**Sunday 6 October 2013: Hack Green Secret Nuclear Bunker Rally:** French Lane, Nantwich, Cheshire, CW5 8BL. Come along and buy (or sell) your items of militaria and at the same time take in the fascinating Hack Green Secret Nuclear Bunker museum while you're there. For further details call the organiser Rod: Tel: 01270 623353 [coldwar@hackgreen.co.uk](mailto:coldwar@hackgreen.co.uk)

### OCTOBER 2013

**Friday 11 to Sunday 13 October 2013: Wartime Weekend:** held in Pickering, North Yorkshire and featuring steam trains, trade stands and re-enactors. A great day out. For further details about the show visit the website at: [www.nrmr.co.uk](http://www.nrmr.co.uk) details about the trading area at: [www.jeepworld.co.uk/pickeringwartimeweekend.htm](http://www.jeepworld.co.uk/pickeringwartimeweekend.htm)

### NOVEMBER 2013

**Sunday 3 November 2013: Northern Military Expo:** popular indoor show held at the Newark Country Show Ground, Notts, 2 minutes off the A1M (NG24 2NY). For details contact Mark Askew on: Tel: 01302 739000 or check out the website at: [www.northernmilitaryexpo.co.uk](http://www.northernmilitaryexpo.co.uk)

**Sunday 3 November 2013: Wartime Family Day:** held at the Coventry Transport Museum, Millennium Place, Hales Street, Coventry, CV1 1JD. A free day for all the family, open between 10.00am and 4.30pm. British wartime vehicles wanted for display in Millennium Place outside the museum, interested owners should contact Clive Parker-Skelhon at the museum. [clive.skelhon@transport-museum.co.uk](mailto:clive.skelhon@transport-museum.co.uk) or Tel: 02476 234295



### NOVEMBER 2013

**Sunday 17 November 2013: Military Vehicles Day:** Over 80 vehicles are expected for our annual Military Vehicle Day. As well as the spectacular displays in the Paddock and around the site, there will be the chance to see some of these machines put through their paces as they tackle the off-road circuit at Mercedes-Benz World. Brooklands Museum, Brooklands Road, Weybridge, KT13 0QN. Tel: 01932 857381 [www.brooklandsmuseum.com](http://www.brooklandsmuseum.com)

**Sunday 17 November 2013: Malvern Militaria Fair:** large, indoor militaria event held at the Three Counties Showground, Wye Hall, Malvern, Worcs, WR13 6NW. For further details or to book in for the show contact Amanda at: Tel: 01743 762266 [amanda@jeeparts.co.uk](mailto:amanda@jeeparts.co.uk) [www.militaryconvention.com](http://www.militaryconvention.com)

**Sunday 24 November 2013: Aircraft Enthusiast Fair and Model Show:** held at the Museum of Army Flying, Middle Wallop. The show opens between 10.00am and 4.00pm, the normal museum admission fee of £7.50 is reduced to £5 on the day and covers both the museum and the fair. For further information please contact the organiser at: [mark@roberts15863.fsnet.co.uk](mailto:mark@roberts15863.fsnet.co.uk) or Tel: 01264 334779



### DECEMBER 2013

**Sunday 15 December 2013: Bromsgrove, Militaria, Medal & Arms Collectors Fair:** held at the Spadesbourne Suite, The Council House, Burcot Lane, Bromsgrove, Worcs, B60 1AA. For further information and dealers booking forms contact James Brown at: Tel: 07980 608211 [fairs@RZMilitaria.com](mailto:fairs@RZMilitaria.com) [www.RZMilitaria.com](http://www.RZMilitaria.com)

### JANUARY 2014

**Sunday 5th January 2014: Aviation, Airline & Military Collectors Fair:** Doors open at 10.30am, featuring Aviation & Military Collectables, Book and Model Collectors, Airline Collectables, Uniform, Plastic kits, held at Croydon Airport Hotel, A.23, Purley Way, Croydon Surrey, CR9 4LT. Free car parking. For further details contact Acebell Aviation on: Tel: 01737 822200 or Tel: 07860762277 [Acebellaviation@aol.com](mailto:Acebellaviation@aol.com)

### APRIL 2014

**Saturday 5 April 2014: Tiger Day:** held at the Tank Museum, Bovington, Dorset, BH20 6JG. A rare opportunity to see the museum's Tiger 131 perform in the arena. For more details see the website at: [www.tankmuseum.org](http://www.tankmuseum.org)

## APRIL 2014

### Saturday 12 to Monday 21 April 2014: Sandstone Estates Easter Festival

held at the Sandstone Heritage Trust, Eastern Free State, South Africa. Annual open festival featuring the many military vehicles, agricultural equipment, vintage cars and narrow gauge steam railway owned by the Sandstone Heritage Trust. The Sandstone Heritage Trust works closely with South Africa's Armour Museum and boasts an impressive and varied collection of military equipment, from a Sherman tank to modern day South African Defence Force armoured vehicles. (For further details of the show see the report on this year's show in this issue)

For more information on the show check out the website at: [www.sandstone-estates.com](http://www.sandstone-estates.com)

### Sunday 20 April 2014:

**Aviation, Airline, Military & Collectors Fair:** held at the K2 Centre, Crawley, West Sussex. Doors open at 10.30am. Featuring aviation and military collectables, plastic kits etc. For further detail contact: [tom@singfield.freeserve.co.uk](mailto:tom@singfield.freeserve.co.uk)

### Sunday 27 April 2014:

**Aviation, Airline, Military & Collectors Fair:** held at the K2 Centre, Crawley, West Sussex. Doors open at 10.30am. Featuring aviation and military collectables, plastic kits etc. For further detail contact: [tom@singfield.freeserve.co.uk](mailto:tom@singfield.freeserve.co.uk)



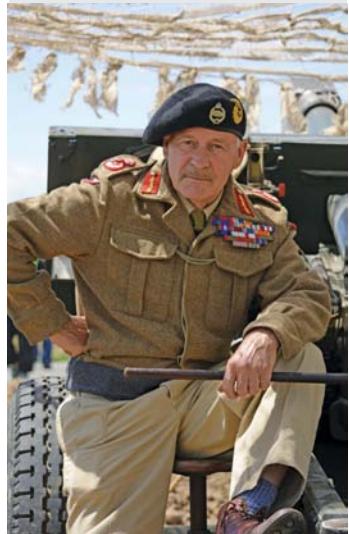
## NOVEMBER 2014

### Sunday 15 November 2014: Military Vehicles Day

held at the Brooklands Museum. Over 80 vehicles are expected for our annual Military Vehicle Day. As well as the spectacular displays in the Paddock and around the site, there will be the chance to see some of these machines put through their paces as they tackle the off-road circuit at Mercedes-Benz World. Brooklands Museum, Brooklands Road, Weybridge, KT13 0QN.

Tel: 01932 857381

[www.brooklandsmuseum.com](http://www.brooklandsmuseum.com)



## MAY 2014

### Saturday 17 May 2014:

**1940's Relived:** Discover period civilian and military vehicles on parade and various groups of re-enactors, representing from the Home to the Eastern fronts. Live 1940s music and dance, vintage trade stalls and more. Brooklands Museum, Brooklands Road, Weybridge, KT13 0QN.

Tel: 01932 857381  
[www.brooklandsmuseum.com/events](http://www.brooklandsmuseum.com/events)

## JUNE 2014

### Sunday 15 June 2014:

**MAVFA Nationals:** held at IWM Duxford, as part of the annual military vehicle show. Further details as and when they become available.

## JUNE 2014

### Saturday 28 Sunday 29 June 2014: Tankfest 2014:

held at the Tank Museum, Bovington, Dorset, BH20 6JG. Experience the world's best display of historic moving armour. Lots to see and do for all the family with trade stands and living history encampments plus the world famous Tank Museum itself, home to finest collection of tanks in the world. For more details see the website: [www.tankmuseum.org](http://www.tankmuseum.org)

## JULY 2014

### Wednesday 16 to Sunday 20 July 2014:

**War & Peace Revival 2014:** held at RAF Westenhanger, Folkestone Racecourse, near Hythe in Kent, CT21 4HX. The world's largest military vehicle show that attracts thousands of military vehicles, re-enactors and living history displays and now at the new venue. For further details or to book in for the show call: Tel: 01304 813337 or Tel: 01304 813945 [www.thewarandpeacerevival.co.uk](http://www.thewarandpeacerevival.co.uk)



**Are you a show organiser? Don't delay, and email your show & event details direct to the Editor at:**

**[ian.young@keypublishing.com](mailto:ian.young@keypublishing.com)**

**or if you prefer you can post them to the Editorial Office - details can be found on page 3**

If travelling long distances to events we would advise people to check for cancellations before leaving home, MMI cannot be held responsible for any errors, omissions or cancellations. Submissions for Mission Briefing should be sent at least two months prior to the event and we would also ask that event organisers notify us of any changes as soon as possible.

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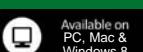
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# Next Month...

On Sale 7th November



## DESERT CRUSADER

Profile of the British Army Crusader in the desert in World War Two

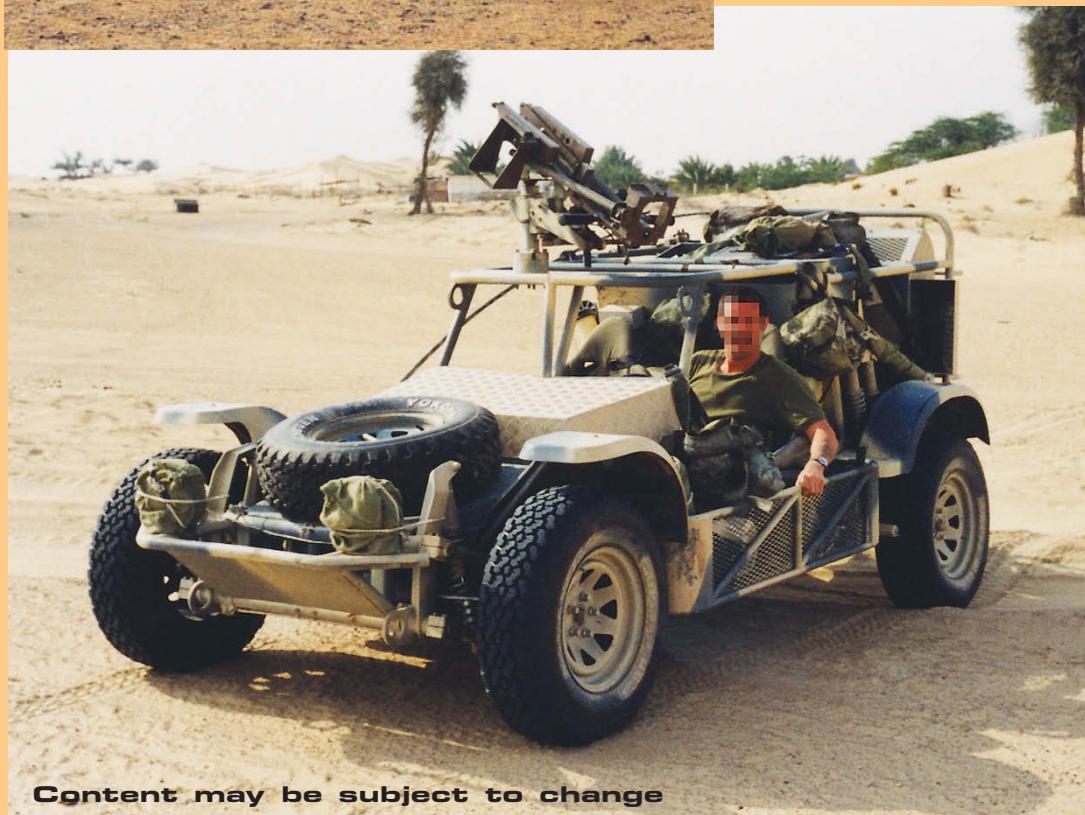


# DESERT WARFARE 100-PAGE SPECIAL



## ARMOURED COMMAND

We look at AEC Armoured Command Vehicles of WW2



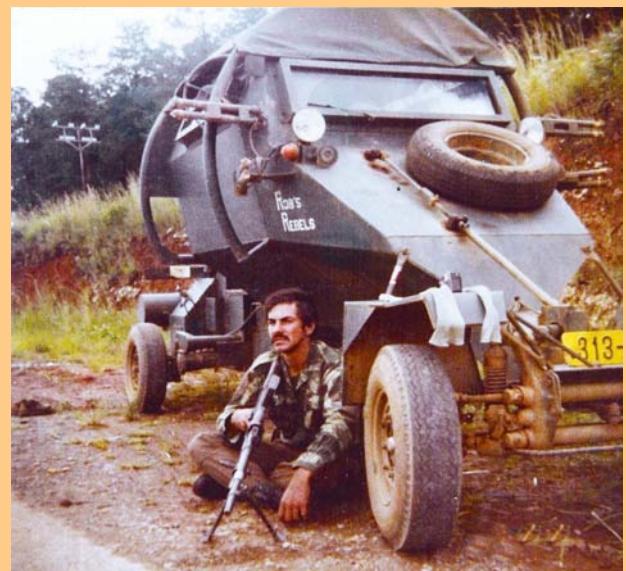
## SAS IN THE GULF

Rare photos showing some of the different vehicles used by the SAS in the desert during the build up to Gulf War 1, including the Land Rover DPV and Light Strike Vehicle.



## Op HERRICK 19

Shaun Connors joined troops as they prepare for another deployment to Afghanistan



## RHODESIAN VEHICLES

Robert Cedars takes a look at the vehicles of Rhodesian Army



## WAR & PEACE REVIVAL

Armoured action from this year's major new military show

## PLUS... JEEP REBUILD Pt.4

The rebuild of a wartime Jeep concludes following a final push

## WITHAM'S TENDER

We bring you a report from the latest MoD Tender Sale

## DESERT INSURGENCY

Carl Schulze takes a look at British Armoured Vehicles in Iraq



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