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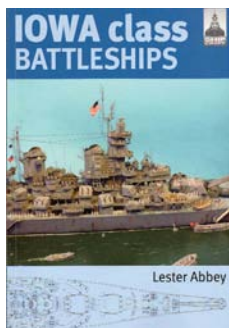
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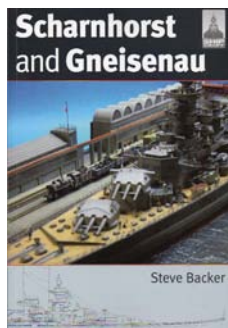


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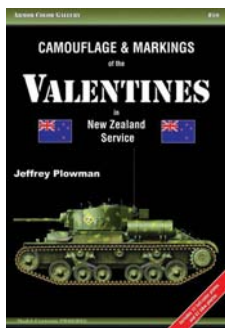
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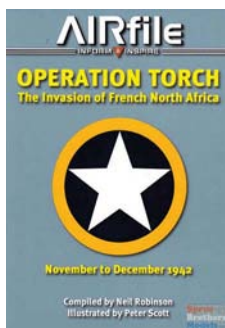
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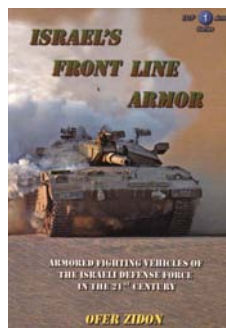
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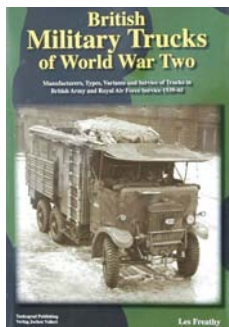
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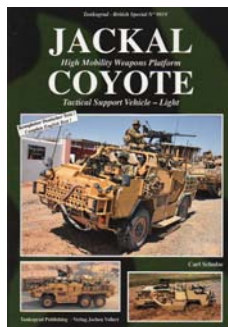
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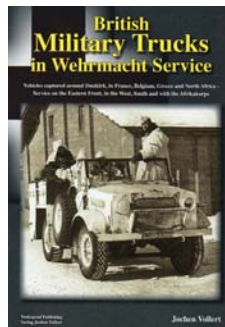
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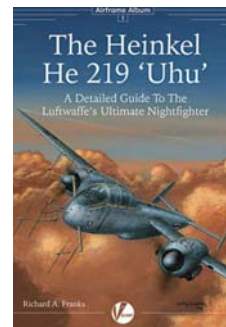
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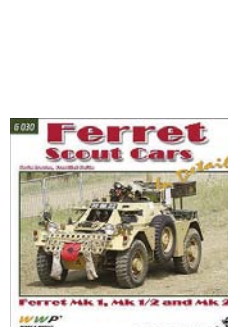
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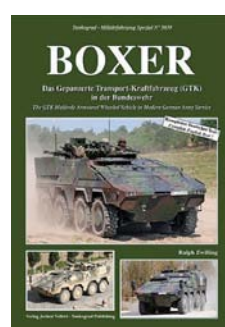
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MILITARY MACHINES

INTERNATIONAL

Welcome to our 100-page 'Tank Special'. This month we're taking a look at a variety of tank-related subjects, from the early days of tank warfare in the Great War, through to a wartime tank that is so rare none exist in preservation today, and the very latest tank technology being developed to protect tank crews on today's battlefields. Other features look at two fabulous collections of tanks and military vehicles, one here in the UK and one in Germany, plus a rare glimpse

inside a factory that built the American M47 tank back in the 1950s, offering an insight into tank production of the time. Our second report from the War & Peace Show features a number of tanks, as well as a varied selection of other vehicles spotted at the show, and we'll be concluding our War & Peace coverage next month with a collection of images from the MMI Press Team. We hope you enjoy this special issue, and we'll be back next month with another varied selection of articles - Ed.



Ian Young

Ian Young
Editor

EDITOR

Ian Young
Editorial Office, Bunks Hall, Alcester Rd,
Spetchley, Worcester,
WR7 4QD, UK
Tel: +44 (0) 1905 345898
ian.young@keypublishing.com

ADVERTISEMENT SALES

Jill Lunn
Tel: +44 (0) 1780 755131
jill.lunn@keypublishing.com

DESIGNER

Sally Sahingoz

EXECUTIVE CHAIRMAN

Richard Cox

MANAGING DIRECTOR/PUBLISHER

Adrian Cox

GROUP EDITOR-IN-CHIEF

Paul Hamblin

COMMERCIAL DIRECTOR

Ann Saundry

PRODUCTION MANAGER

Janet Watkins

AD PRODUCTION MANAGER

Debi McGowan

MARKETING MANAGER

Martin Steele

SUBSCRIPTIONS

Subscriptions Manager - Roz Condé
Subscriptions Department,
Military Machines International,
Key Publishing Ltd. PO Box 300,
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EXCLUSIVE

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EXCLUSIVE



NEWS and REVIEWS

UP FRONT

Rare Vehicles go under the Hammer

Auctions America will conclude its 2012 auction season by helping the historic National Military History Center, a 501(c)3 non-profit organisation, in Auburn, Indiana, sell more than 80 vintage military trucks and vehicles, as well as a diverse assortment of priceless war memorabilia. The single-day sale is expected to feature the most full and half-track military items ever offered at public auction. All of the items auctioned on Saturday, Dec. 8, including an extraordinarily rare WWII Daimler-Benz DB10 12 ton Primer mover, the rarest of all German equipment, will be offered at no reserve, presenting a range of unique ownership opportunities for collectors.

Comprising German, French, British and U.S. military vehicles, the 83 lots up for bids, represent a small portion of the extensive museum collection that will be sold to the highest bidder, creating more room for the museum to better display its historic items.



The sale will also help the museum pay off its mortgage debt by Dec. 31, in turn securing the museum's future and mission to educate the public about the history of World War II through military vehicle displays.

Internet, absentee and telephone bidding options will be available for those unable to attend the event, with the auction streaming live online at www.auctionsamerica.com to provide real-time coverage of the sale. Bidders may request vehicle condition reports by contacting one of Auctions America's world-class specialists at: 877-906-2437 (or +1 260-927-9797 outside North America).

WHEN: Saturday, December 8, 2012

WHERE: National Military History Center, 5634 County Road 11A Auburn, IN

DETAILS: Full event details, including auction times and a complete list of auction offerings are available online at:

www.auctionsamerica.com

Russian Oddity - New Information Comes to Light

Mike Morgan emailed us regarding the item on the unusual Russian military machine in our October issue. Our thanks to Mike for getting in touch – Ed.

Hello Ian,

With regards to the "Russian Oddity" on page 7 in the October issue of MMI, I would like to mention that the vehicle is based on an M62 Class Russian Heavy Freight Diesel Electric Loco, which was made in huge numbers and widely exported all over the Eastern Bloc. From the photo it would appear that the complete loco body, and presumably its innards, have been grafted on to the vehicle chassis, but the chances of the Loco fitting neatly on to a MAZ chassis are doubtful, so the chassis of a MAZ may have been lengthened to suit the vehicle.

The M62 was probably chosen because of it being such a common loco and for the ready availability of the locomotives and the logistic support around the Eastern Bloc countries. The Russian loco was originally made for the Russian broad gauge railways so would have had sufficient width to accommodate the wide chassis.

Cheers for now - *Mike Morgan*



Australian Engineers Museum 2003



We received an email with some images from Australian reader,

Bob Green. Bob is an avid MMI reader and sent along some images he took at an Engineers Open Day that was held at the Holdsworthy, Sydney facility in May 2003. Many thanks to Bob for taking the trouble to send them in and we hope you continue to enjoy MMI – Ed.



Good evening gentlemen,

I am an avid reader of Military Machines International, in fact it was the articles on the Corowa Swim In that persuaded me to attend the show for myself this year. I have attached some photos of the last Engineers Open Day that was held at the Holdsworthy, Sydney facility in May 2003. It was usually held every year on the third Sunday in May and on this occasion I took my nephews and when we walked around the Centurion was 'following' us with his gun and turret. I saw this, had the kids stop [one in each hand - being 6 1/2 and nearly 4], and then we looked at the tank and kept walking while the gunner continued to train the gun on us – the kids thought that was 'cool'.

Some of the photos here are from the Engineer Museum, although I'm not 100% sure if it is still open to the public. The museum has vehicles from post WW2 and was in a dimly light shed, so sorry for the condition of these photos, which was before I went digital. As Australia committed to the conflicts in both Iraq and Afghanistan these displays were no longer put on.

Last year I visited the UK and went to Bovington with a mate from the north of London. We drove all morning to get there, did the museum and then drove back, and in the week I had a hire car we visited 16 museums in six days and put 1,500 miles on the clock!

Please keep publishing the photos and reviews of museums and shows, which are excellent. Meantime I continue to hunt out places of interest to visit and I had hoped that our Australian War Memorial was going to bring the A7V from near Brisbane to Canberra for

much needed TLC and display, which would have been a 3 hour drive instead of the 8 hours to Brisbane! I have visited Puckapunyal twice with my brother and nephew and that's a great visit, though sadly not as large a collection as Bovington.

Hope you enjoy these photos, I really enjoyed attending the May open days, but sadly it seems that they will be no more.

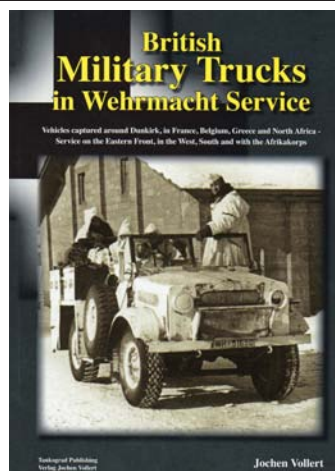
Sincerely yours - *Bob Green*





Christmas Gift Ideas

British Military Trucks in Wehrmacht Service



I had heard whispers that this book was due to be released and I had also heard that it was something special and when I received my review copy I wasn't disappointed. Seldom do I start reviews with a single word, but this new book from Tankograd Publishing, written by Jochen Vollert, can be summed up in one word – WOW!

The book looks at the many British trucks to be pressed into service with the Wehrmacht having been captured during the war. A great many of the vehicles in

question were captured in and around Dunkirk and some of the most incredible images to be found in this book feature the many thousands of trucks and vehicles abandoned in and around the Dunkirk area during the mass evacuation of troops.

The 304-page, A4-format hardback book is beautifully presented with high quality paper and a stunning collection of black and white images. The book has been broken down into a number of chapters cover a wide variety of subjects, which includes: Operation Dynamo, Bedford trucks, Morris-Commercial trucks, Standardised 6x4 3-tonne trucks, Scammell Pioneer, AEC Matador, Austin trucks, Cranes, and Field Cars with further chapters looking at rarities and oddities and Canadian vehicles.



Covering vehicles captured at Dunkirk, in France, Belgium, Greece and North Africa, the book describes the use of the captured vehicles across a number of operational theatres, including the Eastern Front, in the West and with the Afrika Korps. Interestingly a great many of the vehicles were not only repainted and given German markings, but also modified and the many photos chart some of the modifications to British vehicles in German service.

This is a truly epic book that is sure to be popular with readers. There are numerous rare and unusual types, many of which I've never seen before.

At just £34.99 it represents excellent value for money so if you haven't got a copy yet and the subject matter appeals, make sure you add it to your Christmas list! The book is widely available and the review copy was supplied by Tankograd Publishing via Bookworld Wholesale Ltd.

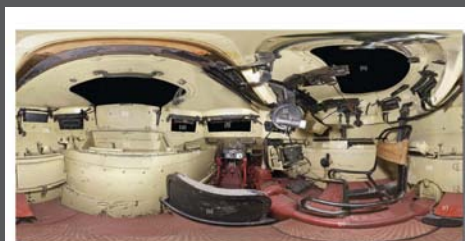


German Tank Interiors Part 1

This new DVD from Scanphoto features a massive amount of reference material on a range of wartime German tanks from the Panzer I, II, III, and IV plus various specialist variants. The information is presented as an interactive PDF document, with a total of 277 pages, with subjects typically presented as a range of interior photographs, plus black & white images, written information, illustrations and interactive features. These interactive features are for me at least, the most exciting part of the presentations, providing a number of views from inside the 'virtual tank' from different seating positions within the vehicle, which can then be rotated by the viewer using the computer mouse or keyboard as if you were sat inside the tank! While the obvious target audience for this DVD would be military model makers, such is the quality of information contained on the disc it will be of equal interest to anyone with an interest in wartime German tanks, or even someone seeking reference material for restorations of these vehicles. While much of this material could have just as easily been presented as a book, the fact that the disc contains the numerous interactive features, allowing the viewer to take a virtual tour of the vehicle interiors, makes the choice of this media ideal.

As a reference source this disc is a must if your interest lies with German tanks, and the fact that you can make a virtual tour of the insides of tanks that, which are scattered across all corners of the globe, makes this a convenient and cost effective alternative to visiting each of the vehicles yourself!

The disc retails at £25.00 plus P&P in the UK and is available from:
www.afv-interiors.com



The driver's position.
(a) Vision ports, with and without armored glass.
(b) Two-part driver's hatch.
(c) Turret ring.
(d) Turret ring.
(e) Turret ring.
(f) Turret ring.
(g) Turret ring.
(h) Turret ring.
(i) Turret ring.
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(x) Turret ring.
(y) Turret ring.
(z) Turret ring.

PzKpfw II Ausf C

The PzKpfw II Ausf C was a variant of the PzKpfw II Ausf A, which was the first mass-produced German tank. It was developed by the German military and was used by the German army during the early stages of World War II. The Ausf C was a medium tank, weighing around 10 tons, and was equipped with a 37mm main gun and a 7.92mm machine gun. It was also equipped with a radio and a searchlight. The Ausf C was produced in large numbers, with over 1,000 units being built. It was a significant improvement over the Ausf A, and it played a key role in the German blitzkrieg strategy.



The big part of the turret with turret ring and the driver's hatch, as seen from the front. The turret is mounted on the hull, and the driver's hatch is located on the top of the turret. The turret is also equipped with a radio and a searchlight. The Ausf C was produced in large numbers, with over 1,000 units being built. It was a significant improvement over the Ausf A, and it played a key role in the German blitzkrieg strategy.

Technical Specifications	Measurements
Length overall	4,000 mm
Width overall	2,275 mm
Height overall	2,275 mm
Weight	10,000 kg
Engine	Maybach HL 60 Pz
Power	100 hp
Speed	40 km/h
Range	100 km
Armament	37mm main gun, 7.92mm machine gun
Armored	10-30 mm
Height	2,275 mm
Construction	Welded steel
Color	Black
Public domain	Yes





Revell New Releases



Revell have released a number of new kits that would make ideal Christmas presents and represent a range of current, in-service German Bundeswehr armoured fighting vehicles. The first kit this month is moulded to the popular 1/35 scale and represents the latest tracked armoured infantry vehicle to enter service with the Bundeswehr, the SPz Puma. The kit is moulded in dark green plastic and features beautiful crisp detailing and even has the moulded 'anti-slip' paint texture on the appropriate panels. Separate swing arms for the suspension offer the possibility of posing the model on a rough, uneven terrain if you wish, and in general the kit is very well detailed with a mixture of fine inscribed lines and raised surface detail. The tracks are of the single length rubber-type, and feature good detailing but when complete most of the track is covered by the side skirts. All in all a very nice representation of the very latest AFCV to enter service with the modern German Bundeswehr. The kit (ref 03096) retails at £26.99 in the UK.

Our second kit is also to 1/35 scale and represents the Leopard 2A6/A6M MBT. As with the Puma, the Leopard is moulded in dark green plastic with fine inscribed lines and raised surface detail and separately moulded suspension swing arms that with a little modification enable the builder to represent suspension movement on the model. The tracks are also of the single length rubber type, which are well moulded and again mostly hidden by the side skirts when in place on the model. A very nice representation of the popular Leopard MBT, the kit (ref 03097) retails at £26.99 in the UK.

The final offering from Revell this month is in the smaller 1/72 scale and features not one but two models, namely the Leopard-based Biber bridgelaying and Dingo 1 armoured car. Like their bigger counterparts, the two kits are crisply moulded in dark green plastic with the Biber comprising of seven sprues, and the Dingo four, which includes one moulded in clear plastic for the windows, and a decal sheet for both vehicles with markings for a number of versions of each vehicle, including several vehicles serving with ISAF in Afghanistan. In the case of the Biber, the Leopard-based hull includes moulded 'link & length' type tracks, which are probably the best way to represent tracks accurately at this scale and the builder has five different options as to how to display the bridge unit. In the case of the Dingo the model includes an interior with seats, dashboard etc.

The box that this pairing arrives in is huge, in fact it's the same size as the two 1/35 scale models reviewed here, but don't think you're getting two huge models because the Dingo measures just 7.6cm in length while the Biber is 15.8cm long. The kit (ref 03192) retails at £17.99 in the UK and like the rest is available from all good toy and model retailers. For further information visit the Revell website at: www.revell.eu

Toylander New Release



This year Toylander celebrates its 25th year of production, having launched the Mayfair in 1987. At that time current proprietor Richard Shepherd was just a customer, but the product obviously impressed him because a little over eleven years ago he bought the company! Since then he has expanded the range, launching a number of new models, including the MB43 shown here to the left with happy customer Ian who has been showing the model for the last eighteen months.

Toylander offer a range of vehicles that include replicas of the Land Rover, Jeep, David Brown tractor and the Mayfair vintage car, and now Toylander has added a trailer to the range specifically to accompany the very popular MB43.

All the vehicles are available either as plans, which provide instructions as to how to build the vehicle, or as a complete kit, with the MB43 manual currently costing £7 including P&P, or £899 for the complete kit.

A range of specific parts is also available for the different kits, should you want to source parts direct from Toylander, and for a limited time anyone ordering the plans for the MB43 can claim a free copy of the trailer manual by mentioning Military Machines International when placing an order.

Full details of the entire range of manuals, parts and kits can be found on the website below or check out the advert in this issue.

www.toylander.com



Christmas Gift Ideas

SIP Gets You Started



A new range of Italian made starter chargers & battery chargers is available from SIP. Eight new Starter Chargers and two new Battery Chargers have been added to the range of automotive equipment from SIP Industrial Products Ltd, the welding, compressor and automotive equipment specialists.

SIP have been manufacturing and supplying quality industrial equipment to the UK and export markets for over 44 years and during that time their product range has expanded from a core of welding equipment and compressors to include a comprehensive range of specialist automotive equipment and hydraulics.

The new Battery Chargers are the Chargestar P24 and the Chargestar P32. Both chargers run from a 230v (13 amp) supply and have dual voltage (12v/24v) charging. The Chargestar P32 has a 16 amp maximum charging current with 110Ah battery capacity and both machines are covered by a full 12 months warranty.

The new range of Starter Chargers opens with the Startmaster P300 – a powerful machine suitable for small to medium garages and workshops. The Startmaster P300 runs from a 230v (13amp) supply and provides 150 amp maximum boost rate with 150Ah battery capacity – the machine has two charge rate levels.

Top of new range of SIP Startmaster Starter Chargers is the Startmaster PWT1400, a hugely powerful, wheel mounted starter charger that runs from a 230v (40amp) supply. It has 90 amp maximum charging current and a 700amp maximum boost rate. With 6 charge rate levels, a 120-minute timer and remote lead for one-man operation this is a superb professional machine that would fit into and garage or workshop.

Full technical specifications for all the new Battery Chargers and Starter Chargers are available on SIP's web site at:

www.sip-group.com

Hip Flask

A new product available through JJC Race & Rally is this stainless steel Jerry can hip flask. The flask is a scaled down version of the well-known petrol Jerry can and features a screw cap. Perfect for putting in your pocket on outdoor activities, the flask would make an ideal gift for any petrol head or military enthusiast whether it be an unusual birthday gift, a gift for a special occasion or for Christmas.

Whether you're buying a gift for a petrol head, member of the armed forces or just someone who collects novelty items, this hip flask will go down a treat. The flask measures 95 x 70 x 27mm with an approximate 170ml capacity and costs just £9.99 inc. vat & delivery.

For further details or to order your Jerry can hip flask contact JJC Race & Rally on: sales@jjraceandrally.com or check out the website at: www.jjraceandrally.com



French Military Style

We're very excited to be able to showcase a great Special Offer from Anchor Supplies in this issue. They are by far the cheapest supplier of the latest fashion "must have": French Army Issue Camo Jacket. Copies are selling on the High Street for up to £50, Anchorsupplies.com have the genuine article at only £15.00! Check out their website for this, and plenty of interesting and unusual gift ideas. All Military Machines readers will receive a special website discount of 10% by using discount code MM2012.

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M1A1 AIM Abrams MBT operating in the streets of Baghdad in 2008. The vehicle belongs to C Company, 4th Battalion, 64th Armor Regiment. The V-shaped Abrams Belly Armor is clearly visible, it weights 1,360kg and is some 200mm thick.



STREET FRONT

**Fit to fight
in the streets –
Carl Schulze looks at the M1
Abrams TUSK Programme**

Below: this M1A1 HA Abrams Main Battle Tank is pictured providing cover for a road block somewhere on the outskirts of Baghdad back in 2008. The vehicle itself belongs to C "Cyclone" Company of the 4th Battalion, 64th Armor Regiment and has been fitted with the TUSK I kit.

In September 2010 U.S. President Barack Obama officially announce the end of Operation Iraqi Freedom, prior to the announcement the last U.S. combat troops had left Iraq. However, some 50,000 U.S. troops remained to train and support Iraqi security forces. By December 2011 the last of these U.S. soldiers were also withdrawn, ending finally the presence of large numbers of foreign troops on Iraq soil.

U.S. and allied forces were simply not prepared, nor equipped for this type of conflict and as a result, great efforts were made to address urgent operational requirements by fielding large amounts of new equipment, such as several thousand wheeled armoured patrol vehicles, known by the U.S. Army as MRAPs (Mine Resistant Ambush Protected). In addition to this, in service equipment was upgraded or modified in order to make it suitable to fight the insurgency and in the case of the M1 Abrams main battle tank, vehicles deployed to Iraq were fitted with Tank Urban Survivability Kits (TUSK) in order to make them suitable for operations against insurgents in urban terrain.

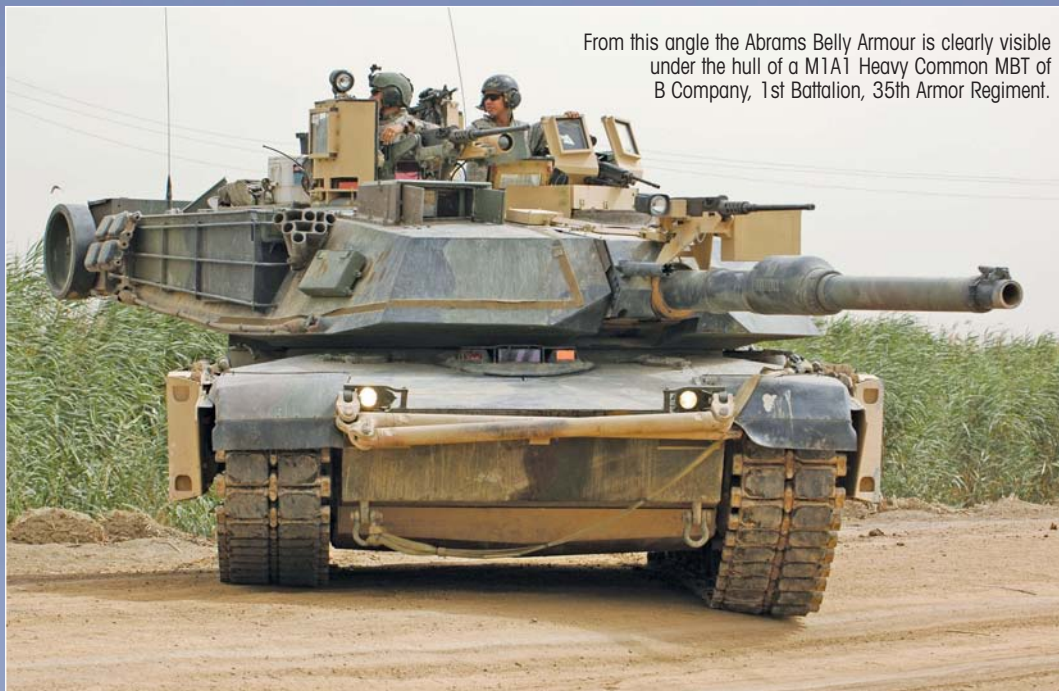
The M1 Abrams MBT is the main weapon system of the armoured battalions of the U.S. Army, the Army National Guard and the United States Marine Corps. Initially fielded in the early 1980s, the M1 Abrams made its



combat debut during the 1991 Gulf War. From 1996 onwards M1 Abrams of the U.S. Army operated with IFOR and SFOR in Bosnia and from 1999 onwards in Kosovo with KFOR. Since entering service the Abrams has been upgraded several times and currently looks likely to stay in service for several more decades.

While the most modern version of the tank is the M1A2 Abrams SEP V2 (System Enhancement Package Version 2), the bulk of the over 500 MBTs fielded under Operation Iraqi Freedom were of M1A1 HA/HA+, M1A1 AIM (Abrams Integrated Management) and M1A2 SEP (System Enhancement Program) standard. The M1 Abrams had originally been designed to battle Warsaw Pact armour in open countryside on German soil, in case that the "Cold War" would have turned

From this angle the Abrams Belly Armour is clearly visible under the hull of a M1A1 Heavy Common MBT of B Company, 1st Battalion, 35th Armor Regiment.



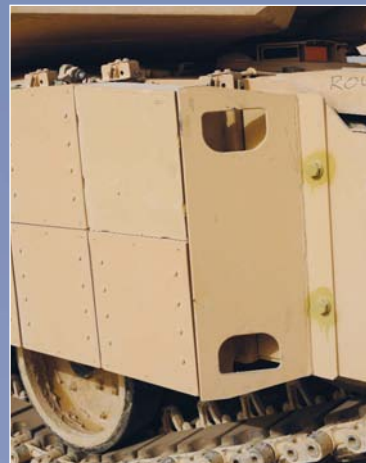
ER

When fitted with the TUSK II kit the armour protection level for the MBTs, especially from the effects of Explosive Formed Penetrator IEDs, is further increased. Here an M1A2 SEP Abrams MBT can be seen that has been fitted with TUSK I and TUSK II.





Right: here the ARAT I ERA can be seen in detail. Clearly visible are three of the XM19 Explosive Reactive Armour (ERA) tiles, one spacer box and the brush guard.



“... the U.S. Army initi

hot. Main development criteria for the vehicle had been a high degree of armour protection over the front arc, great firepower and high mobility (speed, cross country capability and agility).

URBAN OPERATIONS

In the seventies and eighties, when the M1 Abrams was developed, nobody could have foreseen that the MBTs would see extensive action in an asymmetric conflict scenario, in which they would be used to fight insurgents in an urban environment. In Iraq the U.S. Army used the M1 Abrams MBTs regularly to support dismounted troops during combat in urban terrain, for example during the second Battle of Fallujah in 2004 or the fighting in Sadr City in 2006.

These operations were not without losses, with several M1 Abrams MBTs



Top left: without TUSK kits the M1A1 AIM Abrams MBT has a combat weight of 61.5 tons. The vehicle is 9,827mm long (with gun forward), 2,885mm high and 3,653mm wide.

Above: all variants of the M1 Abrams MBT feature a crew of four, consisting of the driver, the vehicle commander, the gunner and the loader. The main armament is a 120mm M256 smoothbore cannon. Here we see an M1A1 HA Abrams MBT of C “Cyclone” Company of the 4th Battalion, 64th Armor Regiment.

Right: July 2008, M1A1 Heavy Common Abrams MBTs of B Company, 1st Battalion, 35th Armor Regiment operate in a small village to the south west of Baghdad. The vehicles are fitted with the TUSK I kit as well as parts of the TUSK II kit, including ARAT I explosive reactive armour, and Loader’s Armour Gun Shield (LAGS).



By fitting of the Abrams Reactive Armour Tiles I (ARAT I) explosive reactive armour the side protection of the vehicle against anti-tank weapons is greatly increased.



iated the TUSK Programme in 2004 ...”

victims to IED attacks, and others knocked out by hand held anti-tank weapons or even simpler means such as petrol bombs. Tank crew members were killed by small arms fire or the effects of IED blasts, when operating with hatches open. Tanks in the streets of the Iraqi cities were facing an increased 360° threat with enemy fighters armed with hand held anti-tank weapons engaging the tanks from above, or from the rear. Mines and massive IEDs also caused losses. In addition to this the tank crews were not able to use standard tactical procedures that in suitable terrain would have saved them and their vehicle from being hit. The narrow and often angled streets did not allow them to use the mobility of their vehicles to move out of potential kill zones, while the lethality of the tanks was reduced due to the fact that the elevation levels of the weapon systems of the Abrams were limited. In addition to this the visibility of the crews was limited when operating with closed hatches and communication between dismounted troops and the tank crew could only archived by radio.

TUSK PROGRAMME

In order to address the issues, the U.S. Army initiated the Tank Urban Survivability Kit programme in 2004, that was first announced officially to the greater public in March 2005. General Dynamics Land Systems (GDLS) was selected as main contractor for the programme, while Rockwell Collins, Raytheon Network Centric Systems and DRS Technologies among others functioned as sub-contractors. The aim of the TUSK programme was to improve the survivability, lethality and situational awareness of the M1 Abrams MBTs and their crews when operating in urban areas.

Development of the TUSK components was conducted in a joint effort by the defence industry and the Program Executive Office Ground

Combat Systems PEO GCS). In several cases the development of TUSK components was inspired by systems that were already used by other nations, for example in Israel on the Merkava III and IV tanks. The Israeli tanks feature a 12.7mm machine gun mount on the barrel of the main gun, which in case of the TUSK programme was introduced as Counter Sniper/Anti-Material Mount. For time and cost reasons commercial off-the-shelf-items or systems designed under other procurement programmes were chosen and integrated into the TUSK programme whenever possible and then modified for use on the M1 Abrams MBTs.

Under the TUSK programme three different types of kits were developed initially, namely TUSK I, TUSK II and TUSK III. Most components of all three kits could be fitted to all M1A1 Abrams variants as well as to M1A2 SEP Abrams. The TUSK I kit is the basic variant. Mounting of TUSK II further increased armour protection levels, especially from the effects of Explosive Formed Penetrator IEDs, while the TUSK III kit featured a remote controlled weapon station that is installed on the turret roof. Under Operation Iraqi Freedom the M1A1 Abrams variants were mainly fitted with the TUSK I kit, while the M1A2 SEP Abrams were fitted with TUSK I and TUSK II kits. To the best of my knowledge the TUSK III was not fielded in Iraq. Fitting of the TUSK I kit to an M1A1 AIM Abrams MBT takes approximately 12 hours.

TUSK I

Due to a briefing of the PEO GCS, dated 2007 the TUSK I kit includes the following components: Abrams Reactive Armor Tiles I (ARAT I) – Explosive reactive armour mounted to the side skirts of the tank consisting of XM19 Explosive Reactive Armour (ERA) tiles. ARAT I increases the side protection by far, especially against attacks with anti-tank weapons. The

COMMUNICATIONS

Below: the TIP is basically an additional Full Function Crew Station (FFCS) that has been added to the AN/VIC-3 vehicle intercom system. It features a handset and a 7.5m long extension cable that can be used by troops outside of the vehicle.

Bottom: here the Tank Infantry Phone (TIP) can be seen in use. The TIP provides dismounted troops access to all communication capabilities of the M1 Abrams MBT and allows easy communication with the crew of the vehicle.



TUSK



Above left: fitting of the Loader's Armour Gun Shield (LAGS) and the Loader's Thermal Weapon Sight (LTWS) allows the loader to operate his machine gun while staying low and behind cover. Via a cable and the video output of the AN/PAS 13 Light Thermal Weapon Sight the captured images are broadcasted to a Helmet Mounted Display (HMD) attached to the Tank Crew Helmet of the loader.

Above right: view onto the roof of the turret of a M1A1 HA Abrams MBT fitted with the TUSK I kit. Clearly visible are the Remote Thermal Sight (RTS) and the Loader's Armour Gun Shield (LAGS). Note the cable channel on the roof that runs from commander's cupola down to the Counter Sniper/Anti Material Mount (CS/AMM) and houses the power supply for the 24-28 VDC Xenon Spot Light.

Right: the Loader's Armour Gun Shield (LAGS) features transparent armour in order to increase situational awareness.



ARAT I tiles contain an insensitive high-energy explosive.

Loader's Armour Gun Shield (LAGS) – Shield mounted to the MG of the loader and armoured wall running around the loader's hatch. LAGS provides vital protection to the loader when operating the loaders machine gun, by the use of the ballistic protected glass the situational awareness of the loader is maintained.

Loader's Thermal Weapon Sight (LTWS) – AN/PAS 13 Light Thermal Weapon Sight fitted to the loader's

machine gun. The system has a detection range of 550m, is 324mm long, 83mm wide and 112mm high. It has a weight of 1.4 kg and is mounted on the Mil-STD-1913 Picatinny rail of the M240B MG.

With the LTWS the loader gains the capability to identify and engage targets in day, night or conditions of low visibility. Via a cable and a video output the captured images are broadcasted to a Helmet Mounted Display (HMD) that can be fitted to the right or left side of the front of the Tank Crew Helmet of the loader. Originally the AN/PAS 13 LTWS and the HMD were developed under the Land Warrior Program.

Tank Infantry Phone (TIP) – Mounted to the rear of the vehicle on the right side. The TIP is basically an additional Full Function Crew Station (FFCS) that has been added to the AN/VIC-3 vehicle intercom system. The FFCS provides the user with access to all communication capabilities of the M1 Abrams. Access is only limited by the programming of the Master Control Station, he can talk to the tank crew or even use/monitor the radios of the MBT.

Power Distribution Box (PDB) – Mounted inside the turret to the left of the main armament. Being a switch box the PDB provides power for several subsystems of the TUSK such as the LTWS and the Xenon Spot Light as well as the RFS of the CS/AMM. The PDB features seven power outlet sockets.

Driver's Vision Enhancer (DVE) – Thermal sight for the driver. It consists of the Sensor Module (SM) and the Display Control Module (DCM). For operations at night and under low visibility the driver can replace the centre periscope of the driver's hatch with the DVE. The DVE allows the driver to see at night and through dust and smoke clouds.

Counter Sniper/Anti Material Mount (CS/AMM) – Allows mounting a 12.7mm M2HB machine gun onto the 120mm M256 smoothbore cannon of the tank which then serves as a second coaxial weapon. The CS/AMM is manufactured by Gunmasters Defense Systems LLC. It enables the crew to engage enemy snipers, RPG-Teams, IED/VBIEDs or other targets up close or out to a range of 2,000m. Aiming of the weapon is done by use

Below right: the Counter Sniper/Anti Material Mount (CS/AMM) can be fitted with a 12.7mm M2HB machine gun and is mounted on the 120mm main armament. The CS/AMM comes with an ammo can holder that can hold 200 round 12.7mm ammo cans. Fitted on the right side of the CS/AMM is a 24-28 VDC Xenon Spot Light.

“... ARAT 1 tiles contain an insensitive high-energy explosive ...”

Bottom right: the TUSK I adds several tons of additional weight to the M1A1 Heavy Common MBT. While this results in additional wear and tear in does not affect its speed and dash capability of the MBT. Note the box containing the Tank Infantry Phone (TIP) on the right.



Right: as early as December 2004, long before the first TUSK kits entered service M1A2 SEP Abrams MBTs operated by the 1st U.S. Cavalry Division in Baghdad were seen being fitted with the Rear Protection Unit Slat Armour (RPUSA).





Above left: the 360° Shield system for the M1A1 Abrams variants differs in many ways from that for the M1A2 SEP Abrams variant. However, both feature the Commander's Spotlight and the Commander's M4 Bracket. The shields have to differ as the M1A1 Abrams variants and the M1A2 SEP Abrams variant feature different mounts for the commander's machine gun.

Above & below far right: different 360° Shield systems were fielded for the M1A1 Abrams variants and the M1A2 SEP Abrams, here the one for the later can be seen. The 360° Shield system includes transparent armour and runs around the commander's hatch. It provides increased protection for the vehicle command while at the same time it increases his situational awareness.

of the MBT's fire control system, allowing high accuracy and reducing collateral damage. The machine gun of the CS/AMM can be fired simultaneously with the main gun and/or the coaxial machine gun. The CS/AMM comes with an ammo can holder that can hold 200 round 12.7mm ammo cans. Fitted on the right side of the CS/AMM is a 24-28 VDC Xenon Spot Light.

Remote Thermal Sight (RTS) – The RTS is a 2nd Generation un-cooled thermal sight that is mounted coaxially to the left of the commander's 12.7mm M2HB machine gun. The RTS is only mounted to M1A1 Abrams variants and not to M1A2 SEP Abrams. By fitting of the RTS the tank commander is given his own thermal sight. The picture that is generated by the RTS is displayed in the Display Control Module that is mounted to the front of the commander's station.

Abrams Belly Armor – V-shaped add-on armour mounted beneath the vehicle, offering enhanced protection from anti-tank mines and under floor detonations of IEDs. Mine Resistant

Driver Seat – New driver seat offering protection from the blast effects of mines, being suspended from the roof of the hull, also designated as Driver's Harness System Seat.

TUSK II

Due to the same document the TUSK II kit includes the following components:

Abrams Reactive Armor Tiles II (ARAT II) – Explosive reactive armour mounted to the turret sides and the side skirts of the vehicle featuring XM32 Explosive Reactive Armor Tiles. The tiles are mounted directly to the turret and onto the XM19 ARAT I tiles on the side skirts. The ARAT II tiles resemble the shape of roof tiles and are mounted angled facing slightly downwards. ARAT II is fitted as counter IED enhancement.

360° Shield – Shield system including transparent armour, running around the commander's hatch. The armour provides increased protection for the vehicle command while at the same time it increases his situational awareness.



Above: rear view of an M1A2 SEP Abrams MBT fitted with TUSK I and TUSK II. Clearly visible are the components of the ARAT II explosive reactive armour, and the Counter Sniper/Anti Material Mount (CS/AMM) mounted on the barrel of the 120mm M256 smoothbore cannon.

Left: the ARAT II explosive reactive armour usually includes 32 XM32 ERA tiles mounted to each side of the hull, 10 mounted to the left side of the turret and 11 mounted to the right side of the turret. On this vehicle a couple of the tiles are missing. In case of the side skirts the XM32 ERA tiles are mounted onto the XM19 ERA tiles of the ARAT I.



AMMUNITION

Under a separate procurement programme the M1028 Canister round was also introduced in order to improve the firepower of the M1 Abrams MBT when fighting in urban terrain and facing groups of dismounts. The M1028 Canister round was originally developed based on a requirement issued by the Commander in Chief U.S. Army Korea, which stated that the U.S. troops based in the Korean theatre needed a short range (100 to 300m) tank fired anti-personnel cartridge. The round is a type of shot gun round for the 120mm smoothbore gun and features an aluminium can as projectile that contains 1,100 tungsten balls. It went into production in 2004 and in Iraq was used with devastating effects against insurgents. In addition to being very effective against groups of dismounts, the M1028 Canister round also is extremely effective against block stone walls, concertina wire and soft skinned vehicles such as cars and trucks.

In Iraq the M1 Abrams MBTs carried a mix of M830 HEAT-MP-T (top), M830A1 HEAT-MP-T (centre) and M1028 Canister rounds (bottom).



ARMOUR

Below: the ARAT II tiles resemble roof tiles and are mounted angled, facing slightly downwards. **Bottom:** the Abrams' ERA can be mounted to the turret sides and side skirts. In the case of the side skirts the XM32 ERA tiles are mounted onto the ARAT I ERA.



Rear Camera – A camera mounted close to left tail light of the tank. The pictures captured by it are shown on a display in the driver's compartment as well as on the Commander's Display Unit. The system enhances the situational awareness of the driver and allow him to reverse the vehicle in combat situations without guiding instructions from the loader or tank commander. The camera features a thermal channel and a daylight channel. The system is manufactured by BAE Systems.

CONCLUSION

With the introduction of the TUSK kits the lethality and survivability of the M1 Abrams MBT and situational awareness of the tank crews was improved by far. The co-operation of the vehicle crew with dismounted assets has been made easier. The TUSK adds several tons to the combat weight of the M1 Abrams MBT, which results in greater wear and tear of the automotive parts, and the belly armour reduces ground clearance, the impact of which is of no great importance when it is taken in account that the TUSK was fitted to the M1 Abrams MBTs to make the vehicle fit for military operations in urban terrain. Crews also reported to the author whilst visiting U.S. forces in Iraq, that the extra weight has very little effect on the vehicle speed and acceleration.

(Photos by - Carl Schulze)

Below: this M1A2 SEP Abrams MBT is fitted with TUSK I and TUSK II. The vehicle belongs to 1st Battalion 22nd Infantry Regiment, the combined arms battalion was operating in the south of Baghdad in summer 2008. Note the ARAT II explosive reactive armour mounted to the side of the turret and the side skirt.





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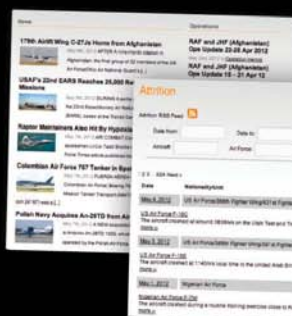
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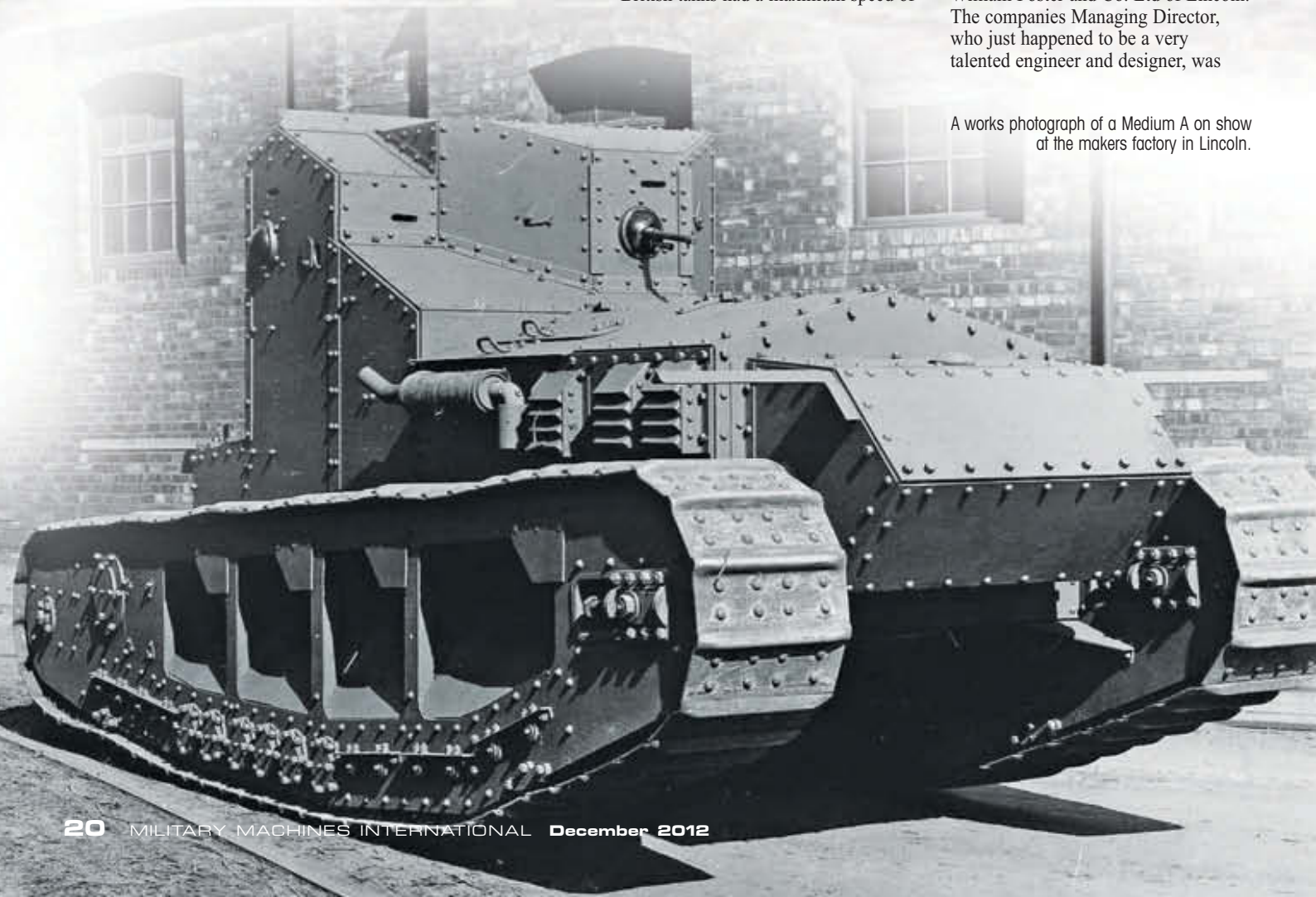
Richard Pullen describes the development of the first British medium tank of the Great War

In October 1916, only one month after the world's first tanks had gone into battle for the very first time, its creators were in London at a specially convened meeting to discuss the future of tank warfare. They were absolutely confident that the new heavy rhomboid Mk I tanks would soon break the deadlock of the trenches and get the war on the move again, but what would happen then? The Mk I and most other heavy Great War British tanks had a maximum speed of

just 4 mph on good ground and considerably less when the going was rough. The main role of the heavy tanks was to cross trenches and plough their way through belts of barbed wire, but once this had been achieved, the need would be for something lighter, faster and generally more mobile.

The Committee in London agreed with the designers and the entire project for a new 'chaser' tank was handed to the tanks originators, William Foster and Co. Ltd of Lincoln. The companies Managing Director, who just happened to be a very talented engineer and designer, was

A works photograph of a Medium A on show at the makers factory in Lincoln.





William Tritton, and he soon began work on the 'Tritton Chaser'. The first prototype was finished by February 1917, but it had some serious failings, not least, the single machine gun mounting in a revolving turret of the type used on armoured cars of the day. The lack of firepower was one reason why the machine was redesigned almost immediately and before long Tritton was ready to unveil the finished form of his new and improved Tritton Chaser, also known as the 'Whippet'

NEW IDEAS

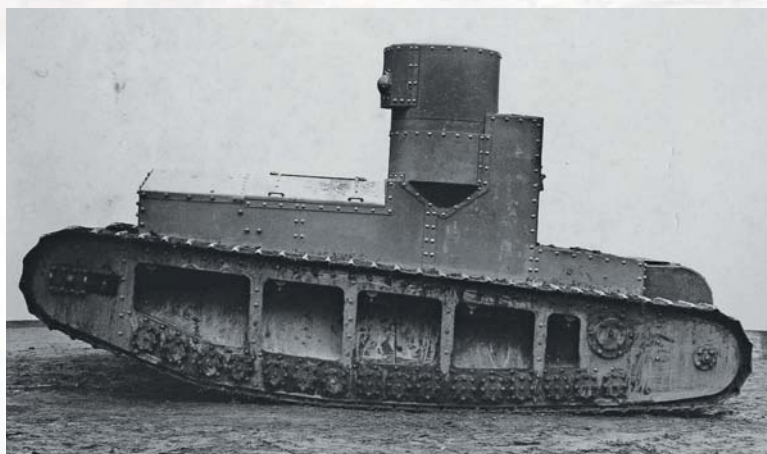
One of the main problems with the heavy tanks had been the fact that they obviously lost a great deal of forward momentum when they used their track brakes to steer. After several failed ideas, Tritton came up with a system that had been proposed for one of the company's early projects, the ill-fated 'Flying Elephant'. The Whippet would be steered by using the two engines



Above: dignitaries, including the King and Queen, have their photograph taken with a Whippet during a tour of Lincoln's factories in 1918.

Left: this photograph of the prototype Whippet only surfaced recently and shows that it was originally a very different machine.

problems. Two engines, means two gear selectors, two clutches, two of everything and all this would need to be dealt with whilst driving through shot and shell, watching out for craters and listening for orders from the Commander and to the note of the two engines. It is hardly surprising that it was jokingly said that the Tank Corps started to specifically target Circus Jugglers to drive their new machine. It may be assumed that if one engine was out of tune, damaged or stopped altogether the whole machine would be



due to its terrific lack of speed. The new tank was capable of just under 8 mph, which sounds pathetic by modern standards, but was twice the speed of a heavy tank and coincidentally, also twice the speed of a running German soldier, which was just what the army were hoping they would soon need. The new tank weighed around 12-tons and was powered by a pair of Tylor 45hp petrol engines. The revolving turret with a single machine gun mounting had been scrapped and instead, the new tank had a cab with four ball mountings that could each take a Hotchkiss .303 machine gun.

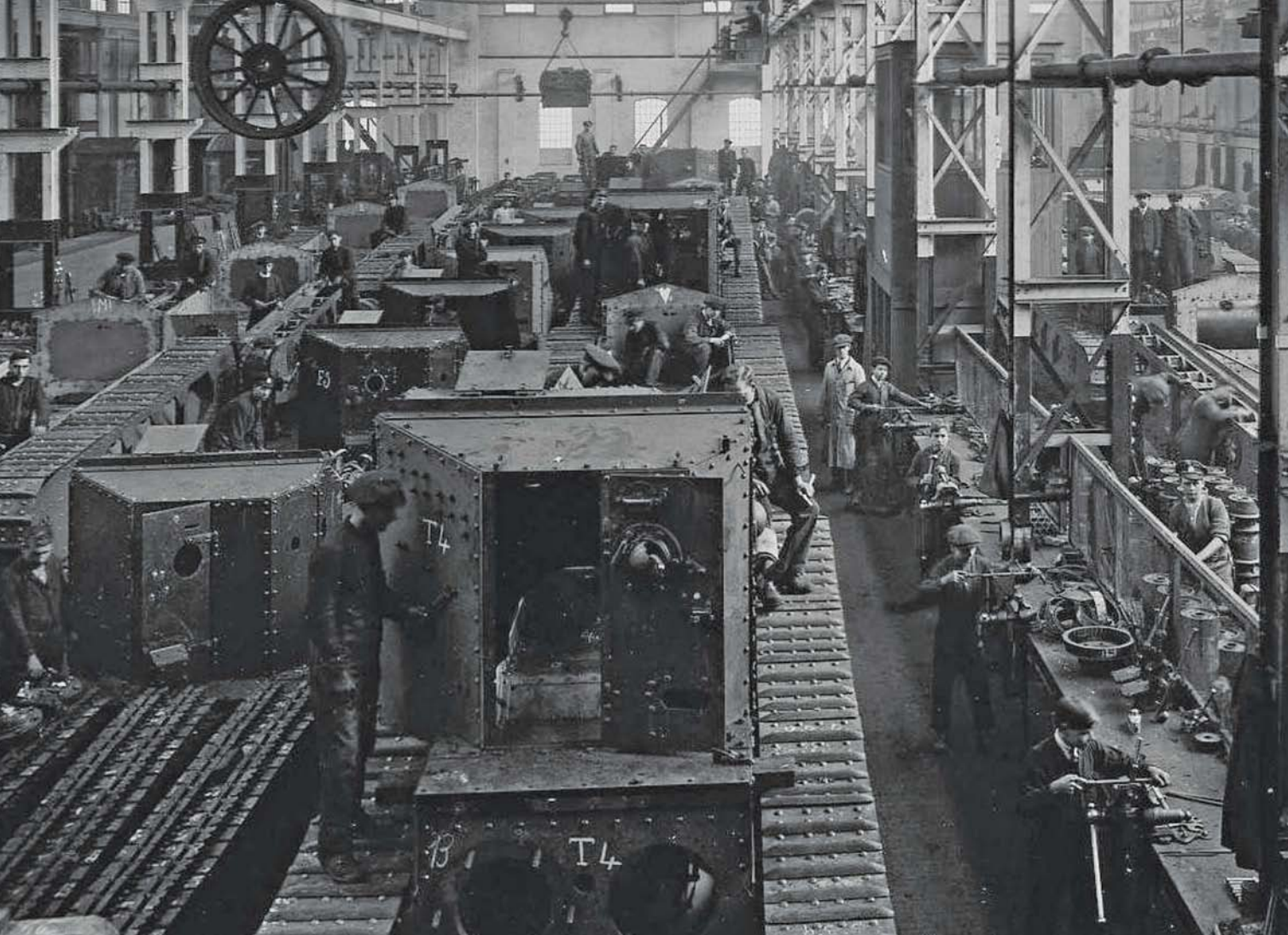
instead of track brakes. The new tank was steered using a steering wheel, as you may find in any standard car, but instead of steering road wheels, the Whippets steering wheel was used to increase or decrease the two throttles linked to it. In theory, this made steering a simple process of turning the wheel, which would increase the throttle on one engine, making the track that it was linked to run faster whilst decreasing the other tracks speed in one easy rotary motion with no need to apply the brakes.

The idea sounds perfect, but driving a Whippet was not without its

LITTLE WILLIE

The new tank was based loosely on the company's first ideas for an armoured fighting vehicle tested out in their prototype, Little Willie. Gone was the large familiar rhomboid shape, designed specifically for trench crossing and instead, the new tank was of a much more modern design with the fighting compartment and engine bay riding above the profile of the tracks.







crippled and would just spin round in a circle, but the designers had taken this into account. The Whippet employed a clever system that included a slip clutch that sat between the two final output drives. The clutch would begin to slip if the output between the two sides differed by more than 12hp, so if one engine failed completely the driver could still limp along at low revs from the remaining engine. If this happened, going along in a slow straight line was fairly straight forward, but turning was a little more complicated. For instance, if the right hand engine failed, turning left would be no problem at all, but to turn right, you would have to turn hard to the left and limp all the way through 270 degrees.

In June 1917, William Foster and Co Ltd received an order to build 200 Whippets, now officially designated the Medium A with the machines production numbers running from A200 through to A399. According to the renowned historian John Glanfield, a second unknown manufacturer was also asked to make 200 Medium A tanks at the same time as the contract was awarded to Fosters, but this second contract was cancelled in September 1917. No Medium A tanks are recorded as having been produced by any other factory, so presumably the contract to the mystery factory was cancelled due to lack of progress?

The Tank Corps Workshop Officer and Technical Advisor, Major Phillip Johnson, visited Lincoln in 1917 with the object of viewing Trittons production Medium A. The machine had done an unbelievable 870 miles on test without a single problem or mechanical breakdown and not surprisingly, Johnson announced that he was suitably impressed with the new machine.

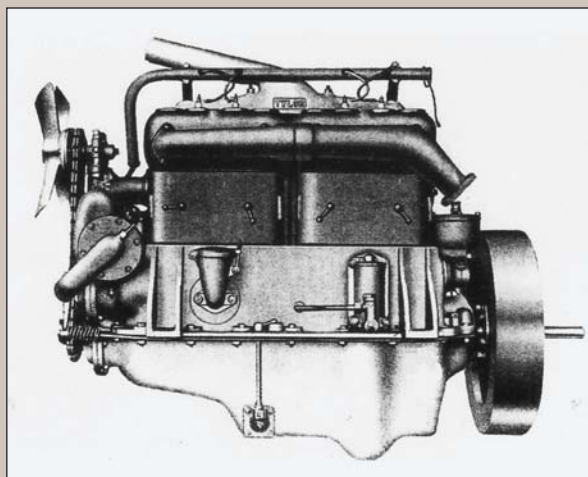
The only real criticism of the Whippet came from its creator, William Tritton. He had hoped to produce a tank that would be capable of at least 10mph and had wanted to fit larger engines. Unfortunately his hands

were tied by shortages and War Office specifications, so the smaller 45hp units were used and Tritton rather unkindly said that 'the choice of 45hp engines had spoiled an otherwise very useful machine'. Johnson and Tritton must have been of one mind as in late 1918 Johnson actually created a 'Super-Whippet' by managing to fit a heavily modified production machine with leaf-springs and a single 360hp V12 Rolls-Royce Eagle aero engine. The finished machine never went into production, but apparently had excellent off road performance and was easily capable of speeds in excess of 30mph.

ON THE FRONTLINE

The first batch of Medium A Whippets was soon despatched to France and the new tanks saw their first action at Mailly-Maillet on the 26th March 1918; their value as fast moving anti-personnel tanks was immediately recognised. They soon became known as the 'New Cavalry', which can have won the Tank Corps few friends with the established top brass of the Army, many of whom were old school cavalry to the bone.

TYLOR JB4 45HP ENGINE



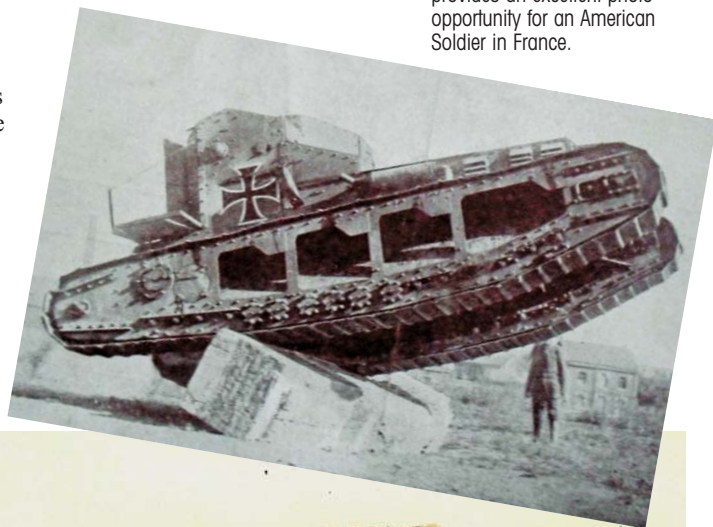
One unforeseen problem with the early tanks was the new phenomenon of 'Track Flash'. The sun would glint off the tracks of a tank and the subsequent flash could be seen from miles away by enemy aircraft, and a Whippet tearing along at 7.5mph with wet, muddy tracks would apparently soon attract the attentions of every German pilot in the sector. To combat this long, two foot wide strips of canvas were slung along each side of the tank between brackets on the front and rear of the machine to hide the tracks from aerial observation. It is not known for sure if these canvas

Top left: a curious photograph showing a Whippet taking a break from the fighting so that it can help launch a French fishing boat.

Opposite far left: two very nice views of the interior of Fosters factory showing Whippets during construction.

Below: a Whippet captured, repainted, rearmed and now in use with the Imperial German Army.

Bottom: this Whippet was destroyed in a battle at Le Fresnoy in 1918, it now provides an excellent photo opportunity for an American Soldier in France.



POSTCARDS

Right: the Tuck Postcards sold well, but a certain amount of artistic licence was taken with the design and colour scheme.

Centre: one of a series of Great War Tuck postcards depicting a Medium A.

Far right: stirring stuff from the postcard manufacturers shows a very odd looking Medium A going into battle supported by the Highlanders.



Above: A347 Firefly, unrestored and on show in the Bruxelles Museum, and one of very few Medium A tanks in existence or on display.

Right: the Whippet never seemed to capture people's imagination the same way the heavy tanks did, so Trench art depicting Whippets is rare.

Right: Lt. Sewell's actual Medium A is preserved and on display to this day at the Tank Museum, Bovington in Dorset and forms part of a very impressive collection of WW1 tanks to be found there.



additions stopped the track flash, but they did apparently double up as very comfortable improvised hammocks when the tank was at rest!

The Whippet turned out to be such a good machine that they were specifically requested to take part in the renewed fighting in Palestine, but in the event none were despatched. When the war finally came to an end in November 1918, the Medium A Whippet and their crews could be justly proud of their war record.

They had taken part in many battles, made a real name for themselves and thanks to the actions of Lieutenant Cecil Harold Sewell in April 1918; they even had a Victoria Cross to their credit. Lt. Sewell's actual Medium A was preserved and can be seen to this day at the Tank Museum at Bovington in Dorset.

The Germans also captured a few Medium A Whippets and

although they never used them in action, at least one was used by the Freikorps during the civil unrest in post-war Germany. As a design the Medium A was eventually overtaken by other improved designs and after the war many were sold off or given away to other countries, which included the likes of Russia and Japan. The 17th Battalion of the Royal Tank Corps were equipped with Whippets and were sent to Ireland during the Anglo-Irish war.

Today, of the original 200 Medium A Whippets made in Lincoln, only five survive, spread all around the globe and in various states of repair. There is one in Brussels, one in Canada, a third particularly rusty example is at the Aberdeen Proving Ground in America, the fourth survivor is in South Africa and the last of the five is Lt. Sewell's V.C. winning machine at the Tank Museum, Bovington.



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EXERCISE ALAMEIN LANCE

**Daniel Nowak and Tim Matzold
joined the 9th/12th Royal
Lancers whilst on exercise in
Southern Germany**

Having returned from their six months operational tour OP HERRICK 14 in the Helmand region at the end of October 2011, 9th/12th Royal Lancers (Prince of Wales) went back to their roots, starting training for their basic task, to provide formation reconnaissance to 7th Armoured Brigade. At the beginning of 2012, an intensive CT-1 (troop training) began to improve the basic skills and drills, facing CT-2 training (squadron level) in advance, culminating in the off-training area FTX "Alamein Lance" in June 2012.

Regarding the name chosen for the exercise, the aim of the FTX was to find something that could be easily recognised and appropriate for high intensity war fighting! The symbolic-laden name El Alamein received worldwide fame, as two significant

An FV107 Scimitar stops in a potato field on the way to an OP. Most Scimitars of 9th/12th Lancers are fitted with BGTI (Battle Group Thermal Imaging).



battles of the Second World War took place at the Western side of the city in the North African theatre, when British forces fought back the Germans supported by their allies.

Exercise Alamein Lance took place between the 4th and 12th June 2012. From the start this exercise was completely different to former exercises conducted in this area in recent years, it was obvious that classic formation reconnaissance was the key. On the morning of 1st June, all participating A-vehicles (CVRTs) moved from the camp to the Bergen-Hohne ranges and were loaded onto civilian low loaders to be transported to a training area some 80 kilometres away from camp, close to the south and east of the heath city of Uelzen.

The low loaders finally reached a small metalled road in a forest near Ostedt, where vehicles rolled off and moved onto a meadow where they remained over the weekend, observed by a guard till the beginning of the exercise on Monday. This kind of large deployment reminded me very much of the former exercises seen in the 1980s!

TRAINING AREA

The Uelzen area has frequently been used by the 9/12th predecessors, the Light Dragoons, since their formation in December 1992 until their return to the UK in 2000. This sparsely inhabited area, with a landscape of deep forests, wide rolling countryside, meadows and villages and civil infrastructure, makes it an ideal training area for reconnaissance formations, providing realistic conditions and covering an area of approximately 80 x 80 km.

The FTX started on early Monday morning, with all A-vehicles deployed from their staging area whilst the



Top right: the Panther CLV is used by Squadron Leaders and the regiment's Commanding Officer. The vehicle is armed with an Enforcer RCWS (Remote Controlled Overhead Weapon Station). Note also the different coloured front bumper, which looks to be a replacement item.

Above centre: the vehicles involved in the exercise moved to the same assembly area before being deployed to their different positions.

Above: this WMK+ makes a tactical halt in a village during the exercise. The 'KK' number plate seems to identify the vehicle to be a converted Land Rover Snatch chassis.

Left: when the exercise was over the unit moved back to camp in fifteen groups, ten minutes apart, and took the regiment until midday of 12th June to return to base.

REPLENISHMENT

Below: B-Squadron were replenished in the field in the evenings in order to be prepared for the next phase of the exercise.

Bottom: in the afternoon of 8th June, A-Squadron were replenished directly at their staging area in a forrest South-West of Suhlendorf.



B-vehicles (wheeled) moved directly from camp. Ex Alamein Lance was a regimental exercise involving all squadrons, which included: A-Squadron as a Sabre Squadron equipped with CVR(T)s reinforced by a troop Spartans of C-Squadron; B-Squadron as a wheeled Sabre Squadron equipped with WMIK+ Land Rovers; C-Squadron in the role of Command and Support Squadron providing a command troop; and

Regimental Headquarters including A2 Echelons (A2ECH) and Exercise Control (EXCON).

After having passed a release point, all exercising troops (HQ, A, B and C-Squadrons) moved to their staging areas. The training corridor of A-Sqn was located in the Southern area between Növenthien and Suhlendorf whilst B-Sqn with their WMIK+ Land Rovers trained in the area between Stoetze and Hohenzethen with the huge Göhrde Forest as the main training area. HQ Sqn and Command Troop had moved in the area between Polau and Schwemnitz to setup RHQ and EXCON.

All troops started their initial training at CT-1 level on Monday, continuing until Tuesday, 5th June. On Wednesday, the first highlight of this exercise was a night crossing of a



LAND ROVER WMIK+ ON EXERCISE

Far right: the WMIK+ upgrade includes about 1,500 improvements and new parts compared with previous WMIK variants. It takes around 300 – 400 working hours per vehicle for the work to be completed. Compared to the OWMIK, which has a weight of 3.35-tonnes, the WMIK+ is a bit of a heavyweight, weighing in at about 4.5-tonnes.

Below left & right: a WMIK+ seen here on a main road during a recon mission. In most cases, these vehicles operated in the depths of forests, away from villages and infrastructure. Note that the crews of B-Squadron have uncammed their WMIK+ for the road march to ensure that all lights can be seen clearly.





Far left top: photographed early on the morning of the 7th June 2012, A-Squadron advanced to contact in direction of Clenze. Various support vehicles, like the FV104 Samaritan ambulance, were also deployed for the recce mission.

Left: an FV107 Scimitar CVR(T) moves forward on his recce mission with both the Commander and gunner in the turret. The gunner has a GPMG at his disposal, the barrel of which can be seen sticking up from behind the right hand sight.

“... B - Squadron was tasked to advance ...”

Medium Girder Bridge under realistic combat conditions when B-Sqn secured the advance of A-Sqn. The MGB was erected by 26 Armoured Engineer Squadron, 32 Engineer Regiment from Bergen-Hohne.

The next phase of the exercise started on 7th June focusing on formation reconnaissance with A-Squadron advancing to the South close to the Village of Clenze and B-Squadron advancing in the Göhrde Forst to the North. The outer border was the road between Dahlenburg and

Hitzacker. It took the troops until sunset to accomplish this mission.

Having been replenished by A2 Echelons in the evening, B-Squadrons task was to advance to contact in Southern direction and, if necessary, to attack A-Sqn. This mission ended late on Friday morning, when all troops moved back to their staging areas deep in the forests and after a review of the operations they found time to get their heads down! Having camouflaged their vehicles, A-Squadron were then replenished directly at their staging

area in the afternoon, when the exercise was interrupted for a couple of hours for an ‘Exercise BBQ’ in the woods, which was really a party and all soldiers definitely enjoyed it, emphasising that staying in the field with their vehicles is simply the best part of soldiers life, and a good change to daily life in camp! Only a short, but heavy thunderstorm with hail disturbed the party atmosphere of the Friday evening, with soldiers running for cover to their vehicles, but that’s life in the field!





Top left: the crew of this FV107 CVR(T) Scimitar remove the camouflage from their vehicle before leaving their location. A camo tarp attached to the side of the vehicle for a makeshift side tent was used as cover for the crew to sleep in.

Above: an FV106 Samson provides First Line Repair. Compared to former exercises, there were less vehicle failures during Ex Alamein Lance.

Right: SC-Squadron Command Troop during a halt to study the map on the move to their location near Rosche. At the front of the vehicle line up is a CVR(T) Sultan Command Vehicle, with a similar looking Samaritan ambulance behind it.



EXERCISE CLOSE

On Saturday the 9th, both A and B-Squadrons were tasked with the setting up of observation posts over the weekend as no military movements were allowed over the weekend due to German regulations. At 0300 hours on Monday morning, all troops left their OPs and moved back to their staging areas in preparation for the final attack on Tuesday. The final task was to reconnoiter, attack and destroy OPFOR (Opposing Forces) with OPFOR for A-Squadron provided by C-Squadron while B-Squadron was tasked to attack HQ Squadron.

A-Squadron's vanguard was the Fire Support Team formed by four Scimitars and one Spartan, starting the advance to contact from their staging area near Suhlendorf at 0230 hours. It was a fast and intensive attack with lots of battlefield illumination lighting up the night sky! The attack eventually finished at 0400 hours.

At 0900 hours, about 300 soldiers with 27 A – and about 50 B-vehicles moved back to camp in 15 groups. Just six CVR(T)s were not able to track back on their own and had to be taken back to camp by Seddon-Atkinson Low Loaders of 16 Tank Transport Squadron from Fallingbostel.

In conclusion, it can be considered that Exercise Alamein Lance, the first regimental FTX in a 443 area for three years, was a great success and provided the soldiers involved with a wide variety of situations and experiences, especially with regard to the new focused structure, with one Sabre Squadron equipped with the new WMK+ Land Rover.

Benefiting from the experiences made on this FTX, the 9th/12th Royal Lancers (Prince of Wales) will conduct their CT-3 training (regimental Level) at BATUS within a Medicine Man Exercise, no doubt with great success!

THE AUTHORS WOULD LIKE TO THANK...

The authors would like to thank the squadron leaders of A and B-squadron for their kind support and help, and a special thank to the A-Sqn REME-fitters for their spontaneous 1st Line Repair on our own Land Rover TUM!

A video DVD of this FTX can be ordered direct from M&N Pictures (No. 145) by logging on to our website at: www.mn-pictures.de

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Military History Museum DRESDEN

Siete Meeter reveals some of the many treasures at this fabulous military museum



The former city arsenal in Dresden was transformed into a spectacular war museum by renowned architect Daniel Libeskind. Following Germany's unification, the plan to renovate the museum was discussed for years, and following a six-year renovation the new museum opened on in October 2011. The Military-Historical Museum Dresden has a exhibition area of 20,000 square metres and within that space are two levels organised to display more than ten thousand objects, which is just a fraction of the 1.2 million artefacts kept at the museum!

The expansion extends over four floors and is 30-metres high, with the tip of the arrow another 8-metres! Libeskind has designed the museum building to the point towards the area where on the 13th February 1945 the horrific bombing of the city began and 5,000 citizens lost their lives. The museum, which cost a reported 80 million Euro, is perhaps all the more remarkable for being designed by Daniel Libeskind, an American architect with Jewish ancestry, but the glass wing 30-metres high, in the form of a wedge looks like the bow of a ship cleaving an iceberg.

The Sp.Pz. 2-Luchs, an 8x8 amphibious reconnaissance armoured fighting vehicle that has been in service since 1975.





Above left: here we see the diminutive Wiesel-1 air-transportable armoured vehicle (with this particular example dating from 1991) beside the much larger PzH 2000 (Panzerhaubitze 2000) 155mm self-propelled howitzer built by Krauss-Maffei Wegmann GmbH & Co. KG (KMW) and Rheinmetall AG.

Top right: another of the West German vehicles at the museum that is used by the modern German Bundeswehr is this Flakpanzer Gepard Self-Propelled Anti-Aircraft Gun (SPAAG), which is based on the hull and running gear of the Leopard 1 Main Battle Tank and armed with twin 35mm cannon.



Above: some of the inside exhibits are imaginatively displayed like this Alouette 2 helicopter.

Below left to right: the Panzerhaubitze 2000 replaced the American-designed M-109-A6 Paladin; the Marder Infantry Fighting Vehicle is being replaced by the newer SPz Puma in 2013; the M113 APC is another American design that has seen widespread use with the Bundeswehr.



Right: the museum has a wide range of former East German hardware on display, including this SPW 50 HP tracked APC.



Right: overhead shot of the museum's T-72M main battle tank surrounded by the many other exhibits.

Below right: the BRDM-2 was an amphibious 4x4 scout car powered by a V8 petrol engine. It has seen widespread use across the world.



Below: the BTR-60 8x8 wheeled APC is amphibious and powered by not one but two V8 petrol engines!



Bottom left: the BMP series of tracked, amphibious APCs have been popular with the Russian and East German armies, this is the BMP-2.

ZSU23/4W1 "Shilka" self-propelled anti-aircraft gun.



"... superb collection of East German vehicles..."



Of the many West German vehicles at the museum you will find an example of the Marder infantry fighting vehicle, as operated by the German Army. The Marder is currently being replaced by its successor, the Puma. One of the smaller tracked vehicles on display is the West German Wiesel-1 air-transportable armoured vehicle, with this particular example dating from 1991. In service the type was fitted with a variety of weapon systems including a 20mm guns (Mk-20) and TOW anti-tank guided missiles.

Another of the modern German armoured vehicles displayed is the Sp.Pz. 2-Luchs, an 8x8 amphibious reconnaissance armoured fighting vehicle that had been in service since 1975 before being replaced by the Fenek in Bundeswehr service. Another modern Bundeswehr vehicle displayed outside is the much larger PzH 2000 155mm self-propelled howitzer built by Krauss-Maffei Wegmann GmbH & Co. KG (KMW) and Rheinmetall AG.

A similar vehicle to the PzH 2000 is the American-made M109 self-propelled 155mm howitzer, first introduced in the early 1960s and subsequently upgraded a number of times to today's M-109-A6 Paladin.

The vehicles displayed outside the museum make for a formidable exhibition of modern military vehicles, and together with the many artefacts and historical items within the museum, make the Dresden Military History Museum definitely worth a visit if you're ever in the area and comes highly recommended.

OUTDOOR EXHIBITS

Outside the main museum building are a number of military vehicles covering a variety of subjects, including a superb collection of East German tanks and vehicles and a collection of modern Bundeswehr vehicles. Amongst those vehicles is an East German T-72-M medium tank, an SPW 50 HP tracked armoured carrier, ZSU23/4W1 "Shilka" self-propelled anti-aircraft gun, a BRDM-2, a BTR-60 8x8 wheeled APC and a BMP-2 amphibious APC.



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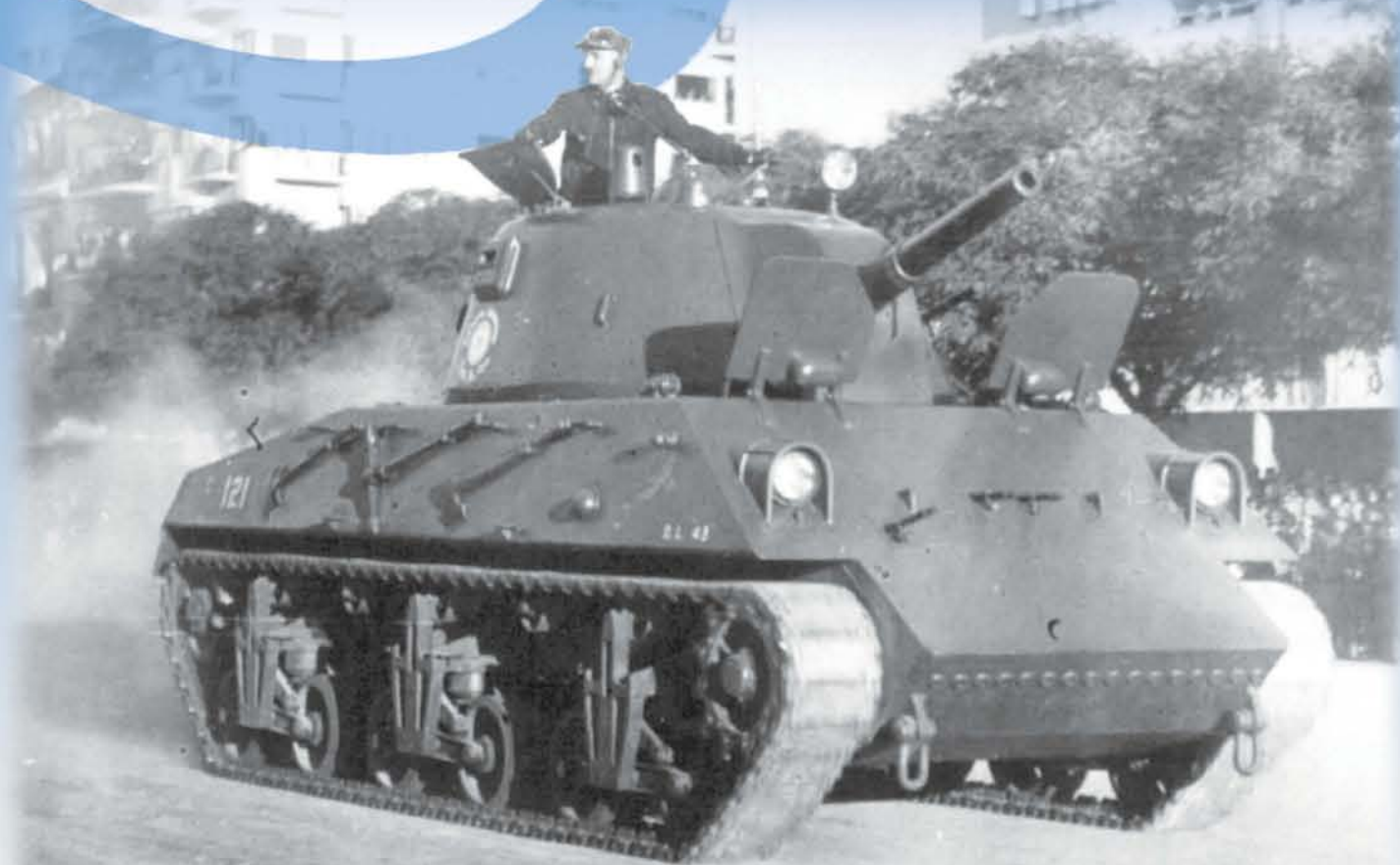
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Argentine

Nahuel



Santiago Rivas describes the Nahuel DL 43, the first Latin American tank

Top photo: Alfredo Baisi is seen here commanding the leading tank during a parade on 9th July 1944. Note the three machine guns visible on the front glacis plate.

Main image below: a retired DL 43 seen here in 1960 awaiting its fate together with some Sherman tanks at Villa Martelli. (Photo - Georg Von Rauch)

The DL 43 was the first tank to be designed and built in Latin America, and despite only serving briefly with the Argentine Army, they were the beginning of what would later become one of the most important tank forces in the region. As with all Latin American countries, the beginning of the use of the tank in Argentina was very slow. In 1920 the Argentine Army received a total of twelve Renault FT 17 tanks, which were not well liked and the light tanks

were finally sold to Brazil, which became the first country in the region to have a tank unit.

In 1924 the Italian government sent a Fiat 3000 Modelo 21 to Buenos Aires to be shown to the Argentine Army, taking part in the military parade of the 25 May of that year, but again there was little interest and no sales took place. In 1928, six Crossley Model 1926 were purchased, becoming the first armoured cars of the Army,

followed by twelve Vickers-Carden Lloyd Model 1934 light tanks in 1937, for which a tank company was created at the Esteban de Luca Arsenal in Buenos Aires.

When World War Two began, Argentina chose to become neutral, despite pressure from the United States to declare war on the Axis, especially after the attack on Pearl Harbour. The United Kingdom preferred Argentina remained neutral, as it was one of the main suppliers of food to the country





Top left: a demonstration of the prototype with War Minister Colonel Juan Peron, Argentine president General Edelmiro Farrell and Marine Minister, Admiral Tesaire on board while Lieutenant Colonel Alfredo Baisi is driving. The tank still doesn't have the turret and the front plate.

and, thanks to its neutrality, the Argentine merchant ships were not attacked by the German submarines and reached the British harbours without problems. Because the other countries in the region supported the US stance, they started to receive modern weapons, especially Brazil, who received among other equipment, M3 Lee, M3 Stuart, M4 Sherman tanks and other armoured vehicles.

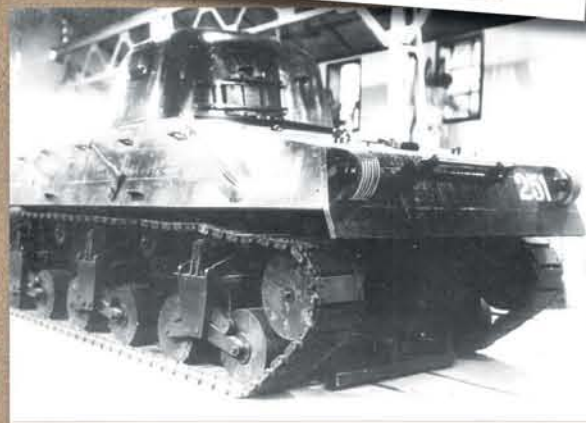
This situation worried the Argentine military, as Brazil, together with Chile, were the main rivals of Argentina in the region and the possibility of an invasion from Brazil to force the country to declare war on the Axis was

feared. To face the tank forces of Brazil, Argentina only had the remaining Crossley armoured cars and the Vickers light tanks, which were of little against the modern tanks. As part of the effort to develop a local industry to provide new weapons for the Army, in 1942 the Law 12,709 was issued creating the Dirección General de Fabricaciones Militares, which would organize all military construction and the production of material for the military factories.

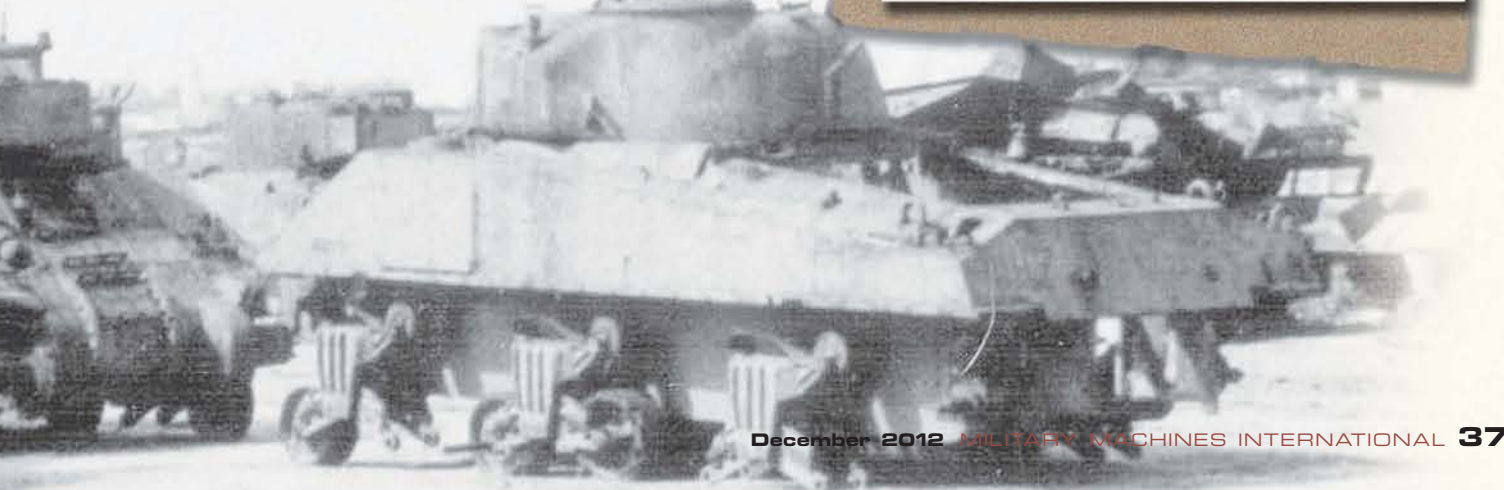
At the beginning of 1943, under the auspices of the command of Lieutenant Colonel Alfredo Baisi, the Arsenal Esteban de Luca offered to build a

Above right: the Nahuel DL 43 prototype, with serial C73 at the exhibition in June 1944 on 9 de Julio Avenue. The tank had the inscription: 'Agrupación Patagónica', with the intention to make people believe that units were already operating the model.

Wooden Mock Up



Above: DL 43 tanks seen on the military parade of the 9th July 1945 on Libertador Avenue of Buenos Aires. Two of the front machine guns were removed and they received the extra tracks on the sides of the turret. Note that the front lights are covered.



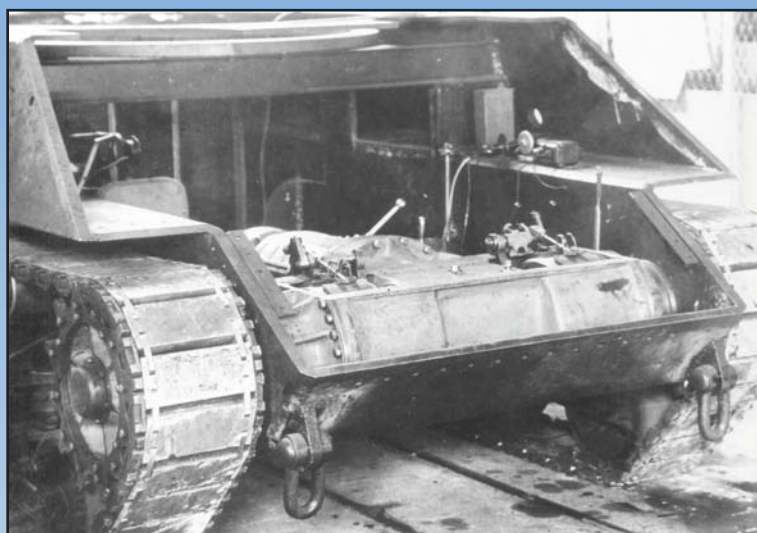


Top left: here we can see a hull for the Nahuel DL 43 being lifted into position on the main assembly line.

Top right: view of the front section of a Nahuel whilst under construction, the gearbox and the driver's position can be seen.

Above left: rear view of the DL 43 hull, there are distinct similarities between it and the American Sherman tank.

Right: the turret of the Nahuel with the Krupp gun and the 12.7mm machine gun. The mantlet has yet to be fitted.



"...The Nahuel DL 43 project included to build a total of twelve pre-series tanks"

medium tank for the Army using local industry to build all the components. This was necessary due to the fact that it was impossible to buy parts from foreign countries. The project included the plan to build twelve pre-series tanks, while modifying a batch of eighteen International Harvester tracked crawlers with armour to tow artillery at the same time. The project was approved by the country's president, General Edelmiro Farrell, after which the tank was officially named Nahuel DL 43 (Nahuel meaning tiger in the language of the Mapuche Indians of the Patagonia, DL for the word "dele" used by Farrell, which means "go ahead" and 43 for the year).

WORK BEGINS

The team started work on the design of the tank, having only a brief knowledge of tank construction, based on the few publications they could find and some local experience in the construction of armoured vehicles. By the end of the year they had most of the blueprints ready and the arsenal personnel started working to prepare

the workshops for the construction of the tanks. The most difficult task was to find the metals needed to build the tanks, as the country couldn't import them and some were not produced in the country at that time.

To test the design a wooden mockup was built, followed by the construction of the first prototype, with many private companies and other military factories supplying parts. The engine selected was a 12-cylinder Lorraine Dietrich 12 E.B, modified to give 500hp, these were built locally at the Fábrica Militar de Aviones in the early thirties for use in the Dewoitine D.21C fighters and the FMA Ae.T.1 transport planes.

On the 10th May 1944, the chassis, minus the turret and with the front hull open, was shown in private to the president and other members of the Armed Forces. The demonstration was successful so the construction of the prototype was completed, while work on the pre-series continued. An exhibition of Argentine military equipment on the 4th June 1944, at 9 de Julio Avenue in Buenos Aires, saw the first two Nahuel DL 43 tanks being exhibited, albeit without the engines, as they were undergoing tests.

Just one month later, the public were surprised when, for the Independence Day military parade held on the 9th July 1944, a total of ten Nahuel tanks took part under the command of Major Salinas and with Baisi commanding the first tank, serialised C 121. The Arsenal Esteban de Luca had managed to develop the tank and build a total of ten examples in under a year, with two more being finished before the end of the year.

The Nahuel DL 43 was built with a chassis formed by welded and rivetted plates, with 80mm of thermally treated steel armour on the front and 25mm on the floor. The turret was a large, conical single piece casting that

was built at Talleres Metalúrgicos San Martín, a private company involved in the manufacture of components for the Nahuel DL 43. The turret itself was moved manually, being capable of rotating a full 360°, and armed with a Krupp L. Modelo 1909 75mm gun.

The turret ring was made at the railway workshops of Córdoba and finished at the Fábrica Militar de Aviones, while the four-speed gearbox plus reverse was built by a private company of Buenos Aires. The bearing system was very similar to that used on the American M4 Sherman tank.

The tank had a crew of five, including a driver to the front left of the hull, a machine gun operator to the right, each with a hatch over their

**cluded the plan
ries tanks..."**

heads, and the commander, gunner/loader and radio operator located within the turret. The engine was at located at the rear of the Nahuel's hull and on the sloping front glacis plate of the tank were positioned three Madsen Model 1926 machine guns of 7.65mm, one to the right and two in the centre, with a Madsen 12.7mm machine gun also installed on the turret.

The Nahuel DL 43 had an overall weight of 35-tons, with a length of 6.223 metres, was 2.952 metres high and 2.33 metres wide, the maximum speed achievable was 40km/h with a range of 250 kilometres.

IN SERVICE

The first moves to create a true tank unit took place on the 15th December 1943 at the Escuela de Tropas Mecanizadas at Villa Martelli barracks, in the suburbs of Buenos Aires, who



were equipped with the Vickers and Crossley armoured vehicles, but received the Nahuel tanks in 1944 to create the Escuadrón Blindado Commando and two medium tank companies (in fact only was activated), leaving the Vickers to the light tank company and the Crossleys for reconnaissance.

The tracks of the tanks immediately showed problems and often broke or shed themselves when the tank turned and despite efforts to cure the problem, was never fixed completely. Because of the problems with the tracks, extra links were added to the sides of the turret, to replace the broken ones. The machine guns installed in fixed positions in the middle of the hull proved useless and by the beginning of 1945 had been removed. After the initial use of the tanks, they showed some deficiencies and in 1946 were sent again to the

Top right: a rare view of the prototype of the Nahuel shortly after being completed.

Above right: a modified DL 43 opening the military parade on 9th July 1947.

Left: Alfredo Baisi seen here commanding the lead tank on 9th July 1944. Note the three machine guns located on the tank's glacis plate.



factory to be reworked. The engines were overhauled, the driver received an opening to the front of the hull to improve his view and the driver and front machine gunner hatches were modified. At the same time Wireless Set No.19 Mk II radios replaced the Telefunken ones.

After they were reworked, they returned to the Compañía de Tanques Medianos of the Escuela de Tropas Mecanizadas in February 1947 where the unit began to develop the operation of tank units, as until now the tank was only being used to support the infantry. The ten tanks then in service took part in the military parade of the 9th July 1947, and some days after, they took part in a deployment and firing exercise at Campo de Mayo, about 15 kilometres from their unit.

The first exercise was a demonstration of an attack with the tanks advancing across country, firing salvos with the main gun and the machine guns, but they showed a lack of visibility for the driver, despite the new aperture on the front. A live firing demonstration took place next, but as the aiming devices were not dependable, so the tank commanders aimed looking through the gun tube, correcting according to the distance. They destroyed all the targets before returning to their unit!

Despite the problems of the Nahuel DL 43, which were in the process of being fixed and promised to make for a very powerful tank, a total of 154 M4A4 Sherman and 206 Sherman Firefly purchased as surplus from the British Army began to arrive in Argentina in 1947, immediately rendering the Nahuel DL 43 obsolete.

The Shermans, together with many other armoured vehicles, went on to form the backbone of the Argentine tank force until well into the seventies, and in 1948, the Nahuel DL 43 were transferred to the Dirección General de Material del Ejército and placed in storage at Villa Martelli before being sold for scrap in 1959.

One remained at least until 1963, albeit in poor conditions before being transferred to the Industrial Technology National Institute, however, since then it has been lost without a trace! Another was placed as monument at the Grupo de Artillería Blindada at Villa Martelli, but when the unit moved to Curuzú Cuatiá town in Corrientes, the tank was scrapped. Unfortunately, none of these rare Argentine tanks have been preserved.



Top right: one of the Nahuel DL 43 tanks on the military parade of 9th July 1944.

Top left: one of the two tanks exhibited on the 9 de Julio Avenue. The rear section of the tank can clearly be seen.

Above centre: Nahuel DL43 pictured on 9 de Julio Avenue. Note the tiger on the side.

Above: note the three machine guns on the glacis plate, and the tiger painted on the side.

A lone retired Nahuel DL 43 in 1960 waiting for its fate together with some Sherman tanks at Villa Martelli. (Photo - Georg Von Rauch)





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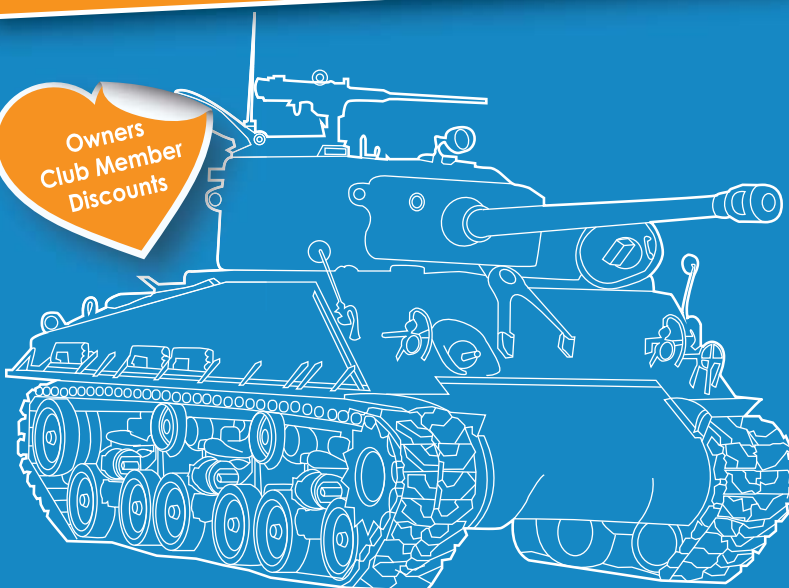
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'The Mother of all Tanks'

RENAULT FT17

Andrew Balcombe takes a detailed look at the French Renault FT17 Tank

The Renault FT was arguably the world's first modern tank, most tanks that have graced the battlefields after WWII, have followed its basic 1917 design principles. After World War I, most tanks of that era all but disappeared. The little French FT, however, went on to be used by a number of countries across the Americas, Europe, Africa and Asia.

The French Army's predecessor to the FT tank was the Schneider CA1, but the design was flawed and following a long internal battle within the French defence forces, artillery General Jean-Baptiste Estienne finally won approval to create a batch of 150 FT tank prototypes based on his own

designs with Renault at Billancourt building the tanks in February 1917. By October 1918 orders for French and US forces reached 7,820 units.

On around March 1918, the first French armoured battalions were created from 75 FT tanks. The tanks featured 37mm guns or 8mm Hotchkiss machine guns and there were also 4 TSF radio tanks included within the battalions, but in a single day of operations, each battalion could lose half of its FT tanks due to mechanical problems and ditching.

In May 1918, the first FTs entered combat in the forests near Ploisy Chazelle, supported by Moroccan infantry. The forest was traversed by



Above: the Tank Museum at Bovington in Dorset has a preserved example of the Renault FT17, this example still has the rear skid extension used to help the relatively short tank cross open trenches.



small tracks and the tanks proved themselves valuable immediately thanks to their small size and rotating turrets. Conversely the larger British rhomboids and French medium tanks were unable to operate in that environment. The FT had proven itself as technically self-sufficient and was able to perform in sustained operations with less support than expected. Having tanks fighting alongside them also gave a huge moral boost to infantry by shielding them from and overcoming enemy machine gun positions.

At the Allied offensive near Soissons, 245 FTs led the vanguard of the attack supported by 100 of the larger Saint Chamonds and 123 Schneiders. Despite making successful penetrations into enemy territory the tanks were not co-ordinating well with infantry and often had to wait for support. Training between tank and infantry units for such manoeuvres was also non-existent within the French Army because tanks were hoarded for combat use and there was no chance for the infantry to train with them.

GERMAN OPPOSITION

Germans tried to develop better anti-tank positions, but the Renaults were too numerous for them to have significant affect. Anti-tank rifles also had limited success on the tanks at close range with the FTs polygon turrets being more resilient than the round girod turrets. Overall, 440 Renaults were destroyed by field artillery in the war and 13 by improvised mines, however, the Renaults never encountered a German tank during combat.

Technical problems put the most amount of Renaults temporarily out of action with US units saying they would go through at least one fan belt everyday, but by August 1918 over 2,000 Renaults had been successfully delivered to front line units. The final tank offensive of The Great War took place on September 26th, 1918, with nine Renault FT tank

battalions committed to the battles in Flanders and Champagne regions. The attacks used French troops and those from the US Expeditionary Force and while the Americans suffered large numbers of casualties due to their lack of experience and training, through determination and weight of numbers, they achieved major breakthroughs. The offensive eventually broke the Germans will and the Armistice of November 11, 1918 ended hostilities.

Despite the terrible attrition rate of the Renault tanks and their limited effectiveness as an individual fighting platform, much credit can be given to the FT for boosting the morale of the broken French Army. At the time of the FTs introduction, the French were a broken and mutinous force following years of terrible losses and poor leadership, but the tanks provided a huge moral boost to the troops, often shielding them from the dreaded machine guns of the Germans.

After the war, the FT was exported widely to other countries, it's small size and simple construction making it easier to travel and operate in primitive conditions and as a consequence the FT tank saw more action than any other tank in the inter-war years. In WWII, newer tanks mostly replaced the Renaults for front line combat service, but many were still in operation. France used them mainly for airfield defence and defending static positions. In 1940, both the Polish and French armies using the aged FT were out gunned and out manoeuvred by opposing German units and the FT was quickly relegated to non-frontline use.

Germany captured many FT tanks, using them for the same purpose, in fact a great many FT17s were used to defend German airfields with some being dug into fixed defensive positions. FT tank turrets were reportedly used to defend the Atlantic Wall against D-Day landings.

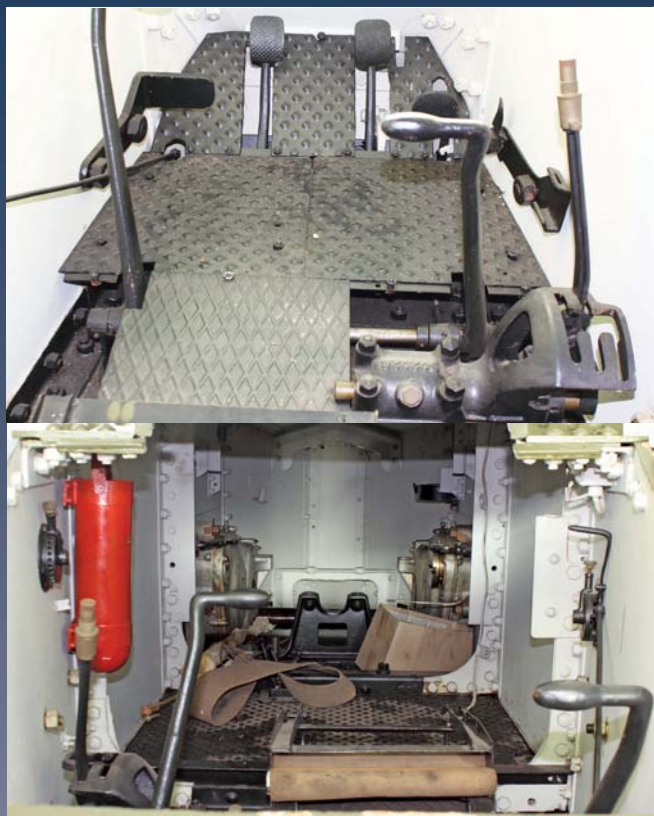
Top left: a fine preserved example of the Renault FT17 is seen here in the Soesterberg Dutch Army Depot next to the much larger DUKW. Note the open driver's hatches.

Top right: a rear three-quarter view of the same Renault FT17 in the Soesterberg Dutch Army Depot. Note that this particular example is not fitted with the rear unditching extension found on early examples of the type.



Left: this head on view of the Renault FT17 shows just how narrow the tank was and how small the crew compartment was. There's little doubt that the inside of the FT17 was a cramped, noisy and difficult place to work, but crews still appreciated the protection from the German machine gun fire.

RENAULT FT17 - INTERIOR DETAILS



Various views showing the interior of the Renault FT17, a tank that is often seen as the 'mother of all tanks' in that it was one of the first to incorporate a rotating turret atop the hull, a design that most modern day tanks is based on. Here we see the driver's controls (top left), a view rearwards into the back of the hull (bottom left), the locking handle for the rotating turret (above left), the turret machine gun (above right), and a view looking forward from the driver's position showing the vision hatches in the closed position (right).

Renault Turret Types

Two types of round cast turrets were fitted to the FT17 before a polygonal omnibus turret constructed from sheet armour replaced it because it was easier to manufacture. The omnibus turret was quickly adopted because it could be fitted with either a machine gun or light artillery piece. The design then changed again and two cast round omnibus turrets were once again made and the tank at the Soesterberg Dutch army depot is a cast-rounded turret.

Machine Gun Nests

Due to more and more tanks appearing on the battlefield during the closing years of World War One, the Germans found themselves having to fortify their machine gun nests inside concrete bunkers. The only way for the Renaults to deal with them was to approach at close range and fire their guns directly into the bunker's gun slit. The German gunners also concentrated their fire on the vision slits of the tanks, even though the armour defeated the bullets, spall knocked off near the point of impact could injure or blind the crew.

IN THE NETHERLANDS

The Netherlands purchased an FT tank directly from the French in 1927, costing the Dutch government 25,000 guilders, and was to be used as a training and demonstration vehicle. It was the first tank that the Dutch defence forces had ever used and at that time the Netherlands was neutral, and pacifism was strong within all of the political parties, therefore the Dutch services were not modernised at the same rate as other European militaries.

The vehicle was the responsibility of first Lieutenants N.J. Jelgersma ND F.G. Durst Britt and was housed at the Ripperdakazerne (Ripper barracks) in Haarlem just west of Amsterdam. From an article in the Dutch Army's news bulletin, the Leger Kourier, the Dutch described the FT they were going to receive as the 'best model that came out of the First World War', however, when the tank arrived, the expectations of the Dutch were somewhat lessened, with the tank looking worn out!

The FTs short range disappointed the Dutch defence commission's expectations for negotiating their test terrain. The sharp bladed edges of the tracks also severely damaged the roads so a transport vehicle for the tank was therefore necessary, however, a heavy lorry such as those used in France was not available so a trailer towed behind a tractor was used

instead. The tank was also delivered without armament, so the Dutch installed a Schwarzlose machine gun.

The tank was put through four different evaluations that investigated the effect of small arms and machine gun projectiles on the vehicle, the effectiveness of machine gun fire from the tank's machine gun, the effectiveness of different kinds of tank barriers against the FT and finally the effect of mud on the tanks movement.

The results revealed that the FT exceeded expectations for its armour to defeat small arms fire and it was not possible to damage the tank severely with rifle and machine gun projectiles. However, paper was hung on the inside of the tank, which showed significant damage from metal fragments bursting off the interior under impact from the bullets and this showed the Dutch that infantry fire could still have an affect (morale) on the tank crew.

The firing test of the Schwarzlose machine gun proved a failure with the gunner being severely hampered by gases from the weapon and the ejected cartridge cases and holding a target in the machine gun's sight was impossible when the tank moved over the testing terrain.

The obstacle courses did provide the Dutch with some surprises though. Brick walls, small trees, trenches, wire obstacles and some shell holes were no problem for the tank to travel over

or through, but the Dutch wanted to see how it performed in softer ground, simulating the ground around their Water Line defence network, so in 1928, the Dutch FT was taken to an area called het Kleine Loo near The Hague known for its marshy ground, where the tank proved immobile and sank quickly in the mud.

Due to the FTs age and limitations at that time, the Dutch decided to hold off on any major purchases. They instead decided that tank technology was going to improve rapidly and wanted to invest in a newer model when necessary.

ON DISPLAY

The FT 17 tank that currently has a home in the Dutch Army (Leger Museum) museum's storage depot at Soesterberg, is a tank that was captured by the Germans in 1940 and brought to the Netherlands for guard duty. The whereabouts of the first tank that was purchased by the Dutch for training and testing is now unknown.

Another FT tank in the Netherlands that was captured by the Germans and used for special duties in the Netherlands has a home in the war museum Liberty Park at Overloon in the East of the country. The museum's curator Erik van den Dungen said 'What we know about this tank is it was made in early 1918, based on the chassis number, it also probably saw

TRACKS & RUNNING GEAR



The suspension and running gear of the FT17 was quite agricultural, but the simplicity of the design ensured that it was more reliable than some of the more complex designs of its rivals. Here we see a view of the front track adjuster and spring (above left), the rear idler adjustment (above), and the general layout of the right hand track unit (left).

EXTERIOR DETAILS



The Renault FT17's simple design ensured that it went on to serve in both the first and second world wars, the hull was principally constructed from bolted and rivetted plate (see left), early variants were fitted with one of two circular turrets of cast construction (see below right), these later being replaced by polygonal turrets constructed from flat armour plate for ease of manufacture. The machine gun in the turret was effective against infantry, but was of little use against tanks and was one of the main drawback of the Renault's design (below centre). Access for the driver was surprisingly good, especially compared with later designs where access hatches reduced in size considerably (bottom right). The exhaust silencer for the engine exited to the right hand side of the rear hull (bottom left).





Above: another view of the Renault FT17 preserved at Overloon in the Marshall Museum, as photographed by your editor during one his visits to the museum.

combat during WWI. Later, it was captured by the Germans, somewhere in France in 1940. More of them were combined into new divisions for guarding purposes. ‘

This one was sent to the Volkel airstrip (nearby the town of Uden), which was built by the Germans during WWII and when the war was over, the tank stayed there for another few years, at least until 1947. In the aftermath of WWII, the Dutch

Marines used the tank for training again, during which time, it remained at the Volkel air force base and then in the early 1960's the FT was handed over to the museum.

Putting the Renault FT17 into perspective, the FT paved the way for modern tank production in that it was designed for mass production and was cheap light and simple. The FTs record of use in the Russian Civil War, Polish-Soviet War, Chinese Civil War,

Spanish Civil War and Estonian war of Independence, are proof enough that it was also a commercial success for Renault in the inter war period.

SUCCESS STORY

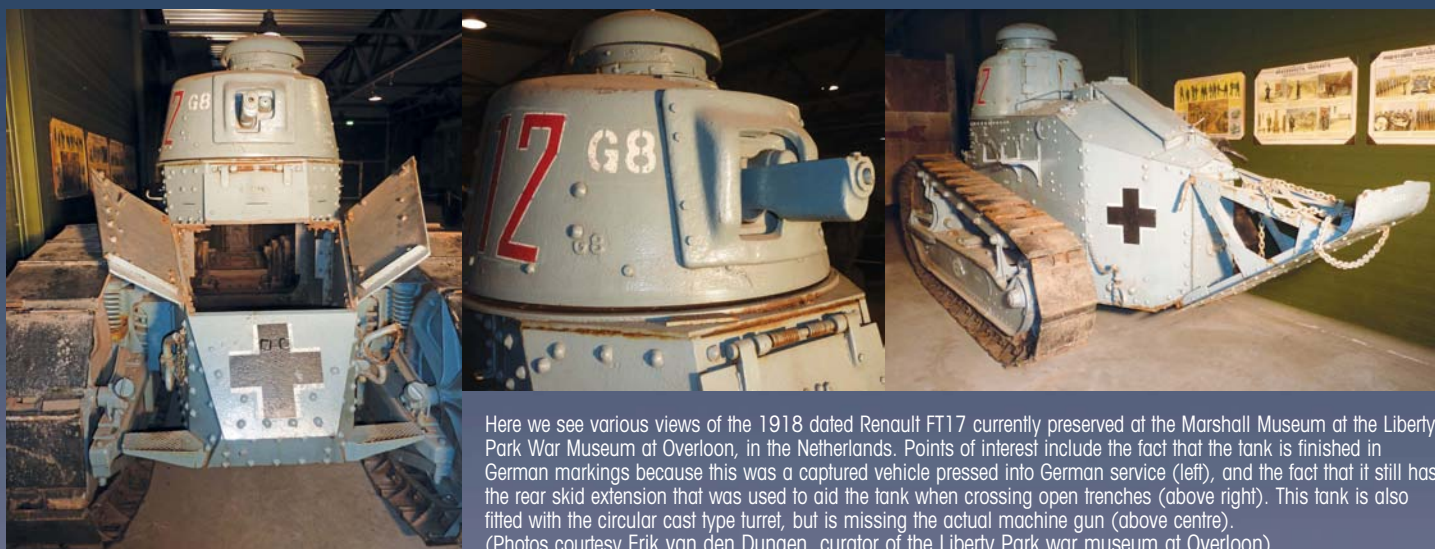
The fact that the ruthlessly efficient German army of 1940 also decided to use this 1917 tank for defending its airfield is also testament to the value of this little yet old tank of World War One. It also cannot be forgotten that the icons and pioneers of the US forces in the World War Two, such as General George Patten and Dwight Eisenhower, used this tank in training and combat in World War One. The FT tank was the mainstay of the US Expeditionary Force in WWI and many US soldiers owed their lives to Renault for saving them from the German machine guns, however, the US were unable to manufacture their own version in time to stop German offensives and had to rely on their French allies to come to the party.

Acknowledgments

My thanks to the staff of the Dutch Leger Museum in Delft, for their helped with the information and who were also kind enough to provide the author with a copy of the Osprey-Vanguard 46, 'The Renault FT Light Tank' Published by Osprey Publishing Ltd, on which much of this article is based.

And I would like to thank Erik van den Dungen, curator of the Liberty Park war museum at Overloon, who was kind enough to send photos and history of their FT Tank.

RENAULT FT17 - MARSHALL MUSEUM



Here we see various views of the 1918 dated Renault FT17 currently preserved at the Marshall Museum at the Liberty Park War Museum at Overloon, in the Netherlands. Points of interest include the fact that the tank is finished in German markings because this was a captured vehicle pressed into German service (left), and the fact that it still has the rear skid extension that was used to aid the tank when crossing open trenches (above right). This tank is also fitted with the circular cast type turret, but is missing the actual machine gun (above centre). (Photos courtesy Erik van den Dungen, curator of the Liberty Park war museum at Overloon)

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The CHURCHILL

The Churchill tank was one of the heaviest tanks to be fielded by the British during the Second World War and was the first to be designed after the outbreak of the war. Despite being plagued by mechanical problems brought about by the rushed introduction, it was generally well liked by tank crews thanks in part to the thick armour, which offered good protection against the German tanks and artillery of the time, however, the main downfall of the Churchill was the inability to fit a larger gun. This preserved Mk IV belonging to collector Nigel Montgomery was photographed at the 2012 Tankfest event.



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TANK TIMES



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THE WARTIME CHRISTMAS FESTIVAL & CRAFT FAYRE

Sat 1st & Sun 2nd December

SPECIAL GUEST TO ARRIVE BY TANK

Father Christmas will arrive at this year's Wartime Christmas Festival by tank.

Jolly St Nick will make his entrance with several speedy laps of the arena in a tank before taking up position in his grotto to receive our younger visitors.

With over 70 traders located throughout the Museum, selling a variety of craft, jewellery, books, food and drink, visitors will have ample opportunity to indulge in Christmas shopping as they take in the various festive activities, talks and tours on offer.

Event Manager Vicki Pol is certain that visitors will be surprised at what they discover. She said; "Costumed re-enactors will be recreating wartime scenes from the past and look at the Christmas experiences of those on the Home Front during World War Two in interactive demonstrations. There will be a Brass Band with Carol Singers, and visitors will be treated to a 1940's fashion show and Jive dancing demonstration. You'll even have the chance to get a 1940's makeover." **II**

Normal admission and opening hours apply and annual pass holders will be admitted free of charge.



Last year's festival

HATS OFF TO MONTY

Just over seventy years ago, General Montgomery won a decisive victory at the battle of El Alamein.

As he made his name as a commander, he also made his headgear iconic – electing to wear the black beret of the Royal Tank Regiment for the rest of the war.

Monty was given his famous beret by Sgt 'Jock' Fraser of B Squadron, 6th Royal Tank Regiment, because the Australian bush hat he had preferred was unsuitable for wearing in a tank.



The beret, as worn by Monty (right) is on display in the museum. Sgt Fraser can be seen on the left

On donating the first of his famous berets to The Tank Museum in 1945, Montgomery wrote; "This beret was given to me by the NCO in command of my tank during the Battle of Alamein in October 1942. It was worn by me from Alamein to Tunis when it was so dirty that I got a new one; it was the Sgt's own beret. I added my General's badge to it and have worn the black beret with two badges ever since..." **II**

INSIDE...

- CHRISTMAS GIFT IDEAS
- TIGER PART RETURNED
- THE VCC APPEAL
- 'FOR VALOUR'
- WHAT'S ON



FROM THE DIRECTOR



Richard Smith

In the last edition of Tank Times we revealed our future plans as we awaited a funding decision from the Heritage Lottery Fund.

We applied for £2.5m, 59% of the total cost of a project with three important elements; the 40,000 sq ft Vehicle Conservation Centre (VCC), new exhibitions and new ways of engaging more people in our collections.

We were delighted to be successful in securing this grant and are now working to match the HLF contribution with £1.5m of our own funds, turning to a variety of potential donors to help reach our target.

The first, and fundamental part of the plan, is the VCC. This vast new building will ensure that for the first time, every vehicle in The Tank Museum's collection is stored undercover in environmentally appropriate conditions. The VCC will be publicly accessible and provide the facilities to allow more conservation and restoration projects than we currently have the space to undertake.

The extra space will allow more volunteers the opportunity to get involved. Significantly the space created will unlock our ability to continue collecting and allow the rotation of vehicles in our existing galleries which are presently overcrowded. Without the VCC, we have no hope of adding to our existing exhibitions to improve the way we tell our story.

Housing 110 vehicles and costing £2.7m, we estimate the cost of accommodating each vehicle is

Continued on page 2...



THE TANK MUSEUM - THE WORLD'S BEST COLLECTION OF TANKS
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FROM THE DIRECTOR CONTINUED...



£25,000. This is the first target for our newly launched VCC Appeal and I would ask our most dedicated supporters, the *Tank Times* readers, to play their part.

You'll find more about the sort of vehicles you can help to protect and learn more about the quick and easy ways to pledge your support on the back page of *Tank Times*.

Every donation of £10 will be recognised within the VCC on its completion and donations of £500 or over will be recognised with a tile on our 500 Club wall.

If you receive your *Tank Times* by post, you'll find a direct debit form on the back of the address slip whereby you can choose to make donations monthly or as a one off payment. You'll also find some raffle tickets; with the top prize being a ride in Tiger 131 which will take place during Tiger Day in March 2013.



But if you don't want to leave it to chance, an eBay auction is set to begin on the 23rd November, where you can bid to ride in the commander's seat of Tiger 131 at Tiger Day. Keep an eye on our website and Facebook for details.

Your support will be integral to the success of this project and you can be certain that your donation will enable the future preservation of our vehicle collection. **T**

Richard Smith

Richard Smith
Director

CHRISTMAS GIFT IDEAS

Here are a few seasonal suggestions to help you fill your Christmas list!



1 'Dig For Victory' Tin Mug	£7.99	10 Dad's Army Mugs	£7.99
2 'Dig For Victory' Flask	£14.99	11 'Don't Panic' Cards	£4.99
3 Tiger 131 Hat	£8.95	12 'Dig For Victory' Tea Towel	£4.95
4 Tiger 131 Polo Shirt	£17.95	13 'Don't Panic' Socks	£4.50
5 Dad's Army Flask	£15.99	14 Tiger Files DVD	£13.99
6 'Dig For Victory' Metal Sign - Large	£9.95	15 Saving The Tiger DVD	£12.99
7 'Dig For Victory' Metal Sign - Small	£5.50	16 Tank Spotter's Guide	£4.99
8 Tiger Tank Manual	£19.99	17 'Dig For Victory' Apron	£13.95
9 'Don't Panic' Pencil Case	£4.99	18 Dad's Army Piggy Bank	£9.99

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TANKFEST | 29 – 30 June 2013
The most explosive weekend in history!
Live displays, living history, explosive mock battles and more.

TIGER DAY 3 | 30 March 2013
A premium examination of Tiger 131 and its history, complete with the opportunity to see her in action.

ACCESS ALL AREAS | Various Dates
The behind the scenes tour! Enjoy a detailed tour of the Museum, including our Archive and Workshops.

TANK EXPERIENCE DAY | Various Dates
You ride, you drive and explore!
Be fully immersed in the rich history of armoured warfare.

For full details and ticket prices for these events, please see our website.

PLACE YOUR ORDER NOW:

Contact The Tank Museum Shop T: 01929 405096 x224
shop@tankmuseum.org | P&P for all items is £3.00 (Mainland UK only).

TIGER PART RETURNED



An anonymous donation has reunited the Tiger tank with an item that was stolen from its turret by a young soldier forty years ago.

The letter which accompanied the mystery package said;

"In the late sixties I was a member of the Junior Leaders Regiment. I collected cap badges and memorabilia whilst I was at Bovington and remembered buying an instruction plaque from the Tiger from one of the lads. Recently whilst clearing my loft, I found it."

The 25 x 20cm plaque is entitled "Bedienungsanleitung für Turmabdichtung" and gives instructions for waterproofing the turret. Tiger tanks had been designed to cross water obstacles like rivers by literally wading through them – and they could be completely immersed in water with the addition of a snorkel.

Back in the 1960's the successful, but now defunct Junior Leaders Regiment was based across the road from The Tank Museum, recruiting and training school-leavers prior to their joining the Army.

After hours, the Museum was too much of a temptation for the bored teenagers, some of whom would illicitly gain access to acquire the odd souvenir.

A previous Curator invented the story of 'Herman The German', the Museum 'ghost', to try and keep the boys away from the museum at night. But it wasn't enough to deter one young souvenir hunter – although the ghost stories endure today.

Curator David Willey said; "Whoever this donor is we are extremely grateful for his thought and kindness in returning it to us. We can assure him that the plaque will soon be back in its rightful place." **T**



Tiger ready for 'deep wading'



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Leave your reviews

FOR VALOUR



Standing exposed in the commander's cupola of a Matilda II tank, he stares defiantly into the face of heavy enemy fire.

His clenched right fist rests on his hip, his left hand holding binoculars. Resolute and determined, he is unmoved by the ferocity of the bombardment directed at him and his battered squadron. He is the very embodiment of inspirational leadership.

This was the scene as Lieutenant Colonel Henry Robert Bowerman Foote of 7th Royal Tank Regiment held back a determined German attack during the battle of Gazala, which took place in early June 1942. His inspired leadership during this extremely testing period would earn him a host of accolades from his men and his superiors; amongst them the Victoria Cross.

The re-invigorated Axis Army under Rommel had been pushing the British back towards Egypt in a series of brilliantly coordinated attacks. As the Axis approached Tobruk, the British were out manoeuvred and forced to fall back following some of the fiercest fighting of the campaign.

Foote's regiment had been in the thick of it for days, having recently defeated elements of the 21st Panzer Division. Losses had been heavy, and his badly mauled regiment had just a dozen serviceable tanks remaining from the seventy that had started. He had also lost many of his best tank commanders and experienced crews, with the 'non-combatants' of the regiment folded in to make up the numbers.

His men would have almost been at breaking point; it would certainly have been preferable for them to withdraw and regroup. But Foote had been ordered to block Rommel's advance to allow the Guards Brigade to slip away. He had himself already had two tanks knocked out from under him. Now he would need to hold his remaining men together to protect the desperately vulnerable infantrymen.

It is often said that the most important part of leadership is example. Fortunately this is something Foote excelled at – and his men loved him for it.

Foote had arrived in North Africa to take command of 7th RTR just weeks before. With the campaign turning in favour of the Axis, this was not a place where a newly promoted Commanding Officer could expect an easy ride. It was also a time when the fortunes of the once impervious Matilda II tanks used by the regiment were also in decline. The

Matilda II, once dubbed 'The Queen of the Desert', was quickly becoming obsolete thanks to the more widespread use of the 88mm Flak gun in the anti-tank role.

"To begin with we thought nothing of him as he had come straight out from England and knew nothing of the desert," remembered Captain J.E. Kenyan Walters. "How things changed later."

It wasn't long before Foote was required to show what he was made of. With demoralising losses racking up, he would frequently lead from the front to encourage his men. In the featureless desert, this would have been accomplished in the face of significant personal risk.

But Foote was not only fearless but an incredibly skilful commanding officer. Now, with the odds stacked firmly against him and his tiny force, he personally visited each tank on foot. With enemy fire increasing, he reorganised his tanks as best he could for what they were about to face.

He then placed himself in his tank, standing high out of the turret so he could be clearly seen by all his men. His tank was hit 29 times and when it was finally put out of action, he led what was left of his regiment forward on foot using hand signals to guide them.

One of his men later said of him; "It was here, in the midst of some of the most vicious fighting, that he won his Victoria Cross after showing a physical courage and leadership in desperate circumstances which beggars description and which will never be forgotten by those who were there."

Foote's superlative courage and outstanding leadership prompted an extraordinary resolve from his shattered regiment, allowing the Guards to withdraw. But the Allies situation continued to worsen. When Tobruk fell days later, Foote and his men fell into German hands as captives.

But Foote's remarkable story didn't end there. He escaped from his Italian POW camp, and with a handful of others moved into the mountains with Italian Partisans. Disguised as a peasant, he eventually escaped to Switzerland where he learned of his Victoria Cross award in April 1944.

Foote served in the Army until 1958, having reached the rank of Major General. He was a Trustee of The Tank Museum when he passed away at the age of 89 in November 1993. A new display case can be seen at The Tank Museum telling Foote's incredible story. **T**

Bob Foote pictured after the war.



MATILDA II



The Tank Museum's Matilda II has been painted and named 'Golden Miller' to represent the tank that Foote commanded during his VC winning action.

The Army ordered 140 Matilda II's in 1938, but they proved so difficult to manufacture that only two had been delivered by the time war broke out in 1939. As a result only a very small number served in France in 1940, but despite the fact all of them were lost in the retreat, their performance was superb.

Its strength was in its armour, which could resist all anti-tank guns of the time. Its 2pdr gun was also, at the time, more than capable of delivering a knockout punch to enemy armour. Its main weaknesses were its mechanical reliability and relatively slow cross country speed (13mph).

But before its weaknesses were truly exposed, Matilda II dominated in the first half of the North African campaign, earning the sobriquet 'Queen of the Desert'. But the Germans had already realised the potential of the 88mm anti-aircraft gun when used in the anti-tank role and their arrival in North Africa signalled the beginning of the end of Matilda's dominance. German improvements in smaller calibre anti-tank shells also made the Matilda increasingly vulnerable, whilst improvements in armour reduced Matilda's offensive capability as the size of the turret ring meant the gun could never be improved.

By the time Foote won his VC, Matilda II's were already being replaced in front-line service through wastage, being completely withdrawn by the time of the first battle of El Alamein in August 1942.

In all 2,987 Matilda II gun tanks were manufactured between 1938 and August 1943. One thousand were shipped to the Soviet Union, and the Australian Army made extensive use of the Matilda II in the Pacific islands where they were more than capable of dealing with Japanese armour. **T**

FROM THE EDITOR



Thanks to the Heritage Lottery Fund we can look forward to an exciting few years at The Tank Museum.

The Vehicle Conservation Project is so important to our future because of what it will enable us to do. There will be several new layers of education, engagement and conservation taking place as a direct result. On that note I would echo the sentiments of the Director and appeal to your generosity, to help us sell as many raffle tickets as possible – and spread the word about our upcoming eBay auction to win a ride in Tiger 131.

Looking forward to the first half of 2013, we will be hosting another Tiger Day (30/3/13) and bringing you another TANKFEST (29 & 30/6/13). There are Premium tickets available for both – but places are limited so please book early to avoid disappointment.

Another reason to visit us again is our forthcoming Wartime Christmas Festival. This event is continuing to grow and provides a very different sort of Tank Museum experience.

But before that, the most poignant event in our annual calendar takes place. That is, of course, Remembrance Sunday. The Tank Museum service is open to all and is led by the Garrison Padre. You will be most welcome to join soldiers from the Garrison, veterans and their families as they gather here on Sunday 11th November 2012 to remember the fallen.

As this is the last edition of the year, we at The Tank Museum would like to thank you for your continued interest and support for everything we've done this year. On behalf of the Director, staff and Trustees, we wish you a very Happy Christmas. **T**

Nik Wyness
Nik Wyness
Editor



The VCC will be used to house a number of rare and interesting vehicles which are currently held in less than ideal conditions and away from public display.

One such vehicle is the Daimler Dingo Scout Car pictured below, which is probably the sole remaining example of a Mk1 Dingo; making it the oldest in existence. The Dingo was a very successful and popular World War II British reconnaissance and liaison vehicle. It was the only British armoured vehicle that was manufactured throughout the conflict,

seeing service in all theatres of war. The Mk I Dingo differed from later marks in that it had four-wheel steering – but this feature was dropped as less experienced drivers found it difficult to control.

Whilst stored undercover, the poor quality of the shed in which this vehicle has sat for some years has led to decay. It is relatively complete, and its rarity makes it a prime candidate for restoration. It was donated to The Tank Museum in 1951 by the Ministry of Supply.



HOW TO DONATE

Visit the VCC Appeal page on our website (tankmuseum.org/VCC) where you will find several resources to help you make your donation. You'll also find more detailed information about the project.



A Direct Debit form if you wish to give regularly.

An application form if you wish to purchase a tile on our 500 Club wall.



A direct link to our JustGiving.com page where you can arrange your own fundraising activity for The Tank Museum, or make electronic donations to our VCC Appeal.

The Tank Museum is also pleased to accept donations by post or telephone. Clearly mark your donation VCC Appeal – but please do not send cash through the post. Contact us using the details below. **T**

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EVENING EVENTS

Saturday 17/11/12 – 19.30

LECTURE: Monte Cassino;
Ten Armies in Hell

– Dr. Peter Caddick-Adams

Peter Caddick-Adams new book examines the bloodiest contest of the Italian campaign. The five month battle was characterised by deadlock in inhospitable mountainous terrain that could only be broken by boots on the ground, rather than sweeping manoeuvres by tanks and aircraft. In this lecture, Dr. Caddick-Adams discusses the battle and draws parallels to modern conflict.



Saturday 26/01/13 – 19.30

LECTURE: Lawrence After
Arabia – Andrew Simpson

T.E. Lawrence is well known for his exploits during the Great War. What he did next is less well-known; for this enigmatic figure created a life of self-imposed obscurity. Shunning both his fame and his name, Lawrence hid as a 'nobody' in the RAF and the Tank Corps. Author Andrew Simpson examines this much neglected period of his life.



Wednesday 19/12/12 – 19.00

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Tank

Right: still missing the tracks, which helps with the movement of the hull in that it can be rolled more easily without the tracks, this hull is being mated with the huge turret. The turret basket can clearly be seen protruding from beneath the turret.

Below: this view of the final assembly hall shows the tanks almost complete and ready to leave the factory for testing. Note the railway track down the right hand side of the photo used to move the heavier components.



James Payne delves behind the scenes at ALCO's Schenectady Tank Factory in the USA

The photographs featured in this article come from a photo album that once belonged to a Mr P.T. Egbert who was President of the American Locomotive Company (ALCO) in the early 50s. During that period the American Locomotive Company Schenectady Factory in New York, USA was building the then new M47 medium tank, and according to the dates on the album, the photographs within this feature were taken at some point in 1952, offering as they do a unique insight into tank production at the plant of the time.

For anyone with an interest in tanks and armoured fighting vehicles, the photographs in this collection will no doubt be of interest, especially to those who perhaps may not be familiar with the heavy industry construction techniques involved with the manufacture of tanks. This rare album provides us with a rare glimpse into the normally secret world of tank manufacture, a world that for me at least is incredibly fascinating given the size of the vehicles involved.



Above: a finished M47 leaves the factory and is carried

Centre right: a nice shot (albeit with some foxing) of the tank being pulled onto the running gear of the M47 using the crawler.

Far right: here we see the turrets in their 'rotisserie' where the many assorted fittings to the exterior and interior

Factory



Above left: the M47's engine and transmission pack is carefully lowered into the hull. Look how many operators are involved in the operation; I wonder how many it took when changing the pack on the battlefield!

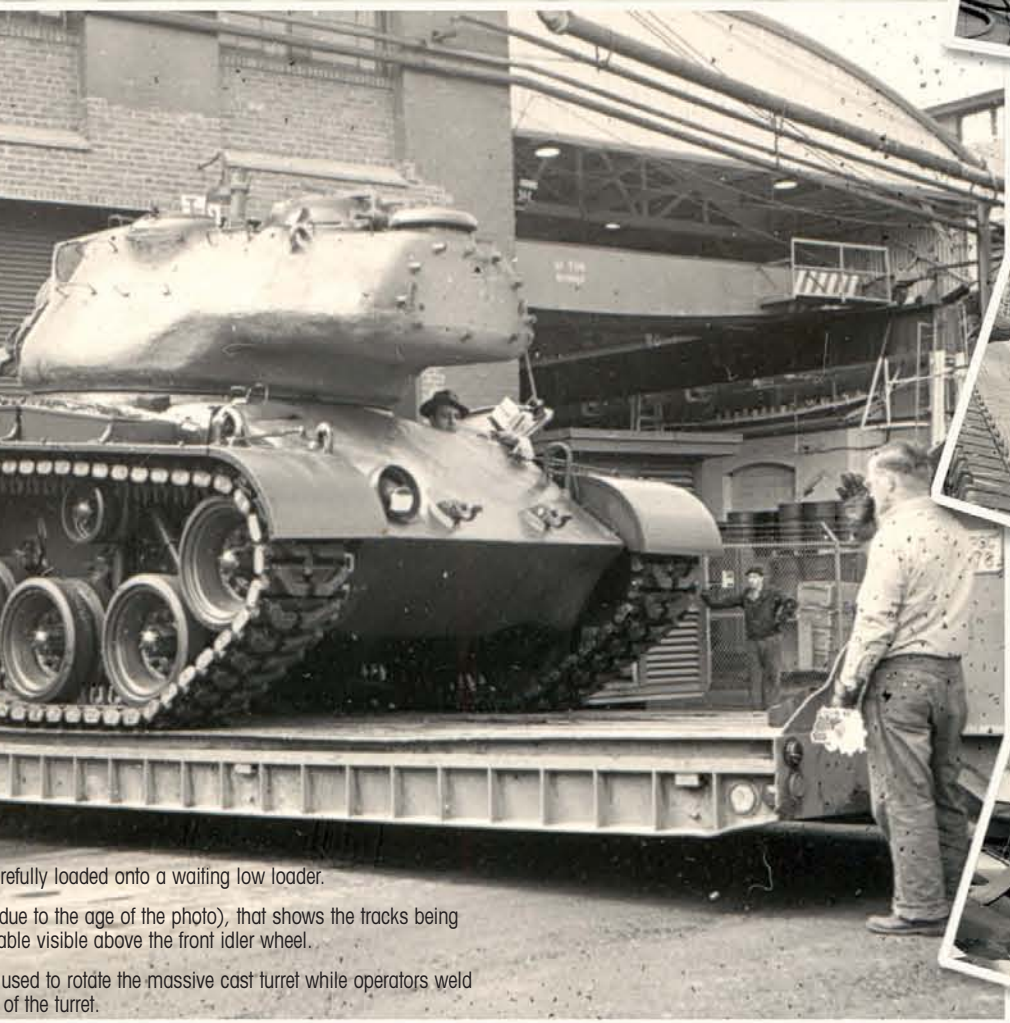


Above centre: view of work being carried out on the turrets. The turret nearest the camera has just had the main gun fitted, but the forward access hatch on the roof has yet to be fitted.



Top right: assembly workers add the roadwheels using an overhead lifting gantry. This looks to be a 'staged' photograph, possibly for publicity purposes.

Far right: men on the final assembly line prepare the one of the tracks before it is fitted to an M47.



carefully loaded onto a waiting low loader.

(due to the age of the photo), that shows the tracks being visible above the front idler wheel.

used to rotate the massive cast turret while operators weld of the turret.



Top right: after having successfully completed the initial road test, the M47s are then taken off road for a more thorough test.

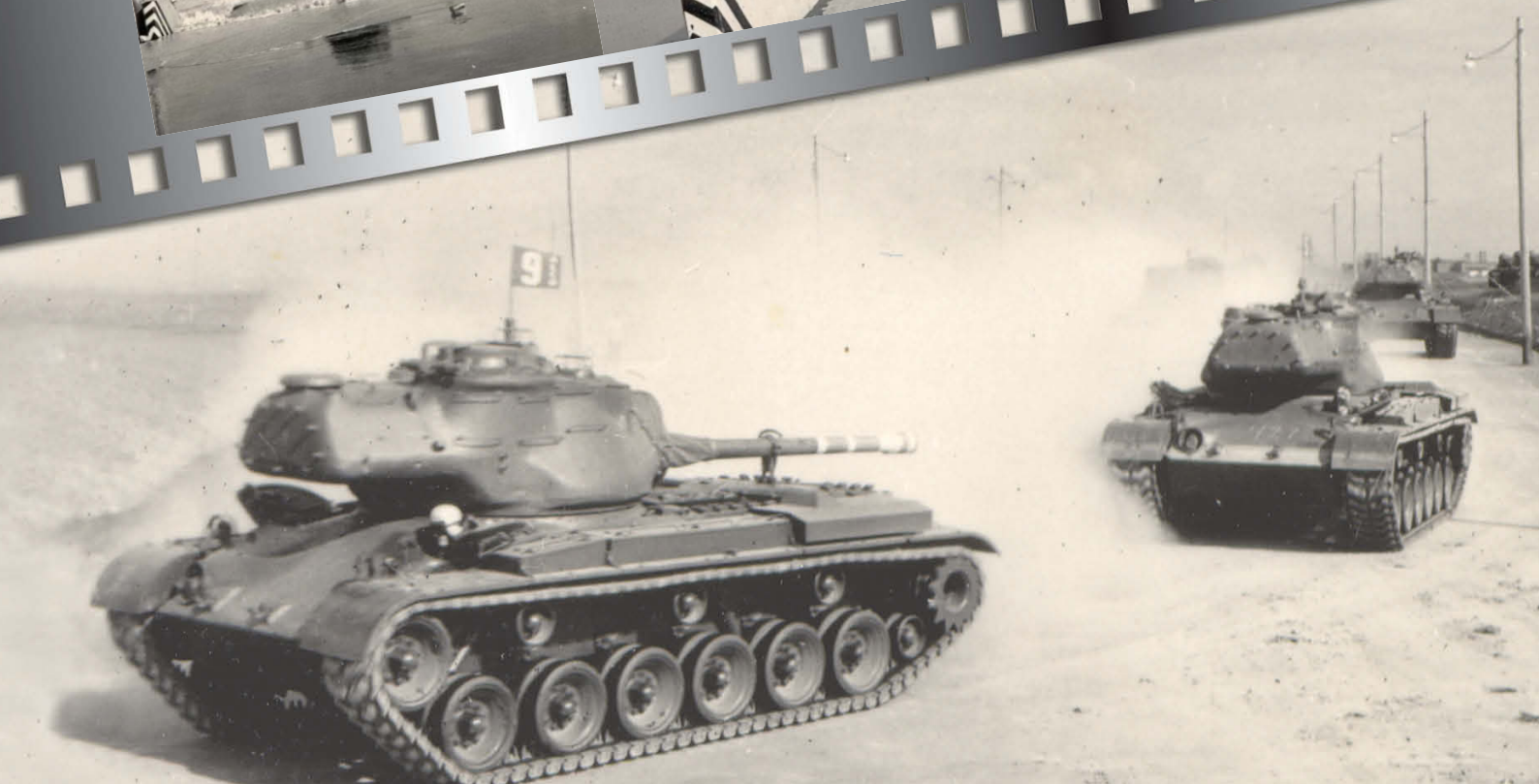
Strip below: once the test run has been successfully completed the tanks are driven through a tank wash to clean the running gear off before returning to the factory and being readied for dispatch, a technique still used today.

Bottom: completed tanks thunder around the test circuit at the factory, kicking up the dust as they undergo a thorough testing programme to ensure all the systems are in working order. Note the numbered flag on the top of the first tank in the photo, all tanks on test seem to carry them, so presumably it is a system for keeping track of the tanks whilst on test.

The M47 medium tank was essentially a further development of the M46 Patton, itself a development of the wartime M26 Pershing, sharing many similarities in appearance. The M47 was the mainstay of the US Army and many NATO forces during the height of the Cold War, with 8,676 examples being built, but the M47 was relatively short lived in US Army service, being replaced by the M48 in the late 50s, but continued to serve for many years with other countries around the world.

The collection is just a small selection of images from the album containing a total of 57 photos, which is just one of an extensive range of military photo archive available from 'Through Their Eyes', which covers subjects from the First and Second World Wars.

A huge range of CDs containing high-resolution images of military-related subjects is available, including those featured here. For further details check out the 'Through Their Eyes' website, which you can find at: www.throughtheireyes2.co.uk





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To Armourgeddon

MMI visited a unique tank-on-tank paintball battle experience right here in the UK



Tucked away in rural Leicestershire is a company offering a wide range of services that will no doubt be of interest to military vehicle enthusiasts and owners. While Armourgeddon offer a range of services that include paintball experiences, tank and military vehicle driving, vehicle restoration services and vehicle sales, they are perhaps better known for being the only place in the world where customers can take part in a tank-to-tank paintball battle!

If you're not familiar with them, Armourgeddon are a company going places, having expanded considerably since they started out and now boast a range of vehicles, from main battle tanks to artillery pieces and an entire fleet of fourteen FV432s equipped with turrets fitted with 40mm paintball cannons! Arriving at their premises just outside Husbands Bosworth in Leicestershire, visitors are greeted by

an FV432 APC close to the entrance and then a 5.5" artillery piece, T-54 and a Humber Pig as you drive into the car park. Elsewhere you'll find a Centurion tank, BRDM-2 scout car, Daimler Ferret, and Bedford MJ trucks.

Inside the buildings I found a further collection of vehicles, which included a pair of US half-tracks, a Diamond T wrecker, a pair of GMC trucks, an M4 high speed tractor, Bren carrier, Bv202 Snowcat, Jeep, M8 Greyhound and even a Sexton self-propelled gun awaiting restoration.

Proprietor Stuart Garner, who runs the company with his wife Tracy and full time staff of eight, plus part-time instructors drafted in when they're particularly busy, told me that many of these vehicles will soon form part of a new museum within the business complex, which is currently under construction and due for completion in 2013, providing yet another reason to visit Armourgeddon.

Nowhere else in the world can you take part in tank paintball battles and the Armourgeddon fleet is certainly impressive.



don and Back!

TANK-ON-TANK

While there are undoubtedly many companies around the UK offering driving experiences and paintball battles, and Armourgeddon also offer a complete range of services, they are also unique in offering visitors the chance to take charge of their own 'Tanks' following instruction from the trained driving instructors and engage in tank battles on the former WW2 bombing range.

On the day of my visit they were running a large corporate event, splitting the visitors into two groups, each taking their turn at the tank battles and the military vehicle driving experience.

Having suited up in protective tank suits and donned their Kevlar helmets the first group took to the driving field in a Bedford MJ truck and the BRDM-2 scout car, and judging by the amount of screaming from the girls onboard I'd guess they were having a good

time! The remainder of the group split into three separate crews and set off around the bombing range in three 432s having been instructed on the driver controls, and while they may have been screaming with excitement I couldn't hear them over the roar of the engines!

The wet summer has seen the bombing range turn from grassy pasture inhabited by cows and sheep, who incidentally don't seem to mind all the activity, to a muddy quagmire in places, making the driving of the 432s that much more challenging and exciting for the drivers and gave me some great photo opportunities into the bargain. After completing the driving course and got used to driving the vehicles both open and closed down, they came back round to the forming up area and practiced with the paintball cannon against static targets before setting off to engage in a full-blown tank battle.

There's no doubting that the visitors on the day had a fantastic time and with Armourgeddon offering such a wide range of services there's bound to be something to suit most military vehicle enthusiasts or would-be tank drivers. Services offered by Armourgeddon range from children's birthday parties and vehicle and tank driving experiences to paintballing, air rifle shooting, archery, quad biking and of course tank paintball battles. A full range of facilities is available to visitors from free parking to a gift shop, photography, refreshments, on-site catering and they welcome school and group bookings.

I had a thoroughly enjoyable day at Armourgeddon, and I wasn't even taking part, and featured here are just a few photos from the day that offer a flavour of what Armourgeddon have to offer. If you're interested in trying out their services check out their advert in this issue.

Top right: the M8 Greyhound was restored at Armourgeddon and has attended a number of shows. It will soon form part of the museum collection due to open next year.

Group above: there are a number of vehicles to be found at the Armourgeddon site, including tanks and armoured vehicles.

Above left & centre: on the day of my visit to Armourgeddon the Bedford MJ truck and BRDM-2 scout car were being used for the military driving experience.

Above right: this Sherman 105 is nearing the end of a long term restoration and following the installation of a new radial engine is now running and driving with just minor jobs to finish.



Flying Saxon

As the Saxon leaves the British Army for good, we take a closer look at the Internal Security Patrol 'Flying Saxon'



A number of Saxon Patrols have been refurbished at Witham Specialist Vehicles. These armoured 4x4s are ideal for Police and Security forces.

The GKN Saxon entered service with the British Army nearly three decades ago back in 1983, being used as a wheeled, 'Battlefield Taxi', transporting infantry troops across the battlefield. The Saxon is essentially an armoured hull built around the running gear of the Bedford MJ 4-tonne truck, which was then in widespread service and made it considerably cheaper to produce and maintain than the tracked equivalent armoured personnel carriers.

The welded steel hull featured a V-shaped hull to deflect the blast from mines, something learned from the various South African mine protected vehicles of the time. A side door and two rear doors provided access to the

interior and the driver was provided with an overhead hatch. Seating was provided for the two-man crew and eight soldiers.

I don't propose to dwell on the history behind the Saxon too much as we have covered the subject several times in past issue of MMI, but for those who want more information I would refer them to the articles 'The Saxon in British Army Service' (November 2002 issue), 'Security Force' (December 2002 issue), and 'On Patrol Pt.2' (April 2008).

NORTHERN IRELAND

Later in life the Saxon underwent modifications to enable it to be better suited to patrolling the streets of Northern Ireland as a replacement for the ageing Humber Pigs and Alvis Saracens. The new vehicle, referred to as the Internal Security (IS) Patrol Vehicle, more normally referred to as the Saxon Patrol, was first introduced in 1992 and featured a number of modifications, with several different

Have you ever seen a 12-tonne Saxon fly? Well the 'Flying Saxon' certainly has big 'wings'.



SAXON



Top right: rear three-quarter view of the Saxon Patrol, clearly showing the folded side screens that are a feature of the 'Flying Saxon' Internal Security Vehicle.

Above: close-up of the left hand side screen in its open position. The screens provide protection for dismounted troops from bricks and other missiles.

Below: like all vehicles that service with the British Army in Northern Ireland, the Saxon Patrol is fitted with protective mesh for windows and lighting as well as barricade removers as well as side and rear protection for the underside.



Right: the 'Flying Saxon' was not built in huge numbers and are comparatively rare.

Below: one of the major mechanical changes to the Saxon Patrol was the replacement of the original Bedford diesel engine with a more powerful Cummins.

Below centre left: the front barricade remover was an essential accessory in Northern Ireland. Unlike those used on the Humber Pig, these could be unbolted and removed if necessary.

Bottom left: a smaller protective bar was added to the rear to prevent items being rolled beneath the vehicle.



variants being built, including a basic armoured personnel carrier, armoured ambulance and the 'Flying Saxon' fitted with swing out side screens featured here.

The main mechanical modification was the replacement of the original Bedford 600 6-cylinder diesel engine with a more powerful Cummins 5.9-litre turbo diesel engine. Other changes included the fitting of a front barricade remover, similar to those fitted to the Humber Pig, side and rear skirts/protection to prevent objects being flung under the vehicle, and the addition of two roof top hatches with clear Macrolon (ballistic composite material) protective screens to allow troops to observe and provide top cover from the protection of the vehicle, a feature that has been seen on numerous vehicles used in Northern Ireland over the years.

Other external changes saw the various stowage bins on the side of the vehicle and the overhead stowage basket being removed, again something learned from the use of the Humber Pig on the streets of Northern Ireland in the years before, where would-be attackers could place firebombs and grenades into the lockers. The ladder rungs to the side of the door in the right hand side of the hull were also removed to prevent anyone being able to gain access to the vehicle's roof, and a protected public address system loudspeaker was also added to the right side of the hull.

All of the external windows or vision blocks and lights were provided with additional mesh protective screens, and in keeping with tradition for vehicles operating in Northern Ireland, the screen washers were filled with a solvent based fluid rather than

Added Protection

Below: here we see the side entry door in the hull of the Saxon Patrol. Note the lack of ladder rungs to the left hand side of the door opening and the spaced internal Macrolon composite armour, which was added throughout the interior.





Top left and centre: all of the windows are protected by mesh. Here also see the spotlight beside the commander's cupola.

Top right: the additional Macrolon armour is clear to see in this view of the interior. Note that it is spaced away from the outer steel armour for maximum effect.

"...screen washers were filled with a solvent..."

Above left, centre left & far left: three views of the Saxon's interior showing the commander's seat, the driving position and the bottles for the solvent used in the washers for the armoured glass blocks.

Left: in this view of a Flying Saxon we can see the right hand side screen folded flat against the hull of the vehicle. Also visible is the loudspeaker in the protective cover above the front wheel arch, and the raised clear Macrolon screens on the roof that surround the two roof hatches used for observation and top cover.



Below: rear view of a Saxon in standard guise clearly showing the stowage bins on the side and roof basket, which were removed on the Saxon Patrol variant.

Bottom left: these Saxons were photographed at Withams in 2010 prior to being refurbished and sold on, in fact there were so many Saxons on site that someone erected a sign saying 'Saxonville'!

water to combat paint bombs, these often being thrown at vehicles in an attempt to obscure the driver's view. The side fuel filler was also positioned lower down the hull, but another, less visible modification was the addition of internal Macrolon panels inside the vehicle to provide additional increased protection for the crew inside, these being bolted to stand-off mountings to create spaced armour.

A relatively small number of Saxon Patrols were also fitted with fold out protective side screens, these again having been developed many years earlier on the Humber Pig. The screens themselves were used to protect the troops from thrown bricks, bottles, firebombs and assorted missiles whilst outside of the vehicle

in a riot situation. The design of the screens is essential the same as those latterly used on the Pig, which themselves were developed from more primitive mesh screens, and feature steel panels with clear Macrolon panels to the top with sliding windows that allow the sheltering troops to return fire. A heavy-duty rubber skirt reaching to the ground is also fitted to protect the troops legs and feet.

PRIVATE HANDS

Between 2007 and 2009 the vast majority of the original Saxons were disposed of via Witham Specialist Vehicles, and while some found there way into private hands, the vast majority were refurbished and sold on to foreign countries. More recently Withams have taken receipt of a number of ex-Northern Ireland Saxon Patrols, a few less than pristine examples appearing in recent tender sales, but more recently a larger batch arrived on site and I went to take a closer look at them.

Most of the Saxons were still wearing their original matt NATO Green paintwork, with many still carrying red painted highlights on the ends of the barricade remover, however, the 'Confidential Telephone Number' worn on most British Army

vehicles serving in Northern Ireland had been removed or painted over. Some Saxons have now been through the workshops and have been fully refurbished and repainted ready to be sold to new owners, and if you fancy one they're a snip with prices starting at £35,000 plus the dreaded VAT!

My host for the day was David Gelley, who took one of the Saxons out to the disused runway at the back of the massive Colsterworth site so that I could get some uncluttered photos of the vehicle. As you can see from the photos it was a glorious, sunny day, which was great for the photos, but travelling just the short distance from the main yard to the airfield it quickly became apparent that being shut inside a Saxon in the heat of Iraq or Afghanistan must have been unbearable!

The photos featured here provide an overview of the 'Flying Saxon', which will very shortly disappear for good. My thanks to David Gelley for his help with the photos, and to Paul Southerington and Douglas Landy for organising the photo shoot for me.

For further details about the Saxon Patrol and the many other vehicles available through Witham Specialist vehicles, check out their website at:

www.mod-sales.com

"... another less visible modification was the addition of internal Macrolon panels inside the vehicle ..."



Saxon Patrol Overseas

The Saxon saw limited service in Iraq, but was generally resigned to relatively low-risk areas of operation. A number of variants were employed, including ambulances and general patrol vehicles, with these vehicles undergoing a number of modifications during their service life in Afghanistan. A recent addition to the military vehicle collection at Imperial War Museum Duxford is a veteran of the Afghan conflict. The vehicle is fitted with additional stand-off bar armour and is based on the Northern Ireland Saxon Patrol and was served with Support Battalion ARRC (Allied Rapid Reaction Corps) in Kabul. The vehicle is currently on display in the Land Warfare Hall at Duxford.



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COBBATON **Combat**

MMI made a return trip to what must be one of the largest private collections open to the general public in the UK



While I'm sure that there are private collections of military vehicles and assorted military memorabilia that are larger than the collection to be found at the Cobbaton Combat Collection, few of them open their doors to the public as a museum on a day-to-day basis, indeed Cobbaton is more like a private collection that just happens to be open to the public than a museum.

Thankfully Cobbaton does open to the public, and owner and founder Preston Isaac, his wife Dinie, their daughter Lucy and son Tim together with his wife Beth have run this fantastic collection as a museum for many, many years, making this a true



family run business. It's a museum I love to visit and over the years I think the number of visits I have made personally is now running into double figures, and I have no doubt I will be returning again time after time.

Contained within the collection is a large collection of military vehicles, weapons, and associated military memorabilia with everything from a Sherman tank to a Standard Tilly and lots more besides. If there is a problem with the museum it's the lack of available space, space that decreases year in year out as the collection continues to grow and evolve, that said



Left: the inside of the museum is like an 'Aladdin's Cave' and is literally jam packed with vehicles and all sorts of military-related items.

Below left: even the vehicles, like this Universal Carrier, are overflowing with items of interest.

Below right: all aspects of the Second World War are covered, including a number of items from the Home Front.

Bottom: you have to pay special attention to the many display cabinets, which contain many fascinating items.



at Collection

it's all part of the charm of the Cobbaton Combat Collection, where visitors could spend many an hour looking at the vehicles crammed into the museum, let alone the many thousands of weapons and items of militaria displayed amongst the vehicles, it truly is an 'Aladdin's Cave' for military enthusiasts.

Although it had only been a relatively short time since my last visit to Cobbaton, I noticed a number of changes within the museum, with some of the larger exhibits having been moved around, while others had been taken outdoors for the show I was there to report on, so it was out with the camera to capture what I could in order to offer a flavour of the museum, because such is the extent of the museum collection, that's all I can do, offer a brief glimpse of the delights to be found at Cobbaton, which hopefully will inspire some of you to pay a visit for yourself.

SHOW TIME

As mentioned previously, my eighth visit to the museum in North Devon was timed to coincide with their annual 'VJ Day' military vehicle show held in August, which sees a number of vehicles belonging to local (and not so local) collectors attending the two-day show and putting on a display in the fields behind the museum itself. This year saw a good collection of vehicles gathering for the show, and for once the weather behaved itself! Having said that, Preston did say that vehicle numbers were a little down on previous years, whereas the number of re-enactors at the show increased, perhaps a sign of the times where collectors are finding themselves feeling the squeeze as fuel prices rise and vehicle prices increase too.

There were several living history displays, including one arranged around the mount in the main display field that commemorated the 30th

anniversary of the Falklands War and as well as a Lightweight Land Rover and visiting re-enactors, included captured Argentine items from the museum's collection.

A more elaborate wartime diorama display incorporated the museum's own semi-derelict Comet tank and two Daimler armoured car hulks as well as a number of the re-enactors' own vehicles in the area just before entering the display field to the side of the museum, and the re-enactors had even gone to the trouble of digging trenches and ditches for added authenticity.

Other vehicles on display around the large field included a number of wartime vehicles, including a Morris-Commercial C8 15cwt truck, an Austin Tilly, an Austin staff car, several Jeeps, a Dodge weapons carrier, Dodge Command Car and a GMC 6x6 truck and an assortment of motorcycles.

Post-war vehicles were well represented too, with an assortment of



Top left: this Pink Panther is a regular at the show and travels all the way down to Devon from Gloucestershire.

Above centre left: this lovely Series IIA Lightweight was amongst the various Land Rovers at the show.

Above left: one of the more unusual vehicles I found was this Czech-built Praga V3S 6x6 truck.

Right: this nice example of the Dodge WC51 Weapons Carrier and GMC 6x6 truck were amongst the many wartime vehicles at the show.



Living History

There were several living history displays, including one arranged around the mount in the display field that commemorated the 30th anniversary of the Falklands War and featured a Lightweight Land Rover and captured Argentine items from the museum's collection. A more elaborate wartime diorama display incorporated the museum's semi-derelict Comet tank and two Daimler armoured car hulks as well as a number of the re-enactors' own vehicles and even had trenches and ditches dug by the re-enactors for added authenticity.



Right: Falklands re-enactors replicated Mount Tumbledown in the main display field.

Below left & right: one of the more elaborate living history displays was this wartime encampment on the entrance to the main display field, which incorporated derelict vehicle from the museum itself.



Land Rovers, which included a number of Lightweights, Ambulances, a couple of the newer Wolf Land Rovers and an ex-SAS Series IIA Pink Panther Land Rover, which is a regular at the show and is driven down to the show in Devon from Gloucestershire – come rain or shine!

I thoroughly enjoyed myself at both the museum and show, which was all the better for being blessed with proper summer weather, and despite my return trip turning into something of a marathon thanks to crashes and delays on the M5, which saw a three-hour trip turned into a seven-hour trip, I wouldn't have missed it for the world!

It may not be the biggest of shows, but it's a very friendly event with a relaxed atmosphere that's generating funds for the Burma Star Association, and has the added bonus of having the museum and its fabulous collection of vehicles and artefacts to keep you occupied for many hours. If you haven't been to the Cobbaton Combat Collection yet, I can thoroughly recommend a visit. Contact details and opening times can be found at:

www.cobbatoncombat.co.uk

WW2 Softskins





WAR & PEACE 2012

Part 2

Welcome to our second report from this year's War & Peace Show, which celebrated the 30th Anniversary of what is officially the largest military vehicle show in the world! The British summer weather played a key part in the running of the show, and gave the event a slightly different 'feel' to normal, but visitors and those who brought along their vehicles to the show undoubtedly had a good time and made the best of the conditions. In our second report we're taking a look at a few more of the tanks and armoured vehicles that turned up, which follows the 'Tank Special' theme of this 100-page issue.

I think it's fair to say that the number of tanks at the show was very slightly down, but those that did attend put on a great display for the watching crowds in the arena, and the muddy conditions just meant that they enjoyed themselves all the more, and for a change, they and the public could see what was going on without the more normal clouds of 'Beltring Dust' that we've become accustomed to! The War & Peace Show has gained a reputation for having more tanks performing for the watching hoards than any other show, and many of the visitors to the show come just to see the tanks perform!

Given the size of the show, the largest in the world, it's impossible to show everything on the few pages I have available to me, but I've tried to offer a flavour of the excitement found at the show, and next month we'll be bringing you another selection of images captured by the MMI Press Team who covered the items I couldn't cover myself and did at least mean that I had eyes all over the show site. Until next month please enjoy the memories from the 30th Anniversary War & Peace Show portrayed over the next few pages and we'll be back next month to wrap up our coverage from the 2012 show.





Top strip: a great many tanks and armoured vehicles attend the War & Peace Show each year, and this year their owners made the most of the muddy conditions in the arena!

Above: a very nice example of the American WW2 Federal wrecker makes its way out of the arena while negotiating the mud and ruts, coping with the tricky conditions with ease.

Main photo: the crowds always want to see tanks and they're never disappointed at the War & Peace Show. This Sherman was one of the best and most realistic wartime tanks to be found at the show in 2012.



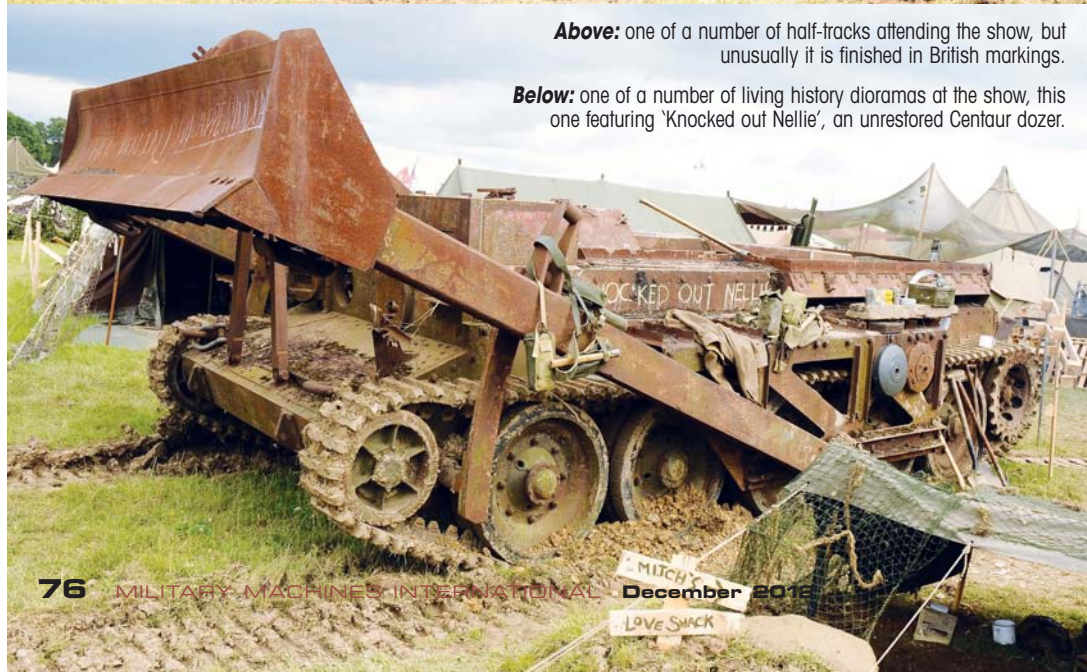
Right: superb example of the British Universal Carrier finished in the colours of the 8th Punjab Regiment and driven by owner Nigel Watson.

Below: visitors to the show have to get used to loud bangs at the show because there are plenty of them!



Above: one of a number of half-tracks attending the show, but unusually it is finished in British markings.

Below: one of a number of living history dioramas at the show, this one featuring 'Knocked out Nellie', an unrestored Centaur dozer.





North London Barmy Army

The girls working on the Military Machines International stand were treated to a ride around the arena in a 'Tank' courtesy of 'Minty' and the North London Barmy Army. They clearly enjoyed themselves and we'd like to say a big thank you to 'Minty' for organising their ride in the arena.



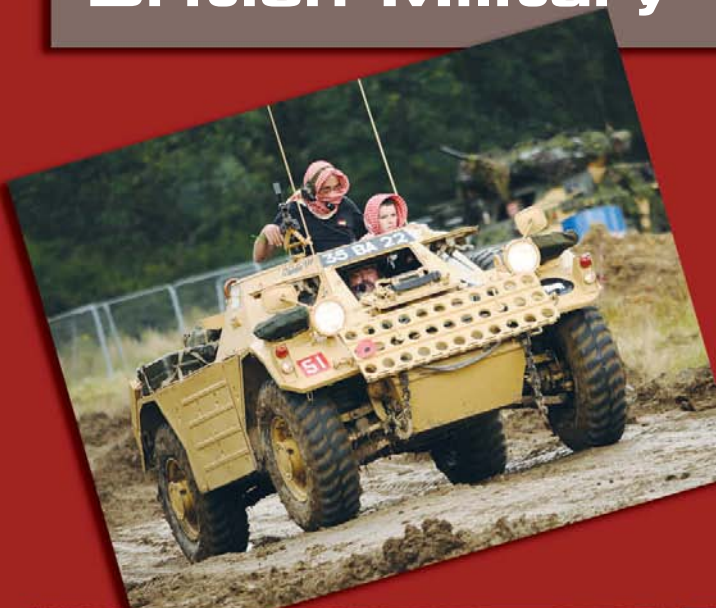
Top strip: the War & Peace Show always attracts characters, and this year there were a great many in attendance!

Left: while there's no doubt that many of the tanks at the show are very rare, including this DD Valentine, it's great to see the owners actually using them in the arena and not afraid to get them dirty.

Below: the Russian T-34/85 tank has always been popular with collectors, probably because in tank terms at least it's relatively cheap! This pair of T-34s took to the arena, accompanied by the characteristic smoke screen from their massive V12 diesel engines.



British Military Vehicles



Post-war British military vehicles remain a firm favourite with collectors both here in the UK and across the rest of the world. This year the War & Peace show attracted another fine selection of the genre to the show, including this Daimler Ferret Mk1 (left), seen here making the most of its time in the arena, a superb example of the once popular Humber 1-tonne truck in pristine condition (below left), and a varied collection of Land Rovers, including the ex-Northern Ireland Series III HWPK 'Piglet' and VPK Lightweight (below).



Wartime Softskins



The variation of vehicles found at the show is enormous, covering wartime and modern vehicles brought to the event by owners from across the globe. Pictured here is a small selection of wartime softskins that I came across during my week-long stay at the show, which represent some of the very best exhibits to be found at the War & Peace Show.



European Cousins

Over the past decade more and more vehicles have started appearing at the show having been brought to the show all the way from Europe by their owners, cementing the reputation for the War & Peace Show being the biggest and best military vehicle show in Europe and indeed the world. Here we see a selection of post-war European vehicles that you wouldn't normally get to see at a UK show, which include a nice example of the Belgian Minerva Land Rover based on the Series 1 (above left), a Belgian FN 4RM/62C 4.5-tonne truck (above right), and a pair of East German trucks, namely a Hanomag truck with office type body (closest to the camera) and an IFA W 50 LAVA truck, sometimes referred to as 'Fat Alice' a less than complimentary reference to the truck's looks!



RARE AMPHIBIANS OLD & NEW

Two rare military amphibians were on display this year, namely a 1957 dated American M76 Pontiac Otter amphibious load carrier (above left), as used by American forces during the Vietnam War, and the larger, more modern Glover Webb Aquatrack (right), which is currently in service with the Philippine Marines. Both vehicles belong to a private collection and their presence at the War & Peace Show offered visitors a unique opportunity to take a closer look at these rare amphibians.



Wartime in the Vale

The summer hasn't exactly been spectacular this year and late June set the tone for the rest of the year with heavy rain causing widespread disruption and even cancellations for many a show up and down the country. On this particular occasion I attended two shows that fell on the same weekend, firstly the Yorkshire Wartime Experience on the Saturday (show report coming soon) and the Wartime in the Vale show on the Sunday. As it turned out the Saturday would have been the better of the two days to attend Wartime in the Vale because heavy overnight rain saw the already soggy site turned into something of a mud bath – sound familiar?

Having arrived at the show (taking advantage of my 'Press' status to park in the exhibitor support car park and out of the mud) I soon met up with a

MMI's Editor brings us a show report from one of his 'Local' military vehicle events

Right: this 6x6 Champ was amongst the more unusual examples of the Champ at the show.



Right: very nice example of the M151A2 MUTT, though the weather wasn't ideally suited to an open top vehicle.



Right: there were many wartime vehicles at the event, including this fine Dodge Command Car.



Below: I came across this lovely example of the Bedford MW truck amongst the various living history displays at the show.



Below: fine trio of Tillies, with a pair of Austins closest to the camera and a Hillman (finished in RAF Blue) furthest away.

Below right: a great many vehicles were displayed in the surroundings of Ashdown Camp, including this K2 Ambulance.

Bottom right: a fine example of the British wartime Daimler Dingo Scout Car seen here in Ashdown Camp.



number of the regulars at the show and I quickly started to realise that I had picked the wrong day to attend, having driven north to Leeds the day before, but being the consummate professional I battled on regardless and did what I could in the conditions, which although windy and overcast, were at least dry. During my initial conversations with exhibitors it transpired that some vehicles had left the show earlier following the overnight rain, but those that remained (and there was plenty of them) offered a varied selection of both wartime and modern vehicles with living history displays amongst them.

While a great many of the vehicles attending the show were regulars, having attended since the start of this popular Worcestershire show, there are usually a few newcomers to be found, be they newly acquired vehicles or simply people attending the show for the first time, and 2012 was no different, with a number of new vehicles on display at the show.

One of the largest and heaviest of the newcomers at the show this year was the Vickers Viper 6x6 Long Range Patrol Vehicle. The armoured 6x6 vehicle was in fact a prototype, formerly owned by a collector in the north east of the country (see page 10 of the February 2010 issue of Military Machines International) and now owned by collector Dave Perks from Shropshire. Needless to say it attracted a great deal of attention, offering visitors a rare chance to take a closer look at this impressive prototype.

The Ashdown Camp replica World War Two army camp, which features a watch tower, Nissen huts and various other buildings, has been a popular feature of the show since it began, and once again it played host to a number of wartime dated vehicles, including a fine trio of Tillies, a very tidy Daimler Dingo Scout Car, an Austin K2 Ambulance, various Jeeps and a superb selection of wartime motorcycles and plenty more besides.





Right: I was chatting to this guy on his Honda quad bike but he wasn't very talkative and come to think of it he didn't really move much either!

Far right: a nice pair of Bedford trucks on display in the main display field. There was a wide and varied selection of wartime vehicles on display at the show.

Below right: this Hummer, which replicates a typical Hummer used in Iraq and Afghanistan, has been a regular visitor to the Wartime in the Vale show for some years and this year it was fitted with a new gun shield for the ring mount on the roof.



As reported in our October issue, the Austin Champ Owners Club chose to celebrate the Austin Champ's 60th Anniversary at the show with a 'Champ Camp', which attracted a wide and varied collection of Champs from around the country, including several rarities and prototypes as well as Champ owners from overseas. If you missed the October issue check out our back issues for the report.



Modern Armour

A newcomer to the show this year was this Vickers Viper Long Range Patrol Vehicle (shown left), and a regular at the show was another modern AFV, namely the Simba as shown below.



Left: 1965 Commer TS3A truck, one of only 25 built to military specification and powered by a Rootes 2-stroke horizontally opposed engine.

Below: Ashdown Camp played host to a number of wartime motorcycles.



Wartime Vehicles



Above: a very nice example of the British wartime Humber Heavy Utility that was spotted at the show and one of a great many wartime vehicles to be found at the Wartime in the Vale event.

Below: rather nice Fordson WOT2 pictured here outside one of the many Nissen huts at Ashdown Camp, which played host to a fine collection of wartime vehicles during the show.



With the exception of the weather conditions, which I fear may have followed me back from my trip north the day before, the show was well supported with plenty to see and do for visitors to the show. Unfortunately some of the arena events were curtailed by the soft ground conditions, during my visit and wellies were definitely the footwear of choice for some areas of the showground, but I'm

assured that the Saturday was a much better day in terms of weather and action at the show, it's just a shame I missed it! That said I had a very enjoyable day, meeting lots of friends at the show, making new acquaintances and getting plenty of photos into the bargain, some of which are featured here for your enjoyment and hopefully offer a flavour of this popular military vehicle show.

Into the Archives

Below: This image of a MAN 40.400 first appeared in the 1984 edition in a generic entry for MAN (6x6) Tractor Trucks. The blue three-axle semi-trailer is laden with a Leopard 1 MBT, and appears to be the same trailer shown coupled to the Titan Z 50.816 H 6x6/51 tractor unit elsewhere in this feature. I attempted to identify the trailer, but two hours of wading through piles of trailer images later and I'd lost the will to live...



Shaun Connors delves into the archives to bring us a selection of post-war heavy equipment transporters



In an effort to retain some balance between wheels and tracks in this tank special issue of MMI, which as you might expect isn't too easy..., the Ed asked me if I could put together an 'Into The Archives' based around that all-important accompaniment to the tank, the tank transporter. I said yes without giving the question too much thought, but when I did give it thought it became a complex case of where should I start, and what should I include?

Ultimately, and with deadline closing in, I decided to select at random images from the vast selection I inherited when I took over as editor of what was then titled Jane's Military Vehicles and Logistics from Terry Gander for the 2001-2002 edition. Images randomly selected I then searched my archive copies of JMWL for any relating information, and here as extended captions are snippets of what I found...





Left: as the Fiat 320 PTM 45, the first prototype of which was built in 1978, this IVECO Fiat 320 45 WTM first appeared in the 1981 edition. This image appeared in the 1988 edition, the semi-trailer an OTO Melara-designed (Bartoletti manufactured) Mod TCS 50 BO.

Below: this Titan Z 50.816 H 6x6/51 was a militarised version of a heavy-duty civilian tractor unit, and for commercial purposes was rated at 300-tonnes GCW. The blue three-axle semi-trailer is laden with a Leopard 2 MBT.



Bottom left: two versions of this (8x8) Mercedes-Benz tank transporter were available, the 4050A with twin 1400R 20 rear tyres, and the 4850A (shown) which could have either 1400R 20 or 24 x 21R single rear tyres. The 48 denotes in tonnes the design GVW of the tractor unit, the 50 denoting (x10) engine power output in horsepower. No (8x8) models from this range were sold, however, some (6x6) derivatives were.

Below: the first of 19 Scania 143E (6x4) tractor trucks were delivered to the Swedish Army in March 1990, these coupled to HAFO four-axle semi-trailers. The load shown in this image is a Swedish Army Centurion MBT. And in-keeping with the tank theme of this issue... In the early 1950s the Swedish Army selected the British Centurion to replace its ageing Strv m/42. The first Swedish Centurions (Mk 3) were delivered in 1953. The final serving Centurions, examples of the Mk 3 and Mk 5 modernised to Strv 104 standard with a Continental diesel engine and Allison automatic gearbox, were withdrawn from service in 2001.





Above: this Renault R 400.90 T is shown coupled to a Nicolas-built semi-trailer laden with an AMX-30. The R 400.90 T first appeared in the 1987 edition, although this actual image was never used. No military sales of the R 400.90 T are known of. If the cab of the R 400.90 T looks kind of familiar to readers of a certain age, commercially it was originally badged as Berliet, and was later adopted by Ford for their heavy truck, the Transcontinental, this available between 1975-1983.



Above: this image of a Steyr 40M42 from the 1999-2000 edition perhaps raises the question of when does an image qualify for an 'Into The Archives' image, and what factors contribute to that qualification? The default answer could be 'the Editors decision is final...,' however, a more valid response might be that the Steyr 40M42 was a prototype only and no examples were sold. It should also be noted the Steyr brand is now essentially defunct for trucks, MAN completing their acquisition of Steyr in 1993. MAN military trucks are now marketed through Rheinmetall MAN Military Vehicles (RMMV).

Right: this image of a Scania R142EC (6x6) appeared in the 1987 edition and was incorrectly captioned as a (6x4). A later revised variant, the R143EK, was delivered to the Swedish Army and just in case you're wondering the words 'Bred Last' mean 'Wide Load' in Swedish!



Bottom: the TRM 700-100 first appeared in the 1988 edition of the then Jane's Military Logistics, this image appearing in the 1995-96 edition of the then Jane's Military Vehicles and Logistics. The first 35 examples of the TRM 700-100 were scheduled for delivery to the French Army during 1995-96, although the Nicolas SFD A6 semi-trailer shown in this image is not the trailer adopted by the French Army, unlike the Leclerc Main Battle Tank load.





BULLETIN BOARD

Shaun Connors takes a look at the Joint Light Tactical Vehicle (JLTV) Programme currently being conducted jointly between the US Army and US Marines

The Joint Light Tactical Vehicle (JLTV) programme is a joint US Army/Marines project to replace part of the ageing High Mobility Multipurpose Wheeled Vehicle (HMMWV/Humvee) fleet. JLTV's origins trace back a good ten years into the final phases of the aborted Future Tactical Truck System (FTTS), with the JLTV designation first appearing mid-2006. In its early days, JLTV was proposed as a replacement for the entire HMMWV fleet...

Following numerous developmental blips, by late 2011 JLTV looked like it might go the same way as the earlier FTTS programme, the preference of those in control of budgets appearing to be the cheaper option of further upgrades to the HMMWV fleet with the HMMWV Modernized Expanded Capacity Vehicle (MECV) programme. In January 2012 the US Army released a Request for Proposal (RfP) for the engineering and manufacturing development (EMD) phase of the JLTV programme, and with a Pentagon announcement that the MECV programme was to be cancelled, by February 2012 a cost-constrained JLTV programme appeared to be firmly back on track.

By late March 2012 it was clear that at least six teams had submitted responses to the EMD phase RfP, and following EMD phase contract awards

in August 2012, in September Hardwire LLC disclosed itself as a previously unknown seventh bidder.

Back in 2008 BAE Ground Systems/Navistar Defense, Lockheed Martin (with the BAE Systems tactical wheeled vehicles team) and General Tactical Vehicles (AM General/General Dynamics joint venture) had been awarded 27-month JLTV technology development (TD) contracts, these completed in spring 2011. Not all of these teamings remained in place for the EMD phase.

AM General (still teamed with General Tactical Vehicles (GTV) for a separate offering) are now known to have offered the Blast-Resistant Vehicle - Off Road (BRV-O), a product based on its own R&D, and a design which could possibly leverage some of AM General's recent experience with HMMWV MECV designs.

BAE Systems (previously teamed with Navistar) realigned its team for the EMD phase to include Ford and will likely have proposed a design that capitalised on earlier TD phase work with the Valanx.

General Tactical Vehicles (GTV) dropped its technology development (TD) phase developed design and opted to offer what was perhaps the lowest risk solution, namely a further development of the in-production MOWAG Eagle.

Lockheed Martin, on the other hand, opted to stick with its TD phase offering, albeit a version that according to the company is 'hundreds of pounds lighter in weight.'

Navistar, which broke away from BAE Systems for JLTV's EMD phase, offered a variant of its Saratoga light tactical vehicle, this unveiled in October 2011 as a middle-ground offering between the HMMWV and JLTV, the latter with its then current TD phase spec still technically in place.

Oshkosh proposed a variant of the company's L-ATV, this also unveiled in October 2011. L-ATV has developmental origins that trace back to Oshkosh/Northrop-Grumman's failed initial JLTV proposal.

Hardwire are now known to have offered a proposal featuring a hybrid electric drive train. Hardwire's armour solutions have been employed on MRAP vehicles, and the company is known for developing an innovative 'blast chimney' that it designed to provide an outlet for energy released in an underbelly blast.

It was disclosed in August 2012 that three JLTV EMD contracts had been awarded, these to teams led by AM General, Lockheed Martin and Oshkosh, and worth around \$64.5 million, \$66.3 million, and \$56.4 million, respectively. Under these awards each contractor must deliver 22 JLTV prototypes within a year of award, these including two-and four-seat variants, and a companion trailer.

Compared to the previous TD phase, for the EMD phase JLTV's overall requirements were tightened in some areas, loosened in others, the Pentagon adamant it was seeking a cheaper platform. According to the August EMD phase award, once in production and deployment JLTV will see an average unit manufacturing cost of less than \$250,000 in 2011 dollars.

Those companies not awarded EMD contracts are, according to the US Army, welcome to proceed at their own risk and expense with

development and can bid for JLTV's final production contract, providing the contracting authority had been notified of their intention within 30 days of the EMD award.

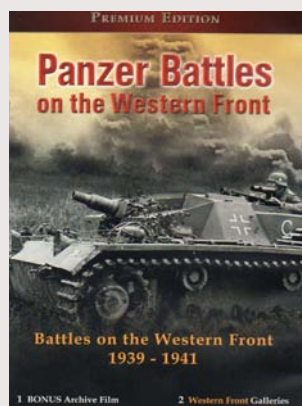
It was disclosed on 31st August that Navistar had filed a JLTV protest with the US Government Accountability Office (GAO); it was disclosed on September 4th that Navistar had withdrawn that protest. At the last major contract milestone, the award of three technology development (TD) phase contracts in 2008, Northrop Grumman and Textron filed protests, leading to a stop-work order that lasted several months; eventually the selection process was validated by the GAO and both protests were denied.

The current acquisition strategy for JLTV's EMD follow-on production and deployment (PD) phase calls for the initial production contract to be solicited in FY15, with a single firm fixed price contract awarded, this consisting of a base three year low rate initial production (LRIP) contract, with an option of a five year multi-year contract for full rate production (FRP).

Current best estimates are that around 50,000 JLTV will be required by the Army, 5,500 by the Marines. Total Army and Marines HMMWV fleet totals quoted in February 2012 were 159,759 and 24,600 up-armoured HMMWVs, respectively, with what will probably be final sizeable deliveries continuing under the current 1 + 2 option yrs HMMWV contract awarded in July 2010.

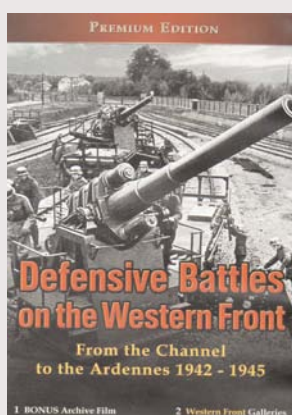


Panzer Battles DVD

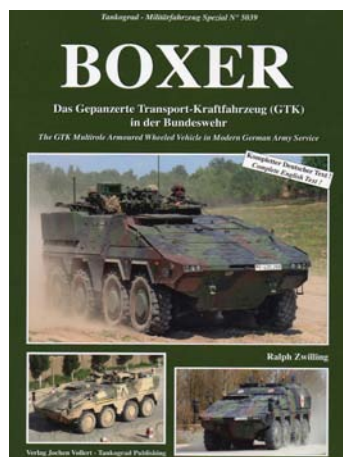


This new DVD released by Pen & Sword is this title 'Panzer Battles on the Western Front'. The documentary style DVD runs for approx 58 minutes and features black & white wartime footage that deals with what is widely known as the 'Phoney War' between 1939 and 1941. The film includes two bonus archive films and four original photo galleries and retails at £16.99. It is widely available from high street outlets or available direct from Pen & Sword. For details see the website: www.pen-and-sword.co.uk

Defensive Battles DVD



Our second DVD from Pen & Sword this month also deals with the Western Front, this time concentrating on the latter stages of the war between 1942 and 1945. The disc retails at £16.99 and features over 50 minutes of rare and unseen archive footage and includes exclusive bonus films and original photo galleries. The DVD is widely available from high street outlets or available direct from Pen & Sword. For details see the website: www.pen-and-sword.co.uk



Modern German Bundeswehr Battle Taxi

The new GTK Boxer multirole armoured wheeled vehicle goes under the spotlight in this new book by Ralph Zwilling. The different variants of the Boxer are described in some detail in this 74-page book, with written descriptions accompanied by a superb selection of colour photographs, which includes a selection taken in Afghanistan where the Boxer is currently serving with the German Army. This book will appeal to those with an interest in modern AFVs as well as model makers seeking high quality reference material. Overall another great book from Tankograd.

Title: Boxer - Tankograd Militärfahrzeug Special 5039

By: Ralph Zwilling

ISBN: N/A

Price: £13.99

Format: A4 Softback

Available From:
Bookworld Wholesale Ltd.
www.bookworldws.co.uk

Cold War Battle Exercises

Title: Panzerschlacht - Tankograd Militärfahrzeug Special 5038

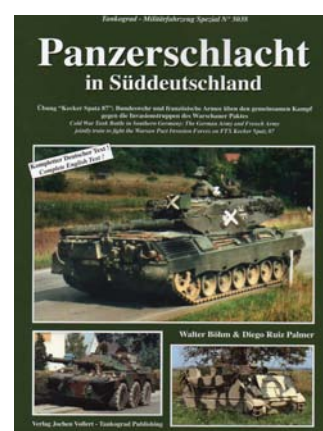
By: Walter Böhm & Diego Ruiz Palmer

Price: £13.99

Format: A4 Softback

Available From:
Bookworld Wholesale Ltd.
www.bookworldws.co.uk

The second book from Tankograd this month looks at the exercise held in Southern Germany in 1987 during the Cold War, which involved the German and French Army jointly training to fight Warsaw Pact invasion forces. A wide number of German and French vehicles are featured within the book, including various tanks, AFVs and softskins. Interestingly the photos of the French force include a large number of Hotchkiss Jeeps in various forms! It's a fascinating book that looks back at European armies more than two decades ago.



Military News from around the World

The latest edition of Militar Fahrzeug features another varied collection of military vehicle related subjects covering a number of eras. Amongst the vehicles covered is the heavily updated German Marder AIFV, the Leopard 2-based Wisent armoured recovery vehicle for Canada, the Singapore Army Leopard 2, an interesting little feature on the T-34 versus the Stug III, a couple of military exercise reports and various other news and historical items. As usual the quality of the material is excellent and accompanied by a superb collection of photographs. As usual the text is in German with an English summary.

Title: Tankograd Militar Fahrzeug issue 4/2012

By: Jochen Vollert

ISBN: N/A

Price: £9.99

Format: A4 Softback

Available From:
Bookworld Wholesale Ltd.
www.bookworldws.co.uk

Updated & Improved Reprint

Title: Nuts & Bolts Vol.05

By: John L. Rue & Heiner F. Duske

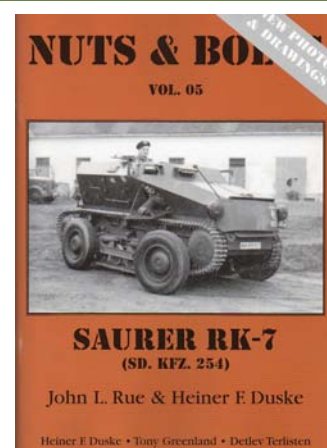
ISBN: N/A

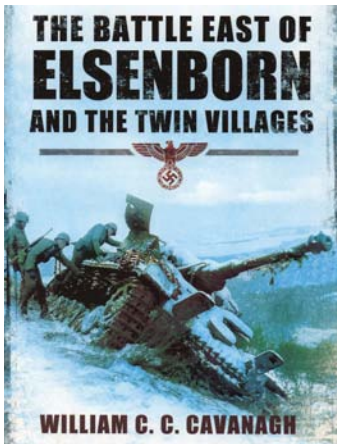
Price: £20.90

Format: A4 Softback

Available From:
Historex Agents Ltd.
www.historexagents.com

Since this book was first printed back in 1996, new information and wartime photographs have come to light and the publisher and authors have now reprinted this book with an additional 60-page addendum featuring numerous new archive images, a series of line illustrations, plus colour photos of preserved examples and a modified scale model of the Saurer. Rather than this being a completely new book, the publishers have taken the unusual step to insert the additional material within the original 44-page book, making it a hefty reference source covering a most unusual subject.





Massive German Counter Offensive

This new book from Pen & Sword examines the role of Joseph 'Sepp' Dietrich's sixth Panzer Army in the massive German winter counter-offensive. Hitler tasked Dietrich with taking on the positions of the US 99th Infantry Division, the plan being to reach deep inside Allied-held territory and seize the vital port of Antwerp. In the event this daring and somewhat desperate counter-attack failed, but it was a close run thing and this book tackles the twists and turns of the offensive from a number of different directions. All in all an interesting and gripping read.

Title: The Battle East of Elsenborn & the Twin Villages

By: William C. Cavanagh

ISBN: 9781848848924

Price: £12.99

Format: Softback

Available From:
Pen & Sword Books Ltd.
www.pen-and-sword.co.uk

Eliminating German Surface Warships

Title: Hunters and the Hunted

By: Bryan Perrett

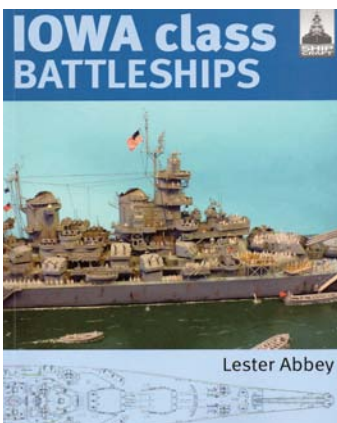
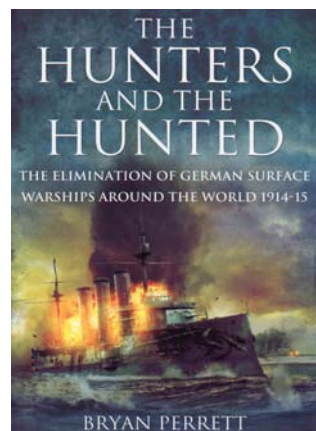
ISBN: 9781848846388

Price: £18.99

Format: Hardback

Available From:
Pen & Sword Books Ltd.
www.pen-and-sword.co.uk

At the outbreak of the First World war the Imperial German Navy had a considerable number of surface warships deployed around the world. These ships posed a serious threat to British merchant vessels, particularly the import of food and fuel supplies so it was decided to hunt down and destroy the German warships before they could wreak havoc. The book provides a fascinating narrative, looking at it does how the German Navy conducted this type of war and the role of the Royal Navy in the destruction of the German naval vessels.



Classic WW2 American Battleships

Primarily aimed at ship modellers, this series of books from Seaforth provide a stunning amount of reference material, which includes black & white and colour photos of the Iowa Class battleships, a number of line drawings and illustrations, details of the various model kits and accessories that are available in the marketplace, and colour images of built models. The 68-page book is full of great photos and stacks of information and at £14.99 is very good value for money, so if the subject matter appeals take a look.

Title: Iowa Class Battleships

By: Lester Abbey

ISBN: 9781848321113

Price: £14.99

Format: A4 Softback

Available From:
Seaforth Publishing Ltd.
www.seaforthpublishing.com

Classic WW2 German Battleships

Title: Scharnhorst & Gneisenau Battleships

By: Steve Backer

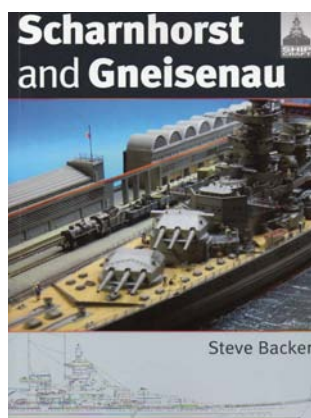
ISBN: 9781848321526

Price: £14.99

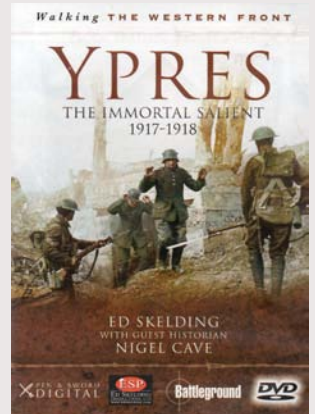
Format: A4 Softback

Available From:
Seaforth Publishing Ltd.
www.seaforthpublishing.com

The second title in the Seaforth Publishing 'Shipcraft' series deals with German capital ships Scharnhorst and Gneisenau, both of which are well known for their exploits in the naval actions of WW2. Once again the book follows the same format, providing archive images for reference, details of available kits and accessories and additional information that model makers may find useful when replicating these famous battlecruisers. If model ships are your thing you would do well to check out this series of books.

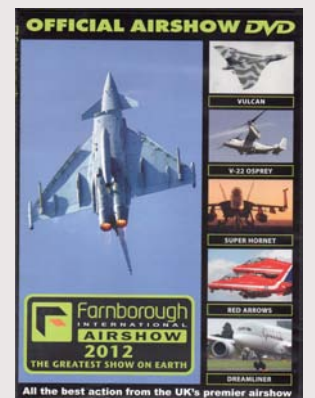


YPRES DVD



The tragic events of Ypres, the immortal salient is discussed in depth in this documentary style film. Combining archive imagery with contemporary footage taken at key sites around the Western Front, presents Ed Skelding and Nigel Cave discuss the intricacies of the offensive, recounting the harrowing experiences of the soldiers fighting on the ground. The DVD, which runs for 75 minutes and retails at £16.99, is widely available from high street outlets or direct from Pen & Sword. For details see: www.pen-and-sword.co.uk

Farnborough 2012 DVD



The official Airshow DVD of what is widely regarded as the greatest airshow on earth is now available through Key Publishing. Once again the Farnborough International Airshow featured a host of fast jets, military giants, airliners, historic aircraft and aerobatic display teams and you can now relive this year's spectacular action with this 2-hour long DVD! The DVD retails at £14.99 and can be ordered through the Key Publishing website at: www.keypublishing.com/shop

MISSION BRIEFING

DATES FOR YOUR DIARY

NOVEMBER 2012

Saturday 3 November 2012: 1940s Big Band Blitz: annual 1940s event held at York House, Twickenham featuring 1940s vehicles and re-enactors. Doors open 6.30pm, finishes at 11.00pm. Tickets £22 available in advance plus concessions. For details call Warren Walters: Tel: 020 89733605

Sunday 4 November 2012: Northern Military Expo: popular indoor show held at the Newark Country Show Ground, Notts, 2 minutes off the A1M (NG24 2NY). For details call: Tel: 01302 739000 or check out the website at: www.northernmilitaryexpo.co.uk

Sunday 4 November 2012: Militaria & Medal Fair: held at The Princes Hall, Princes Way, Aldershot, Hampshire, GU11 1NX. For details contact: Tel: 01753 534777

Sunday 18 November 2012: Military Vehicle Day at Brooklands Museum: held at the Brooklands Museum, Brooklands Road, Weybridge, Surrey, KT13 0ON. Open from 10.00am. For details see the website at: www.brooklandsmuseum.com

Sunday 18 November 2012: Malvern Militaria Fair: large, indoor militaria event held at the Three Counties Showground, Wye Hall, Malvern, Worcs, WR13 6NW. Contact Amanda on: Tel: 01743 762266 amanda@jeeparts.co.uk www.militaryconvention.com

Sunday 25 November 2012: History on Wheels Motor Museum: Open Day, located at Longclose House, Common Road, Eton Wick, nr. Windsor, Berks, SL4 6QY. For details: Tel: 01753 862637/833833 www.historyonwheels.co.uk

Sunday 25 November 2012: Militaria & Medal Fair: held at Yate Leisure Centre, Kennedy Way, Yate, nr Chipping Sodbury, Bristol, BS37 4DQ. For further details contact: Tel: 01753 534777

DECEMBER 2012

Sunday 16 December 2012: History on Wheels Motor Museum: Open Day, located at Longclose House, nr. Windsor, Berks, SL4 6QY. For details: Tel: 01753 862637/833833

JANUARY 2013

Sunday 6 January 2013: Aviation & Military Collectors Fair: held at Croydon Airport Hotel, A23, Purley Way, Croydon, Surrey. Doors open at 10.30am, for details call: Tel: 01737 822200 Mob: 07860 762277 acebellaviation@aol.com www.redhillairshow.co.uk

Sunday 27 January 2013: Militaria 2013: large, indoor militaria event held at the The Exhibition Centre, Stoneleigh Park, Coventry, Warwickshire. For details contact Amanda on: Tel: 01743 762266 amanda@jeeparts.co.uk www.militaryconvention.com

February 2013

Sunday 9 February 2013: Fleet Air Arm Model Show: held at RNAS Yeovilton, Somerset, BA22 8HT. Featuring plastic kits, R/C models, Books and Model collectors. Open 10.00am. For details contact: Tel: 01935 840565 www.fleetairarm.com

MARCH 2013

Sunday 3 March 2013: Hack Green Secret Nuclear Bunker Rally: French Lane, Nantwich, Cheshire, CW5 8BL. For details call Rod on: Tel: 01270 623353 coldwar@hackgreen.co.uk

Sunday 17 March 2013: Malvern Militaria Fair: large, indoor militaria event held at the Three Counties Showground, Wye Hall, Malvern, Worcs, WR13 6NW. Contact Amanda: Tel: 01743 762266 amanda@jeeparts.co.uk www.militaryconvention.com

APRIL 2013

Saturday 6 April 2013: Shoreham Airport Aerojumble: aviation and military collectors fair, held at Shoreham Airport, A27, Shoreham, West Sussex, doors open 10.30am. For more details contact: Tel: 01424 753356 Mob: 07710 154606 sndz338@aol.com

Sunday 28 April 2013: Northern Military Expo: popular indoor show held at the Newark Country Show Ground, Notts, 2 minutes off the A1M (NG24 2NY). For further details contact: Tel: 01302 739000 or check out the website at: www.northernmilitaryexpo.co.uk

Sunday 28 April 2013: Aviation, Airline, Military & Model Collectors Fair: held at Gatwick Airport, K2 Centre, Crawley, West Sussex. Doors open 10.30am. For further details contact: tom@singfield.freeseerve.co.uk

JUNE 2013

Saturday 15 Sunday 16 June 2013: Dunsfold Collection Open Weekend: held at the Springbok Estate, just down the road from DLR at GU6 8EX. open from 9.00am. A rare opportunity to see the unique Dunsfold Collection of Land Rovers and featuring club stands, trade stands. For further details contact: Tel: 01483 200567 Fax: 01483 200738 openweekend@dunsfold.com www.dunsfoldcollection.co.uk

JULY 2013

Wednesday 17 to Sunday 21 July 2013: The War & Peace Show: The Hop Farm, Paddock Wood, Kent. The world's largest military vehicle show. For details call: Tel: 01304 813945 www.thewarandpeaceshow.com Tel: 01622 872068 www.thehopfarm.co.uk

SEPTEMBER 2013

Sunday 7 September 2013: Peopleton Autumn Show: held at Peopleton Village Playing Fields, Peopleton, Worcs. Classic Cars, Military Vehicles, stalls and entertainment. Open 12.00 noon till 6.00pm. For further details or to book in please contact John Sargeant: Tel: 01905 840155 sarg-37@tiscali.co.uk

Sunday 29 September 2013: Manchester Militaria Fair: held at Event City, Phoenix Way, Urmston, Manchester, M41 7TB. Located next door to the Trafford centre. For further details or to book in for the event please contact Amanda at: Tel: 01743 762266 amanda@jeeparts.co.uk www.militaryconvention.com

OCTOBER 2013

Sunday 6 October 2013: Hack Green Secret Nuclear Bunker Rally: French Lane, Nantwich, Cheshire, CW5 8BL. For details call Rod on: Tel: 01270 623353 coldwar@hackgreen.co.uk

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 further details contact the organiser Mark Askew on: Tel: 01302 739000 or check out the website at: www.northernmilitaryexpo.co.uk

Sunday 24 November 2013: Malvern Militaria Fair: large, indoor militaria event held at the Three Counties Showground, Wye Hall, Malvern, Worcs, WR13 6NW. For further details please contact Amanda at: Tel: 01743 762266 amanda@jeeparts.co.uk www.militaryconvention.com

Why not email your show & event details direct to the Editor at:
ian.young@keypublishing.com
or post them to the Editorial Office - details can be found on page 3



Air League Trust Scholarships and Bursaries 2013

Want to learn to fly or glide? Already a pilot and want to improve your skills? Interested in engineering? If so, read on...

2013 will see over £100,000 worth of flying and gliding scholarships offered to young people from The Air League Trust. Flying scholarships, gliding scholarships, flying and gliding bursaries and engineering scholarships are all on offer.

Each of the schemes are detailed on The Air League Trust website (www.airleague.co.uk) and application forms will be available to download in November. The closing date for flying scholarship applications is 31st January 2013, while the flying bursaries, gliding scholarships, engineering scholarships and balloon scholarship application deadlines are 22nd February 2013.

www.airleague.co.uk



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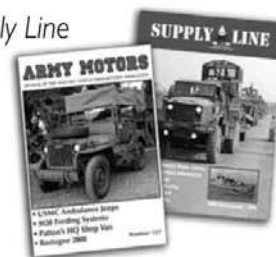
Monitoring municipal, state, and federal legislation to fight barriers to the hobby. And, assisting local MVPA affiliates facing these issues in their areas. Just part of what we do.

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Farnborough Airshow DVD Bundle Pack



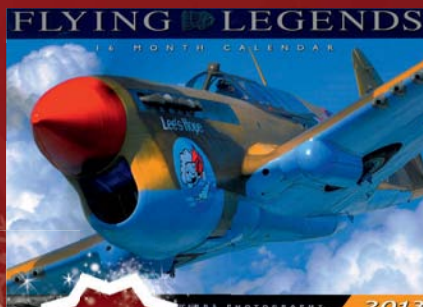
This superb DVD bundle pack features the best action from the last two Farnborough International Airshows. Featuring stunning displays from the likes of the F-22 Raptor, Airbus A380, Vulcan XH558, Boeing F-18A Super Hornet and many more. This is the perfect way to re-live the 2010 and 2012 airshows!

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Flying Legends 2013 Calendar

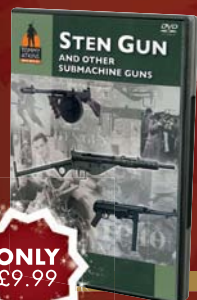


The Flying Legends 2013 sixteen-month calendar features legendary World War II warbirds from around the world, captured in flight by award-winning photographer John M. Dibbs. Razor-sharp, un-retouched air-to-air photography brings these old warbirds to life. The calendar starts from September 2012 so there's no better time to buy your perfect accompaniment to the year ahead!

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Sten Gun DVD

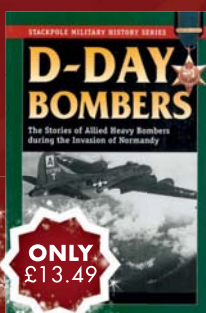


From the MP18 to the Sterling Development of the Submachine Gun, World renowned Sten Gun authority Peter Laidler is the star of a new specialist DVD about the history of the Sten and other submachine guns. Peter reveals fascinating inside stories about the gun that played such a crucial role during the Second World War. Running time 100 mins. Region 2 (PAL) DVD.

Code: DVD514

**ONLY
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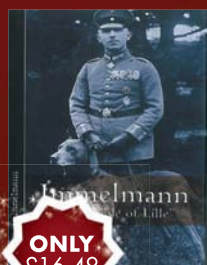
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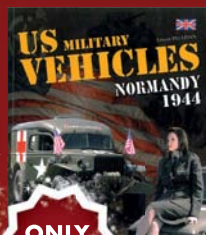
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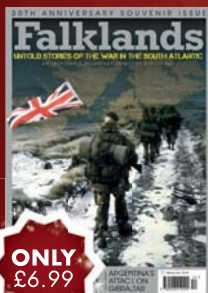


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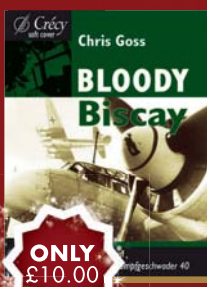


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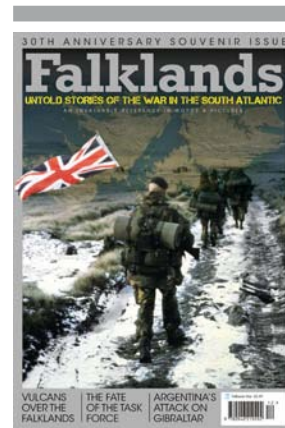


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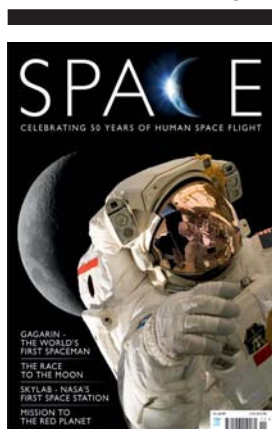


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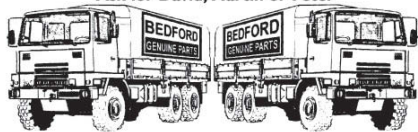
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