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Museum Ordnance

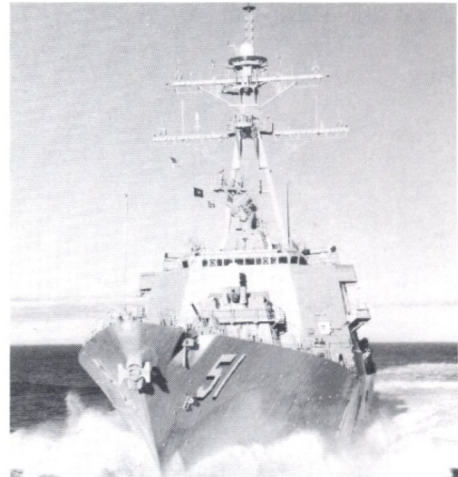
*The Magazine for the
U.S. Army Ordnance Museum*

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The Curator's Column

In a previous column I reported to you that the museum was to begin a rehabilitation program on its outside artifacts within the near future. That statement is still true to a certain degree. As soon as the President of the United States and the Congress can agree on a budget, the funds necessary for this project will become available and we can start the process. In that regard we have selected an extremely qualified young woman to manage this very important program. Ms. Catherine L. Stephens is getting her Masters Degree in Museum Science from Baylor University in Texas. She is a former Army officer and has worked in other Army museums. As part of the selection process I talked to a great number of persons that she has worked for in the past and others that know of her. Needless to say she came highly recommended and, as I know several of the people who recommended her are not the types to exaggerate, their endorsements mean all that much more. We are looking forward to having her on board the museum staff as soon as the necessary administrative work, and funding, can be completed.

The Panzerjaeger Tiger (P) Elephant has *NOT* left the collection. It has merely been transferred to a private

(Continued on Page 10)

On The Cover

Courtesy of the Israeli Defense Force Public Affairs Office is this view of the Slammer. Built on a Merkava chassis, this SPG was built as an unsuccessful competitor to the U.S.-built M109 system.

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Museum Ordnance

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Slammer Merkava- Based Self Propelled Artillery System

Artillery has moved far from the concept of a gun or two firing on coordinates provided by a forward observer via a radio. Artillery has evolved into a true weapon system, whereby a gun barrel by itself is of only limited use. The system now must include sophisticated guidance and fire control elements, satellite navigation, laser guided projectiles, true shoot-and-scoot capabilities, and integrated communications, plus a gun barrel! As proof of this point, recent combat against Iraq, who fielded, on paper, more powerful guns in their artillery units, but failed to provide them with the other systems, in survivable form, to allow those guns to fight effectively.

Israel has always worked to have fully integrated combat arms so that each compliments the other. They have also never been afraid to venture in weapon development on their own. Their self-propelled artillery systems show that trend as well. Long dependent on French guns, sometimes on French chassis, and other times married to WWII-vintage Sherman hulls, they soon turned to the American M-109 series of self-propelled guns (SPG). All the while, Soltam, Ltd., began to make their name as Israeli's premier artillery and ammunition manufacturer. Producing a wide range of gun for both towed and self-propelled applications as well as the full range of projectiles and propellants.

One of the company's more daring ventures was the development of a totally-Israeli SPG built on the Merkava main battle tank (MBT) hull and chassis. Called the Slammer, the vehicle was developed to compete with the M109 at a time when a large purchase and/or upgrade was imminent. The decision between the two systems was heated and brought a number of factors to the table, some of which were not necessarily related to the operational performance of either vehicle. Ultimately, the Slammer was not selected by the Israeli Defense Forces (IDF) for a variety of reasons. Overall project cost and availability of Merkava chassis were among the major points favoring the M109 in the end. The company still holds some hope of marketing the vehicle privately or of modifying the turret to fit other chassis.

The Slammer, of which two prototypes were built, is comparable to most other SPG's of the time. Although the first prototype was delivered to the Israeli Artillery Corps in 1984, with the second in 1986, the Slammer was not shown to the world until 1990. How-

ever, even though the Israeli's have not acquired the system, nor have any other sales been recorded, the Slammer is worthy of study.

Some of the design criteria that drove the project was the battlefield environment that Israel was faced with. The fact that it occupies a relatively small geographic area; that its enemies could come from all sides; that mobility, both in terms of keeping up with the front lines and avoiding counter-battery fire was essential; a minimum range of 39 km was necessary; and survivability were all keys that locked the design project together.

Soltam joined with the MBT and Electronics Division of Israeli Aircraft Industries for the project.

The chassis and lower hull of the Slammer is modified from the basic Merkava MBT. Other than being fitted with a "specially constructed bearing" for the turret, few other details of the modifications are known.

The turret is of welded steel construction capable of providing protection against 14.5mm rounds at point-blank range and 155mm fragments at one meter. Crew protection is further aided by an over-pressurization system and an internal fire extinguishing system. There are two roof hatches and a rear door for ammunition resupply.

The punch of the Slammer is delivered with the 155mm 52 caliber main gun mounted facing forward in the fully rotating turret. Range with conventional ammunition is about 26,000 m, and exceeds 39,000 with enhanced ammunition. Firing ERFB-BB (base bleed) rounds the range will be greater than 39 km. The gun has a horizontal sliding breech block, semi-automatically operated.

The gun tube has a two-stage baffle along with a fume extractor halfway in the barrel. It is a monoblock tube with 52 calibers, 48 grooves with a right hand twist.

A pivotal feature of the Slammer is an automatic loading system within the turret. This allows a sustained rate of fire of four rounds per minute with a burst rate available of nine rounds per minute (capable of three rounds in fifteen seconds). The crew of four has seventy-five (each) projectiles and charges onboard. Sixty of these rounds are ready for automatic loading while the remaining fifteen are stored in several locations. The main sub-assem-

bles of the auto load system are: shell storage system, shell transfer system, loading tray and flick rammer, charge loading tray (for external charge resupply), and the shell elevator for reloading the internal storage or direct loading of the gun. The loading of the charge is performed manually with the primer being inserted automatically (inserted automatically while the breech is opening at the end of the recoil cycle). A manual back-up system allows for normal operations in case of an auto load failure. The auto load system can also handle all standard NATO-type projectiles.

During operations the commander controls the auto load system via a five inch by seven inch Commander's Panel. The Central Control Unit (CCU) is based on the CPU-8086 and handles the logic equations for the entire system. It transfers commands through the serial communication (RS 422) to all computers and controls the displays on the Commander's Panel. All terminal/units are based on the 8031 controller for

purposes of independent control of the drive elements according to functionally determined division. The Operator's Panel is for guiding operators and making round identification and fuzing selections. Finally, there is a Loader's Keyboard Panel with a breech block closing switch, fire, and local activation of the various trays.

The fire control system is based around an Inertial Laying and Navigation System (ILANS) which is an electronic system consisting of several microprocessors, inertial reference system, and a digital interface with the communication system. Panoramic telescopic sights are available for backup operations. For direct fire, the Slammer uses an M-32-based sight with a special drive unit which is advertised to give the Slammer the ability to hit a fifteen by fifteen meter target at up to six km. A point that Soltam also has made is that the sights on the Slammer were purposely designed to be very similar to those on the M109A2.

Turret traverse and elevation control is supplied via hydraulic pressure derived from the main powerpack. A handpump is available for backup. Traverse of the turret is a full 360 degrees with elevation ranging from -3 to +60 (use of the auto load system is not affected based on the angle of the gun tube).

The turret components, as well as the turret as an entire sub-system were designed to be applied to other SPG's or to other tank chassis for "instant" SPG's. It is not known whether any tests were carried out with this turret on other chassis or not.

This seems to be an example of not being able to qualify a system as a success based on the number of sales. The Slammer, by all accounts performed extremely well and would be a strong contender in any SPG showdown. It appears that the Slammer was beaten not by itself but by the accountant's pencil.



AUSTRALIAN SHERMANS

Paul Handel

Although Australia received some 757 M3 Medium Grants and Lees during 1942, only three M4 medium tanks were allocated to the Australian Army during the course of the Second World War. The indigenous tank program which produced the Australian Cruiser Tank was halted in mid-1943, after only sixty-six production vehicles were built. Part of the reason for stopping the Australian-built tank project was the insistence by US authorities of the availability of M4 Mediums in any quantity required by Australia. Indeed, the local manufacture of US Medium Tanks was considered at one stage, but the requirement to obtain powerplants from the USA and the inability of Australian industry to produce a synchromesh gearbox were factors which led to the idea being dropped.

The first US M4 Medium Tank to

arrive in Australia was an M4A2, produced as part of a British Lend-Lease order. Some of the identifying features of the vehicle were steel chevron tracks, solid bogie wheels, early style M4 volute units, early style sprocket, spoked idler, and sandshields. The gun was mounted in an M34 gun mount, and the turret used an Oilgear traverse unit. The tank arrived in Australia during mid-1943, and on arrival carried both a US registration number (USA W 3096073) and a British registration number (T 146142). The British registration number (less the T prefix) was the one used by the Australian Army to identify the vehicle. Soon after its arrival in Melbourne, the tank was painted in a two-color camouflage scheme of vehicle gre (a sort of khaki grey) and khaki green No. 3, and then despatched to the Mechanisation Experimental Establishment (MEE) at Monegetta, north of Melbourne, for trials. These trials included testing over grass, in bushland, through mud and over standard "WD" obstacles such as step, trench, and incline. The vehicle probably remained at MEE until around the middle of 1944.

Early in 1944, the Australian Army was requested by the British War Office

The M4A2 after its arrival in Melbourne. The USA and UK registration numbers can be clearly seen, and the desert-type sandshields are in place.





The M4A2 after repainting at Monegeetta. The Australian number can be seen on the transmission housing and the sandshields are already showing signs of damage.

to undertake trials of Churchill and Sherman tanks in "New Guinea conditions." The vehicles would be supplied by the UK, as would an RAC officer and a REME Senior NCO to assist with instruction on driving and maintenance. The British allocated two Shermans which arrived in Australia in May 1944. It is believed the tanks were supplied from stocks in the UK. Although both tanks bore consecutive British registration numbers, they were significantly different.

Tank No. T263412, an M4 manufactured by the Chrysler Corporation (serial No. 59427), had a welded rear hull with cast front. It had rubber chevron tracks, solid bogie wheels, early style sprocket and solid idler. The gun was mounted in an M34A1 gun mount, and the turret had a loader's hatch. Applique plates were welded on the hull sides.

The second tank, also an M4, was registered T263413, and was manufactured by Baldwin Locomotive (serial 16239). It had a fully welded hull, with rubber block tracks, spoked bogie wheels, late style sprocket, and solid

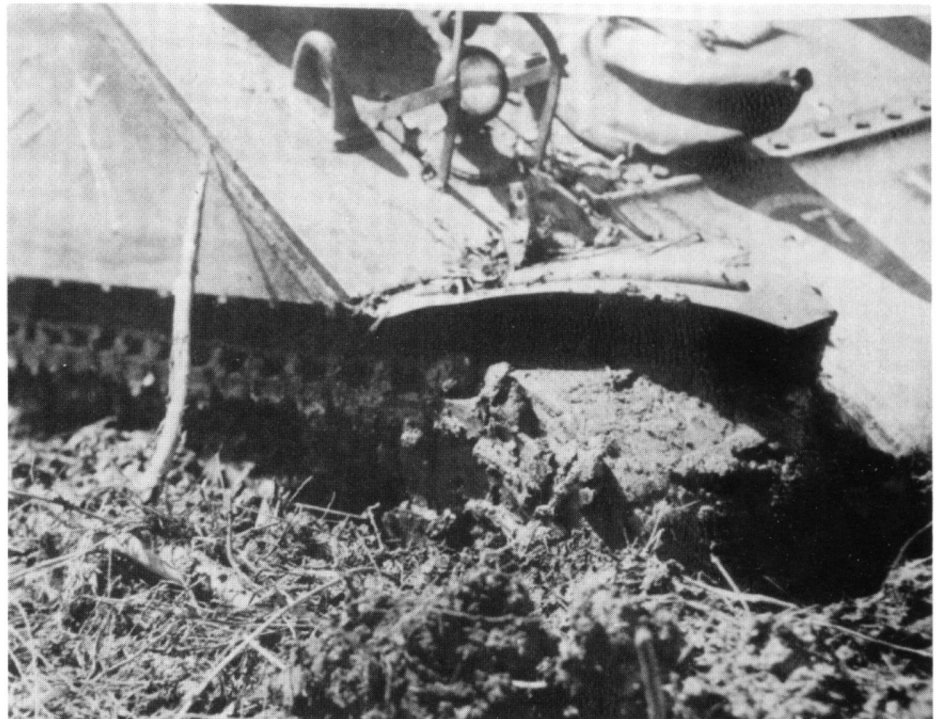
idler. The gun was mounted in a M34A1 gun mount. Applique plates were welded in front of the drivers' hatches and on the hull sides. An interesting sideline in designations is that in both official reports of the jungle trials the two tanks are listed as M4A1. Not until a further Australian report of 1945 does the designation M4 appear.

The Australian Army proposed the

use of the diesel engined M4A2 in the trials as well as the War Office supplied tanks and so the three Shermans, together with three Churchills (a Mk IV, Mk V, and a Mk VII), were shipped to New Guinea in August 1944 on the US Liberty Ship Norman J. Coleman, along with twenty-six Matildas allocated to the 2/4th Australian Armoured Regiment. After landing at Madang, the tanks were stored in the open for fourteen days, during which time the trials camp was established. The terrain selected for the trials included plantations of light undergrowth, with ground surface mud up to three feet deep; undulating Kunai grass, dense secondary growth and creek crossings eighteen feet wide and up to ten feet deep. Rain for the trials period was over twelve inches per month.

Initial running of the Shermans showed that the performance of the M4A2 fitted with steel chevron tracks was unsatisfactory, and so after fifty-seven miles of running for trial purposes this tank was deleted from the trials. Instead it was used to carry observers around and as transport to and from the trials site. The track problem was noted in the report which quoted "... had this tank been fitted with a flat rubber track and grousers, its performance would have been superior to that of the Sherman M4A1 (sic)."

The trials were conducted only in first and second gears, and this caused some problems with the two M4's due to the oiling up of spark plugs. The



The M4A2 on trials in New Guinea. The packing of mud in the steel chevron tracks can be seen, and faintly discernible on the side of the hull is the fictional figure "The Saint." The sandshields have been completely removed.

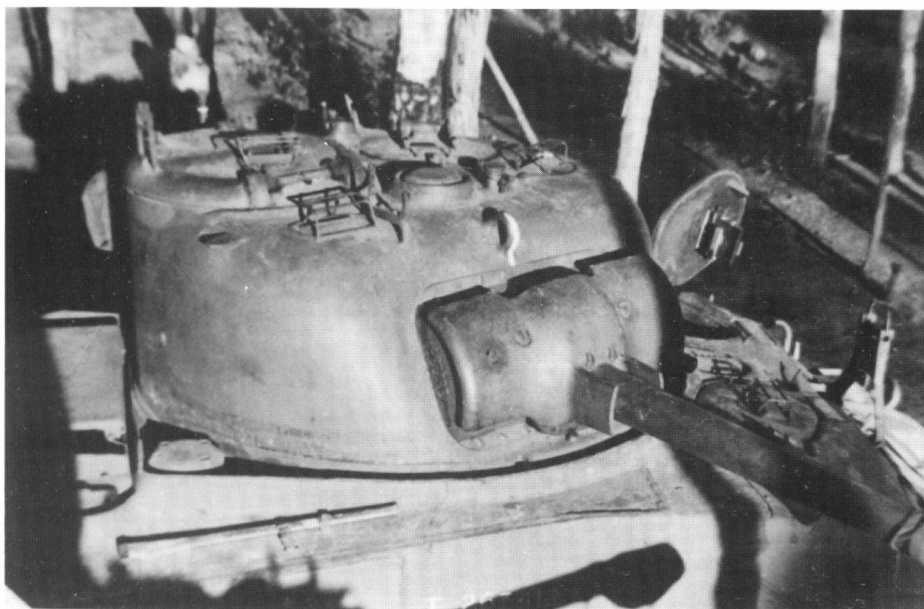
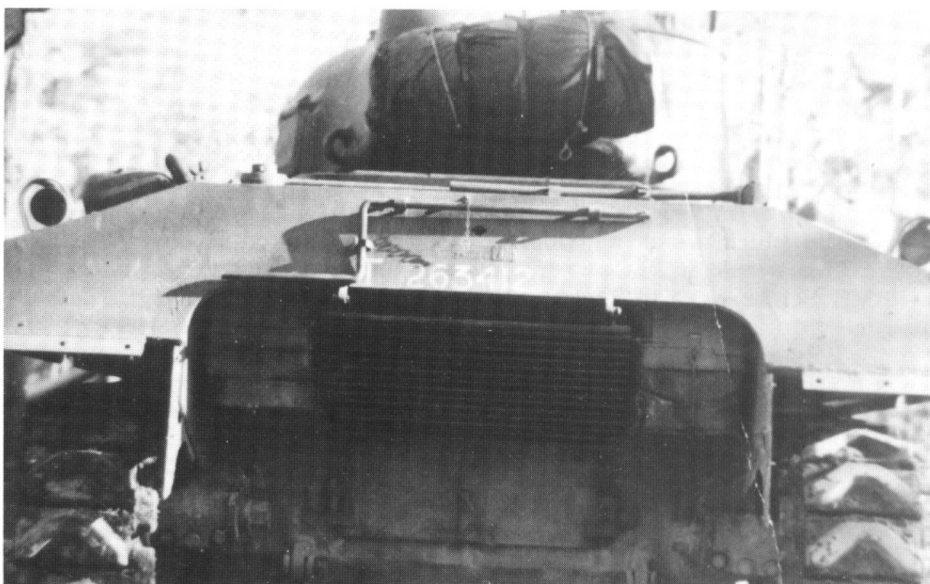
average distance covered by each tank during the trials, which lasted thirty-two days, was 130 miles. It was considered by the trials team that overall the Churchill was preferable to the Sherman for operations in jungle. The main advantages of the Churchill over the Sherman were listed as:

1. Superior maneuverability, especially at low speeds.
2. More suitable low gear ratio for low speed running during infantry co-operation.
3. Greater armor thickness.
4. Marginally better performance when crossing creeks and during hill climbing.
5. Greater ground clearance.

The Sherman was judged to be superior only in the areas of visibility, due to its larger periscopes which had wider fields of vision, and its ability to steer more easily on side slopes. However, the inherent reliability of the Sherman was considered advantageous.

Following the trials, the tanks remained in New Guinea for a further three and a half months, after which they were returned to Australia, where some further trials were conducted. Those trials confirmed the results of the New Guinea tests, and so the Australian Government ordered 510 Churchills for the Army. This order was cancelled at the end of the war, after only fifty-one Churchills had been received.

After the war, the three Shermans were sent to the AFV school at Puckapunyal, where the M4A2 and M4



TOP: The M4 (composite hull) in the tank park in New Guinea. The rubber chevron tracks are evident, as are the applique armor plates on the hull sides.

ABOVE: The lower rear hull of the M4 (composite hull) showing air cleaners and tool stowage.

The turret of the M4 (composite hull) with the M34A1 gun mount and gunner's hatch in evidence.

The M4 with flat rubber block tracks moving up a grass covered embankment. The grouser rack on the hull front is clearly seen.

(Composite Hull) were retained as museum pieces. The M4 was apparently used as a tank target, and was shot up on the range. The M4 (Composite hull) was used as a small arms target in running order, as extra armor protection was welded around the entry hatches and over the air cleaners at the rear. Fortunately, the desire to junk all surplus AFV's was resisted during the 1950's, and the M4A2 and M4 (Composite Hull) can both be seen today on display at the RAAC Tank Museum at Puckapunyal. The turret of the M4 was rescued from the range and is believed to be in the hands of a private collector.



The M4 with grousers fitted moves up a grassy hill. Note the missing grousers from the rack on the front of the hull.

The M4 after crossing a wooden corduroy road and negotiating a jungle track. The additional grouser rack and tool stowage can be seen, as can the towing pintle on the lower rear hull.

Curator's Column

(Continued from Page 3)

contractor in Georgia and is being rehabilitated. We expect to have it back in the Spring. Several other vehicles are missing from their normal spots. Again, they have *NOT* left the collection but have been moved in preparation for their rehabilitation.

Unfortunately, the first fifteen vehicles to undergo rehabilitation were not picked on the basis of their level of deterioration, historical significance, or other such criteria. They were picked, alas, on the need to clean the area they covered. This is not altogether a bad thing if you are an environmentalist. Our concern is to make sure that we get cleaned up what we need to clean up and then prevent any further contamination. (Let me hasten to add that the current level of contamination is very very small and can be rectified simply and, more importantly, cheaply.)

Within the museum proper we hope to complete a new exhibit on Explosive Ordnance Disposal by early summer. We are excited about this project as we have just acquired a EOD robot and plan to display it. Our temporary display on the Glen Miller Band of the American Expeditionary Force has closed but we hope to have another temporary exhibit in its place soon.

Come and visit us soon!

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Museum Ordnance Bookshelf G-2 news and notes about AFV resources

by

Tom Laemlein

Happy 1996! During the year Bookshelf G-2 will be featuring news and notes on the latest book and software releases for AFV fans. I'll also be featuring information on collecting out-of-print resources, their values, and where you have a chance to find them. We'll start the year with a focus on new foreign material available, particularly from Eastern Europe.

Wydawnictwo Militaria (Warsaw, Poland) is currently producing a tremendous series on armored vehicles. These cover WWII vehicles (primarily German), in well-printed, large format books. Color plates and scale drawings are numerous and very well done. You'll also find numerous photos from Polish sources rarely seen in the West. Titles include: Panzer I through Tiger, Panzer Colors (two volumes), Flakpanzer, Hummel/Nashorn/Brumbar, German Armored Trains, Maus, Stalin, Cromwell, and French Tanks 1940. The first volume released in English covers the SdKfz 251. Prices for the Polish imports are about \$10. Keep a sharp eye out for other Polish publications, particularly Janusz Magnuski's *Czerwony Blitzkrieg* (The Red Army blitz on Poland, 1939) or any of his releases on Polish armor. One well-stocked source for Eastern European publications is Derek Frost, 4335-115th Street, Edmonton, Alberta, Canada T6J 1P5.

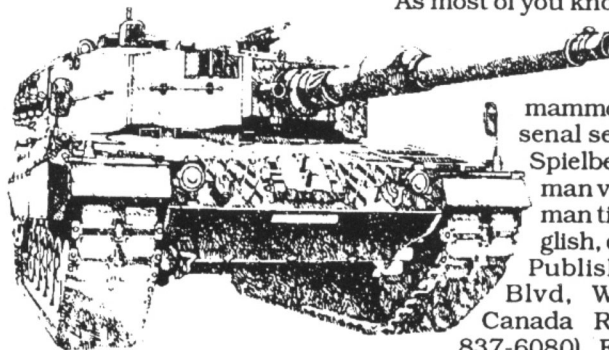
Russian sources are hard to find, Cyrillic is impossible for most of us to read, and Russian printing quality is (with some exceptions) atrocious. Even so, AFV books from the former Soviet Union are worth looking into. A recent purchase of a Russian book on Hungarian Tanks in WWII (\$6) netted excellent 1/35 drawings of every Hungarian vehicle, including the Toldi II in skirt armor. Upcoming Russian imports include: Lee/Grant Tanks, T-35, BT Series, and Soviet Railway Guns. Prices are usually well below \$10. Sorry, but I can not offer any specific Russian importer. Your best bet is the nearest major model or militaria show.

From France comes the excellent Militaria Magazine Specials that highlight AFV campaigns and battles like Tobruk, the Bocage, the Rhine Crossing etc. These are softcovers, with text in French and many previously unseen photos from French sources. The latest issue (#17) covers Dunkirk 1940. Cost varies, expect to pay around \$20. (try RZM Imports, P.O. Box 995, Southbury, CT 06488) Also from France comes the magazine Steel Masters, a glossy publication dedicated to armor modeling, loaded with quality photos and color illustrations. Look for them at regional model shows for about \$8-10 each.

Due in soon from Finland is *Armored Vehicles of the Finnish Defense Forces 1918-1989*. This is a photo history with English text illustrated with numerous interesting shots captured Russian vehicles in Finnish service. For those interested in the Spanish Civil War, look for *Blindados En Espana, La Guerra Civil 1936-1939* by Javier de Mazarrasa. This is an incredible softcover work, full of photos and color illustrations that cover the unique Spanish tank destroyer "Verdeja." (Contact: Air Enterprises, 214 Kenmark Rd, Newark, DE 19713 302-737-8363)

As most of you know, Schiffer Publishing (610) 593-1777 is producing English versions of most of the

mammoth German Waffen-Arsenal series, as well as Walter Spielberger's books on German vehicles. For other German titles translated into English, contact J.J. Fedorowicz Publishing (106 Browning Blvd, Winnipeg, Manitoba Canada R3K 0L7 or call 204-837-6080). Fedorowicz offers some



outstanding AFV titles, including the huge photo history *Tigers in Combat* by Wolfgang Schneider (\$95, and worth every penny).

Museum Ordnance's Bookshelf Book Reviews

HITLER'S NEMESIS

The Red Army, 1930-1945

By Walter S. Dunn, Jr.
231 pages, numerous tables
1994 ISBN 0-275-94894-3
Praeger Publishers
88 Post Road West
Westport, CT 06881
(203) 226-3571
\$59.95

Reviewed by Mark Stille

The recent expanded access to Soviet (now Russian) military archives has generated new interest in the Soviet role during the so-called Great Patriotic War and has offered new insights into how the Soviets were able to stop and then defeat the German juggernaut. Hitler's Nemesis is a survey of the Red Army

before the Second World War, its initial disasters early in the war, and its adaptation to allow it to become the principal instrument of Nazi Germany's defeat. If by no other reason than the general paucity of information on the wartime Red Army in English, it is a very valuable addition to anyone interested in Soviet military history or the war on the Eastern Front.

The book is well-named. As the author makes clear, it was the Red Army which bore the brunt of the fight against the Wehrmacht. This point should never be lost to English-speaking readers, and Dunn does a fine job of demonstrating the price the Soviet Union paid in the defeat of Hitler in his discussion on the USSR's manpower situation and its wartime mobilization (over 700 divisions, compared to the United States' 90).

Armor buffs will not be disappointed. Five of the book's thirteen chapters deal with the Soviet tank or tank destroyer

forces. Of these, the chapter on the refinement of the tank force during the second part of the war is noteworthy, and the chapter on tank and crew replacements and training is outstanding. Much of this information is not available anywhere else in English.

Because of the book's complete treatment of the Red Army, from its creation, doctrine, manpower and mobilization, and an examination of its armor, infantry, and artillery forces, this book is virtually one-of-a-kind. Despite its hefty price, it is a "must have" for any serious student of the Soviet Army or the Eastern Front. However, it will not be the definitive work on the subject. Notes for the various chapters indicate a heavy reliance on works already available in English and particularly on captured German archival material. The final word on the Soviet Army has yet to be written, and will not be until Soviet archives are fully exploited. However, in English, Hitler's Nemesis is the best single volume available on the subject.

DOMINICAN CRISIS 1965-1966

By Frank Walsh
40 Pages, photos, map
1966
Frank Walsh and T.B.N. Enterprises

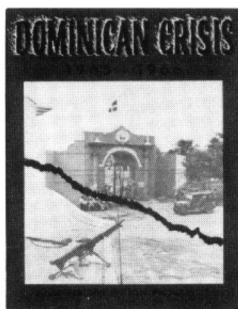
Reviewed by Paul V. Walsh
(No relation to the author)

It is likely that the majority of the public that watched the recent U.S. intervention in Haiti on the TV were unaware that this was not the only case of American history repeating itself on that small Caribbean island. Haiti's neighbor, the Dominican Republic, had also been occupied by U.S. forces, between 1916 and 1924 (the Marines occupied Haiti between 1915 and 1934). Almost thirty years ago U.S. forces returned to the Dominican Republic in operation 'Power Pack,' an intervention that was largely overshadowed by increasing U.S. involvement in Vietnam.

Frank Walsh's work includes roughly ten pages of text briefly describing the upheaval that followed in the wake of the death of Dictator Rafael Trujillo in 1961 and the U.S. intervention that it prompted. The immediate cause was the Civil War that broke out between the popular 'Constitutionalists' and Gen. Elias Wessin y Wessin, who commanded the Armed Forces Training center or 'Centro de Entrenamiento de las Fuerzas Armadas' (CEFA). As the elite of the Dominican Armed Forces, the CEFA had a mo-

nopoly on its heavy weapons. Because of the U.S. weapons embargo against Trujillo, these consisted of the unlikely combination of twenty L-60 light tanks, twenty Lynx armored cars (both acquired from Sweden in the early 1950s), and twenty AMX-13 light tanks (purchased from France in 1959). It is interesting to note that, because the CEFA was located next to an air base, it has often been erroneously reported that the Dominican Air Force was equipped with tanks! Gen. Wessin launched an attack on the capital, Santo Domingo. The Constitutionalists, however, repulsed this attack, seizing a number of Wessin's tanks and armored cars. Walsh's book contains twelve photos on the Civil War, including one showing an AMX-13 in front of the National Palace and another of an L-60 in Constitutionalist hands.

The majority of Walsh's book is made up of photos illustrating the U.S. intervention and occupation as part of the Inter-American Peace Force (IAPF). Landing from the Aircraft Carrier 'Boxer,' the



3rd Battalion of the 6th Marine Brigade, 2nd Division, supported by a tank company, entered the western portion of Santo Domingo behind a column of LVTs, ONTOS, and M-48 Pattons. The book contains five photos of USMC M-48s and two of ONTOS. The Marines linked up with the elements of the 82nd Airborne Division, which occupied the eastern portion of the city. The two forces can be easily distinguished in photos, since the 82nd was only recently equipped with the M-16, while the Marines were still armed with the older M-14. The 'clean' look of these troops is in marked contrast to their counterparts in Vietnam.

Along with U.S. forces, the IAPF consisted of a Brazilian Infantry Battalion, and the 'Fraternity Battalion,' the latter containing a Costa Rican Platoon, a Brazilian Marine Company, and rifle companies from Honduras, Nicaragua, and Paraguay. Walsh's book has ten photos of these peace-keeping troops, including one showing the Brazilian crew of a jeep-mounted 106mm recoilless rifle. Although fighting was largely restricted to dealing with the occasional sniper, a minor battle broke out between the IAPF and Constitutionalist forces on 15 June. The last U.S. forces withdrew in 21 September, 1966.

Frank Walsh's book provides a fine photographic history of this all-too-often forgotten operation, long overshadowed by the conflict in Vietnam.

C³I

As part of the US Army's ongoing crusade to eliminate excess hardware and equipment, fairly large quantities of vehicles have been sold to Lebanon at bargain-basement prices. In early January a delivery of 107 M113 armored personnel carriers and twenty-three other soft-skin vehicles was made.

While the cost of a new M113 runs close to \$1 million per copy, these were sold for about \$50,000 each.

Swedish newspapers recently reported that the mega-telecommunications company Ericsson planned a commando-style mission into Baghdad in the fall of 1990. Employees of the company were among the foreigners that were not allowed to leave Iraq following that country's invasion of Kuwait.

The company reportedly hired a team of security specialists to initiate "Operation Leapfrog." The plan called for the team to be brought in from Iran to meet with the Swedish employees and from there make their way back out. The plan was disrupted and ultimately cancelled when the guide for the infiltration failed to show up at the meeting point.

The need for the operation was negated

several days later when Saddam Hussein released them to leave the country.

Denying that his country is starting an arms race in the region, Malaysian Defence Minister Syed Hamid Albar announced that his country would acquire 300 main battle tanks (MBT).

The shortlist of candidates find Vickers Mark III competing against the T-72 (two versions, one from Poland and the other from Slovakia).

Citing Malaysia's increasing participation in U.N. peacekeeping activities, and their lack of fundamental heavy equipment as the reasoning behind the purchase of the tanks as well as several other major weapon systems. The country has purchased MiG-29 (eighteen) fighters as well as F/A-18s (eight), has a signed contract with Daewoo of Korea for more than 100 infantry fighting vehicles, and a request for proposal out to more than twenty countries for the construction of twenty-seven frigate-class patrol boats. In addition, it is anticipated that an order for attack helicopters will be forthcoming.

Perhaps not a race, but Malaysia's ability to project war will take a sharp upswing when these systems are in place.

Is China planning to invade Taiwan? Published newspaper reports in late January said that China was planning an invasion of Taiwan, which they view as a "renegade" province, after the elections there on March 23, 1996.

It has also been disclosed that on December 19, the USS Nimitz sailed through the Taiwan Strait, separating the mainland from the island. This is the first time a U.S. Navy ship has done

so since the U.S. granted official recognition to China in 1979. China lodged an official protest over the action. The U.S. claims it was an innocent action brought on by concerns over the weather.

Tensions between the two countries has been at a high level for over a year, ever since the Chinese tested two missile tests in the sea just north of Taiwan.

China has also been involved in several gunboat incidents with the Philippine navy, including several with gun fire exchanged, a ramming, and an attempted boarding.

In a financial move similar to that arranged with South Korea, Russia has agreed to give Finland three SA-11 Gadfly surface-to-air missile systems to pay down part of its \$1.3 billion debt. The deal also includes operational and maintenance training.

The Western Front Association will hold their Spring 1996 meeting at the Sheraton Four Points Hotel in Aberdeen, Maryland on March 16 (Saturday).

Some of the featured topics at this WWI organization will be "Pillboxes and Other Concrete Structures on the Western Front," "Trenches and Trench Warfare," AEF in the Battle of Soissons," "George C. Marshall in World War One," the "80th Anniversary of the Battle of Verdun," plus other displays and discussions on WWI subjects

The cost per person is \$20 and the sessions start at 9:30 a.m. For more information contact Eric Miller, P.O. Box 2305, Elkton, MD 21832

Tech Intell Volume Two

During World War II, the United States Army deployed small teams of ordnance personnel throughout the European and Pacific theaters of operation. The task of these teams was to report on each type of enemy ordnance and equipment as they would encounter it in the field.

Their reports and summaries were sometimes the first information available on a vehicle, gun, tank, or other system. Each report was usually accompanied by several photographs and a description of the subject. These reports were not compiled in a rear area motor pool but right on the front lines.

Darlington Productions has put together a selection of these reports in Volume 2 of **TECH INTELL**. This soft-cover book is 132 pages long with 129 photos and illustrations. Formatted with the look of the original reports, these reports have not been altered or edited and appear as they did in 1944/45.

Included in Volume 2 are reports on: PzKpf.Wg II Model L Tank • 2 cm Half-Track Armored Car (Sd.Kfz.) 250/9 • 2 cm Panzerflak Tank PzKpfw 38(t) • 7.5 cm Stu K. 42. Mounted on Pz.Kpfw IV Chassis • 3.7

cm Flak 43 on PzKpfw IV • BIVc Remote-Controlled Demolition Vehicle • 2 cm. Flakvierling 38 Mounted on Pz. Kpfw. IV Chassis • German 8-Wheeled Armored Car Sd Kfz 234/1 • German Armored Semi-tracked Vehicle mounting 2 cm. KwK 38 Sd. Kfz. 251/17 • German 8-Wheeled Armored Car Mounting 5 cm KwK 39/1, Sd.Kfz 234 • German Heavy Semi-Track Military Tractor, SWS • German Heavy Semi-Track Recovery Vehicle Sd.Kfz 9 • 38 cm Rocket projector on Tiger I Chassis • Modified German Semi-Track Vehicles • German Anti-Aircraft Guns Mounted on 8-ton Semi-Track Vehicle, Sd.Kfz 7 • Special Body on 8-ton Semi-Track Prime Mover, Sd.Kfz. 7 • German Streamlined Motorcycle • Preliminary Report on Henschel Tank Proving Ground • German 8-wheel Armored Car Mounting 2 cm KwK 38 gun • German Self-Propelled Gun Chassis as Cargo Carrier • French Unic Light Half-Track • Ordnance Target Report: Henschel "Panzer Versuchstation" (E100)

Title	Qty	Each	Total
Tech Intell Volume 2		\$13.95	
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BRITISH VICKERS MEDIUM TANK

"... a sound, if somewhat unremarkable machine."

Peter Brown

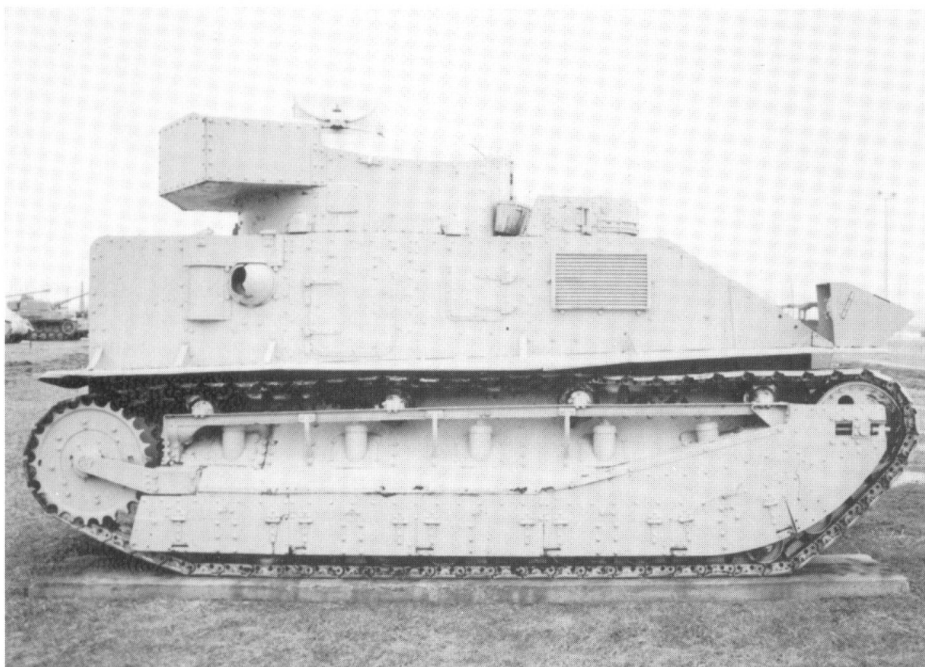
Great Britain ended the First World War with a sizeable tank fleet, mainly of two types. The old, Heavy series designed to cross mud, barbed wire and trenches, and the Mediums such as the Whippet designed for exploiting the breakthrough. Without the pressures of war-time production there was time to assess what role the new Tank had in warfare. New theories evolved to exploit them, but these theories needed a suitable vehicle to test them.

None of the wartime tanks were fast. They did not need to be as they were mainly concerned with supporting the infantry against machine guns, even Whippet was not expected to range far and wide, but new ideas required tanks to do just that. A new design for this new warfare was produced. It was to be a sound, if somewhat unremarkable machine.

The first Vickers Light Tank Mk I underwent trials in 1923. Choice of name was due to its weight, but when lighter designs came along it was re-

named the Medium Mk I in the following year. Existing documents were altered to reflect this. There were new features in the tanks, and welcome ones too. The machine had sprung suspension which the old Heavies lacked, with pairs of small wheels supported on springs to soften the ride, especially across country. The crew was separated from the engine, an improvement which was still a novelty. It mounted a revolving turret with a shell-firing gun, while various machine guns were fitted for use against infantry.

Once the design was accepted it was slowly improved. Various small changes to the turret and driver's visor resulted in the Mk IA and IA* (the star denoting a small change) but the main changes resulted in the Mk II series. These had the suspension protected by plates which could hinge upwards for maintenance. Engine was located at the left front under a steeply sloping armored cover, with the driver sitting to the right and alongside it. When con-



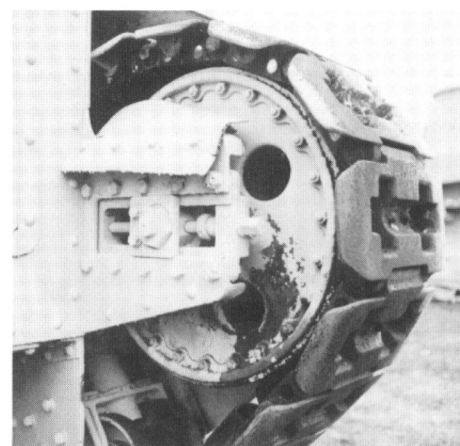
ditions allowed, he could see forward by opening flaps directly in front of and ahead and above his head, which was above the level of the rest of the hull.

This 'hood' is another distinguishing feature between the Mk I and II. Just behind the centre of the tank was the turret. This curious object was a low drum, with the sides and rear sloping down from the flat roof. As was common then it had no turret basket, it simply revolved above the apparently spacious fighting compartment. The commander had a small platform which allowed him to stand with his head out of the top hatch to observe all around. Below him the other three crew members served the 3pdr gun and up to four air-cooled Hotchkiss machine guns, and the two Vickers water cooled machine guns located in the hull sides. These men communicated either by shouting or by use of rubber speaking tubes, methods made for ringing ears or total confusion if the turret was traversed. All the crew entered by a large door in the rear of the box-shaped hull, with alternative side exits in case of emergency.

Even this design was improved. The Hotchkiss mountings were removed and the turret equipped with a co-axial Vickers gun, while the commander's position was moved back to take him further away from the recoil of the 3pdr gun and the shell cases ejected from it. He was further protected when looking out by the curious bevel-sided cupola, known as the "Bishop's Mitre." This had flaps opening to the side and view-

ing shutters front and rear. The turret rear bevel was deleted, and an electrically driven ventilating fan was fitted to the fighting compartment, protected by an armoured box. This design was known as the IIA, and ten were produced from 1930 onwards.

Still more changes were made, and a radio set was added to the turret rear which made the lead weight originally used to balance the gun unnecessary. Many of these changes were incorporated into earlier vehicles, to produce a bewildering array of sub-types. The



The track tension mechanism on the Vickers Medium at the U.S. Army Ordnance Museum.

APG vehicle is actually a IIA*, the eighth vehicle built which was allotted Army serial number T425 and civil registration number of MT9617. It would have cost some £8000 - about \$32,000 at the exchange rates in those days! In all over 170 vehicles were built by either Vickers or the Government-owned Ordnance Factories for the British Army, and served the Royal Tank Corps from the mid-1920s until the beginning of WW2. Several vehicles were fitted with a larger 3.7" howitzer in place of the 3pdr as a close-support tank.

Some even survived later, a couple even faced Rommel in the desert - dug in as pillboxes. Other struggled on as either training vehicles or even pillboxes in the dark, post-Dunkirk days

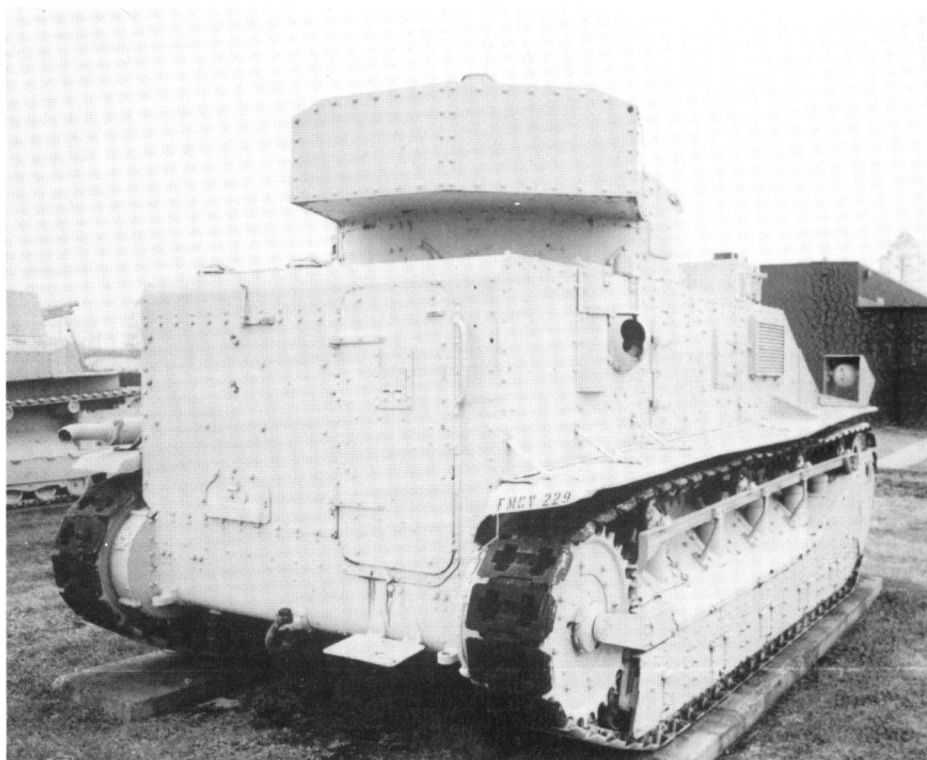


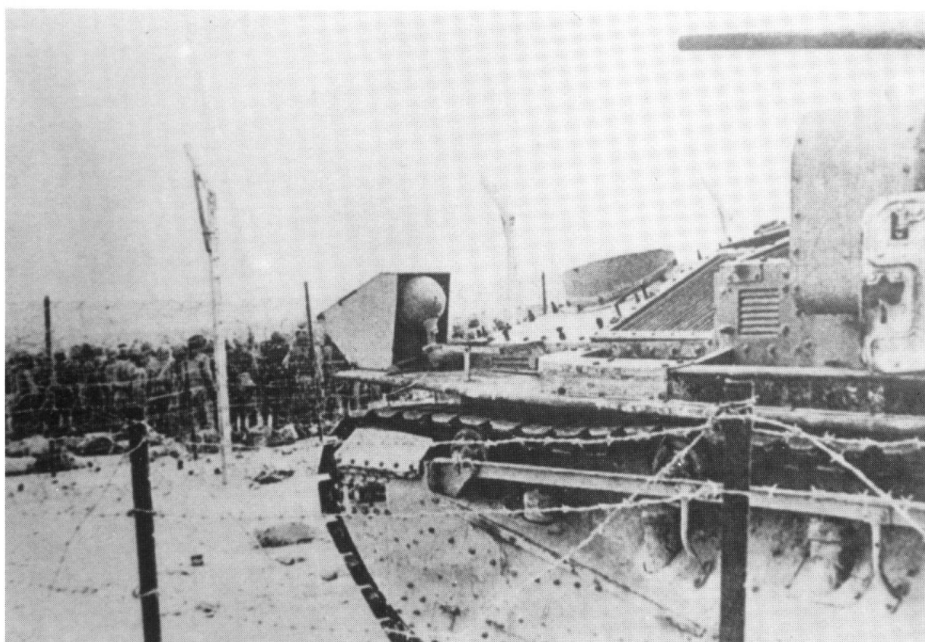
until new tanks and old age rendered them obsolete.

Some went farther afield. A lone Mk I went to South Africa, special versions were built for use in India by the British Army stationed there, four modified tanks went to Australia with smaller bevels to the turret sides and no "Bishop's Mitre," and some fifteen similar machines were sold to the Russians who called them "English Workmen." These vehicles do not seem to have impressed the Russians, for unlike the 6-ton Model E and light tanks also bought they were not produced under licence.

One modified vehicle, fitted with an enlarged rear body containing wireless equipment and no turret, was christened "Boxcar" and used at the command tank of the 1st Tank Brigade, while a turret command tank with dummy main gun also existed. One was converted as a simple bridgelayer.

One unusual design was a wheel cum track device. To overcome the problem of short track life and lack of





British prisoners at Mersa Matruk held in a compound behind a Vickers Medium.

expensive specialist transporters, a Mk I was modified to have a solid rubber-tired wheel at each corner of the hull. These were raised and lowered mechanically by using a special power take off from the gearbox. The idea worked, after a fashion, but was not a success and the tank was converted back into its original form.

A self-propelled gun version of sorts also existed, several vehicles carrying the then standard 18pdr gun on a chassis based on Medium parts were produced and named Birch Guns. These were very advanced when they first appeared in 1925, and could act as field or anti aircraft gun in support of mobile formations.

Detail changes resulted in different models, including two with turrets or at least crew protection in all directions and not just a field gun type shield. The design was not taken into full scale service, although a gun tractor, again using parts from the Mediums, saw service as Medium Dragons towing 60pdr and 6" guns.

The Medium's main virtue was, it was there. The theory and practice of armored warfare was evolved with the help of these machines and the smaller tanks, tracked carriers and armored cars which accompanied them. At various times they battled across English country lanes in mock combat, or rattled in the heat and dust of India and Egypt clad in asbestos sheets to keep out the heat. They were an undistinguished design, not a lot more than a box on

tracks, but they helped many people learn a lot. Perhaps without them there would have been no Blitzkrieg?

Statistics

Medium Mk IIA

Dimensions

17' 6" long

9' 3" wide

8' 10" high to top of turret

Armor

8mm maximum

6.5mm minimum

Engine

Amstrong-Siddeley air-cooled V developing 90php at 1675rpm

Max Speed

18mph (some timed at 25mph)

Weight

12.5 long tons

Armament

one 3pdr gun and one .303" machine guns in turret, two .303" machine guns in side mountings with 96 and 5750 rounds respectively carried

Armor Modeling and Preservation Society...

... or AMPS, is a non-profit organization whose purpose is to "associate interested individuals and organizations in both sharing an interest in the history of armored vehicles and in cultivating interest in armored vehicles and related subjects via the hobby of modeling..."

Boresight the Society's publication, is issued six-times per year and is full of articles, reviews, and other information useful to the military modeler.

A one-year membership is \$20.00 (U.S.), Canada \$25.00, All Others: \$25.00 surface and \$35 airmail. All payments must be in U.S. funds, no credit cards.

AMPS
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Plan on attending AMPS 96, the 2nd Annual National Convention of the Armor Modeling and Preservation Society on April 19 & 20, 1996 at the Aberdeen, Maryland, Sheraton Four Points.

Museum Ordnance Specials

Museum Ordnance announces a series of publications using the 24-page magazine format. Each publication in the series will feature either a particular vehicle, a series of vehicles, or a conflict/engagement.

Museum Ordnance Special #1 M88A1 Armored Recovery Vehicle

An indepth photo study of the U.S. Army's primary ARV. More than 80 photos and line drawings detail the exterior and interior of this vehicle.

Museum Ordnance Special #2 Iron Coffins: Italian Medium Tanks - M13 and M14

More than 60 photos, illustrations, and drawings depict these WWII tanks.

Museum Ordnance Special #3 M26 Pershing

The interior and exterior of this U.S. tank is detailed with more than 90 photos and line drawings detailing the exterior and interior of this vehicle.

Museum Ordnance Special #4 German Elefant Panzerjäger Tiger (P)

Approximately 90+ illustrations show the inside and outside of this German Tank Destroyer. Although this example is not in restored condition from the APG museum, it clearly shows off the features and details of this vehicle.

Museum Ordnance Special #5 "FUCHS" Transportpanzer (TPz1) and Variants

This modern Bundeswehr vehicle serves not only as an APC, but also as an engineer vehicles, ambulance, command post, and other roles. The U.S. Army (designated as the FOX) used these vehicles in an NBC role during the Gulf War. See it inside and out!

Museum Ordnance Special #6 Post-War T-34/85

Takes a look at the life and evolution of the T-34/85 after WWII. Photos show external changes as well as internal details.

Museum Ordnance Special #7 Armored Fighting Vehicles of El Salvador

El Salvador fought their internal guerrilla war with a variety of armored vehicles, some purchased, most, however, were designed and built within the country. Tracked and wheeled vehicles alike are shown in this Special filled with action photos and detail shots.

NEW!!

NEW!!

NEW!!

Museum Ordnance Special #8 The Battle for Namibia, South Africa's Longest War

This Special takes the reader into a rarely studied war fought by the South African military against SWAPO insurgents based mainly in Angola. With 57 photos, 2 drawings, and 3 maps.

Museum Ordnance Special #9 The M1A1 and M1A2

A detailed look at *THE* world's premium MBT. Inside and out using photos and line drawings from the U.S. Army TM's, you can see the differences between the two vehicles.

Museum Ordnance Special #10 Valentine Infantry Tank

Using photos from two different vehicles as well as illustrations from the operator's manual, see this tank up close.

Museum Ordnance Special #11 Sd.Kfz 231 (8-Wheel)

Detail photos of both the interior and exterior, plus a few wartime photos clearly describe the German armored car.

Museum Ordnance Special #12 Merkava II and III

This look at the exterior of this Israeli MBT. Shows the differences between the two variants AND the differences between the production runs within the variant.

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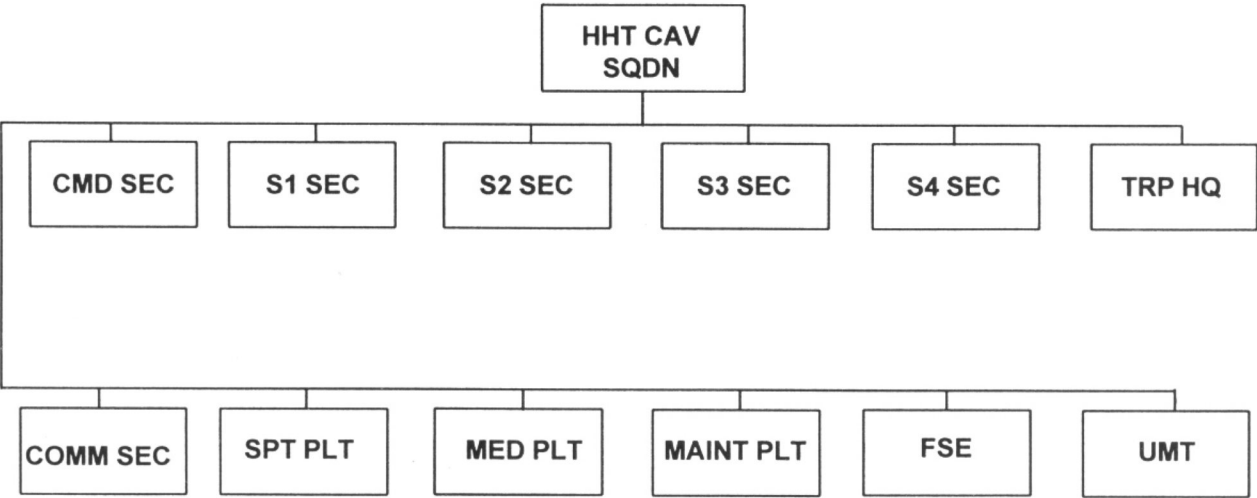
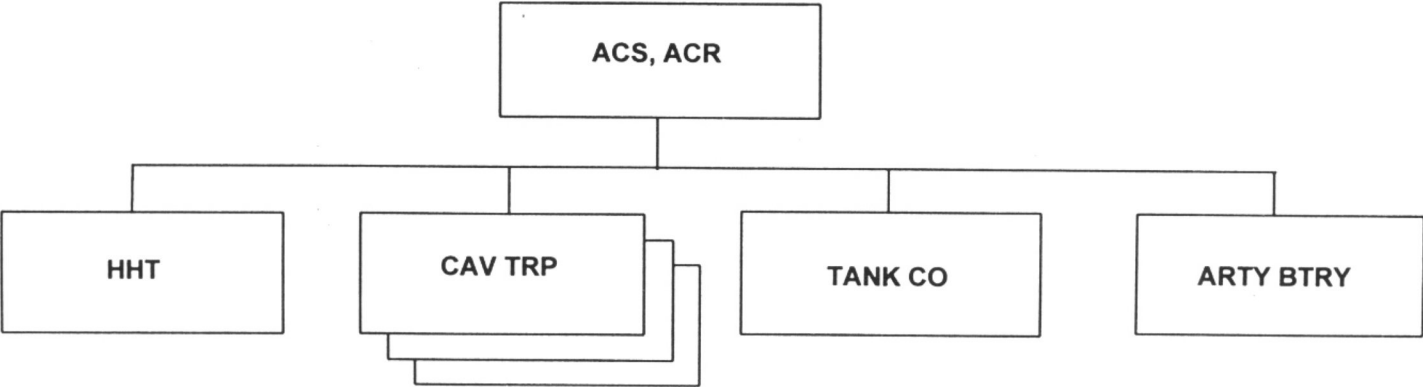


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Modern U.S. Army Table of Organization and Equipment

Armored Cavalry Squadron

Based on reference data released from the Armor Center at Ft. Knox, what follows is the TOE for an ACS (armored cavalry squadron) from an ACR (armored cavalry regiment). At some point, if there is a demand, we can provide the full remaining TOE for the ACR.



HHT, ARMD CAV SQDN, ACR

CMD SEC PARA 01

S-1 SEC PARA 02

S-2 SEC PARA 03

THREE TRP III/V SQDS PARA 10



1 LTC 12C88 (CDR)
1 SSG 18030 (VEH CDR)
1 SGT 18020 (CFV GNR)
1 SP4 18010 (CFV DVR)



1 LTC 12C88 (CDR)
1 CSM 88250 (CSM)
1 PFC 18010 (VEH DVR)
* WHEN NOT MTD IN M-3



1 MAJ 12C88 (EXEC OFF)
1 PFC 18010 (VEH DVR)



1 CPT 12C88 (S-1)
1 SFC 78240 (PERS SGT)
1 SSG 78830 (PERS AD SVC SUPV)
1 SP4 71010 (LEG SP)
2 SP4 78810 (PERS AD SP)
1 PFC 71110 (ADMIN CLK)
2 PFC 78810 (PERS AD CLK)



1 CPT 34088 (S-2)
1 LT 36088 (TAC INTEL OFF)
1 SGT 88820 (INTEL ANAL)
1 SP4 18010 (CARR DVR)

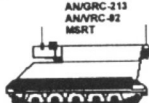


1 MSG 19230 (INTEL SGT)
1 SP4 84810 (INTEL ANAL)

S-3 SEC PARA 04



1 MAJ 12C88 (S-3)
1 SSG 18030 (VEH CDR)
1 SGT 18020 (CFV GNR)
1 SP4 18010 (CFV DVR)



1 CPT 12C88 (ASST S-3)
1 SGM 19230 (OPR SGT)
1 SP4 18010 (CARR DVR)
1 SP4 71110 (ADMIN SP)



1 SFC 18040 (ASST OPS SGT)
1 SSG 18030 (VEH CDR)
1 SP4 18010 (CARR DVR)



1 MAJ 12C88 (S-3)
1 PFC 18010 (VEH DVR)
* WHEN NOT MTD IN M-3



1 LT 74A88 (CHEM OFF)
1 SSG 84830 (NSC NCO)



1 LT 12C88 (LNO)
1 SP4 18010 (LNO ASST)

ONE 88 CAL. 1 M-88 MG
WTRIPPOD IN SEC

S-4 SEC PARA 05



1 SFC 82Y40 (SUP SGT)
1 PFC 82Y10 (SUP SP)



1 CPT 12C88 (S-4)
1 SP4 18010 (CARR DVR)



1 SGT 82Y20 (ASST SUP SGT)



1 SP4 82Y10 (SUP SP)

ONE M-88 MG WTRIPPOD IN SEC

TRP HQS PARA 06



1 CPT 12C88 (CDR)
1 PFC 18010 (VEH DVR)



1 LT 12C88 (EXEC OFF)
1 SP4 82Y10 (SUP SP)



1 SSG 19238 (1SG)
1 SP4 82Y10 (ARMORER)

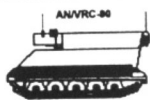


1 SSG 82Y30 (SUP SGT)
1 PFC 82Y10 (SUP SP)

ONE 88 CAL MG WTRIPPOD AND RING MT IN SEC

SQDN COMMO SEC PARA 07

SPT PLT HQ PARA 08



1 CPT 36C88 (C-E OFF)
1 SFC 31U40 (SEC CH)
1 SGT 31U20 (TM CH)
1 SP4 31U10 (SG SPT SYS)



1 SSG 31C30 (RDO TM CH)
2 SSG 31U20 (FWD SIG SPT)



1 SGT 31U20 (FWD SIG NCO)



1 SGT 31U20 (TM CH)
1 SP4 31U10 (RAD RET OP)
1 PFC 31U10 (RAD RET OP)



1 LT 12C88 (PLT LDR)
1 SFC 88880 (PLT SGT)
1 PFC 18010 (VEH DVR)

TRANS SEC PARA 09



1 SSG 77F30 (PET VEH SUPV)
1 SP4 18010 (PET HY OP)
1 PFC 18010 (PET LT OP)



1 SSG 88880 (SEC SGT)
1 SP4 18010 (HY VEH DVR)



1 SGT 18020 (AMMO SGT)
1 SP4 18010 (VEH DVR)



1 SP4 84810 (DEC SP)
2 PFC 18010 (VEH DVR)

THREE 80 CAL MG WTRIPPODS & RING MTS



1 SSG 18030 (SQD LDR)
1 PFC 18010 (ASST HY DVR)



1 SP4 18010 (PET HY VEH OP)



1 SP4 18010 (PET HY VEH OP)



1 SP4 18K10 (PET HY VEH OP)



1 SGT 18020 (PET HY OP)
1 PFC 18010 (ASST PET HY OP)



1 SP4 18010 (HY VEH OP)



1 SP4 18010 (HY VEH OP)



1 SSG 18030 (SQD LDR)
1 PFC 18010 (ASST HY DVR)



1 SP4 18010 (PET HY VEH OP)



1 SP4 18010 (PET HY VEH OP)



1 SP4 18K10 (PET HY VEH OP)



1 SGT 18020 (PET HY OP)
1 PFC 18010 (ASST PET HY OP)



1 SP4 18010 (HY VEH OP)



1 SP4 18010 (HY VEH OP)



1 SSG 18030 (SQD LDR)
1 PFC 18010 (ASST HY DVR)



1 SP4 18010 (PET HY VEH OP)



1 SP4 18010 (PET HY VEH OP)



1 SP4 18K10 (PET HY VEH OP)



1 SGT 18020 (PET HY OP)
1 PFC 18010 (ASST PET HY OP)



1 SP4 18010 (HY VEH OP)



1 SP4 18010 (HY VEH OP)

TANK CO III/V SQUAD PARA 11



1 SSG 18K30 (SQD LDR)
1 SP4 18K10 (ASST HY VEH OP)



1 SGT 18K20 (PET HY VEH OP)



1 PFC 18K10 (ASST PET HY VEH OP)



1 SP4 18K10 (PET HY VEH OP)
1 PFC 18K10 (ASST PET HY VEH OP)



1 SGT 18K20 (HY VEH OP)
1 SP4 18K10 (HY VEH OP)



1 SP4 18K10 (HY VEH OP)

SQDN MESS SEC PARA 12



1 SFC 84B40 (FOOD SVC SGT)
1 SSG 84B30 (FIRST COOK)



1 SSG 84B30 (FIRST COOK)
1 SP4 84B10 (COOK)



1 SSG 84B30 (FIRST COOK)
1 PFC 84B10 (COOK)



1 SP4 84B10 (COOK)
1 PFC 84B10 (COOK)



1 SGT 84B20 (COOK)
1 SP4 84B10 (COOK)
1 PFC 84B10 (COOK)



1 SGT 84B20 (COOK)



1 SP4 84B10 (COOK)



1 SGT 84B20 (COOK)



1 SGT 84B20 (COOK)
1 SP4 84B10 (COOK)
1 PFC 84B10 (COOK)



1 SGT 84B20 (COOK)
1 SP4 84B10 (COOK)
1 PFC 84B10 (COOK)

ARTY BTRY MESS TEAM PARA 13



1 SFC 84B40 (FOOD SVC SGT)
1 SP4 84B10 (COOK)



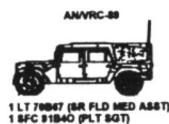
1 SSG 84B30 (FIRST COOK)



1 SGT 84B20 (COOK)
1 SP4 84B10 (COOK)
1 PFC 84B10 (COOK)

HHT, ARMD CAV SQDN, ACR (CONT)

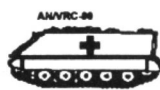
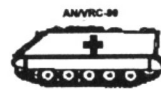
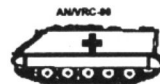
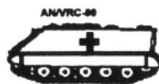
SQDN MED PLT HQ PARA 14



TREATMENT SQUAD PARA 15



TRACKED AMB SQUADS PARA 16



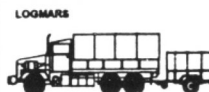
CBT MEDIC SEC PARA 17

1 SP4 91810 (CBT MED SP)

SQDN MAINT PLT HQ PARA 18



REPAIR PARTS SEC PARA 19



RECVY SPT SEC PARA 20



MAINT SVCS SEC PARA 21



FIRE SUPPORT SEC PARA 22

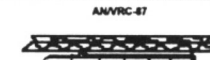
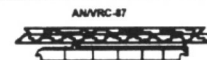
ANVRC-83
ANVRC-82
ANVRC-86
TA-19A2
M8D
2 F&CT



ANVRC-81
F&CU



AVLB SEC PARA 23



UNIT MINISTRY TM PARA 24

TA-1936



ARMD CAV TRP

TRP HQS

SCOUT PLT

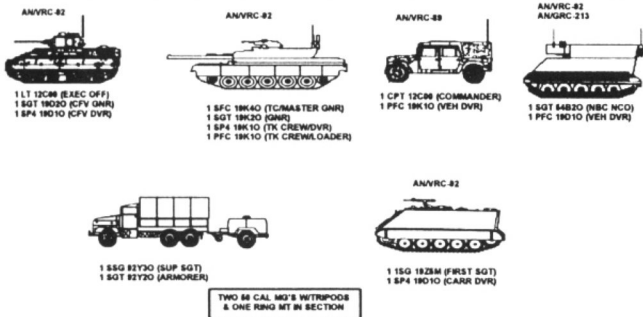
MAINT SEC

MORTAR SEC

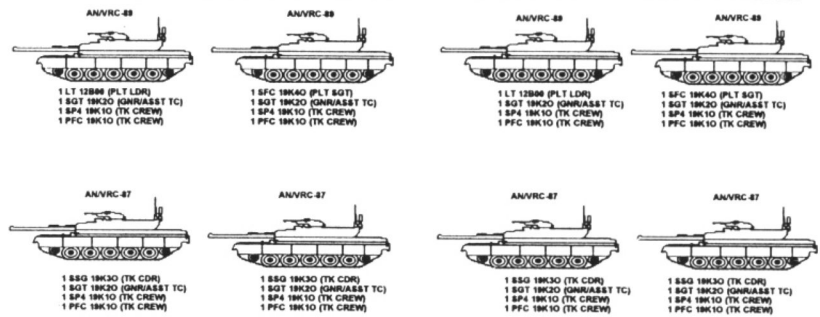
TANK PLT

CAVALRY TROOP, CAVALRY SQUADRON

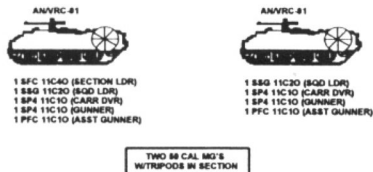
TROOP HEADQUARTERS PARA 01



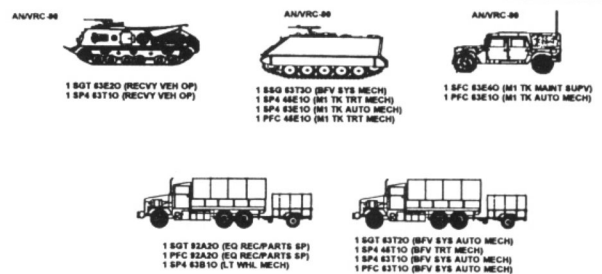
TWO (2) TANK PLATOONS PARA 04



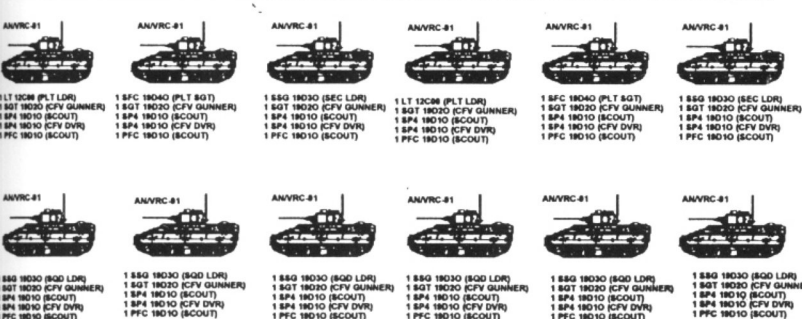
MORTAR SECTION PARA 02

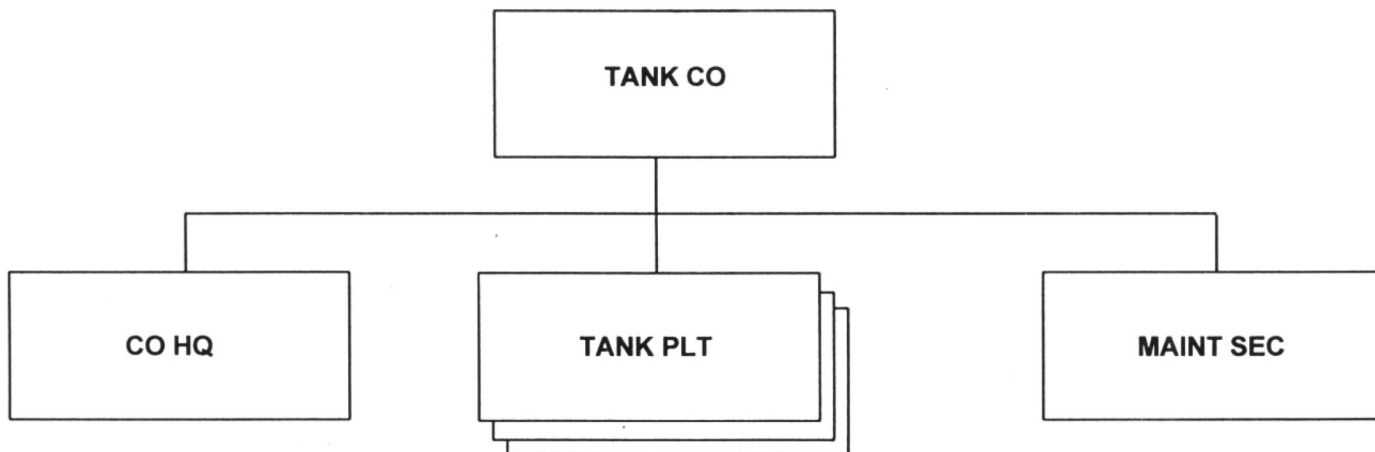


MAINTENANCE SECTION PARA 05



TWO (2) SCOUT PLATOONS PARA 03



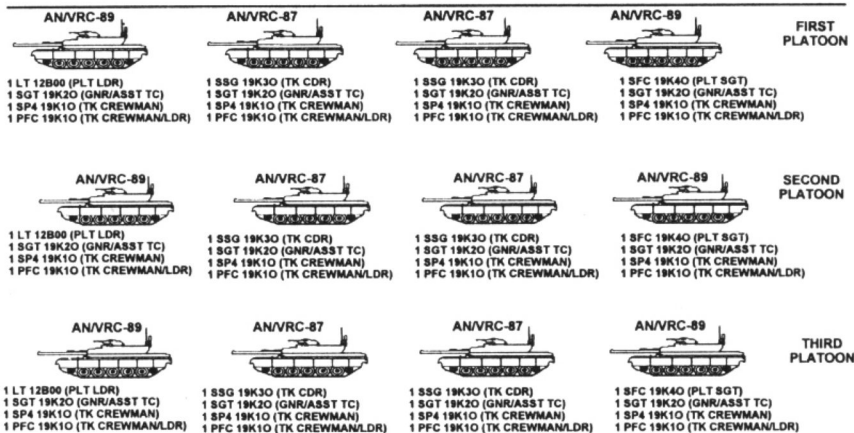


TANK COMPANY, ACR

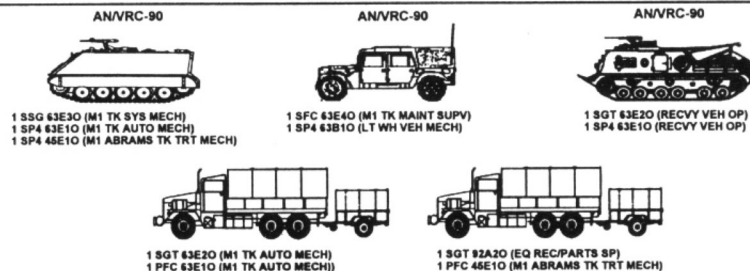
COMPANY HEADQUARTERS PARA 01



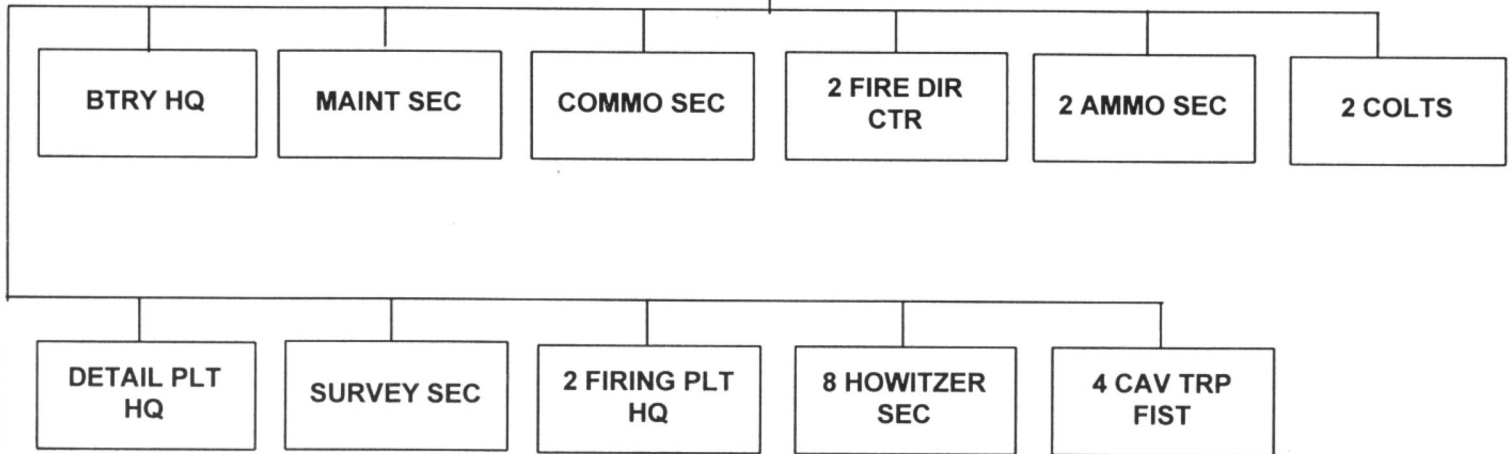
THREE TANK PLATOONS PARA 02



MAINTENANCE SECTION PARA 03



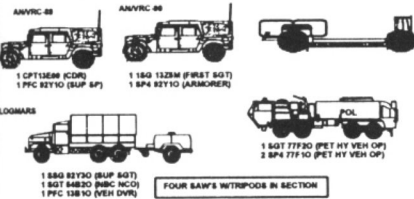
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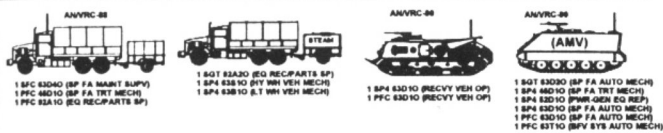
ARTILLERY BATTERY, ACR

BATTERY HQS PARA 01

DETAIL PLT HQS PARA 02



BATTERY MAINTENANCE SECTION PARA 03



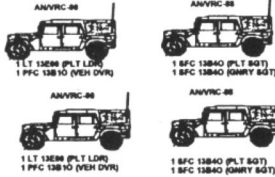
SURVEY SEC PARA 04



COMMO SEC PARA 05



TWO (2) FIRING PLT HQS PARA 06



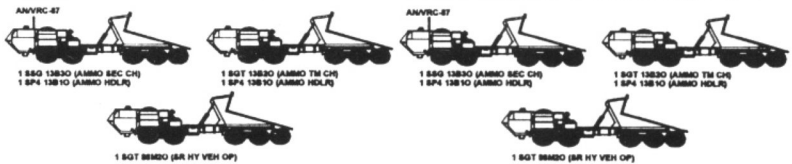
TWO (2) FIRE DIRECTION CENTERS PARA 07



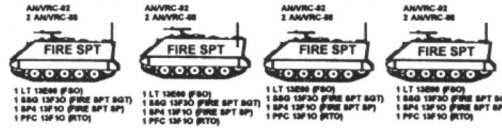
EIGHT (8) HOWITZER SECTIONS PARA 08



TWO (2) AMMUNITION SECTIONS PARA 09



FOUR (4) CAV/TP FIST PARA 10



TWO (2) COLTS PARA 11



CRICKET

German Heavy Self-Propelled Gun

Brad Thompson

The GW Tiger für 17cm K72 (Sf) was another of the German designs built towards being able to deliver artillery firepower, especially of large caliber into action quicker and closer to the front. Allied air supremacy had made the transportation of large artillery trains and columns difficult. Because of their size, the component parts of the heavy gun were carried separately meaning the loss of even a few crucial vehicles could reduce the entire gun to inaction.

Another reality for the Germans was the difficulty in producing the heavy artillery pieces themselves. A solution was to increase production of heavy smooth-bore mortars. Using fin-stabilized projectiles, the long ranges required could be obtained along with the punch of larger artillery.

There was only one prototype of this vehicle built and it was found at the Henschel Tank Proving Ground near Kassel, Germany. The vehicle was found without the mortar mounted, which was found at a location approximately one and one-half miles away. The chassis that the gun was mounted on was designed to slip into the vehicle on a set of rails. Besides allowing for easier maintenance, this was to

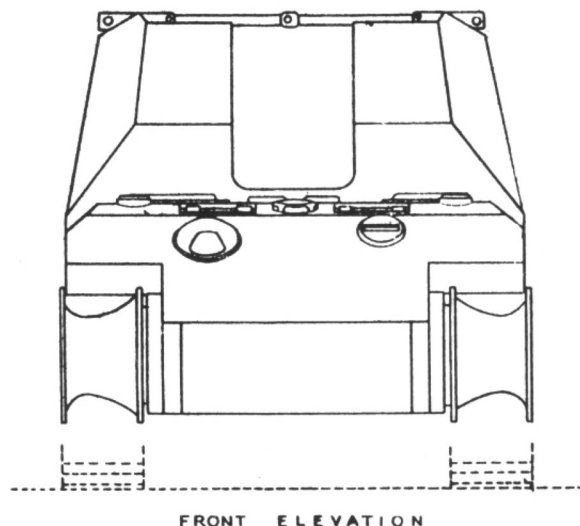
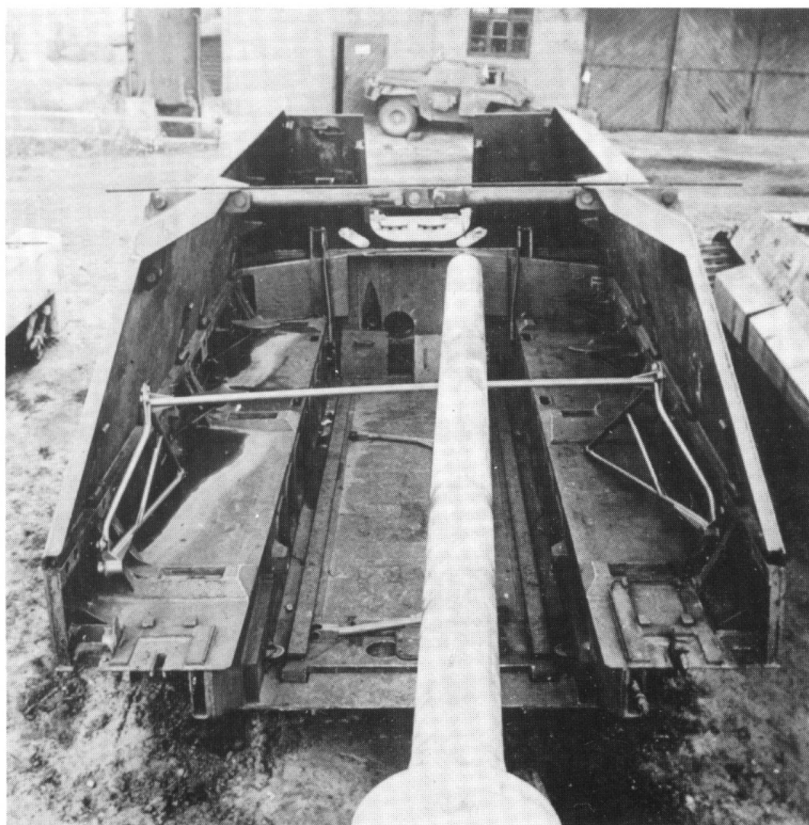


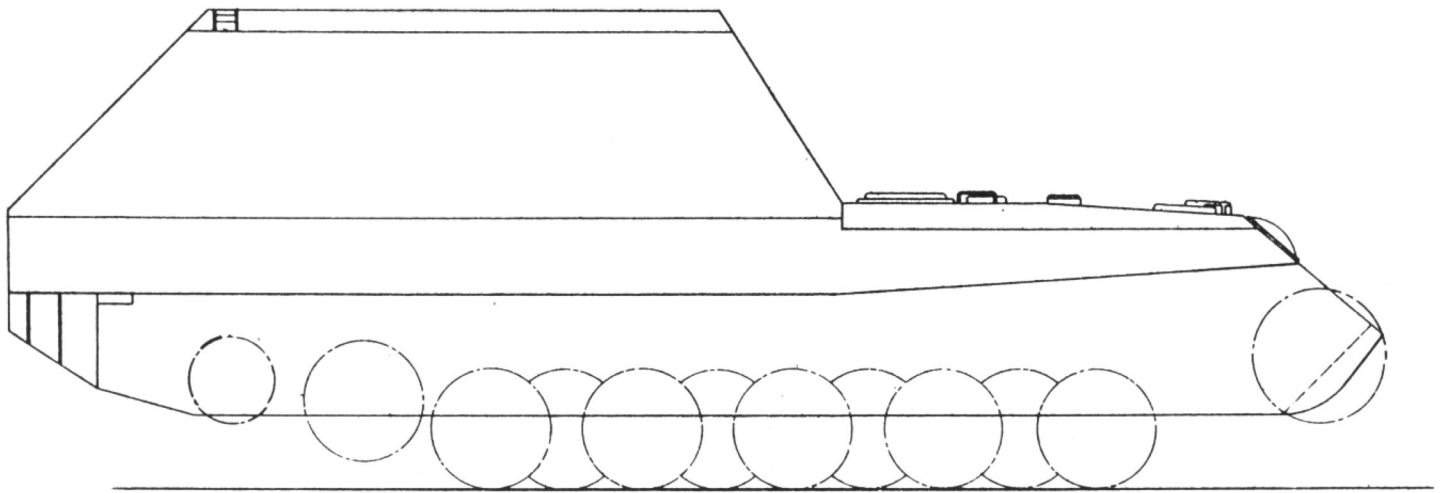
allow the mortar to be slid towards the rear onto a platform that would permit 360 degree traverse. Besides the 17cm, there were also arrangements for a 21cm, a 30.5cm, and even consideration of a 42cm mortar.

The vehicle itself was built around the Tiger B chassis and running gear. Using the same engine as the Tiger B (Maybach HL230P30) a range of 200 km at a speed of about 35 km/hr could be had. The finished vehicle weighed about 58 tons and was 13 meters long with the 17.5cm barrel. The height stood at 3.15 meters. The 17.5cm variant had a crew of seven.

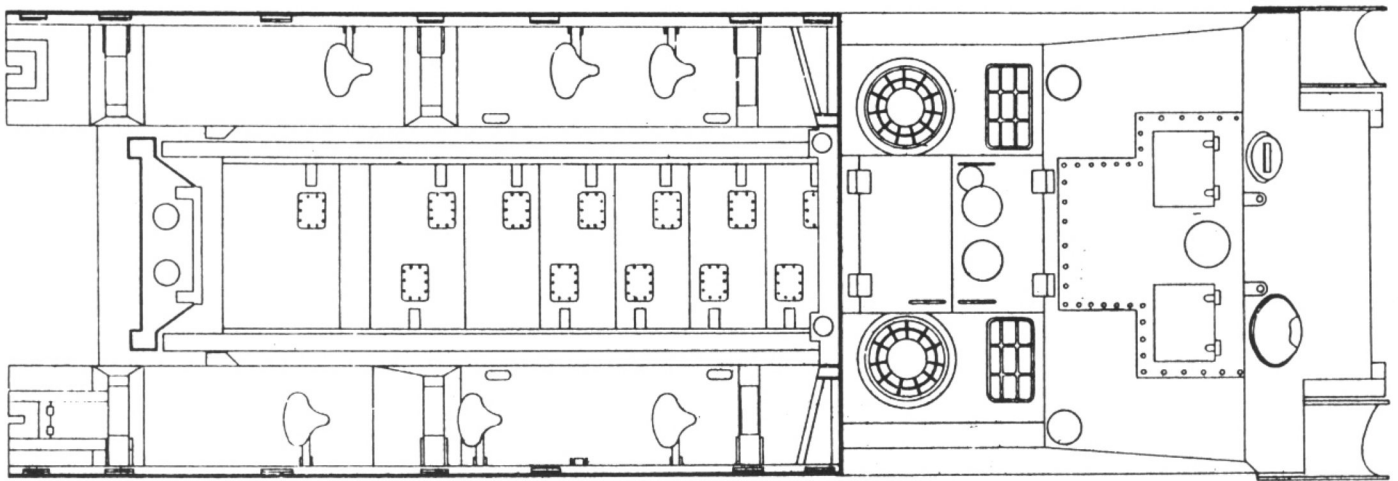
The 17cm version was destined for production, with a planned start in mid-1945.

Tech Intell, Volume Two has three of different photos of the vehicle and one of the mortar carriage and chassis. The Encyclopedia of German Tanks of World War II (revised edition) was used for this brief text.

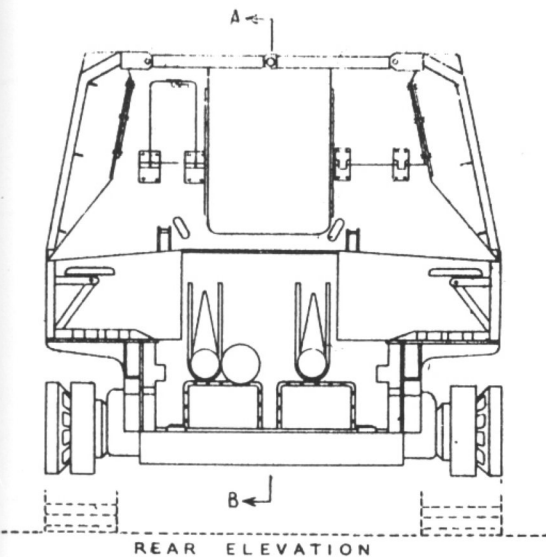
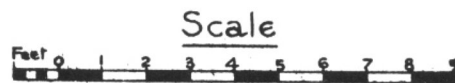




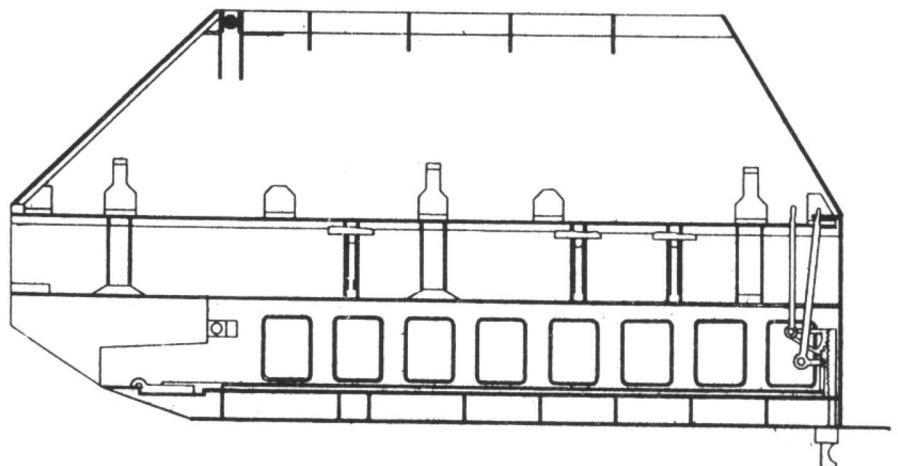
SIDE ELEVATION



PLAN



REAR ELEVATION



The Ordnance Museum Foundation

Executive Director's Corner

P.O. Box 688
Aberdeen Proving Ground, MD 21005

Fellow Members;

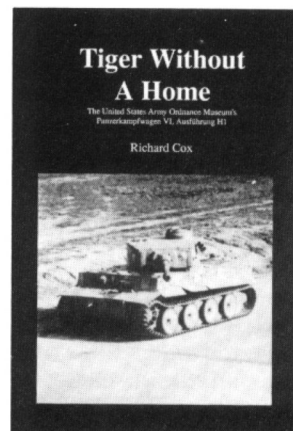
ANNUAL MEETING RESCHEDULED

The East Coast winter has stopped a lot of activities in our area, including our Annual Meeting (that was the day of the first ice storm of the season). We have rescheduled the Annual meeting to SATURDAY MARCH 9, 1996 FROM 10:00AM IN THE LITTLE THEATER

If you can make it, we would enjoy your company at the meeting. We may persuade Dr. Atwater to show some of the special artifacts the museum possesses that are not on public display. We will review the usual information - membership, funding status, programs and an appeal for new leads for potential contributors. We also look to the members for fresh ideas and critique what we are doing. So, if it's not too far a drive, plan to attend.

PUBLICATION - TIGER WITHOUT A HOME

Richard Cox's book is published and the orders for pre-publication are being mailed now. If you did not order a copy, write the Ordnance Corps Association, P.O. Box 377, Aberdeen Proving Ground, Maryland 21005-0377. The cost is \$12.95 + \$2.00 S&H. (Maryland Residences add 5% sales tax). The Foundation and Association jointly sponsored this edition of the book and will share in the profits. If this turns out to be successful, we may try some other publications and reprinting some interesting ordnance literature. We thank Mr. Cox for his support of the museum and Foundation.



GOVERNMENT INITIATIVE

Co-Chairman Elliot Deutsch has made contacts with Maryland government officials to request funding from the State and County for the new building. We believe there is a good potential, particularly for matching funds.

CORPORATION MATCHING FUNDS

We have recently received matching funds along with member ship renewals. I hope all of you think about this when renewal time comes along, and if your company has this program, recommend the Foundation. We are a qualified organization [501(C)(3)] for this form of donation.

NEW BOARD OF TRUSTEES MEMBER

We welcome Mr. David C. Clark to the board. Dave has a long time interest in the museum and small arms. He has edited and co-authored books on the M-1 Garand, Springfield 03 Rifle and the Springfield Armory. We are looking for other potential members of the board of trustees of the Foundation. We meet once a month at the museum.

COMPANY COMMANDER

Recent additions (October thru December) to the Company Commander level of membership include:

Kurt A. Laughlin	Richard Cox
John B. Sledge Jr.	William Prinn
Jacques Littlefield	Michael Johnson
Col. Richard Butt Jr.	Richard Hunnicutt
Philip G. Ruess	

Join The Ordnance Museum Foundation, Inc.

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Ordnance Company Commander Membership
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\$250.00



Miniature Ordnance

The Diminutive Russian ASU-57

This offering from AER of Moldovia comes as a set of soft plastic moldings in a clear plastic bag. Instructions are a single set of exploded views, and color and markings instructions are a set of color three-views. An historical summary is provided in a good English translation, but color and markings data appear only in Russian. I was not overly impressed with the final result, but given the apparent accuracy, relatively low cost, and ease of construction, I would recommend this kit. The kit will likely have more specific appeal to specialists in Soviet equipment or vehicles of the Arab-Israeli wars.

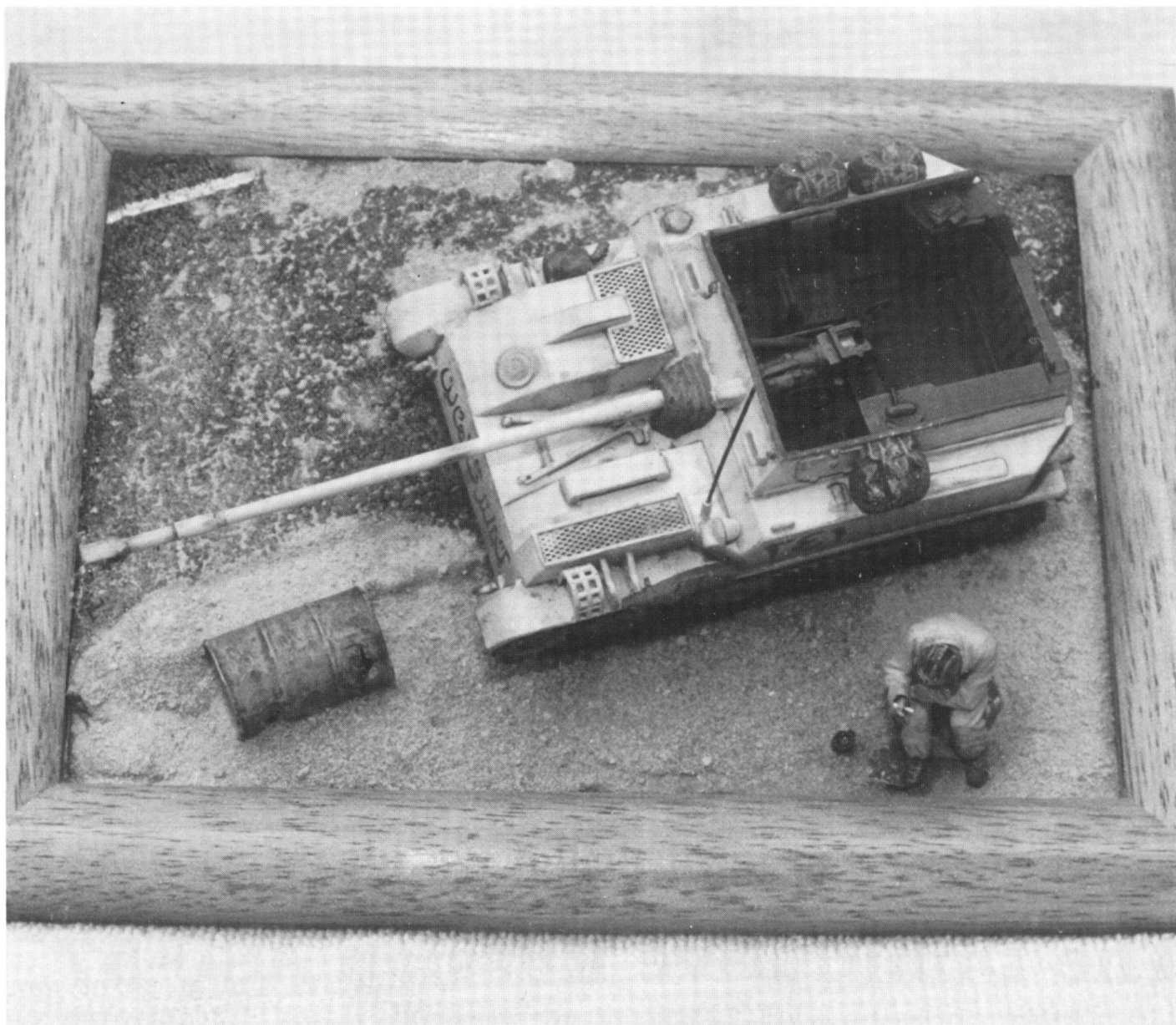
Almost all the nations involved in World War II experimented with some

type of airborne armored vehicle. Most of the wartime efforts met with very limited success, and some were pretty spectacular failures. The designers seemed to rely on the facts that these things would be used by men who would (a) fight inside a lightly-armored vehicle packed with fuel and ammo, and (b) would jump out of an airplane to get to where they could do it, and so would probably accept most anything you gave them. The US and Britain finally settled on building special tanks, very light and very poorly-armed, to be carried in special heavy-lift gliders. The Soviets, with a less developed aircraft industry, concentrated on vehicles which could be carried as external cargo on bombers to be dropped from minimum airspeed and low altitude into a drop zone, although I suspect that had

any of these seen action, they would more likely have had to crash-land the aircraft in the drop zone. The Flying Tank, a T-60 fitted with detachable wings and stabilizers, was probably one of the truly spectacular failures. One can only imagine what it must have been like when this thing threw a track on takeoff, let alone what it would have been like to be a crewman when it touched down at flight speed!

The best-known US post-war efforts were the M-50 Ontos, six recoilless guns on an enclosed, light tracked chassis (used by the Marines in Vietnam), and the M-56 Scorpion, a rear-mounted 90mm gun on a tracked chassis with no crew protection other than a small front plate on the gun mount (also used in the early days in Vietnam). Only the Scorpion was a true

Ed Gilbert



airborne gun as originally designed, capable of being dropped into a landing zone before an airstrip could be seized. The M-551 Sheridan (still soldiering on with US airborne forces, more for want of a replacement than through any merit of its own), was initially designed as a scout tank.

The first Soviet post-war effort was the tiny ASU-57, introduced about 1950. The Soviets had initially developed the 57mm gun, as a follow-on to the obsolescent 45mm, in 1943. The 57mm had a rather ignominious career in World War II, so it was pretty obviously inadequate as an anti-tank gun even when this vehicle entered service. The tactical role was more as a direct-fire support weapon, i.e., an assault gun,

than as a tank destroyer.

The ASU-57 was originally carried in large streamlined, parachute-equipped canisters under the wings of a bomber, and dropped like a bomb. Later the vehicles were carried internally as palletized cargo in heavy transport aircraft, and dropped more conventionally. Even when dropped by parachute, heavy vehicles have an undesirable tendency to come down pretty hard, as the size of a parachute canopy has a practical limit. To solve this problem, the ASU-57 came down on a pallet suspended by a single-cable shroud under three large parachutes. A long probe rod extended downward from the pallet, and when the probe hit the ground it triggered a cluster of

retro-rockets attached to the shroud, slowing the fall even further. The blast of the rockets, and the dirt and dust stirred up from the ground, was spectacular, but the system was apparently more effective than the US parachute-only system.

The replacement for the ASU-57, the air-portable but not air-droppable ASU-85, came into service in the early 1960s, and the ASU-57 began to appear in foreign service. In addition to the USSR, the ASU-57 was used by Egypt (1967 Six Day War), North Vietnam, Yugoslavia, and Ethiopia (the Ogaden conflict).

The kit depicts several of the unusual features of this vehicle. The most obvious is the small size. Visibil-

ity was no problem - if the driver sat completely upright, his head was above the lightly-armored superstructure sides. The compact design with the engine far forward, and the need to put the drive sprockets on the extreme front edge of the chassis necessitated a transverse engine with the transmission forward of the engine. Earlier Soviet designs, such as the SU-76, had used front-mounted engines and front drive but the ASU-57 was much more compact, and in the 1950s, this made the design of the shifter rather dicey. On the kit you'll notice that the gear-shift lever extends horizontally out of the firewall. This design feature also appeared on some early European autos with transverse engines you shifted gears by pushing, pulling, and twisting on the lever! Try to visualize sitting in the rear seat of your car, and working the manual floor shift with a stick tied to the top of the lever. Also, counter to the prevailing Soviet practice, the driver sat on the right, in order to accommodate the usual gunner-on-the-left, loader-on-the-right design. (This layout, inherited from towed artillery, was the bane of Soviet tankers for decades). The kit has the gun in the battery (forward) position, ready for firing. During the airdrop, the gun tube could be pulled aft in the cradle to minimize space requirements and potential for damage.

The parts are not numbered, and the instructions are a single sheet of pretty clear exploded views. The only points that are not clear from the drawings are- (1) the loader's seat faces to the rear, rather than forward as indicated by the drawings (as a result it doesn't fit into the locating slots in the floor) and (2) the lower end of the counterbalance cylinder (to offset the weight of the enormous length of gun tube forward of the trunnions) under the gun cradle fits into a hole in the firewall.

There are a few things that will significantly improve the kit without much work. The locking bars that hold the shells in place are pretty rudimentary - replace them with plastic strip. The mounting arm for the plate that's intended to keep the loader from getting in the recoil path is the wrong shape - it can be replaced with an L-shaped piece of wire glued to the lower side of the gun cradle. The superstructure front plate, with the driver's and gunner's viewports, is about 4mm too wide - this is best fixed by gluing it in place with the viewports equidistant in

from the side plates, then trimming the ends.

The seats and the dust mantlet around the gun tube are just blobs of plastic. I textured these using a small ball-tip grinder in my Dremel tool to simulate the creases and folds in the cloth. The area with rounded ridges inside the rear plate of the crew space is actually a cloth-covered pad. I cut a piece of tissue slightly wider than the pad area, coated it with thinned white glue, and carefully pressed the tissue into the vertical grooves. When painted a slightly different color (I used khaki drab) it stands out as a separate part.

The gun sight and mount are best left off until after the gun mount and superstructure front plate are installed, as the front end of the sight has to fit into an opening in the inside of the front plate. I didn't like the look of the forward end of the main gun tube, so I replaced the sleeve just aft of the muzzle brake, and the gun tube forward of it, with tubing.

The engine deck screens are rudimentary, and should be replaced with photo-etched metal screen. The kit provides some flat sections of grid that can be bent to make the headlight covers. I bent them around a paintbrush handle, and fortunately the plastic is soft enough that this actually worked for a change.

There were significant knockout marks in only two places that caused trouble. The marks inside the vision flap rims on the insides of the superstructure sides are hard to file out. The marks on the floor of the crew space I covered with rubber floor mats made from Plastruct V-grooved sheet.

I added a few odd gizmos from photos, including conduits, the firing solenoid on the left side of the gun, a hydraulic cylinder of some sort on the right side of the cradle, a large Verlinden bolt head on the front of the recuperator cylinder, and odd bolts on the interior and exterior.

The packs are some I molded, and the figure is a heavily modified Italeri/Zvezda WW II Russian tank crewman; he wears the tan coveralls and summer-pattern tanker's helmet worn by Egyptian armored crewmen in the 1967 war.

Your painting options are pretty limited for this beast. The Soviet version should be dark green or olive-drab, inside and out. I did mine up in the colors and markings of the Egyptian Army. For this scheme I painted

the interior olive drab, and the exterior Modelmaster Modern Desert Sand, then drybrushed the exterior wear areas with olive drab to simulate the base coat showing through.

Two basic sets of markings are supplied, a wide variety for Soviet Group of Airborne Forces, and for the Egyptian Army. The Soviet markings include tactical numbers, airborne forces symbols (two types), and fancy parade markings including red stars and the obligatory Guards shields. The Egyptian markings include Arabic script tactical numbers, slogans, and "license plate" style registration numbers. Note that if you use the Egyptian markings, the slogan on the front plate means that you'll need to leave off the pioneer tool rack. The decals turned out to be unexpectedly good quality, with no visible film after an application of Solvaset.

The kit builds up to an okay, but somehow disappointing, model. Dimensionally it appears to be quite good, but it just looks toy-like. Perhaps that's because the actual vehicle was so toy-like.

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Darlington Productions is seeking manuscripts for publication and would like to hear from you.

We are rapidly expanding our Museum Ordnance Special series with ten to fifteen new titles planned for the next 12 months. If you have an idea or concept for a Special, give us a call. The Special is a heavily illustrated magazine-format publication focusing on a particular vehicle, series of vehicles, or a engagement, conflict, or war.

We are also seeking manuscripts on 20th century military history subjects. These can include battles, wars,

equipment, etc., from WWI through to the present. Minimum word count is approximately 45,000 and must include photos and/or other illustrations. The books in this range would be published with a soft-cover.

Finally, we are seeking manuscripts that are longer and more comprehensive, however, otherwise similar to the above description for soft-covers. These books would be published with a hard cover.

See page three for the address and phone number to contact Darlington Productions.

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A free service to subscribers of *Museum Ordnance*. All subscribers are entitled to one free, thirty word classified ad per issue. Copy should be typed or neatly printed. The Publisher reserves the right to approve and edit all classified ads prior to publication. All ads must include the date the ad is to be removed, or they will be run for two consecutive issues. For ads with more than thirty words or ads for non-subscribers, the rate is fifty cents (50¢) per word. All payments must be made in advance and in U.S. funds. Send to Museum Ordnance, P.O. Box 5884, Darlington, MD 21034.

SALE/OFFERS

For Sale by Author: Desert Storm Allied Ground Forces Order of Battle. Covers all U.S. Army, Marine Corps, Allied combat units, and support units down to brigade/group level. 140+ pages; extensive bibliography. \$16 + \$4 postage USA & Canada (\$7 postage other countries); VA residents add \$.72 sales tax. Checks, money orders only. Thomas D. Dinackus, 4719 Major Court, Alexandria, VA 22312. 2/96

Just Published!: The New Guidebook to Ninety of the most Important Vehicles of the Patton Museum, Ft. Knox, KY. Fighting Vehicles of the Patton Museum. Featuring basic technical data, narrative history and photograph of each vehicle. Send \$8.95 plus \$3.00 for 1st class postage. Girdin Blaker, 1504 "N" Ave., LaGrande, OR 97850. 2/96

German Photo Histories: Kleine & Kuhn Tiger - \$25; Spaeter Die Einsatze der Pz Gren Div. GD - \$15; Walther Die 1. SS Panzer Div. - \$12; Walther Die 12. SS Pz Div. - \$12; Speilberger #3 Pz III - \$20; Speilberger #5 Pz IV - \$20; Speilberger #9 Pz V Panther - \$26. Depending on size of order send additional \$5-10 for postage, any excess will be refunded. Jon H. Randolph, 18425 Boone Rd, Columbia Station, OH 44028 2/96

Artillery Plans: Reprinted early 20th century American artillery plans and manual. For list send two first class stamps to: Peter Frandsen, 9900 Georgia Avenue #302, Silver Spring, MD 20902-5242. 2/96

Sale. Replacement turrets, other parts for WWII ID models, 1/32" scale. Made for US Govt. WWII. Have U.S., British, and Japanese tanks, others. Britton, 8122 Brookside Dr., Olmsted Falls, OH 44138. 216-235-2719 2/96

Study U.S. Coast Artillery Corps, artillery, harbor defense, and fortifications! Trips and publications. Write: Coast Defense Study Group, 731 Baltimore Pike, Bel Air, MD 21014. 6/96

Technical Manuals for sale. Photocopies of over 7500 titles of AFV's and military vehicles technical manuals. Languages mainly in English, plus some others. Send specific enquiry to Tank Museum, 3 Parc Cinquantenaire, 1040 Brussels, Belgium.

Sale: Odd ball/miscellaneous magazines/books, etc. Over 40 years of buying military books. Send three (\$3) dollars for list (SPECIFY ODDBALL). Mostly WWII to present. Bill Whitley, 311 Bundy Ave., Endicott, NY 13760. (607) 748-7922. 6/96

Dominican Crisis, 1965-66! Over 300 action photos in 64 pages, from the US Army's Caribbean adventure thirty years before Operation 'Restore Hope.' Plenty of modeling ideas! \$3 pp from AG, 225 Brown St., Philadelphia, PA 19123

Fighting Vehicles & Weapons of Rhodesia '965-80, Mint \$37US. Also Eastern European AFV publications available. D. Frost, 4335-115th St., Edmonton, Alberta T6J 1P5 Canada 3/96

Sale: Photo's of AFV's: Leopard I & II, YPR765's, Gepard, Panther D, Sturmtiger, etc. Send \$1.00 for list. Bernard McKenna, Ylsterveste 19, 3432 RN, Nieuwegein, Netherlands. 2/96

WANTED

Wanted: Photos of WWI British Heavy Tank V* at Fort Knox, KY, US Mk VIII and Renault light tank at Fort Meade, MD. Colin Knapp, 35 Meadow Field, Stokesley North Yorkshire, 759 5EL, England. 6/96

Atomic Cannon Model at a reasonable price. To be built, not collected. Instructions or copy of full instructions from same model (mine are lost).

Arthur F. Sintefill, 4 Johnson Ave, East Moriches, NY 11940 (516) 878-8410. 2/96

U.S. 75mm Pack Howitzer optics, tools, recoil system repair equipment, etc., Wanted. Please call collect. Weekdays (505) 437-0220; Evenings & Weekends (505) 437-3599 5/96

Wanted: Forming special interest group for modelers & enthusiasts interested in Arab and Israeli armor. Send SASE to Steven Brown, 4432 Eastwood Dr, #8307, Batavia, OH 45103 6/95

Researcher seeks Demilitarization manuals from Dept. of Defense, from 1940 through 1975. Call collect days (505) 437-0220. Evenings and weekends (505) 437-3599. 2/96

Wanted: Photos of rear of Indian Army T-72, early models with Gill armor. Need to know if they have unditching beams, extra fuel tanks, and markings. Photocopies ok as long as they show these features. Peter Brown, 8 Saddle Close, Colehill, Wimborne, Dorset BH21 2UN England 6/96

Latin American AFVs. Research underway for a publication on AFVs serving in the Caribbean, Central, and South America. We are looking for information, material, and photographs to help trace the history of armor in these countries. If you would like to contribute contact either Jeff McKaughan/Museum Ordnance, P.O. Box 5884, Darlington, MD 21034; or Paul Walsh, 227 Sunnybrook Rd., Springfield, PA 19064. All contributions will be acknowledged and greatly appreciated.

Wanted: Machine Guns and similar military items, must be Amnesty Registered, by licensed collector. (505) 437-0220, days (505) 437-3599, evenings and weekends. Collect calls accepted. 2/96

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Bradley



Mk 45 Naval Gun



AGS



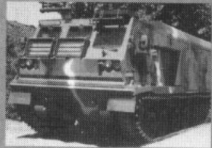
Paladin



Mk 41 VLS



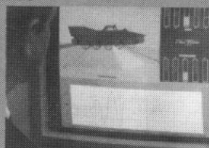
M992



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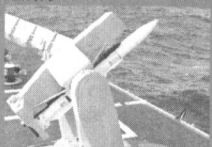
AFAS



AAV



FVS Carrier



Mk 13 Launcher



M113



AAAV



CAV



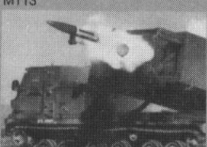
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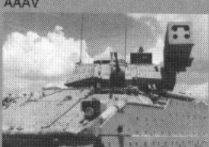
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M577



MLRS



BSFV



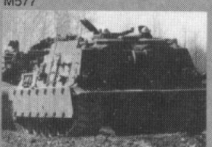
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M9 ACE



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XM1108



155mm Naval Gun



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Although the United Defense name is new on the scene our roots are deeply embedded in defense. FMC and BMY, partners in United Defense, each have long and successful histories of producing products for American and Allied armed forces. Some are the Bradley Fighting Vehicle, the Mk 45 Naval Gun, the Paladin Self-Propelled Howitzer, the Mk 41 Vertical Launch System, the Armored Gun System and others pictured above.



A prime source of equipment and technology, United Defense is also demonstrating the capability to upgrade, overhaul, and convert older systems for new purposes and

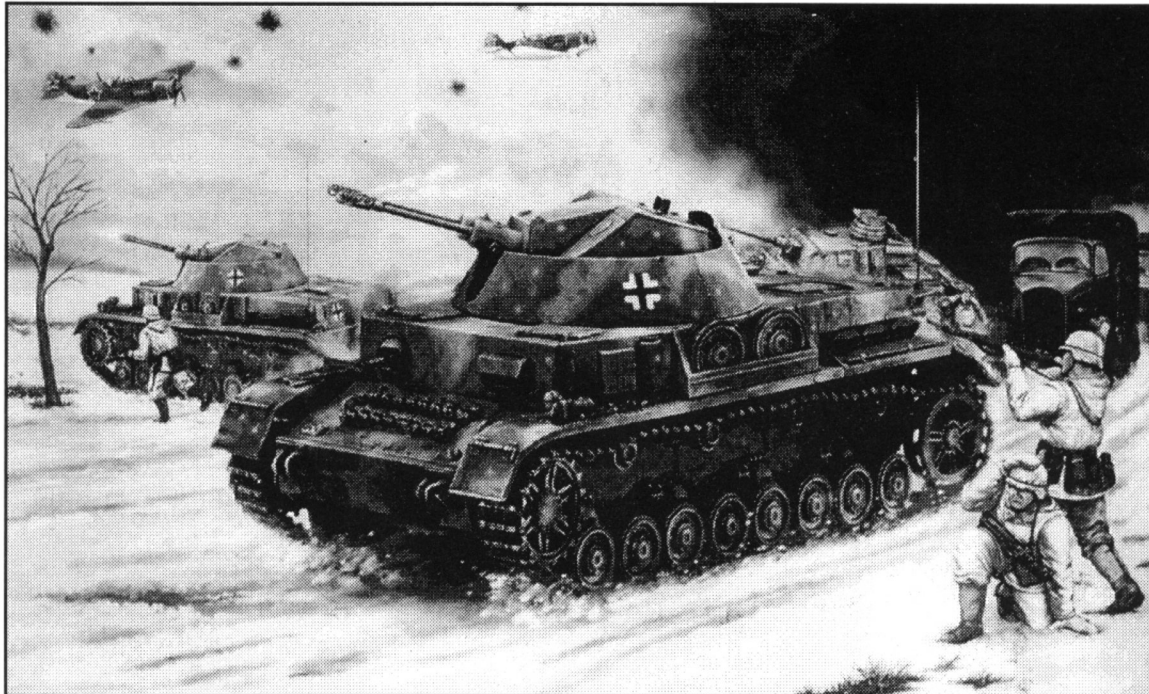
extended use. United Defense continues to provide cost effective engineering solutions and is leading the effort to "digitize" the battlefield.

United Defense is prepared to meet new challenges and has made a commitment to provide quality defense products and services now and into the future.

United Defense

FMC/BMY

KUGELBLITZ



Air defense units were always an integral part of the German frontline formations during WWII. A number of vehicles were developed for this role such as The Möbelwagen, Wirbelwind and Ostwind. These vehicles all suffered from a lack of armor protection. In 1944, a new turret was developed that was fully enclosed and featured two belt-fed 3cm Mk.103 machine guns mounted in an internal sphere. This AA system was mounted on the well proven Panzer IV chassis. Dragon's kit of this vehicle has the accurate "Kugelblitz" turret based on official information. The newly tooled turret can be elevated up and down and rotate. Photo-etched parts are also included.



6046 8th SS Cavalry Division "Florian Geyer"



6049 Soviet Anti-Tank Team



6051 Jagdtiger - Porsche Production Type

1/35 SCALE



DRAGON



MARCO POLO
IMPORT