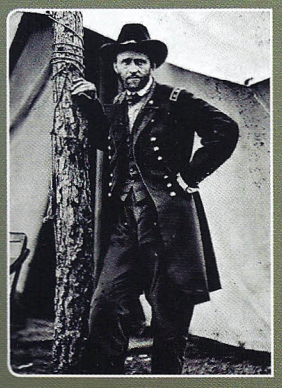
M3 GRANT

BY JESSE NAUGHTON

THE GRANT has an interesting history. While shunned today as an obsolete and inferior design, it proved an effective stopgap solution. It was back in 1940 that a demand arose for a medium tank capable of using a 75mm main gun. The engineers at the time did not have the capability to mount a 75mm in a fully traversing turret. As an interim design, the 75mm was housed in the sponson with only limited traverse. A turret was added with a 37mm gun system. The British contracted directly with Pullman, Lima and Baldwin to produce the M3 'Grant' version, which differed in a number of ways, the most obvious being a larger turret that allowed the radio to be positioned where the tank commander had access to it. This was in contrast to the American thinking at the time, which had a separate crew member manning the radio in the hull. The Grant turret also omitted the small machine gun turret on top, which lowered the tank by almost a foot. There were some internal changes as well to ammo stowage and other details and these were further modified throughout the vehicle's life cycle.



What's is a name?

In Britain the M3 was called by two names based on the turret configuration.

Tanks employing U.S. pattern turrets were called the 'General Lee', named after Confederate General Robert E. Lee.

Variants using British pattern turrets were known as 'General Grant', named after U.S. General Ulysses S. Grant.

WHEN THE BRITISH first fielded the M3 Grant it was well liked. It was reliable, had relatively good armor for the time and good mobility for a medium tank. Probably most importantly of all, its 75mm main gun was capable of firing an effective HE shell. Previously, Rommel's army had used the tactic of placing AT guns at the front to stop the British armored attacks. With effective ranges substantially longer than those of the small-bore British gun systems employed by period British designs, the AT guns were devastating. Without an effective HE round, it was quite difficult to silence the German guns. The 75mm in the sponson mount, while not ideal, allowed the British to engage the AT guns early and with real punch.

THE M3 GRANT first made a name for itself at the battle of Gazala in May 1942 and then at the first battle of El Alamein. The low points of the design included the high silhouette, which coupled with the sponson location for the 75mm did not allow the tanks to use a hull down position effectively. The riveted construction also suffered from spalling, when impacts from enemy shells dislodged rivets and sent hot metal fragments throughout the cabin.

AS M4 SHERMANS SHOWED UP in increasing numbers in the late summer and fall of 1942, the Grant was slowly phased out. However, during the spring and fall of 1942 it was a very welcome addition to British offensive power and remained in service for the rest of the North Africa campaign. M3s were then spread out to the fringe campaigns and the other Commonwealth units in the Middle East and Burma where they fought with distinction for the remainder of the war.

WHEN I WAS IN MY EARLY TEENS and building models, I always had a soft spot for the M3 Medium Tank. It's just an odd-looking tank but in a cool way. When I got back into modeling a few years ago, I decided that I wanted to build a Grant. I have been slowly assembling parts and references to build the 'ultimate' Grant for the last couple of years. I knew that the Academy kit certainly had its faults but it was the only kit on the market so the idea was to polish it up as well as I could. It would also by my first foray into a full interior, as those large hatches would show off whatever was in there. With the 2013 AMPS Convention theme of 'Civil War Generals', it was game time.

Most importantly of all, its 75mm main gun was capable of firing an effective HE shell.

Based on a November time frame in Tarhuna (in present day Libya) the weather, while certainly not cold, was not desert hot either. Therefore, the sweater and jacket-clad figures from Alpine were well suited for the scene.

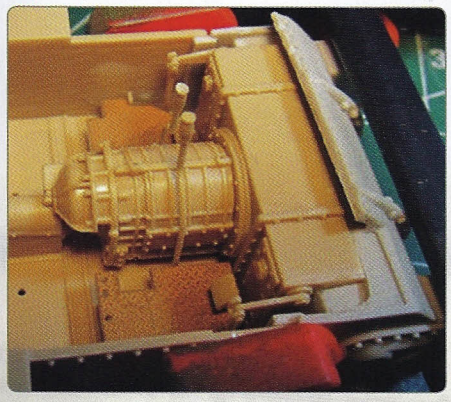
BUILD

THE ACADEMY initial pattern VVSS is one of the key problems with the kit, as the bogie trucks are noticeably too tall. To fix this, I used the Cyber-Hobby VVSS kit with tracks. Cyber-Hobby has two versions, an early and late, and while what I needed was the early, what I had was the late. The biggest difference is the reinforcing rib on the front face of the bogie trucks, so that's an easy fix; I cut it off.

I cleaned up the road wheels and bogie trucks next. As anyone who has built a few Sherman-related kits knows, you get a pile of spares pretty quickly as both Dragon and Tasca provide lots of extras in their generic Sherman sprues. I ended up selecting Tasca drive sprockets, open spoke road wheels and the open spoke idler.

With the suspension done, it was time to move to the daunting interior. First, Academy provides a hull floor that includes an escape hatch. However, early M3s did not have this feature so I had to cut out the detail and sand it back smooth.

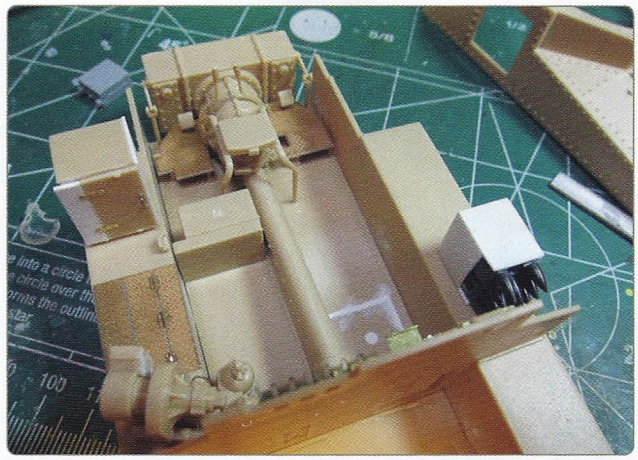
NEXT was fitting the final drive assembly, pedal boxes and drive shaft onto the floor. It was then that I went to dry fit the Formations M3 final drive cover. Due to the interior of the casting, I had to cut up the Academy final drive. I should have read that first but after using a saw, all was well.

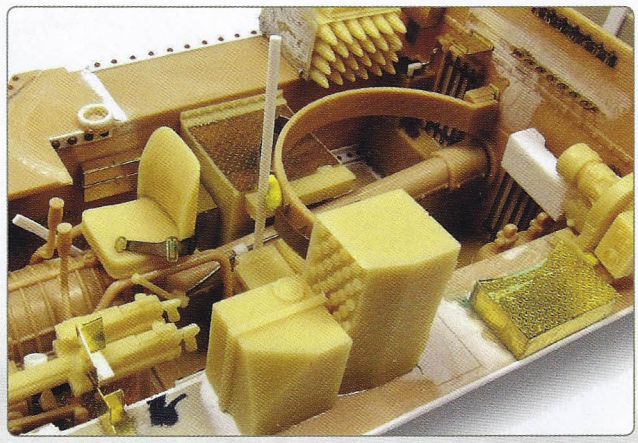


There was some minor warpage with the Academy hull floor and some interference with the pieces but after some minor trimming under the driver's seat, it all fitted well.

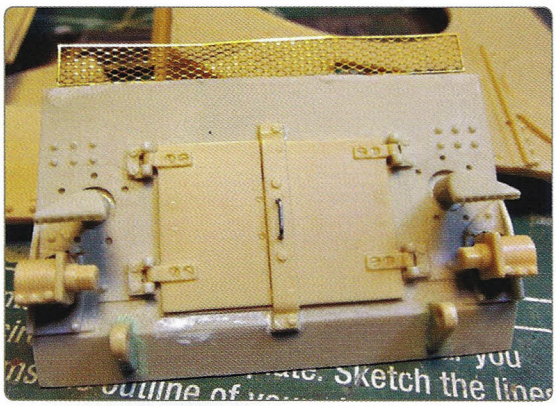
The Academy lower hull has some holes on the sides into which the bogies locate, so those were filled. On the exterior, Academy molded on the bolt plates for the bogies but these don't mate up to the Cyberhobby bogies and Cyberhobby provides its own that look better as far as details are concerned, so out came the Dremel tool to grind off the Academy bits.

ONE THING you'll find if you have some M3 references is that they are about 80% Lee-centric, with only little bits and pieces of the specific Grant information. The interior is one such place. Various references mention that the interior layout, as far as ammo storage and other details, changed through time. As far as I could find there is only one set of interior layout drawings available. However, these show later features. You will also find lots of photos looking in the large hatch on the right hand side but almost nothing looking in the left side hatch! This is frustrating because the Grant has a specific ammo bin on the left that is different to the Lee. I assembled the interior details from the included Academy bits and photo-etched brass from the Eduard interior set and attempted to scratchbuild the ammo bins.





IT WAS ABOUT THEN, when I was scrolling around on eBay, that I noticed the Verlinden interior set for the old Tamiya Grant. In addition, it had what appeared to be an accurate - or at least more accurate - rendition of that ammo box. It also had some nice turret interior details that were sorely missing in both the Academy kit and the Eduard photo-etched brass set that I had, so it was picked up for the project. A few little details from wire and styrene were added, including the vent canisters on the final drive, the brake lever for the driver and the oil lines running from the engine bay to the final drive.



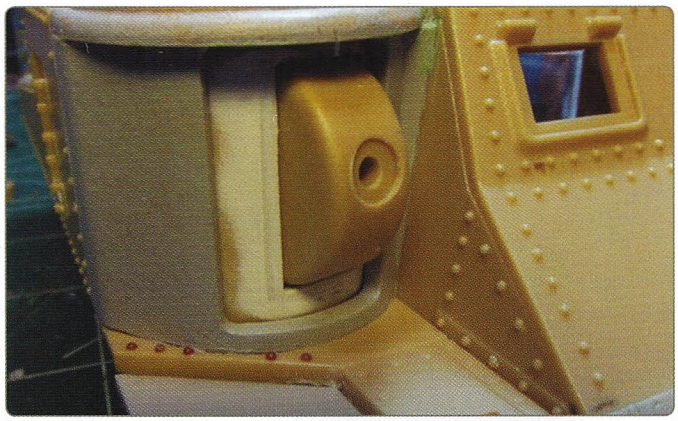
I went back to the exterior to work on the rear hull plate. The Academy kit provides the early 'pepperpot' exhaust setup; however, my references showed many with the fishtail exhaust setup that uses the Sherman-style air cleaners. Formations provides a set to replace the Academy kit parts, which I also had. That built up well and the castings were all very good with no air bubbles or warpage. A wire handle for each of the engine doors was added, as well as some photo-etched brass details. The whole rear plate was then attached to the lower hull.

> **As an interesting side note, the fishtail exhausts were an early application for Inconel, a super alloy developed in the 1940s that today is used in very high performance applications ranging from gas turbines to the exhaust systems on Formula 1 race cars and it certainly does not rust easily!**

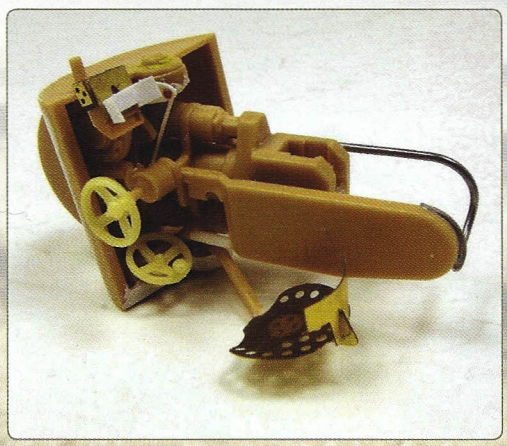
IT WAS TIME to go back to the interior and to the 75mm gun mount. The gun rotor fits into the traverse rotor... umm... poorly. There's a large gap visible, which doesn't match the real thing at all. After some plastic strip, putty and sanding around the perimeter I could close the gap while leaving the gun rotor able to elevate freely. It was not perfect but it was much improved. The interior received the gun breech details, gunner's seat and some added detailing for the gunner's sight, linkage and the recoil guard, which was made of solder and bent to match photos as, again, the Academy bit isn't great.

I THEN BEGAN TO DRY FIT the upper hull pieces together. By being careful and dry fitting A LOT, it actually seemed to assemble very well and was square. I was rather surprised. Being a riveted hull, it's important to keep those seams between each plate deliberate without becoming a gap. They can't just be filled with putty and sanded away. It was at this time that the upper rear corners of the rear hull plate were attached directly to the upper hull. They were cut off the Academy piece when I substituted the Formations rear plate. The plate on the real thing overlaps the engine deck piece, so the seam there must be eliminated.

Once the upper hull was assembled, it was time to go rivet crazy! I used Tichy Train Group rivets for the interior. In total, there are probably ~300 .035" rivets added, some .050" rod used to replicate the larger rivets and bolts and reinforcing plates added from styrene strip. These were actually a lot easier to use than I had imagined. I basically painted the strip with Tamiya extra-thin cement, cut the rivet face off the sprue and with the tip of a #11 X-acto blade, poked it into the right spot. I also tried out the Eduard version in photo-etched brass but it's just not three-dimensional enough compared to the real thing so those were thrown into the spares box.



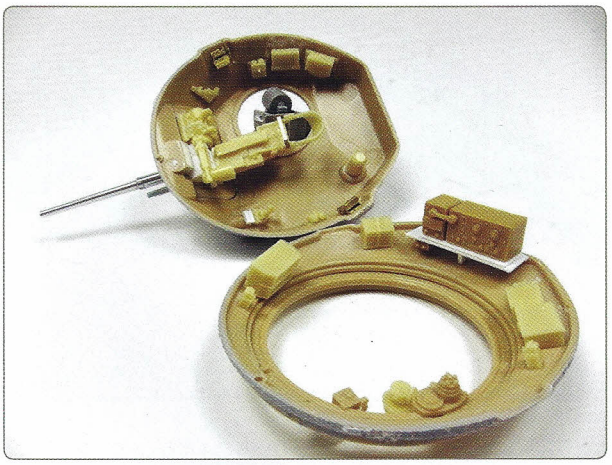
On the exterior of the upper hull, the demarcation between the armored plates and the cast piece that contained the 75mm mount wasn't very clear on the Academy parts, so this was scribed in. The cast area was textured with Mr. Surfacer 500. The sponson floors and Formations fenders had been added, so more dry fitting was done to mate the upper and lower hulls along with the 75mm gun assembly. This all fitted surprisingly well, with only a slight bit of shimming to make everything fit a bit better. The driver's periscope - another British modification - was sourced from the old Armored Brigade Models Grant update set.



THEN IT WAS TIME TO MOVE ON TO THE TURRET. A shelf for the radio was made out of plastic card and the No. 19 radio from the Bronco M24 Chaffee kit was installed, as it's a very nice piece. On the exterior, another known problem with the Academy kit is that the barrel centerline in the gun rotor for the 37mm is too low. There are a number of aftermarket replacements and I ended up looking at most of them. I had the old Armored Brigade Models version, the Legends Production version (from its Lee turret), the old Tamiya kit piece and the Formations Models piece (from its Lee turret). The ONLY one that is correct is the Formations piece and with some minor work it fitted into the Grant mount. John Rybak at Formations was nice enough to send me a second rotor when I ordered the Lee turret as I plan to build a Lee in the future. At this point, I also started reshaping the turret exterior a bit. Academy didn't totally mess this up, but it certainly can be better. Mostly, many of the corners are too sharp compared to the real thing. Additionally, the left side vision port should be raised slightly and both vision port surrounds should be blended into the turret casting better. One of the radio mast mounts was scratchbuilt using an old Dragon antenna base, while the other cone-shaped mount was pulled from the spares from an AFV Club M5A1 Stuart. Additionally, I used a metal 37mm barrel from RB Model and added heavy casting texture with Mr. Surfacer 500 based on photo references. The co-axial .30 caliber MG barrel was replaced with a resin barrel from Tiger Model Designs, which is extremely well done and much better than most resin .30 caliber barrels. Based on references, I also scratchbuilt the field modification for the .30 caliber anti-aircraft MG mount. The .30 caliber MG was the body of the Academy piece with a resin Tiger Model Designs barrel. Some detail was added for the 2" bomb thrower.

The turret floor from the Academy kit looks pretty good. However, when looking at my references I found that it's actually rotated about 10 to 15 degrees from where it should be. Looking at the Verlinden version from the resin interior set, it is correct. However, the turret sides from Verlinden aren't as nice as the Academy version, so I ended up using the Verlinden floor with the Academy turret basket sides. I added details and plumbing for the turret hydraulics using various thicknesses of lead soldering wire. While buying some parts for that M3 Lee build mentioned earlier, I picked up the Griffon Model photo-etched brass set, which had some additional interior details not included in any of the other sets I had, the biggest of which was the interiors of the vision blocks for the turret. The Verlinden 37mm ammo racks on the turret walls were a lot simpler to install than the individual rounds that Academy provided, as well as having clamp detail. The problem was the air bubbles between the rounds. After careful work with a knife and files, I cleaned these up enough to be passable.

It was also this time that some very nicely molded American-style Thompson submachine guns showed up in my mailbox from Tiger Model Designs. These do NOT have the fore grip and were added per the official British stowage diagrams.



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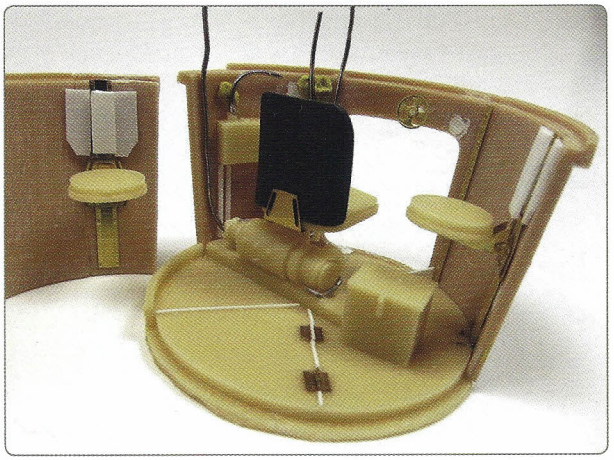
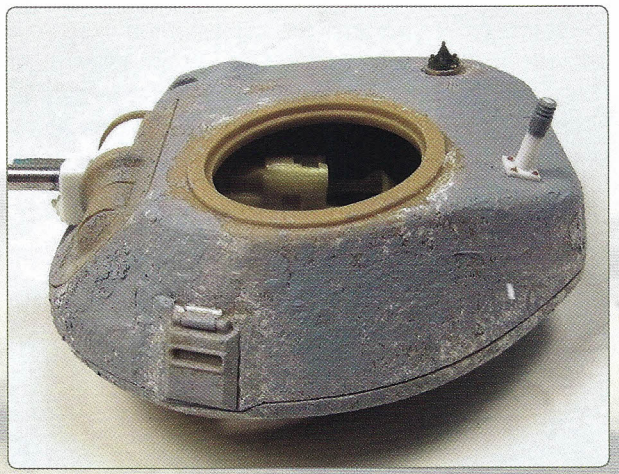
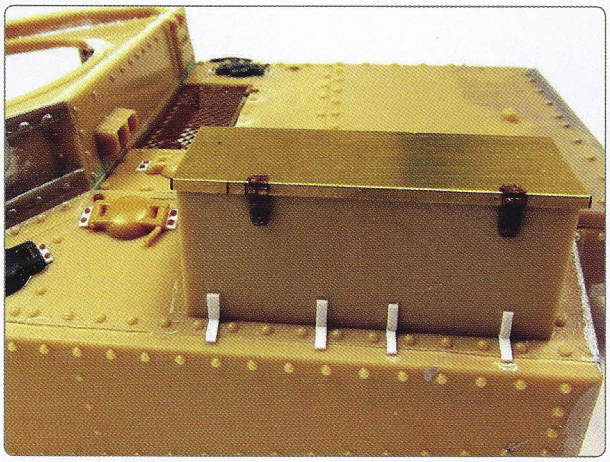


I ended up using the Verlinden floor with the Academy turret basket sides.



I added heavy casting texture with Mr. Surfacer 500 based on photo references.



MOVING BACK TO THE UPPER HULL EXTERIOR, I filled in the location for the antenna mount on the left rear diagonal plate. These were not used on Grant tanks as the radio was in the turret. At that point, my AMS kicked into high gear and I decided to replace all of the rivets along that diagonal on both sides. The issue is that due to casting limitations, Academy molded them at an angle, causing them to be oddly shaped, so off they went and on went some more Tichy Train Group rivets. T-handles for the fire extinguishers were added as well as the fuel caps. On the M3, these were rivetted onto the hulls, so small plates with rivets were added along with twisted photo-etched brass chains for the retainer pins. The rear stowage boxes were detailed with scratchbuilt mounting straps and the tops and latches came from the Eduard photo-etched brass set. On the rear, the taillights were installed and wiring added. On the front, the headlights and siren, including the wiring back to the hull, were mounted. Photo-etched brass brush guards from the Eduard set were also installed. The POW (petrol oil and water) rack box was used, again, from the Eduard set. The 75mm barrel itself was also added. Again, Academy messed this up, so a resin version from Formations Models, was used. Archer Fine Transfers casting marks were also added to the final drive cover.

At this point, all of the major subassemblies were built. Painting the interior meant that I couldn't fully assemble both halves of the turret or mount the upper hull to the lower hull until later. Along the same lines, I couldn't add the sand shields until the tracks were fitted.

MARKINGS & PAINT

MARKINGS

I had the Echelon decal set for Lees and Grants, so I went about trying to find additional information about some of these specific tanks covered. I landed on one particular tank named 'Battleaxe,' a B squadron tank of the Staffordshire Yeomanry, which was photographed in November of 1942 after the 2nd battle of El Alamein around the city of Tarhuna. After asking about this on Missing-Lynx, I was contacted by a few folks, one of whom had another, better quality, photo of the rear of this tank taken at approximately the same location and time. It showed some additional markings not provided in the Echelon decal set. I contacted Georg Eyerman of Decalomanaics to help me with the missing markings. Georg was very helpful and put together exactly what I asked for.

PAINTING

Now that I knew the markings were taken care of, I started the painting process. The interior was sprayed with Tamiya flat white. Details were hand painted, mostly using Vallejo and Reaper paints. A dry transfer placard from Archer Fine Transfers was added to the side of the 37mm breech area. Weathering was a mix of pigments and AK Interactive products. Some light chipping was done with a graphite pencil on high wear areas. At this point, the turret halves could be closed up and some additional work with Mr. Surfacer to blend the two halves was performed. The open hatches and vision ports were masked off and the Grant was ready for a base coat. I used a white primer but did not really like the result, as it was a bit rough in texture. However, I chose to move forward.

The paint mix is loosely based on Mike Starmer's excellent research into the British colors. The base is Light Stone and is a mix of Tamiya colors thinned with Mr. Color lacquer thinner. Using the lacquer thinner allows very good adhesion for the base coat, which will come in handy in the next phase. Based on correspondence with Mr. Starmer, it was decided that the disruptor color was most likely a dark olive green. This was not one of the official colors, but one of the 'Camcolours' that were field applied and locally sourced. Various references showed that it typically had hard demarcations but was sometimes sprayed based upon what was available. I opted for spraying as my brush painting skills aren't the best. The green was again from Tamiya paints, predominately Field Grey,with a bit of Dark Green added. This was thinned with rubbing alcohol. I used a different thinner as this now allowed me to go back with a clean brush dipped in alcohol and scrub the green color off in places while the lacquer based base coat remained. I came up with this technique after attempting

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to use an aftermarket chipping fluid product and having poor results. The lower portion of the final drive assembly as well as the bottom of the 75mm barrel was painted with Tamiya flat white as these tanks had counter-shading. The camouflage pattern comes directly from Mr. Starmer's excellent book about British camouflage patterns at El Alamein and after. Detail painting was also done at this point. The machine guns were painted dark gray and then rubbed with a graphite pencil and the idlers received the same graphite treatment.
I shot the Grant with a coat of Future floor finish before adding the decals. These went on nicely. Because of the hand painted nature of the real thing, I went back with a very fine brush and painted over the decals, giving them a slightly more hand-painted appearance. Due completely to my own fault, the 'Battleaxe' decal on the rear could not be used, so it was completely hand painted.

I also dry-fitted various stowage bits from the Black Dog Grant accessories set. These were very nicely molded although it is necessary to pay attention with these sets as the manufacturer tends to come up with some rather impractical locations for stowage even though they look great. The stowage was base painted with Tamiya black thinned with lacquer thinner to bite into the resin and then brush-painted with Vallejo model color paints.

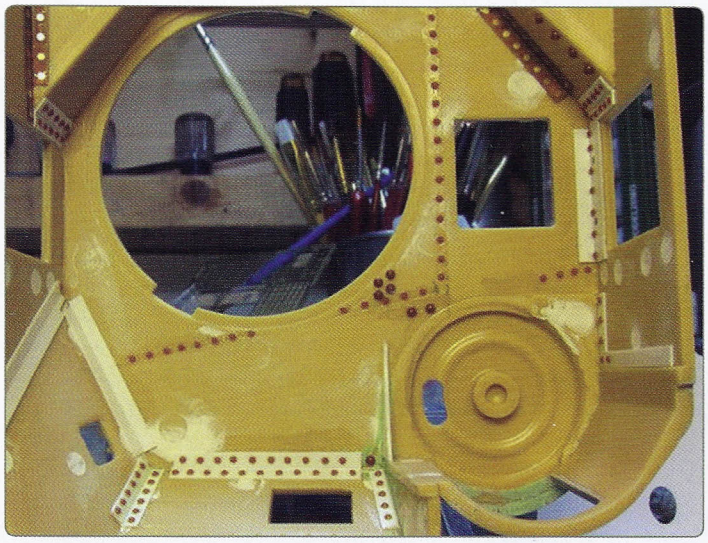
After another coat of Future, the weathering process began. Again, a mix of AK Interactive products, my own washes and some artists' oil paints were all used to break up the finish. I used mostly lighter colored effects since the environment would be very sandy or of other light colored earth. I used Vallejo Matte medium as a final dull coat.

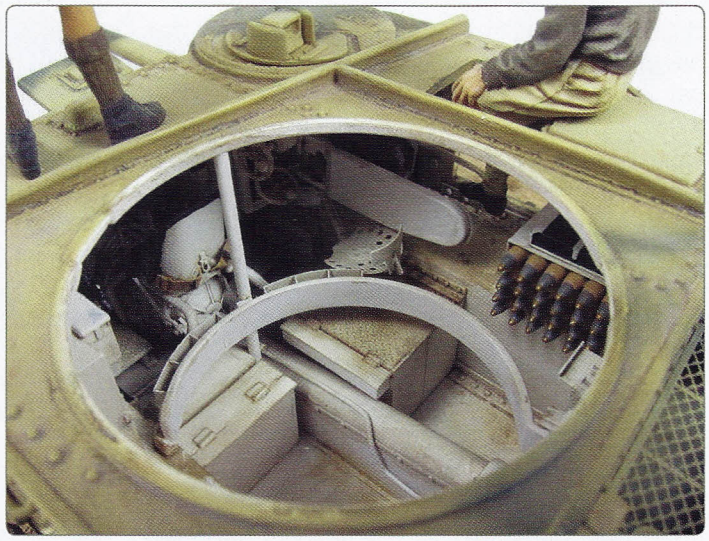
It was this late in the game, only about three weeks before the AMPS International Convention, that I read about a brand new product by Panda Plastics reviewed on the Track-Link website. It was a set of worn WE-210 tracks. After emailing Panda directly a multiple of times, it finally sold me a set. Once they showed up, the initial base coats of Tamiya NATO black for the rubber bits and a metallic brown for the end connectors was sprayed onto the tracks while they were still on the sprues. Assembly went perfectly, there was minimal clean up and no glue was required to get a nice and solid friction-fit. Once assembled, the paint was touched up on the sprue attachment points. The tracks were weathered with pigments and some graphite on the end connectors. Because I didn't use any glue, the tracks were easily fished through the suspension.

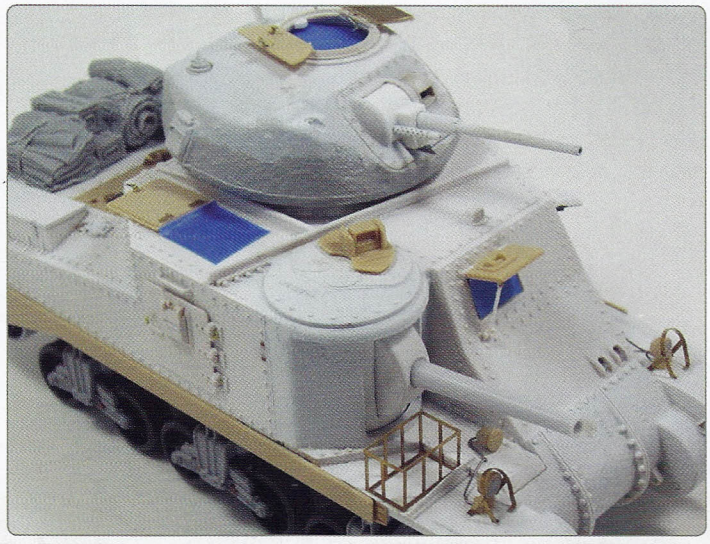
The base is just Celluclay with some small pebbles and gravel from my office's parking lot. The small scrub grasses are various products from Fredericus Rex and the spotty patches of grass are Verlinden static grass. The base was painted with a sand color based on some Google Earth searching of the area and weathered with pigments, washes and dry brushing.

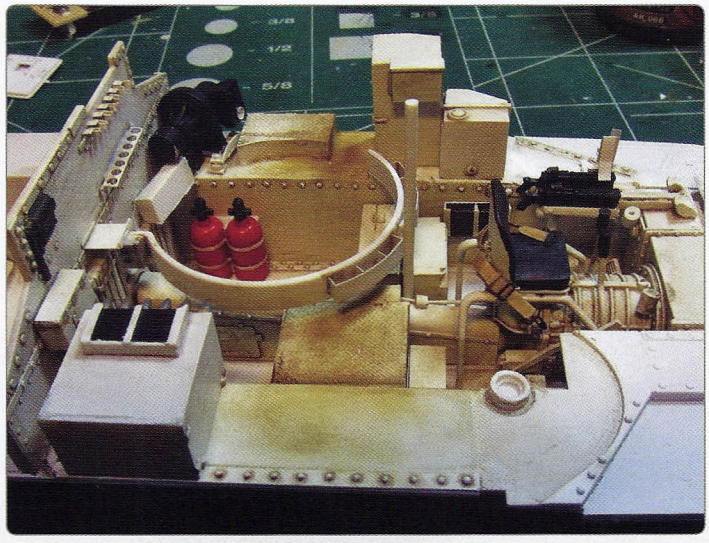
Based on a November time frame in Tarhuna (in present day Libya) the weather, while certainly not cold, was not desert hot either. Therefore, the sweater and jacket-clad figures from Alpine were well suited for the scene. While I'm no figure painter, the figures were painted with Vallejo paints. The small puppy was included with the seated Alpine figure and made a nice touch and focal point for the two tankers.

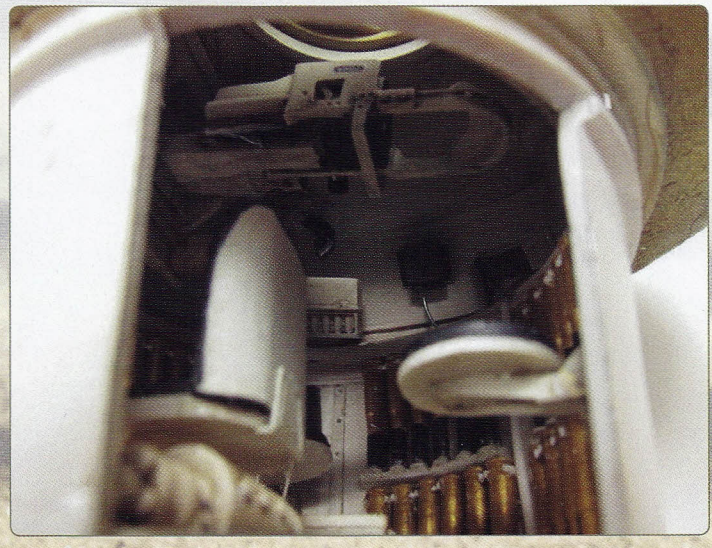
We received so many high quality "in progress" images from Jesse that we thought we would show more of them. We appreciate this kind of documentation - so here are a few others for your viewing pleasure.











With the smell of thinner still thick from the night (morning?) before, the Grant made it to the AMPS 2013 show, entered as a vignette. The judges were nice enough to give it a gold medal in that class. It was an even bigger thrill and surprise when it was also awarded the 'Best Commonwealth' award against some very tough competition.

Overall, I'm very happy with this build. I set out to push my own limits and I certainly did that.

REFERENCES USED:

M3 Lee/Grant in Action,
by Jim Mesko, Squadron Signal Publications,1995

M3 Medium Tank,
by Steve Zaloga ,Osprey New Vanguard, 2005

M3 Medium Tank (Lee & Grant) Walk-Around,
by David Doyle, Squadron Signal Publications, 2008

The M3 Lee AF-Visual,
by David Doyle, Letterman Publications, 2004

M3 Lee/Grant Volume 1, *by Patryk Janda*, AJ Press, 2009

British and American Tanks of World War 2,
by Peter Chamberlin & Chris Ellis, Cassell, 2000

Alamein and After 1942-1943, *by Mike Starmer*, 2003

British Tank Markings and Names,
by B.T. White, Squadron/Signal Publications, 1978

Photo of 'Battleaxe' given to me by a Czech member of Missing-Lynx. I'm not sure from what book it came.

Various internet research, AFV Interiors website and other website forum members.

Photos taken of the old APG M3 Lee and Grant now located at Ft. Benning, Georgia.

KIT/AFTERMARKET ITEMS USED:

Academy	M3 Grant
Verlinden	Interior set (for Tamiya)
Eduard	M3 Grant interior photo-etched brass set
Eduard	M3 Grant exterior photo-etched brass set
Lion Roar	M3 Lee photo-etched brass set
New Tiger Model Designs	.30 caliber barrels
New Tiger Model Designs	Thompson sub-machine guns
Formations	M3 final drive cover and fenders
Formations	M3 rear hull plate, exhausts and air cleaners
Cyber-Hobby	late VVSS
Panda Plastics	Worn WE-210 tracks
Formations	75mm barrel
Formations	37mm gun rotor
RB Model	37mm barrel
Armored Brigade Models	M3 Grant driver's periscope
Bronco	No. 19 radio from M24 Chaffee
Tasca	Armored fuel covers, periscopes, sand shield hardware, road wheels, drive sprockets and idlers
Archer Fine Transfers	Casting marks and stencils
Decalomaniacs	Custom decals, researched by me
Tichy Train Group	Rivets
Black Dog	M3 Grant stowage
AFV Club	Radio mast
Alpine	Figures and dog