

# RT Volume 39, No. 4 Winter 2017 article text

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**Cover Comment:** *Calgary's Massimo Santarossa tweaked the Trumpeter 1:72 M113 kit to produce a very fine rendition of a Canadian Armed Forces vehicle as it would have looked during its deployment to the Former Yugoslavia. See page 21 for the build.*

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## Editorial

Steve Sauvé, C#0323 [RT@ipmscanada.com](mailto:RT@ipmscanada.com)

### Back to Telford!

In a moment of weakness, Mrs. **RT** Editor relented and let me do a return trip to England to visit the ancestral birthplace of IPMS. Three retired Exec members and I ganged up and made the trek to IPMS(UK)'s Scale Model World (SMW) show at Telford and took in some touring in London on both ends of the trip.

SMW was, as usual, very well organized and well run, and there is a lot to take in over the two-day show, this year on 11/12 November. The organizers and volunteers should be given special thanks for the time and effort they put into the event each year. Their devotion is truly remarkable, and the SMW show has nothing equivalent in scope on this side of the Atlantic. Many British and European branches, chapters and SIGs put on displays, all of which were very well done, and many of which showed an impressive amount of work and investment by the various groups.

For me the social side is the real attraction of these events (okay, the vendors are nice, too). I reconnected with people from my 2013 Telford visit and I met a bunch of new folks, including: **Jeremy; Chris Ayre; Les Burningham; John Hunsley** and his delightful wife (I want to say her name is Jan, but my memory is failing here); **Pat Martin** from BC; **Lee Reynolds** from Australia; **Neil Robinson; Trevor 'Mr. Airfix' Snowdon; Alistair**, a friendly marketing guy from Airfix (*but no new 1:48 Sea Fury kit, dang it!*); Exec member **Gary Barling** from Petawawa ON, and I had a nice chance meeting with **Allan Mills** from Toronto ON. I also had a very pleasant post-banquet pint with IPMS(UK) President **Paul Regan**, where we spoke of matters of mutual national interest. There were many others, of course, and regardless of whether it was a long or short gab it was a real pleasure to talk to everybody at SMW.

I really had just one thing on my 'to do' list at Telford this year - that was to see in person the results of a model build that I'd been following online for about 18 months. The model is, essentially, an almost scratchbuilt 1:18 scale Spitfire FR.XIV, an ex-RCAF aircraft which was purchased and raced at the 1949 Cleveland National Air Races, where it placed third in its class. See [airrace.com/1949%20NAR%20.htm](http://airrace.com/1949%20NAR%20.htm).

The model's remarkable construction was exquisitely detailed at **Britmodeller** and can be seen at [britmodeller.com/forums/index.php?/topic/234999371-118-spitfire-mk-xive-race-80/&tab=comments#comment-2300892](http://britmodeller.com/forums/index.php?/topic/234999371-118-spitfire-mk-xive-race-80/&tab=comments#comment-2300892)

The model was built by **Peter Castle**, who also runs the **Airscale** cockpit detail aftermarket business at [airscale.co.uk](http://airscale.co.uk). I had a few chances to chat with Peter, who, aside from being a top-notch modeller, is an extremely friendly and pleasant fellow. He was genuinely humbled by the attention and well-earned accolades his Spitfire received at SMW, including:

- ◇ Best in Show,
- ◇ Senior National Champion,
- ◇ The Aviation Hobby Shop Trophy,
- ◇ The Airbrush Heaven Trophy
- ◇ The Edgar Brooks Spitfire Trophy
- ◇ the Czech IPMS Best Allied Aircraft
- ◇ **The IPMS Canada Best Canadian Subject**

SMW showed that the hobby is indeed alive and well in Europe, and it is inspiring to see what IPMS'ers are doing on the other side of the pond.

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### National Director

Bob Migliardi, C#0490 [box626@ipmscanada.com](mailto:box626@ipmscanada.com)

In the recent issue of *beaveRTales* I read something that got me thinking. It was the article on building the series of the Aurora Knights. I remember building them as a kid back in the late 1950s. And then many years later I built the Silver Knight again. It sure was a departure from my, then, usual diet of aircraft and armoured vehicles, but it was also great fun. It got me thinking outside my usual modelling box... what technique would look most like real metal armour (I used Rub-n-Buff silver); how might I create a realistic-looking wooden lance (I used a wood dowel tapered to shape and decorated with a spiral stripe); how should I paint the leather for all the straps? I was happy with the result, but, of course, it was nowhere near as nice as those in the BT article.

Still, it was something very different from my usual modelling fare, and as such it was refreshing, and enjoyable, with no need to ensure that the pitot tube was exactly the precise length, or the tailwheel had the correct number of spokes. All of which gets me to my point: Why not take a little mental holiday and build something outside your normal modelling box. For example, how about your first car? Mine was a 1968 VW Beetle! That might be interesting. There are a number of period-correct Beetle models from Airfix, Tamiya, Revell, and probably others. I'd have to do a little research to determine what the exact configuration of the '68 was (Yes, a Beetle is a Beetle, but now and then they did change minor details). Scribe a sun roof if the kit doesn't have one. Play with paints to see how to get a good dull white and rust patch finish. Yeah... It's starting to sound like it might be fun.

How about the first aircraft you flew in?... what would that be? Unfortunately I can't remember, but I'm sure it was one of the Convair 340, 440, 540, 580 variants on either Allegheny or Mohawk airlines. There are kits available of the Convairs from Welsh Models. Back in university I jumped out of an aircraft (yes... I was sober). It was a modified Cessna 180 with all seats removed save the pilot's, a homemade 'flip-up' door on the right side, and a large additional step to help climb out. Monogram did a 180 model that should be easy enough to convert, and the paint scheme would be fairly simple. Maybe I could even have a 1:48 scale figure of me boarding the aircraft. I do have reference photos!

Anyway, you see where I'm going with this. Why not try something new? Break out of your comfort zone and discover what modelling is all over again.

### Chapter & Member Liaison

Kerry Traynor, C#4083 [CML@ipmscanada.com](mailto:CML@ipmscanada.com)

My mandate is to look after chapters and individual members. For the most part, issues arising with members range from concerns about their membership to finding information about the latest build. One responsibility I have which takes up a good chunk of my time is to keep up with what is going on with our chapters spread out across the country. I am the first to admit that, at times, my performance has been less than stellar, and I get the occasional raised eyebrow at executive meetings. Fortunately my 'supervisor', the National Director, is easy going and can easily be distracted with a pint or two and a funny story.

In executing this duty, the perfect scenario would have me travelling back and forth across the country visiting chapters and meeting people face to face. The Treasurer keeps turning down my requests for leasing a private jet, so I rely on emails, checking out the chapter web pages and Facebook.

Recently I sent out an email to the chapters asking how things were going and a good number replied catching me up on things. I also had a chance to visit the web sites and Facebook pages, and, again, most were up to date and the state of most chapters is that they are healthy and active. Some chapters have yet to respond and have no web presence, and I did get some bounce backs. So I suspect that these chapters changed their executives (and did not let me know...), changed email addresses or have ceased to exist.

The reason I do this is, for the most part, to see that everything is good and the chapters are healthy. As mentioned in previous columns, IPMS Canada leaves the chapter operations to the chapter, but we do want to help out if assistance is wanted. The second reason we try to keep up to date with the chapters is so that we can promote the chapters through *beaveRTales*, our web site and Facebook.

Our Social Media Coordinator and Web Master do great jobs on keeping their realms up to date, but we can only post what we know. If there is an event planned or you have cool things happening with the chapter, please drop me a line and I will get it

promoted in our various mediums. To be clear, it does not have to be a big event like a model show. Send us photos of chapter meetings, social gatherings or whatever.

If you members have any questions or concerns, whether you belong to a chapter or not, please do not hesitate to contact me. If I can't address the issue, I can find someone who can.

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# 1:12 Wolf WR1 F1 Racer

**by Ron L. Britt**  
**IPMS/USA 50701**  
**Mustang, OK, USA**

**P.5** - I was motivated to build this particular model for several reasons. First off was that I wanted to build a large-scale kit. Second was that the kit was manufactured by Tamiya.

I had previously built a couple of the other Tamiya 1:20 scale F1 kits and was familiar with their detail and quality. So I decided to look into their kits a little harder. What I discovered was that some of the Tamiya large-scale F1 kits had quite a few aftermarket metal parts offered by different manufacturers; the 1977 Wolf WR1, however, had the most out of all of them. This was a huge plus for me because I have never been satisfied with model paint to give an authentic look of bare aluminum parts.

In my younger years I had watched the WR1's driver; all I can say is that South African Jody 'Madman' Scheckter was quite a colourful individual.

Then there is the car itself. With its beautiful paint scheme, I was hooked. From there the aftermarket parts accumulation began and the modelling project got underway...

## **P.6 - To Start with... The Finish**

First let me say that if there was a 'negative' to consider when I was picking this kit to build, this was it. I knew that I was going to have to go with the original paint and decal scheme to make this work. Wow, could I pull it off?

I started out with filling the body panels with Mr. Hobby Surfacer 500. After that I primed the body with Tamiya Primer, then sanded it with 1500 grit sheets to work out any defects. Then it was onto the base coat. I first decanted the Tamiya TS 55 from the aerosol can for application with my airbrush. I sprayed the paint and then sanded it smooth with 1500 grit paper. I repeated this process four to five times per body panel to work out the defects in the paint finish and the sanding accidental 'burn-through'.

Next was applying the graphics. I tried using the decals offered with the kit but they did not conform to the body panels well. So I used Tamiya masking tape for the curves to mask out the graphics. I airbrushed with decanted Tamiya TS 21, followed by a slight bit of sanding.

I applied the rest of the decals and finished it with about three coats of Mr Hobby Gloss Top Coat. I followed that with a polish with Novus paint polish. Whewww!!!

I would like to say that this process went as well as I have explained, but painting is my not my strong suit nor my favourite part of modelling. Like other unpleasant experiences in life, it just seems to go on forever; and when you think you're about done, something goes wrong...

## **P.7 Interior, Steering and Suspension**

The photo sequence above (1 to 5) shows the steps I took to start with the kit parts and used aluminum tubing to create the numerous tie rods visible on this model.

## **P.9 – Engine**

About half-way through the project I noticed that the build was really coming alive. However, the plastic wheels that called for being painted with gloss black was going to really at best just be a very plain 'vanilla' result. So I got ahold of Jim at Micro Nitro and sought out his expertise in CNC fabricating me a set of aluminum wheels for the Wolf. Needless to say, he did a bang-up job.

**P.11-** Well here it is finished and in all its glory. I would say that for the most part I was satisfied with the build, especially considering that most of my builds are 1:25 scale 'scratch' and 'bash' concepts. I don't really do a lot of builds that are representative of the kit as supplied by the manufacturer. Will I do another one like this? Probably not for a while. What I learned from this build is that I thought that, being large-scale, it was going to be easier build. What I found out is, large-scale presents its own challenges. Like parts lining up correctly. The editor thinks people want to know how much I spent on this build. Well, it was (USD) \$500 for the first kit, the replacement parts and photo-etch stuff, then another \$125 for a second kit because the body panels on the first kit were so badly warped. All in all, it was a challenging but ultimately satisfying experience. I hope you have enjoyed reading about this project.

#### **About the author:**

Ron Britt was born in Queens NY, and raised in Kansas City MO; he is now a self-employed construction contractor residing in Mustang OK. Ron says: "Being a military brat (my father was USMC) I was about 12 and remember watching my dad build car models at the kitchen table. He was very good and won most of the competitions he entered. I asked so many questions about his building techniques that it must have drove him crazy. He was also a concept builder and could not just build out of the box."

Ron enjoys passing down his dad's and his own techniques to members in his IPMS chapter (Oklahoma Historical Modelers Society). It has been very satisfying to watch other modelers adapt my techniques and improve their builds.

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## **Experimental Camouflage 1:48 JG 53 Bf 109 E-3**

**by Jim Knight  
C#5033  
Eugenia, Ontario**

### **History**

Many of us that have built German aircraft have seen the wide variety of camouflage that they used pre-war and during the war, and, especially the Jagdgeschwadern 53 and 54 in Russia, with the browns and greens added to the standard aircraft camouflage during the war.

This aircraft that I built is a Bf 109 E-3 that was flown by Uffz. Stefan Litjens, Wiesbaden-Erbenheim. The aircraft was painted in the experimental scheme used in JG 53 in the autumn of 1939 till the spring of 1940. These colours were comprised of RLM 71, 70, 65, 02 and a mix of 71/02 as a fifth colour in a splinter pattern.

### **Kit and the Build**

The kit that I used for this build is the 48<sup>th</sup> scale Tamiya kit of their Messerschmitt Bf 109 E-3 #61050 (**Fig. 1**). This is a great kit that goes together really well and is a relaxing build. The decals are Hussar #48D001 and the only thing I replaced was the kit seat with one from Ultracast set Early Me 109 Seats.

Once opening up the box I started by removing all the cockpit parts and the fuselage sides. The seat base was glued into place along with the control stick, rudder petals and the front bulkhead. The trim wheel and oxygen bottle were next glued into place. These were then primed along with the instrument panel and seat with Mr. Finishing Surfacer 1500 Black (**Fig. 2**).

Next I mixed up Mr. Colour RLM 02 with some Mr. Colour Levelling Thinner about 30% paint 70% thinner and started to spray these parts. I tried to keep it so you can see a bit of a tonal difference on these parts. Also spraying the inside of the fuselage the same way. While waiting for these to dry I removed the canopy parts and dipped them in some Future Floor Finish and covered them up to keep the dust off them.

When the paint had dried on the cockpit parts I started the detail painting of the various parts. The seat belts were done in a tan colour and the dials and switches were painted on the instrument panel. Once this was done I gave all the parts a light wash with AK 121 and a bit of dry brushing with 02 (**Fig. 3**).

When everything was dried I assembled all the parts together and glued them into the fuselage and then glued the fuselage together.

Next up were the wings and these were removed from the sprue and cleaned up. Most kits have you assemble the wings before gluing them to the body but there is a better way. Take the top wing either side and put it up against the fuselage. Check to make sure it fits well with a nice seam and then using liquid glue of your choice, glue the upper wing to the fuselage. Check your alignment front and back and you should have a perfect wing joint seam. Do the same for the other side and let dry (**Fig. 4 & 5**).

After an hour or so take some ca glue and add a few drops to the joint from the bottom to strengthen the joint. I let this sit to harden overnight. The next day I attached the bottom wing to the top wing and fuselage and after a couple of little adjustments I glued the bottom wing into place.

When the wings had dried I then moved on to installing the top and bottom cowlings and air intake. The spoilers and flaps had their little tags removed for a better fit and the lower wing radiators were installed. Now there are two corrections that I should have done next but I only did one. When the aircraft sits on the ground the ailerons droop down about 11 degrees. The kits ailerons are moulded into the wings and I did not wish to cut them out at the time.

The correction that I did do is to scribe in the top and bottom seams along the length of the fuselage from canopy to fin (**Fig. 6, 7 & 8**).

The last step before painting was to glue the front and rear canopy parts into place and masked them and the centre canopy up for painting. One other thing was that I left off the stabilizers and elevators and their supports to make the masking and painting a little easier (**Fig. 9**).

I then gave the kit a wash and scrub with dish soap and a toothbrush and when dry wiped it down with some isopropyl alcohol to remove all dust and grease from the kit. When dry I tacked the centre canopy into place.

## Painting and Masking... and Masking

My next step was to spray Mr. Finishing Surfacer 1500 Black over the whole aircraft and landing doors, gear legs, stabilizers and elevators. Once dry I checked to see if I needed to fix any spots or seams and everything looked good (**Fig. 10 & 11**).

I started off with Mr. Colour #115 RLM 65 as the first colour to be put down. This was mixed 30% paint with 70% Levelling Thinner. This was then sprayed in a mottled type pattern over the bottom and the sides, top wings stabilizer and elevator where the blue needed to go as to the pattern I was following.

Then I came back over these areas with the blue very lightly for a tonal affect (**Fig. 12 & 13**). When painting the first three colours spray a bigger area than you need to tape. When I was happy with the blue I let the kit sit for 24 hours for paint to dry hard. I did this with all colours to be on the safe side so that no paint pulled off when I removed the tape.

The next day following the pattern on the decal sheet I masked off all the blue places to keep them clean (**Fig. 14**). For masking I used the green painter's tape because it seems to have less tack than others and all my tape cutting is done on a ceramic tile that I have.

The next colour to spray was Mr. Colour #60 RLM 02. This was sprayed the same as the blue was, then going back over lightly for effect and spraying a bigger area than what was called for. The next day I taped up the RLM 02 areas following the pattern (**Fig. 15**).

Now the next colour is a mix of 50% RLM 02 and 50% RLM 71. I used Mr. Colour #17 RLM 71 and RLM 02 for my mix. I mixed up a little batch of these two colours so I would have some left over for touch ups later. Then I started to spray this colour the same as the first two. I taped this colour up the next day (**Fig. 16**).

The next colour on the list was RLM 71 which I started to paint the same as the last three. Next day I taped it up and sprayed the final colour Mr. Colour #18 RLM 70. The same as the rest of the colours before and I also sprayed the spinner and propeller at this time.

The next day was the day to see how well the masking worked out. Once I started removing the tape the pattern started to appear. No paint pulled off and it looked like I only had two places where I screwed up on the pattern (**Fig. 17, 18 & 19**). Once those were fixed I gloss coated the aircraft to get it ready for decals.

## Decals and Weathering

With these decals you get two versions of this aircraft. The first one carries early national markings and the second with later markings, with paint touch-ups because of the new marking sizes (**Fig. 20**). I chose the first set.

The decals went on very well using the Micro Scale System. The bottom crosses took a bit of Solvaset to get them to snuggle down over the cannon bulges. After they were on for a bit I took an X-Acto blade and sliced through them along all panel lines and the flap and rudder hinge lines (**Fig. 21 & 22**).

The next day I gave the decals a light wash with warm water to remove any leftover residue. I then gloss coated them again with Future and let everything dry for a couple of days.

Next I glued into place the landing gear and tail wheel. When the gear had set I then added the doors making sure to get the correct angle. I gave the model a wash with AK 121 Wash Dark Brown. I let that flow into all the panel lines and then let it sit for about an hour. Next I started to wipe it off lightly with an old t-shirt moistened in varsol wiping in the direction of airflow. Once finished I put the model down to let dry and started to work on the exhaust and the wheels. The next day I added some of the smaller parts and then the model was given a coat of Vallejo Satin Finish along with the propeller and spinner.

## Finishing

Once the satin finish had dried I began to remove the tape from the canopy sections (**Fig. 23**). The exhausts were installed and the antenna was glued in place and painted. Next the propeller unit was put on and then the wheels were glued on. When these had dried I added an aerial wire using E-Z Line and then added the main canopy in place.

## Final Thoughts

I found this to be a good build for me to see how I would make out doing a multi coloured splinter scheme involving a lot of taping with different angles and shapes. I made a mistake or two in the pattern along the way but was able to fix them without too much trouble.

## References

Hussar Decal Sheet 48D001 Messerschmitt Me 109 E1/E3

It has decals for two versions of this aircraft with really good art work for both sides and top and bottom of wing.

Lynn Ritger, The Messerschmitt Bf 109 Part 1 Prototype to E Variants, SAM Publications

An excellent source of information on early 109s and there is also art work depicting another version from JG.53 in a similar scheme at the time only using more blue.

## About the Author

Jim has been retired from the graphic arts industry since 2010 and has been working on putting a dent into his kit collection. Once retired he and his wife Julie moved north of Toronto to a small village up near Collingwood. Now he spends time going to the cottage for boating and fishing and travelling as often as he can. They have two sons, one a Metro Toronto Police Officer and the other a veteran of the Canadian Armed Forces.

## 1:72 Cushman Model 39 Package-Kar

by Al Magnus,  
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Regina Scale Modellers,  
Regina, Saskatchewan



Airfix of late has been coming out with some very nice kits. Though they are primarily aircraft, a few are of interest to us members of the land-hugging crowd. One of the nicest releases in their new line is the 1:72 scale WWII USAAF Bomber Re-supply Set (kit no. A06304). It comes with a variety of ground support items like trailers, bombs and vehicles, one of which, the Cushman was of real interest to me. Knowing nothing about Cushman vehicles I figured I should at least find out what this little vehicle was called. As best as I can tell from my various web searches, it is a model 39 Package-Kar.

Now I could have built this in a military livery but what I really wanted was to make it as a civilian vehicle to enter in our local club's model car contest. For this I had no shortage of ideas, as the web is littered with numerous photos of Cushmans that have been converted for various roles. One I found particularly appealing, a conversion to a small bed-style carrier. For my build I didn't want to make an exact duplicate, just a reasonable facsimile that was more suited to my basic scratch building skills.

## The building starts...

First of all, the base kit is quite small and comprises only 11 pieces, so with such a small parts count I figured I could devote more time towards modifications.

I started at the rear tail light. It is moulded directly to one side of the cover. The fit isn't the best and the detail somewhat soft. After gluing the two cover pieces together I removed the tail light and bezel and filled the depression with plastic and smoothed everything with some filler. (Fig. 1) A pair of disks punched from plastic sheet made a new bezel. ( see Fig. 6, later in article)

Next came the face of the engine cover/seat combination. Airfix moulded this with a solid face. On the real vehicle there is a square opening that exposes the engine.

I marked and cut out the necessary plastic. (Fig. 2 & 3) To fill the now conspicuous void I built a quick and dirty one cylinder engine from some rectangular plastic rod, thin plastic sheet and a cylinder shaved from a surplus aircraft radial engine. An exhaust system was fashioned from plastic rod for the muffler and tail pipe, and a short length of copper wire was bent into shape for the remainder of the pipe. Engine detail was kept to a minimum since it will be barely visible once it is put inside the cover. I also added the little platform the engine rests on.

(Fig. 4) Now that the frame part was off the sprue I also addressed the steering column. The kit part is on the thickish side with soft detail. A scratchbuilt column was made from plastic rod and copper wire, using the kit's column as a template. Handle grips were made from super glue dipped into baking soda a few times until it was built up to my liking, and then they were sanded to shape. I filled in the column's mounting slot since reference pictures showed a flat floor here and not the raised area the kit has. (Fig. 4 and 5)

I then returned to the engine cover. Under the top cover there is a small package compartment and beneath that a small fuel tank. I blanked off the compartment with plastic card (Fig. 6), and scrounged a small fuel tank from my spares box. It was a bit oversize, so I cut it down to fit.

## Now that the easy stuff is done...

With the simpler changes done, I turned my attention to the more difficult platform. I started by finding a pair of new wheels in the spares box. I would have used the kit wheels but they unfortunately come with moulded-on fenders which wouldn't be easy to remove. Luckily the new wheels fit the axle stubs perfectly and I could friction-fit them into place while I worked on the platform. After calibrating my Mark I eyeball, I measured out the platform's floor on some sheet plastic and cut it out. I loosely placed the floor on the frame and noted where the wheels contacted the floor and marked where I estimated the fenders would sit on the floor. I then cut two pieces of plastic tube for the fenders and test fit them over the wheels. Much to my consternation the tube's arc was insufficient to clear the tires and I had to find a larger diameter tubing in my inventory. With the fenders sorted out I added backs to them. Then cuts were made in the floor to accommodate the fenders which were then glued in place.

Two sideboards were cut, their height based on the depth of wheel openings plus a little extra. The wheel openings were traced onto each sideboard at the appropriate spot and the opening cut out close to the pencil line and then sanded to size. Next the boards were glued to the floor and the rear board added. I noticed in my reference pictures that there were some plates mounted at the front of the bed to hold a removable board, which I also added.

Adding the wooden rack to the back wall completed the box. This was the easiest part, requiring only a few measured cuts to some flat plastic rod. They were then glued into place after I had scratched some simulated wood grain texture to their faces with the tip of my hobby knife blade. (Fig. 7)

Before painting I like to loosely assemble the pieces to make sure everything looked reasonable. (Fig. 8, 9) Satisfied with what I saw I proceeded with the painting.

## Painting

I wanted the Cushman to represent a surplus vehicle purchased for use by a small business, possibly sometime not too long after the war. I used Testors enamels for all of my painting. After a primer coat of Light Grey, the body and frame got a coat of Olive Drab followed by the same Olive Drab lightened with a few drops of Flat White and sprayed in a 'cloud' pattern on the larger panels. The box was given another coat of Light Grey and highlighting done with Camouflage Grey sprayed in the corners and along a few of the edges. I scuffed up the bed with various other paint colours, applying the paint with the tip of a round toothpick. I painted wheels and tires black. Then everything got a coat of Glosscote sprayed directly from the can in preparation for the decals.

The fuel tank, engine and exhaust were sprayed flat black, followed by some Glosscote. The tank was given a coat of Alclad II Chrome lacquer and the engine was drybrushed with silver and Panzergrau. The exhaust system was sprayed with a light coat of Leather Brown, then rusted up with Tamiya Rust pigment powders.

## Markings

With my word processing software and laser printer I made simple decals on a piece of Microscale blank decal sheet, and protected the images with a coat of Microscale Liquid Decal Film. The decals were applied and then soaked many times over with Micro Sol to get them to sit down nice and snug. A quick dry-brushing with light grey and an airbrushing of some Afrika Korps Dunkelgrau '42 toned down the scuffs and imparted a slightly-dirty look.

## Final Details and Assembly

A search through my accessory stash gave me options for a load on the bed. I settled on a resin pail and small barrel from Armand Byardi. The pail was painted Burnt Umber and then given a wash of Tamiya Rust pigments. The barrel was painted Yellow and dirtied up with Tamiya Panel Line Accent Colour (Dark Brown).

Brengun supplied a tool box and tools. This is a beautiful set with top notch etchings showing some relief on one side. Assembling the tool box was easy - four folds, add some super glue along the edges for reinforcement, and a short piece of piano wire for the handle. It was painted red and dirtied up with more Tamiya Panel Line Accent Color.

The tools were more problematic. Beware, they are minute and easy to lose and the carpet monster will be well fed if you are not careful! Brengun could have made things a lot easier if they had etched these from silver metal, as I have seen other manufacturers do, and save me the trouble of having to paint them silver.

Getting the tools into the bottom of the box without marring the finish was a challenge. After some exasperating trials with super glue on a few pieces and damaging their finish, I found the easiest method was to put a small drop of Glosscote on the bottom and then plop a tool into the box. After the Glosscote had dried a bit I then added another minute drop of Glosscote and put in the next tool.

Following the painting, all of the subassemblies were joined. As I was placing the steering column into its locating hole it dawned on me that it was too close to the backside of the bed's rack. In this position on a real vehicle the operator wouldn't have been able to make much of a turn without barking his knuckles. So I modified the bracket that held the column to the box, touched it up with Olive Drab applied with a brush, and then glued it into place. Then the pail and barrel were glued to the bed. The last items added were a set of scratch made pedals on the floor. Then everything got a coat of Golden brand Hard MSA Varnish with UVLS (Matte) to dull the finish. I added the tool box last as I wanted it to remain somewhat glossy. And, last but not least, a tail light was punched from clear red plastic and super glued to the bezel.

The final result can be seen in the photos on this page.

### About the author

Al Magnus was born in Regina where he has spent the majority of his life. His modelling got started during his pre-teen years, followed by about a 20-year hiatus. Returning to the hobby in the mid-1990s he joined the Regina Scale Modellers soon afterward. Al exclusively builds to 1:72 scale and his primary interest is armour, with some dabbling in aircraft, sea vessels and rockets/missiles. He retired in 2009 after 29 years as a public servant. Al and his wife Janice have been married for 34 years and they have a son and daughter.

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**by Massimo Santarossa**  
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The M113 Armoured Personnel Carrier (APC) has been a fixture of the modern battlefield for more than five decades. Designed in the 1950's by Food Machinery Corp (FMC) in the USA and entering production in 1960, more than 80,000 M113s and M113-based vehicles have been produced, seeing service in all corners of the globe with numerous countries. Beginning its life as a troop carrier, the M113 family of vehicles has been built in many different variants and further modified again by each country that has employed it.

Canada took delivery of its first vehicle, the M113A1 (the diesel-powered upgrade of the gasoline-powered M113) in 1965, eventually acquiring more than 1100 units.

Canada purchased from FMC in the 1964-1968 period the M113A1, M548 and the M577A1, The Lynx does not have an 'M' number as it was not adapted by the US military and is a separate vehicle type that was not part of the M113 series. In the early 1990s DND purchased some additional M113A2 vehicles from UDC in order to augment the M113A1 series that was in the process of being upgraded to A2 status.

Despite now being years older than the crew who operate it, the M113 family is expected to remain in Canadian military service until 2020.

## **A Miniature M113A2**

It is hardly surprising then that such a ubiquitous AFV can be easily found on display at most model contests and on the shelves of many a modeller. The vehicle can be readily built in 1:35 and 1:72 scale, and most any version can be produced straight from the box or via a conversion set. As I have something of an affinity for Canadian subjects, and I like to work in the one true scale, modelling an M113 was something that has always been on my 'bucket list'.

For this first M113 project (there will be others) I chose to build a standard M113A2 APC. That is not to say that I was satisfied to build the model straight out of the box, far from it. Along the way after market parts would be used as well as a number of scratch built pieces in order to create what would hopefully approach something representing a Canadian vehicle.

There are two 1:72 kits of the M113 readily available on the market, one from Italeri and the other from Trumpeter. Both have pros and cons to them, but in the end I settled on the one from China. I settled on two kits in fact, the M113A2 Medivac APC would serve as the base kit while the ACAV version provided the commander's gun shield. My goal was to build a vehicle that served in Kosovo while on UN peacekeeping duty in the 1990s.

## **Back Fill**

Job one on this build was filling in various sink marks and holes found in the plastic (**Photo 1 and 2**). The Trumpeter kit had many ejector pin marks located in the most visible places possible, thus two-part epoxy putty was used to correct this. The undersides of the external fuel tanks were completely open so styrene sheet was used to cover these over. The kit is designed to have its side skirts in place, but since my subject did not, their locating strips were removed and the rather large holes left behind were again filled with styrene (**Photo 3**). Sheet plastic also came in handy to cover over the pock marked interior surfaces of the vehicle.

With the surface of the plastic suitably prepared, it was time to start adding some detail to the kit, both after market and scratch built. The Eduard PE set provided a good starting point for detailing the interior. The bits are small and a fair bit of patience was needed so as not to rush the effort (**Photo 4**). With photo etch, the primary type of glue used was cyanoacrylate (super glue) however I have been using Gator Grip glue more often for such work also. The latter is a type of white glue which means it is friendly to work with, however its holding strength is almost that of CA making it very versatile indeed.

## **More Details**

To give my M113 a more Canadian appearance and to round out the detail further, the Eduard set alone would not suffice. Basic stowage items were sourced from the spares box, but other items had to be hand-made, and for this a collection of styrene shapes and pop can aluminum was reached for. Pop can, or beer can if you are so inclined, aluminum is thin enough to cut with a pair of scissors and hobby knife but strong enough to retain a shape. In this case it was used to build an additional stowage rack inside the vehicle, while on the outside the grouser rack and head light guards were made from it. Styrene bits were cobbled together to create a space heater for the vehicle as well as the

various communication boxes found on the interior bulkheads (**Photo 5 and 6**). Electrical wiring for these and other parts was made from various types of wire purchased from a fly fishing store.

A good match for the light green found on the inside of the M113 is the British colour, Sky Type S, which airplane modellers will be familiar with (**Photo 7**). Once painted and gloss coated with Future, placards were placed on various bulkheads and hatches to add that further touch of realism. These decals came from the spares box and, truth be told, are more accurate for an aircraft (**Photo 8 and 9**), however no one will know (unless you write about it) and the added dimension they give to a model is worth the extra few minutes work. The only thing that remained was to weather the interior with an oil wash and some pigments.

## Scratchbuilt Parts

Construction of the exterior followed much the same plan as the interior, with PE and scratchbuilt items taking the place of kit parts and in creating Canadian modifications (**Photo 10**).

Without going into a long diatribe about how to bend plastic or cut metal, here is a short list of the scratch built parts:

- ◆ lifting eyes/tie down points in the four upper deck corners made from wire
- ◆ exhaust stack from styrene rod
- ◆ additional signal lights from the spares box
- ◆ signal light guards from aluminum
- ◆ drive wheel cover 'sacrificers' from styrene strip
- ◆ snow grousers made from lead foil
- ◆ snow grouser rack made from aluminum
- ◆ tie-down straps cut from Tamiya tape
- ◆ towing points and shackles from spares box (DML Sherman kit)
- ◆ commander's gun shield from Trumpeter ACAV kit

Added later would be:

- ◆ ExtraTech barbed wire
- ◆ a spares box road wheel
- ◆ tow cable made from Billing Boats thread and spare tow cable ends

Some time was time needed of course to produce and fit all the bits in place but this was mostly due to the fact that they were small. In truth, more time was spent on the interior than the exterior. The upshot is that it was not long before it was time to paint.

## High Visibility White

We have all seen that United Nations vehicles are white, but we also know that they do not come from the factory that way and that they get their high-visibility colour before being deployed. As such, it is often possible to see the vehicle's original colour peeking through in spots.

In the case of the model, the underside and the suspension areas were painted NATO Green, as was the running gear. The insides of all the hatches and the edges of the hull where they made contact also received a coat of this colour. These were then tacked in place with a couple of drops of white glue, the idea being that firstly they would serve as masks to keep paint out of the interior, and second when they were opened a fine ring of green would be visible where the white paint could not reach, just like on the real thing (**Photo 11**).

After picking out the few non-white detail bits with a fine brush and the appropriate colour, the model was given its first gloss coat in preparation for decals. Armour, unlike airplanes, have only a minimal number of decals so it did not take long to get all the markings in place. These were either sourced from the spares box or printed on clear decal film. Another gloss coat to seal the markings and it was time for weathering where hopefully the model would really come to life.

## Make it Not So White

Detail was first picked out with a pin wash using Winsor & Newton oil paints (**Photo 12**). A fine point brush was employed as the details were understandably small, however any excess was wiped away before the paint set. With oils this is not a problem because they have such long working times, but this also means that they must be given ample time dry

thoroughly before handling the model again, at least a day if not more. When convinced that no more oils were needed, and they were completely dry, the model then got its flat coat.

Mud was caked on the underside and around the suspension of the vehicle as well as on the rear where it would be thrown up by the tracks (**Photo 13**). To create the mud, pigments were mixed up with Tamiya acrylic paint thinner then stippled on using an old brush. This mixture dries fairly quick and is quite durable.

With the underside and suspension area of the hull nicely covered in mud, the road wheels and tracks could be mounted (**Photo 14**). The road wheels, drive sprockets and idler wheels were painted NATO Green except for their exposed faces which received the UN white treatment, and black for the rubber wheel itself. The kit tracks were the rubber band style and though a little soft in fine detail, overall they looked the part. These were first painted black, followed by a dry brushing of gun metal on the metal contact points, then rounded out with dry pigments to add a dirty look.

Once mounted, the running gear was given a light application of mud to tie it in with the rest of the vehicle. Because of the scale it was important to keep the chunks of mud looking realistic. For example, a grain of sand to the normal eye is tiny, but on a 1:72 AFV, when blown up to 1:1 scale, that grain of sand could easily be a rock one foot across, which would be enough to dislodge some tracks. There are those who will use sand and dirt from the garden to weather their models, but I find that the scale of the material does not look correct. Just my two cents for what it's worth.

Further blending and dusting was done by applying pigments, working from the bottom of the vehicle upwards. Because the pigments go on dry, some light rain streaking was created with verticals strokes of a brush slightly dampened with water.

Final assembly consisted of placing the open hatches in their correct position and installing the three gun shields along with the 0.50" cal. machine gun. The shields are combination of the kit parts and Eduard PE, which in this scale looks spot on. The kit machine gun is nicely moulded for a part so small, but with the addition of a few of the metal bits becomes more eye catching.

The finished model grabs its share of attention in the display case despite its small size, probably because of its bright colour. The Trumpeter model is an easy kit to build. It does have a few accuracy issues but this is because of the compromises made in 1:72 scale, compromises which are easily over come with the use of some PE or a little scratch building. As for being a Canadian vehicle, I hope it looks the part.

## Materials

- ◆ Trumpeter 1:72 US M113A2 Armored Car #07239
- ◆ Trumpeter 1:72 US M113 ACAV Armored Car #07237
- ◆ Eduard 1:72 M113 ACAV #22122

## References

- ◆ [M113 in the 1990s \(Part 1\)](#), Carl Schulze, Concord Publications, 2004
- ◆ Internet
- ◆ Personal photographs

### About the author:

Like most plastic afflicted individuals, Massimo has been building since he was a young boy. He considers himself an omnivorous modeller, building everything from planes to ships, tanks to trucks, although he does has a soft spot for aviation, usually with a maple leaf on it. This may stem from the fact that for the last 30 years he has flown one type of airplane or another, the latest being the Boeing 787. Originally from British Columbia, he now calls Calgary home, along with his wife and daughter.

***(Editor's note: Due to page space constraints Ed's article will discuss only the M113A1 family, and not the later 'A2', 'A3' and MTVL upgrades in CAF service)***

The M113 family acquired by Canada from 1964 to 1968 included the basic M113A1CDN Armoured Personnel Carrier (APC), the M577A1CDN Command Post, and the M548A1CDN Cargo Carrier. All vehicles were manufactured by Food Machinery Corporation (FMC) Ordnance Division at Santa Clara, California.

The Canadian Army eventually purchased more than 700 vehicles, mostly M113A1's, in two contracts, in 1964 for 442 vehicles and 352 vehicles in 1965.

(Although not a direct M113-derived variant, the Lynx Command and Reconnaissance vehicle deserves a mention here. A total of 174 units were purchased to fill the armoured reconnaissance role domestically and with Canada's NATO force stationed in then-West Germany. The Lynx used many M113A1 components such as the powerplant, running gear and tracks, which eased the logistics and support demands.)

All M113 vehicles were capable of mounting a machine gun. Normally, this was a Browning M1919A4 general-purpose machine gun (GPMG) although, later on, the Browning M2HB (Heavy Barrel) 0.50" calibre heavy machine gun was also used. The M1919A4 was a 0.30" calibre air-cooled, belt-fed weapon, and had an effective range of 1,530 yd (1,400 m). In the late 1960's, it was converted to fire 7.62 mm NATO standard ammunition and was then referred to as the C5 GPMG. The M2HB was a 0.50" calibre, air-cooled, belt-fed heavy machine gun, and had an effective range of 1,970 yd (1,800 m). Either weapon with its ammunition box could be mounted on the machine gun mount attached to the commander's cupola. Up to 2,500 rounds of 0.30" calibre/7.62 mm ammunition, or 2,000 rounds of 0.50" calibre ammunition could be stored in metal boxes under the personnel seats.

Since 1964, Canadian M113A1's and their many variants have been a common sight in Canada as well as on the roads and training areas of West Germany. When not used for training exercises in Canada, their amphibious capability has been employed in helping Canadian communities during times of flooding. In Germany they formed the bulk of the armour within 4 Canadian Mechanized Brigade Group (4 CMBG) and were a common sight on the roads or during training exercises, strategically positioned near gasthofs (German pubs/taverns) within the Canadian area of operations. Canadian M113A1's were also used in UN peacekeeping missions, first in Cyprus in 1974 when M40A1 106 mm recoilless rifle-armed versions were sent from the brigade in Germany to provide some light armour muscle to the Canadian contingent as they negotiated and held the buffer zones between the Greek and Turkish belligerents. The second time was in the Former Yugoslavia when, once again, vehicles from Germany provided the armoured backbone of the two United Nations Protection Force (UNPROFOR) Canadian Battle Groups. Those vehicles not sent to the Balkans were returned home to Canada when the two Canadian bases in southern Germany, Lahr and Baden, were closed in 1994.

## **1984 - New Vehicles**

The M113A1CDN had been in Canadian service for 20 years when, in 1984, Canada began to purchase a limited number of new M113A2CDN APC's. By 1991, 72 vehicles had been purchased from United Defense Ground Systems Division in Santa Clara, California, to augment the older M113A1CDN APC's which were being upgraded in Canada to the A2 configuration.

## **Fleet upgrades and new vehicles**

The next phase in the service life of the Canadian M113 series of vehicles would see upgrades to the existing fleet and the purchase of additional newer models. New versions would see M113A2 vehicles equipped with the Air Defence Anti-Tank System (ADATS) while others, such as the Damaged Airfield Reconnaissance Explosive Ordnance Disposal (DAREOD) vehicle were modified and equipped to deal with explosive ordnance disposal on airfields. These two new versions plus the existing ones already in use would see service not only in Canada but also in Bosnia, Kosovo and Afghanistan.

## **Canada's M113's today**

Fifty years after the first M113A1's were purchased, only 300 or so remain in service, with the rest either being used as targets on gun ranges, museum monuments or sold for scrap. The 300 left were either upgraded to M113A3 standard or they have been heavily converted into Mobile Tactical Vehicles, Light (MTVL's) which has resulted in the mounting of improved remote weapons systems, lengthening the hulls and the addition of a sixth road wheel. These modernized vehicles are expected to service for another 20 years which will mean that the M113 will have the distinction of having the longest service of any armoured vehicle in Canadian military history.

## **The Canadian M113A1 family**

The M113A1CDN family of vehicles consisted of the following major variants:

### **M113A1CDN Armoured Personnel Carrier**

The M113A1CDN provided the Cdn Army with a vehicle with much-desired cross-country manoeuvrability, armour protection and a modern radio suite. It was first supplied to the units of 4 Canadian Mechanized Brigade Group (4 CMBG) in West Germany in the mid-1960's. Shot while on exercise in Northern Germany in 1967, photo EF67-123 shows a vehicle armed with a M1919A4 0.30" cal. MG and has been painted in the then-new standard three-tone camouflage of black, olive green and khaki-brown, with yellow fixed radio call signs (32C, pronounced as 'Three-Two-Charlie' in army 'radio speak'). British-style tactical signs were painted in black and in this case, as viewed from the driver's position in his seat, consist of a maple leaf on the right front corner and a '9' (indicating that this vehicle is part of an infantry battalion) on the left.

### **M113A1CDN with Ambulance Litter Kit**

One of the first special equipment kits adopted by Canada for use with the M113A1CDN was the Litter Kit or Ambulance. This kit comprised a series of ceiling-mounted chains and hooks, which allowed two pairs of stretchers (litters) to be slung from the vehicle ceiling, with an attendant sitting in a central, fold-down, rear-facing jump seat. When used as an ambulance, the machine gun was removed and International Red Cross markings, usually plywood or metal signs, were attached to the hull sides, front and rear. M113A1's could be modified to the ambulance configuration and reconfigured back to a personnel carrier with relative ease. This photograph shows only two stretchers in use although four could be used during combat operations.

### **M113A1CDN with Bulldozer Kit**

The M113A1CDN bulldozer conversion kit provided the APC with the capability of improving water-crossing entrances and exits, and performing general light bulldozer work while the operator remained within the armour protection of the vehicle. The carrier retained the same general operational characteristics of the M113A1 and eight soldiers, plus the operator, could still be carried when the kit was installed. The CAF adopted the kit in the early 1970's, which was manufactured by Flextrac Nodwell. The kit consisted of a buoyant bulldozer blade on the front of the carrier, a hydraulic system to control the blade, heavier transmission-to-differential universal joints to absorb shock loads during bulldozer operation, and dismountable headlight clusters to prevent damage to headlights during brush and tree clearing operations. In order to compensate for the extra weight mounted on the front of the vehicle, a buoyancy cell was mounted over each of the rear fenders. The M113A1 Bulldozer Kit was a permanent modification for 52 Canadian vehicles.

### **M113A1CDN Mobile Repair Equipment (Fitter's Vehicle)**

The **M113A1CDN Mobile Repair Equipment**, the Canadian version of the US M579 Fitter's Vehicle, was a repair vehicle supporting units equipped with light tracked vehicles. The basic APC was modified with the addition of a large hatch in the vehicle roof and a crane. The top-hatch opening was a 4" (10 cm) high raised area that covered the complete crew compartment and contained not only the standard cargo hatch as well as the commander's cupola as well. The entire hatch was hinged on the right hand side and, when raised, the hydraulically-operated HIAB crane could load and unload major assemblies, such as engines and transmissions, into the cargo area. Due to the weight distribution of the crane and cargo, the Fitter's Vehicle had a special foam-filled front trim vane in order increase buoyancy during amphibious operations.

The vehicle was manned by a crew of three, which consisted of driver, commander, and assistant. The CAF had a total of 21 M113A1 Fitter's Vehicles.

### **M113A1CDN Armoured Recovery Vehicle, Light**

The M113A1CDN Armoured Recovery Vehicle, Light (ARVL) kit was designed to retrieve mired and disabled equipment from the field and to be used as an emergency crane. The ARVL had the same operational characteristics as the basic APC, and was manned by a crew of three, consisting of a driver, commander, and one assistant crewman. The major differences between the APC and the ARVL were the addition of a 20,000 pound (9,072 kg) single-line-pull, hydraulically operated winch and its hydraulic system, remote throttle control, rear-mounted ground spades and centre blade, personnel safety shields, top deck-mounted boom-type crane, a heavier towing pintle, and the necessary mounted and

stowed equipment for recovery operations. The CAF had 37 ARVL's in service, essentially with every unit that operated the M113 family.

### **M113A1CDN with M40A1 106 mm Recoilless Rifle Kit**

The M40A1 was the infantry battalion's largest anti-tank weapon and it had an effective range of 3280 yd (3,000 m). It replaced the M20 75 mm recoilless rifle and when introduced into service with the Canadian Army in 1956, the 106 mm recoilless rifle could penetrate any known tank armour at the time. It could also be used against other targets such as personnel in the open and field fortifications.

The M40A1 kit consisted of a 106 mm recoilless rifle with its M79 mount fixed to the top deck of the M113A1CDN and replacing the right, rear seat with ammunition racks. Even with no ammunition in the racks this modification increased the basic vehicle weight by approximately 500 pounds to 21,400 pounds (9,707 kg), and the overall height of the vehicle by approximately 44 inches to 116 inches (2.95 m). This affected the airtransportability of the M113A1CDN, which meant that the recoilless rifle had to be dismounted for air transport. This modification did not change the centre of gravity of the vehicle. At least twelve vehicles were modified for use with the M40A1 Recoilless Rifle, and all were subsequently reconfigured back to the standard APC when the TOW ATGM replaced this weapon system in the late 1970's.

### **M113A1CDN with SS11B1 Missile Kit**

The SS11B1 was a first-generation, French-designed, self-propelled, auto-rotating, command-guided anti-tank guided missile. Primarily an anti-tank weapon, the SS11B1 could be employed against other types of targets and it could either be vehicle or ground launched. The SS11B1 missile had maximum range of 3,280 yd (3,000 m) and a minimum range of 875 yd (800 m). It was not possible to engage targets under 800 metres due to the time lapse involved from the moment of launch until the controller gained control of the missile. When fired at maximum range the time of flight of the missile was 20-23 seconds. The rate of fire was limited to two missiles per minute due to the time of flight factor.

The M113A1 launching vehicle was modified to accept two missile launchers on telescopic mounts, each with 360° traverse. To protect the missiles, brush guards were mounted on the side of the vehicle and the missiles could be fired over the guards. The controller/vehicle commander could fire the missiles from the commander's seat, and he also had the ability to fire dismounted from the vehicle. The vehicle was capable of carrying two ready-to-fire missiles and four spares in special stowage assemblies within the vehicle. The crew consisted of a vehicle commander/controller, loader, and driver.

Initially the missile controller sat in the APC's crew commander's station underneath a Plexiglas cover while using the binoculars with the T10K1 Control Box. In 1970, the SS11B1 carriers were configured with the Hensoldt post sight. This was mounted to the right of the crew commander's cupola with the gunner leaning up against the right wall of the carrier interior. Firing could be conducted closed down with the missile launcher arms extended up above the brush guards.

At least ten vehicles were modified to mount the SS11B1 and all were subsequently reconfigured back to the standard APC when the TOW ATGM replaced the SS11B in the late 1970's.

### **M113A1CDN with AN/MPQ-501 Radar**

The AN/MPQ 501 Counter-Mortar Radar entered service with the Royal Canadian Artillery in 1962. It had a range up to 15.5-miles (25,000 m) with an azimuth at any 22.5-degree arc and an angle of sight from +12 degrees to -6-degrees.

The primary role of the radar was the location of enemy mortars and other short range, high trajectory weapons and had a limited capability to locate low trajectory weapons. It could also detect the impact of friendly shells to assist in the adjustment of artillery fire onto the target. It could carry out acquisition and surveillance of ground targets. The radar detachment consisted of a sergeant, four radar operators, two signaller/drivers, and one radar mechanic. The radar unit was centrally mounted on the top deck of a M113A1 along with an auxiliary power unit and air-conditioning unit to the rear. This meant that the commander's cupola was removed and repositioned to the right of the radar unit. The rear cargo hatch was secured closed and a ladder was fixed to the rear of the vehicle to allow easier access to the radar. The amphibious capabilities of the M113A1 were adversely affected due to the added weight of the radar unit and internal equipment.

Six M113A1 were converted to mount the AN/MPQ-501 radar. The converted vehicles were phased out in the late 1980's and reconfigured back to the standard APC.



## **M113A1CDN with 81 mm Mortar Kit**

The 81 mm mortar was an indirect, close support, infantry weapon with a range of 220 to 4900 yd (200 to 4500m). The mortar consisted of a forged monobloc steel barrel with a smooth bore, a bipod, and a base plate. The Canadian manufactured M29 81 mm mortar was first introduced to the Canadian Army in 1954 as a replacement for the Second World War vintage M.L. 3-Inch mortar. The M29 was replaced by the L16 81-mm mortar which was a Canadian/United Kingdom joint venture initiated in the late 1950's to improve this weapon system. One of the design changes was that the L16 barrel exterior was finned for approximately half of its length towards the breech end to increase its cooling properties.

The 81 mm mortar kit allowed for the crew, weapon, ammunition and its ancillary equipment to be carried within the M113A1; however the weapon had to be dismounted from the APC to be fired.

Photograph REC74-675 shows M113A1CDN 35264 with an L16 81 mm mortar and three-man detachment dismounted from the vehicle and ready to fire.

## **M113A1CDN Company Command Post**

The M113A1 Company Command Post vehicle was introduced in 1973 and was an M113A1 equipped with additional radios in order to facilitate communications on several networks, as well as map boards and interior blackout light controls. A covered canvas penthouse tent extension doubles the command post working area beyond the rear ramp when set up for an extended stay. In order to form a larger command post working area, two M113A1's could be parked back-to-back and joined with a penthouse. The crew of the M113A1CDN consisted of a driver as well as two or three company command post personnel.

## **M113A1CDN Artillery Command Post**

The M113A1CDN artillery command post was an M113A1 equipped with additional radios in order to facilitate communication on several networks, as well as mapboards, artillery range and plotting instruments and interior blackout light controls. A covered canvas penthouse tent extension doubles the command post working area beyond the rear ramp for an extended stay. The crew of the M113A1 consisted of a driver as well as three or four artillery command post personnel. Records indicate that fewer than ten vehicles were converted for this purpose.

Photograph BS72-1867 shows M113A1CDN, callsign '9' ('Niner'). This is the 3 Mechanized Commando's (3 Mech Cdo) Commanding Officer's carrier. For the most part, both the company and artillery command post-modified M113A1's could only be distinguished from the outside by a fixed radio callsign painted on the vehicle, or by the two or more radio antennas. 3 Mech Cdo was formed in the Sennelager, Germany, training area on 28 June 1970, to serve as a mechanized infantry battalion with Canada's commitment to NATO ground forces, 4 CMBG. Although not employed in an airborne role, the unit belonged to the Canadian Airborne Regiment and wore the international symbol of airborne troops - the maroon beret. The Commandos turned over the reins to 3<sup>rd</sup> Battalion, The Royal Canadian Regiment, on 13 July 1977, when they were renamed 3 Airborne Commando, and relocated to CFB Petawawa to serve as part of the Special Service Force with the Canadian Airborne Regiment.

## **M113A1CDN with TOW Anti-Tank Guided Missile Kit**

The BGM-71 Tube Launched, Optically Tracked, Wire-Guided (TOW) anti-tank guided missile system was developed by Hughes Aircraft between 1963 and 1968. The XBGM-71A was designed for both ground and helicopter-borne applications, with production commencing in 1970. For Canada, delivery of the TOW commenced in April, 1976 and was completed by mid-1977. The TOW replaced the SS11B1 guided missile system and M40A1 106 mm recoilless rifle, although the M40A1 continued to be used by the Reserves until the late-1980's. TOW had an optical range of 4100 yd (3,750 m) and was a more modern long-range anti-tank system than either the SS11B1 or the M40A1.

This variant consisted of a M113A1 with a M233 TOW mounting kit installed. Kit production began in 1971 and provided for the stowage of an M220 TOW launcher, 10 missiles, and the TOW crew inside the vehicle. The missile rack, ground tripod, and launcher were all mounted in the front right-hand side of the crew compartment. The vehicle crew consisted of a driver, crew commander and two TOW operators. The AN/TSQ-95 or AN/TSQ-102 Missile Guidance Set was also carried within the vehicle as was the M159E1 ground tripod which allowed for dismounted operation of the TOW launcher.

The M233 kit consisted of a pedestal unit mounted on double vertical rails which were pivoted at the vehicle floor under the troop compartment roof hatch. Located in the front of the cargo hatch and just behind the crew commander's position, the pedestal unit was manually raised on its rails and the launch tube was then attached and loaded for firing. There was also a folding gunner's platform which was raised and attached to the pedestal, and when not in use laid flat on the

vehicle floor. Beginning in the early 1990's, this TOW system was augmented by the M113A2 TOW Under Armour (TUA) which was a turret mounted system with two launchers that afforded better crew protection.

Conversion of M113A1s began in the early 1980's with 44 vehicles being modified.

## and to complete the Canadian M113A1 family story...

### **M548 Cargo Carrier**

The M548 6 ton (5.5 tonnes) tracked cargo carrier was a purpose-built lightweight, unarmoured, full-tracked carrier designed for use as a cargo and ammunition support carrier.

The carrier was air transportable and was capable of amphibious operations, extended cross-country operation over rough terrain and high-speed operation on improved roadways. The carrier could accommodate a driver and three passengers sitting abreast in the cab. Canada initially purchased 80 of these vehicles in 1966 with an additional 30 more beginning in 1983.

### **M577A1 Command Post**

The M577A1CDN light tracked Command Post was a purpose-built full-tracked vehicle used as an operational staff office and command post. It was primarily employed in cross-country operations but was also capable of amphibious operation on inland lakes and streams. It was air-transportable but not air-droppable. Canada made an initial purchase of 50 vehicles in 1965 and 1966, with an additional 10 vehicles starting in 1986.

The M577A1 was similar to the M113A1 except that the M577A1 had a 25.5-inch (64 cm) higher rear personnel compartment to house a command post and staff office. The command post was equipped with map boards, tables, blackout curtain, interior blackout light controls, power and communication cables and receptacles, and an auxiliary power unit to provide DC electrical current. A covered canvas penthouse tent extension enlarges by double the command post working area beyond the rear ramp for an extended stay. In order to form a larger command post working area, two M577A1s could be parked back-to-back and jointed with a penthouse. The crew of the M577A1 was a driver and four headquarters or staff personnel.

### **Lynx Command & Reconnaissance Vehicle**

Here is the uniquely Canadian version of the Lynx Command and Reconnaissance vehicle. 174 Lynx fully tracked Command and Reconnaissance vehicles were purchased in 1967 from Food Machinery Corporation (FMC) in California to augment the FV701 Ferret which was already employed by Canada. The Lynx was not a standard US Ordnance vehicle and was therefore not assigned an M-number even though it shared some components with the M113A1; this has led to it being erroneously referred to as the M113½. The Lynx had a crew of three which consisted of driver, commander and observer. The main armament of the Lynx was a remotely-fired Browning .50 cal HB with the observer having a rear, pintle-mounted, 0.30" cal. M1919A4 MG. The Lynx was withdrawn from service in 1993 being replaced by the eight-wheeled Coyote light armoured vehicle.

**For more on the Canadian M113 story, readers can obtain a copy of Ed Storey's book. It covers the M113A1CDN family in Canadian service with details about all of the major variants, including the M577A1 Command Post and M548 Cargo Carrier. 24 pages, \$9.95 from Service Publications. Visit [servicepub.com/weapons.html](http://servicepub.com/weapons.html))**

#### **About the author:**

Ed Storey has been a military vehicle enthusiast and militaria collector since the mid-1970s and has authored numerous articles for several magazines including both IPMS RT and MAFVA Tankette as well as "Wheels and Tracks". Ed is retired from a 35-year CAF career with the Canadian Military Engineers and lives in Ottawa with his wife and family.

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