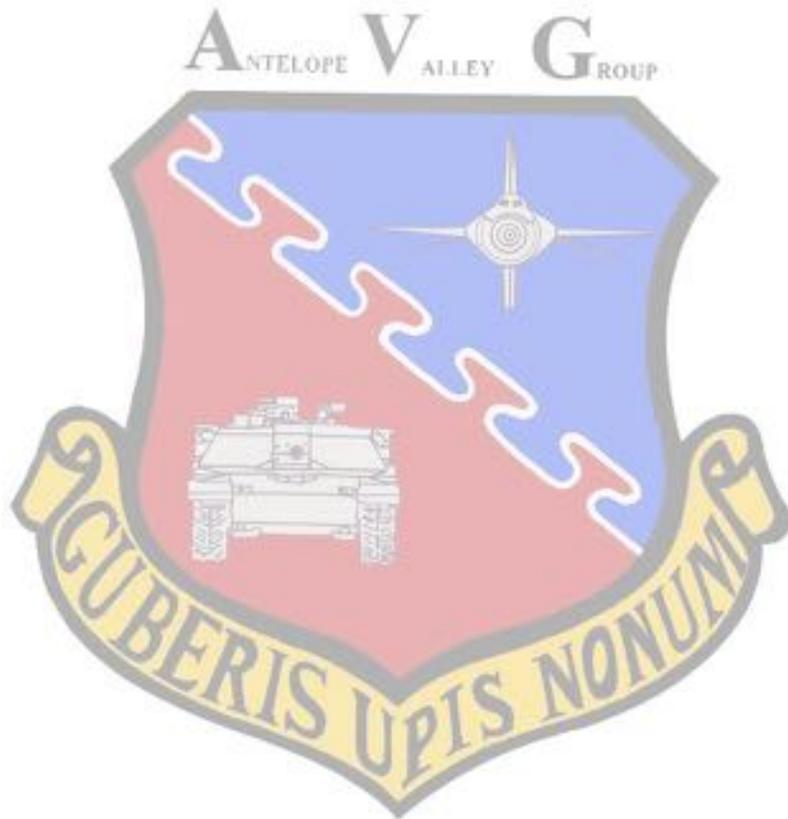


# The Smoking Hole

A Publication of the Antelope Valley Group IPMS

**Volume 27, Number 3**



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## Club News and Business

**MARCH MEETING 1:00 - 4:00 pm MARCH 19, AT COUNTER OF THE BEANS NILO'S HOUSE, LANCASTER (address will be in an e-mail).**

### February Meeting General Meeting Notes:

We had another great meeting, this time at my house. Had our long-delayed "Here, Kitty, Kitty" contest, discussed plans for this year's Desert Classic and had an interesting and lively discussion on the possibility of encouraging the participation of Gundam modelers in the club.

### Latest Club Status

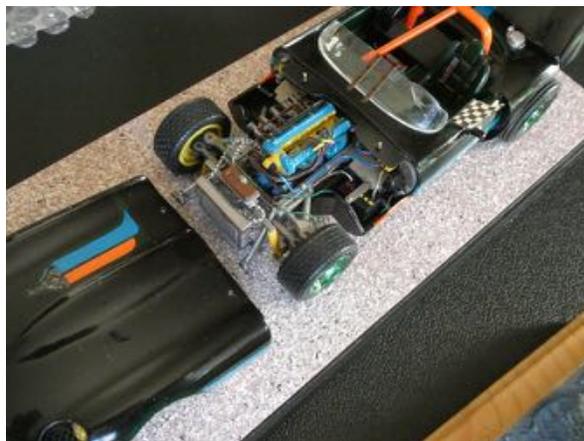
Still looking for a permanent meeting venue. Rich R. contacted Hummel Hall in Rosamond (the club met there for a number of years during the late 'Aughts"). Unfortunately Rosamond Parks and Rec considers weekends "off hours" and wants an ungodly hourly rate, coupled with a \$500 deposit and insurance requirements, so doesn't look like a viable option. Veep Rowdy proposed a couple of options at restaurants he knows (one in Santa Clarita- which may be a bit far for our "Northern" members). We did hold a couple of meetings a Coach's in Rosamond a number of years back when we first got booted from Hummel Hall. The search continues...

### March Meeting

So, for the time being, we're still in, as Rich R. puts it, "the Bedouin meeting strategy". Jay, Bill and I have all hosted and this month Niilo has volunteered. Niilo's house is in Lancaster (address forthcoming). Hope to see you all!

### "Here, Kitty, Kitty" In-house Contest.

We had the second of our delayed in-house contests, "Here, Kitty, Kitty" (build something with a cat name or theme). We had a number of entries (one with a rather creative interpretation of the rules...). And the winner is... Jim B. with his Jaguar XK-E race car!



Jim says he built this a number of years ago for therapy while convalescing from surgery. It's built from the old 1960's-vintage Revell XK-E roadster kit and employs several old-school detailing techniques. A truly beautiful model with an inspiring story behind it. Congrats on the well-deserved win!

#### Club Dues for 2022

Since we already have the contest awards, and are not incurring significant costs at the moment, we've decided to defer the 2022 dues until we've found a permanent meeting place. Dues will remain at \$36

#### 2022 Desert Classic

Discussed some contest planning items. Venue is still uncertain, but the AV College is still the preferred site. Since this is our third attempt at the contest, we chose "Third Times a Charm" as a theme (exactly what the definition of this is remains open...). We also chose "75<sup>th</sup> Anniversary of the U.S. Air Force" as a special award. There was also a rather lively discussion about adding a Gundam category. Gundam's seem to be a generational thing– a lot of the more "mature" modelers don't understand the appeal, while they are quite popular with younger modelers. The consensus seems to be adding a category might be a good way to attract younger builders.

#### Upcoming In-House Contests

We still have 2 postponed in-house contests, "Jurassic Plastic" and "Your Personal/Professional Experience". We're currently contemplating "Personal/Professional Experience" for May and "Jurassic" for August.

#### February Physical Meeting

We had our February meeting at my residence in West Palmdale. We had an outstanding turnout – the largest we've seen since pre-pandemic, with over 20 members showing up.



The meeting was a little on the chaotic side and ran long, but I chalk that up to the large turnout and being 'out of practice' in holding formal club meetings. Promise we'll 'tighten up the ship' in the future.

Lots of great models on display

Mike W. had a couple of neat conversions:



Revell Prinz Eigen and Z-38 anti-aircraft destroyer conversion



USS Ashanti from the Polar Lights Enterprise

Mike O. brought his NATS-winning diorama, "Small Town Garage, 1965"



There's a lot of scratch-built detail, and Mike made extra effort to be sure the decorations and small detail were period-correct

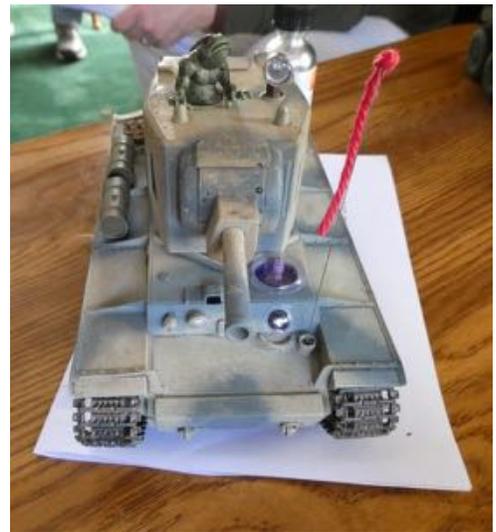


Mike shows his dio to Mike W.



In keeping with the 'cat' theme, Jim P. had his nicely done 1/35<sup>th</sup> Revell German Luchs (Lynx)

I'm always amazed by Mike S's creativity. Wish I had his imagination. This is his 1/35<sup>th</sup> Tamiya KV-2 "Fishtank"



This really needs to be seen in person to be fully appreciated. The turret details are really inspired!





Mike spent 30+ hours on this creation and used Vallejo, Tamiya and Citadel paints, with Rust-All weathering. Here's a list of the aftermarket he used: "Aquarium fish and plants, D&D fish, real catnip, yarn, guitar wire. Clear plastic parts are from grocery store vegetable containers and 'google eyes'. The periscope is from model ship fittings. Lighting is from toy "gel-rings" and light-up Lego blocks." Additionally, Mike says: "My first attempt at hairspray chipping technique. To remove the top layer of paint, I tried: 1) rubbing with Q-tips and old toothbrushes, 2) scratching and scraping with a pointy engraving tool and X-acto knife, 3) sanding with sandpaper, and 4) sandblasting." Mike goes on to say he thinks sandblasting holds great promise for depicting wear on aircraft leading edges

Niilo had a couple 1/48<sup>th</sup> P-40 'kitties', a P-40B "Tigershark" and P-40E "Kittyhawk"



The P-40B is the Revell kit (really the old Monogram kit from the '60's) and the P-40E is the AMTech. (ex-AMT), a really nice, underrated kit. Niilo spent 35 hours over 2 months on the P-40B and 40 hours over 3 months on the P-40E. He used mostly Tamiya paints (with some Testors) on both models. Only aftermarket is Multistripe Dual-line adhesive car striping tape in gold on the P-40E.

About the P-40B, Niilo says: "The P-40's were lacking somewhat in maneuverability and rate of climb, but coupled with its rugged construction, armor plating and fast dive speed, it held its own against most of the fighter planes in existence at that time. The Flying Tigers of China were formed in China with 3 squadrons of volunteer pilots. The first squadron was 'Adam and Eve', the second squadron was "Panda Bears" and the third called "Hell's Angels". The first action was December 20, 1941 and compiled 299 victories with a loss of only 50 planes, eight pilots killed and four missing in the first 6 months of engagements.

The kit was difficult to build and required extensive filing, sanding, use of filler for gaps. The decals were old and required excessive attention. The pieces were produced using the 1964 molds and reissued for this version. Interesting build. Try it if you want a challenge."

For the P-40E: "The P-40E was the last version of the P-40 aircraft which originated with the P-4B which was called "Hawk" in the United States, Tomahawk" in Great Britain, and the "Tigershark" of the Flying Tigers in China. Changes in configuration from the "B" to the "E" included 1) a more powerful Allison engine, 2) armament increases for 4 0.30 caliber wing machine guns and 2 0.50 caliber machine guns in the nose to 6 0.50 caliber machine guns in the wings, and an additional 175lb of armor plating.

The P-40 series was the only line of air defense (air-to-air) and (air-to-ground) at the start of WW II. The P-47, P-38, and P-51 were in production, but not at a rate to support combat demand on two fronts (Europe and Pacific). They held the line until the others were available.

This kit was interesting in that you had to decide which version you wanted to build. This version is the P-40E(K-1) that was flown by Capt. Franklin Nichols of the 7<sup>th</sup> FS/49<sup>th</sup> FG out of New Guinea in 1943, 77 years ago.

Good model, reasonably easy, good-fitting parts with minimum sanding and filing. Decals straightforward."

## 2022 Meeting Schedule (Tentative)

Primary	Activities	Refreshments	Demo	Review
15 Jan	Physical meeting at Prez Bill K's house, Palmdale 1 – pm			
19 Feb	Physical meeting at Admin Amateur Matt's house, Palmdale 1 – 4 pm			
19 Mar	Physical meeting at Counter of the Beans Niilo's house, Lancaster 1 – 4 pm			
16 Apr				
21 May				
18 June				
16 July				
20 Aug				
17 Sept				
15 Oct				
29 Oct	2022 Desert Classic			
19 Nov	2023 Club Officer Nominations			
17 Dec	2023 Club Officer Elections, Gift Exchange			

## The Tool Crib

*Eligoo Mars 2 Pro SLA Resin 3-D Printer and Mercury Plus Wash/Cure Station*



I've taken the plunge into 3-D printing. All the details are in the "Club Demos" section.

## Kit Reviews

*Airfix 1/48 DeHavilland Vampire F.3*

John S. has an in-box preview of a highly anticipated new kit, the Airfix Vampire



**De Havilland Vampire F.3**

Manufacturer: Airfix

Scale: 1/48

Kit #: AO6107

Price: \$35.00

Decals: Three options

Reviewer: John Summerford

Notes: No photo-etch. Paint call-outs are only for Humbrol numbers

**History**

Courtesy BAE systems

The success of the Gloster Meteor led to De Havilland Aircraft Company being approached to design and build an airframe for the Halford H1 turbojet engine (later to become the DH Goblin). Initially designated DH99 (named the 'Spider Crab'), it was an all-metal design which was considered to be hugely experimental in its unorthodox arrangement of twin rear booms mounted behind a molded, egg-shaped wood/aluminum fuselage and one single engine. Further modifications resulted in the design re-designated as the DH100 Vampire.

The prototype DH100 Vampire (LZ548/G) was first flown on 20th September 1943 at Hatfield by Geoffrey R de Havilland (son of the founder), 6 months after the Meteor, due to delayed by engine availability.

The first production DH Vampire (F.1) was actually produced by the English Electric Company at Warton due to the production pressures and a lack of capacity at Hatfield. Despite finally arriving after the end of the Second World War, the DH Vampire was eagerly awaited and became the second British jet fighter to see service with the RAF. It was also given the honor of leading the VE - Day fly-past over London. It was the first RAF aircraft to be able to exceed 500. The main production version was to be the DH Vampire FB.5 fighter bomber (a modified DH Vampire F.3) and this variant was also be the basis for many of the export versions. Separate night fighter and trainer models were produced as the DH113 Vampire NF and DH115 Vampire Trainer respectively.

A number of DH100 Vampires were also modified for shipboard use such as the De Havilland DH Sea Vampire and on 3rd December 1945, Captain Eric 'Winkle' Brown completed the first successful landing and take-off of a jet fighter from the Carrier HMS Ocean. Subsequently, it became the Royal Navy's first jet fighter.

The type was very successful in the export market, providing many air forces with their first experience of jet fighter operations and around 30 air forces were ultimately to operate the type. Some fifty DH100 Vampire F1, F2 and FB variants were purchased by the Royal Australian Air Force in 1946 and, although the majority were built with Goblin engines, the second aircraft was actually built with a Rolls-Royce Nene power-plant.

By the time production finally ended, 3,269 Vampires had been built in England and a further 1,067 built under license abroad. The DH Vampire remained as a front-line fighter for the RAF until 1953, after which it was retained only in the pilot training and refresher role.

Elsewhere, the aircraft had surprisingly longevity with large numbers still in service in several air forces in the 1980s. The Swiss Air Force was the last Vampire user, retiring their sizeable fleet of DH Vampire FB.6s and T.55s from active service as late as 1990 It was finally retired from RAF service in 1966, being replaced by the Hawker Hunter and Gloster Javelin.

DH Vampire F.3 version had a production run of two prototypes and 202 airframes. It featured revised tail surfaces of a more 'De Havilland' shape; tailplane chord increased. Maximum weight increased to 11,970 lb. and flown 4 November 1946. 20 were exported to Norway and 86 aircraft sold to Canada.

### **The Kit**

A single bag holds four light gray sprues and the clear parts are in their own bag within the primary bag. I'm fortunate that, in my example, two bags of clear parts are included. I was on the other side of that issue with Airfix's Gnat kit with a missing sprue. I called the North American distributor and asked for a copy of the missing sprue. At that time, I lived less than 10 miles from their warehouse and could have picked it up. Instead, they mailed another kit to me. If you are the unlucky one that is missing a clear sprue, I can mail the extra one to you.

The parts are well molded with crisp detail, no flash, and seams almost nonexistent. Wheel well detail is molded into the upper wing. The only flaw that I could detect is a sink mark in fillet at the trailing edge of the right wing and fuselage. There is just enough texture on the surface to soften the sheen of the plastic.

The engineering of this kit is fantastic! Included are two spars. The front spar incorporates the first compressor face of the engine and the aft face of the main landing gear wells with the aft spar having the engine turbine and hinge plates for the flaps. The intakes are single pieces and have the vanes molded in. Three come with the kit, the oddball for another version. (Editorial note: The intake is for the FB.5. The kit includes all the parts to build an FB.5, but they're not mentioned in the instructions). After looking at how the booms are keyed into place, their attachment is foolproof. (Although, this fool has defeated other manufacturer's efforts.)

Total parts count, including the clear parts is 124. Options are included for a seat for a pilot figure, or one without that has a harness molded in, two instrument panels, external underwing fuel tanks, and flaps posed completely down or up.

Decals for three options are found in the folds of the instructions. All three options are for aircraft in museum collections. Depicted on cover is the first option, VT812 found at the RAF Museum, Hendon, United Kingdom. Option two is 442 "City of Vancouver" at the Comox Airforce Museum, Comox, British Columbia, Canada and sports a bat head motif on the nose. The third is P42408/AE-B found at the Gardermoen Museum, Oslo, Norway. All have the primary color in High-Speed Silver.

The instructions are in a 16-page booklet. The first two pages cover a brief history in five languages and the usual cautions and symbol explanations. The next 10 pages illustrate assembly sequence starting at the lower wing/fuselage and continues over 87 steps. If the flaps are to be modeled up, steps 39 through 52 can be skipped. Most of the steps show only one or two pieces added.

In the first step, attention is called out to a hole that should be drilled for part D19, that is installed in step 32, before the upper and lower wing/fuselage sections are mated. I think that part is an antenna and it sits off-center of the underwing roundel, so it would be far easier to install it after decaling. The other underwing roundel decal obscures a landing light, so one can either mask the lens, and cut the decal after it dries, or trim the decal before application.

Color call-outs for interior paints just list the Humbrol number, not the name of the color, while the names are given for the exterior colors.

### **Conclusion**

The engineering of this kit is very well thought-out. Other than installing part D19 at the end of build, one should end up with a great model by following the instructions and should be a

straight forward build out of the box. Look forward to other variants from Airfix in the coming years.

## Club Demos

### *3-D Printing. The future of modeling?*

There's been a lot of buzz the past few years about the rise of 3-D printing of model parts opening new horizons for scale modelers. While commercial 3-D printed parts have been around for some time, especially from parts printing services such as Shapeways, the dramatic decrease in cost of printers has made the technology available to more hobby manufacturers, and basic printers are now within the reach of hobbyists.

I recently took the plunge and purchased a hobbyist 3-D printer. Here's my review and experience.

There are 2 primary types of hobbyist printers, fused deposition modeling (FDM) and stereolithography (SLA). FDM printers use a thermoplastic filament heated to melting point and ejected by a print head, while SLA printers utilize an ultraviolet light-curing resin. FDM hobbyist printers have been around for some time, but SLA printers have come down considerably in price recently and are becoming more common. FDM printers tend to produce parts with more prominent "striations" or layers you may be familiar with in 3-D printed parts, while the latest generation of SLA printers can produce very fine detail with little, if any visible layers. Most of the 3-D printed parts now appearing from aftermarket manufacturers (like Eduard and Monkey Model) are produced by the SLA process. There are various grades and sizes of SLA printers, from small hobbyist printers that can produce small to medium parts, larger, semi-professional machines and large, industrial grade printers.

I purchased an Elegoo Mars 2 Pro, which is a fairly basic mid-grade hobbyist SLA machine. There are several other comparable machines available, such as the similar Anycubic Photon Mono and Phrozen Sonic Mini.



Elegoo Mars 2 Pro

I chose Elegoo for their good reputation for customer service and their printers are highly regarded. My friend Erick (a former AVG member) has an earlier Mars that he's quite happy with.

The Mars 2 Pro is a 2K resolution printer, which means it can produce parts with a 50 micron X/Y resolution. Elegoo recently released a printer with 4K resolution, the Mars 3 which allows X/Y resolution to 37 microns. Whether this is visible to the naked eye is open to question. As I'm new to 3-D printing, I decided to go with the cheaper machine

The Mars 2 Pro retails for \$299, but I was able to take advantage of Elegoo's holiday sale, which bundled the printer and the Mercury Plus wash/cure station (more about this later), which retails for \$170, for only \$270.

The Mars 2 Pro, like its competition, is made in China. I must say, I'm impressed with its construction and finish. It's made mostly of aluminum and the machined parts are quite well done. It has a real quality feel. The principle of operation is thus. The base contains the processor, a UV light source (diodes) and the DC stepper motor for the Z-axis. The upper surface of the base is an LCD screen. This is what the "2K" resolution refers to (the Mars 2 Pro screen has an active area of 5.14 x 3.25 inches with 2560 x 1620 pixels). The screen darkens, only remaining transparent to expose the resin to the UV light, in the proper areas for each layer as defined by the model. Earlier SLA printers used color LCD's, but the newer printers use monochrome screens, which last longer and transmit more UV light to cure the resin faster and decrease print times. Above the screen is the resin vat. The bottom of the vat is transparent, made of a non-stick Teflon-like material called FEP. Projecting above the base in the z-axis is a vertical rail that supports the build platform, which is moved by a jackscrew driven by the stepper motor. The jackscrew mechanism lowers the build platform to the bottom of the vat, then raises it to the height of the first layer to be printed. The printer then exposes the first layer according to the print file to cure the resin. The machine then raises the platform to detach the cured layer from the FEP film, then lowers the platform to expose the next layer. The Mars 2 Pro is capable of 10 micron resolution in the Z-axis (layer thickness). The printer then repeats the process until the part is fully printed.

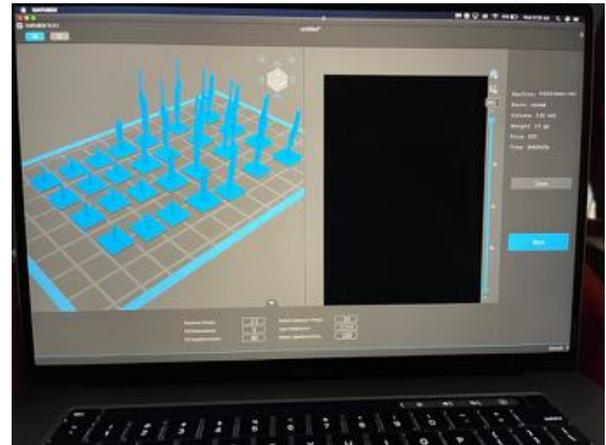
Most hobbyist printers run firmware from either Chitu Systems, Lychee or their own proprietary. Elegoo uses Chitu. The firmware comes with companion software that runs on a PC and is used to generate the print model. This software is called a 'slicer', as it is used to 'slice' the model into the print layers. It also has other functions, allowing you to orient the model on the build plate, orient it and generate the supports that are necessary for large and complex models (this is the 'trusswork' you often see on 3-D printed parts). The Chitu Systems slicer is Chitubox. There a number of slicers available, with different features, many of them free, and some printers will run files from many of them, but the Chitu firmware will only run files generated by Chitubox (.ctb format). Chitubox will accept some files modified in other slicers and convert them to .ctb files, however. The basic Chitubox software is free, but there is also a subscription-based "Pro" version with additional features.

Basic Computer Aided Design (CAD) files used for 3-D printing are stereolithography files (.stl) or object files (.obj), which contain more information. Chitubox accepts both, and can also use Standard for the Exchange of Product Data (.stp) files generated by many CAD programs.

To get started, you set your printer type in the Chitubox program. There is a pull-down menu of printer models (including the Mars 2 Pro). This sets the default parameters, such as the build space dimensions, default exposure times, layer thickness and platform extend and retract speeds. Most of the parameters can be altered by the user. There is also a menu where you can set the parameters of the resin you are using, including cost-per-liter, which enables a neat feature in the program that tells you how much the print will cost to produce.

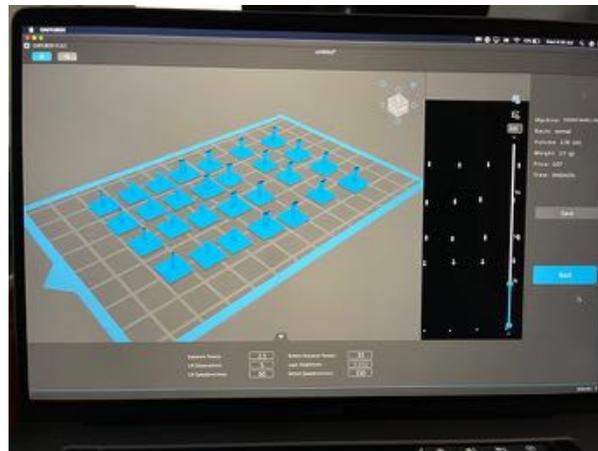
You can then import your .stl model into the program. Chitubox shows a graphical representation of your printers build space. It will highlight any part of your model that falls outside the build space. There are

various menus that allow you to rotate, position and scale your model. There are other options to allow you to hollow out your model (to reduce the weight and save resin) and create holes to allow resin to drain from inside cavities in the parts. Once you have the part(s) oriented to your satisfaction, you can create the supports. These are very important, especially on larger models, both to ensure the model remains attached to the build plate, but also to support smaller portions of the model. Chitubox has a feature to auto-generate supports. It works reasonably well, but extra supports often need to be added. This is easy to do – there is a tool to allow you to draw in the supports.



Chitubox interface

After you have created the supports, it is time to create the layers by 'slicing' the model. How long this takes depends on the size of the model, but generally only takes a couple of minutes or less. Chitubox graphically shows you the process, including a projection of how the LCD screen will look for each layer. Once the slicing is complete, you can run a routine to detect 'islands'. Islands are features in the model that aren't connected to anything and won't print (and could cause the print to fail). The free version will highlight the islands so you can try to fix them, but only the Pro version has an auto-repair function.



Layer display on the right

Once this is complete, you can save the result as a .ctb file and export to a USB drive for use in the printer. The first time you use the printer, you need to level the build platform. It is critical the platform is absolutely parallel to the base and screen, or you may have failed prints. The printer is controlled by an LED touch-screen on the front panel, and there is a routine to run to level the platform.



Touchscreen control panel

You adjust the platform in 0.1 mm increments until a sheet of paper placed between the screen and the platform can be pulled out with only moderate force. You then tighten the set screws on the platform and raise it clear of the base.

To print, you insert the USB drive with your model into the USB slot in the base and select the model file with the touch screen. You install the resin vat and fill with resin to the 'max fill' line.

There are a number of resins available from different manufacturers. Most of the printer manufacturers have their own line of resins, but you are not restricted to only those, you can use other maker's resins. The resins have various properties, some are tougher, or more flexible, or produce finer detail. They are available in a number of colors, and transparent resin is also available. Each resin comes with suggested setting, such as exposure times and layer thickness. Typical cost for a general purpose resin is about \$30-35 for a liter. The resin is pretty nasty stuff. It's very sticky in its fluid state and has a pronounced odor. It's also pretty toxic – you don't want to get it on your skin or breath the vapors. You'll want to use nitrile gloves and wear a respirator or N- or KN-95 mask when working with it (the printer manufacturers include gloves and a mask with the printers). All the printers come with a tinted acrylic cover. This is for 2 reasons – to filter the UV light, which can damage your eyes, and to try to contain some of the odor and fumes.

Nonetheless, you should always use the printer in a well ventilated space. A lot of users have theirs in the garage, but the resins have a fairly narrow range of optimum temperature (basically between 68 and 85 degrees F), so this can be problematical. You can get cheap ceramic heaters from Amazon or Home Depot to help control the temperature. The Mars 2 Pro actually has a carbon filter built into the base to try to absorb the fumes, but how effective it is debatable. If you choose to operate the printer indoors, there are a couple of ventilation strategies. One is to run a fan ducted to the outdoors. This, however, can be challenging during the colder months, so another option is a fan with a large charcoal filter. This is what I chose – you can get a system intended to control the odor in "greenhouses" (wink-wink. I can't IMAGINE what sort of smell you'd want to eliminate from your "greenhouse". Something "skunky" maybe?) for about \$60.

Once you have your USB loaded and your resin vat filled, you install the cover and push "print". The printer gets to work. It's kind of fun to watch – the front panel screen displays each layer as it prints. It's not a speedy process, though. The new monochrome printers have decreased the layer exposure time to about 7 seconds (down from 15 to 20), but with 1000 or more layers, and a couple of second to re-position the build plate between layers, you can see it will take some time.



Resin



My filtration system



LCD print screen with test pattern

When your print is finally done, you tilt the plate to drain the excess resin back into the vat. But there will still be some excess resin on the print, and it won't be completely cured. This is where the Mercury wash and cure station comes in. You don't really need this unit – many hobbyists create their own wash and cure solutions (you can also cure your parts in the sun), but it sure is convenient. Most of the resins are cleaned with isopropyl alcohol. You need at least 91%, 99% is better. Yes, more toxic, smelly stuff. There are some new water-washable resins – I have a bottle, but haven't tried it yet.



Printing complete!

The Mercury has a large container to hold the solvent with an agitator in the bottom driven by a magnet in the base. It has a support that you can attach the entire build plate to submerge it in the solvent, and there's also a basket you can put parts into. You set the mode (wash or cure) and the time on the base and install the cover (it won't operate without the cover). Typical wash times are 2 to 3 minutes.



Washing parts

After you are finished washing, you swap the wash container with a Plexiglas turntable. You set the washed parts on the turntable to set up for cure. The Mercury has 2 sets of UV LED's at different wavelengths and rotates the parts past them on the turntable to cure them. Typical cure is 1 to 2 minutes. You don't want to over-cure the parts – they can become brittle. And that's it!



The Mercury curing parts

You can leave the excess resin in the vat for some period of time – the cover will prevent it from being exposed to UV, but it's best to return it to the container. You should filter it in case there are any piece of cured resin in it (a filter is included with the printer). Cleaning the machine is messy – be sure to wear your PPE!. You don't want to throw away uncured resin – leave any paper towels or tissues you used in the sun to cure the resin, then they are safe to dispose of.

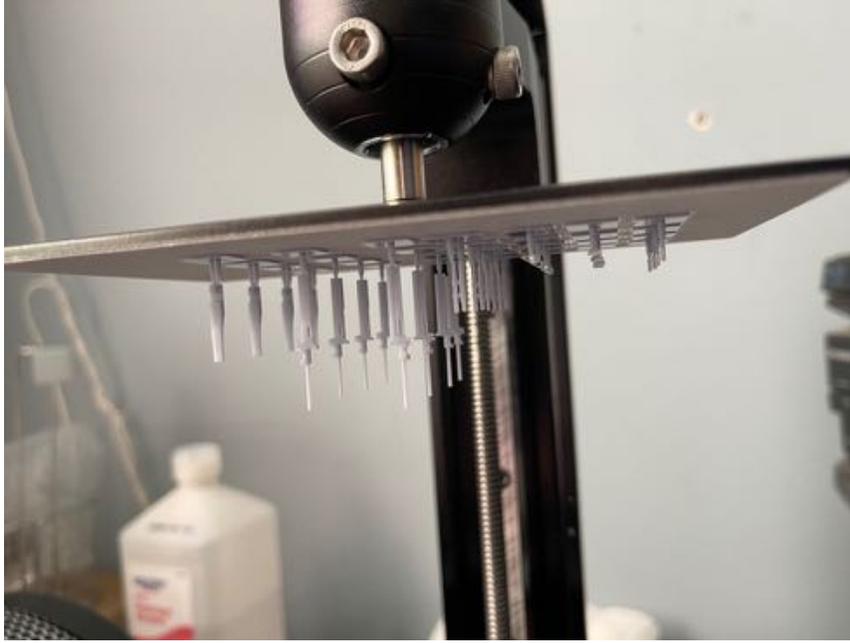
The Mars 2 Pro comes with a file to produce some test pieces on the supplied USB drive. These are a couple of chess pieces (rooks) that really show off the capabilities of the printer. They have quite a bit of fine detail and are hollow inside with a spiral staircase in the middle! Very impressive. They also highlight the extreme patience needed – they took about 10 hours to print!



Rook test pieces. Detail is amazing. I love the labeling, "Printer Torture Pieces", lol.

Having seen the results, I was itching to try some model parts. Where do you get CAD file for parts, you might ask. Well there are a number of market places that have models available, many for free or a nominal charge. Some are Thingiverse, MyMiniFactory and Cults3D. You can also use Yeggi, which is a 3-D file search engine that searches multiple sites. A very large proportion of the models are either fantasy or wargaming figures or sci-fi, but I've found some very nice ejection seats and other aircraft parts. If you're proficient in CAD modeling, you could create your own. I have some experience with industrial CAD (Pro-E), but a license for that is unaffordable, but there are a number of free programs available, of varying capabilities. They all have a bit of a learning curve. I was recently reading an article in Meng Air Modeler, where the author who built an 1/32 Academy F-18 created his own nozzles, wheels and ejection seat with a CAD program, then printed them. I must say, they looked most impressive. Another method is scanning an actual component, but this isn't too cost effective at the moment. The laser scanners, such as Airfix uses, are tens of thousands of dollars. There is a sterolith camera system intended just for 3-D modeling, but it's \$800. I've seen couple of programs that supposedly let you produce models using your cellphone camera, but the results I've seen don't convince me.

Anyway, I'm working on a project to build a old Jurassic Monogram 1/24th Huey gunship. It's a product of the '60's, and the M60 machine guns are pretty basic and don't look so great and I want to replace them. I found some on Shapeways, but the designer is really proud of his work, and wanted over \$100 for 4 1/24th guns. I was going to substitute some GE gatling guns, but after getting the printer, I thought, maybe I could print some! I found a really nice 1/4th scale M60 CAD model on MyMiniFactory for only \$3, so I bought it. I scaled it down to 1/24th in Chitubox and set it up to build 4 guns. The estimator in Chitubox said it was going to cost me 6 cents to print the parts! I loaded up the printer and 3 hours later, had a set of 4 M60s.



Finished M60 pieces

What do you think? The picture doesn't really do it justice – the slots in the flash hider at the end of the barrel are actually open and you can see through them. I'm convinced. I've downloaded some models of some sci-fi ships that aren't available as kits and am looking forward to trying them.



Assembled M60

There is, of course, a learning curve to this and it's not as simple as it might appear. Fortunately there's a really active user community out there, and lots of YouTube videos. Elegoo has a lot of information on their website, too, and have a great reputation for customer service. I'm a convert! More to come!

## Member Show and Tell, 26<sup>th</sup> COVID Edition

Stephen has finished a beautiful 1/48<sup>th</sup> A-4L Skyhawk from the still-nice Hasegawa kit. You can never have too many Hasegawa Scooters (I have something like 7...)



From Stephen: "Here is my A-4L from Hasagawa. I added drop tanks from Phase Hanger Resin, quick boost seat and the Zoom set from Eduard. The "L" had "E\F" avionics stuffed into a "C". It retained the smaller engine.

## Calendar

3/26/2022	Silicon Valley Classic VII	Napredak Hall Inc. 770 Montague Expy San Jose, CA
4/30/2022	Spruefest	Brookhurst Hobbies 12188 Brookhurst St. Garden Grove, CA 82840
6/4/2022	San Diego Model Contest & Swap Meet	San Diego Air and Space Museum Annex, Gillespe Field 335 Kenney St. El Cajon, CA 92020
6/25/2022	SilverCon 2022	Town and Country Lutheran Church 4049 Marconi Ave. Sacramento, CA
7/20-23/2022	IPMS/USA National Convention	La Vista Conference Center 12520 Wesport Parkway La Vista, NE
10/8/2022	IPMS Reno "High Rollers" 21 <sup>st</sup> Invitational Contest	Reno Elk's Lodge #597 597 Kumle Ln Reno, NV
10/1/2022	OrangeCon	Hotel Fullerton Anaheim 1500 S. Raymond Ave. Fullerton, CA 92831
10/22/2022	Fresno Scale Modelers Fall Contest	Clovis Veterans Memorial District 808 4 <sup>th</sup> St. Clovis, CA 93612