

# My Balsa & Glass Workshop

## OA-1K Skyraider II 3D Modeling Efforts

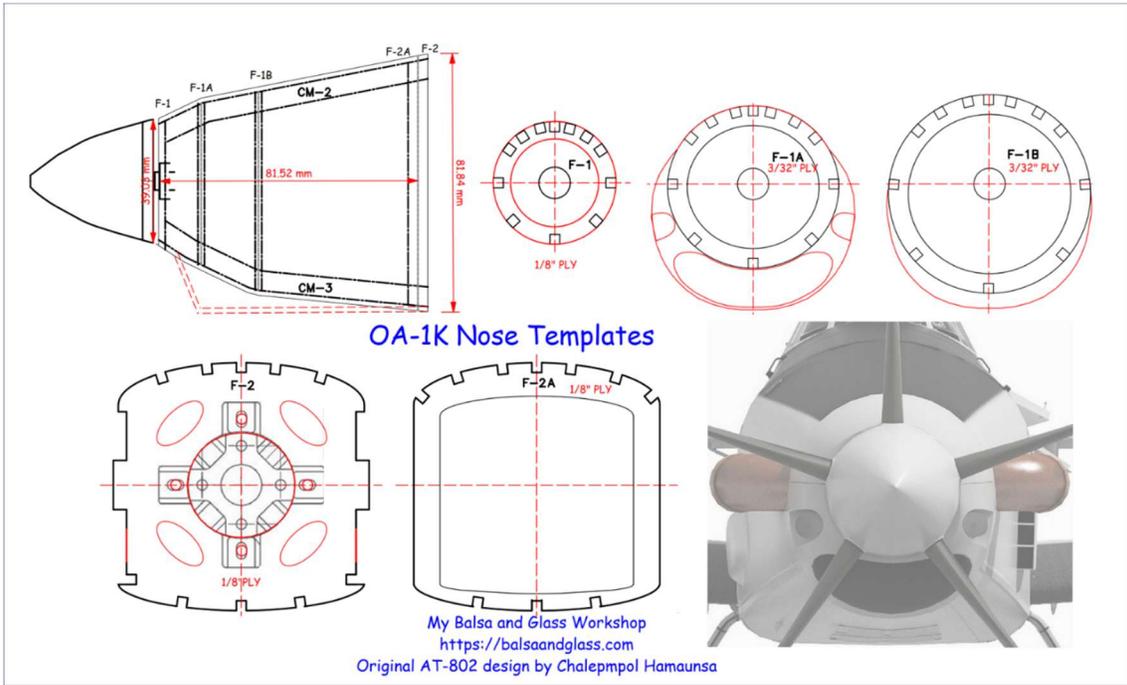
10 February 2026

In all my 37+ years of building Balsa RC Models, I had never entertained the idea of using 3D Modeling & Printing to build some of the model parts. Well, all that changed when I decided to scratch build the OA-1K Skyraider II.

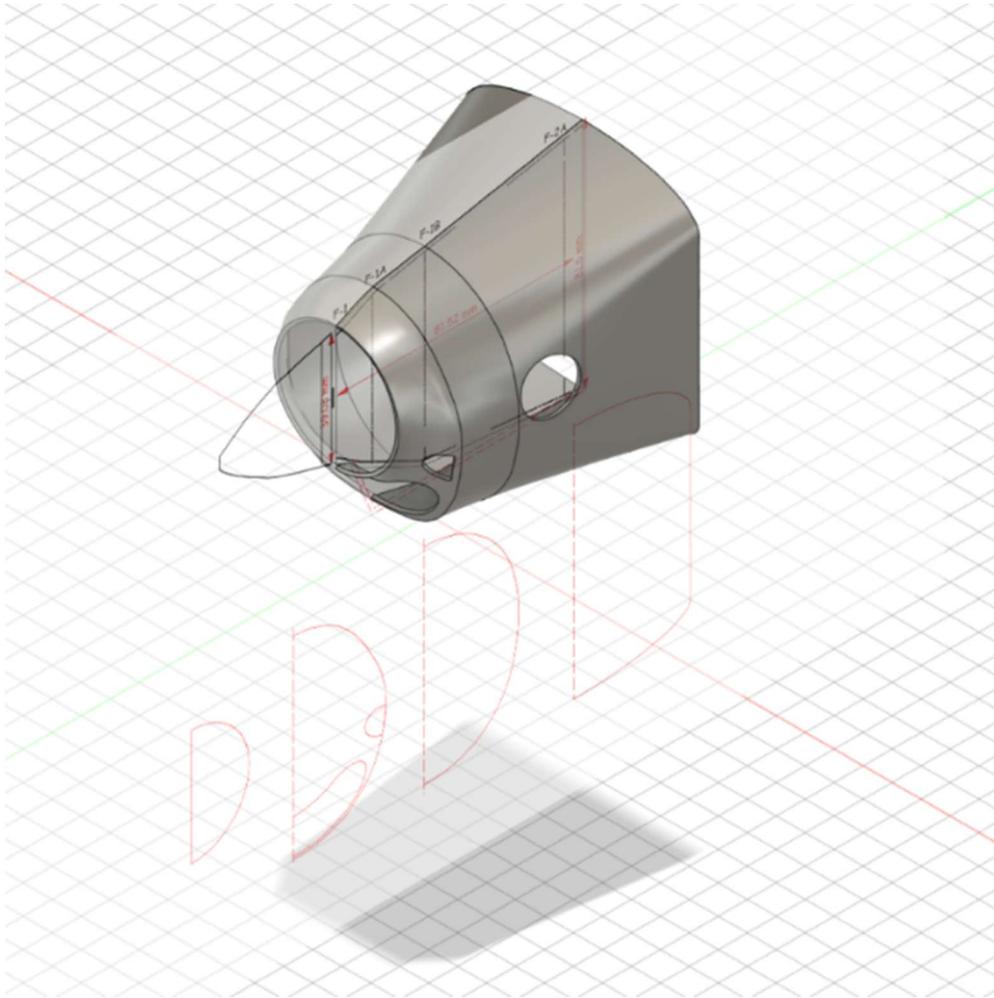
Given that the OA-1K build would require a wide selection of ordnance and a targeting pod hanging below its wing, this presented a new problem as to just how I would build those. So, I started looking for some ordnance models to purchase, which rapidly introduced me to all the stuff available using 3D Modeling & Printing. The more I searched the web for related information the more I realized that I needed to learn how to build 3D models and generate the files I would need for 3D printing.

I also wanted to model the OA-1K nose cone such that I could build it using a 3D printer versus the former, stringers, and balsa ply sheeting method used in the AT-802 plans. To do this I first needed to learn how to use a 3D CAD program that would produce the STL (stereolithography) file required for 3D printing. So, I was off again learning yet another new computer program and jumping feet first into the world of 3D modeling. After many hours of research and trying my hand at several 3D programs, I finally settled on using Autodesk Fusion 360 (<https://www.autodesk.com/products/fusion-360/personal>). Autodesk offers a 100% free Fusion 360 license to Students and Hobbyists. I'm working with the free version using a Personal Use license.

While I'm very comfortable using my 2D CAD program Back to the Drawing Board (<https://drawingboardapp.com>), I found the 3D world rather challenging for my old brain. To aid in getting my brain and mouse fingers up to speed, I worked through several of the outstanding Fusion 360 video tutorials available on the web. Using my modified drawings of the nose cone formers, I imported a PNG image of the top image below into Fusion 360 to build my 3D nose cone. After *many hours* of working with and learning Fusion 360, I finally was able to produce my first 3D model as shown in the bottom image below.



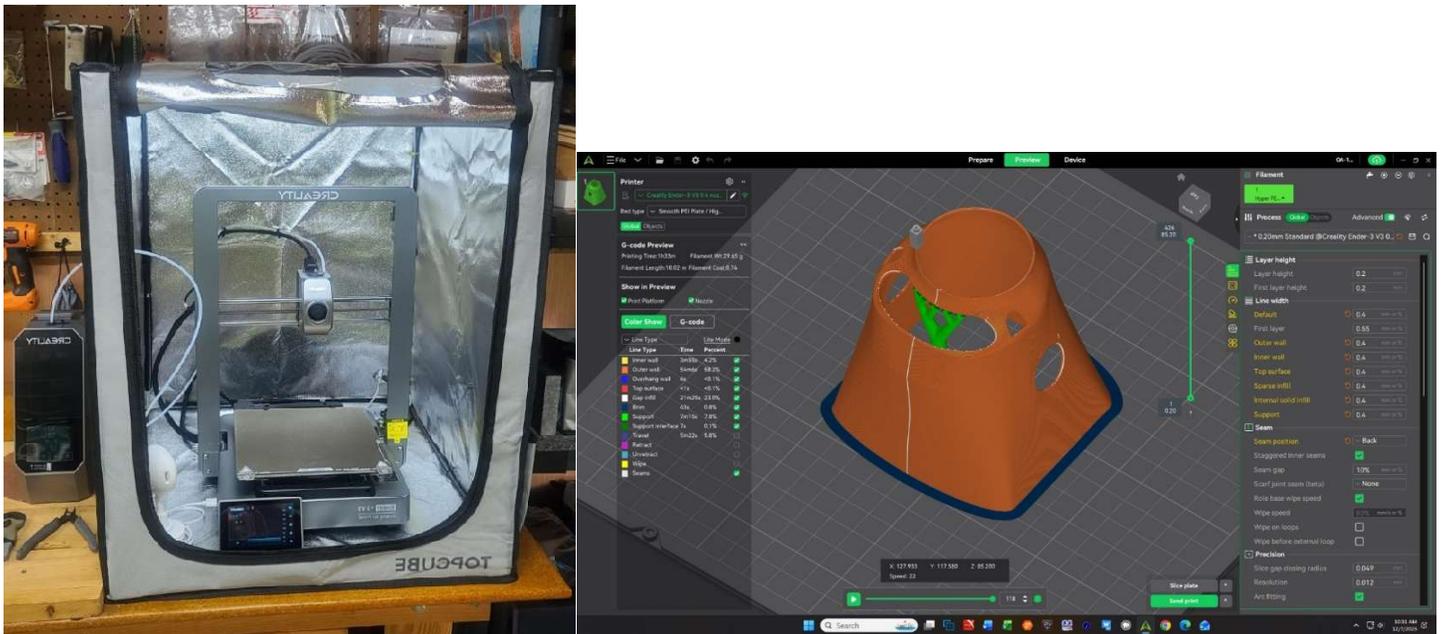
Source of Lower Right Image: <https://www.turbosquid.com/3d-models/air-tractor-at-802u-rigged-719751>



So now that I have the 3D model, I needed a way to produce the actual nose cone. There are many different types of 3D printers available for those of us in the hobby world, and they can range from just over a hundred dollars to many thousands depending on what you want. Given I was not planning to mass

produce anything I settled on a very nice entry level 3D printer from Creality (<https://www.creality.com>). I purchased their Ender-3 V3 along with some PLA filament materials to get me up and running. You can see the Ender-3 printer in a nice Topcube 3D printer enclosure, and a Creality Space Pi Filament Dryer in the left image below. The Topcube enclosure and Creality filament dryer were both purchased from Amazon.

To generate what is called a "G-code" file used by the 3D printer, I'm using what they call a "slicer" program called Creality Print (<https://www.crealitycloud.com/downloads/software/creality-print/Windows/>). The STL file from the 3D CAD program is imported into the slicer where you can adjust all kinds of settings to then produce the G-code along with an interesting display of how the part will be printed. My OA-1K nose cone in Creality Print is shown in the right image below, which if you look in the upper left corner of the image, this should take an hour and a half to print.



I used gray Creality Hyper-PETG (<https://store.creality.com/products/hyper-series-pla-3d-printing-filament-1kg/>) with a 0.4mm printer nozzle to print the nose cone, and Giantarm Silk Metallic Silver PLA ([https://www.amazon.com/dp/B08V541SDQ?ref=ppx\\_yo2ov\\_dt\\_b\\_fed\\_asin\\_title&th=1/](https://www.amazon.com/dp/B08V541SDQ?ref=ppx_yo2ov_dt_b_fed_asin_title&th=1/)) 3D printer filament for the turboprop exhaust pipes using the same printer nozzle. The image below is my 3D printed OA-1K nose cone.

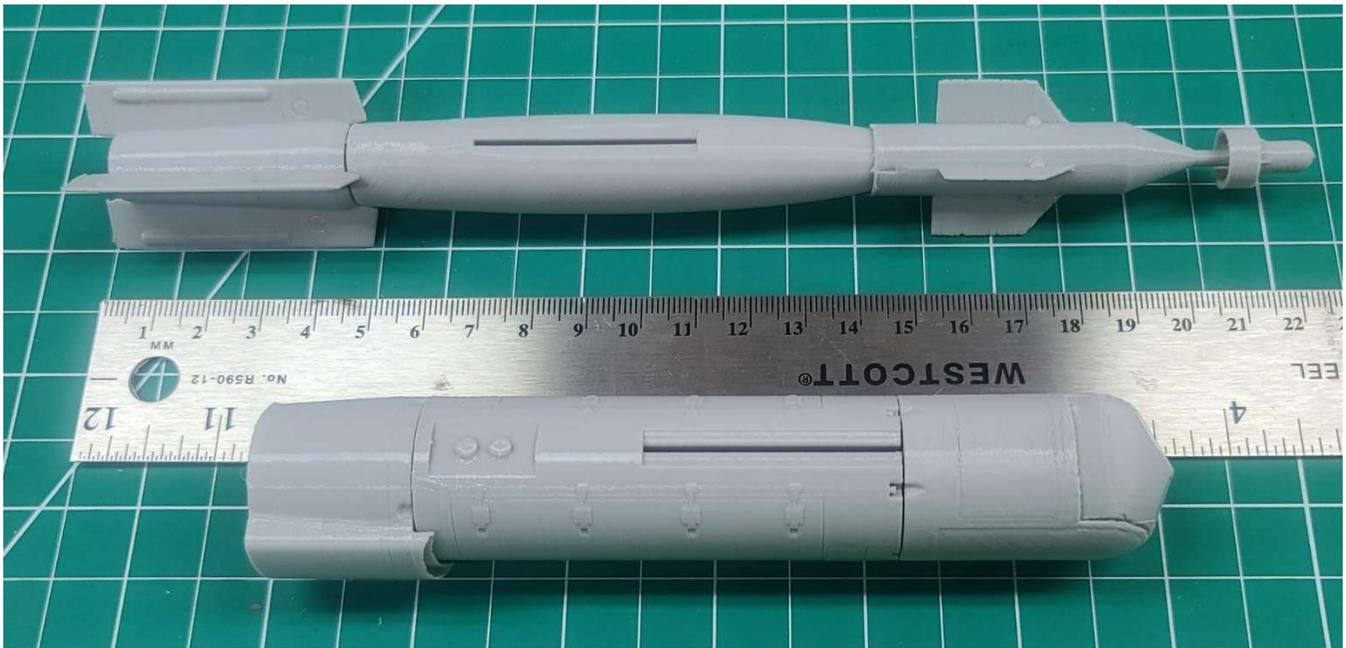


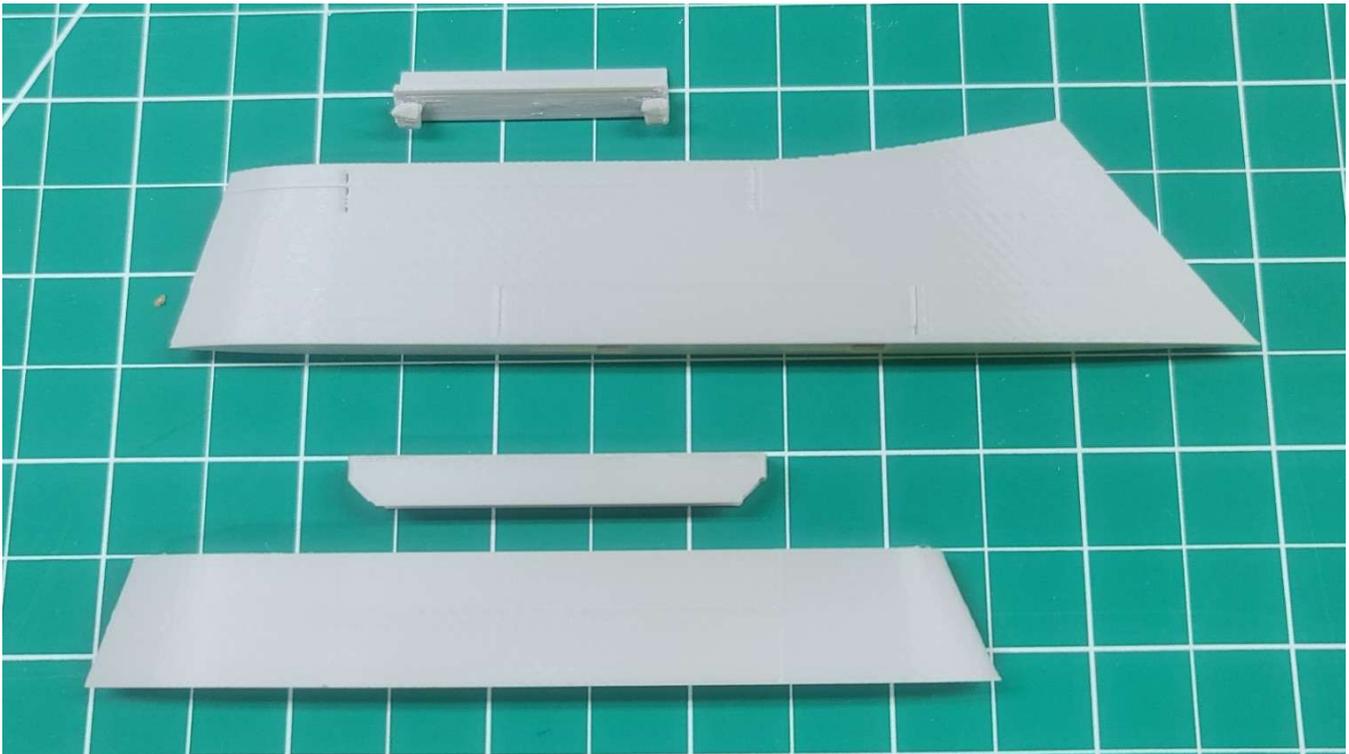
Before I could finish up the build of my OA-1K wing panel, I needed to determine the location of the cut-outs for the pylon mounting rails in the 1/8" Lite ply weapon hardpoints. To do this I first needed to decide on the type of pylon and hardpoint mounting rails I would use. After a quick search of the web, I found a nice set of weapon hardpoint pylons designed by ShadowVFX on Cults3d.com (<https://cults3d.com/en/3d-model/game/hobbyking-avios-super-tucano-weapon-hardpoint-pylons/>). These are weapon pylons, bombs and central fuel tank for the Avios Super Tucano RC airplane. They are designed to use standard Freewing attachment hardware, but he also provides copies of the Freewing attachment hardware in STL files (both Male and Female) for use on the airplane wing (to attach the pylon to the wing) and any potential weapons you want to attach to the pylon. The image below shows you the Hobbyking Avios Super Tucano Weapon Hardpoint Pylons.



With pylons in hand, I now needed to find some models of the ordnance I wanted to hang under the wing and fuselage of my OA-1K. For a targeting pod, because I had worked in the USAF Targeting Pod Program Office as an acquisition program manager for six years, I wanted to use the AN/AAQ-28(V) Litening Targeting Pod. I was able to find exactly what I wanted again on Cults3d.com (<https://cults3d.com/en/3d-model/game/1-10<sup>th</sup>-scale-an-aaq-28-v-litening-targeting-pod>). This 3D model was designed by DirtyDee and is modeled for the 1.7m Freewing A-10 Thunderbolt II. The pod body has a slot to use standard Freewing attachment hardware. For one of the ordnance items, I selected a DirtyDee model of the GBU-12 Paveway II laser guided 500 lb. bomb (<https://cults3d.com/en/3d-model/game/1-10<sup>th</sup>-scale-gbu-12-paveway-ii>). This too is modeled for the 1.7m Freewing A-10 Thunderbolt II, and the bomb body has a slot to use standard Freewing attachment hardware.

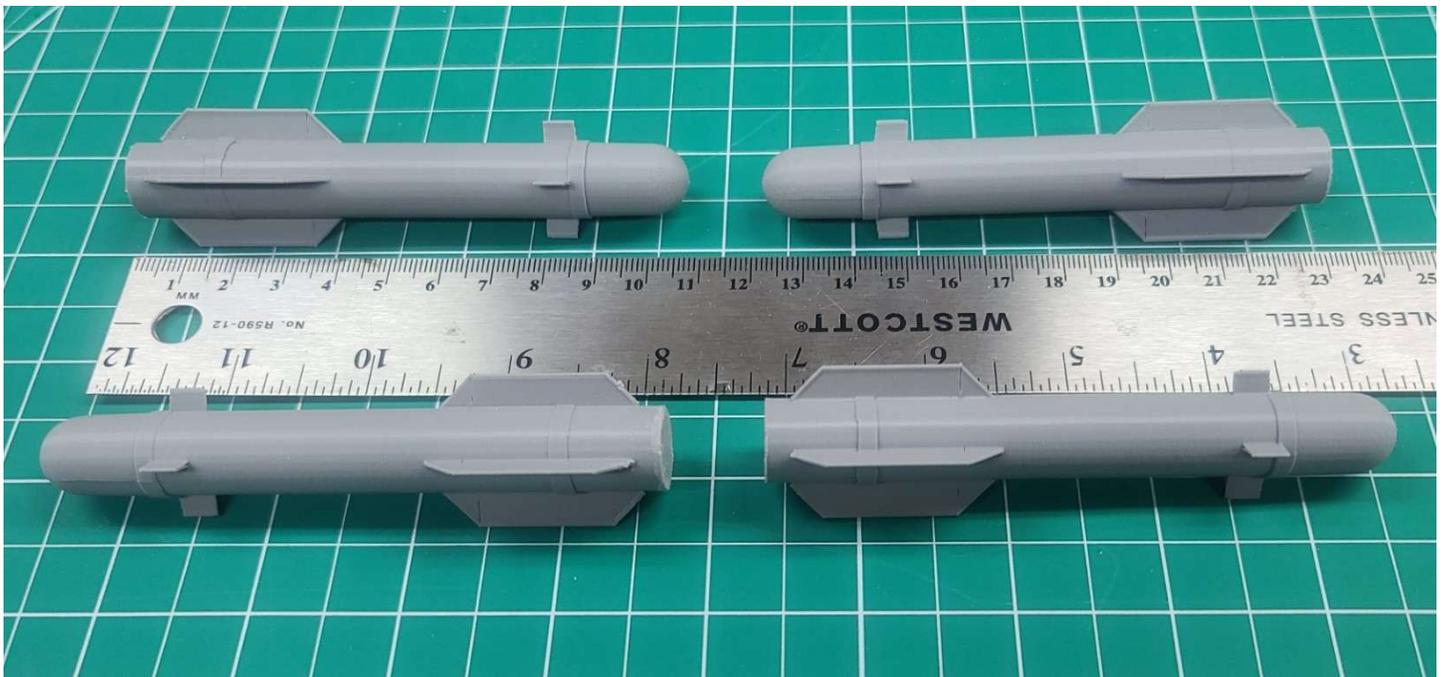
All these 3D model STL files were 1/10<sup>th</sup> scale, so I reduced their size to match my 1/15<sup>th</sup> scale OA-1K. After running the various STL files through Creality Print to make the required adjustments I then printed out all the parts on my Ender-3 V3 printer using Gray Creality Hyper-PETG. The top image below shows you the results for the targeting pod (30 g.) and a GBU-12 bomb (20 g.). These are fairly well detailed and once painted up to match the real articles should work out well for my OA-1K. In the bottom image are the two pylon styles (wing & fuselage), and a set of rails, which I'm not too sure if they will be strong enough or not, even when using PETG filament. If not, I'll have to epoxy the pylons to the bottom of the wing/fuselage and use the rails only to attach the ordnance to the pylons. The wing pylon weighs 14 grams.





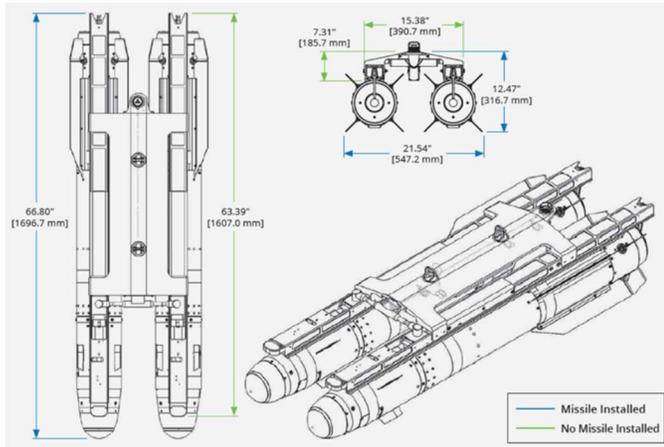
So, with these printed I was able to determine the location of the cut-outs for the pylon mounting rails in the 1/8" Lite ply weapon station hardpoints.

While building the wing panels, I decided to also work on some other ordnance models. I wanted to hang some AGM-114 Hellfire missiles on a pylon under the wing. For these I found a nice SLT file on Thingiverse.com (<https://www.thingiverse.com/thing:1322049>). This 3D model was designed by Robert Fitz. Again, I needed to resize the model to produce a 1/15<sup>th</sup> scale Hellfire missile for my OA-1K and then printed out four missiles on my Ender-3 V3 printer using Creaity Hyper-PLA. The next image below shows you the results. These are simple but nice models and once painted up to match the real articles they should work out just fine. They each weigh 7 grams.

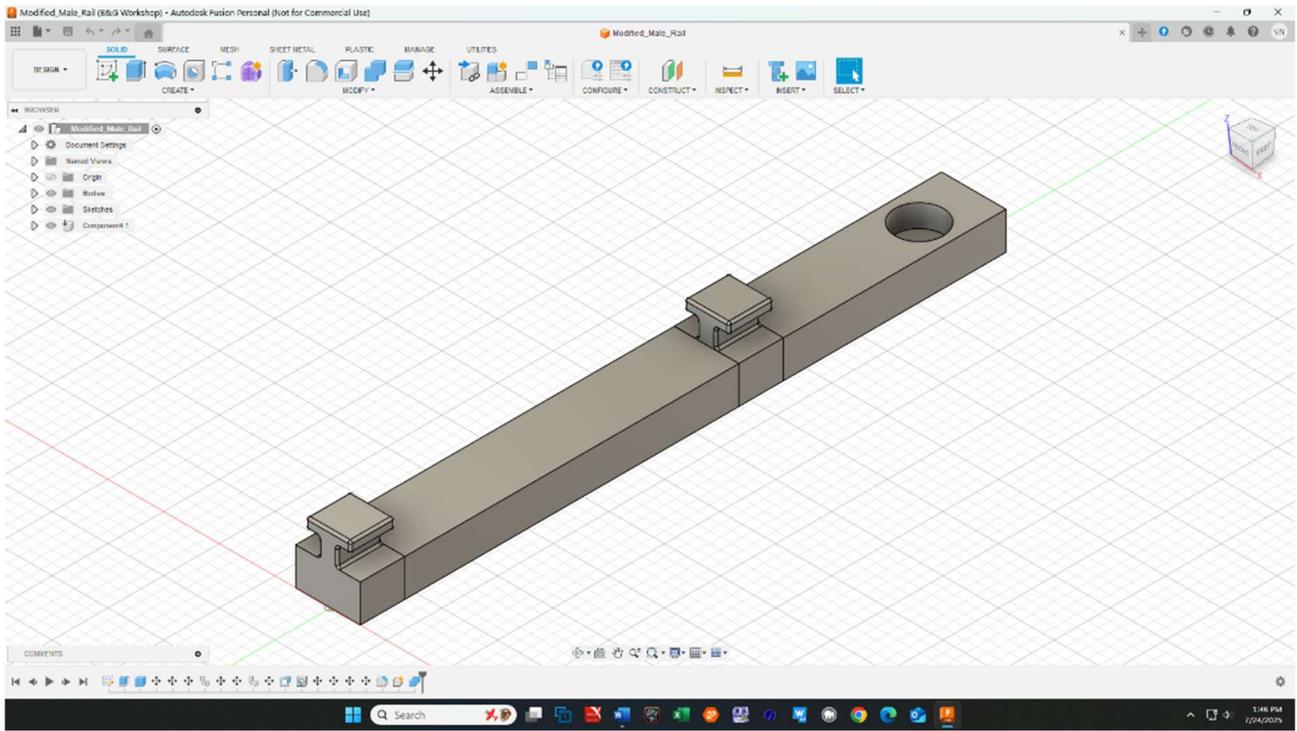


Now to find a launcher rack that I can use to hang two Hellfire's from a single wing pylon station. The USAF uses the M310 launcher on the MQ-9 Reaper, and yes there are some really nice scale plastic models of that launcher, but I was not able to find any SLT files for the M310. So, I went back to Fusion 360 again to see if I could work up a M310 model for myself.

I started out my design effort using the drawing in the left image below. After *many hours* of trials and reworking the design, I was finally able to produce something that looks like an M310 2-rail launcher, which you can see in the right image. These each weigh 7 grams.

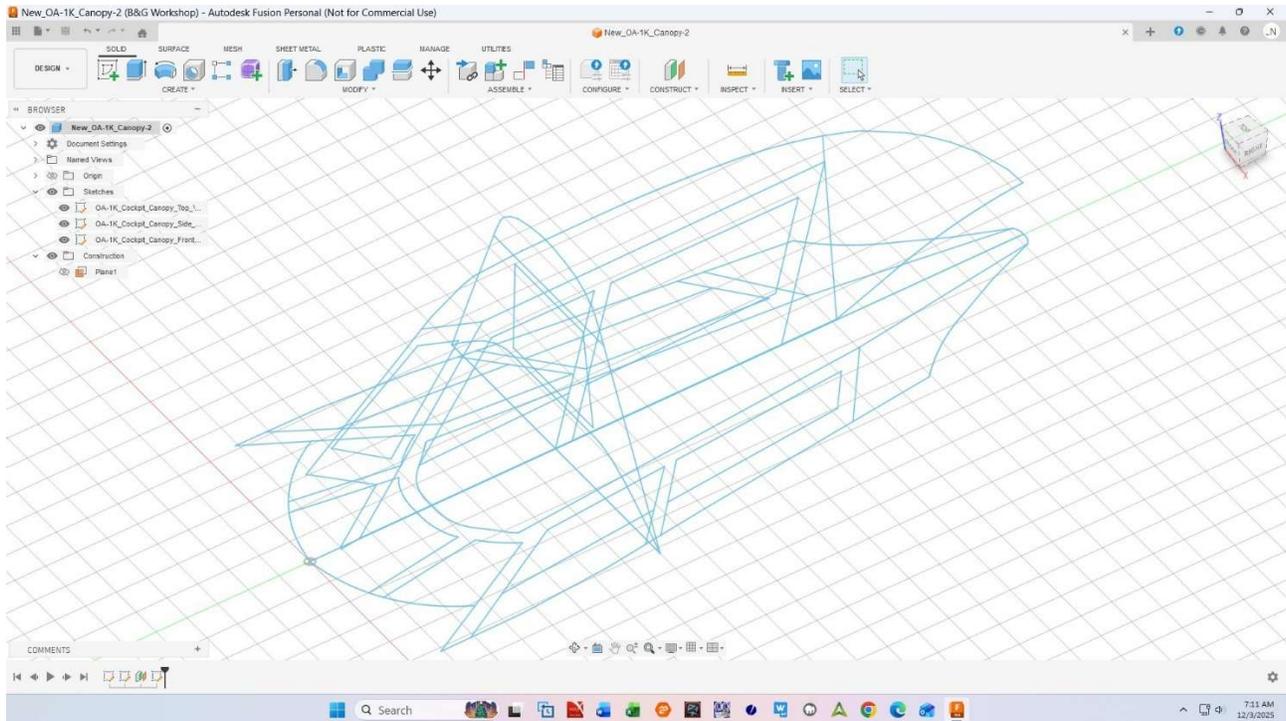


Let's go back and take another look at the weapon station hardpoints and some modifications I feel are needed to the pylon mounting rails that will be installed in the bottom of the wing. To aid in holding the pylons in place on the bottom of the wing, I decided to use a small 4x2mm Neodymium disc magnet at each weapon station and in each weapon pylon. I found a good source on Amazon at ([https://www.amazon.com/dp/B0B2M13NDW?ref=ppx\\_yo2ov\\_dt\\_b\\_fed\\_asin\\_title&th=1](https://www.amazon.com/dp/B0B2M13NDW?ref=ppx_yo2ov_dt_b_fed_asin_title&th=1)). I also decided to *"beef up"* the design of the wing male pylon mounting rail and add a hole for a disc magnet. After taking measurements of the Freewing attachment hardware, I drew up a modified male rail shown in the top image below using Fusion 360, exported the resulting STL file and 3D printed the modified rail. After a couple of iterations of my design, you can see the final results in the bottom image below. One of these rails will be epoxied into the 1/8" Lite ply at each weapon station hardpoint (now 8 total) in the bottom of the wing. Additionally, I needed to modify the pylon 3D models to add the required hole for the small 4x2mm Neodymium disc magnet.

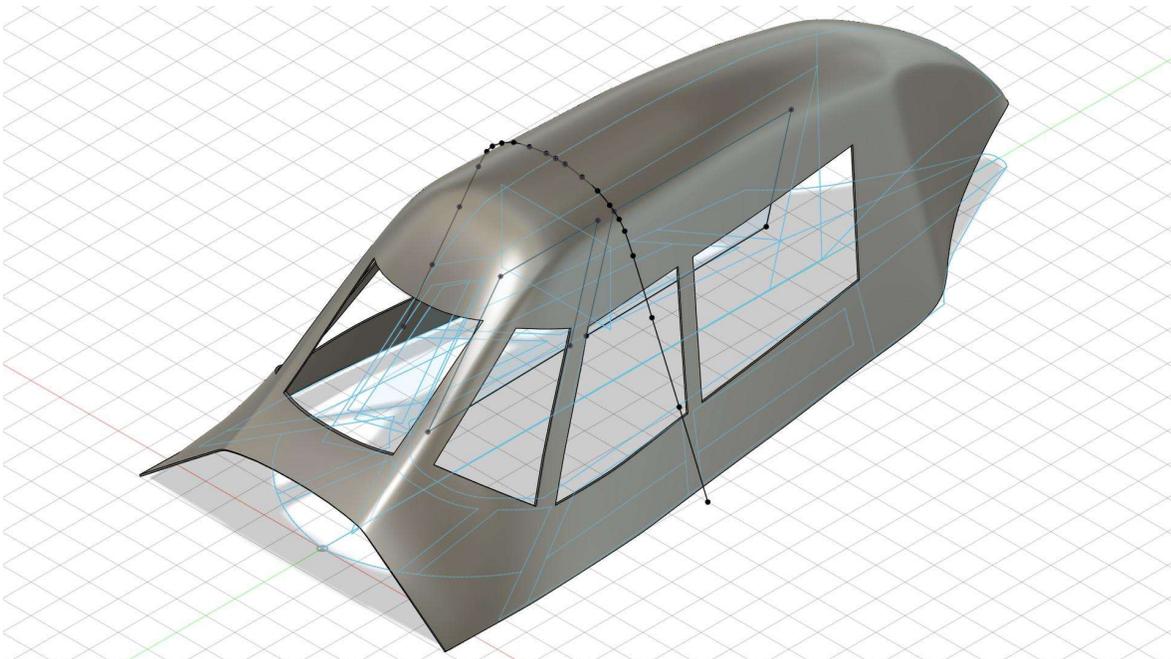


Now for the cockpit and canopy. I really wanted to print a 3D canopy for my OA-1K, so using my 2D canopy profiles (top image below) I imported the three views as .dxf files into Fusion 360 (bottom image below).

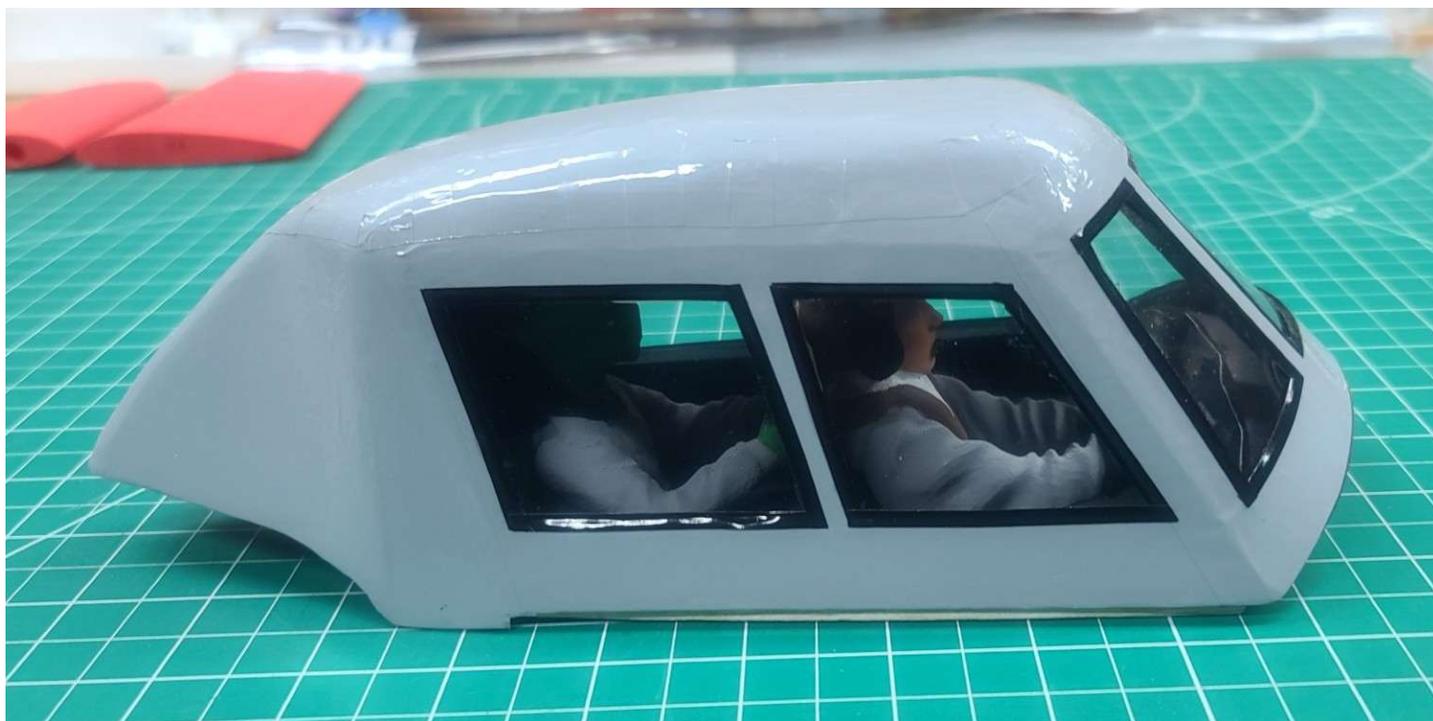
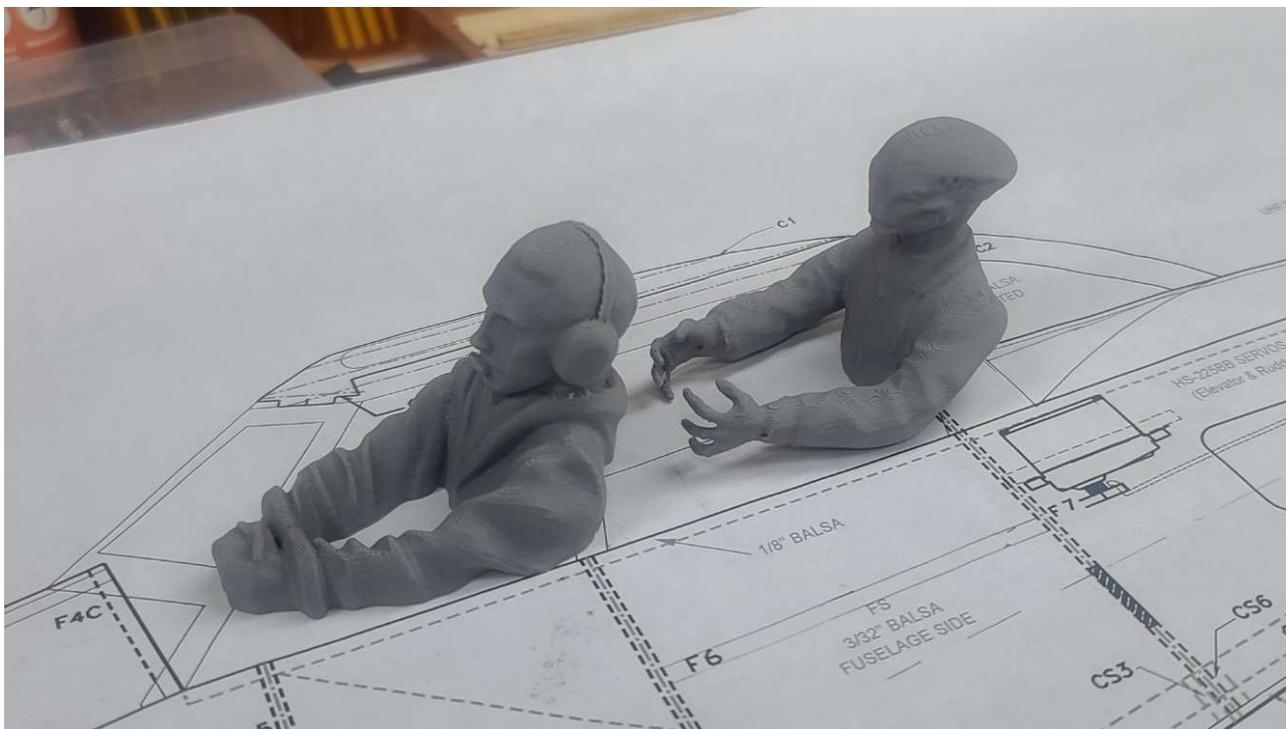
## OA-1K\_Cockpit\_Canopy\_Views.png



I first tried the surface modeling approach I used to model the nose cone. I spent *many hours* trying to get the "lofts" to work properly but had several issues with the "rails" not intersecting the "profiles", along with several other things. With further research and viewing of some nice tutorial videos for Fusion 360 called "How to Model an Aircraft in Fusion 360" (<https://www.youtube.com/watch?v=eBTaxZGYUug/>). I tried another method which uses "T-splines" or "Mesh" bodies. As you can see in the next image below my progress for a 3D printed OA-1K canopy is finally looking promising.



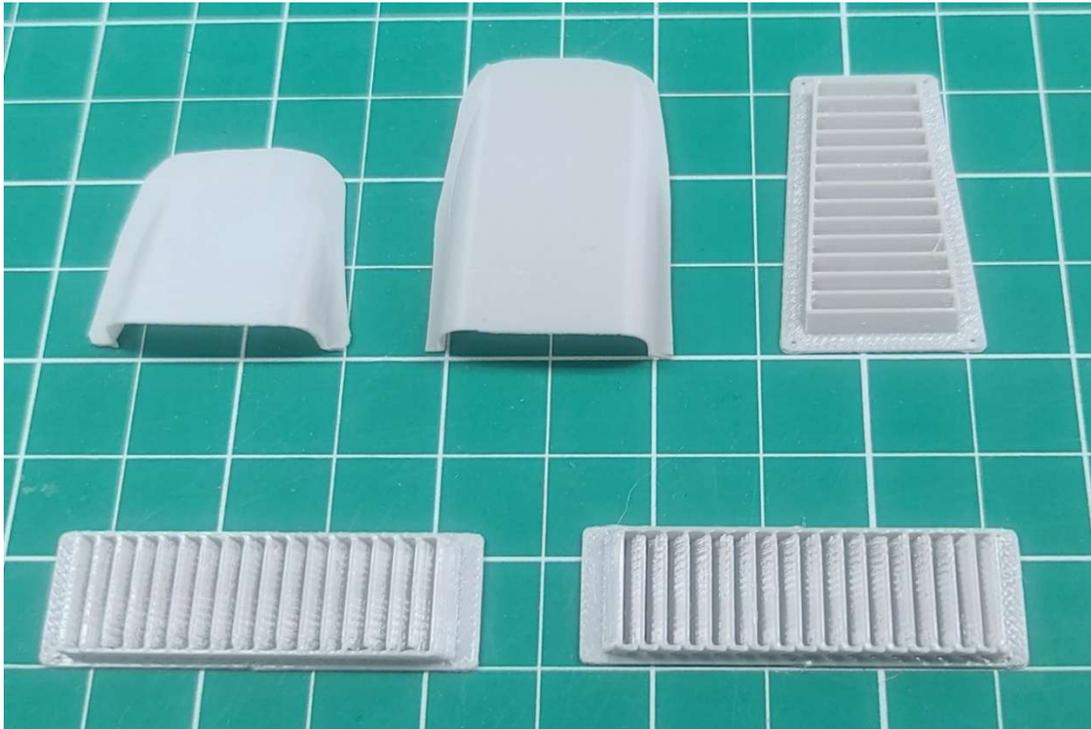
For my OA-1K cockpit I needed a 3D model for the pilot and mission payload operator. For the pilot I found a bust I could use on Printables. (<https://www.printables.com/model/93582-pilot-133>) For the mission payload operator I found an interesting model on Cults3D. (<https://cults3d.com/en/3d-model/game/driver-fahrer-extraterrestrial>) I took each of the STL files and edited them until I had what I needed, and then 3D printed each using Grey Creality Hyper-PLA with a 0.4mm nozzle and a 0.15mm layer height. The two busts for my OA-1K cockpit are shown below. They each weigh 12 grams.



Some other parts I needed to 3D print for my OA-1K RC model were the various cooling air scoops/vents/grills used on the full scale plane (shown below), and these would aid in fuselage internal air cooling of the motor, battery, and ESC on my OA-1K RC model.



In a web search I was able to find the STL files I needed on Printables (<https://www.printables.com/model/969628-vase-mode-rc-air-scoop>) and also some others on Thingiverse (<https://www.thingiverse.com/thing:1443136>). I downloaded the STL files I liked, adjusted them to the sizes I wanted for my OA-1K in Creality Print, and 3D printed them using Grey Creality Hyper-PETG with a 0.4mm nozzle and a 0.2mm layer height. With the lightening holes already cut in the aft fuselage sides, I couldn't add more holes for air cooling where the grills need to be placed, therefore, the two side grills will be *non-functional* and just glued in place to the outside surface as on the full size aircraft. To provide an actual exit for cooling air at the back of the fuselage, I will place a *functional* grill on the bottom of the fuselage between formers F8 and F9. The 3D parts shown below should help cooling air pass through the fuselage and add a little detail to my *Semi-Scale* OA-1K model.



In addition to the large KU SATCOM Dome Antenna structure on the back of the canopy, I wanted to add some other communication systems antennas to my *Semi-Scale* OA-1K model that are used on the actual aircraft as seen below.



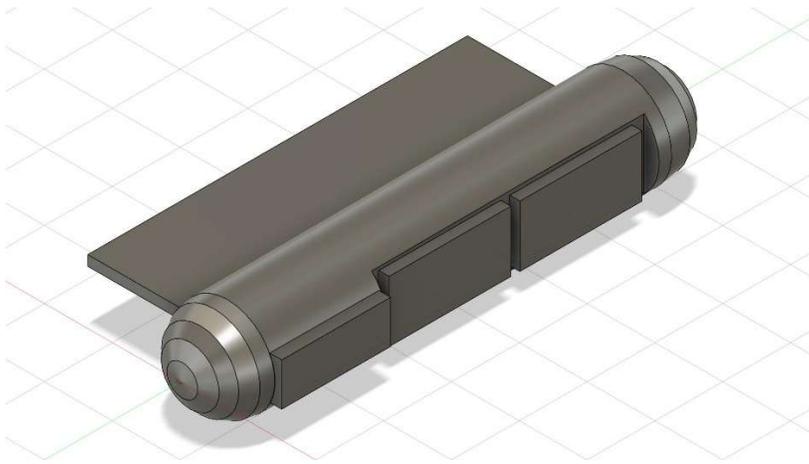
I found some nice 3-view engineering drawings for UHF SATCOM and Secure UHF/VHF/FM antennas as a small dish and a blade. I took the drawings, scaled them to match my 1/15<sup>th</sup> scale OA-1K, imported the resulting image files into Fusion 360, produced two STL files for the antennas (top image below), imported those into Creality Print, and 3D printed them using Black Creality Hyper-PETG with a 0.4mm nozzle and a 0.15mm layer height. I decided I would use the blade antennas as small tabs to remove the LiPo bay access hatch which is flush with the top of the forward fuselage and held in place with magnets. The resulting 3D printed communication systems antennas are shown in the bottom image below.





While looking through some 3D images on the web of the OA-1K I came across one that showed some small Airborne Countermeasures Dispenser Pods mounted along the bottom of fuselage aft of the wing and forward of the horizontal stabilizer. I thought these looked pretty cool, so I decided to try and see if I could model a 3D pod using Fusion 360.

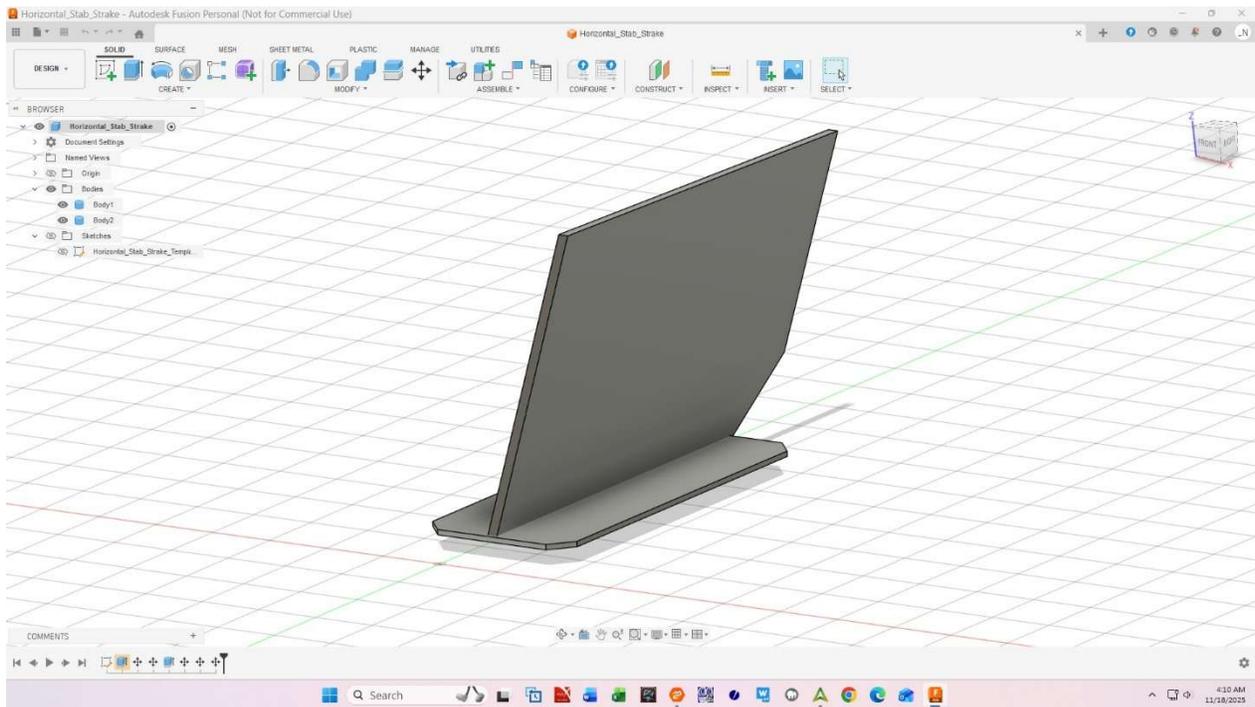
Since the pod is basically a grouping of basic shapes, I was able to build the 3D model shown in the left image below. Using this model, I exported the STL file and then used Creality Print to print out two pods using Gray Hyper-PETG filament with a 0.4mm nozzle and 0.15mm layer height. The resulting two Countermeasures Dispenser Pods are shown in the right image below. I will need to paint these before installing them on my OA-1K.



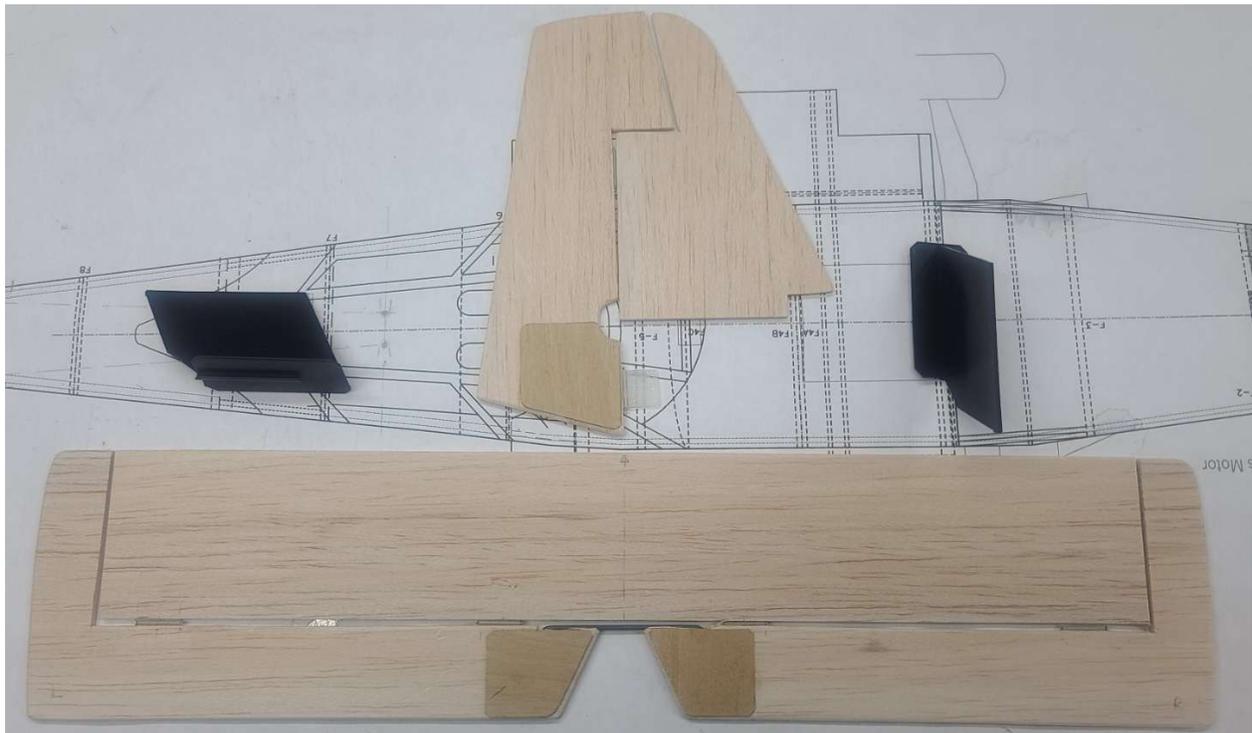
Another armament I wanted to make a 3D model of and hang under the wing of my OA-1K was the GAU-19 gatling gun, or Mini-Gun. I found a **free** 3D Sketchup (SKT) file on the Sketchup website (<https://3dwarehouse.sketchup.com/model/186dbddd-8e63-46fa-92bc-00483f8b86dd/gau-19b?hl=en>) for the three-barrel version that is shown in several actual OA-1K images, and converted that to a STL file. Using the STL file and Fusion 360, I scaled it to 1/15th scale, added an ammo drum, modified the assembly so it could be attached directly to an OA-1K wing hardpoint, and then produced the 3D model in the left image below. Using this 3D model, I exported an STL file and then used Creality Print 7.0 to print the ammo drum using Gray Hyper-PETG filament with a 0.4mm nozzle and 0.15mm layer height. I then printed the GAU-19 using Black Hyper-PETG filament with a 0.2mm nozzle and 0.08mm layer height. The resulting GAU-19 3D model is shown in the right image below. I think it looks awesome.



I originally planned to make the horizontal stab strakes and mounting plates from balsa and plywood, but I decided to see if I could make both using a 3D model and then print them out using some PETG filament. First I exported from my 2D CAD program the templates of the stake and its base as .dxf files, which I then imported into Fusion 360. From these I was able to generate a 3D model of the strake and base, as shown below.



I then exported an STL file from Fusion 360, which I loaded into Creaity Print and using some Black Hyper-PETG filament with a 0.4mm nozzle and 0.15mm layer height I 3D printed a set of stakes for my OA-1K. These will be installed after the stab is covered with Ultracoat. My OA-1K tail feathers at this stage are shown below.



During the tail feathers installation, I realized I had to come up with some Horizontal Stabilizer Struts similar to those used on the actual OA-1K. So, I took several measurements off my 1/15<sup>th</sup> Semi-Scale model and then used those to draw up a 3D model of a strut in Fusion 360. The left image below shows the resulting 3D model. This basically is a 2mm thick by 5mm wide strut with 1.0mm hole on the fuselage end, and a 1.0x2.0mm pin on the stab end. The ends are angled so they can be attached to the

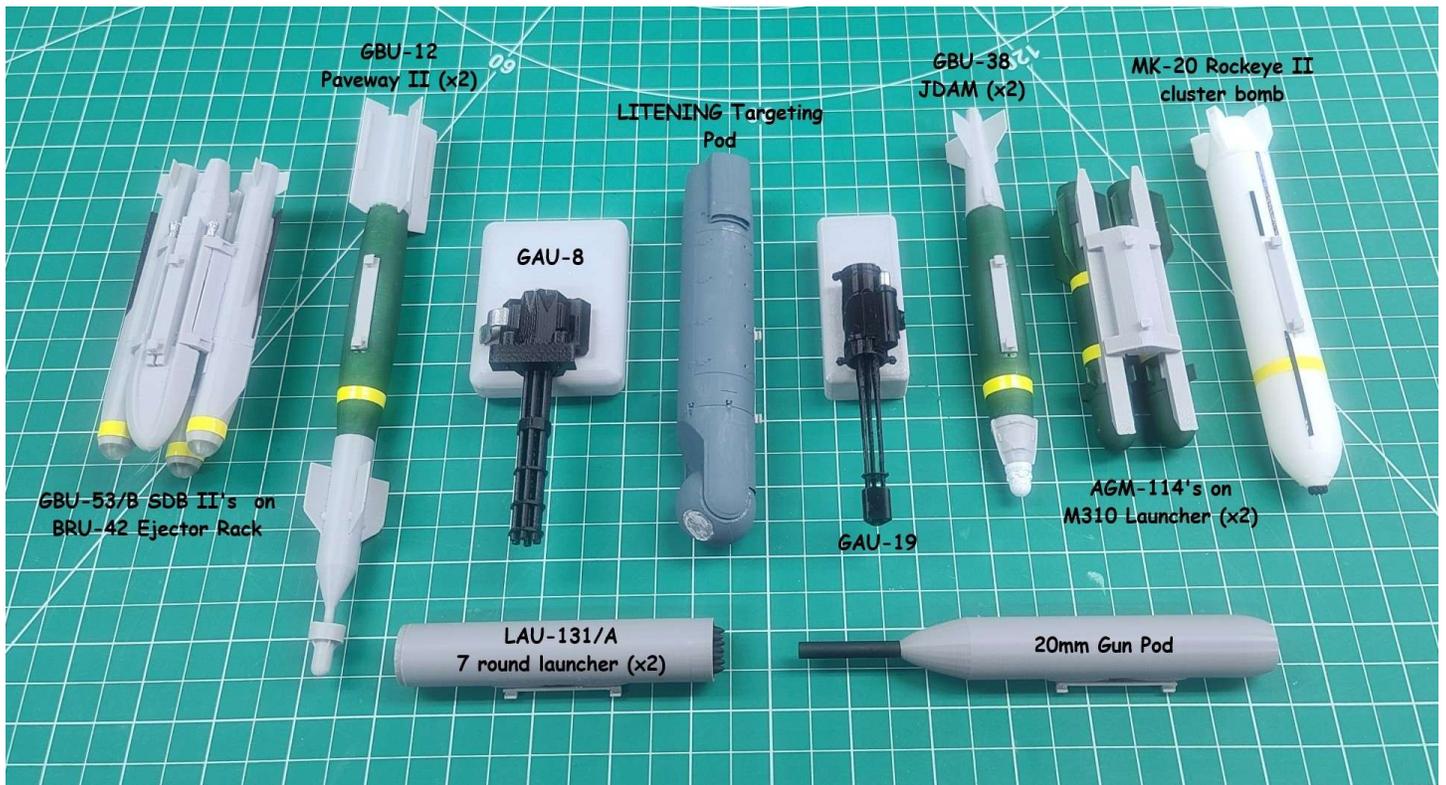
underside of the horizontal stab and bottom of the fuselage. After exporting the STL file from Fusion 360, I loaded the file up in Creality Print and printed the struts using Black Hyper-PETG with a 0.4mm nozzle and 0.15mm layer thickness. The resulting 3D struts are shown in the right image below. These were attached to my OA-1K using #1x1/4" pan head screws and CA glue.



Some other armament I wanted to add to the collection of 3D models I could hang under the wing of my OA-1K were the MK-20 Rockeye II (CBU-100) cluster bomb, and some GBU-53/B SDB II's hanging on a BRU-42 Triple Ejector Rack. For the MK-20 3D model I went back to the modeler Dirty Dee (<https://cults3d.com/en/3d-model/game/1-10th-scale-mk-20-rockeye-ii-cbu-100/>) on Cults, which he also designed the BRU-42 Ejector Rack 3D model. In Creality Print I scaled these down to match my 1/15th scale and then printed the MK-20 using White Hyper-PLA, the BRU-42 using Grey Hyper-PETG, both with a 0.4mm nozzle. For the GBU-53/B's I was able to find an STL file on cgtrader (<https://www.cgtrader.com/3d-models/military/rocketry/gbu-53-stormbreaker-small-diameter-bomb-ii/>), which I first scaled, modified to tuck the wings back in their stored position, and then 3D printed parts for three bombs using Grey and Black Hyper-PETG with a 0.4mm nozzle. The resulting MK-20 Rockeye II is shown in the left image and the three GBU-53/B's with the BRU-42 Ejector Rack are in the right image below.



How about an update on the external stores that can be hung from the underside of the wing on my OA-1K. As shown below, I finally have everything painted and ready to hang on the pylons. *These turned out pretty nice I think.*



Well, it was finally time to see what this little beast looked like when loaded up with some 3D printed models for some action. I first set her up in what I call a "Lite Load Configuration," which is made up using a GAU-19, a MK-20 Rockeye II (CBU-100) cluster bomb, AGM-114's on M310 launchers (x2), and LAU-131 seven-tube rocket launchers (x2). This configuration is shown below.



Then I set her up in what I call a "Heavy Load Configuration," which is made up using a GAU-8, the LITENING Targeting Pod, GBU-12 Paveway II's (x2), GBU-38 JDAMs (x2), and GBU-53/B SDB II's hanging on a BRU-42 Triple Ejector Rack. This configuration is shown below.



Well, all I need now is for the North Carolina weather to warm up to melt all the ice and snow on the ground and maybe try and see if I can keep from destroying my OA-1K attempting a first flight.

Remember to check out my OA-1K Skyraider II Build Description and see All Images Taken During my OA-1K Skyraider II Scratch Build using the links under the OA-1K Skyraider II section.