



# FB-111 Aardvark PSS

*Strafe the slopes  
with RM's free PSS  
plan by Phil Cooke*



**MAIN PHOTO AND  
INSET:** Moment of  
truth - Phil's brother  
about to let go! A  
rearward C.G. gave  
Phil a lot to think  
about during the first  
flight, but the FB111  
showed it's potential.

I have enjoyed flying PSS models for a number of years, but in that time I have only had a single attempt at building and flying a model of my own design. This was a stand-off scale Shorts Tucano and happily, performed very well, but lacked some of the excitement of the Tornado, F-20 and Hawk(s) I had built previously from plans. It was whilst looking for a new fast jet to study (preferably one that had not been modelled before), that I came across the FB-111, the stretched wing version of the General Dynamics F-111 Aardvark.

The aircraft was designed for the USAF in the 1960's as a high altitude supersonic bomber, assigned with the task of delivering a potent nuclear strike to the target. By modelling the stretched wing derivative, I would be able to keep the wing planform true scale, whilst maintaining a wing loading similar in magnitude to other slope jets. Truly believing that the sight of an F-111 on the slopes would be a first, I hastily set about drawing and building (Incidentally, I have since found out that there IS another PSS F-111 in service, built and flown by Martin Whitelaw, of which I would very much like more details!). At 1:20 scale, my version spans 42" and is 44" long, so when rigged, fits snugly in the boot of the car.

## Fuselage

The fuselage is of conventional box construction from nose to tail, using 3/16" balsa sides and 1/2" x 1/2" triangular doublers. This allows plenty of sanding around the long, sleek nose before any holes appear. A lot of time was spent sanding and planing here, using a 1:72 scale plastic model Aardvark as an invaluable 3-D reference. The air intakes and wide body section towards the tail were formed from 1" thick blue foam 'cheeks', which were sanded to shape and glued onto the fuselage sides. The top decking was then added using 1/8" balsa, building it up behind the cockpit to achieve the correct wing/body blending profile.

## Wing

Fellow PSS enthusiast Simon Cocker recommended the RG15 wing section to counteract the effects of the high drag fuselage. This section got very slim indeed towards the tip, but the wing panels were cut and veneered superbly by Ian Larkin at Humberside Models, requiring just LE, TE and tips to be fitted. A rear facing location dowel and load spreader plate for the nylon bolt were fitted, and a hole for a wing mounted servo was cut and lined with

balsa. Aileron stock (1") was used to complete the basic wing construction, which was then blended to the fuselage using 1/8" balsa formers and 1/16" balsa decking. This was certainly the trickiest part in the construction and two attempts were made before an accurate wing/body blend was achieved. If I had to do it again, I would probably use blue foam here, which could simply be carved and sanded to shape.

## Tail and plastic bits

The fin and tailplanes are simply 1/4" balsa sheet, the fin incorporates a spruce mounting post, whilst the all-moving tailplanes house 1/4" brass tubes for actuation. A carved length of dowel was fixed to the top of the fin, representing the electronics pod, which is housed there on the full-size machine.

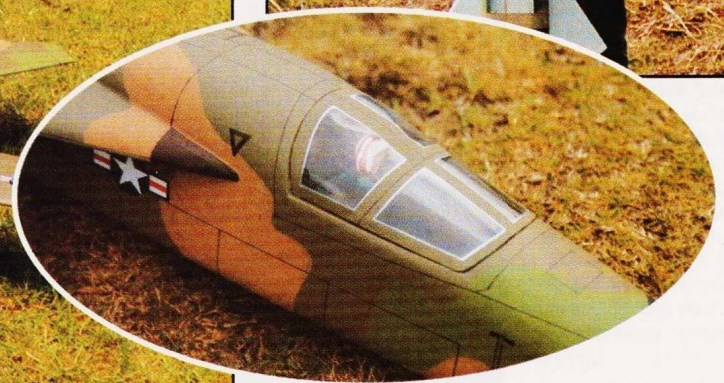
Not having access to a vacuum forming facility, a clear canopy was cut from the neck of a large pop bottle, although not exactly scale in profile, it houses a scale size pilot and other cockpit details, which adds realism to the model. Authentic looking jet pipes (a very prominent feature on the full size) were made by cutting down a pair of disposable plastic coffee cups. Once these were cleaned up and painted,



**BELOW:** A distinctive colour scheme adds presence to a small model. The FB111 offers plenty of variety.



**RIGHT:** Phil finished the model the night before the competition! Here he proudly displays the lower surfaces -note the ventral strakes, cheek intakes and the coffee cup tail pipes!



**ABOVE:** just the right level of scale detail for stand-off competitions. On the full size, instead of ejection seats, the complete crew module is ejected, which has inflation bags underneath to cushion landing impact.

they looked surprisingly like the real thing, and of course, weigh next to nothing! Fiddly little air intake cones were carved from soft balsa, covered and glued to the fuselage underside, which more or less completed the airframe. Now, on to my favourite bit...

### Finishing

The particular FB-111 that I chose to model, had flown with the 509th Bomber Wing and was painted for participation in a NATO Tiger Meet, with a 'Tiger Stripe' fin and light grey underside. It was thought that the high visibility colour scheme would help in 'eyeballing' the model as it blasts up and down the slopes, plus I had a colour drawing of the exact aircraft, which would be helpful when faced with the static judges at competition.

The model was given a final sanding, checking carefully using the 1:72 model that everything looked about right, before covering it entirely in Olive Drab Solartex. The large tail strakes were added to the undersides at this stage, cut from 1/8" light ply and dropped into the blue foam cheeks. The camouflage was applied using Humbrol Enamel paints and a 1" brush, whilst the yellow fin and grey undersides were masked and sprayed with car sprays. Painting the nose a gloss black left her needing just the 'stars and stripes' which were cut from Solartrim. Finally, numerous panel lines and rivets were added with a fine permanent marker and a straight edge, which really enhanced the scale finish.

Radio installation was not a problem, once I had decided on the correct position for the Rx battery in order to get the C.G. about right. Some time was spent questioning where the model should balance, due to the unknown effects of the lifting body and large chin strakes. For the first outing it was set at 3 1/2" from the LE at the wing root, with the Rx battery mounted in a box above the wing TE. A quick check of the control directions, and she was ready for the slope.

### Flying

The model was flown for the first time at the Horseshoe Pass PSS meet in May this year. The wind was very blustery indeed, and having scored well in the static marking, I was a little reluctant to release the Aardvark over the edge. However, the model found its way to the slope edge in the hands of my brother, who had the unenviable task of launching it. In the strong wind, we had to launch well down the slope before the model climbed away smoothly on the third attempt.

A slightly rearward C.G. was temporarily trimmed out, on elevator, and I was able to manoeuvre the model around the sky without any real concerns. Left and right twinkle rolls were performed, confirming that the throws on the ailerons needed 'taming', but I soon felt comfortable at the controls despite the conditions, and the model looked terrific in the air! Unfortunately, later in the flight, the rearward C.G. position caught me out at

the top of a 1/2 roll and loop combination, which resulted in a vicious tip stall and a speedy return to earth. Although the damage was limited to the wing only, I was forced to cease flying for the day.

A clean break across the wing was sparred and patched up, and since the repair I have had numerous flights, moving the C.G. incrementally forward each time. It is currently at just 2" from the LE at the wing root and seems about right here, which undoubtedly confirms the lifting effect of the fuselage strakes. To date, the model has only been flown in winds around 20 - 25 mph, so the full glide envelope has not yet been explored. The model handles very well, as long as you don't overuse the elevators during turns, to eliminate the possibility of that tip stall (more washout at the wingtips?). The F-111 is very fast along the slope, and is fully aerobatic, although loops are a bit tricky unless you're doing the speed of sound!

### To sum up...

I have now enjoyed a few hours of flight time with the Aardvark, and the model does look terrific screaming across the slope. Landings are very scale like, so long as you don't use too much elevator turning her back into wind, when she will quickly dig a hole! All in all, with a little refinement, I'm sure the FB -111 will prove a well worthwhile project, - you just have to accept she'll never be a floater (although you could easily fit 120% scale wing to it!). Anyone for a friendly dogfight?

**RM**