OSA-! Missile Boat

See http://eezebilt.tk/plans.html for more data and a build log

Main Hull

So, let's get going. Like all the Eezebilt 50+ range, we start by cutting out the patterns from the plan, and joining them where necessary. This is a long boat for an eezebilt - there are no less than 13 joints to be made - each one numbered with an alignment line. Then the main parts can be cut out. The hull can be started first, assembling the deck and the sub-deck, both made from two sheets of 1/8" balsa. Now, here's the first unusual action. We bend the bow of the sub-deck up from about former 4 forward. This can be done by soaking the front portion of the sub-deck, and then leaving it overnight with weights on it and the front propped up. That's one of the photos I lost - but here's the basic idea. The front should end up about 1/2" - 3/4" up. Weigh the rear part of the sub-deck down on a flat surface covered in clingfilm, so that glue will not join the boat to the building board!

Next, attach formers F1a and F4a to the subdeck. When the glue has gone hard, slide the rear end of both Bow Formers well into the slot of F4a, and then slide it forward again to connect with the slots in F1a. Glue in place so that the sub-deck follows the curve.

Meanwhile, assemble K1a and F2a and attach these to the subdeck. Take care to get a good glue connection at the bow. When that is solid, you can add F3a, which should hold K1a down and secure the bow in its correct position.

Now comes a change to the process which I used to build the hull. My original hull was simply assembled in my hands, the keel added and the sides skinned. And then I found that the hull had a slight corkscrew twist in it - and I had no datum line I could use for reference to correct it. The deck and the chine are both continually curved! The reason for the curve is that the front of the boat is held rigid by the egg-box bow structure, but the rear has no such vertical support until the sides go on, and it can get twisted at this stage. Particularly if, as was the case with me, your balsa is low quality and twisted anyway...

So, the best way to construct is to continue to assemble the deck/subdeck unit on a flat board until the hull sides go on. Weigh or pin the subdeck to a board with a sheet of clingfilm underneath as a barrier for the glue, and do not attach the keel until the sides are on. The front of the sub-deck will curve up, but the rest of it from about former F5a sternwards should be flat, and firmly attached to the board.

So, now that you have attached the hull unit firmly to a building board... let us add the rest of the formers and the 1/4"x1/8" longitudinal reinforcing strips. First, glue the rudder/transom support in position, which will give you the angle for the transom. Then pin the transom in place, together with formers 5, 7 and 8 (which go vertically), and lay the longitudinal strips into their respective slots. Then lay the deck on top and check that the tongues in formers F4a and F8a fit into the deck hatch hole, and hold the deck properly aligned. The strips should have a gentle 'S' shaped curve - if not, investigate the reason why and correct it!

Once you are sure you have the correct positions for the formers, glue them and the longitudinal strips in place. Once they are firm, attach the deck and glue it to the supporting longitudinal strips in the

centre of the hull. It should adopt the same curve as these quite easily. It will be slightly high at each side of the hull - once the centre of the deck is glued firm the edges should be pinned down and glued, giving the deck a side-to-side curve as well as a fore-and-aft one.

With the subdeck still attached to the flat board, you can start to do the sides. I had rather poor quality balsa, and felt that it needed support, so I added 1/4" stringers down the sides, and along the bottom of the boat. You may do this, or leave them out - particularly if you are skinning with ply. If they are to be put in, they go from the transom to F4.

To skin, do each side in two parts - the stern section first. Add a thin strip of 1/8" balsa to the sides of former F4a to help support the side joint. Once both stern side pieces are firmly glued, it can no longer twist, the unit can be removed from the board, and the bow side piece attached. It will curve easily around the bow shape of the upper keel.

Now the lower keel units A and B can be added, aligning them along the centre line and checking for verticality by adding the lower formers. Add the support stringers if you feel that your material needs it.

I mount the motor and prop-shaft at this stage, because it is easy to align them precisely. I use a piece of tube to make a solid connection between the motor and the shaft, and then mount the motor firmly in position, aligning the shaft accurately central through the hole in the keel and sub-deck. I then use epoxy to seal the prop-tube solidly in position in the sub-deck and keel. In this case I used a short tube, a longer 4mm shaft and mounted a separate skeg at the propeller end. If you want to use a full-length prop-tube, either bend a brass strip around it to make a skeg, or add a triangular balsa filler between tube and hull. Now is also a good time to attach the rudder tube if you are going to glue it in position.

Once the tubes are solidly in position, the bottom skins can be added. Note that both the side and bottom skins are printed oversize, and will need trimming to fit. Along the chine the side skin should be sanded back to fit snugly with the bottom skin. Along the keel, the bottom skin lies on top of the wood while the keel is straight, but towards the bow, around F4, the keel starts to curve up and the bottom skin overlaps it completely. This must be sanded back to fit with the skin on the other side. Trim the bottom skin to fit around the prop-tube, and seal it by pouring epoxy into the gap. The hole for the rudder tube can now be drilled - the tube being installed through the circular access hole in the stern deck. Finally, add the prop skeg or a support for the tube, and the basic hull is complete. A 1/8" rubbing strip and a 3/16" chine spray rail will be added later, after sealing and sanding.

Superstructure.

Like the missile launchers, this is a simple box structure. Attach the formers to one side, then glue the other side on and offer it up to its position in the deck. It should fit squarely and snugly - if not, some trimming may be needed. Once it is a good fit, add the long roof and the short front roof and the structure should become quite rigid.

The four side extensions at the front of the superstructure should be added next, again checking that they sit firmly and squarely on the deck. Once they are glued, the outer skin can be added to them, and across the front. Sand all edges down to a rounded shape, and this is ready for filling and painting.

The small blockhouse mounting for the anti-aircraft 'Drum-Tilt' radar is a similar simple balsa cube with a smaller cube above. See the 'Fittings' section for making the radar dome.

Missile Launchers.

These are simple structures, but note that the front and rear launchers are of different widths, and they are left and right handed, to allow for the slope of the deck. The two formers are attached to the sides, and the unit is held at right angles once the horizontal square underside at the front is added.

Once the glue on each unit is dry, check for handedness one more time, and then add the curved top. It is better to pre-bend this by soaking, then glue it centrally at the top and push each side down evenly to avoid distortion. If cut accurately the part should fit exactly - but it's easy to trim a bit off or add it if necessary.

Finally, sand the front down to an even angle, and add the angled faceplate. Each unit can now be offered up to its position on the hull, and trimmed to match the curve of the deck. Cut small slots in the top of the side skin to accommodate the outboard tabs of the launchers. The basic unit is now complete - the side strips can be added later after sealing and sanding.

The doors can be made next - a simple diamond shape with a triangular section bar down the front. Note that there are two different sizes for front and rear! The hinge unit is simply made from bent copper wire - hammer it flat and bend as shown.

Forward Mast and .Radar

This is a major feature of the OSA boat. The original Russian boats had many aerials mounted on it - typically for Electronic CounterMeasures. The export boats had fewer aerials - I am modeling the India Navy INS NIPAT, so I don't have to put so much on the mast!

I wanted to have moving radar, so I made the former out of two brass disks with a brass tube joining them. You could just use solid wood. Assemble the former with the disks top and bottom - with a bolt in one for later attachment. Then take thin strips of balsa and glue them between the two disks. Once they are firm, fill in any holes with extra balsa strip, then sand with medium paper. That's your basic mast.

The radar unit is made from a curved length of brass sheet glued to a small balsa cylinder, as shown on the plan. A weathercock vane is soldered to the rear.

The NIPAT has a targeting radar on top of the mast, and a pair of aerials on arms either side for direction finding. Lower down, it has a standard navigational radar on a separate forward facing arm. Bend some 0.7mm brass wire into 'U' shapes as shown, and epoxy into position. A dab of solder will easily join them. I added some bracing between the arms for a bit more detail!

Rear dome

This is the radar which controls both gun turrets. It can be carved out of solid balsa to the shape indicated in the Fittings by spinning a block on a drill and using sandpaper. However, the containers which are found inside KinderEggs (a popular confection in Europe) are a good size for this purpose. They need shortening slightly - cut the rim of each half awayto bring them to size, and join with a small cardboard patch inside.

A KinderEgg radar dome can be fixed to the balsa mount by sanding a hole on one of the edges of the dome and putting an M4 bolt through it with a washer either side. This will give a solid connection, especially if a bit of epoxy is added.

Guns

The guns can be carved out of solid to the dimensions given, but a KinderEgg container can be used for the dome part here as well. If you are not in a country which sells Kinder Eggs, simply google 'kinder egg plastic container' - there are always some for sale on EBay.

For the conical base, this can also be sanded on a drill from a block, or the conical skirt of a household plastic bottle can be used. Pick one which has a 1.2" top if you want to match a Kinder Egg dome! Add a small disk of 1/16" balsa on top of the conical base, allowing about 1/16" clearance around the edge.

To make the Kinder Egg gun, cut a disk of tinsheet to the shape provided, and bend both sides up to give a U-shape. Cut a quadrant of nylon sheet or balsa block to fit inside that U-shape, and add two brass tubes for the guns. a short rod through the U-shape and quadrant will let the guns pivot up and down.

Wind a length of copper wire around the balsa disk on to of the base. This will provide the guide rail that the gun will pivot on. Cut it precisely to size and solder underneath the U-shape as shown on the plan. Check that the gun mount rotates easily on the base. Finally, solder a brass bolt through the centre of the u-shape - this will join the two parts and provide the attachment to the deck.

Cut a dome end off of a Kinder Egg, and carefully cut a rectangular section out as shown on the plan for the guns. Trim to fit and glue over the metal U-shape with epoxy.

Other Fittings

The boat is made to 1:48 scale, so commercial fittings of this size can be bought. This is a convenient size for figures, as it is ‘O’ gauge, so railway figures of this type can be used.

Several examples of small fittings are shown on the plan if you want to make your own. Bollards can be made from brass strip, tube and nails, while the ladders and doors are from brass wire and balsa. Winches are simple dowel turned in a drill, and an anchor can be made from tinplate. See the ‘fittings’ section of the plan for other ideas...