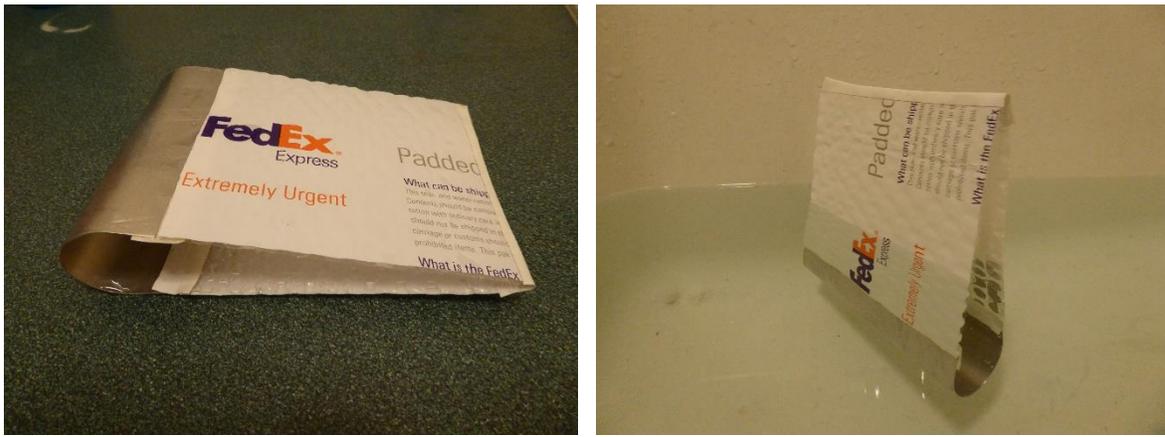


# Flaperon Model #2 Test Results

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On August 22, 2015, a crude model of the B777-200 Flaperon was constructed and tested (Model #1). The model was a quick and dirty attempt to simulate only the honeycomb skins and leading edge. It did not have end ribs. Model #1 floated leading edge down.



**Figure 1 Flaperon Model #1 made from 0.025" aluminum leading edge and bubble pack. The model floated leading edge down with about ½ the bubble pack "skin" above the water line.**

Reports from the field suggest the Flaperon floated in a flat orientation, probably upside down. To test this assumption, a new, more accurate model was constructed (Model #2).

Examination of the public Flaperon photos indicates that the Flaperon upper and lower skins were constructed with carbon-fiber honeycomb sandwich material approximately 0.5 - 0.75" thick. The leading edge was fabricated from aluminum sheet of unknown thickness. The rear spar also appears to be made from honeycomb, and the main spar probably was too.

It has been noted that the voids between the spars and ribs would be vented and would likely fill with water over time. However, the low density sealed honeycomb cells would not fill with water. To simulate this type of construction, plastic poster board 0.16" thick with a cellular structure was used. Ribs with vent holes were fitted to the ends to create a quasi-sealed structure. Figure 2 shows the construction of Model #2.

Model #2 has outside dimensions ~15" X 7.3" X 1.7" (cord), tapering to 1.1" at the rear spar. The cellular material is 0.16" thick and it has a density (before sealing the ends with hot glue) of 0.18. The finished mass is about 7.5 oz (210 g).



**Figure 2 Flaperon Model 2 construction**

Model #2 was placed in a large water basin. It floated in a “flat orientation” with most of the volume above the water line and the leading edge lower. The internal void was then filled half way with water. Again the model floated in the flat orientation. Finally, the void was completely filled with water and the model floated in the flat orientation with only part of the upper skin above the water line. While Model #2 is still a crude model of the real Flaperon, it better simulates the effect of the void filling with water, and thus is a reasonably good confirmation of the likely floating orientation and relative buoyancy.



**Figure 3 Flaperon Model #2 floating with void full of water**