Osprey Notes by Joe Wagner

My original Osprey was a "tour de force" -- a unique design in several ways. First, it was a response to MANY requests for conversion of my 1949 Dakota 1/2A free flight design to radio control.

The ff Dakota was designed with a combination of "automatic stability" features that I felt made it unsuitable for R/C. (Yes, since then MANY modified Dakotas have proven to be excellent R/C performers -- most notably my friend Pat Tritle's "J-Kota".)

Anyway, I designed the Osprey to:

1. Resemble the Dakota's styling & its all balsa construction.

2. Be in effect a one-piece model, with all its "operating systems" included in a single "pull out the nose" unit;

3. Use Cox's then-new 2-channel "Cadet" R/C system, plus a Cox Black Widow for power. (At that time I was a consultant for Cox Hobbies.)

These constraints required several design compromises. Since the limited power and the all-balsa construction made the Osprey rather heavier than the usual 1/2A R/C model of that time, I employed a high-lift, "single-surface" steam-formed wing airfoil. This did the job it was intended for -- I knew it would because I had designed, built, and flown several earlier model planes, both free flight and R/C, using that feature.

However, the airfoil (McBride B-7) stalls abruptly. That's a characteristic of most high-lift airfoils. I was used to that, and forgot that most other model flyers were NOT.

That caused difficulty for some Osprey flyers... Anyway, to cut short this long story, I later revised the Osprey design, with the help of a couple of friends, to include:

A. Longer-span top wing -- 36 or 40 inches

B. Revised airfoil: still steam-formed but with a thickened leading edge that made it more like a Jedelsky airfoil, and greatly reduced its sharp stalling characteristic.

C. Changed the power to a PAW .09 diesel, with a throttle, of course.

D. Eliminated the "pull-out-the-nose" power & R/C unit…

These changes made the Osprey a far friendlier craft in the air -- and more scale-like in appearance too. One of my friends even added a ring (NACA) cowl around the engine, which made his model look a lot more like the Coast Guard Waco biplane that I'd stolen the Osprey's decor from...

I haven't redrawn the Osprey yet. (Our revised models were all built from marked-up copies of the original plans.) I probably won't redraft the Osprey, because I have LOTS more projects in work. LOTS more !!! My creativity hasn't even come close to running dry...

Joe Wagner **3/5/2010**

OSPREY ORIGIN

This model had a curious origin. One morning, Rich Uravich – then the editor of Model Airplane News – phoned me to ask how quickly I could provide a new model construction article for the magazine.

Rich said that a planned feature had fallen through at the last minute, and they desperately needed something to take it's place.

Time for some fast thinking on my part! For quite a while I'd been considering the design of a modified **DAKOTA** for radio control. (Many modelers had asked for my recommendations to convert **DAKOTAS** to R/C – and since micro radios weren't yet available, I always discouraged the R/C **DAKOTA** idea.)

Also, at that time (early 1988) I was a consultant to Cox Hobbies. The company sent me samples of various new products to test & comment on. One of those was the 2-channel Cox Cadet radio system. I hadn't used that yet.…

Another point in my thinking was a possible new application for a process of steam-forming sheet balsa into efficient model wings. I'd built & flown several

planes with that type of wing – rubber – and CO2 – powered free flights, plus a couple of 1/2A R/C model planes.

With these points in mind, I told Rich that I could do a small all-sheet-balsa R/C biplane design for the magazine in about 2 weeks. Rich said, “Great!” and hung up.

I’d designed quite a few 1/2A R/C models by that time, and had a good feeling for the size & weight parameters. (With only 2-channel control, the climb rate – at full power, of course – couldn’t be fast, or the plane would get too high for comfort by the time the engine’s fuel ran dry.

I’d also decided to make my new all-sheet-balsa biplane all one piece, like a **DAKOTA**. But obviously it’d be necessary to have access to the radio system….

To accomplish that, I came up with an arrangement that had the engine, an auxiliary fuel tank, and the R/C components, all mounted onto a plywood strip. This was attached to the rear of the firewall, & fit into a slot built into the fuselage interior. Unscrewing 4 screws at the firewall, plus the antenna (a wire “whip” type), and the switch actuator – then unsnapping the tail clevises – would allow the entire engine & R/C “package” to slide out my little Biplane’s nose.

All of this worked out quite well. My original **OSPREY** prototype (which still exists) flew nicely for me from the start. All I needed to adjust was the CG position.

However, since I did the **OSPREY’S** design and construction working under “deadline pressure”, I forgot something important. That was the fact that steam-formed wing airfoil was like all thin, under-cambered airfoils: It was quite efficient – but stalled abruptly.

That hadn’t bothered me in flying my prototype, because I was used to compensating for the sudden stall effects, from hundreds of flights with my earlier small R/C models that used the steam-formed wing.

But the “average modeler” who built an **OSPREY** from the magazine article & plans wasn’t used to that. When his model stalled in coming out of a turn, he thought it was tail-heavy. He would move the receiver battery forward, to fix the apparent tail-heaviness – and that only made the stalling tendency worse….

I came up with a quick fix for fellows who wrote to me about their **OSPREY** stalling problems. This was a modification to the wing leading edges, as shown in the attached sketch. The idea was to make the leading edge nose radius 3 times as large – because L.E. radius is what affects a wing’s stalling angle the most. The smaller the L.E. radius, the more suddenly the wing will sta