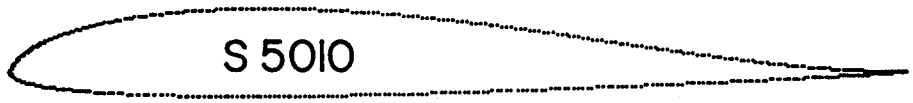
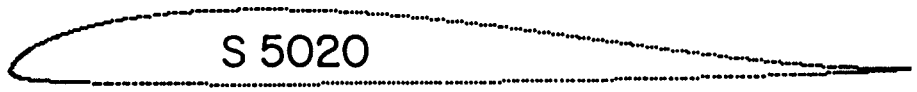
SELIG S5010-098-86
SELIG S5020-084-86

These two airfoils were published in SOARTECH #7, "The FLYING WING Edition". As you can tell by the "S" prefix, they are from the computer of Mike Selig. Dave Jones (England) had asked Mike to design some sections for tailless planforms, the resulting sections would then be placed in SOARTECH. Mike came through with these two profiles. They both have positive pitching moments and could be used for "plank" designs. The moments are not so strongly positive as the Eppler 184 and 186, 228 and 230. However, these sections should be able to give better performance than the Epplers due to decreased drag and higher maximum coefficient of lift.



The S5010-098-86 is 9.8% thick. It has a moment coefficient of +0.0086 and a zero lift angle of +0.64 degrees.



The S5020-084-86 is 8.4% thick. It has a moment coefficient of +0.0084 and a zero lift angle of +0.82 degrees.

If you decide to use these sections, there are a couple of things to remember:

First, the leading edge of both sections is relatively blunt. According to Dave Jones' (California) experience, this is probably detrimental to penetration if you're operating with a light wing loading.

Second, the trailing edge of both sections is relatively thin. If you're building an all wood structure this leads to difficulties in construction. Taken together, these two items point in the direction of a foam core structure.

Another thing to keep in mind is the noticeable performance increase to be derived from having the trailing edge of the wing straight and sharp. A blunted trailing edge does terrible things to the pressure gradients over the aft portion of the wing and can disrupt the airflow well forward. The modern computer generated sections we're seeing these days seem to thrive on sharp trailing edges, and these two Selig sections are no exception.

Many of us are still living in the dark ages; we take a piece of trailing edge stock and glue it into place, then we take the covering material and attach it directly to the trailing edge stock after a minimum of sanding. Such procedures may be OK for powered craft, but we're looking for peak performance from our sailplanes.

Laminating the trailing edge from two pieces of 1/16th sheet with 1/64th plywood between is a superior method, from both a structural and performance view. The balsa sheets should be carefuly mated to the plywood at the trailing edge to preserve the airfoil section, and if you can manage a knife-sharp edge on the plywood, so much the better. You might also consider cutting your foam cores to accept 1/64th plywood or fiberglass skins; these techniques make sharp trailing edges even easier to obtain. Take some time getting the trailing edge perfect - it's worth the effort!

These two sections look VERY promising. If any readers put them to use we'd appreciate hearing about their performance.

S5010

X	Y
100.000	0.000
99.676	0.001
98.707	0.007
97.101	0.036
94.870	0.108
92.041	0.256
88.667	0.516
84.828	0.903
80.608	1.406
76.076	2.008
71.307	2.688
66.377	3.420
61.355	4.163
56.296	4.877
51.247	5.529
46.251	6.093
41.348	6.546
36.576	6.873
31.969	7.063
27.560	7.113
23.383	7.023
19.473	6.799
15.860	6.445
12.573	5.968
9.637	5.377
7.071	4.688
4.889	3.915
3.102	3.081
1.718	2.214
0.739	1.348
0.167	0.533
0.015	-0.140
0.424	-0.650
1.456	-1.084
3.028	-1.471
5.123	-1.804
7.718	-2.082
10.785	-2.306
14.291	-2.481
18.194	-2.609
22.448	-2.688
27.008	-2.715
31.829	-2.691
36.864	-2.623
42.055	-2.517
47.345	-2.381
52.675	-2.219
57.983	-2.039
63.209	-1.846
68.292	-1.645
73.173	-1.443
77.792	-1.243
82.095	-1.049
86.030	-0.863
89.547	-0.691
92.603	-0.527
95.163	-0.367
97.211	-0.212
98.730	-0.088
99.678	-0.019
100.000	0.000

S5020

X	Y
100.000	0.000
99.683	-0.001
98.736	0.000
97.160	0.015
94.964	0.066
92.171	0.186
88.833	0.413
85.028	0.766
80.840	1.234
76.339	1.793
71.594	2.430
66.672	3.116
61.644	3.827
56.576	4.524
51.519	5.170
46.516	5.736
41.608	6.198
36.830	6.539
32.218	6.748
27.803	6.821
23.620	6.759
19.702	6.565
16.081	6.244
12.785	5.802
9.837	5.249
7.257	4.596
5.059	3.862
3.252	3.065
1.843	2.234
0.833	1.401
0.219	0.613
0.002	-0.049
0.308	-0.507
1.226	-0.815
2.727	-1.037
4.807	-1.192
7.434	-1.310
10.563	-1.404
14.148	-1.478
18.141	-1.534
22.491	-1.569
27.150	-1.583
32.064	-1.576
37.179	-1.550
42.436	-1.507
47.776	-1.449
53.139	-1.379
58.462	-1.297
63.687	-1.206
68.753	-1.108
73.601	-1.004
78.178	-0.896
82.430	-0.785
86.308	-0.672
89.767	-0.557
92.767	-0.440
95.276	-0.317
97.297	-0.188
98.763	-0.079
99.686	-0.018
100.000	0.000