

Enter case reference: tryout
Reading in parameter file: Parfiles/tryout.txt

Section identifier: naca4412_yt_v3
Number of panels: 400
Reynolds number: 0.5 million
Range of incidences (degrees): -10:1:10

Results for alpha = -10.000 degrees

Lift coefficient: -0.428
Drag coefficient: 0.03823
Lift-to-drag ratio: -11.193

Upper surface boundary layer:
Laminar separation at x = 0.846
Turbulent reattachment at x = 0.876

Lower surface boundary layer:
Laminar separation at x = 0.008
Turbulent separation at x = 0.013

Results for alpha = -9.000 degrees

Lift coefficient: -0.310
Drag coefficient: 0.02849
Lift-to-drag ratio: -10.877

Upper surface boundary layer:
Laminar separation at x = 0.831
Turbulent reattachment at x = 0.861

Lower surface boundary layer:
Laminar separation at x = 0.008
Turbulent separation at x = 0.013

Results for alpha = -8.000 degrees

Lift coefficient: -0.192
Drag coefficient: 0.02105
Lift-to-drag ratio: -9.113

Upper surface boundary layer:
Laminar separation at x = 0.811
Turbulent reattachment at x = 0.841

Lower surface boundary layer:
Laminar separation at x = 0.008
Turbulent separation at x = 0.013

Results for alpha = -7.000 degrees

Lift coefficient: -0.074
Drag coefficient: 0.01550
Lift-to-drag ratio: -4.756

Upper surface boundary layer:
Laminar separation at x = 0.791
Turbulent reattachment at x = 0.821

Lower surface boundary layer:
Laminar separation at x = 0.008
Turbulent separation at x = 0.013

Results for alpha = -6.000 degrees

Lift coefficient: 0.044
Drag coefficient: 0.01152
Lift-to-drag ratio: 3.858

Upper surface boundary layer:
Laminar separation at x = 0.766
Turbulent reattachment at x = 0.796

Lower surface boundary layer:
Laminar separation at x = 0.008
Turbulent separation at x = 0.013

Results for alpha = -5.000 degrees

Lift coefficient: 0.163
Drag coefficient: 0.00882
Lift-to-drag ratio: 18.431

Upper surface boundary layer:
Laminar separation at x = 0.741
Turbulent reattachment at x = 0.771

Lower surface boundary layer:
Laminar separation at x = 0.008
Turbulent separation at x = 0.018

Results for alpha = -4.000 degrees

Lift coefficient: 0.281
Drag coefficient: 0.00705
Lift-to-drag ratio: 39.811

Upper surface boundary layer:
Laminar separation at x = 0.711

Turbulent reattachment at $x = 0.741$

Lower surface boundary layer:

Laminar separation at $x = 0.008$

Turbulent separation at $x = 0.018$

Results for $\alpha = -3.000$ degrees

Lift coefficient: 0.399

Drag coefficient: 0.00609

Lift-to-drag ratio: 65.509

Upper surface boundary layer:

Laminar separation at $x = 0.675$

Turbulent reattachment at $x = 0.706$

Lower surface boundary layer:

Laminar separation at $x = 0.008$

Turbulent separation at $x = 0.023$

Results for $\alpha = -2.000$ degrees

Lift coefficient: 0.517

Drag coefficient: 0.00578

Lift-to-drag ratio: 89.396

Upper surface boundary layer:

Laminar separation at $x = 0.640$

Turbulent reattachment at $x = 0.665$

Lower surface boundary layer:

Laminar separation at $x = 0.018$

Turbulent separation at $x = 0.023$

Results for $\alpha = -1.000$ degrees

Lift coefficient: 0.634

Drag coefficient: 0.00898

Lift-to-drag ratio: 70.591

Upper surface boundary layer:

Laminar separation at $x = 0.604$

Turbulent reattachment at $x = 0.630$

Lower surface boundary layer:

Laminar separation at $x = 0.018$

Turbulent reattachment at $x = 0.033$

Results for $\alpha = 0.000$ degrees

Lift coefficient: 0.752
Drag coefficient: 0.00924
Lift-to-drag ratio: 81.380

Upper surface boundary layer:
Laminar separation at $x = 0.559$
Turbulent reattachment at $x = 0.584$

Lower surface boundary layer:
Laminar separation at $x = 0.023$
Turbulent reattachment at $x = 0.028$

Results for $\alpha = 1.000$ degrees

Lift coefficient: 0.869
Drag coefficient: 0.01013
Lift-to-drag ratio: 85.787

Upper surface boundary layer:
Laminar separation at $x = 0.447$
Turbulent reattachment at $x = 0.467$

Lower surface boundary layer:
Laminar separation at $x = 0.058$
Turbulent reattachment at $x = 0.069$

Results for $\alpha = 2.000$ degrees

Lift coefficient: 0.986
Drag coefficient: 0.01047
Lift-to-drag ratio: 94.224

Upper surface boundary layer:
Laminar separation at $x = 0.411$
Turbulent reattachment at $x = 0.431$
Turbulent separation at $x = 1.000$

Lower surface boundary layer:
Laminar separation at $x = 0.160$
Turbulent reattachment at $x = 0.176$

Results for $\alpha = 3.000$ degrees

Lift coefficient: 1.103
Drag coefficient: 0.01081
Lift-to-drag ratio: 101.996

Upper surface boundary layer:
Laminar separation at $x = 0.375$

Turbulent reattachment at $x = 0.396$
Turbulent separation at $x = 1.000$

Lower surface boundary layer:
Laminar separation at $x = 0.399$
Turbulent reattachment at $x = 0.435$

Results for $\alpha = 4.000$ degrees

Lift coefficient: 1.219
Drag coefficient: 0.01165
Lift-to-drag ratio: 104.618

Upper surface boundary layer:
Laminar separation at $x = 0.350$
Turbulent reattachment at $x = 0.370$
Turbulent separation at $x = 1.000$

Lower surface boundary layer:
Laminar separation at $x = 0.404$
Turbulent reattachment at $x = 0.435$

Results for $\alpha = 5.000$ degrees

Lift coefficient: 1.335
Drag coefficient: 0.01266
Lift-to-drag ratio: 105.432

Upper surface boundary layer:
Laminar separation at $x = 0.324$
Turbulent reattachment at $x = 0.345$
Turbulent separation at $x = 0.995$

Lower surface boundary layer:
Laminar separation at $x = 0.404$
Turbulent reattachment at $x = 0.435$

Results for $\alpha = 6.000$ degrees

Lift coefficient: 1.451
Drag coefficient: 0.01386
Lift-to-drag ratio: 104.687

Upper surface boundary layer:
Laminar separation at $x = 0.299$
Turbulent reattachment at $x = 0.319$
Turbulent separation at $x = 0.990$

Lower surface boundary layer:
Laminar separation at $x = 0.415$

Turbulent reattachment at $x = 0.445$

Results for $\alpha = 7.000$ degrees

Lift coefficient: 1.566
Drag coefficient: 0.01542
Lift-to-drag ratio: 101.573

Upper surface boundary layer:
Laminar separation at $x = 0.268$
Turbulent reattachment at $x = 0.288$
Turbulent separation at $x = 0.985$

Lower surface boundary layer:
Laminar separation at $x = 0.420$
Turbulent reattachment at $x = 0.445$

Results for $\alpha = 8.000$ degrees

Lift coefficient: 1.681
Drag coefficient: 0.02463
Lift-to-drag ratio: 68.248

Upper surface boundary layer:
Laminar separation at $x = 0.019$
Turbulent reattachment at $x = 0.027$
Turbulent separation at $x = 0.951$

Lower surface boundary layer:
Laminar separation at $x = 0.430$
Turbulent reattachment at $x = 0.455$

Results for $\alpha = 9.000$ degrees

Lift coefficient: 1.795
Drag coefficient: 0.02703
Lift-to-drag ratio: 66.413

Upper surface boundary layer:
Laminar separation at $x = 0.015$
Turbulent reattachment at $x = 0.023$
Turbulent separation at $x = 0.926$

Lower surface boundary layer:
Laminar separation at $x = 0.995$

Results for $\alpha = 10.000$ degrees

Lift coefficient: 1.909

Drag coefficient: 0.03129
Lift-to-drag ratio: 60.987

Upper surface boundary layer:
Laminar separation at $x = 0.007$
Turbulent reattachment at $x = 0.011$
Turbulent separation at $x = 0.896$

Lower surface boundary layer:

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