Flow about the Airfoil Sc715

Dipl. Ing. (FH) Kapt. Wolf Scheuermann

Forschungskontor

Hamburg   2008

The following images show the airflow about the zero-moment airfoil Sc715 from angle of attack (AoA) -5° to AoA +25°. The airfoil Sc715 is the optimum of the Scheuermann-(Sc)-airfoil series.

The streamlines about the airfoil are calculated using the conformal mapping of the streamlines about a rotating cylinder by complex-analytic potential functions (a special class of meromorphic functions) onto the complex plane. The theoretical calculation of the circulation about the airfoil is hereby corrected for the reduced camber of the reflexed airfoil of the Sc-series.

This closed solution of the potential theory of air flow is obviously only partially correct, as is the potential flow theory. The laminar flow, particularly at higher angles of attack, is unrealistic. But no closed solution of the Navier-Stokes-equations is available, yet.
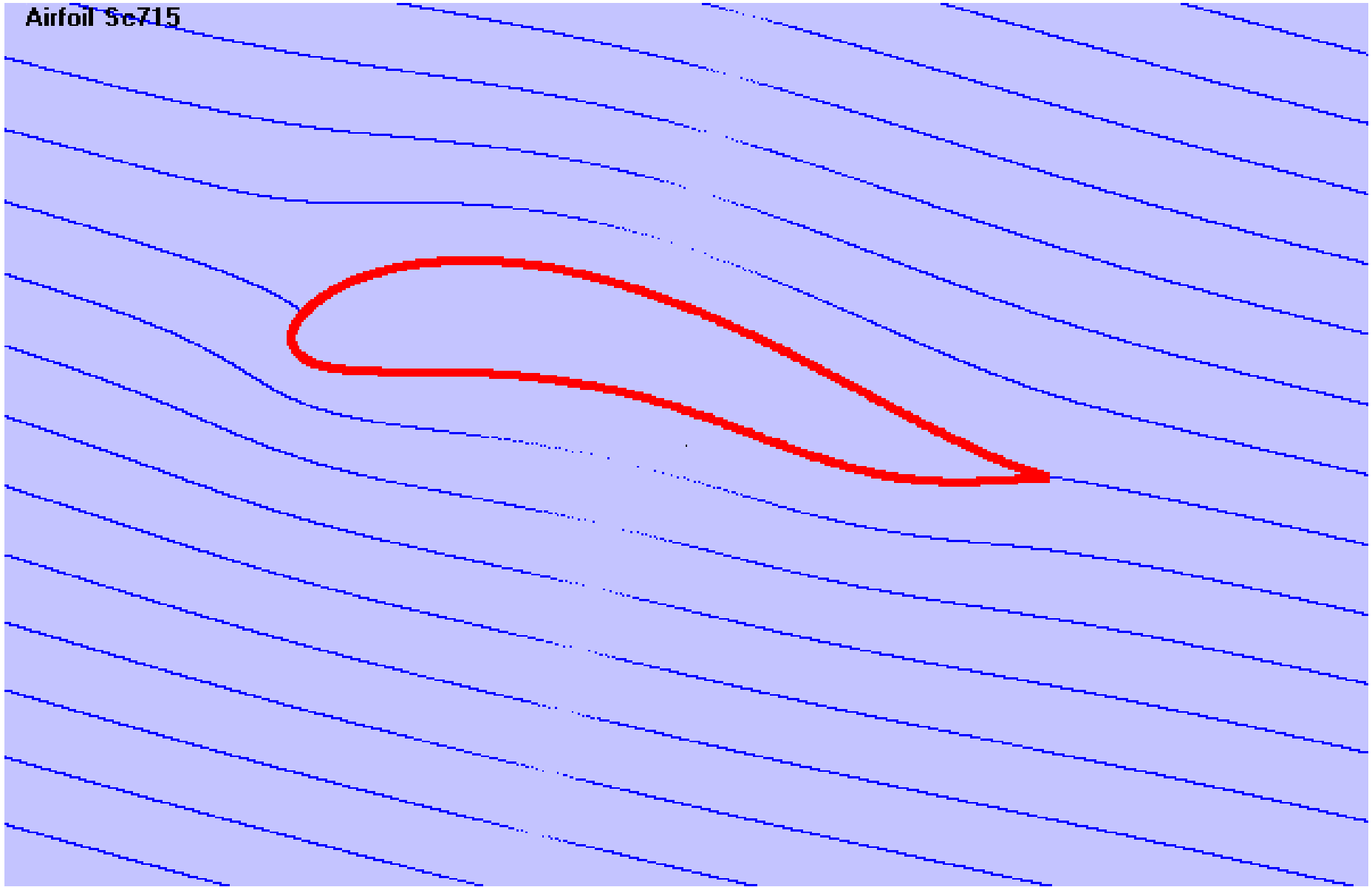
The work for an approximative solution for the complex airflow model is in progress.
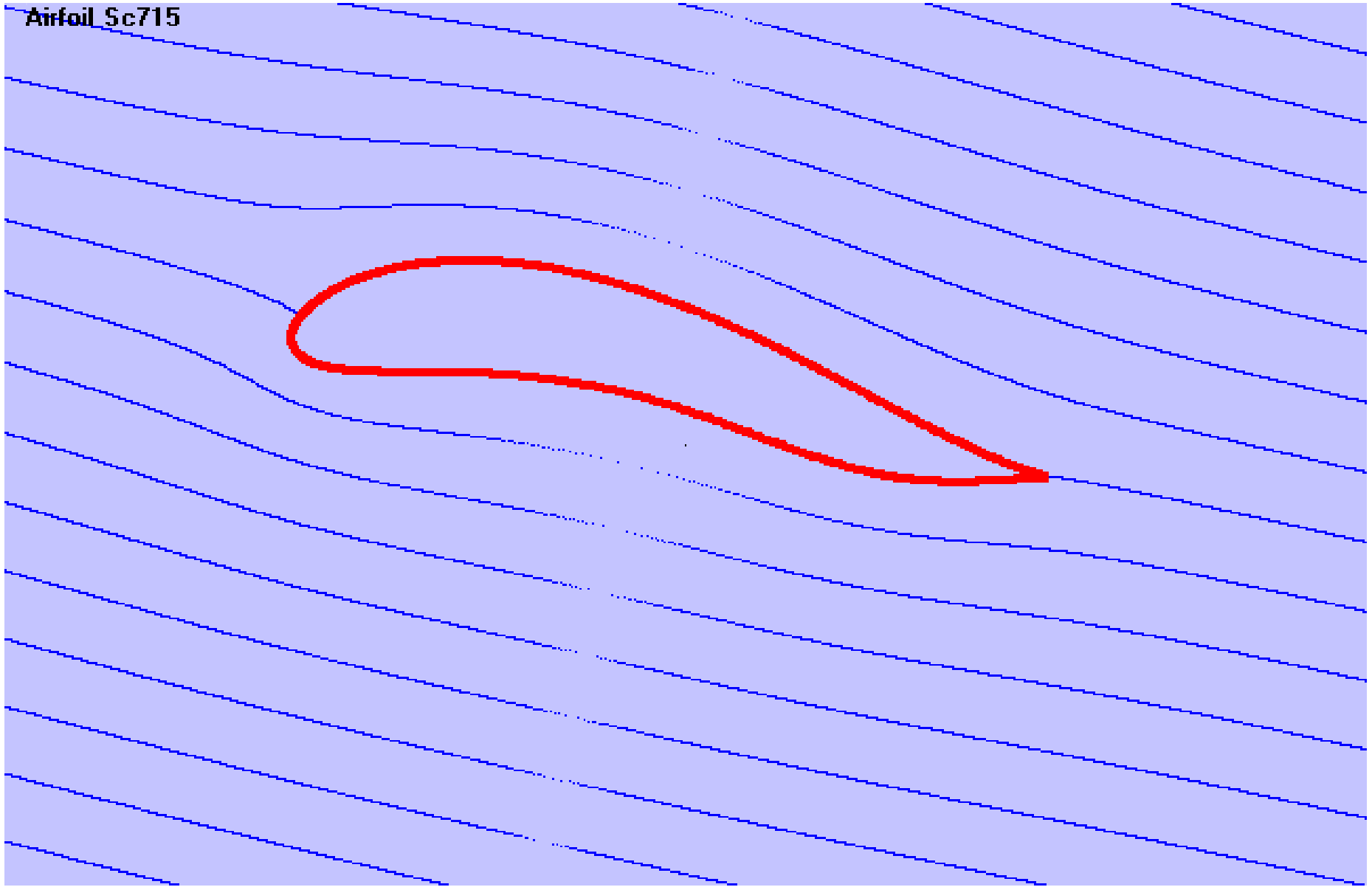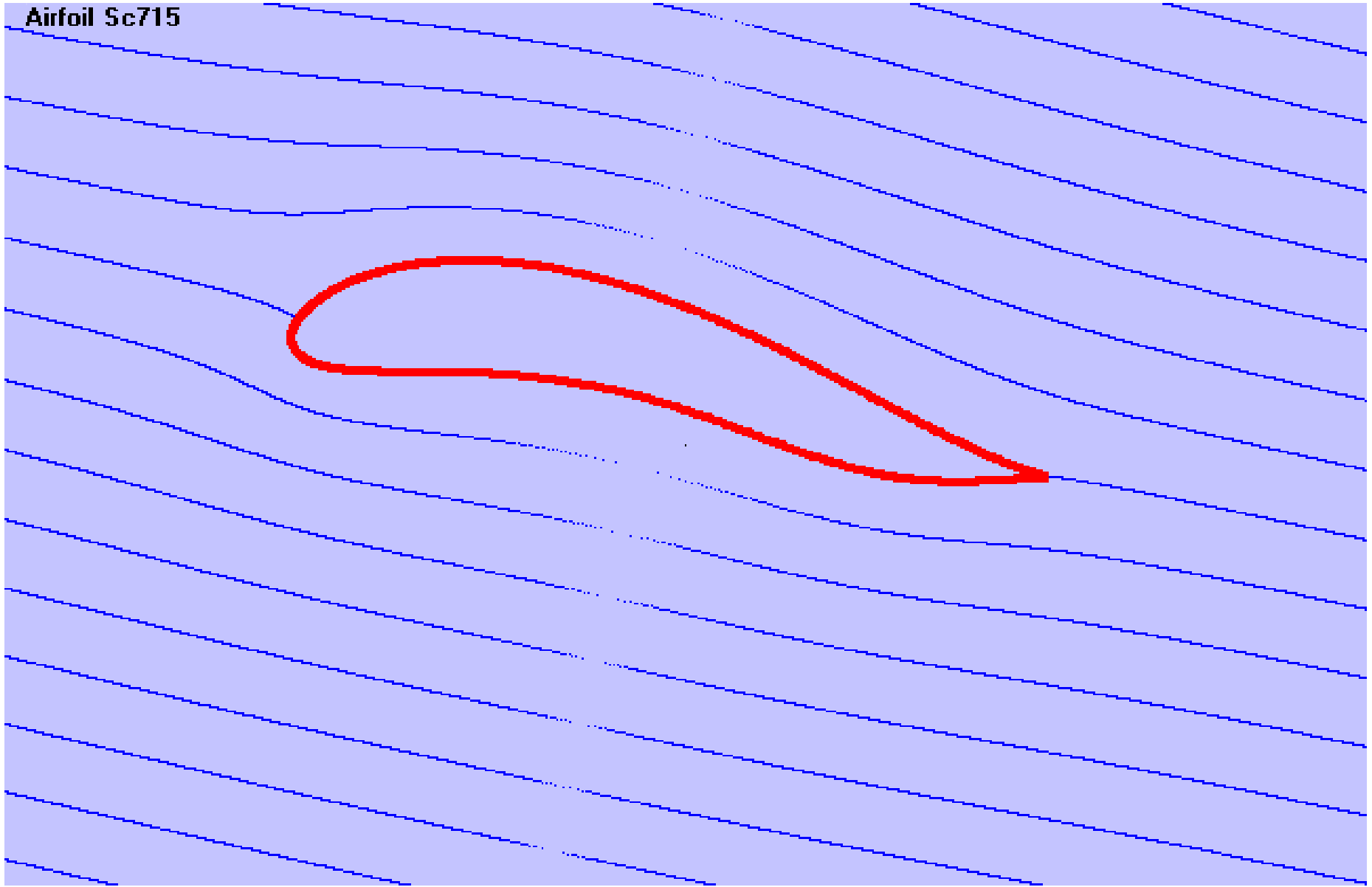
Airfoil Sc715, AoA -5°
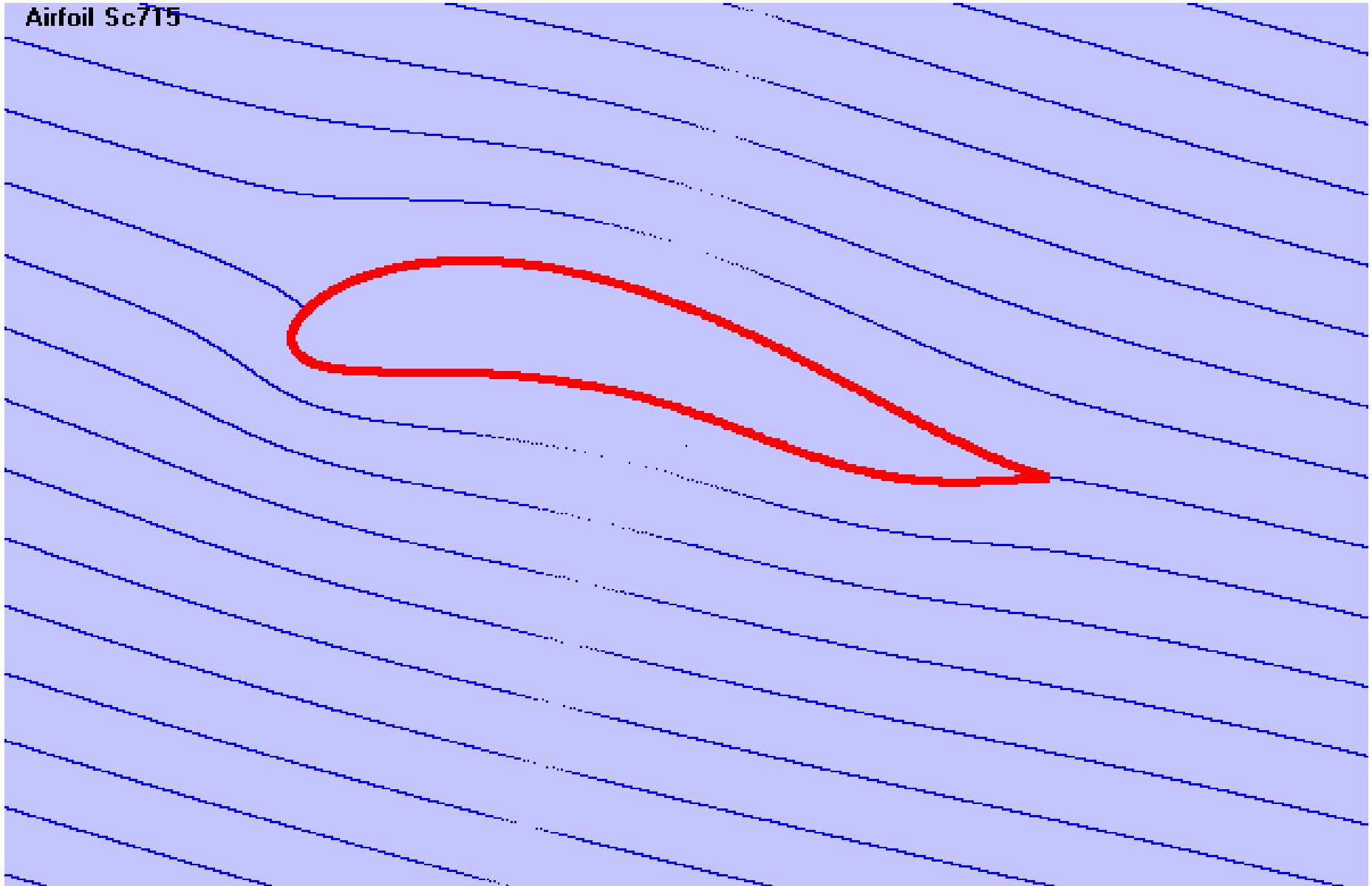
Airfoil Sc715, AoA -4°

Airfoil Sc715, AoA -3°

Airfoil Sc715, AoA -2°
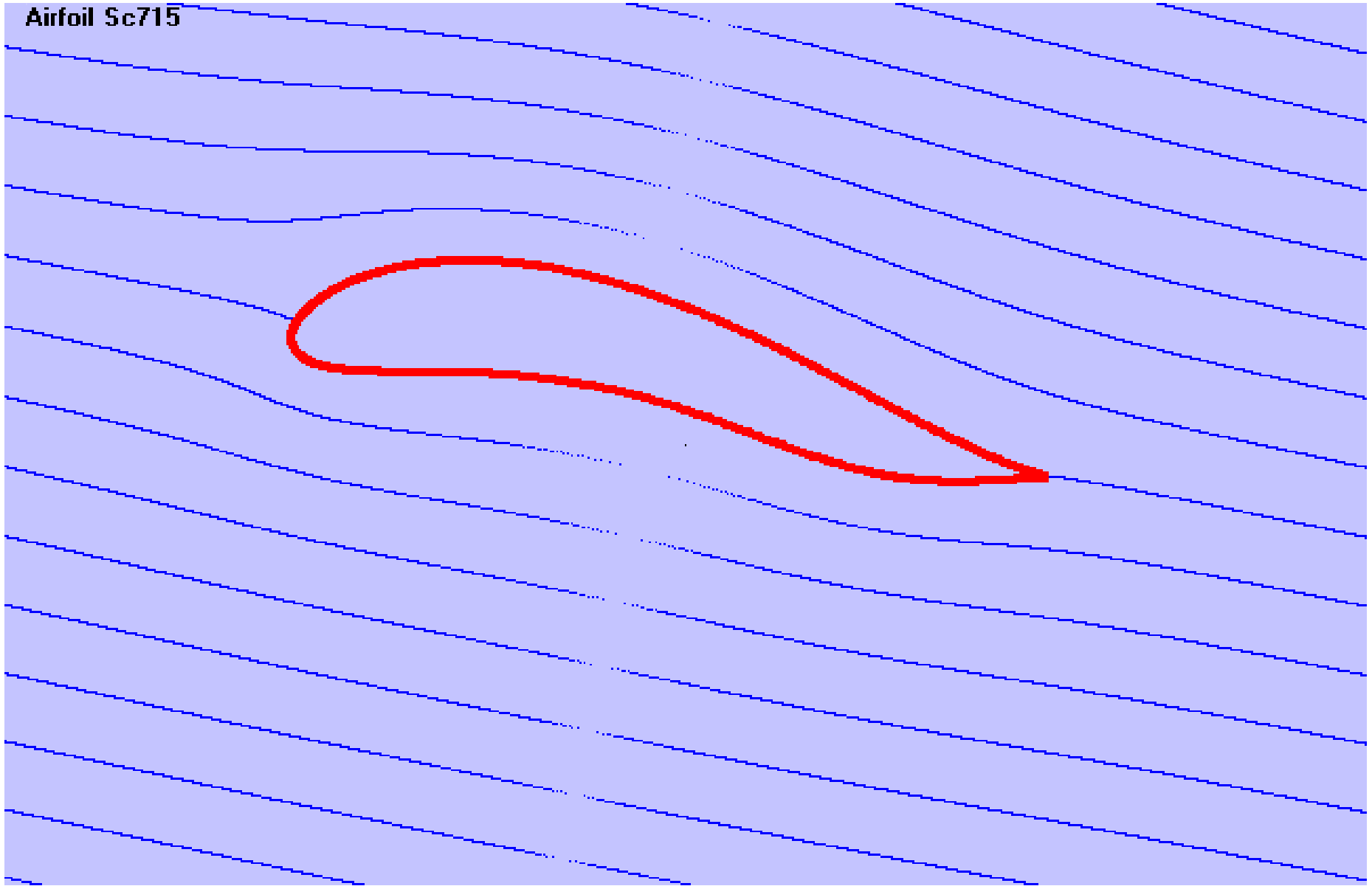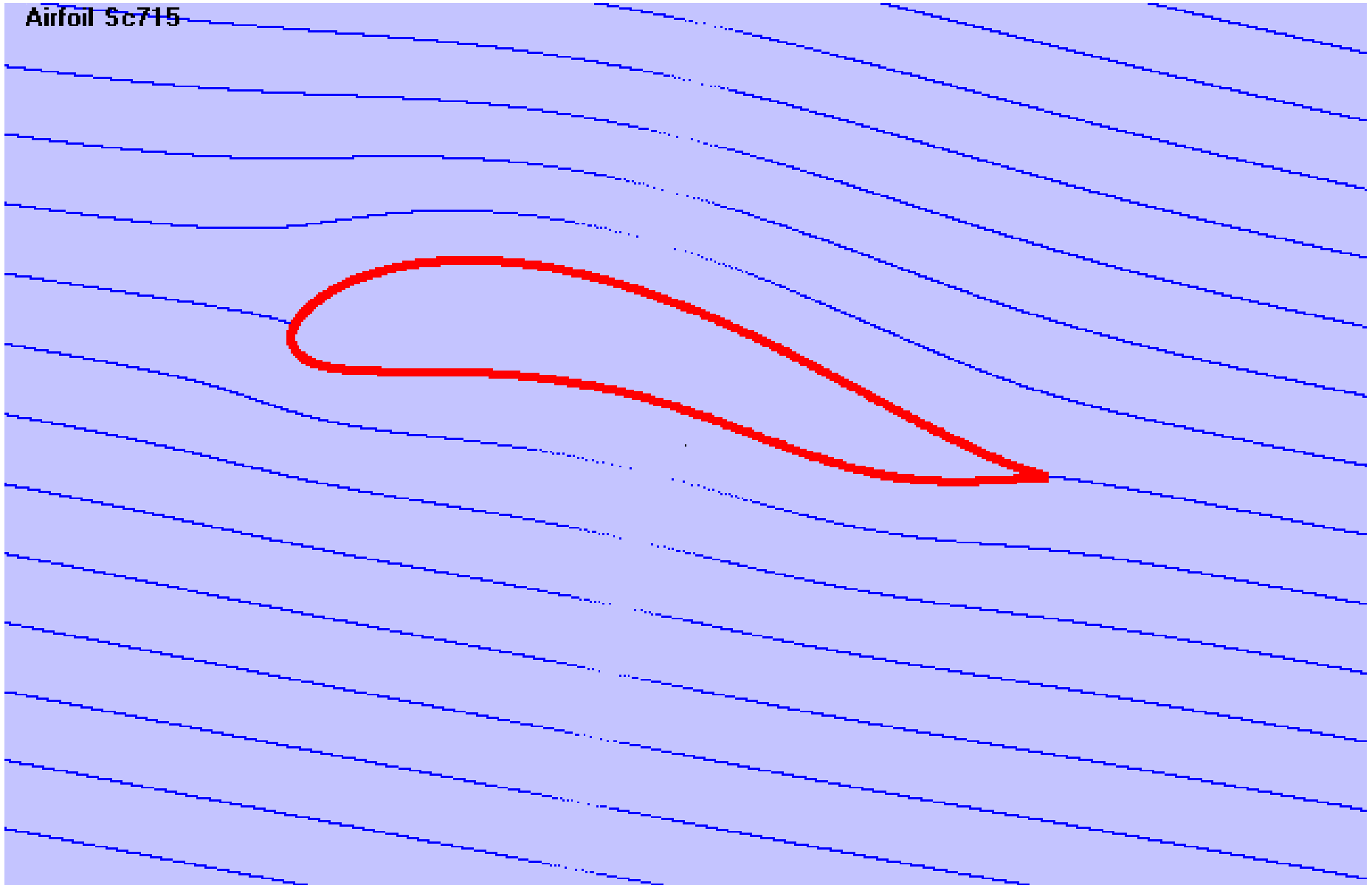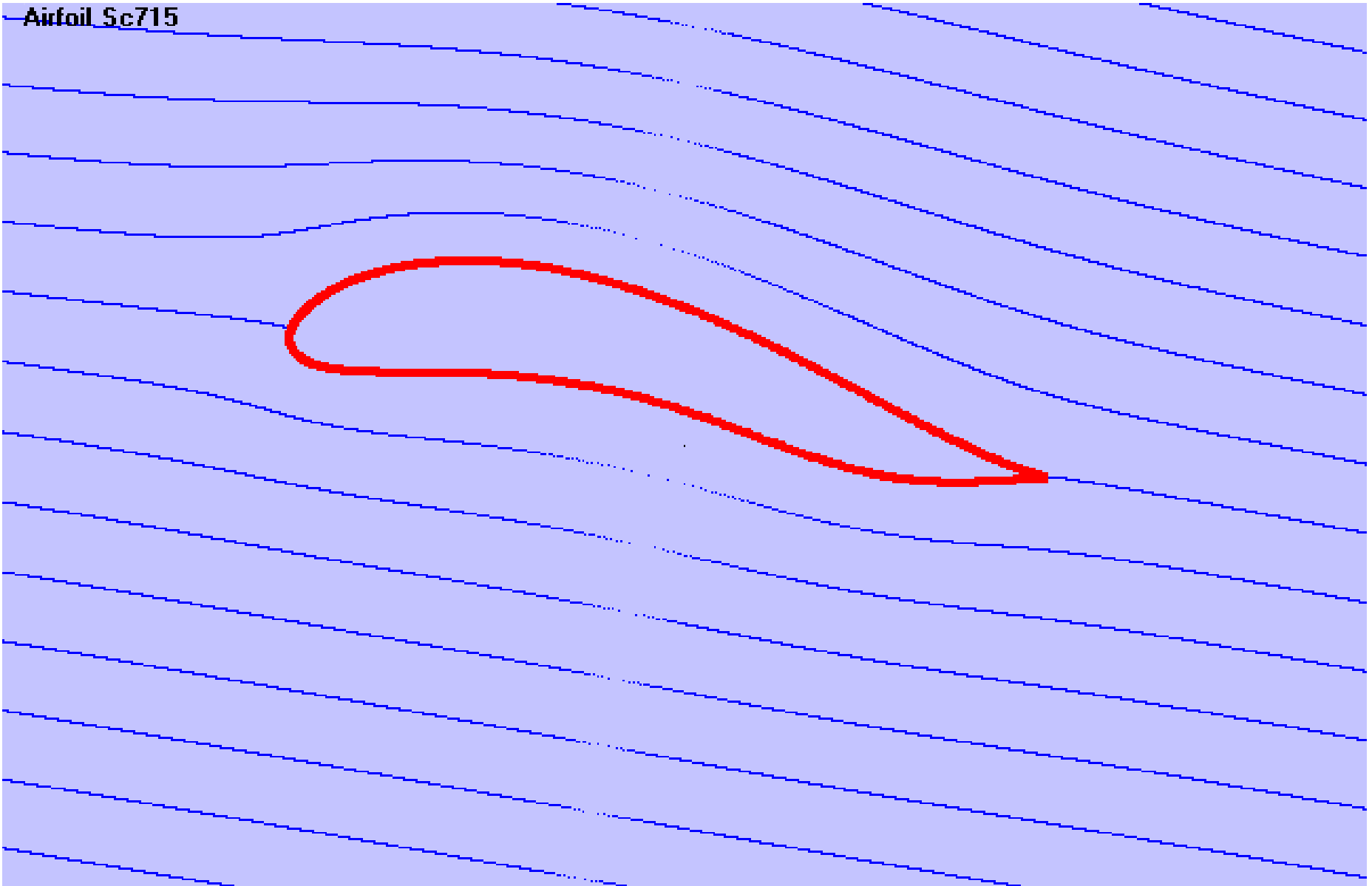
Airfoil Sc715, AoA -1°

Airfoil Sc715, AoA 0°
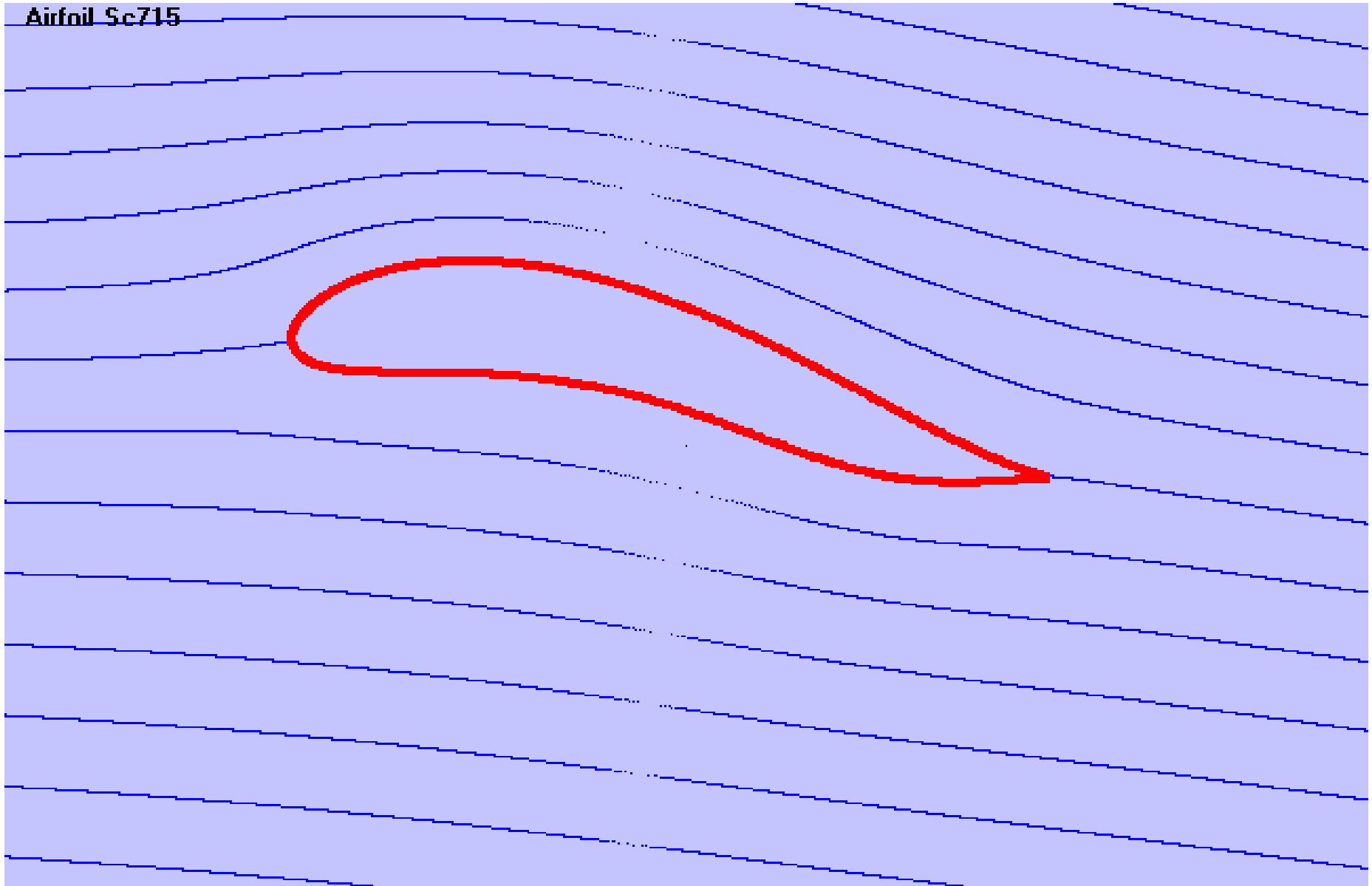
Airfoil Sc715, AoA +1°
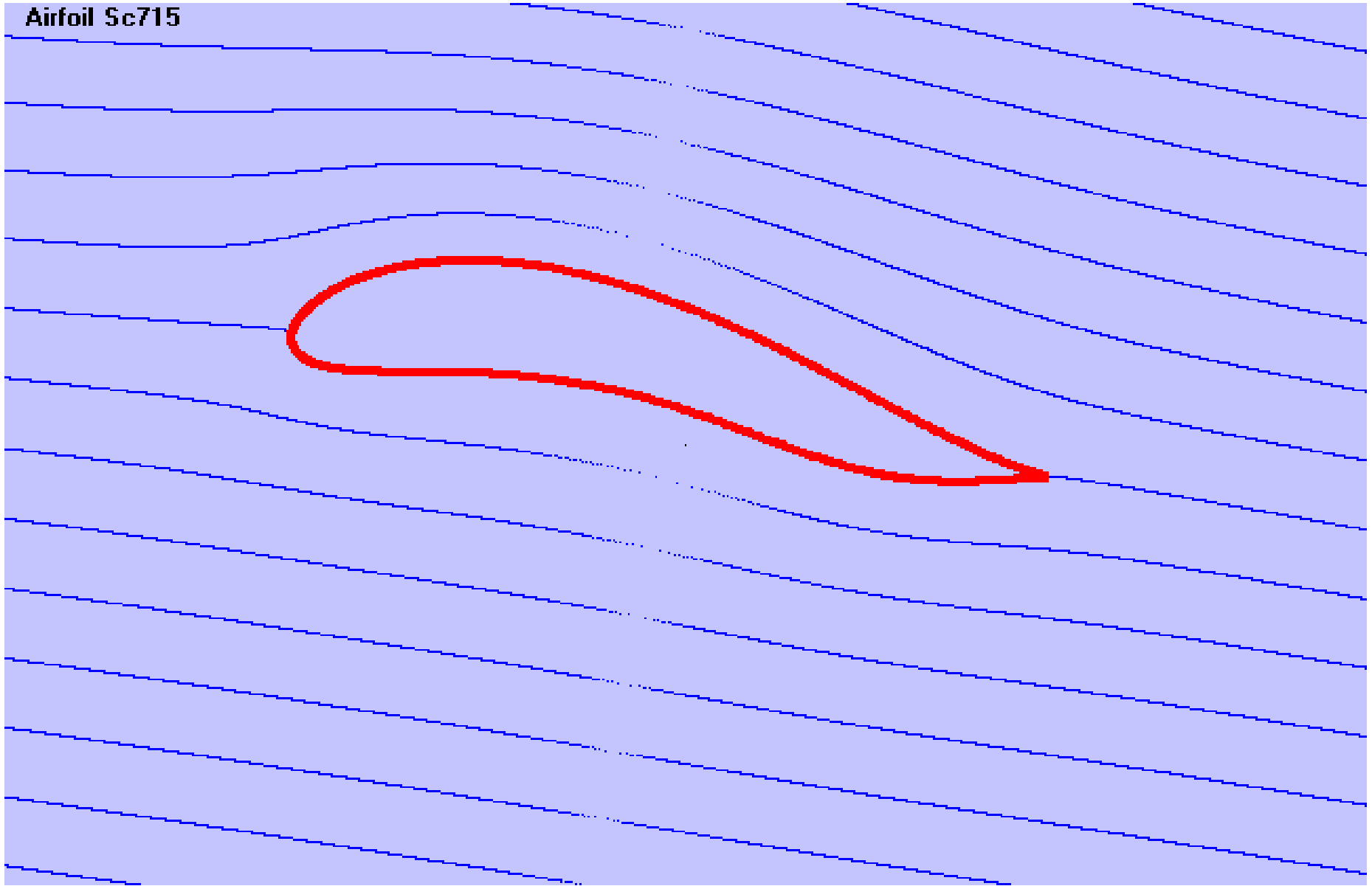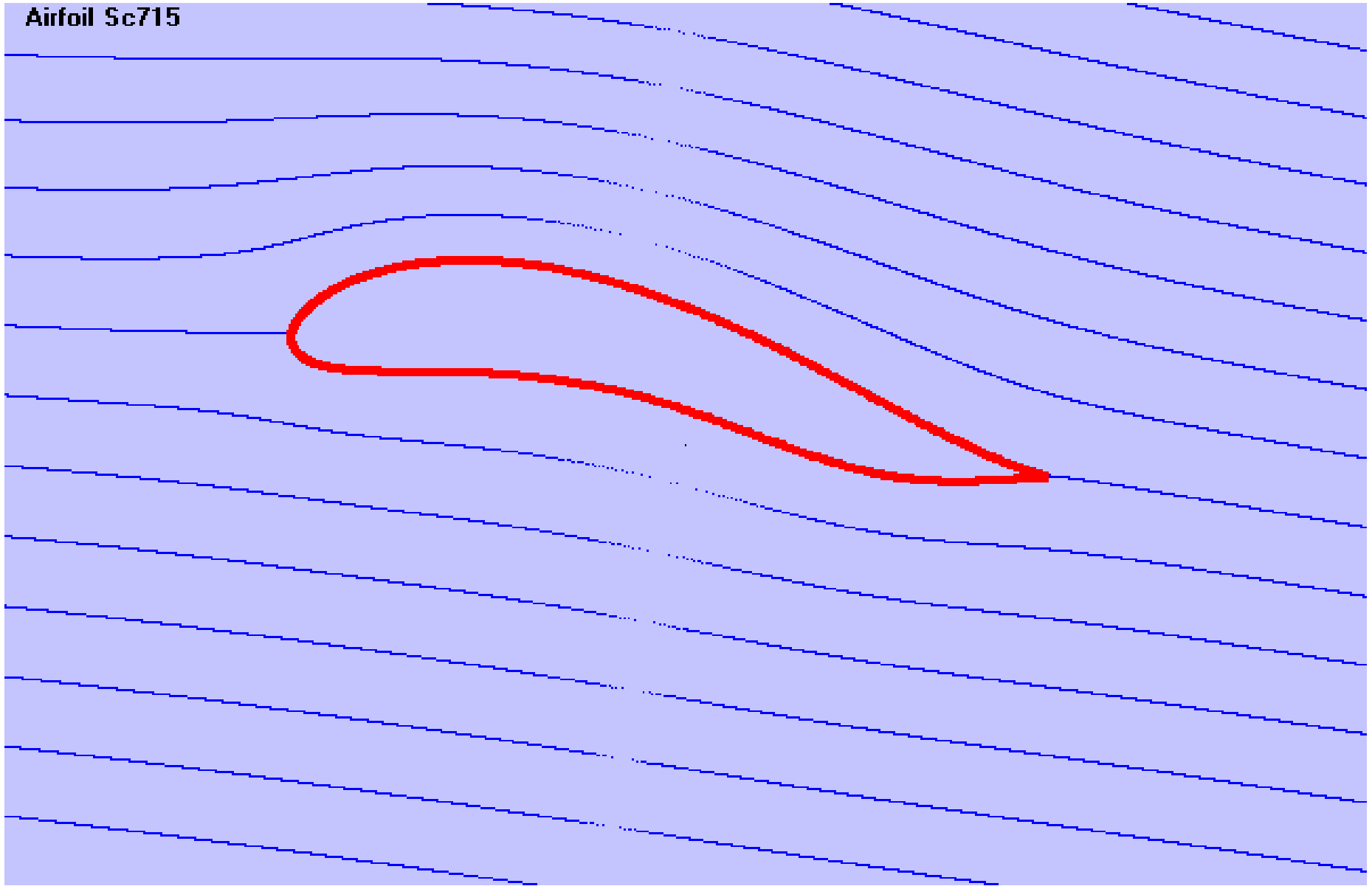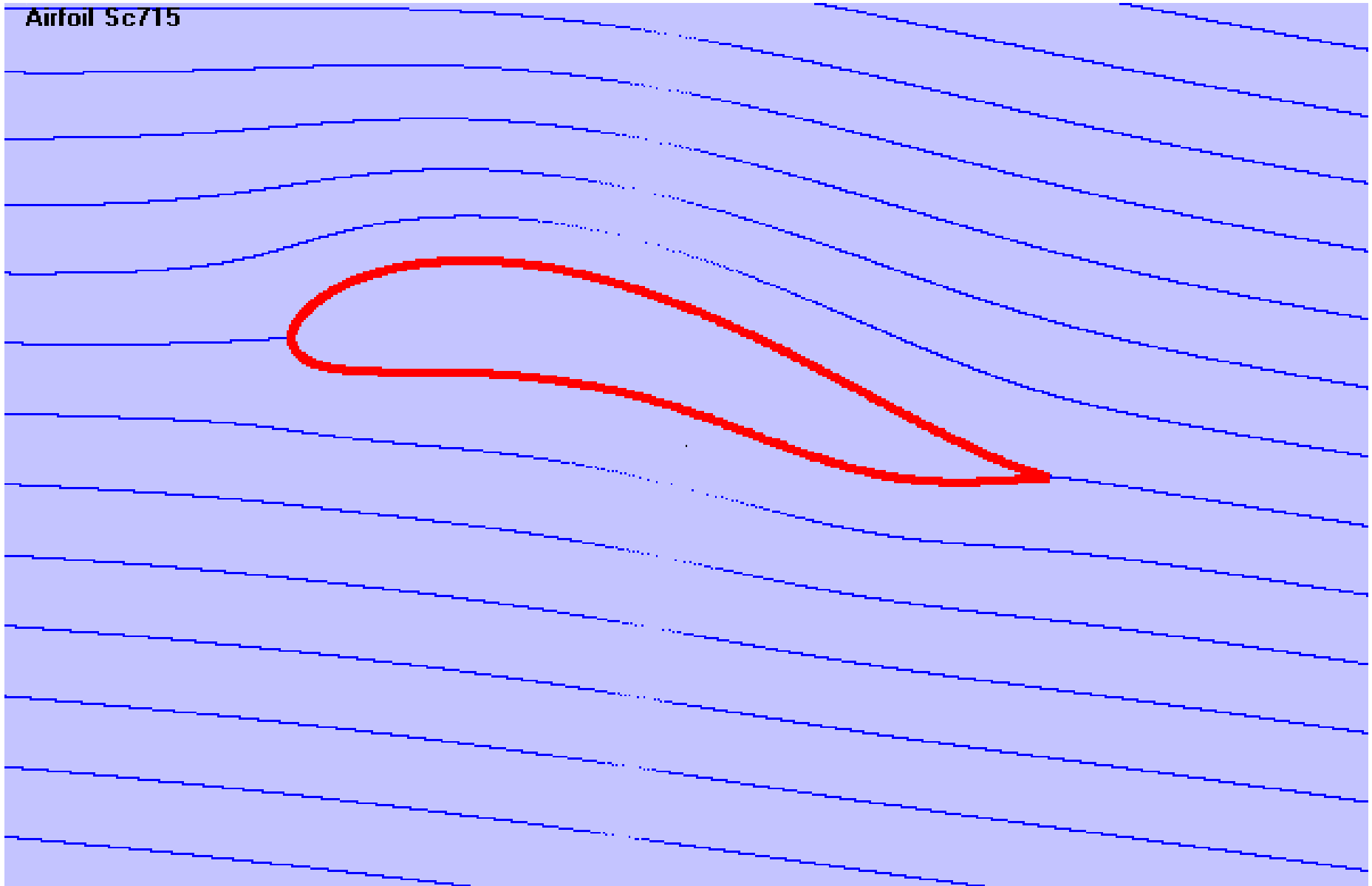
Airfoil Sc715, AoA +2°

Airfoil Sc715, AoA -+3°
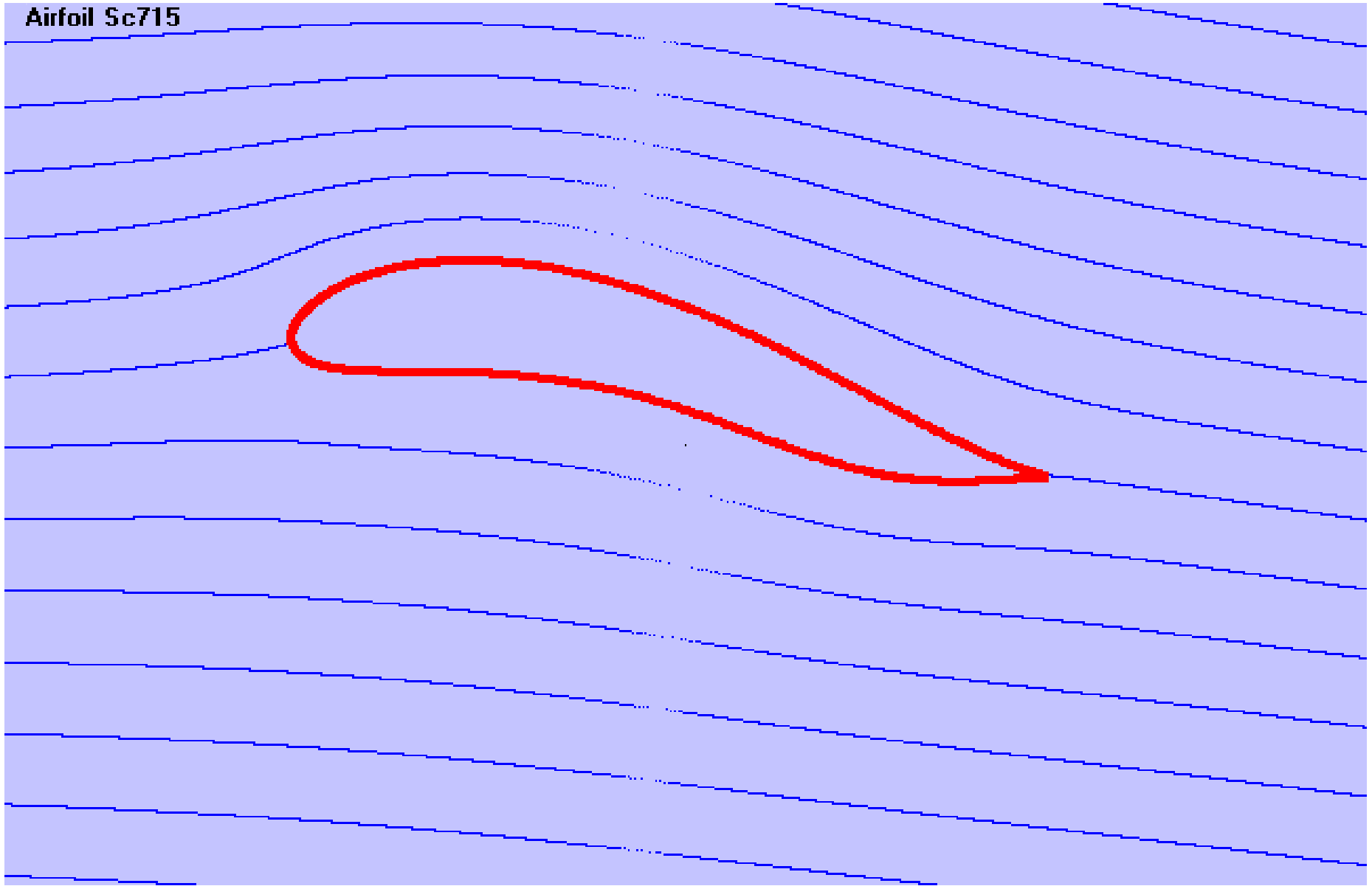
Airfoil Sc715, AoA +4°
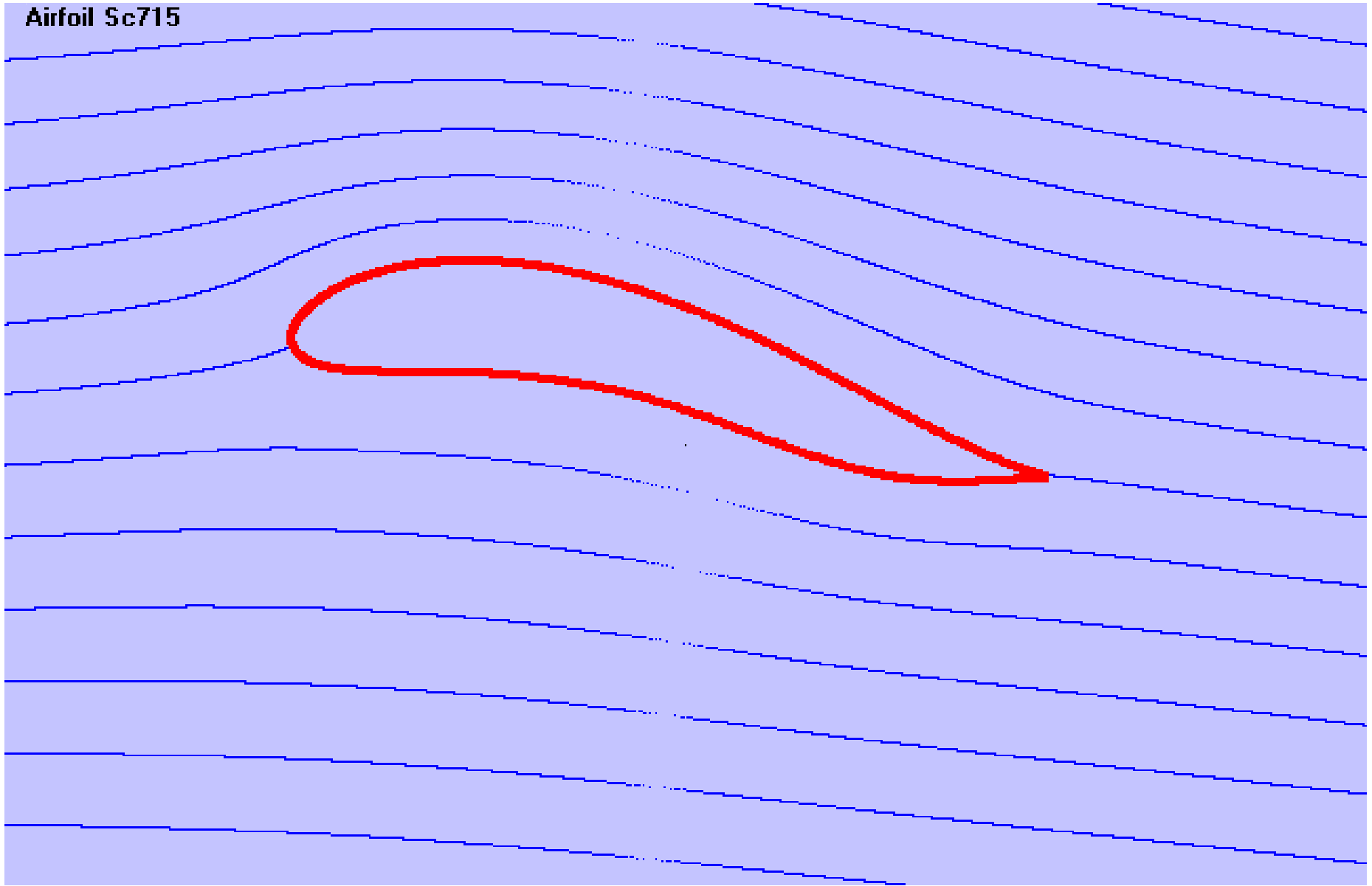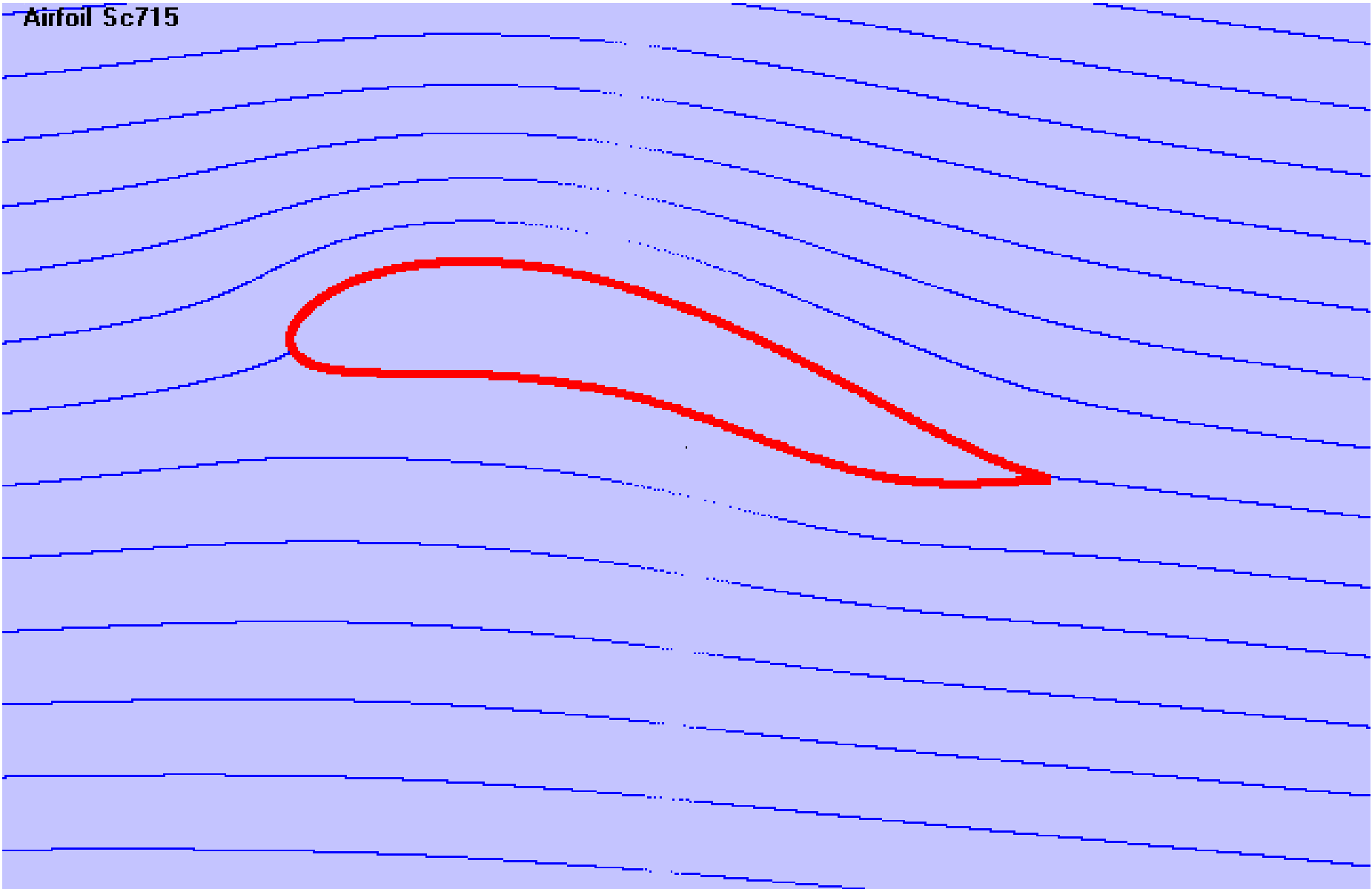
Airfoil Sc715, AoA +5°
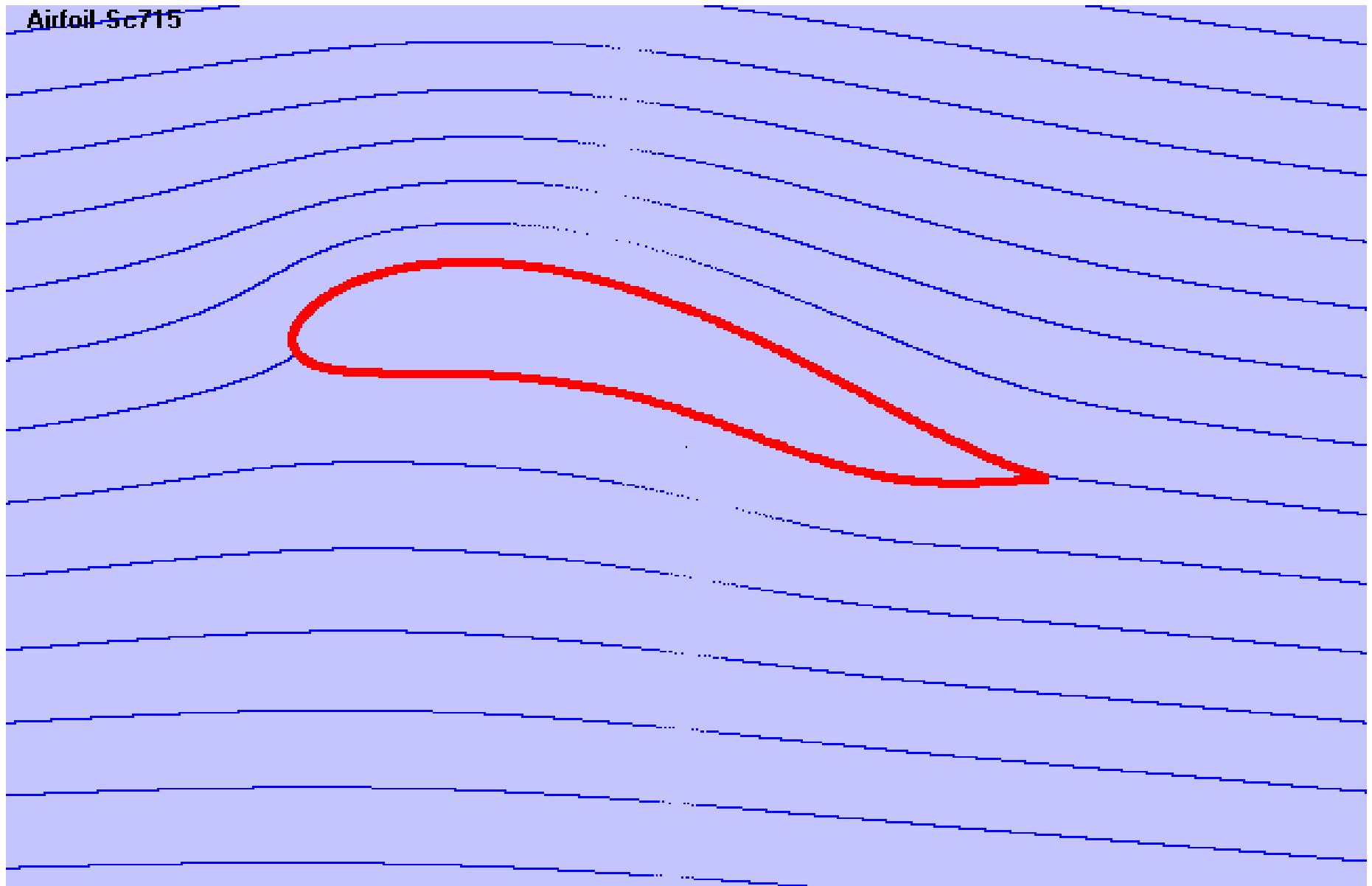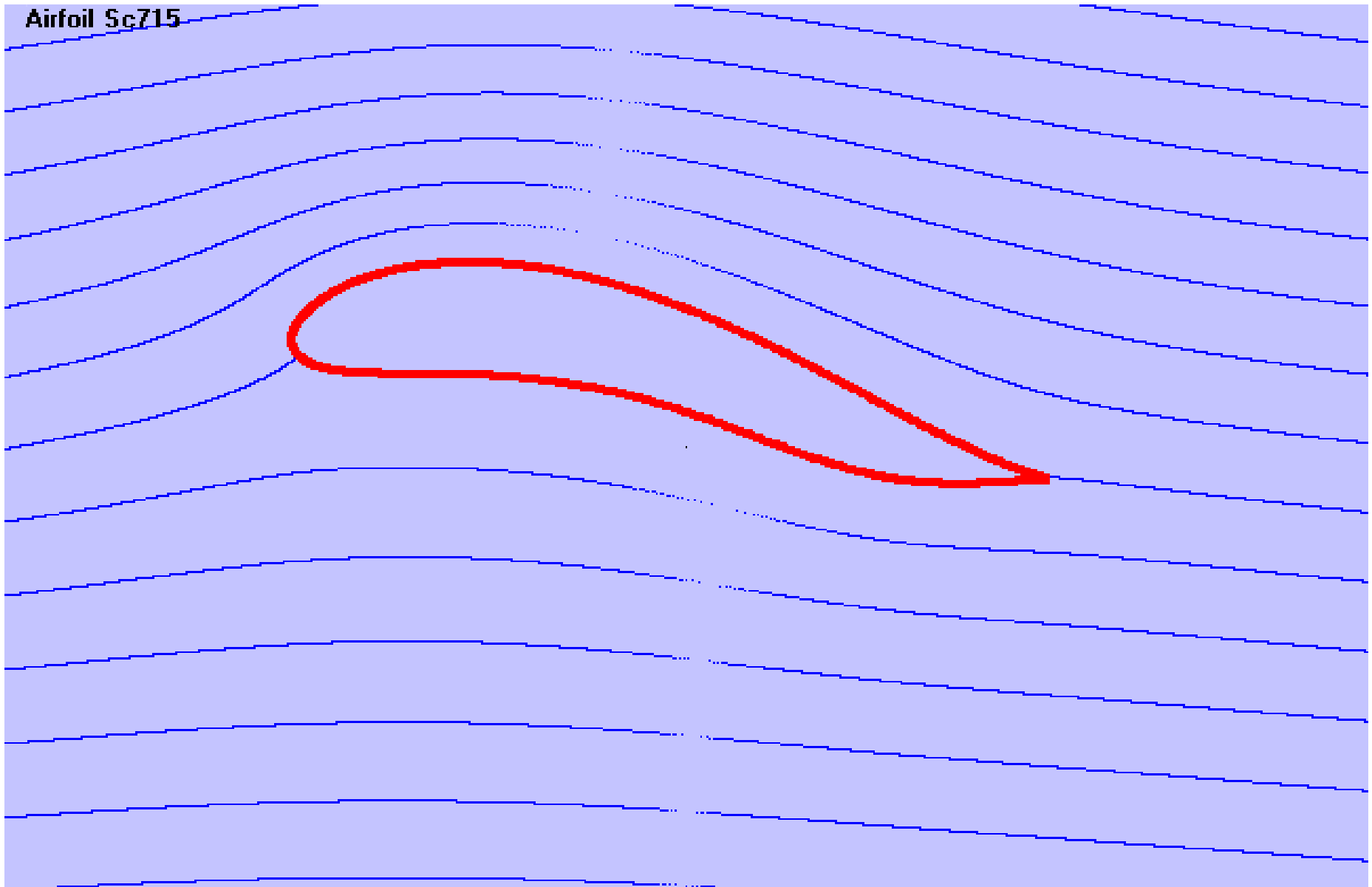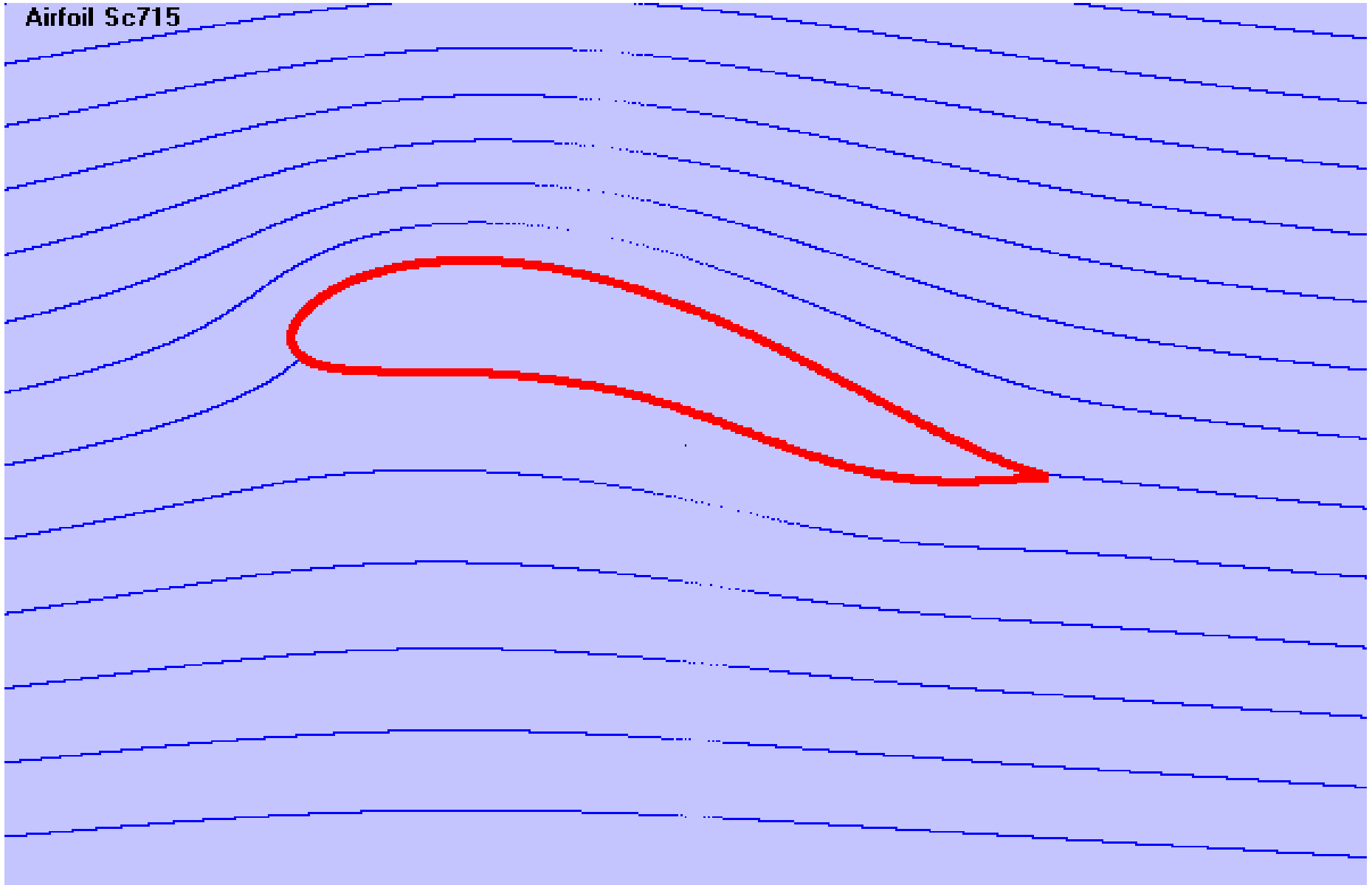
Airfoil Sc715, AoA +6°

Airfoil Sc715, AoA +7°
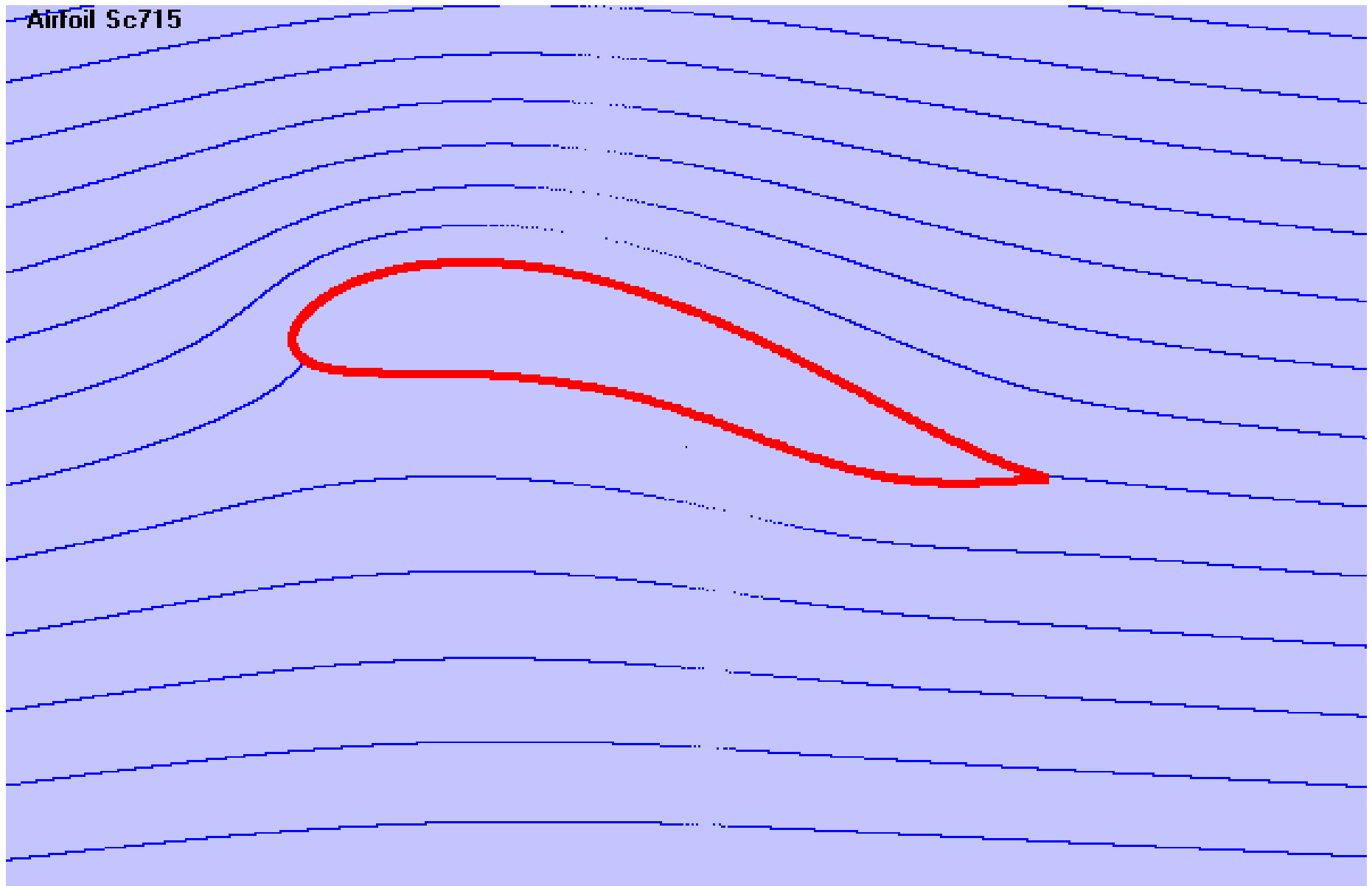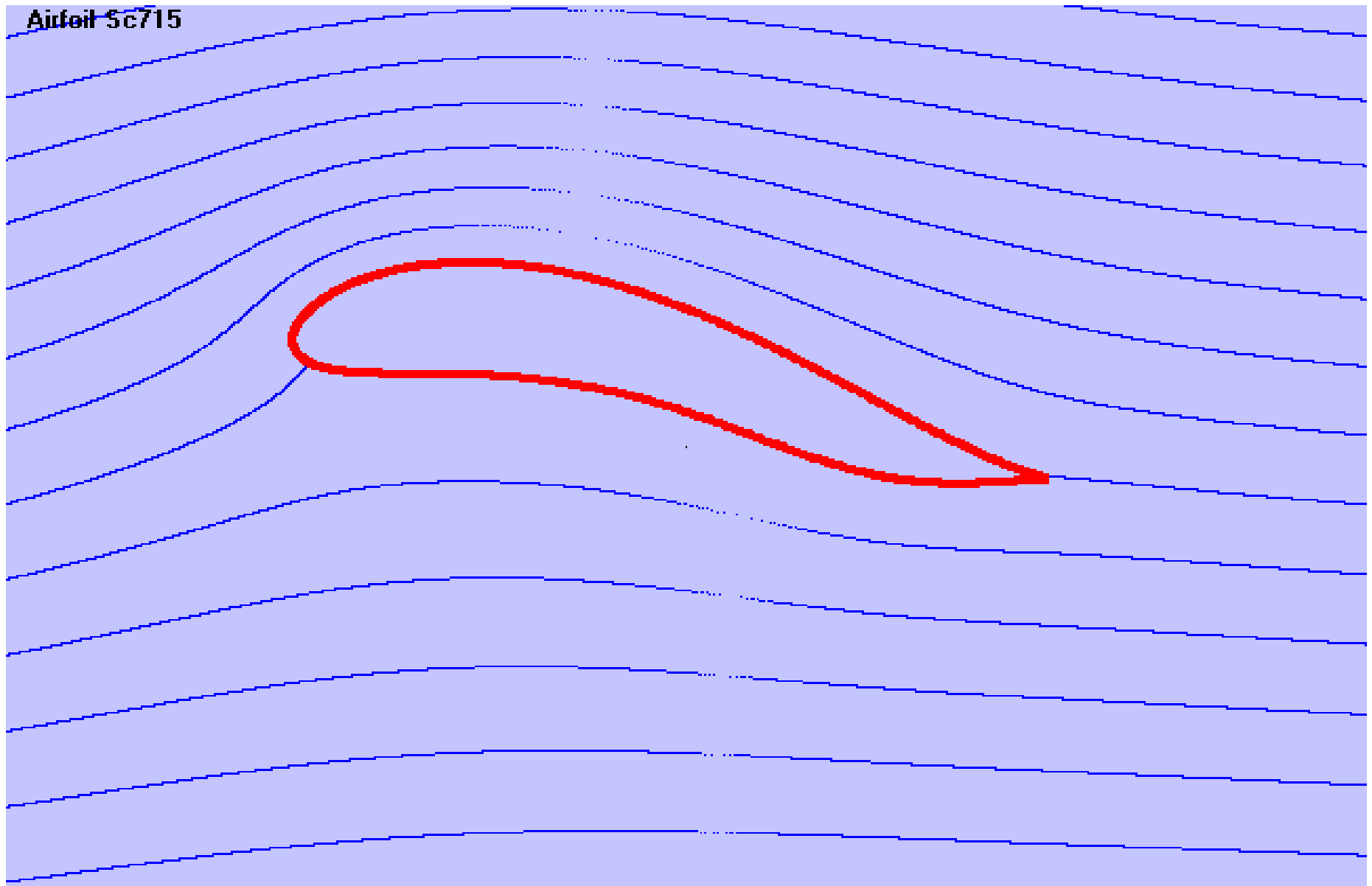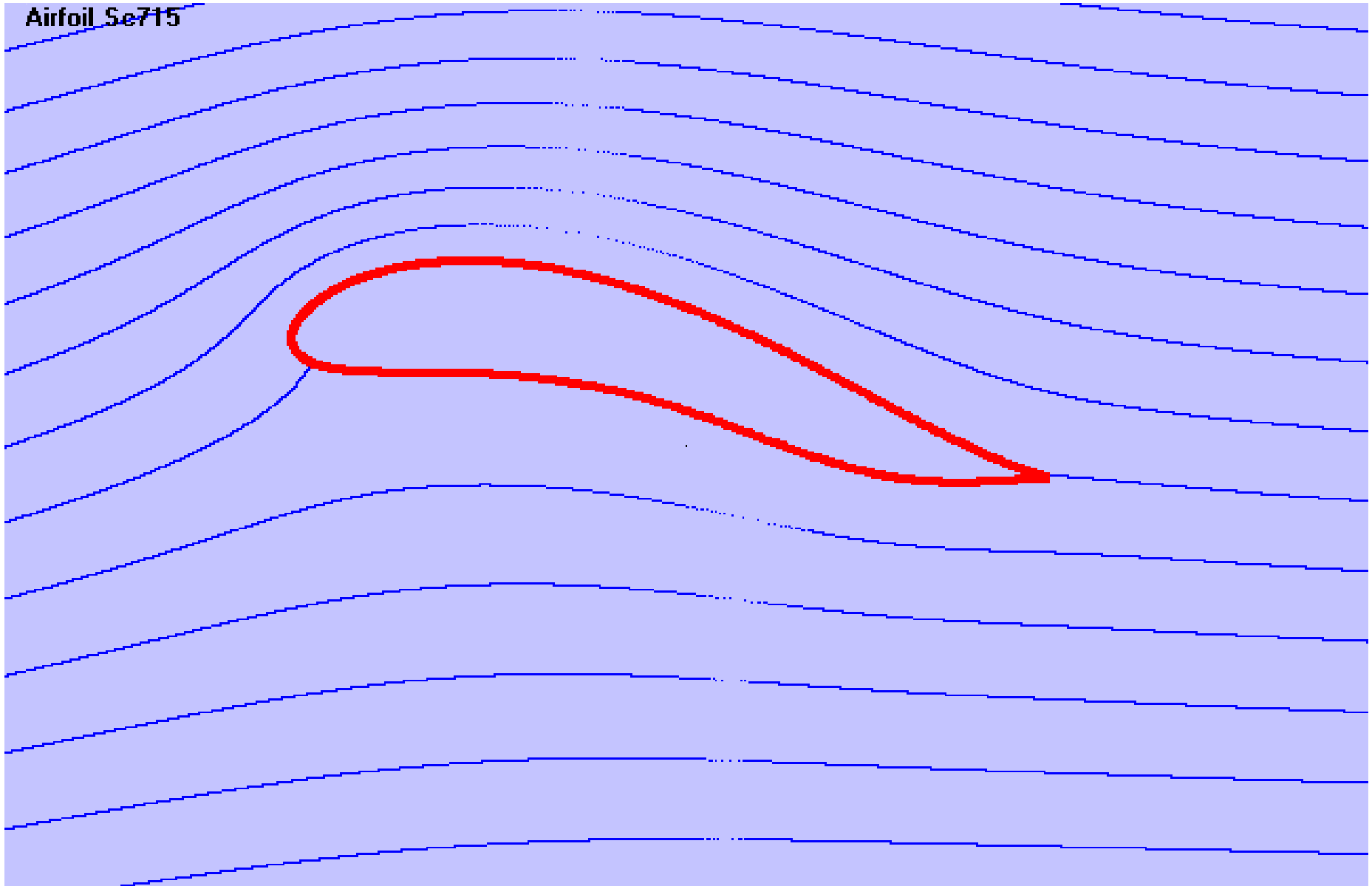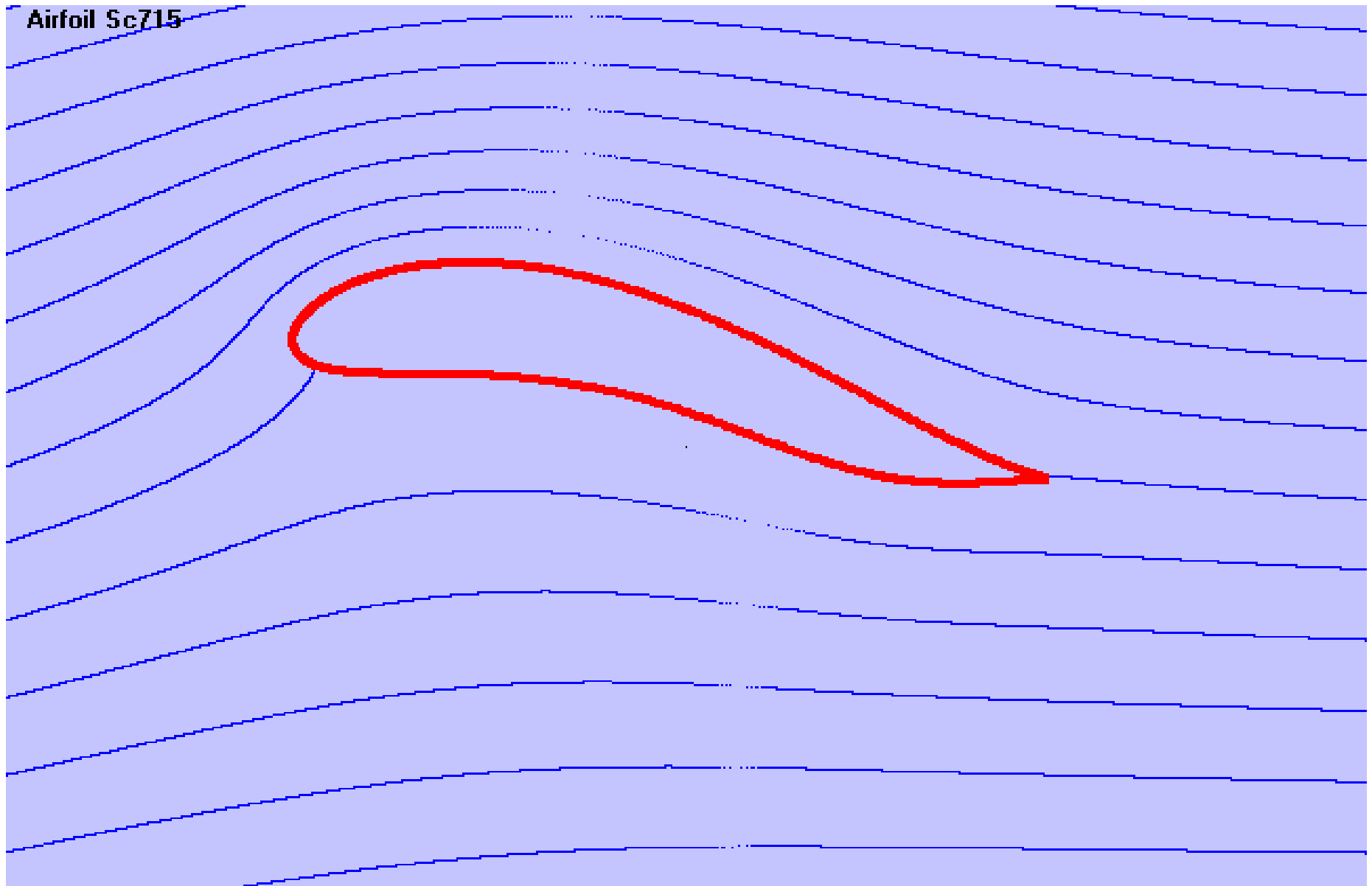
Airfoil Sc715, AoA +8°

Airfoil Sc715, AoA +9°

Airfoil Sc715, AoA +10°
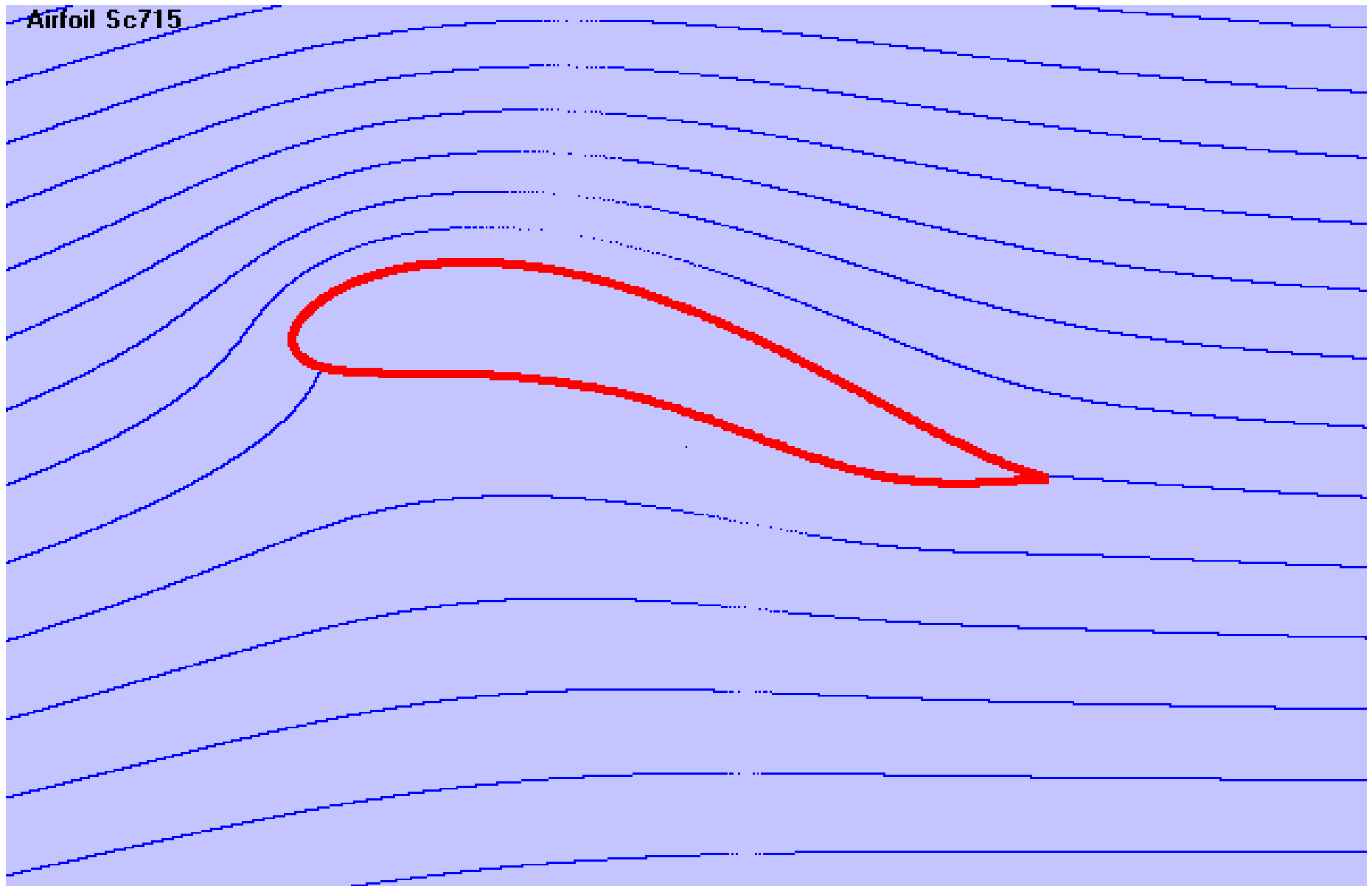
Airfoil Sc715, AoA +11°
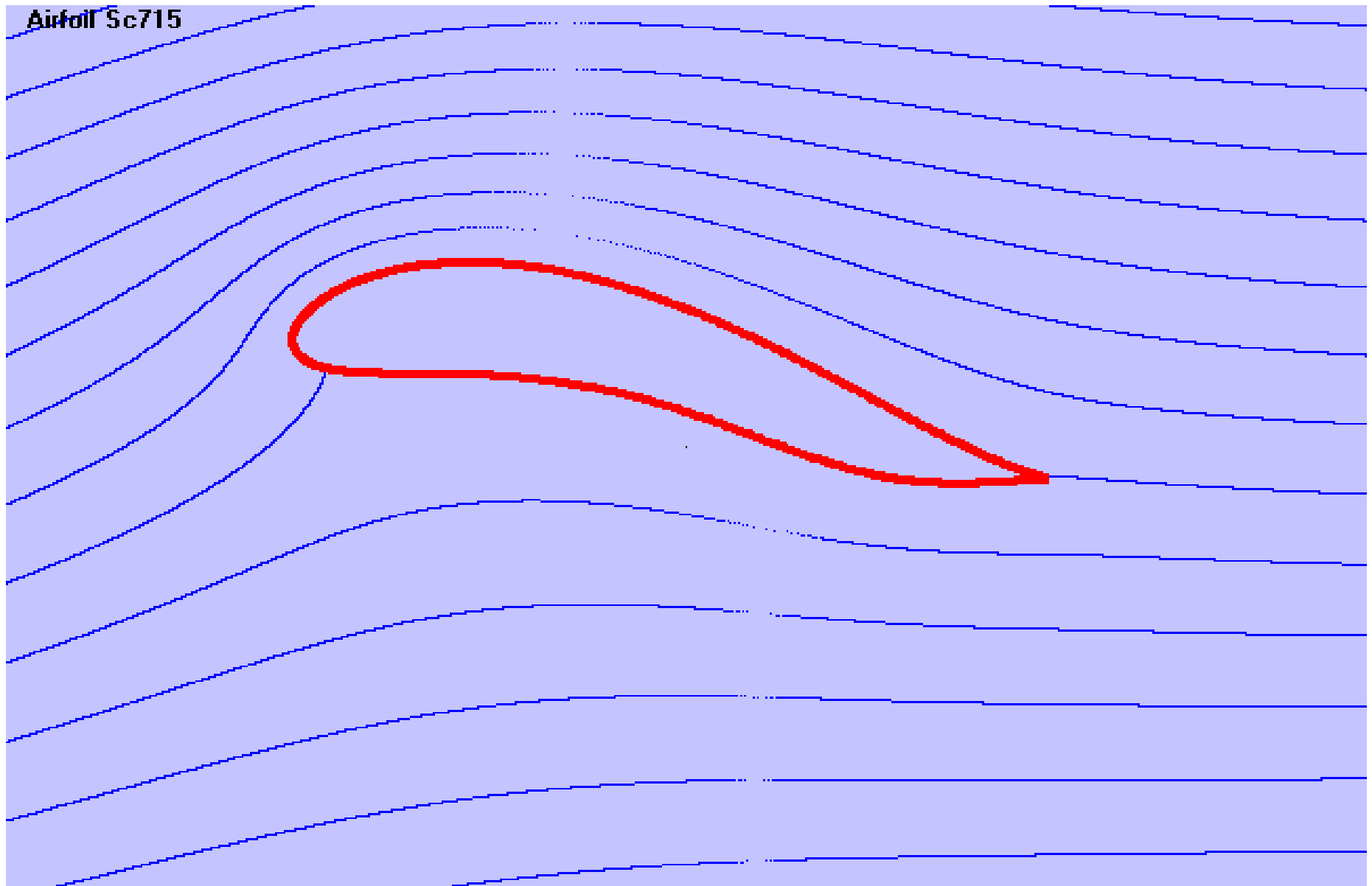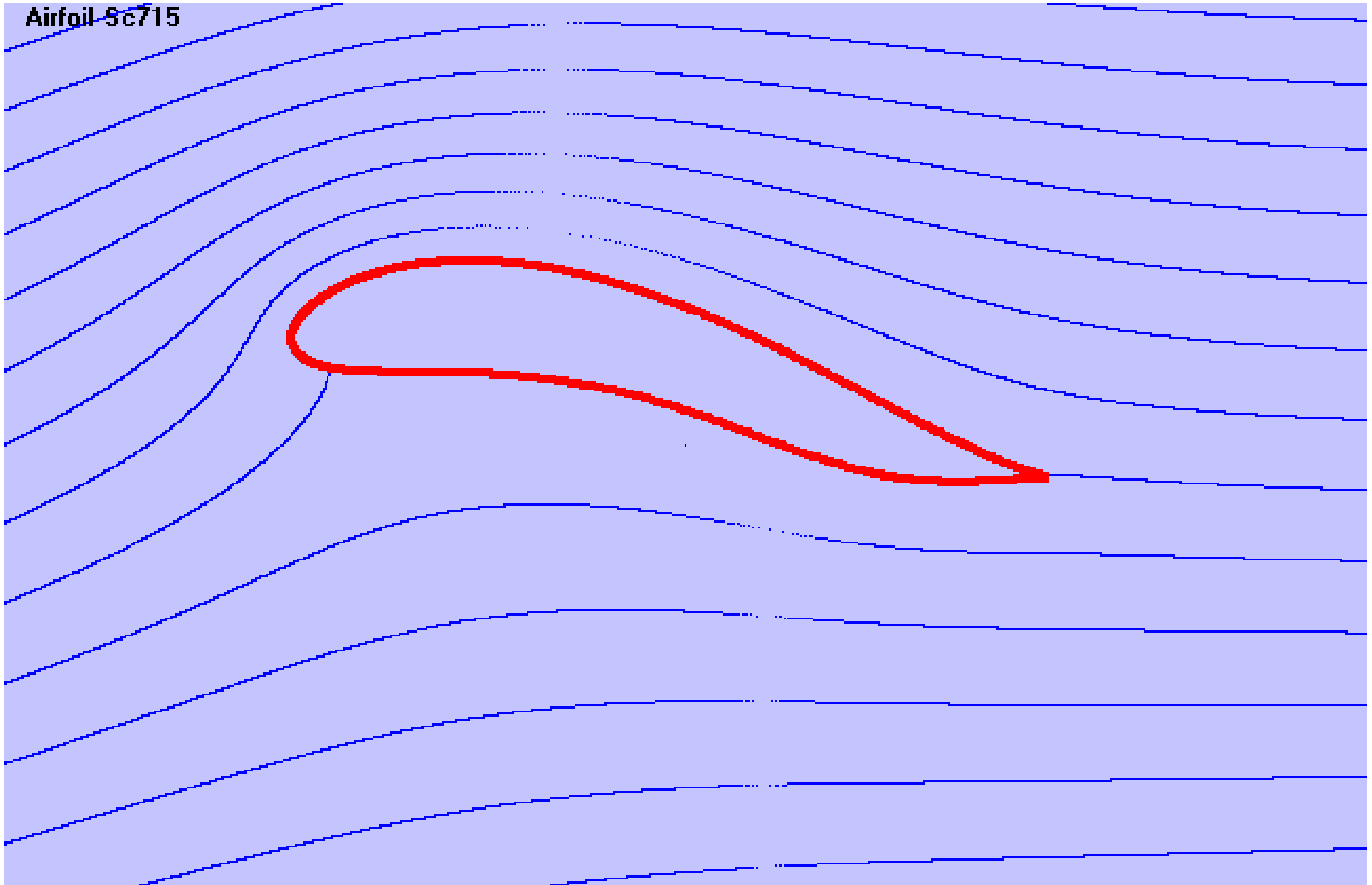
Airfoil Sc715, AoA +12°

Airfoil Sc715, AoA +13°
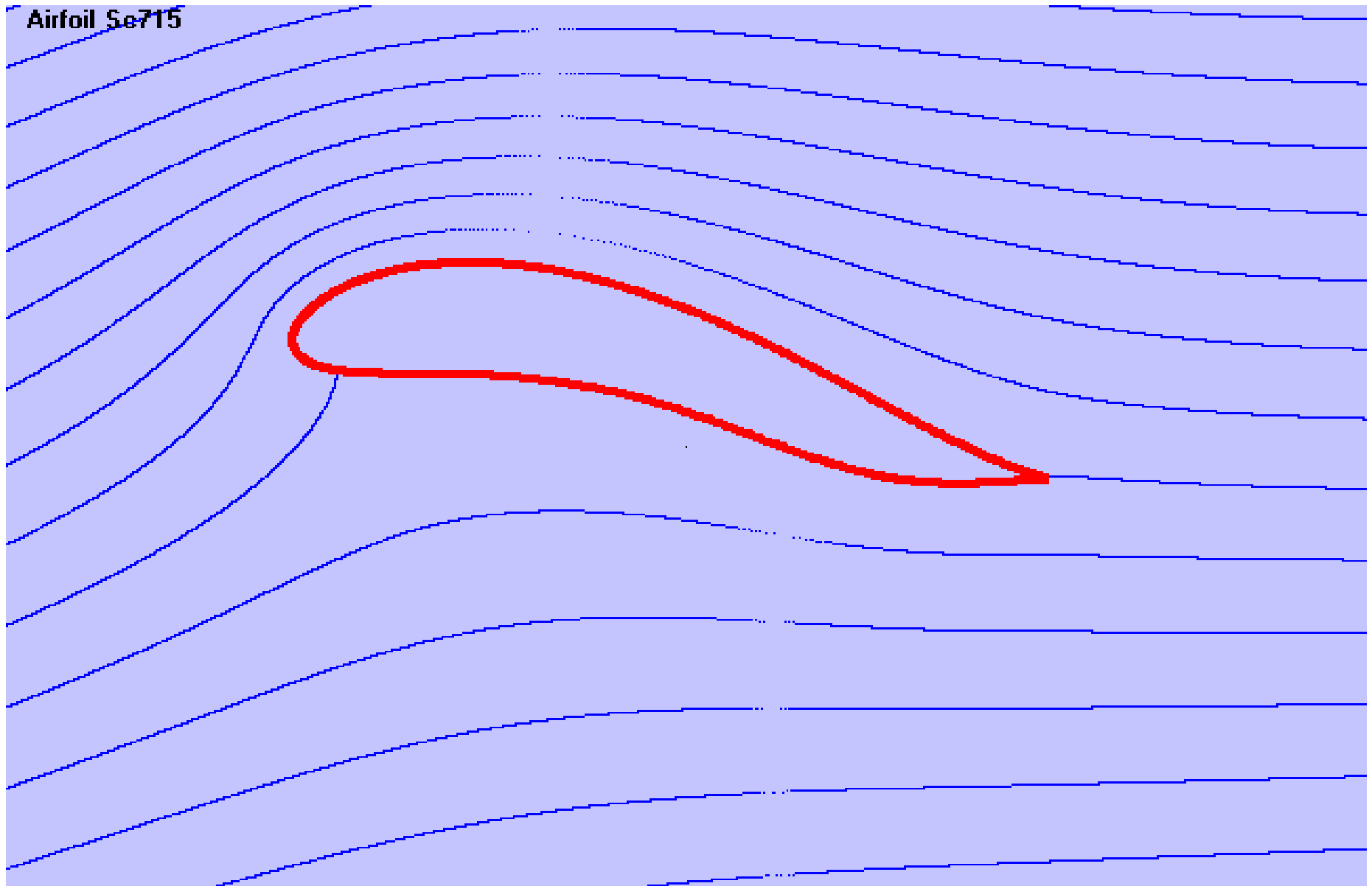
Airfoil Sc715, AoA +14°
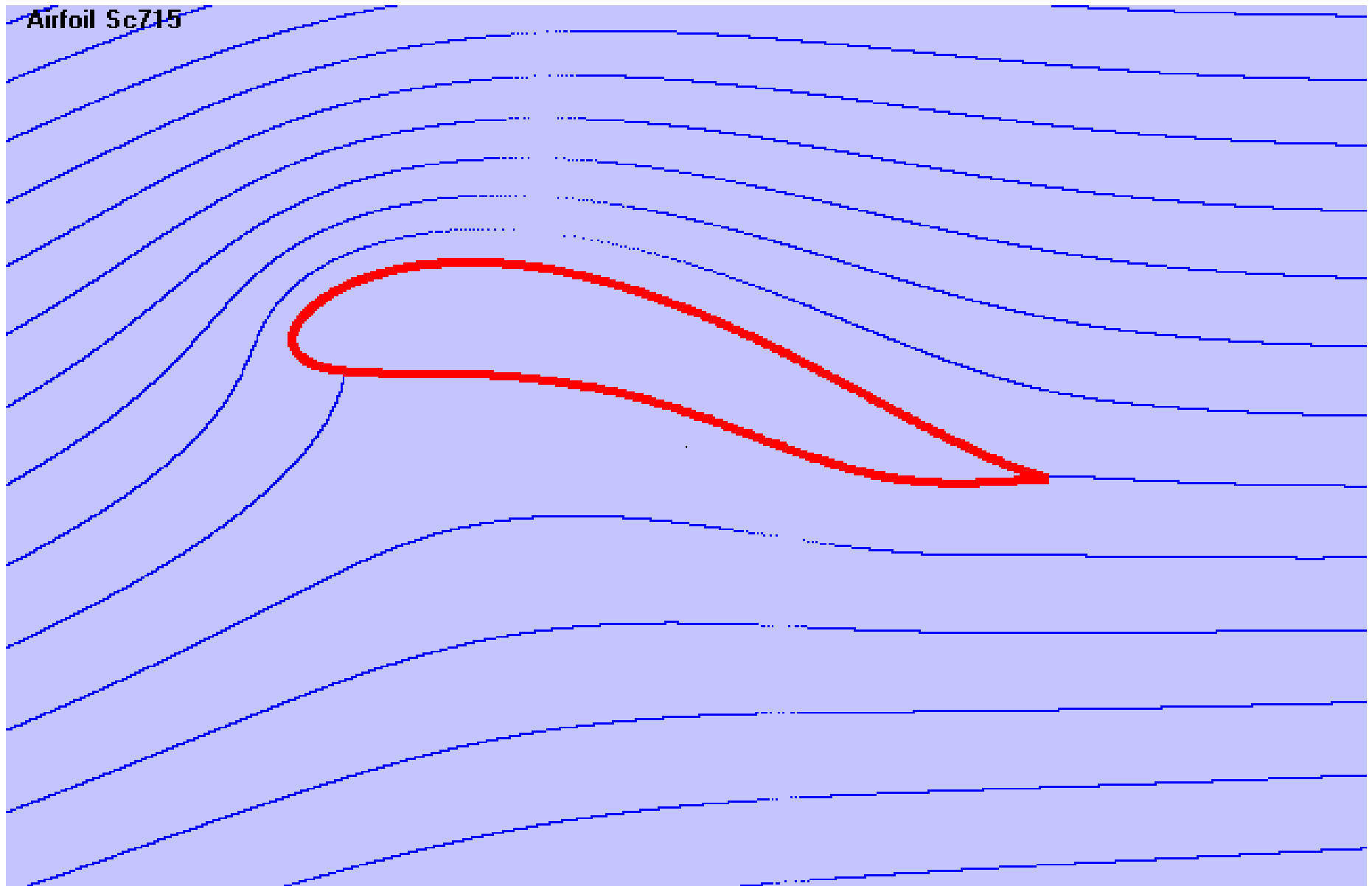
Airfoil Sc715, AoA +15°
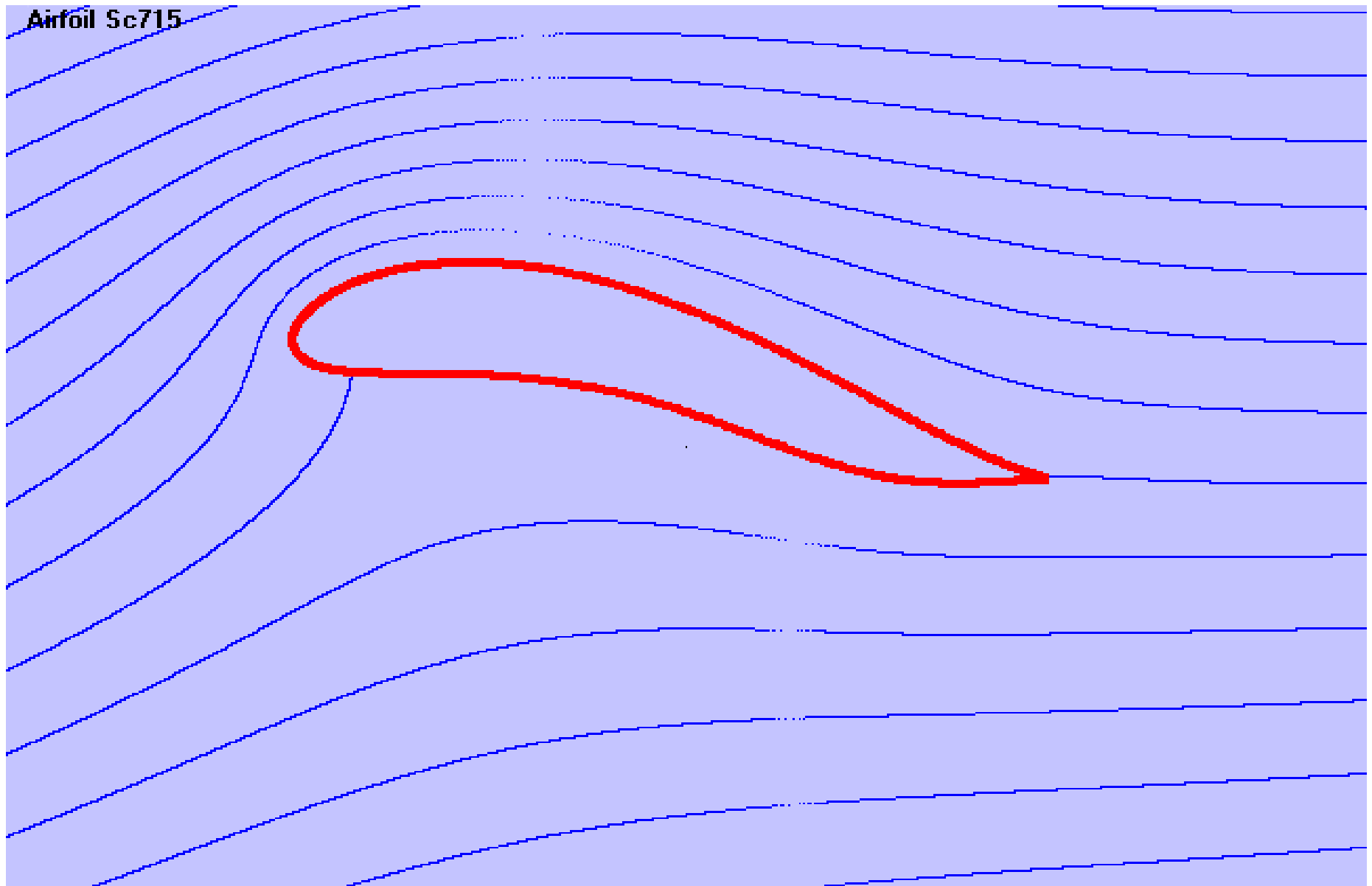
Airfoil Sc715, AoA +16°

Airfoil Sc715, AoA +17°
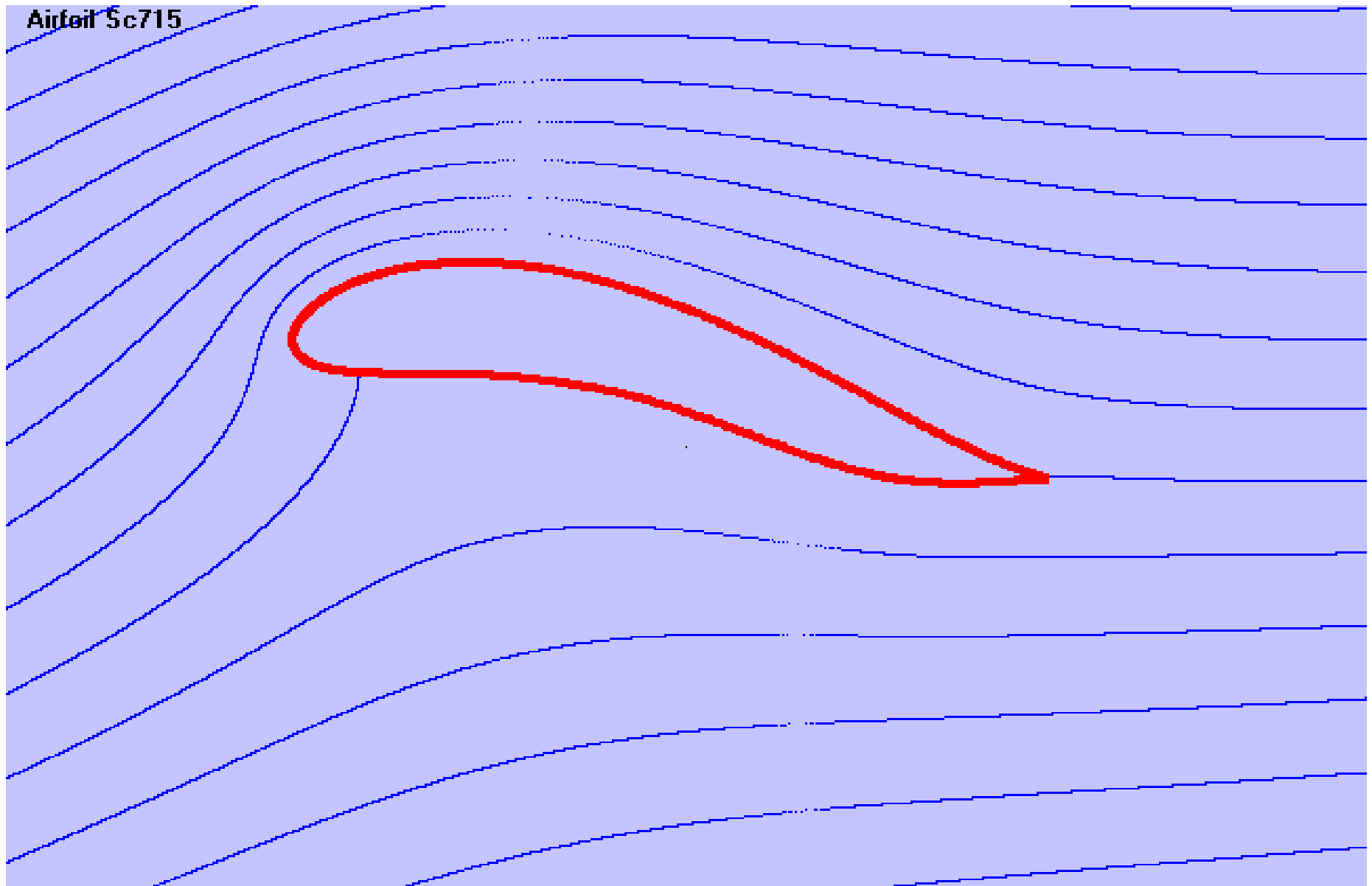
Airfoil Sc715, AoA +18°

Airfoil Sc715, AoA +19°

Airfoil Sc715, AoA +20°
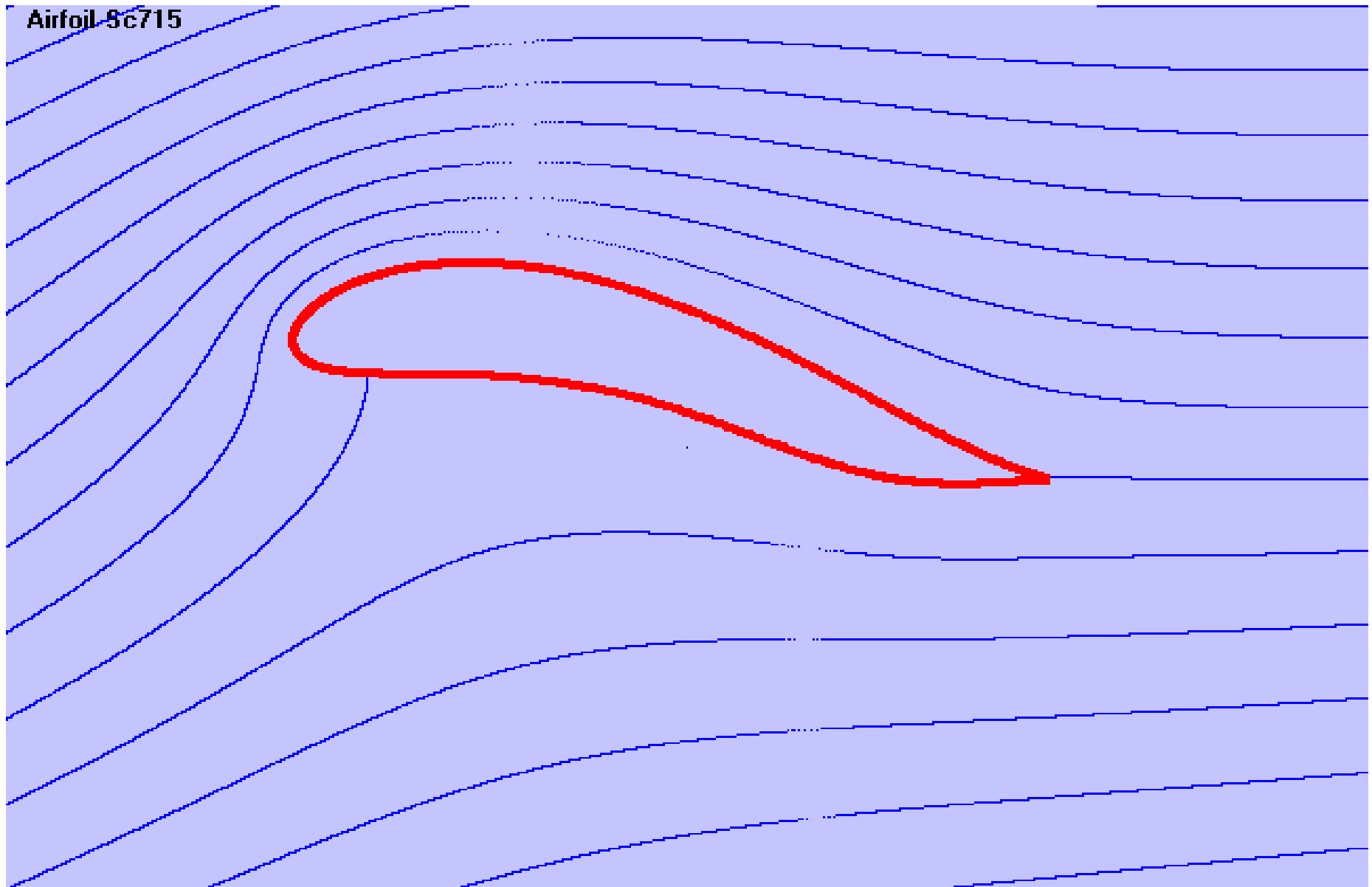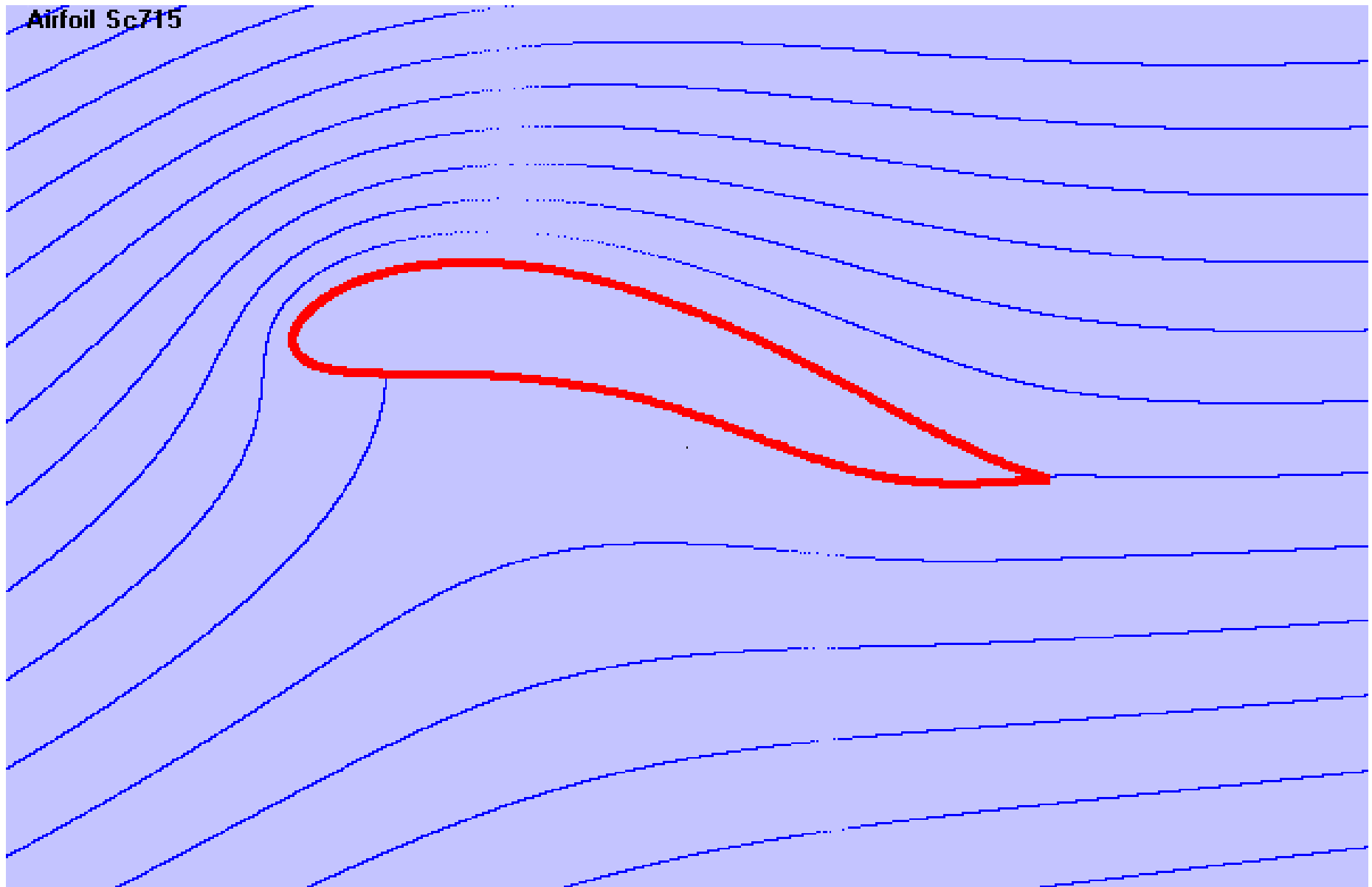
Airfoil Sc715, AoA +21°

Airfoil Sc715, AoA +22°

Airfoil Sc715, AoA +23°
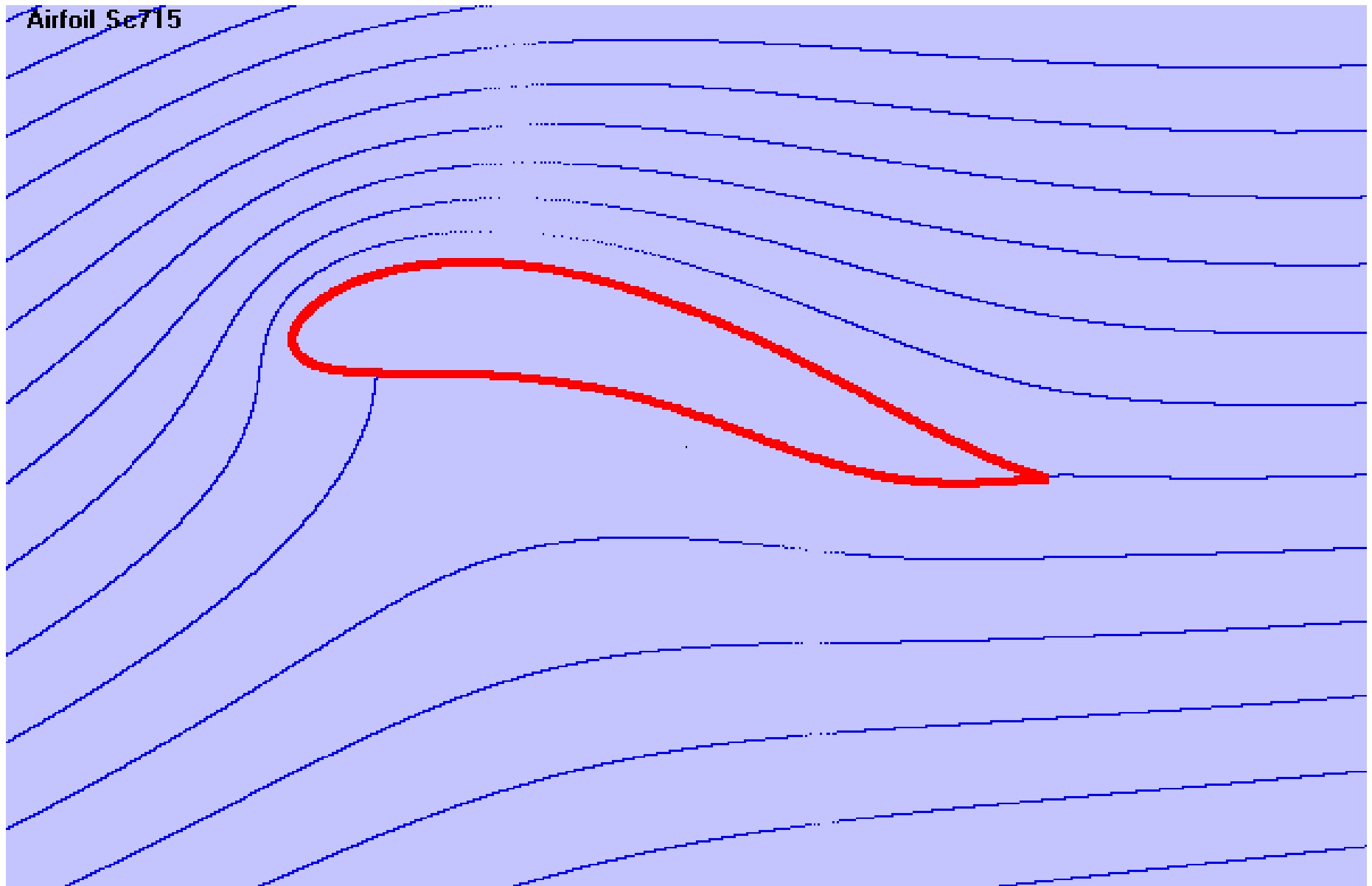
Airfoil Sc715, AoA +24°

Airfoil Sc715, AoA +25°