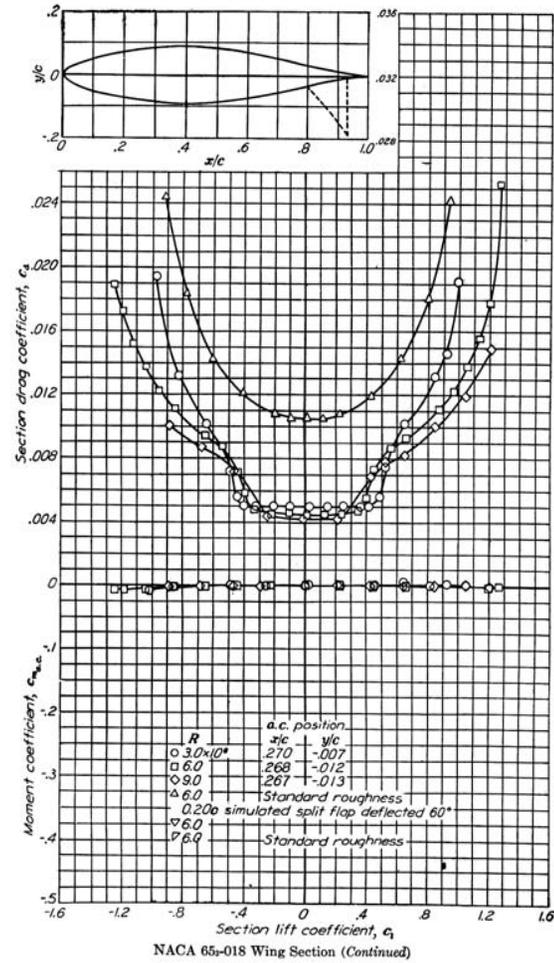
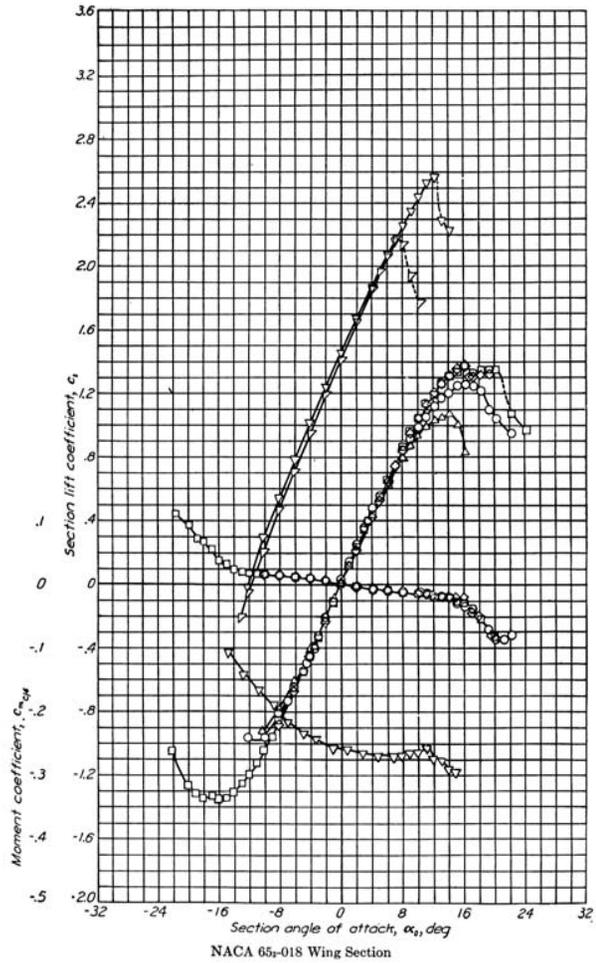
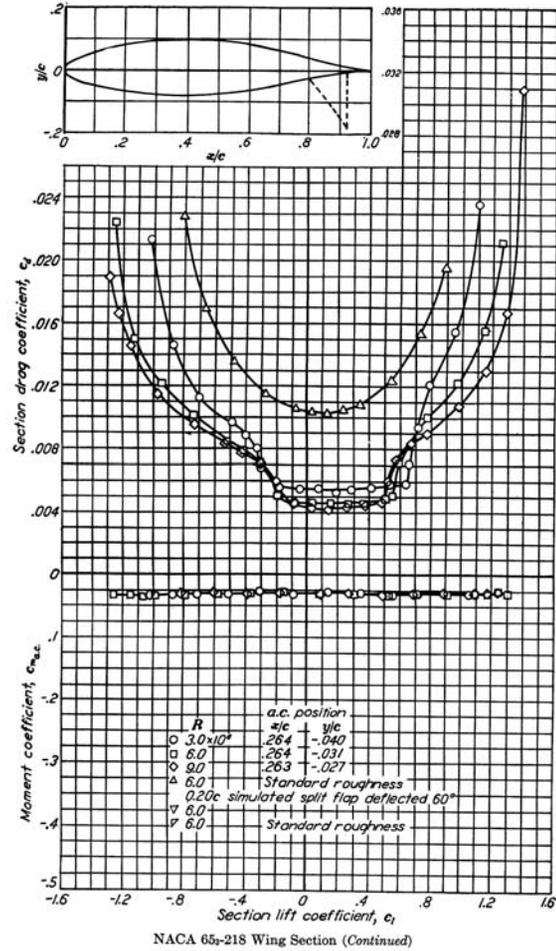
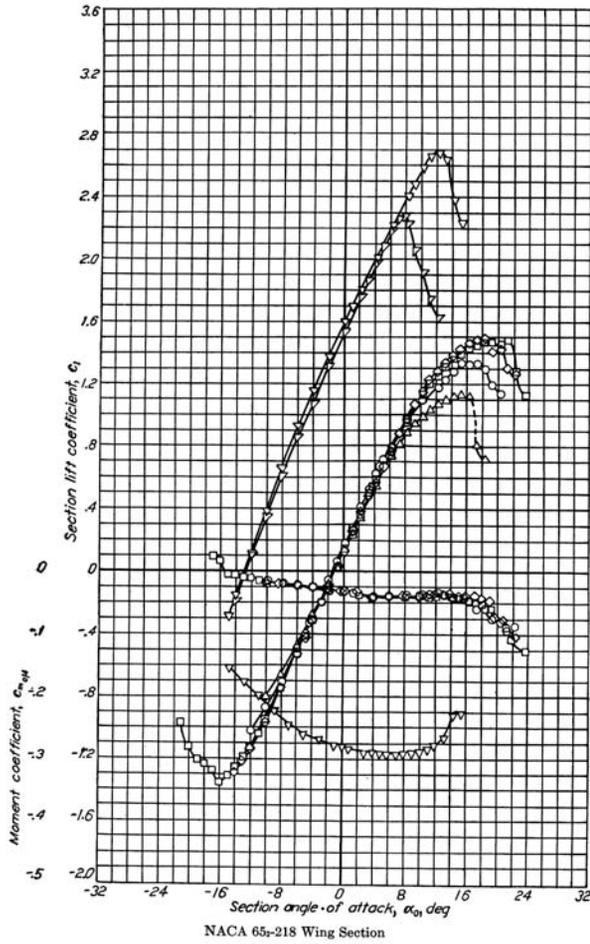


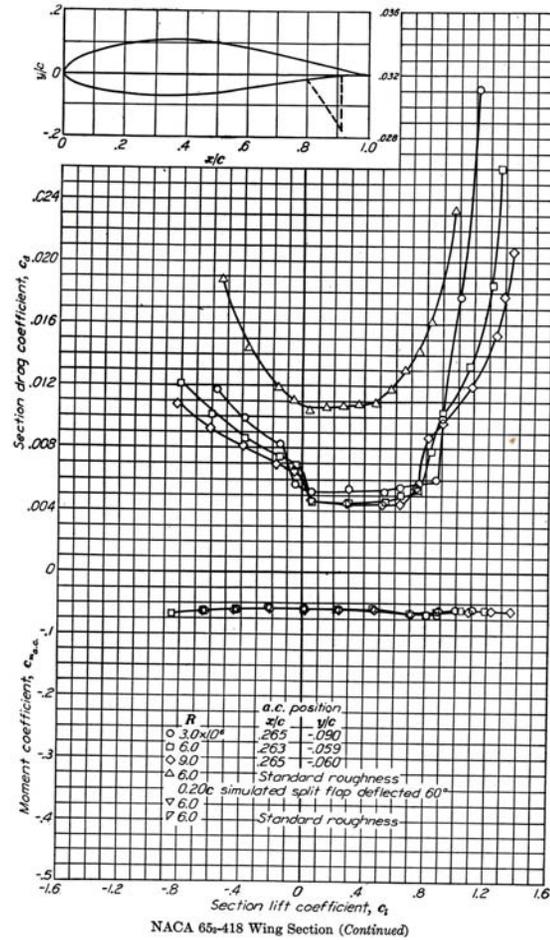
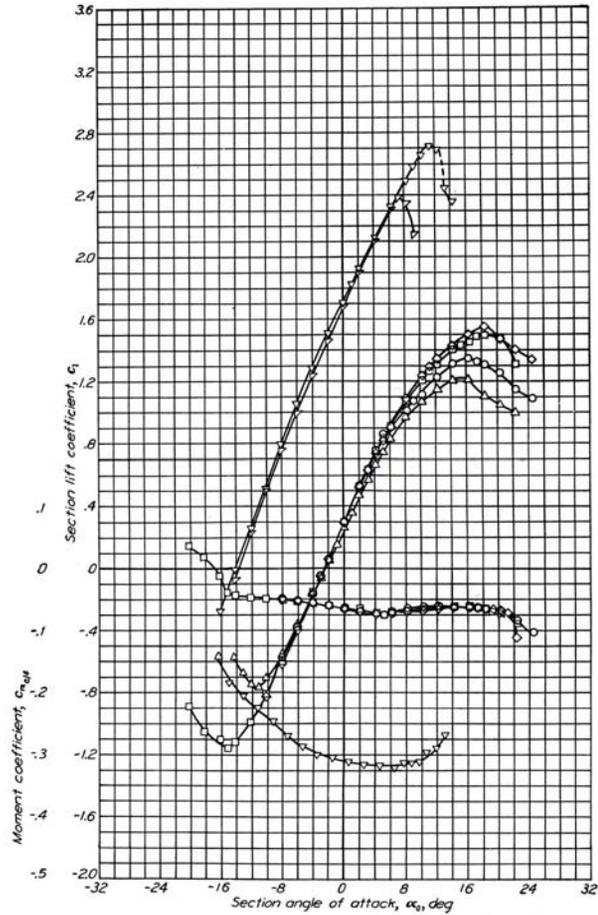
HIGHT LIFT DEVICES



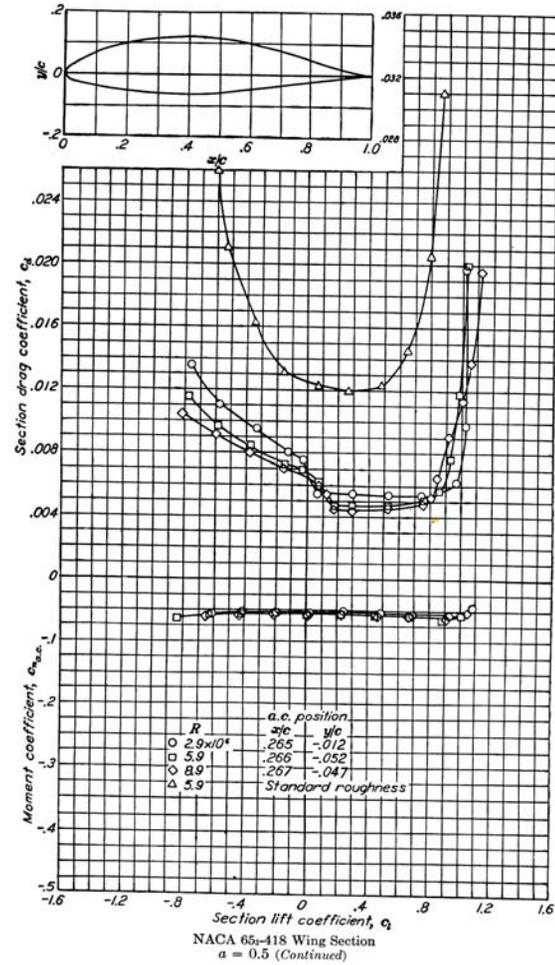
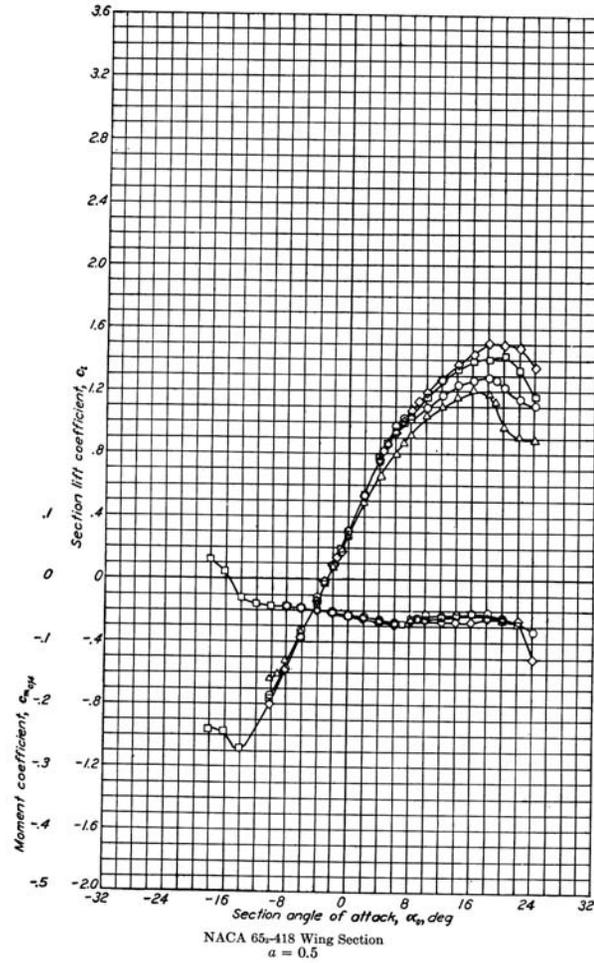
HIGHT LIFT DEVICES



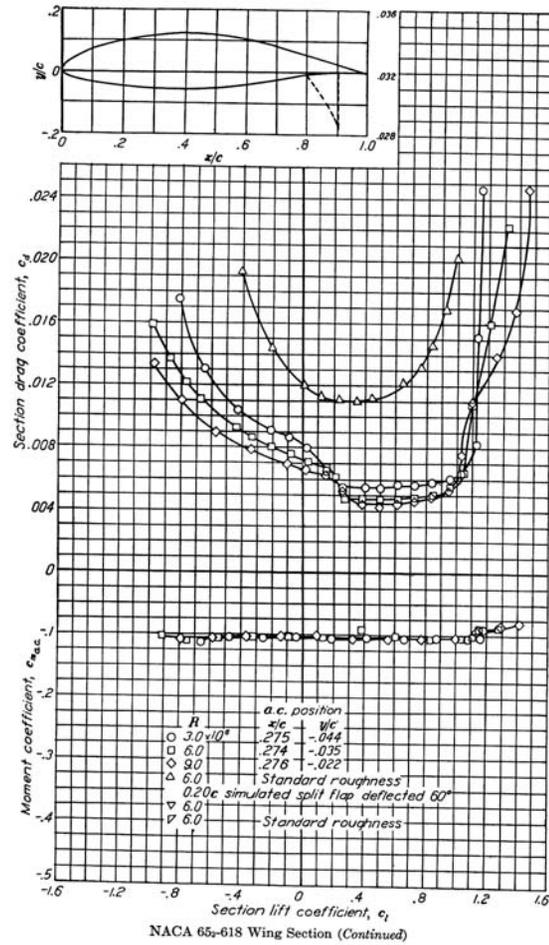
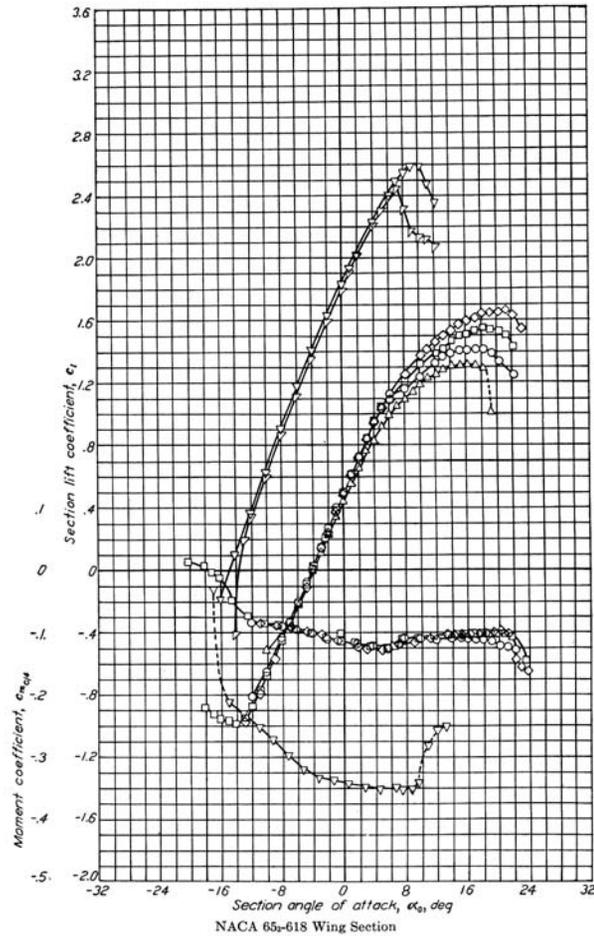
HIGHT LIFT DEVICES



HIGHT LIFT DEVICES



HIGHT LIFT DEVICES



HIGHT LIFT DEVICES

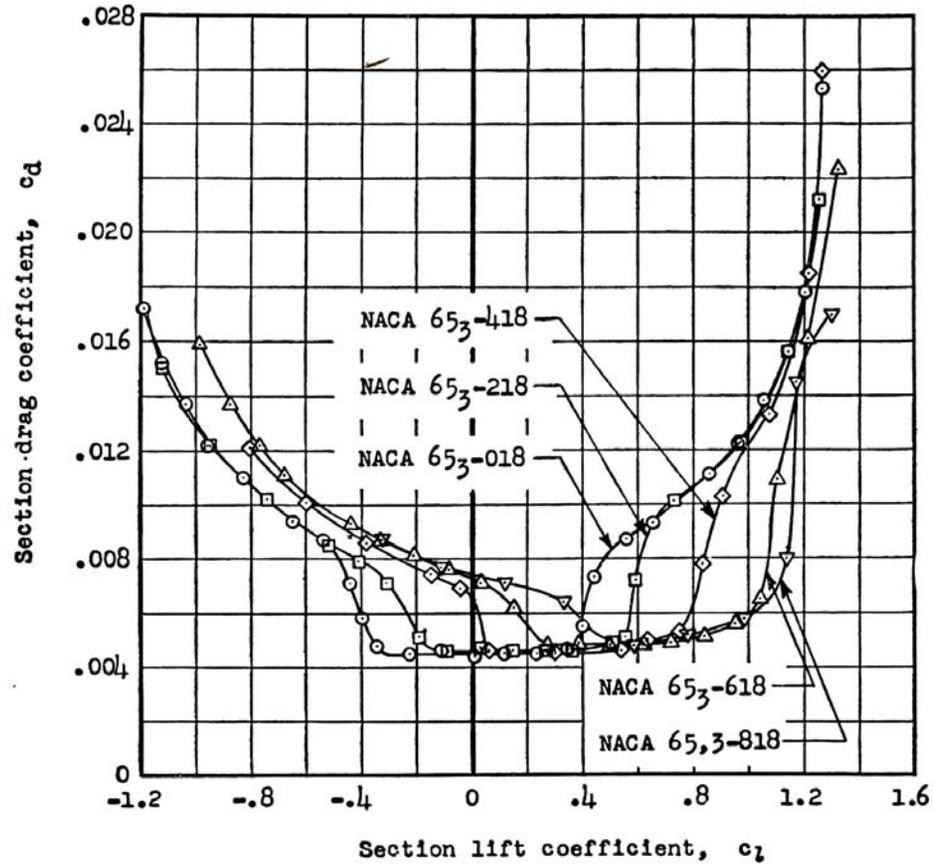
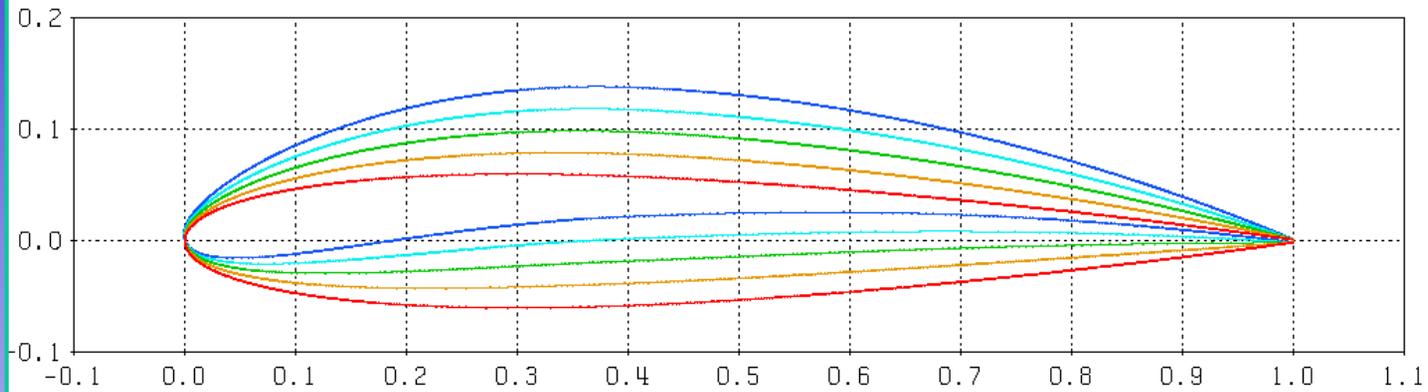


FIG. 71. Drag characteristics of some NACA 65-series airfoil sections of 18 per cent thickness with various amounts of camber. $R, 6 \times 10^6$.

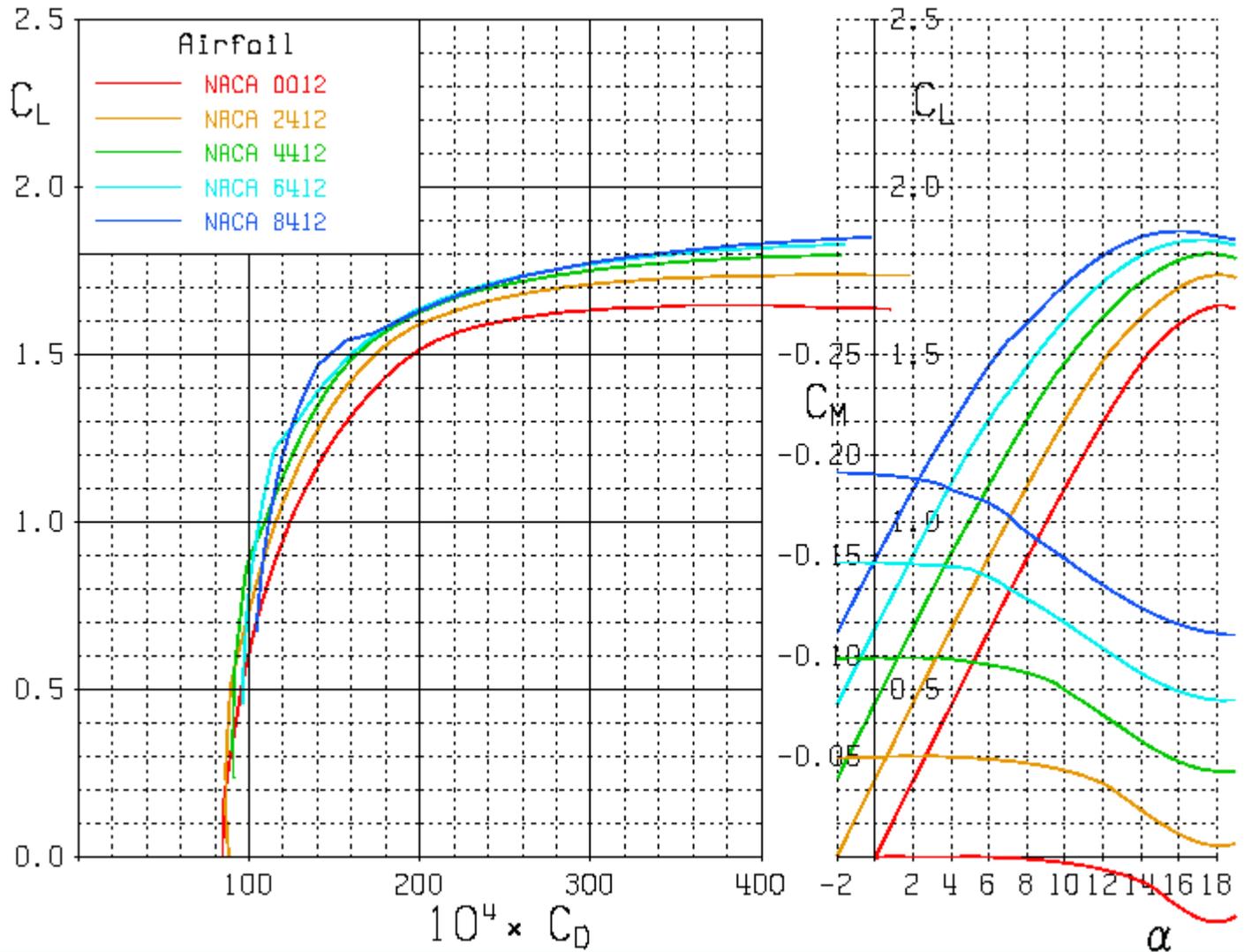
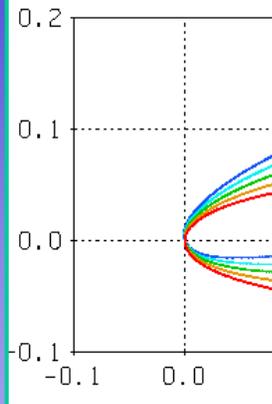
HIGHT LIFT DEVICES

- 1 NACA 0012
- 2 NACA 2412
- 3 NACA 4412
- 4 NACA 6412
- 5 NACA 8412



HIGHT LIFT DEVICES

- 1 NACA 0012
- 2 NACA 2412
- 3 NACA 4412
- 4 NACA 6412
- 5 NACA 8412



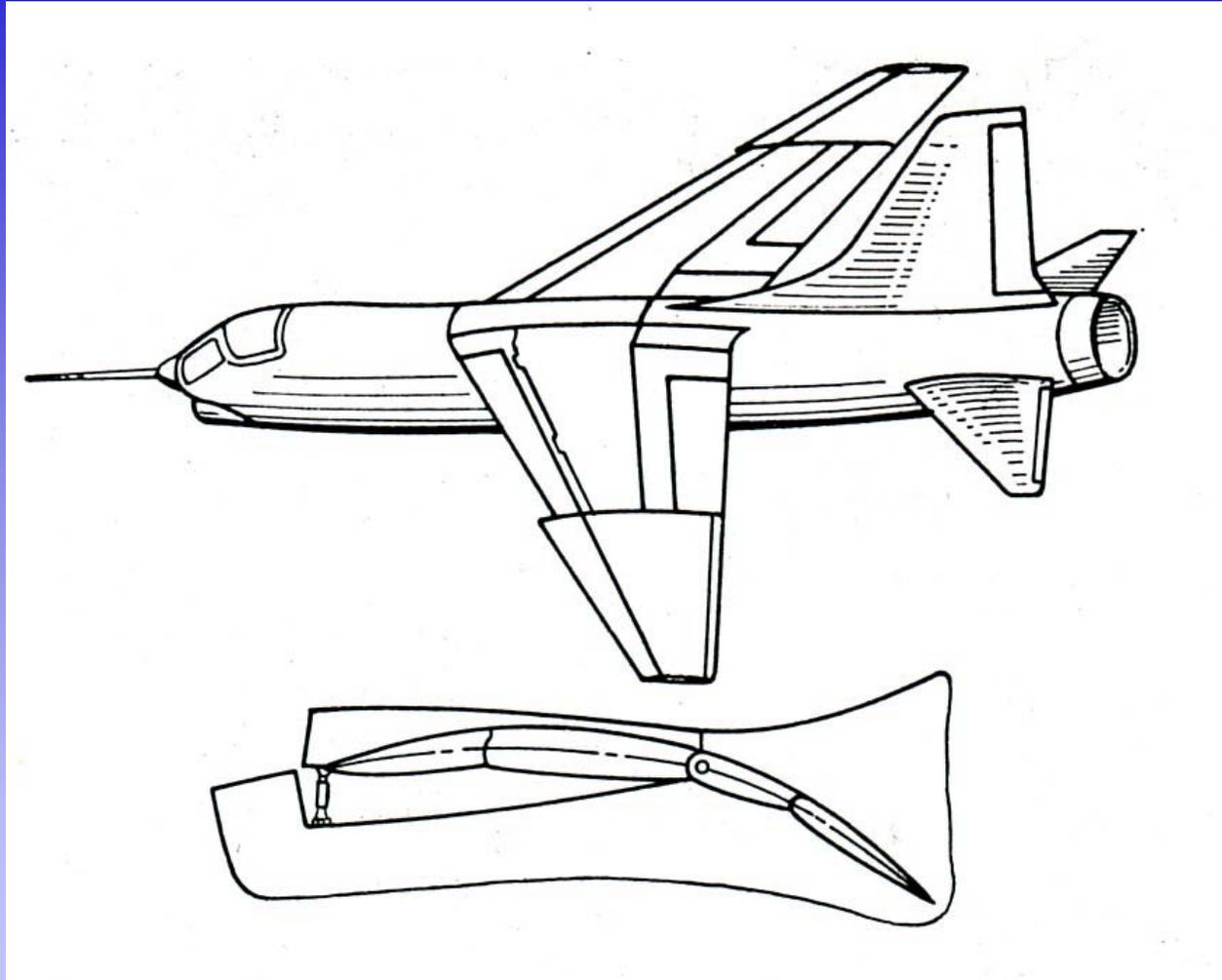
HIGHT LIFT DEVICES

$$C_{L_{MAX}} \div C_{L_{OPT}} \div C_{L_{MIN}}$$

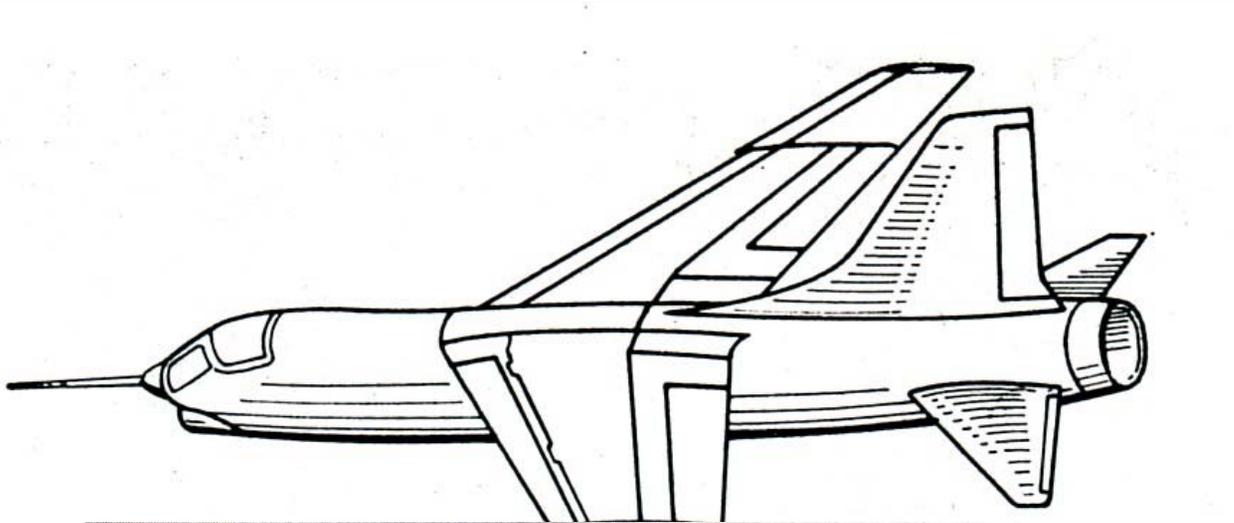
$$C_{D_{MIN}}$$

$$\alpha$$

HIGHT LIFT DEVICES

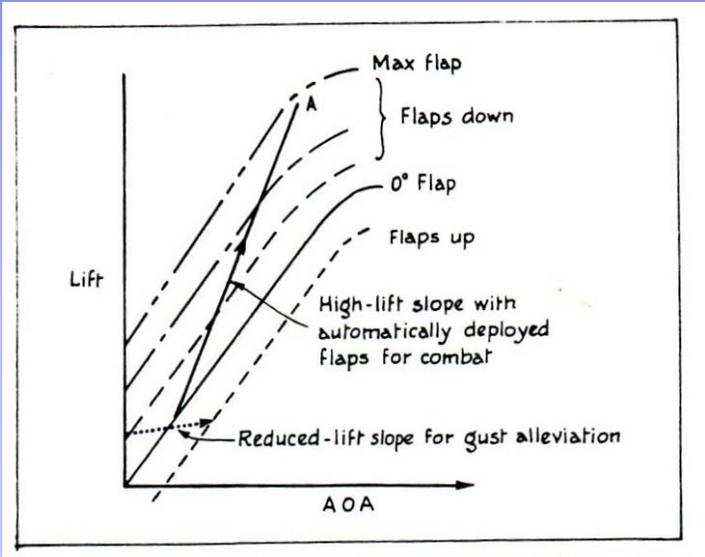
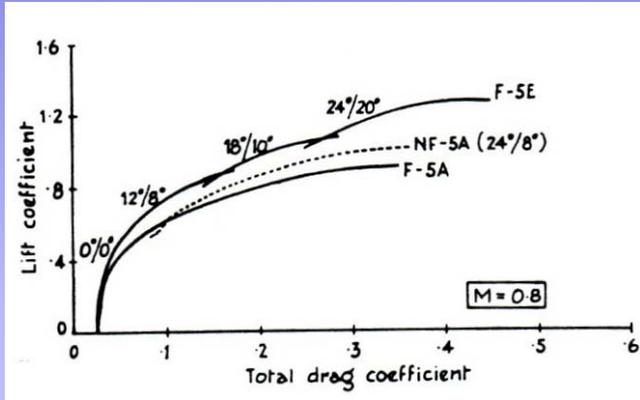
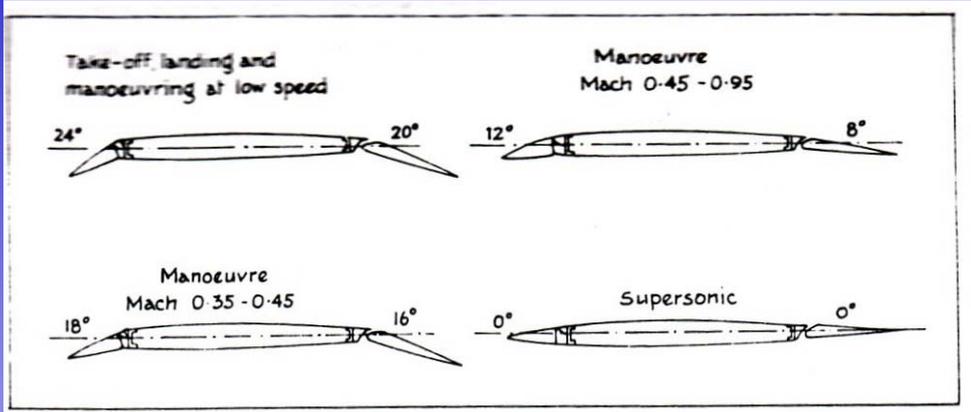


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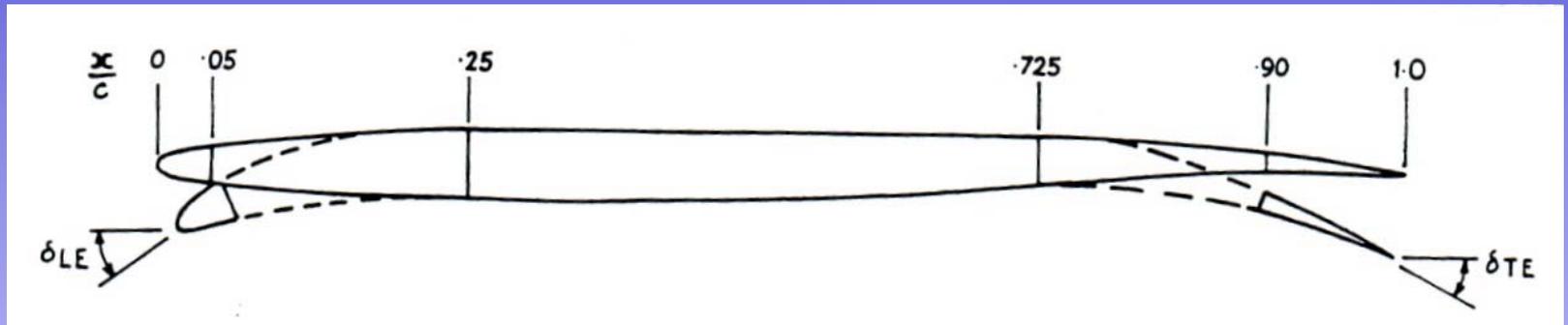


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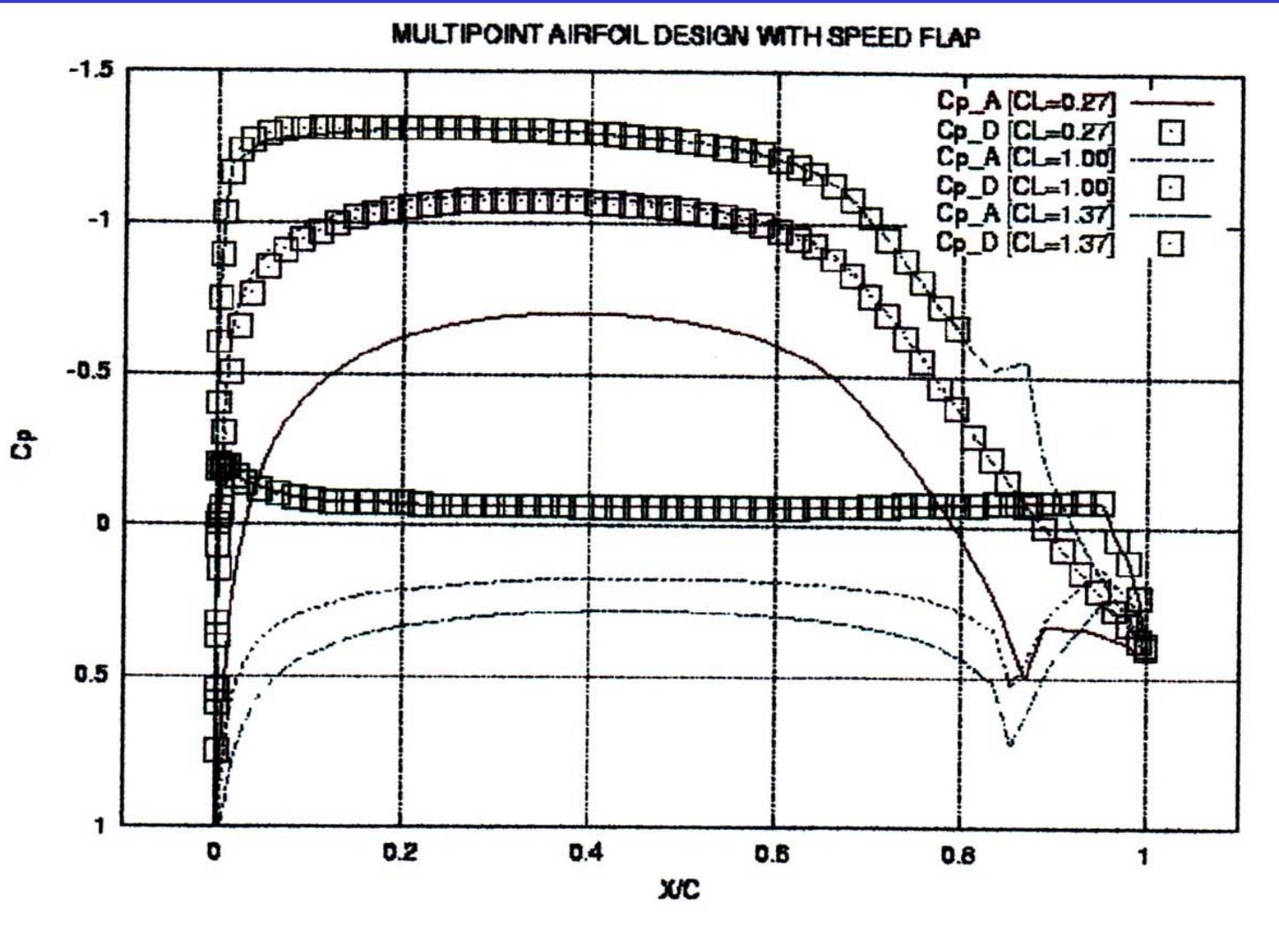
F-5E



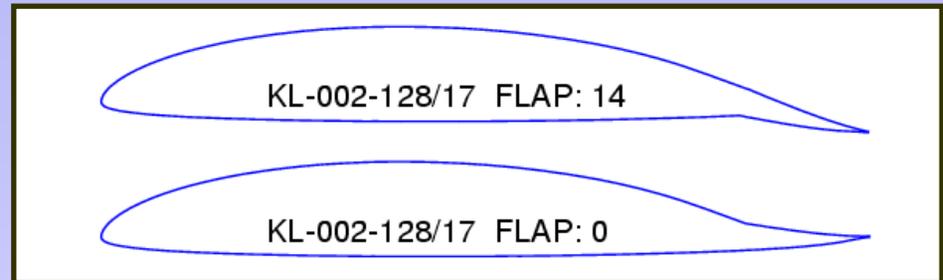
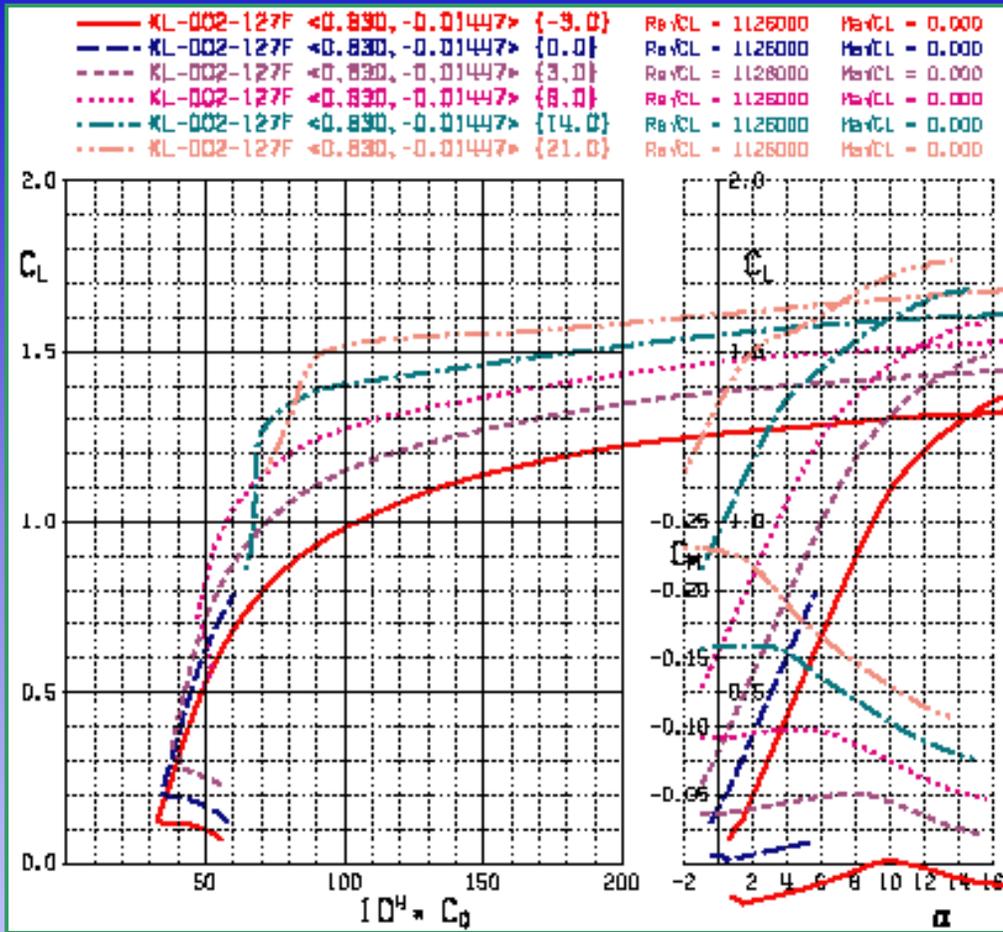
HIGHT LIFT DEVICES



HIGHT LIFT DEVICES



HIGHT LIFT DEVICES



HIGHT LIFT DEVICES

CL_{MAX} V_{MIN} α_{CR}

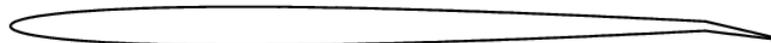
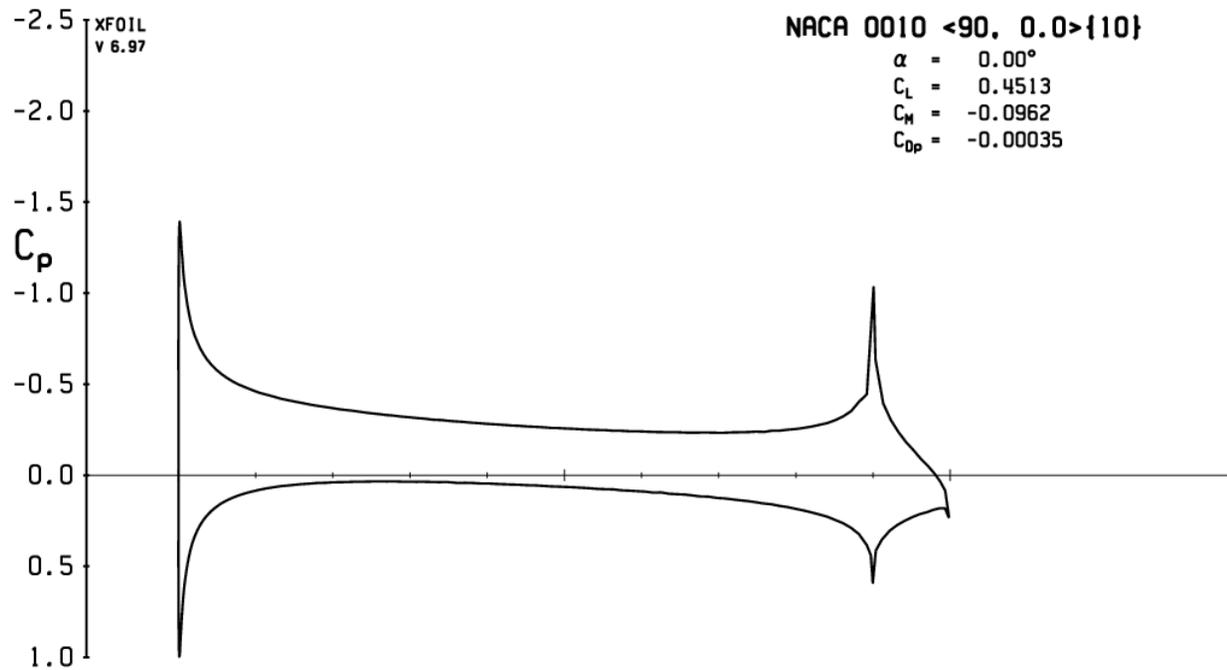
Thin Airfoil Theory (Glauert)

XFoil
v 6.97

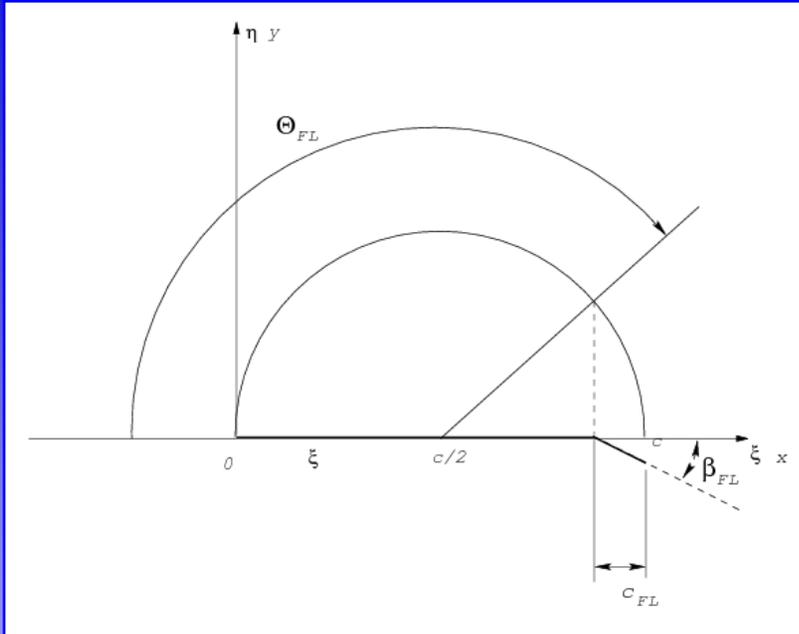
NACA 0010 <90, 0.0>{10}

$\alpha = 0.00^\circ$
 $C_L = 0.4513$
 $C_M = -0.0962$
 $C_{Dp} = -0.00035$

C_p



Thin Airfoil Theory (Glauert)



$$C_L = 2\pi \cdot \left(A_0 + \frac{1}{2} A_1 \right) \approx$$

$$2\pi \cdot \left(\alpha + \frac{4\sqrt{c_{FL}}}{\pi} \cdot \beta_{FL} \right) = 2\pi \cdot \alpha + 8\sqrt{c_{FL}} \cdot \beta_{FL}$$

$$\underbrace{\hspace{10em}}_{-\alpha_0}$$

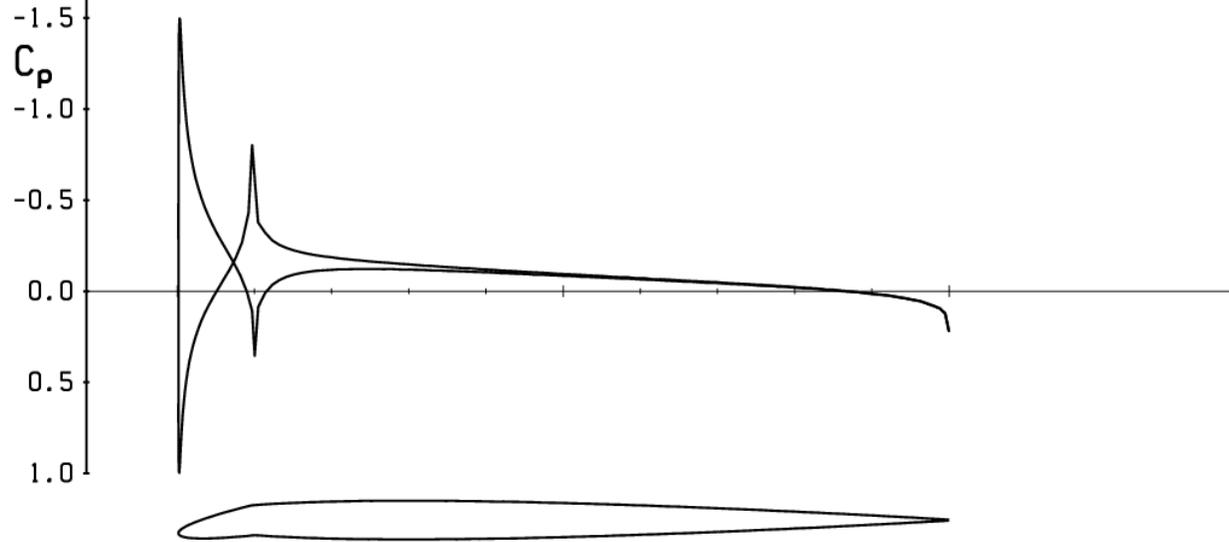
$$\underbrace{\hspace{10em}}_{C_{L_0}}$$

Thin Airfoil Theory (Glauert)

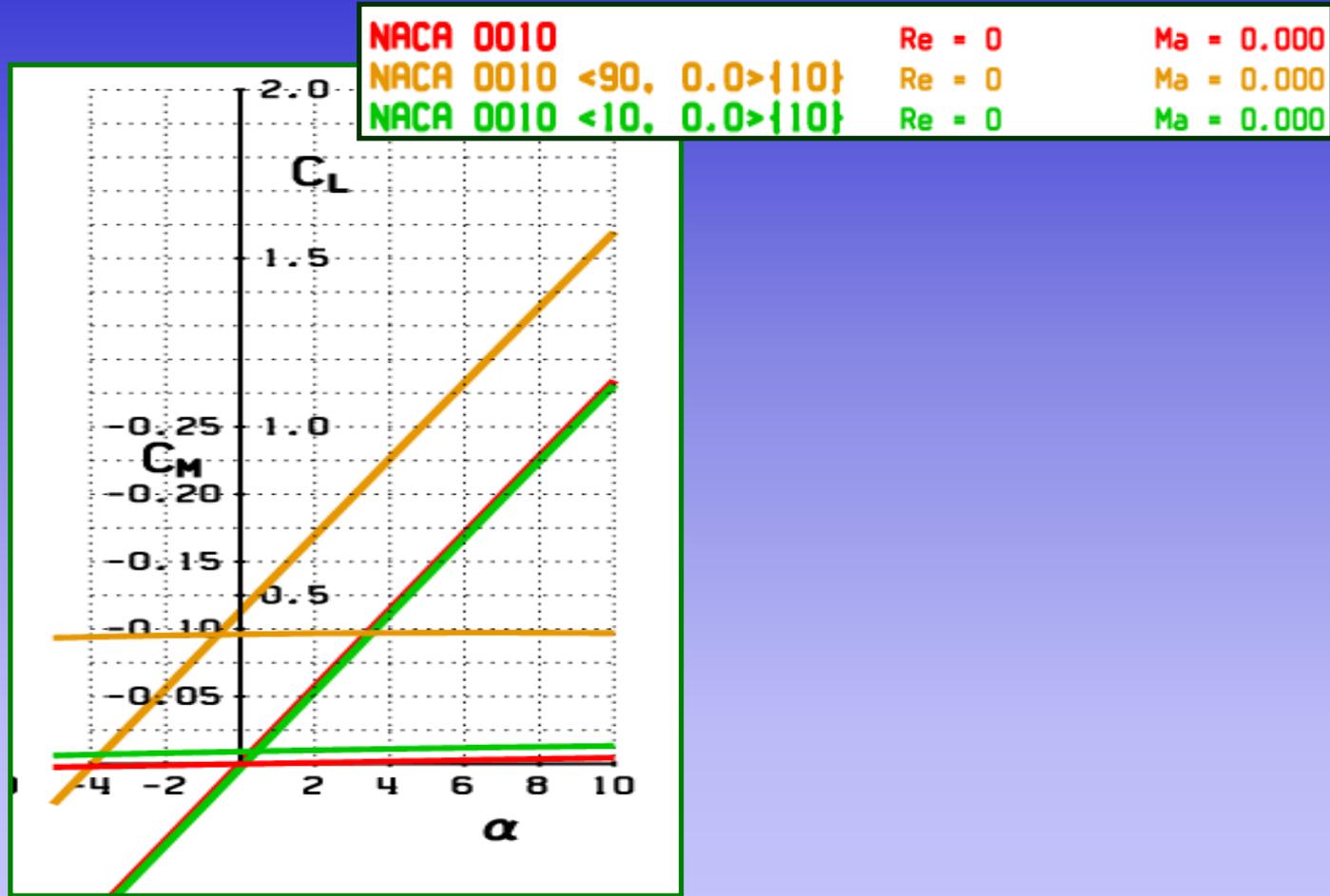
XFoil
v 6.97

NACA 0010 <10, 0.0>{10}

$\alpha = 0.00^\circ$
 $C_L = -0.0128$
 $C_M = -0.0092$
 $C_{Dp} = -0.00029$

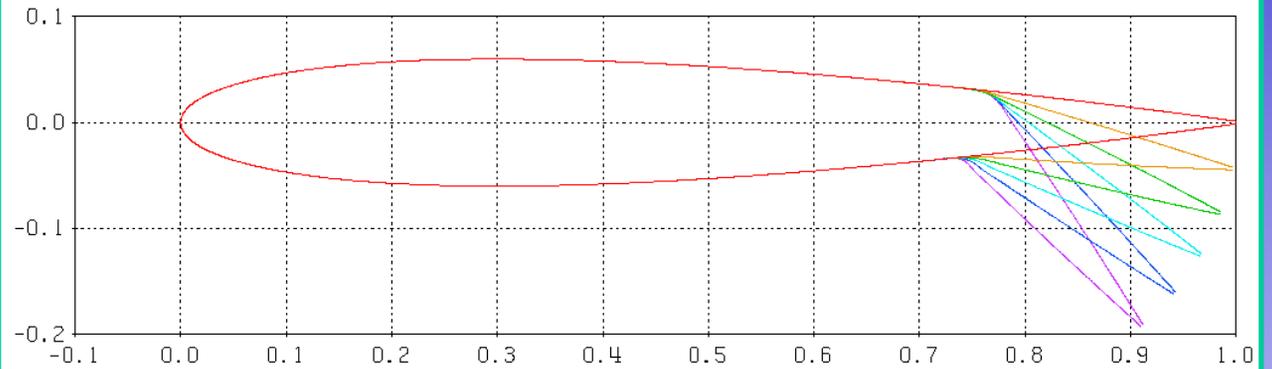


Thin Airfoil Theory (Glauert)



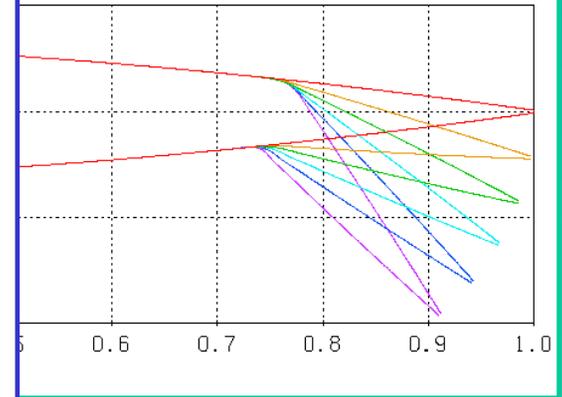
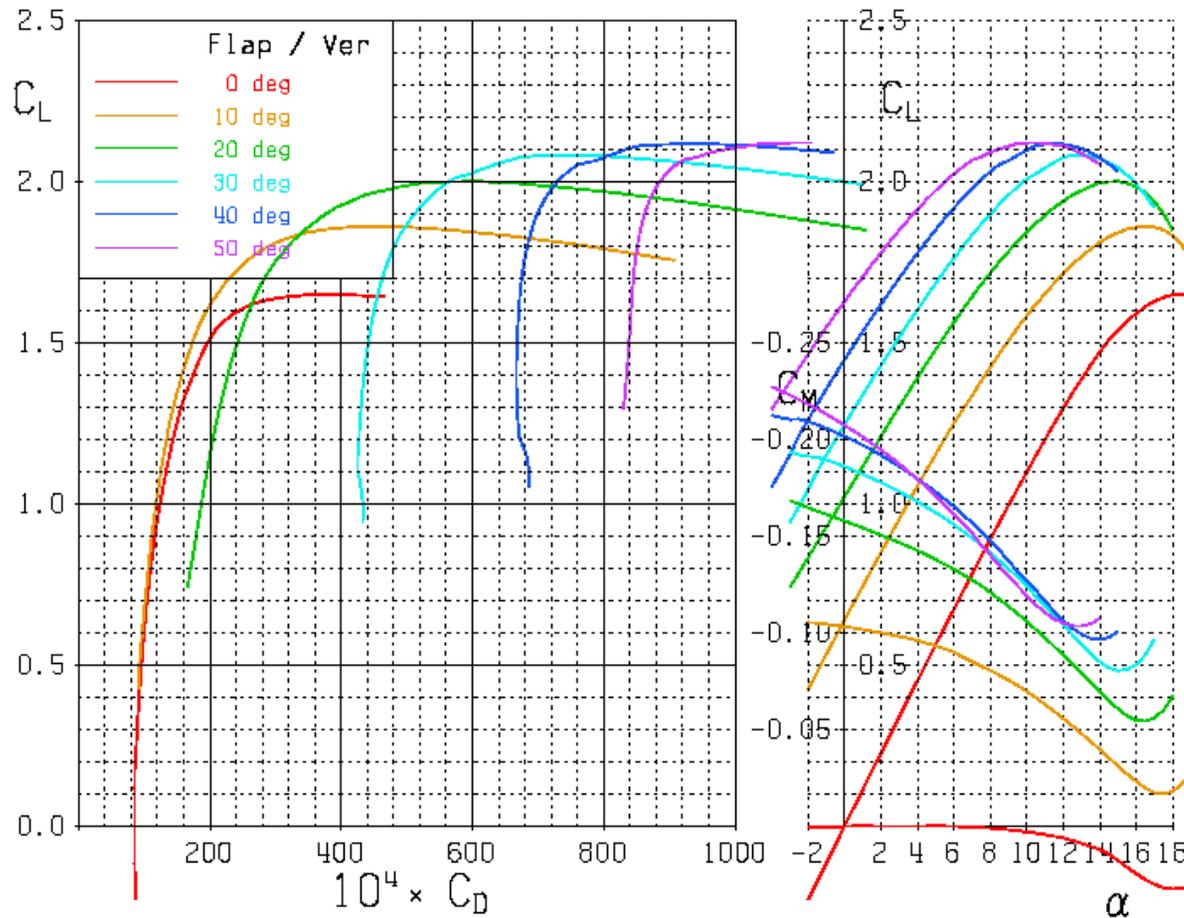
HIGHT LIFT DEVICES

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- 4 NACA 0012 <75, 0.0>{30}
- 5 NACA 0012 <75, 0.0>{40}
- 6 NACA 0012 <75, 0.0>{50}

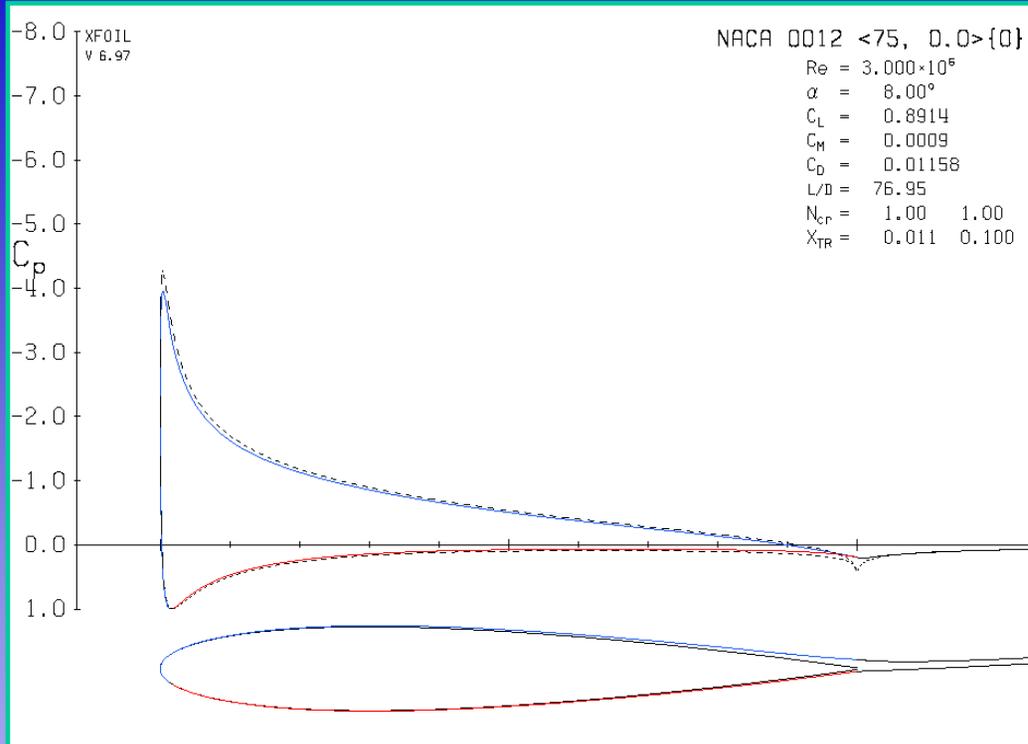


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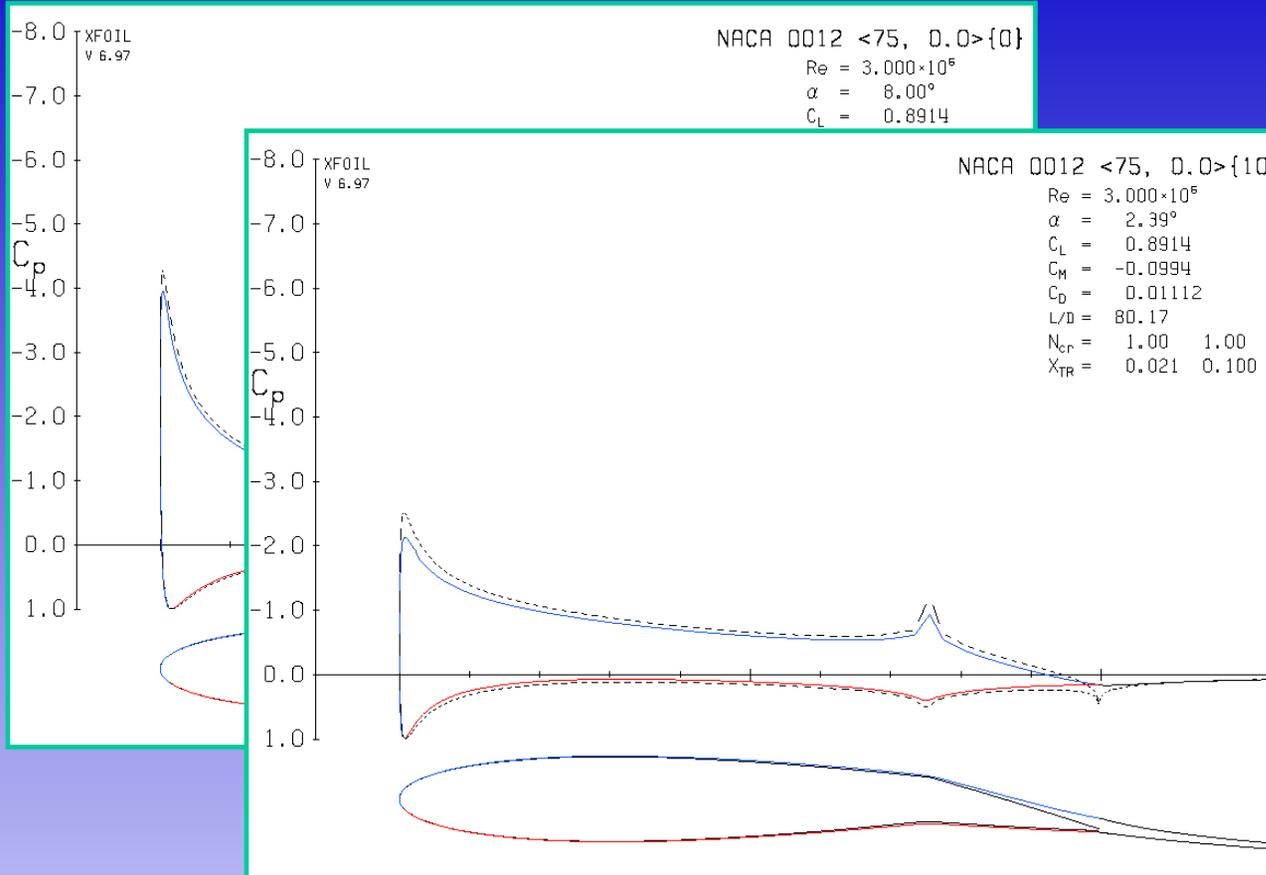
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- 2 NACA 0012 <75, 0.0>{10}
- 3 NACA 0012 <75, 0.0>{20}
- 4 NACA 0012 <75, 0.0>{30}
- 5 NACA 0012 <75, 0.0>{40}



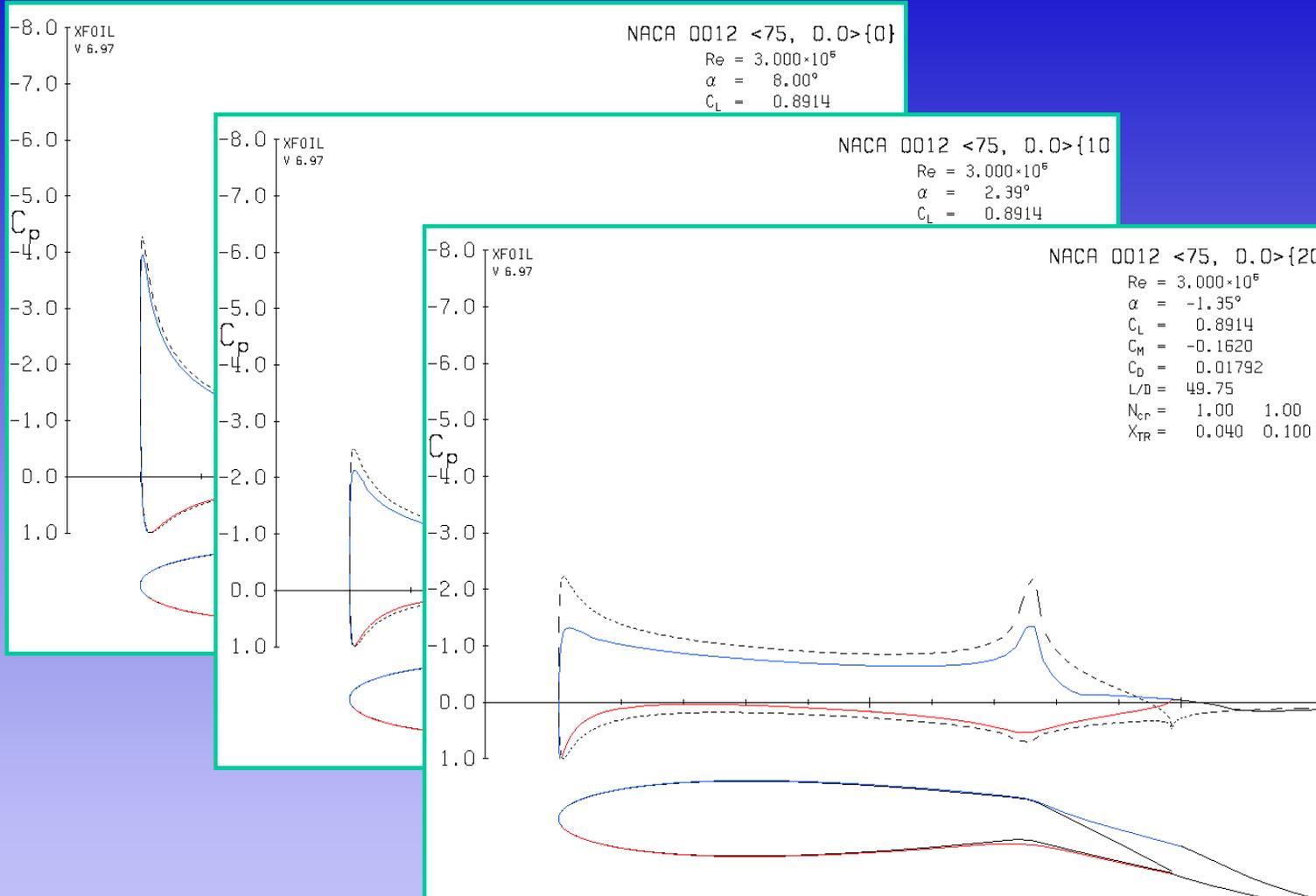
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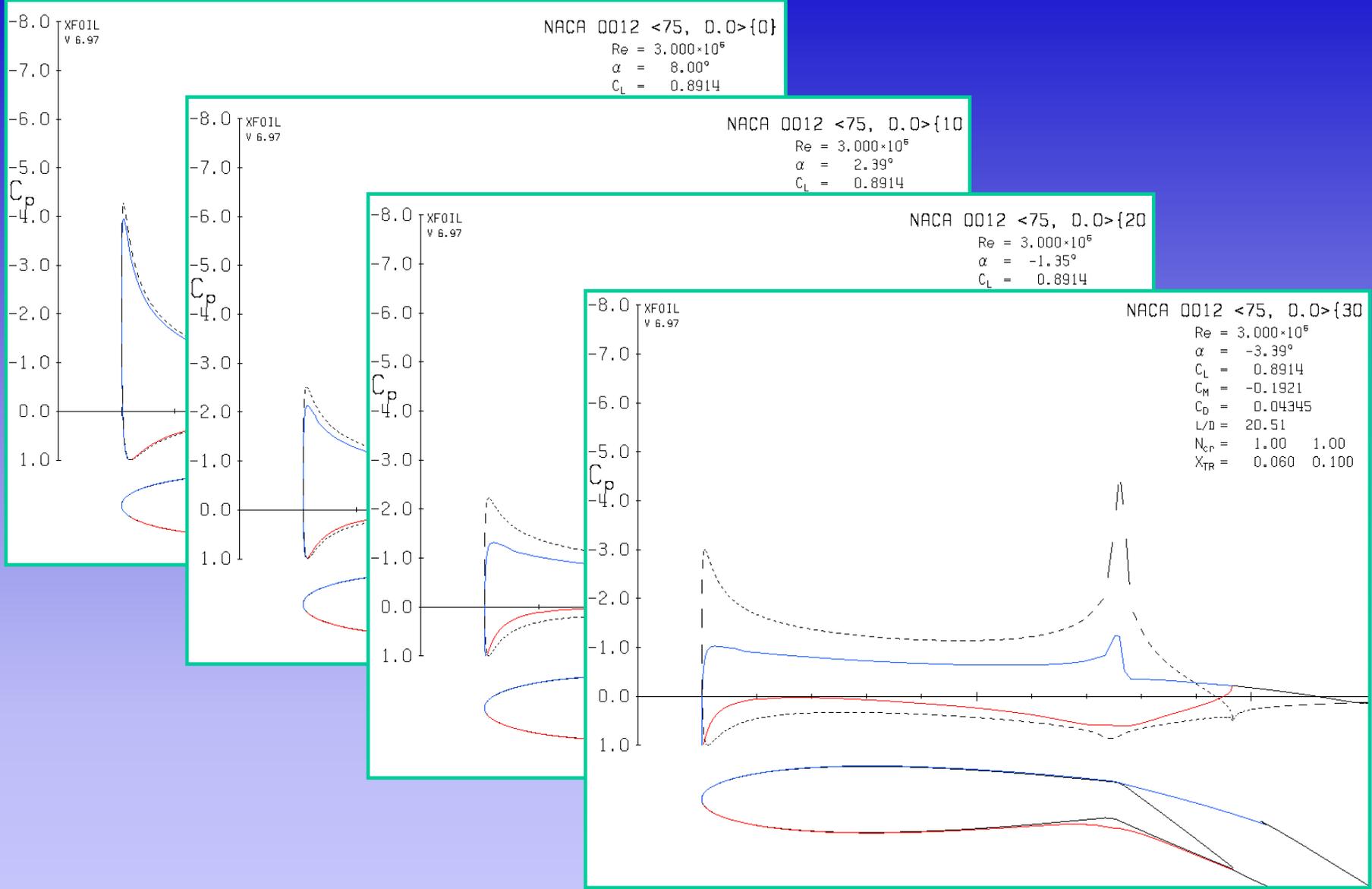
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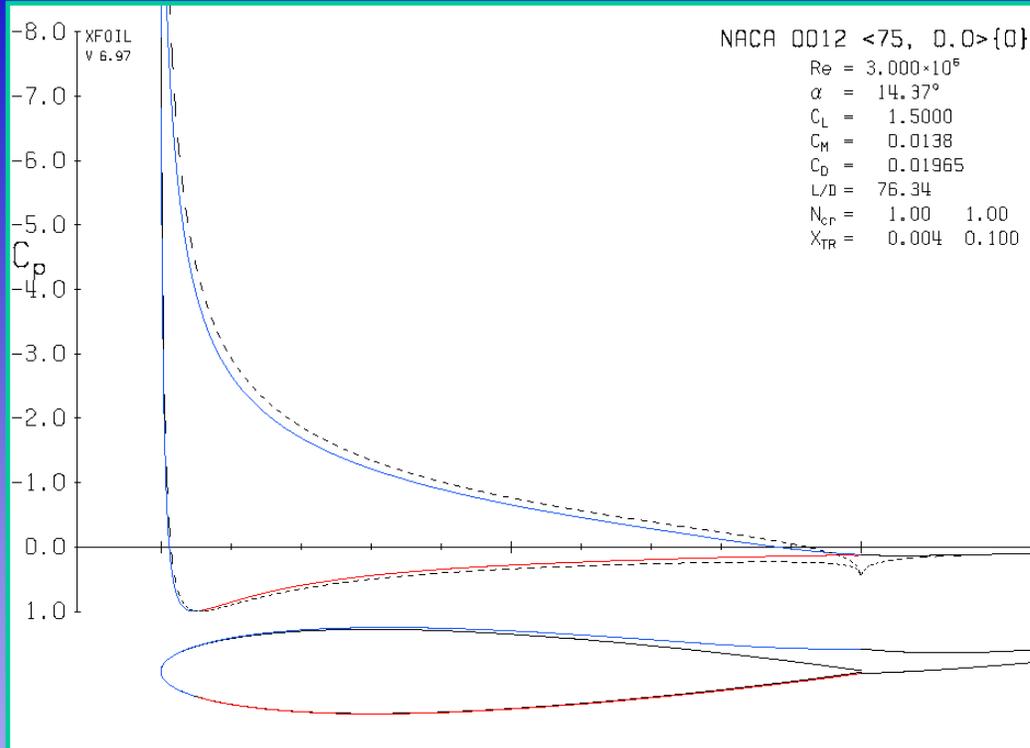
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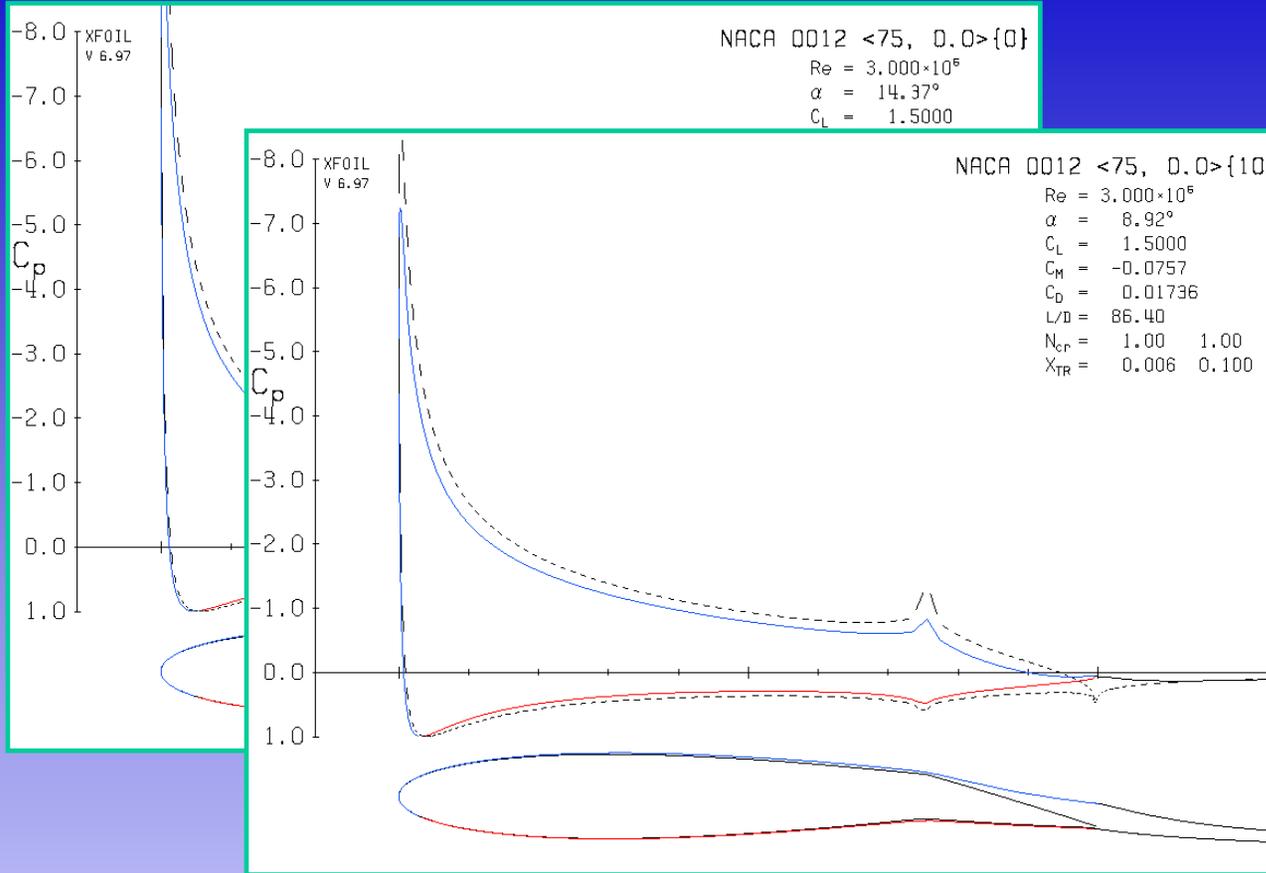
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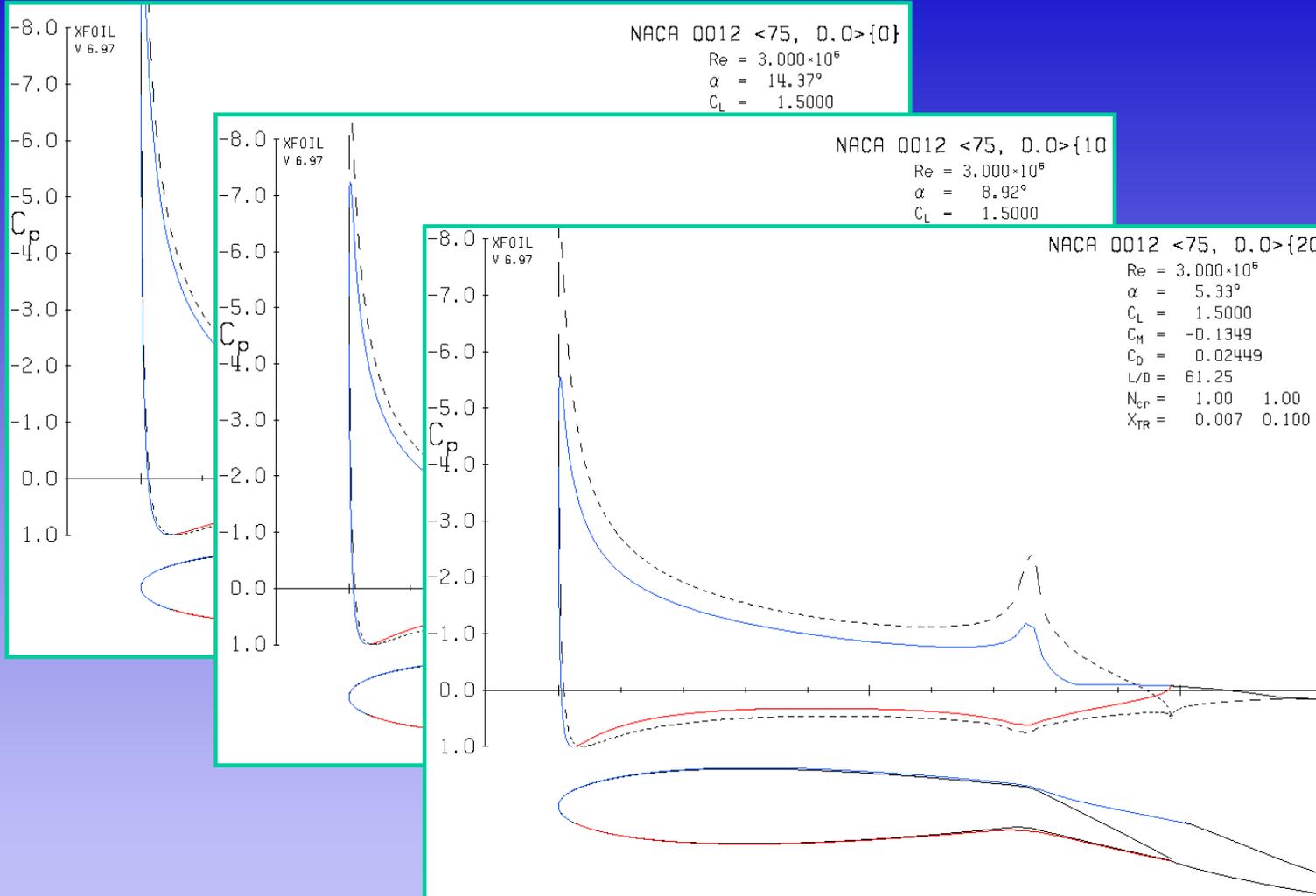
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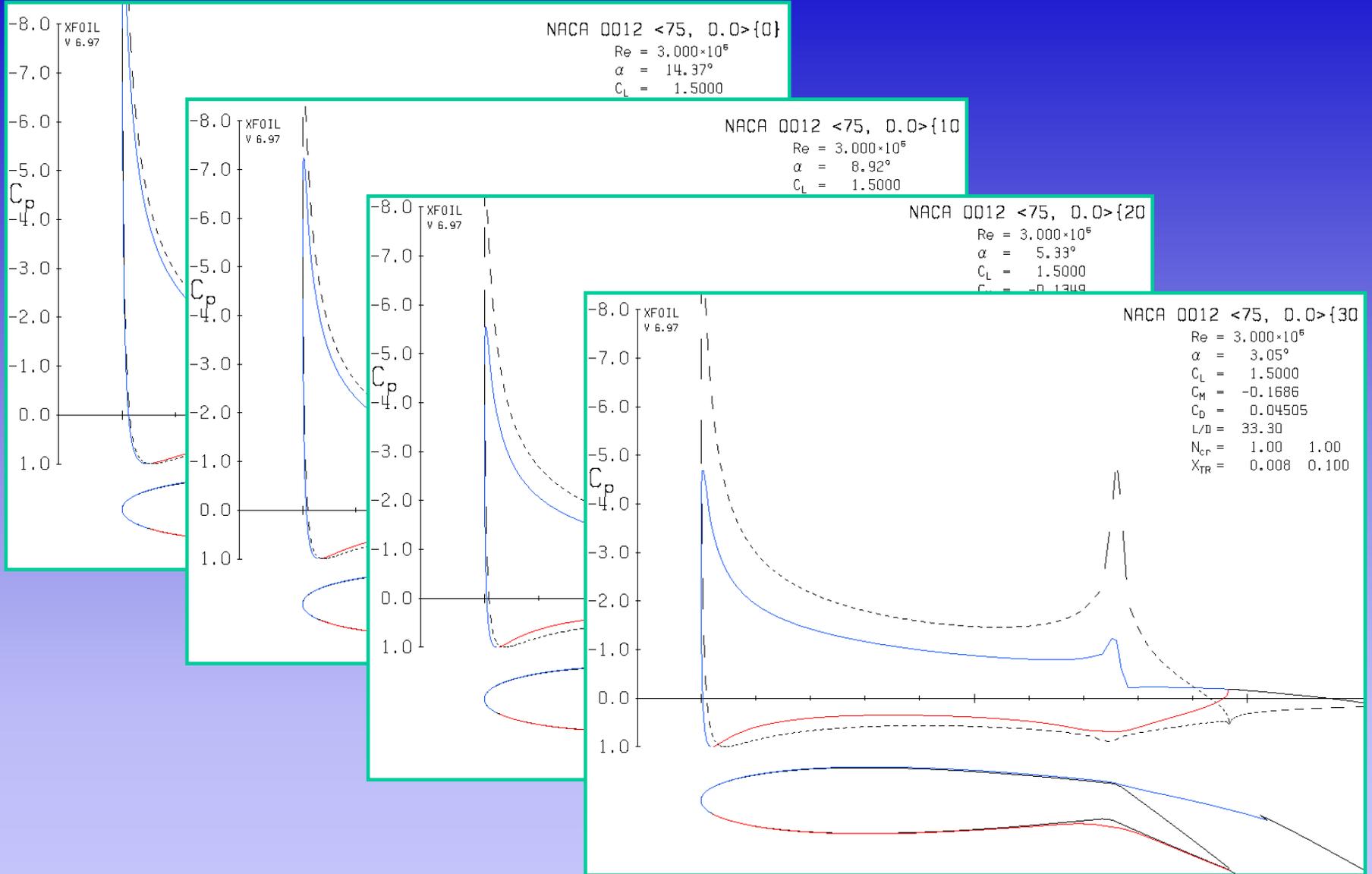
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HIGHT LIFT DEVICES

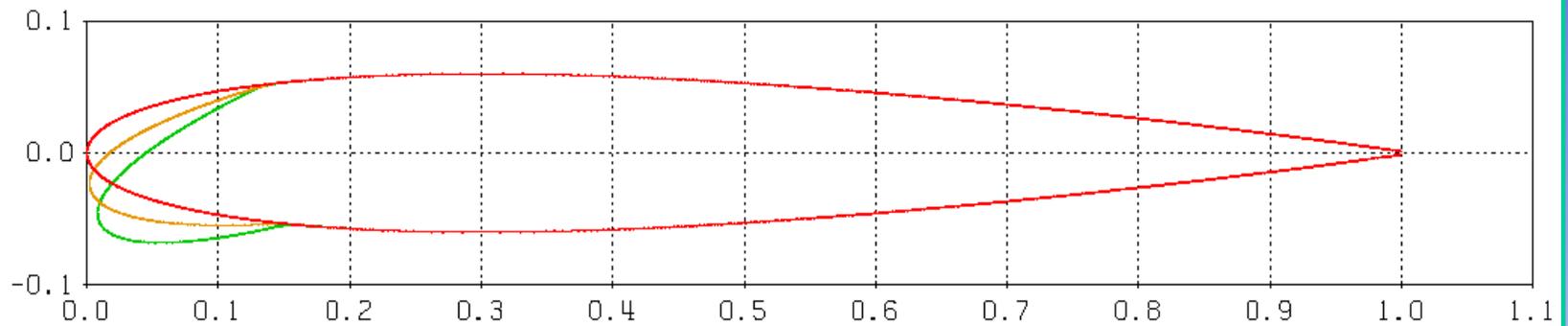


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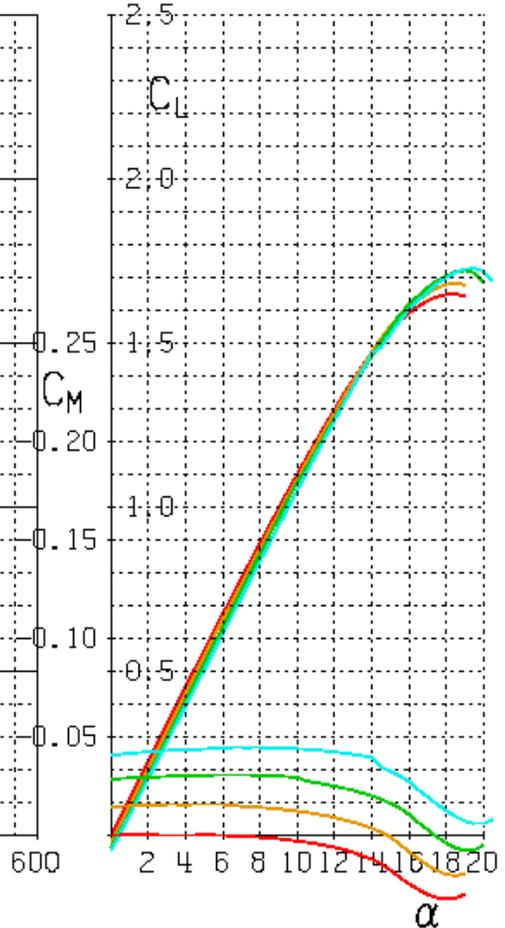
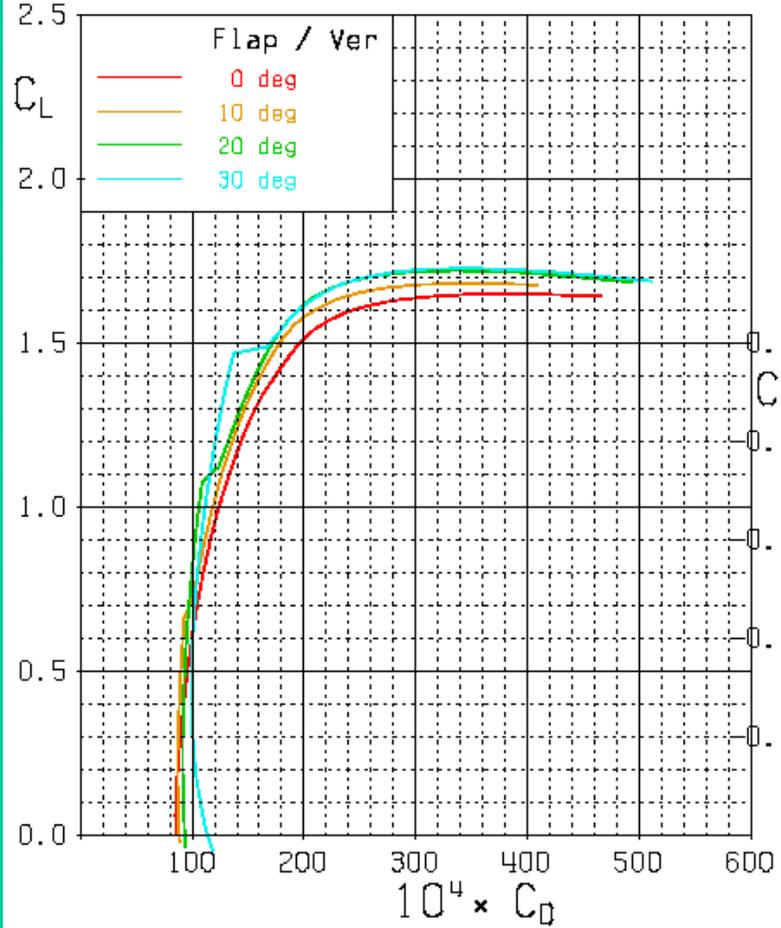
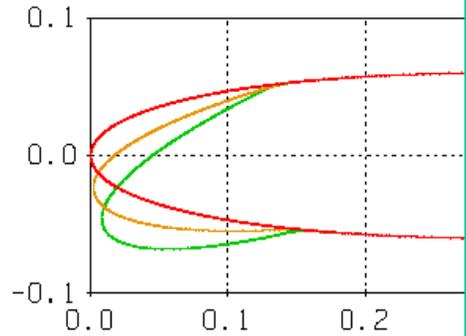
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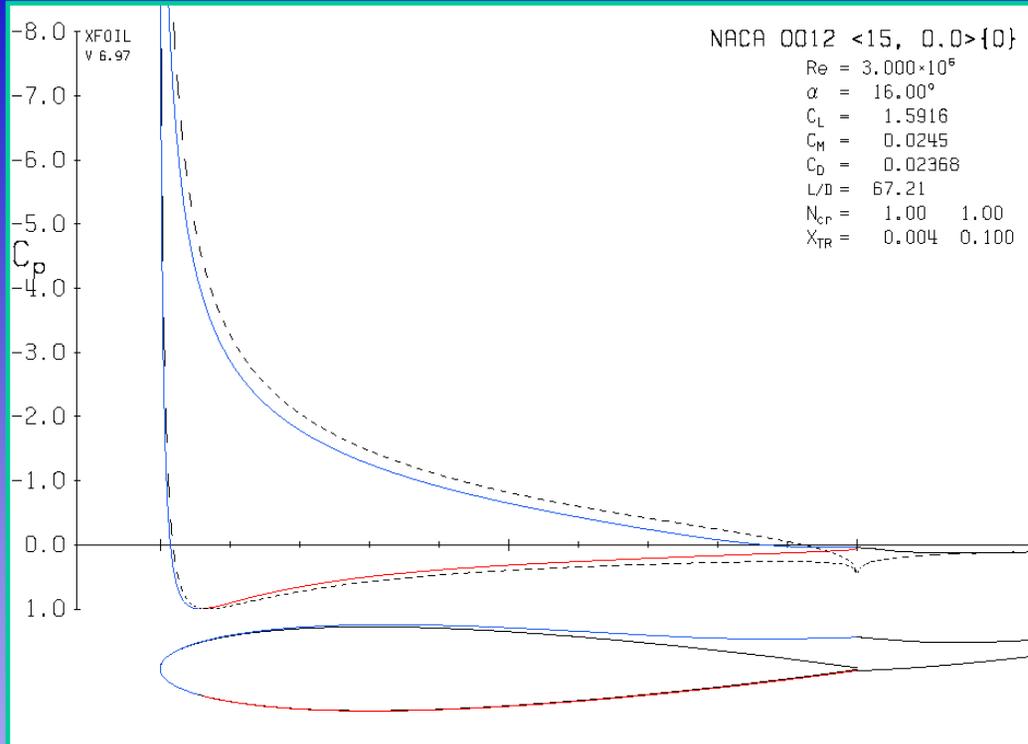


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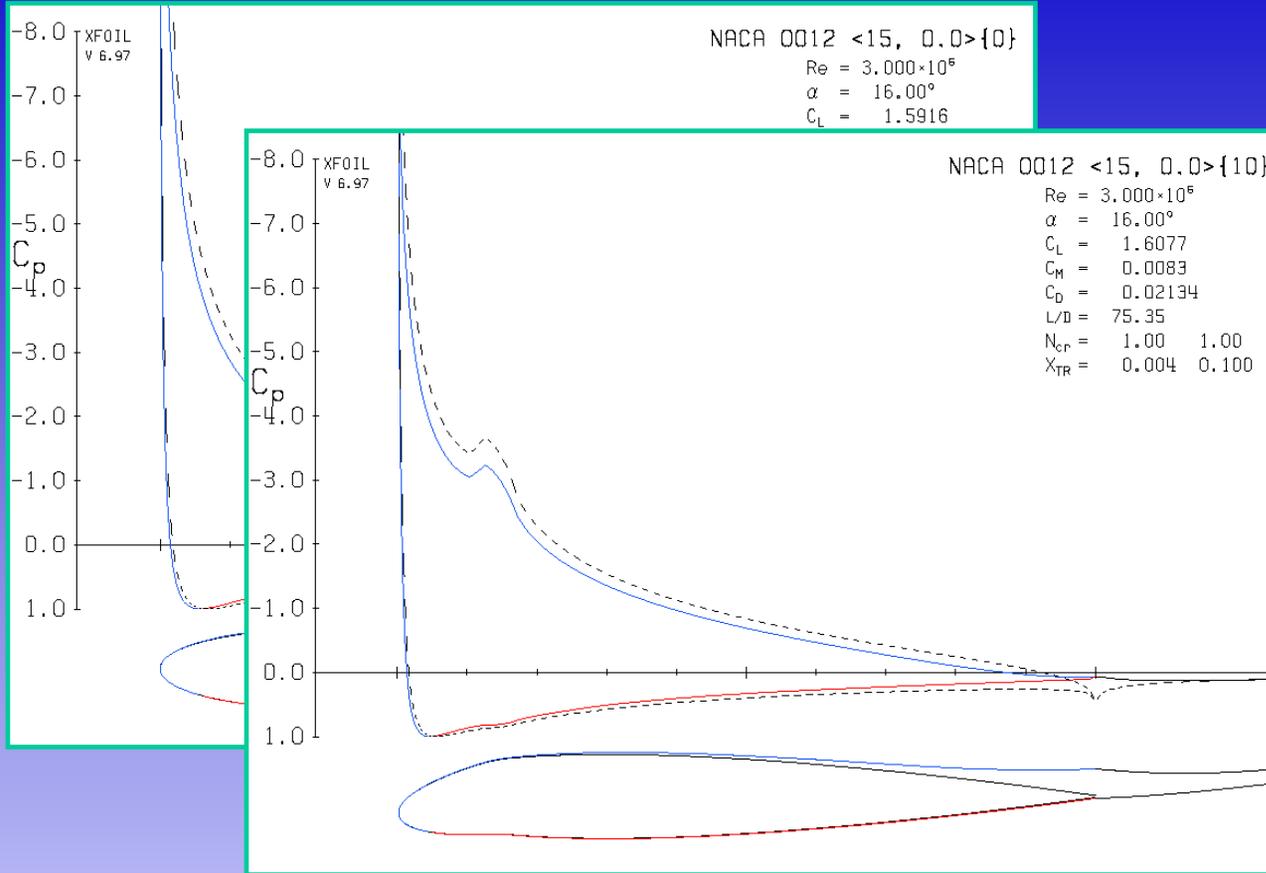
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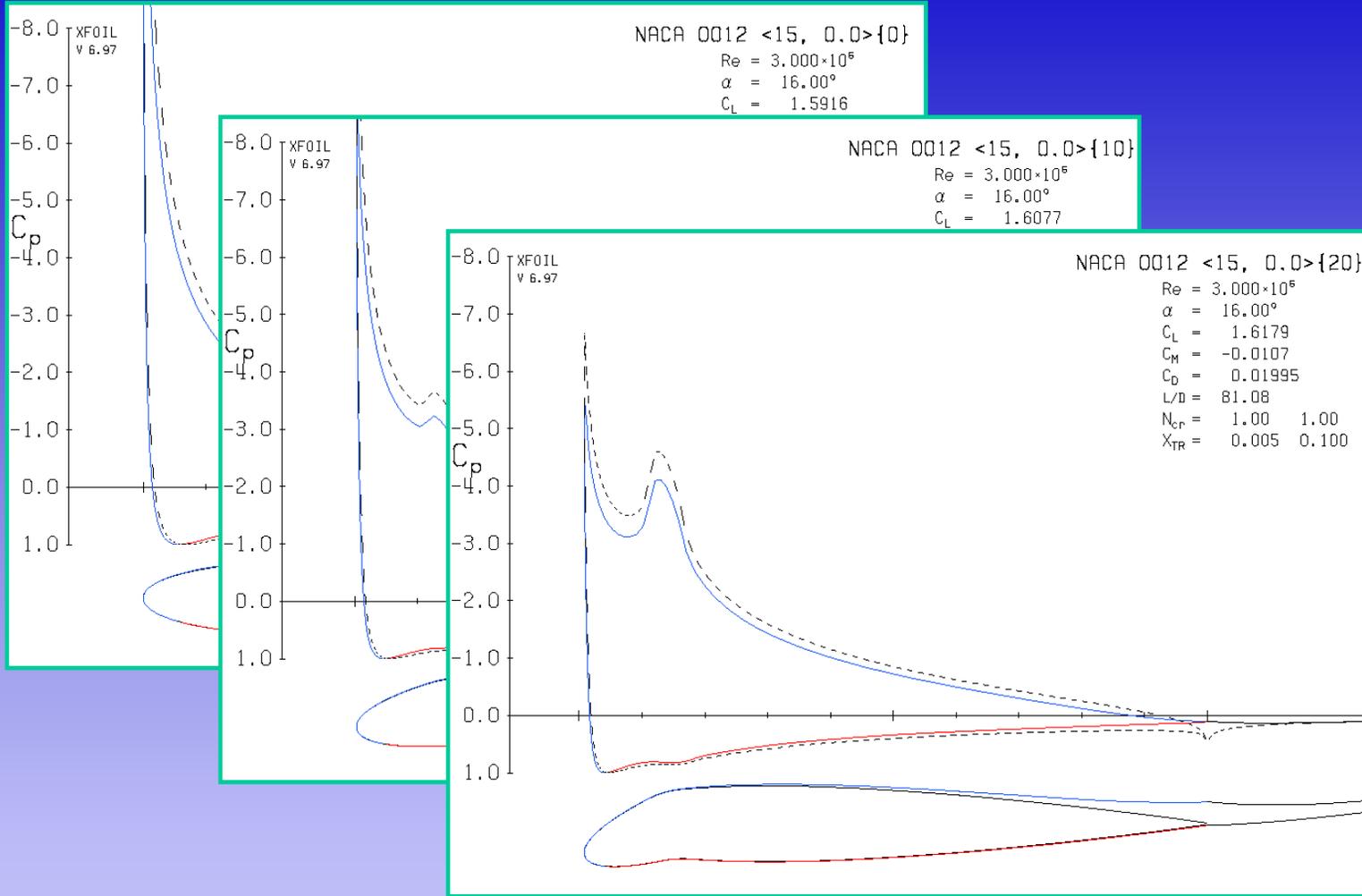
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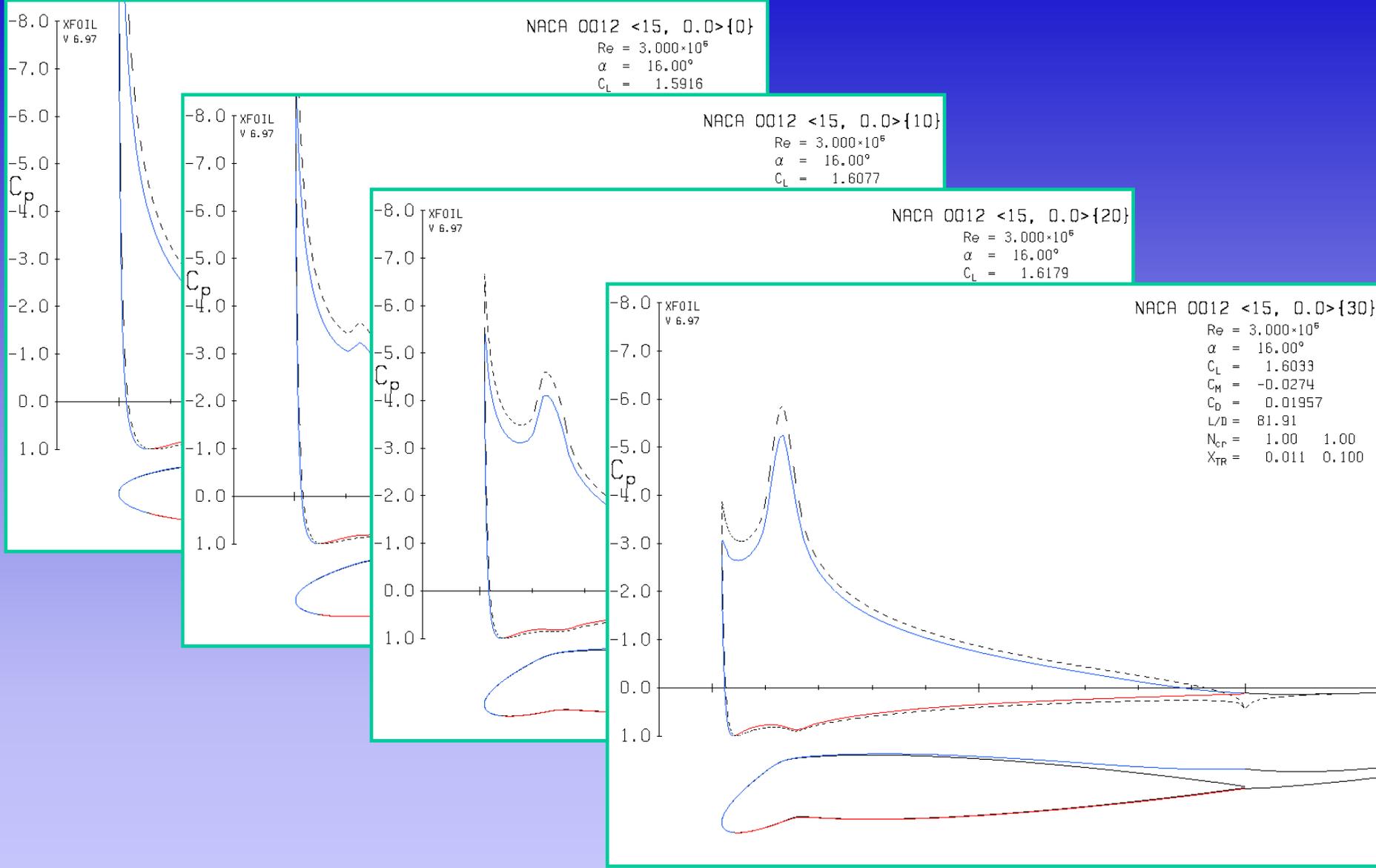
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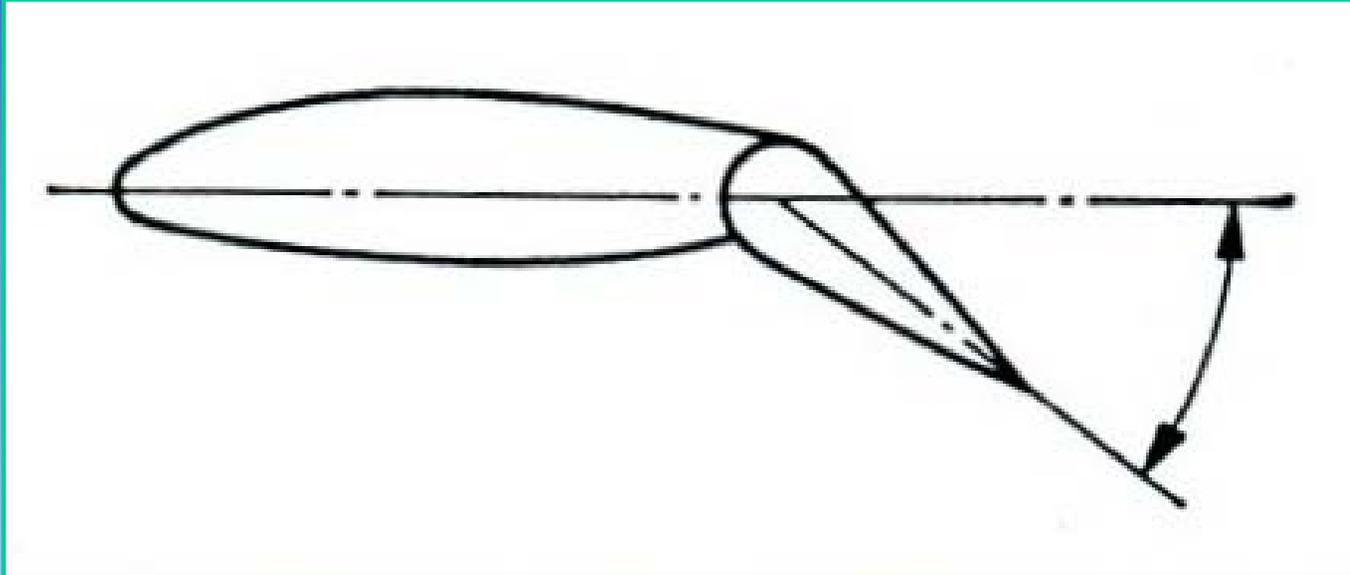
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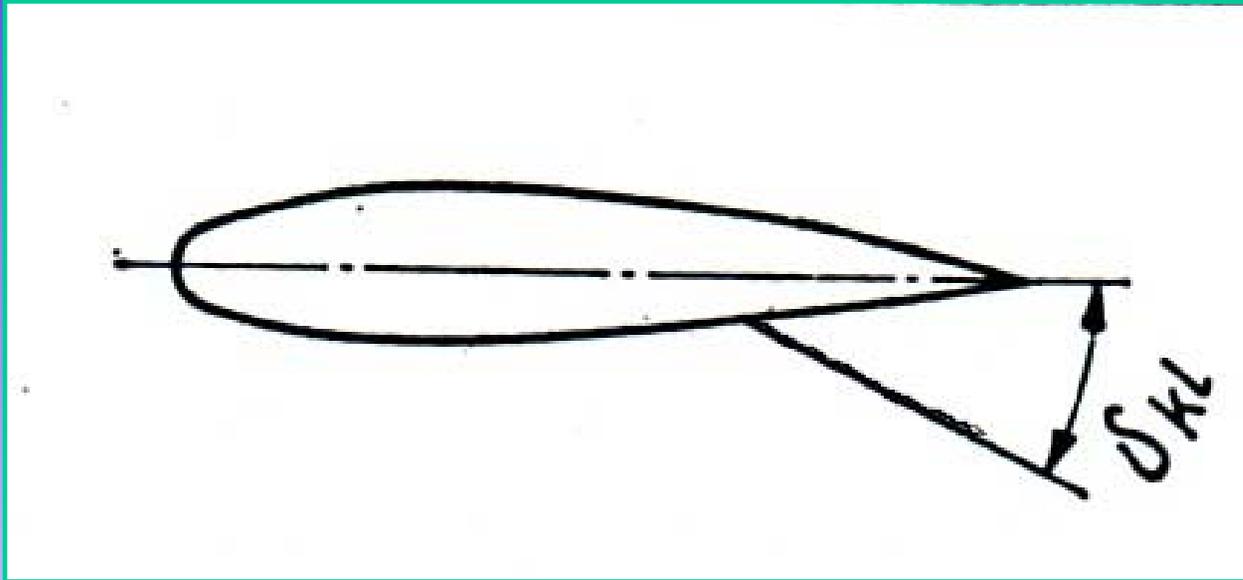
HIGHT LIFT DEVICES

CL_{MAX} V_{MIN} α_{CR}

HIGHT LIFT DEVICES



HIGHT LIFT DEVICES



HIGHT LIFT DEVICES

Aug. 12, 1924.

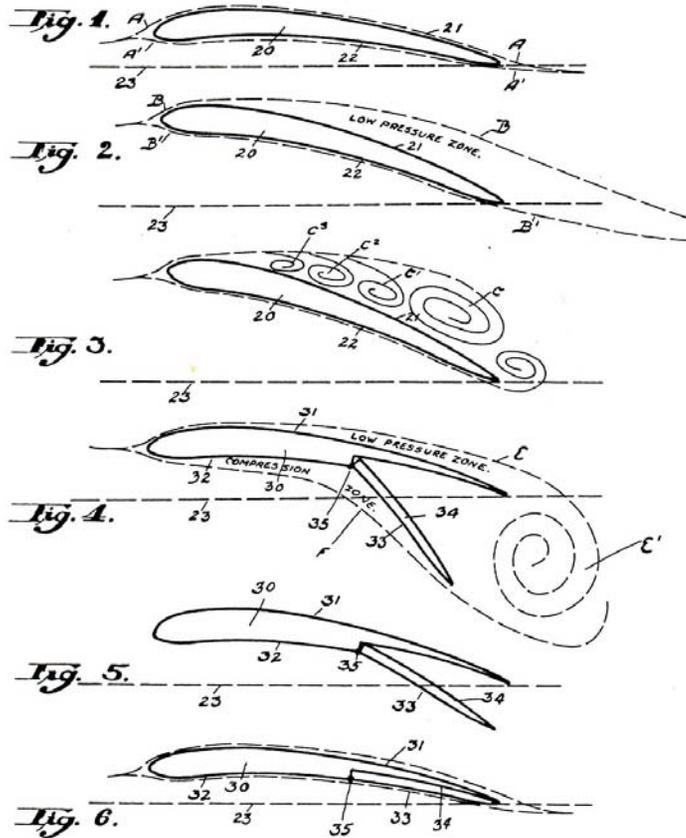
O. WRIGHT ET AL

1,504,663

AIRPLANE

Filed May 31, 1921

3 Sheets-Sheet 1



Witnesses:

R. K. Lee

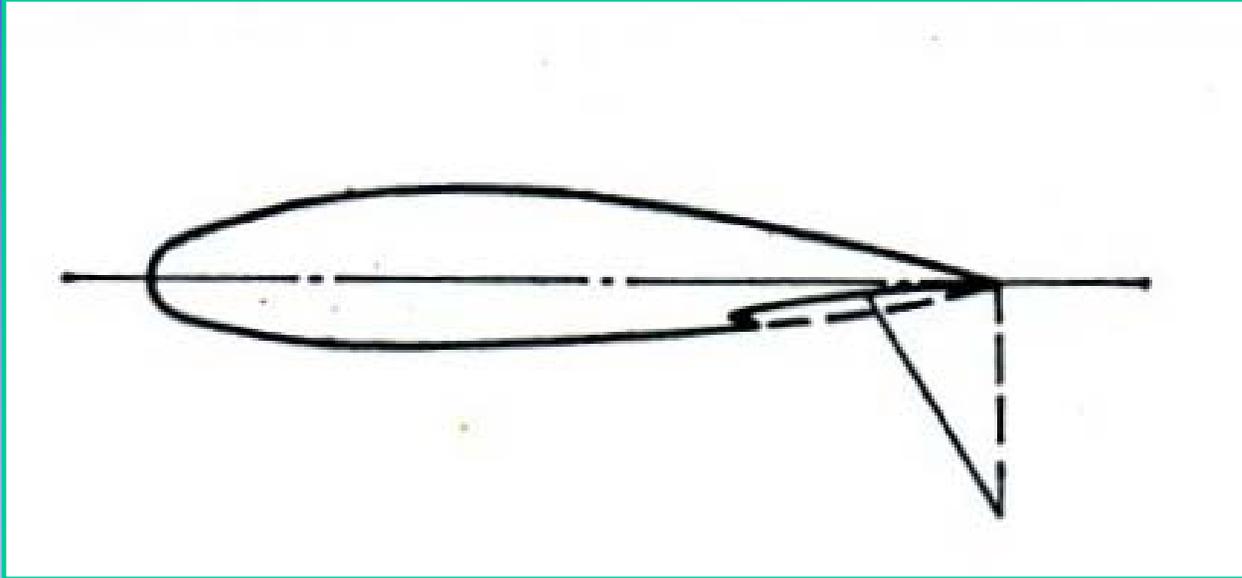
L. H. Emrick

By

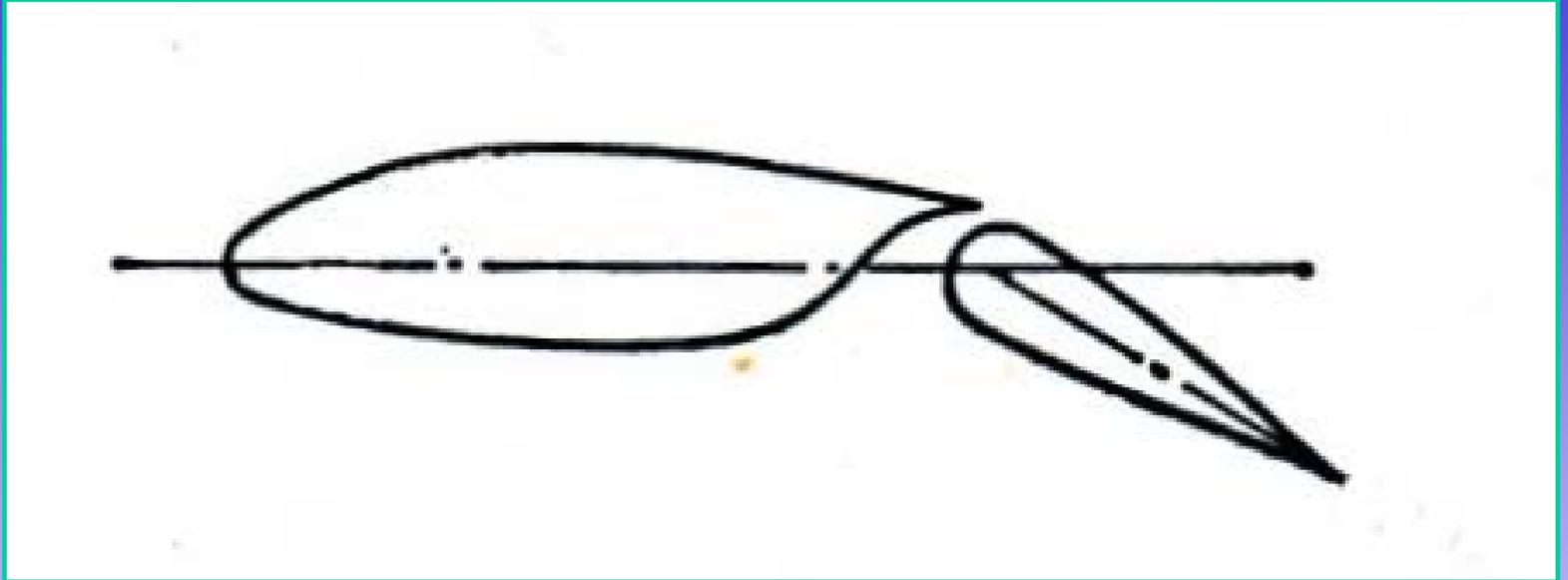
Inventors
Orville Wright and
James M. H. Jacobs.
Francis D. Hardisty,
Attorney

Fig. 7 Sheet 1 of the U.S. Patent 1,504,663, by Orville Wright and J. M. H. Jacobs, illustrating their concept of a split flap.

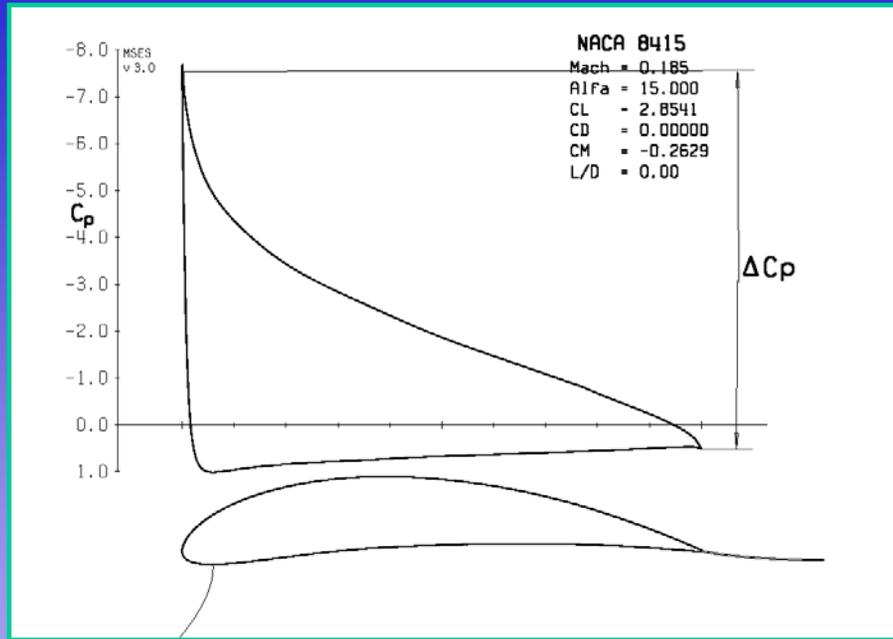
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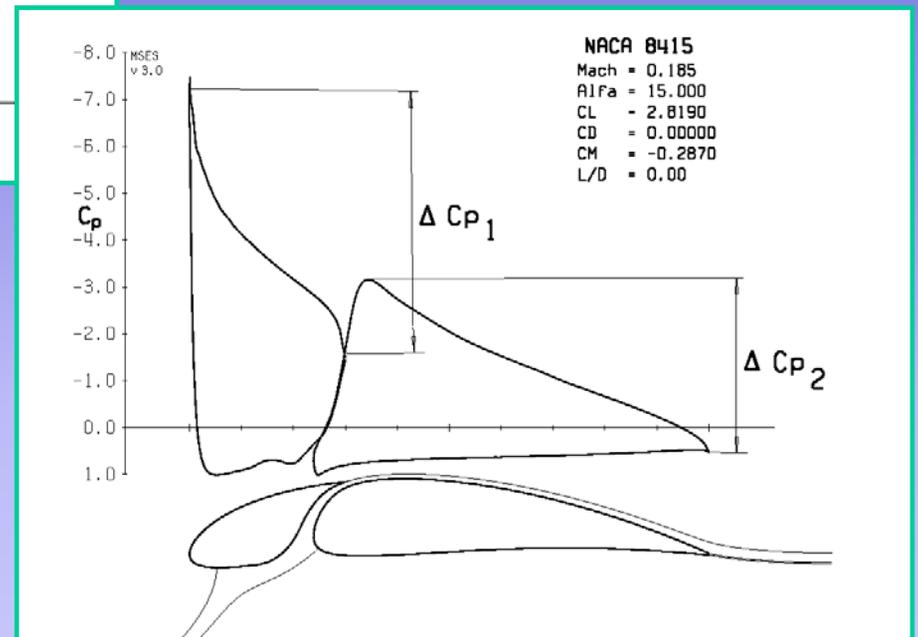
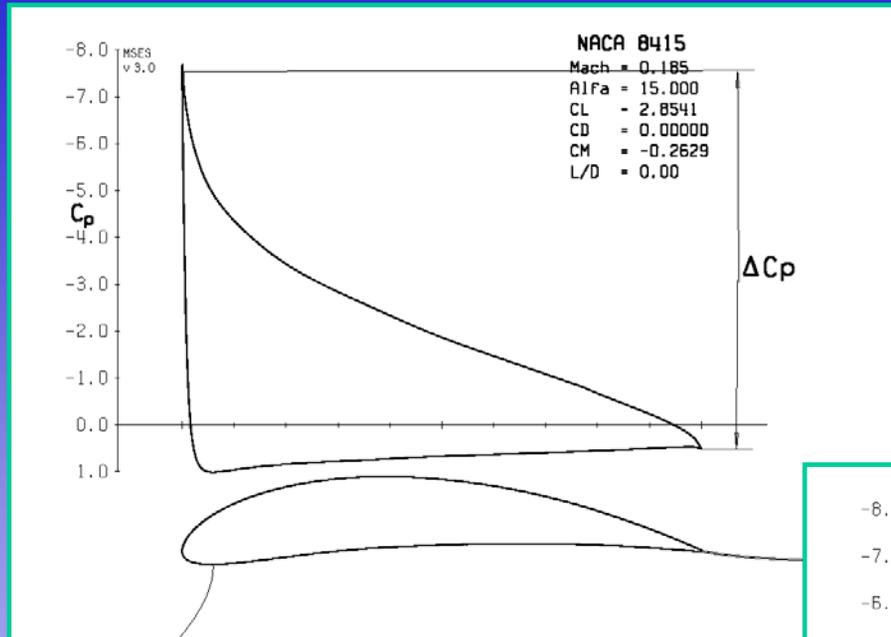
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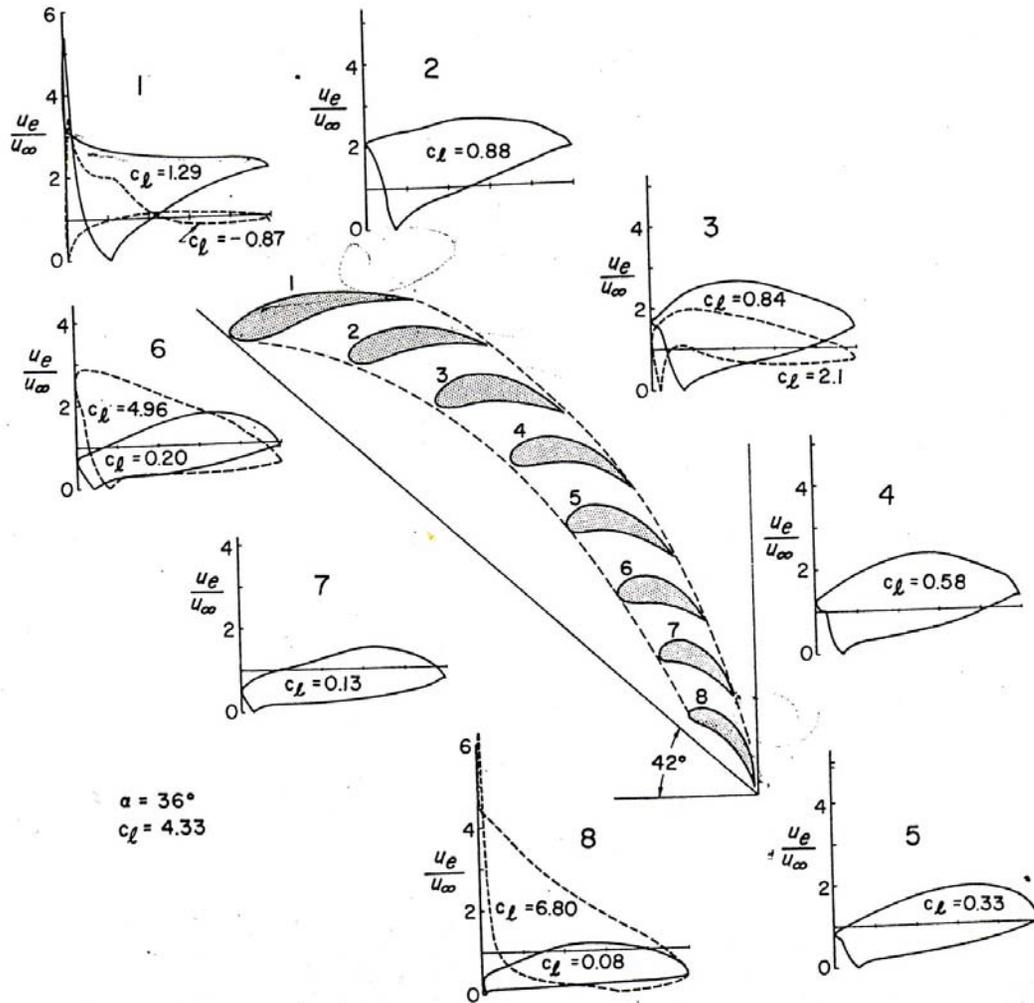
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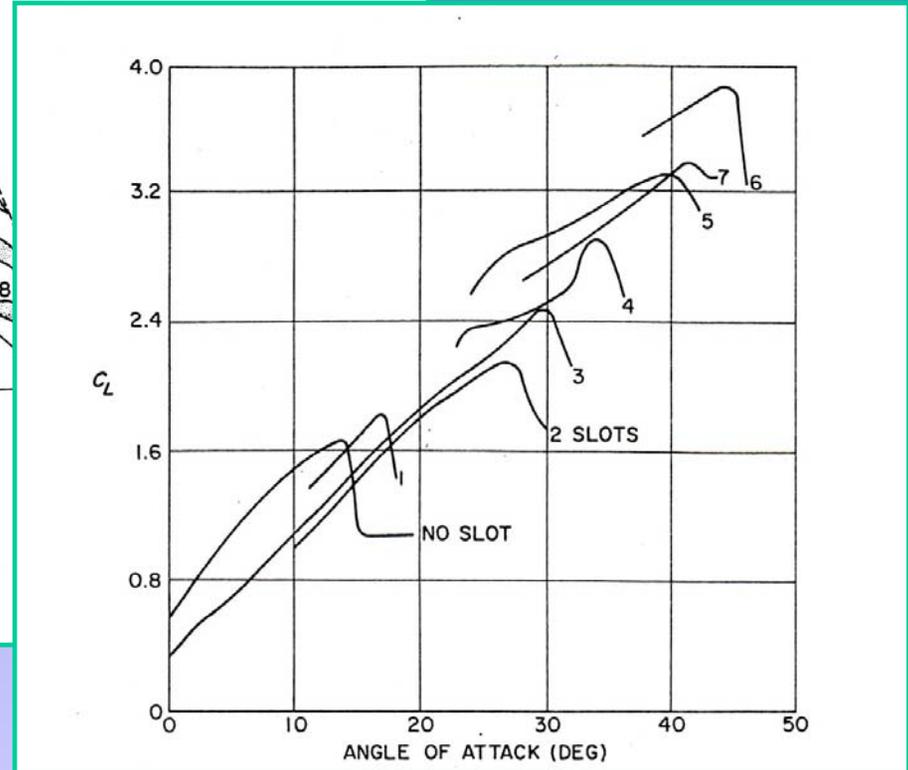
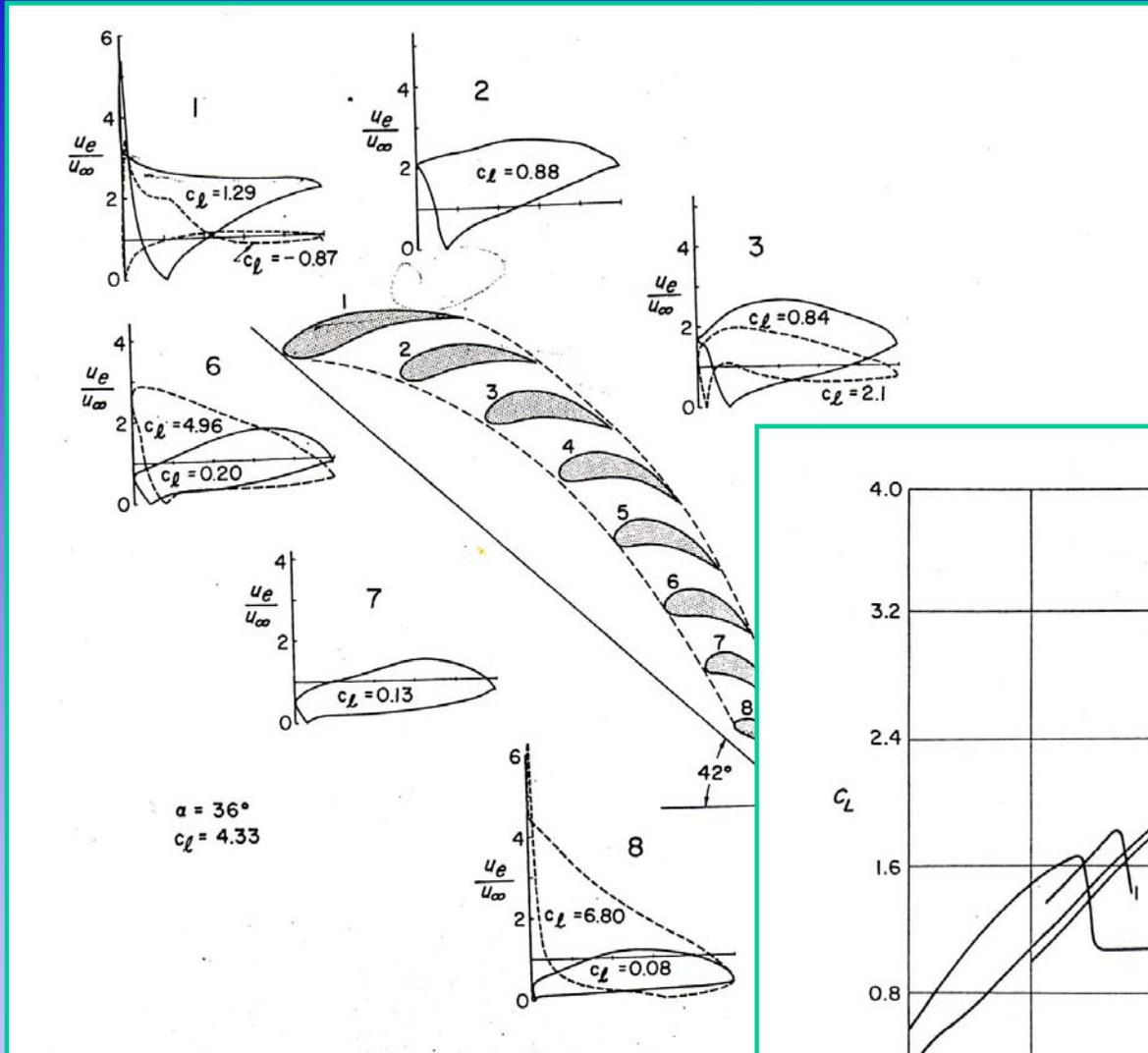
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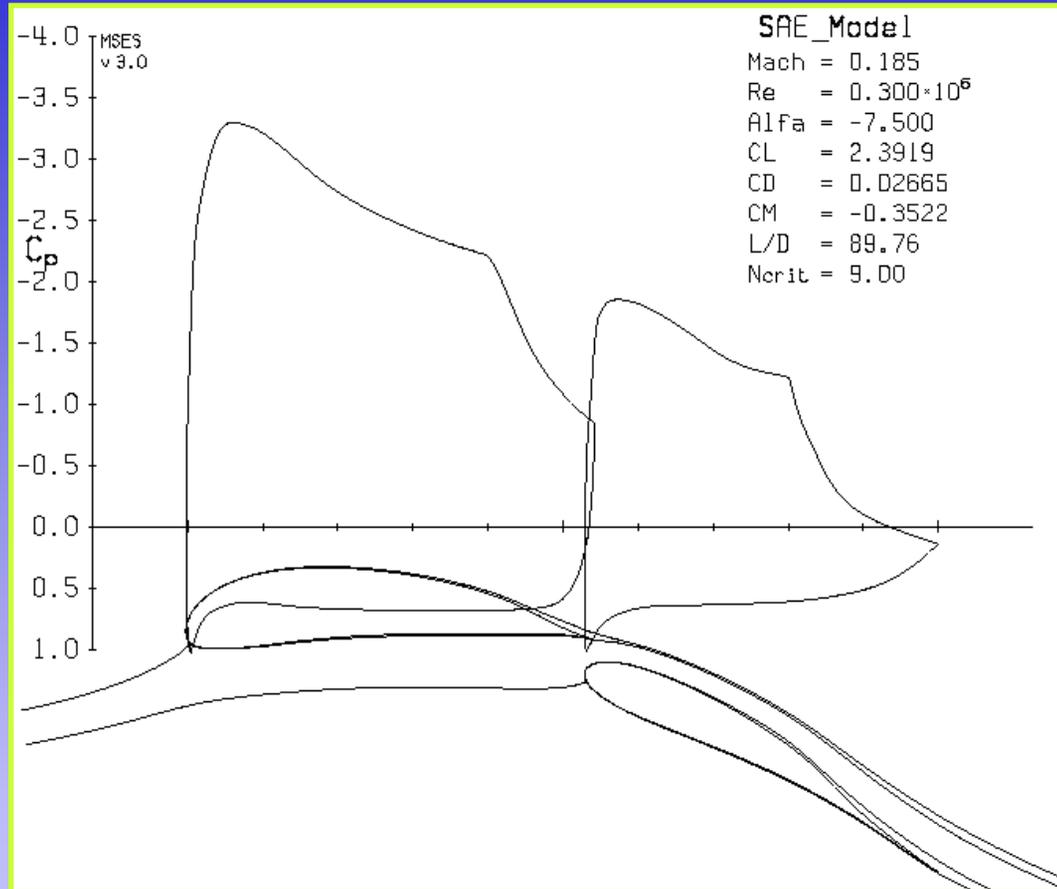
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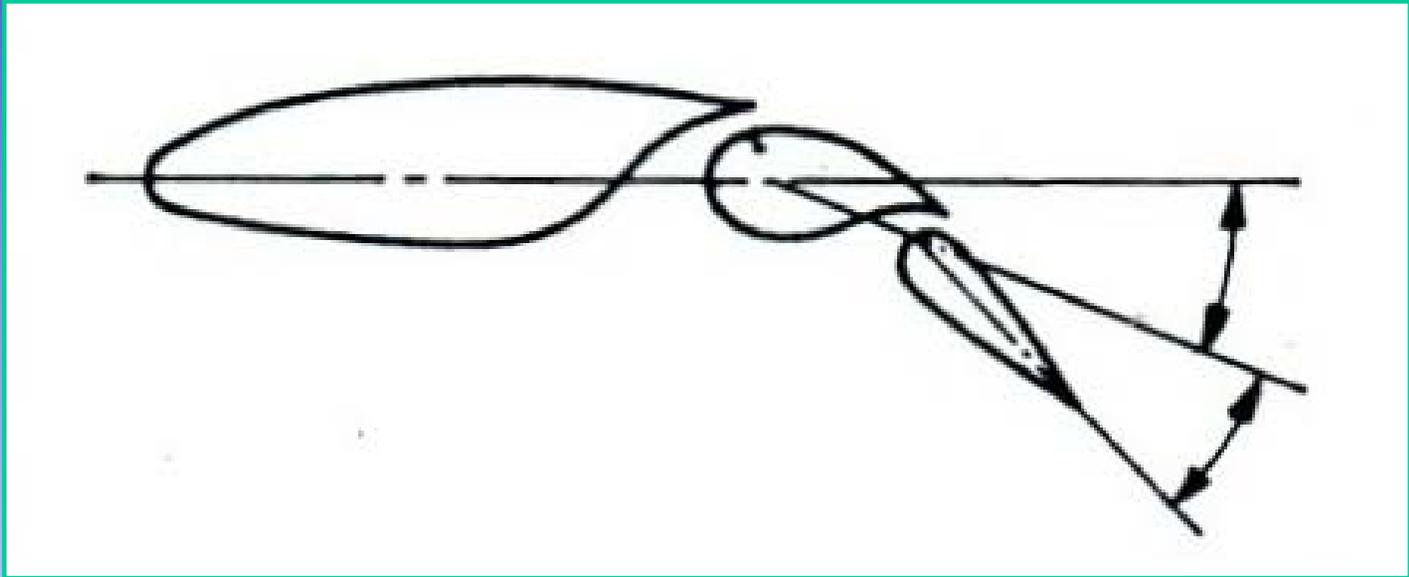
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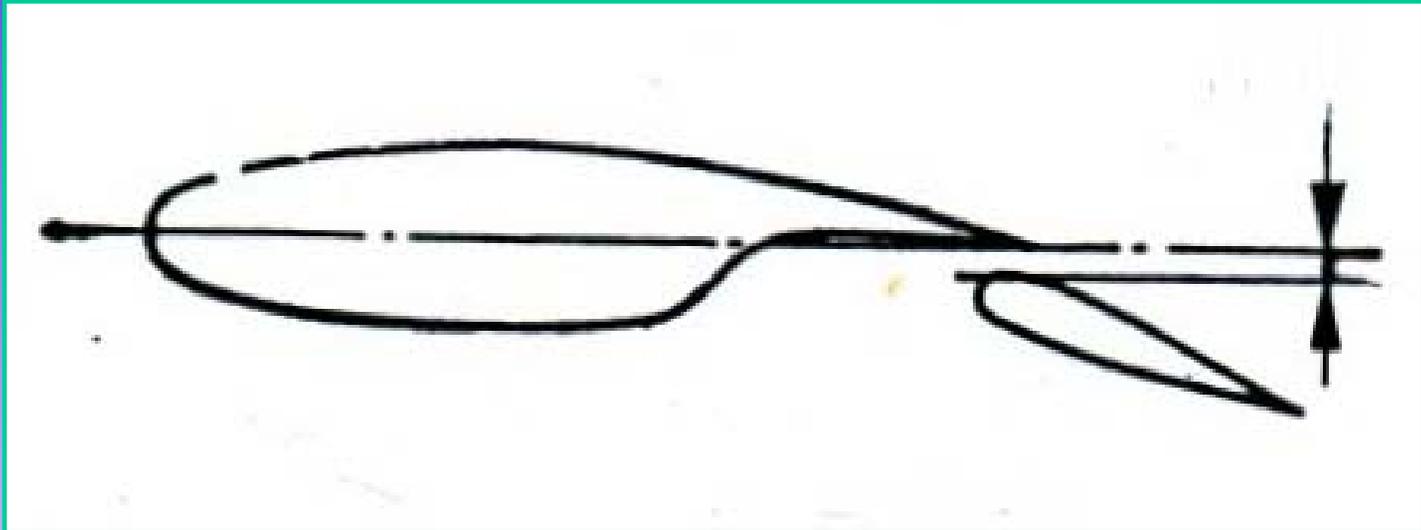
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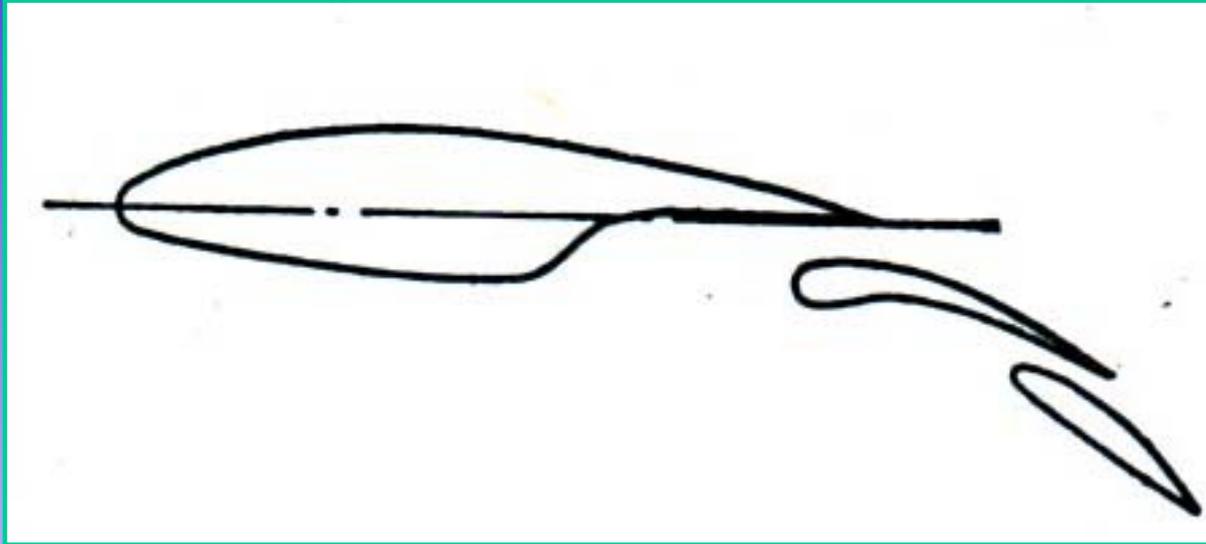
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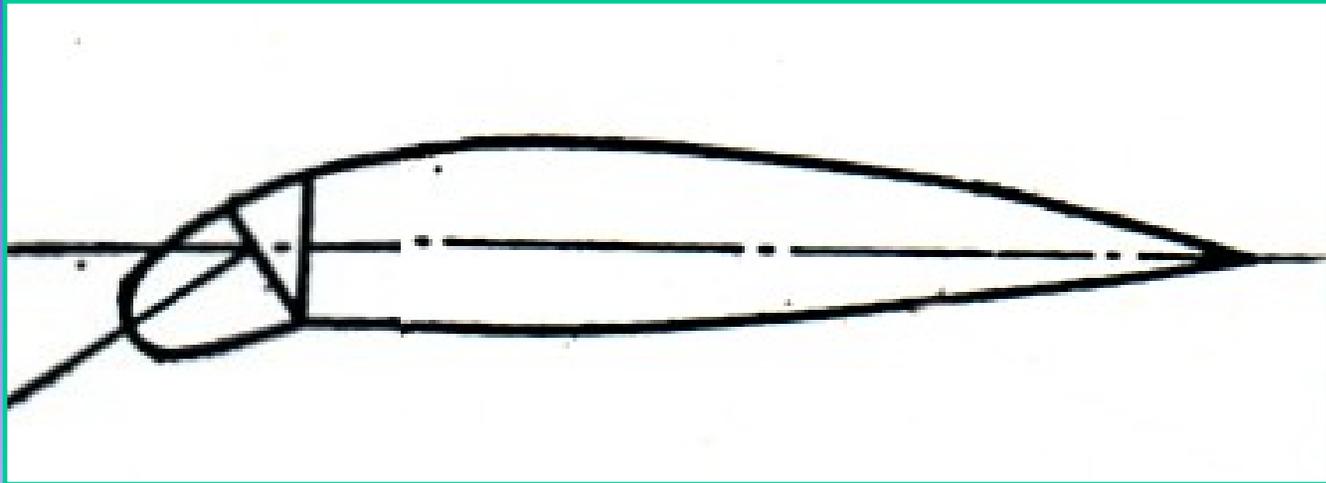
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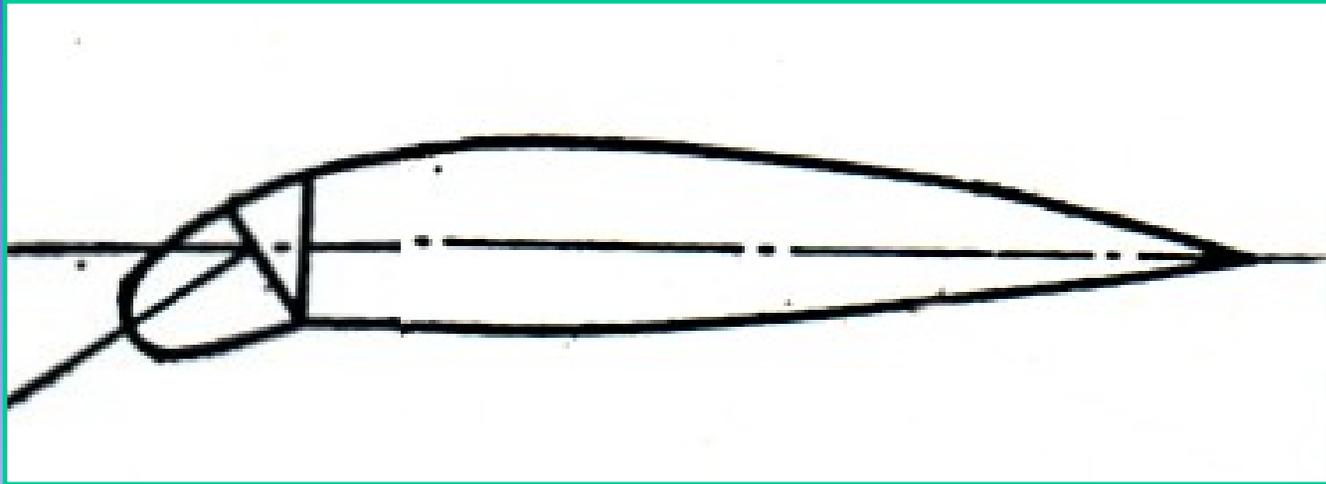
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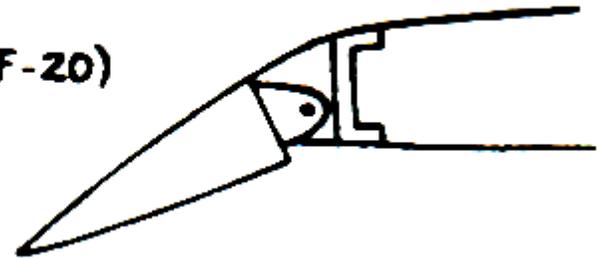
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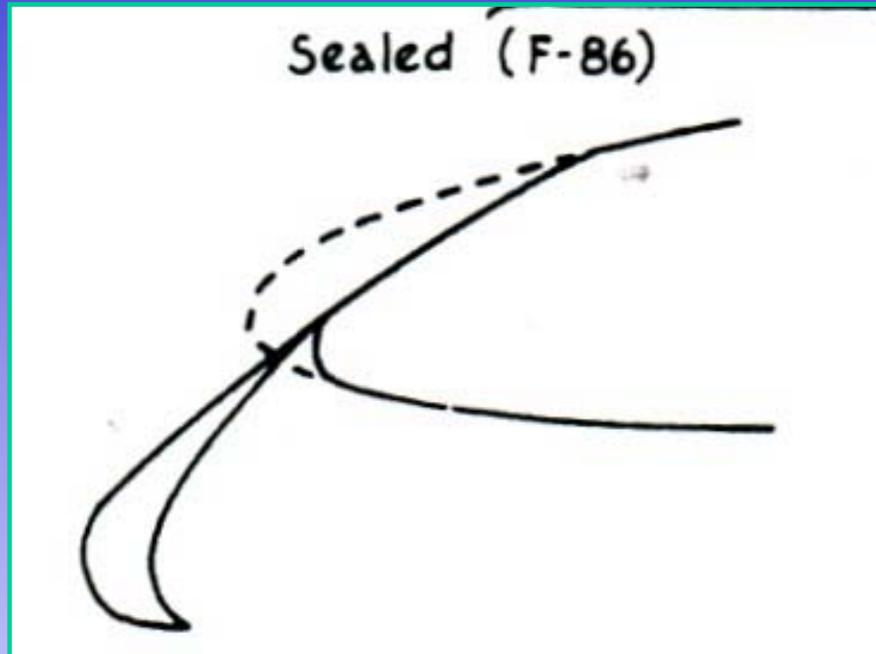
HIGHT LIFT DEVICES



Nose flap (F-20)

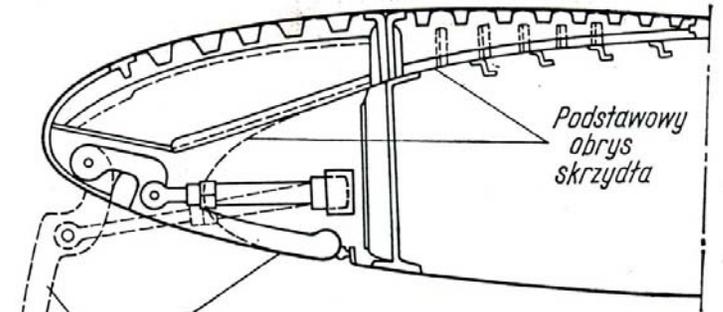
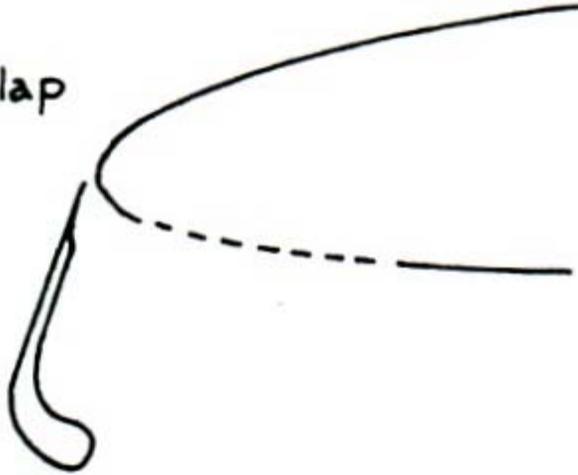


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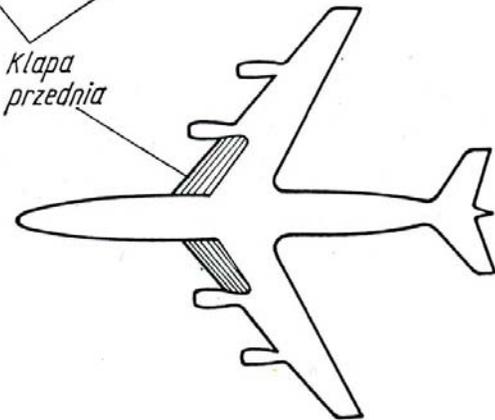


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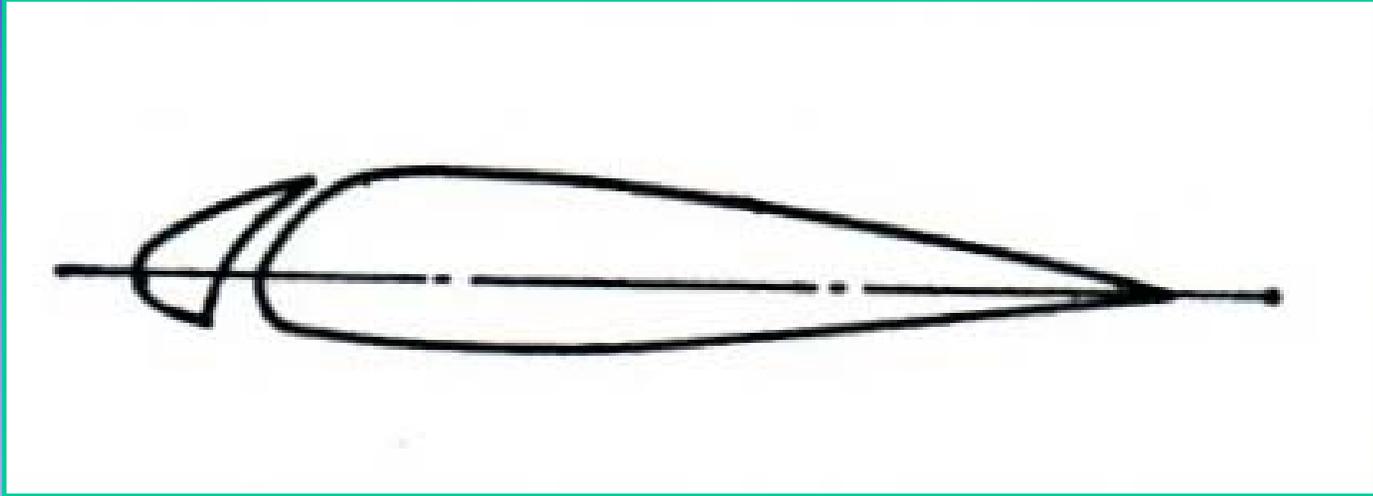
Krueger flap
(Tornado)



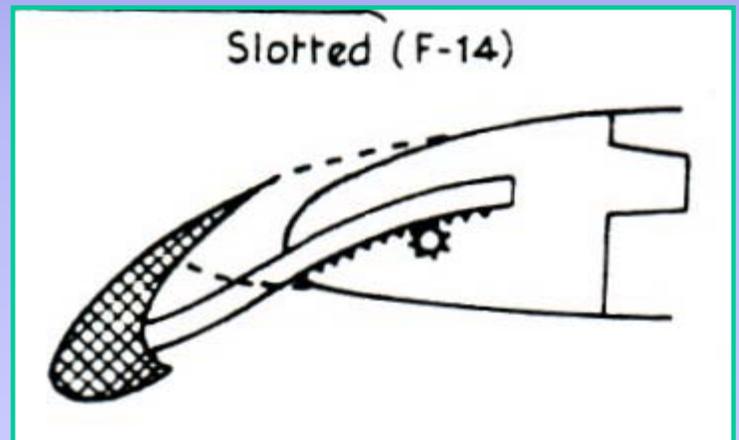
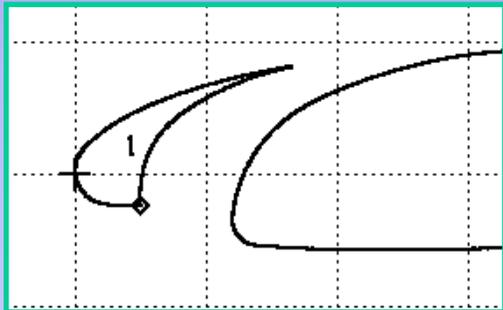
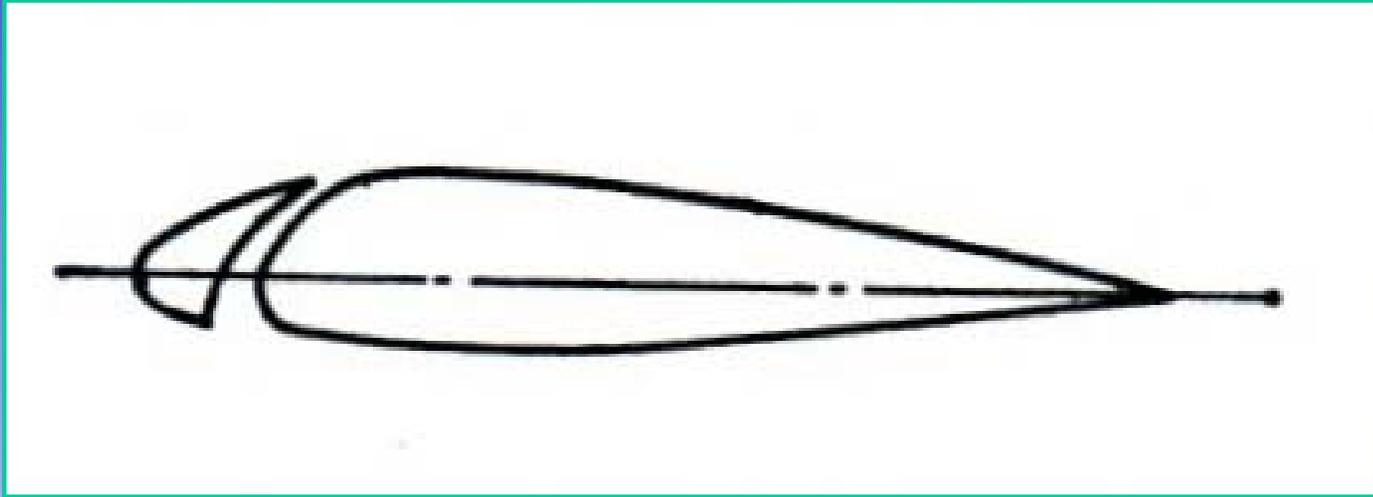
Kłapa przednia



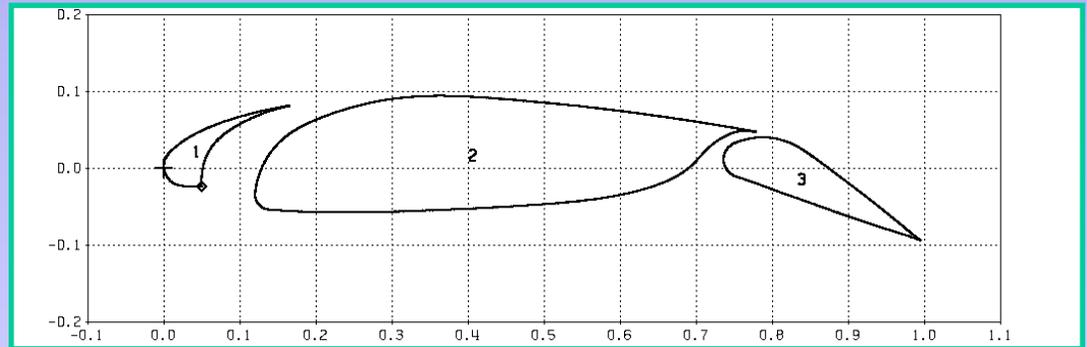
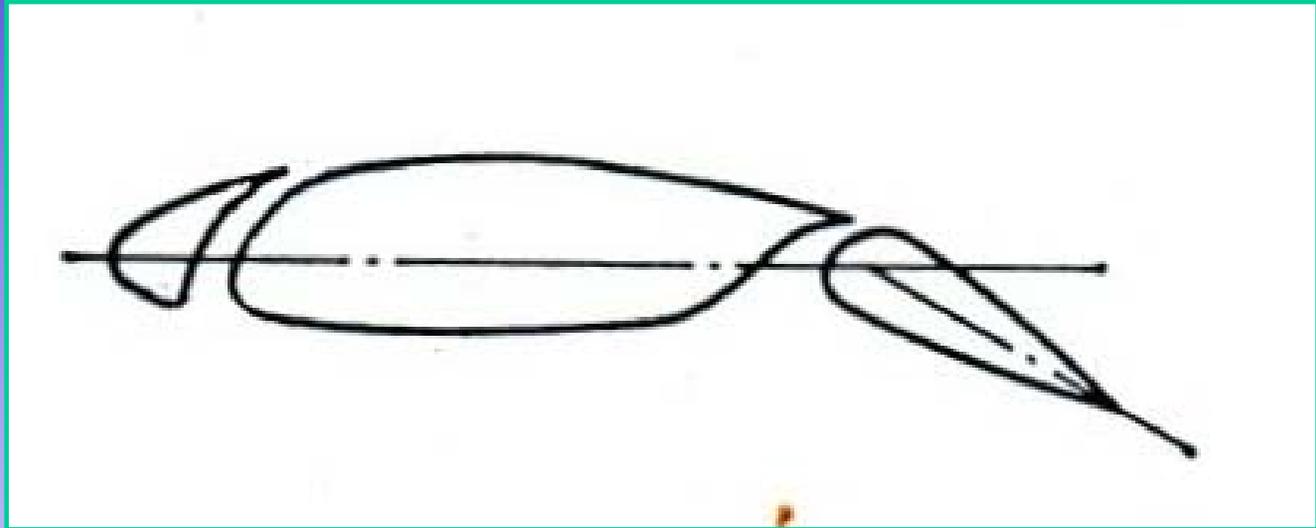
HIGHT LIFT DEVICES



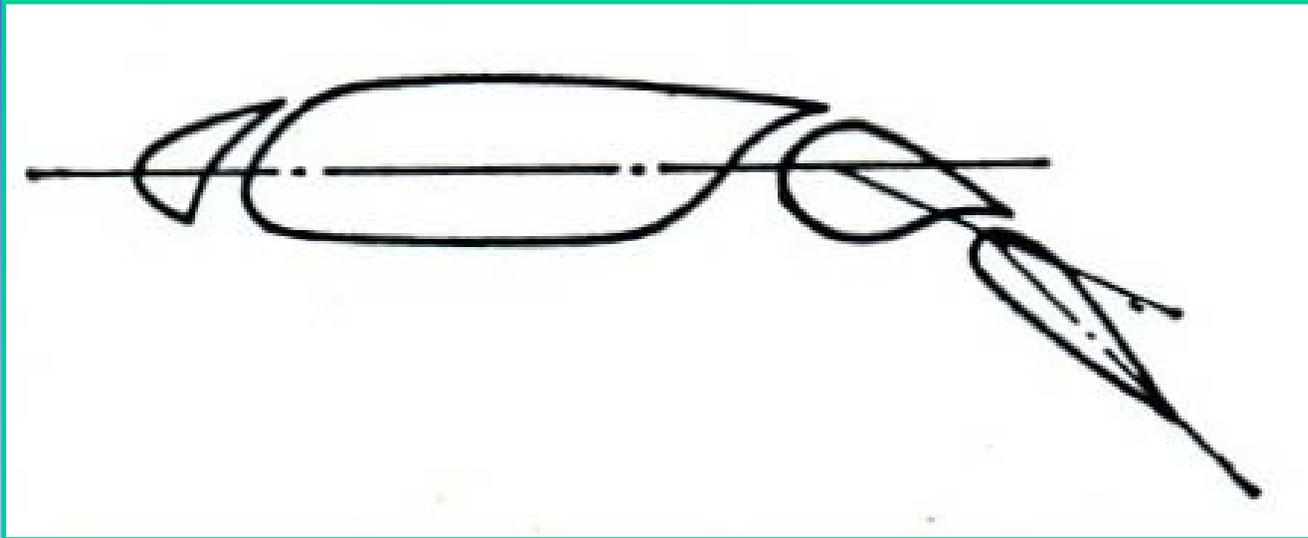
HIGHT LIFT DEVICES



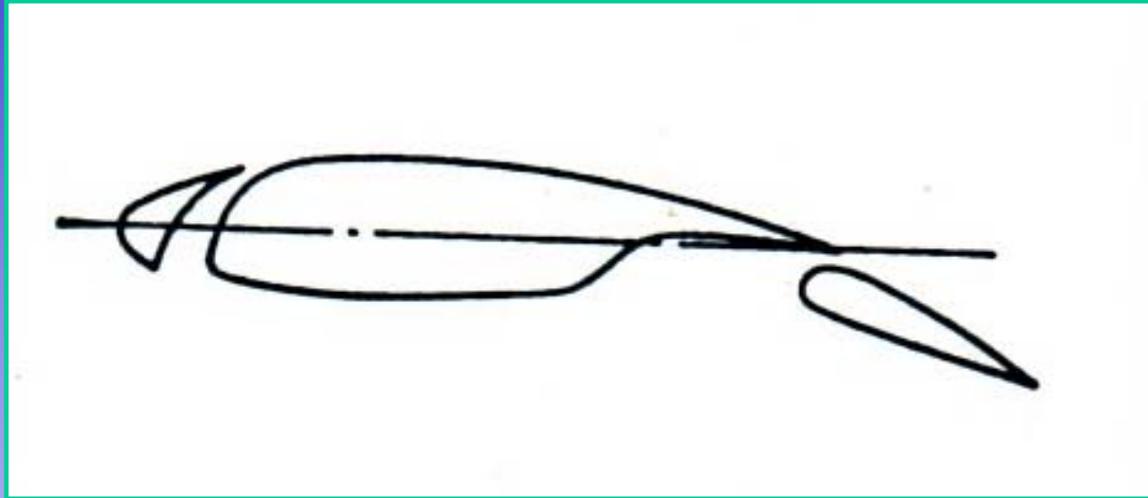
HIGHT LIFT DEVICES



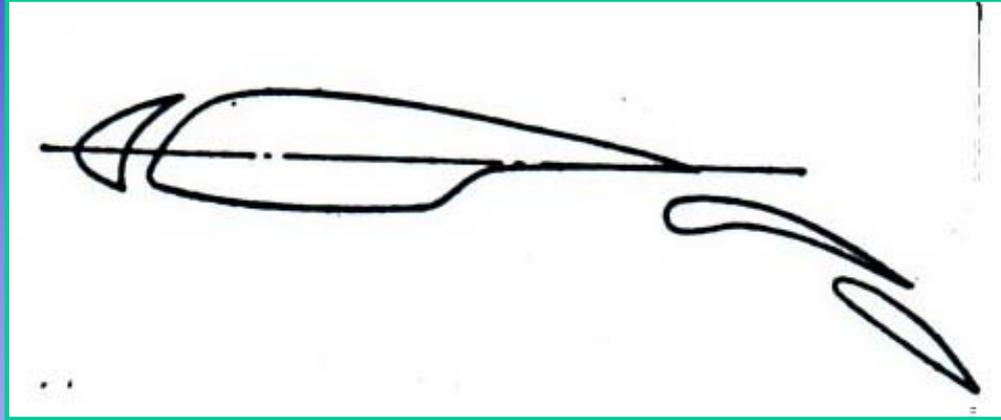
HIGHT LIFT DEVICES



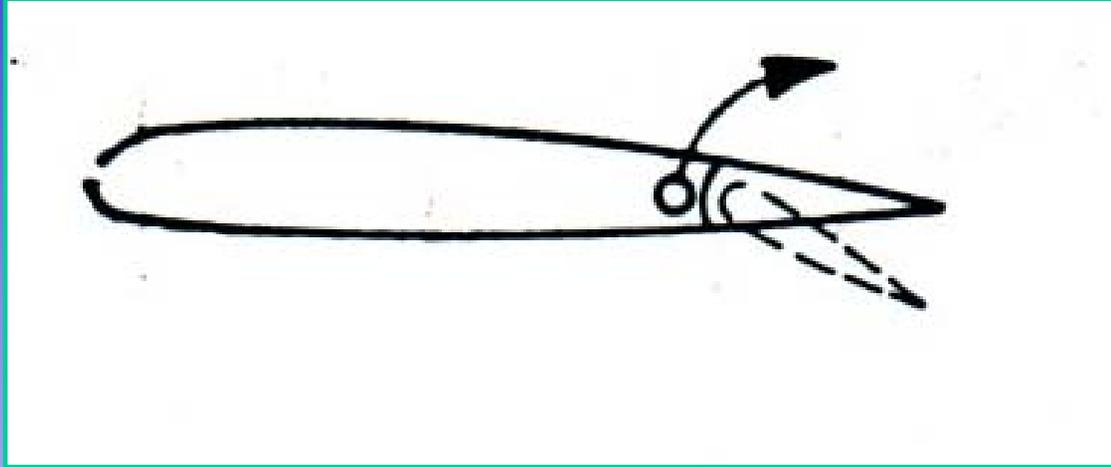
HIGHT LIFT DEVICES



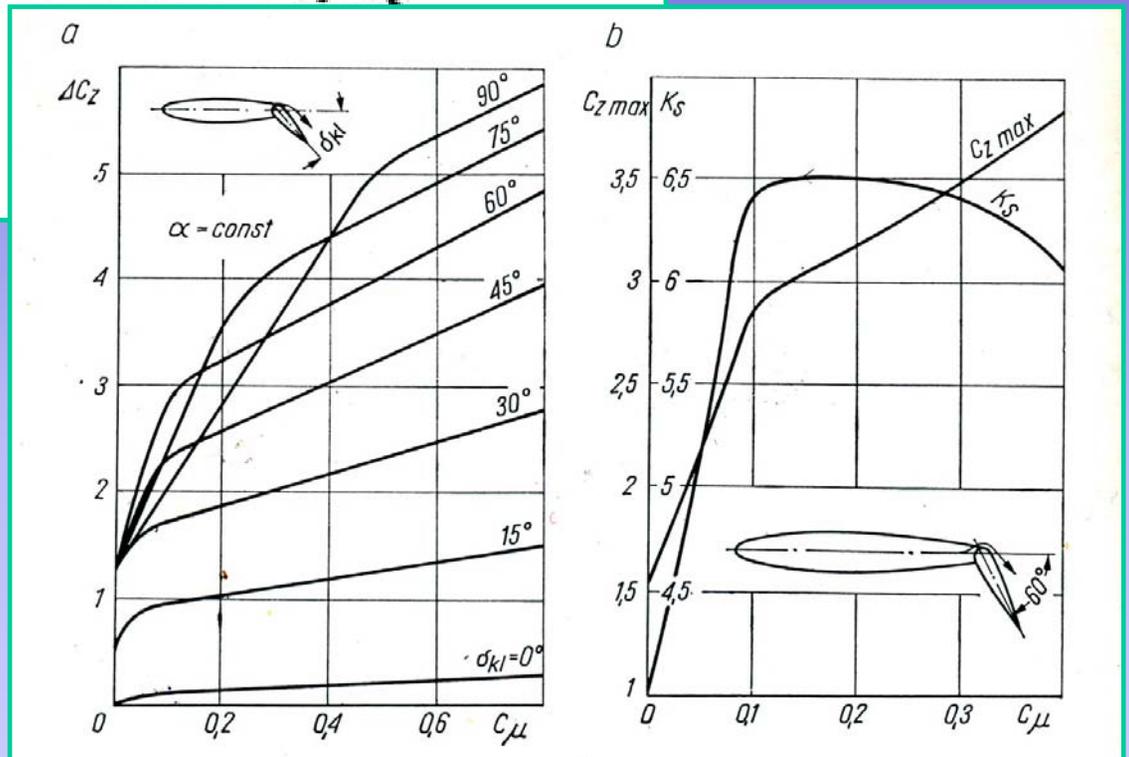
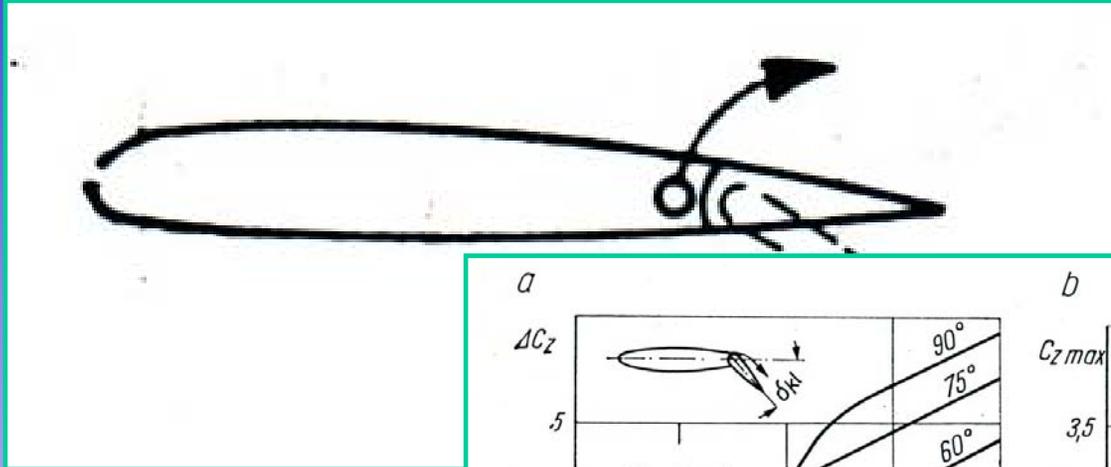
HIGHT LIFT DEVICES



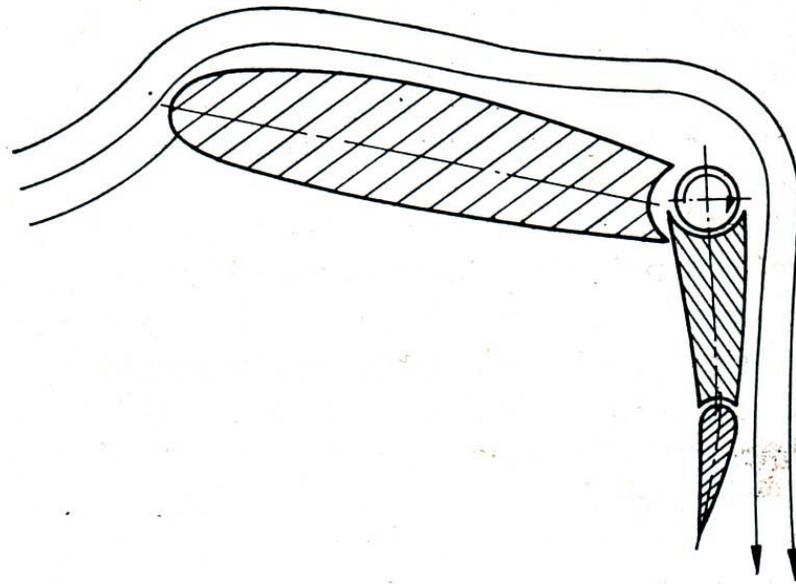
HIGHT LIFT DEVICES



HIGHT LIFT DEVICES

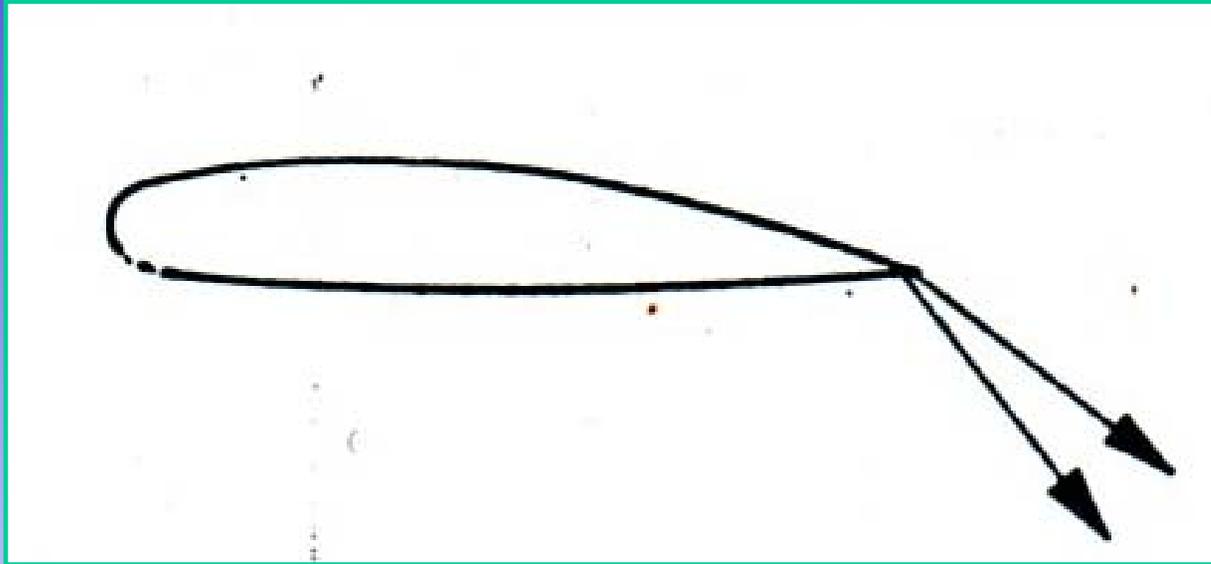


HIGHT LIFT DEVICES

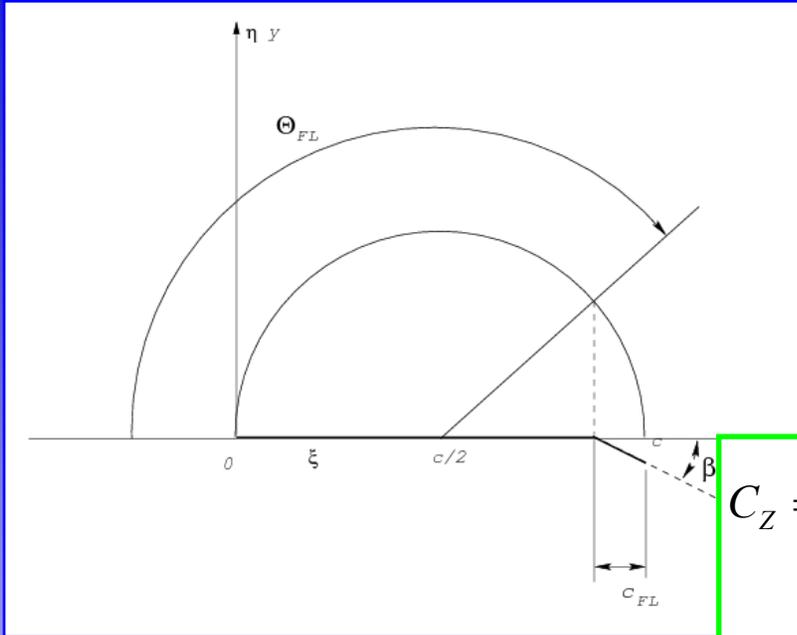


Rys. 9.22. Klapa samolotu NORTH AMERICAN OV-10A „Bronco”

HIGHT LIFT DEVICES



Thin Airfoil Theory (Glauert)



$$C_Z = 2\pi \cdot \left(A_0 + \frac{1}{2} A_1 \right) =$$

$$2\pi \cdot \left(\alpha + \underbrace{\left(1 - \frac{\Theta_{FL} - \sin(\Theta_{FL})}{\pi} \right)}_{-\alpha_0} \cdot \beta_{FL} \right)$$

$$2\pi \cdot \alpha + 2\pi \underbrace{\left(1 - \frac{\Theta_{FL} - \sin(\Theta_{FL})}{\pi} \right)}_{C_{Z_0}} \cdot \beta_{FL}$$

HIGHT LIFT DEVICES

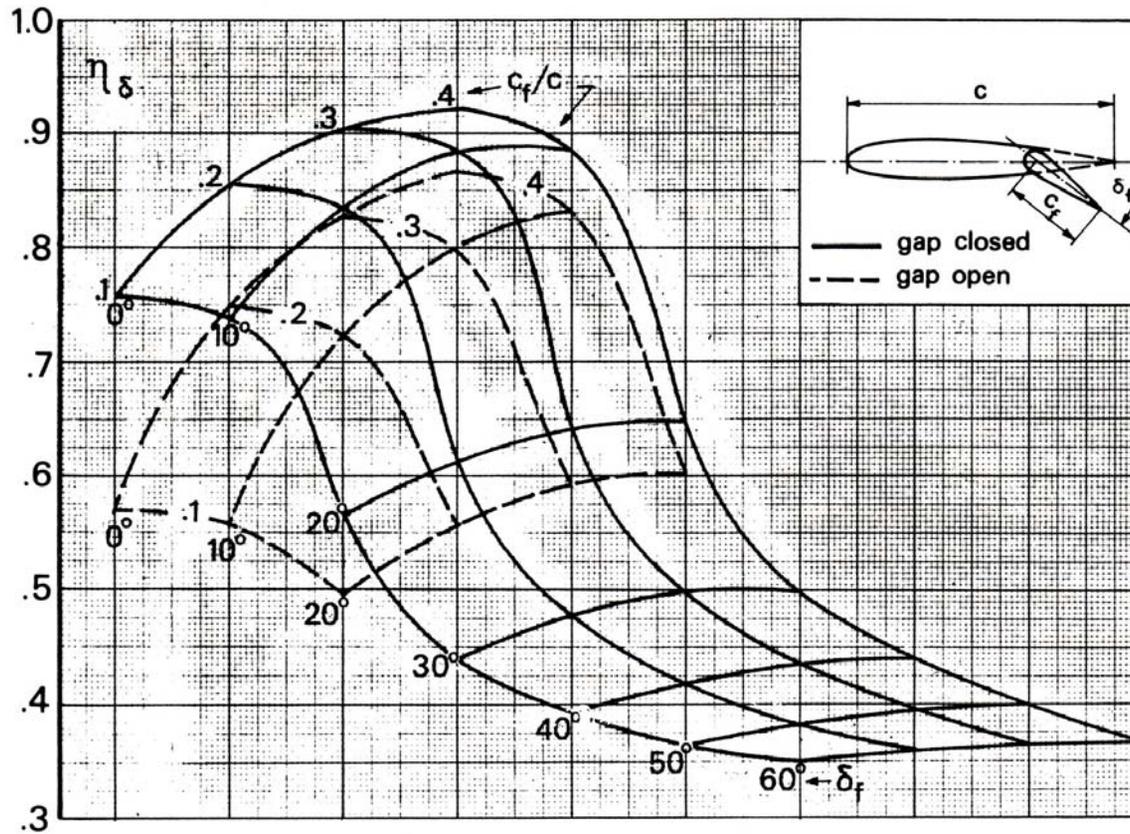


Fig. G-4. Lift effectiveness factor for plain flaps (derived from experimental data in the USAF Datcom, Table 6.1.1.1.-A and Ref. G-64)

HIGHT LIFT DEVICES

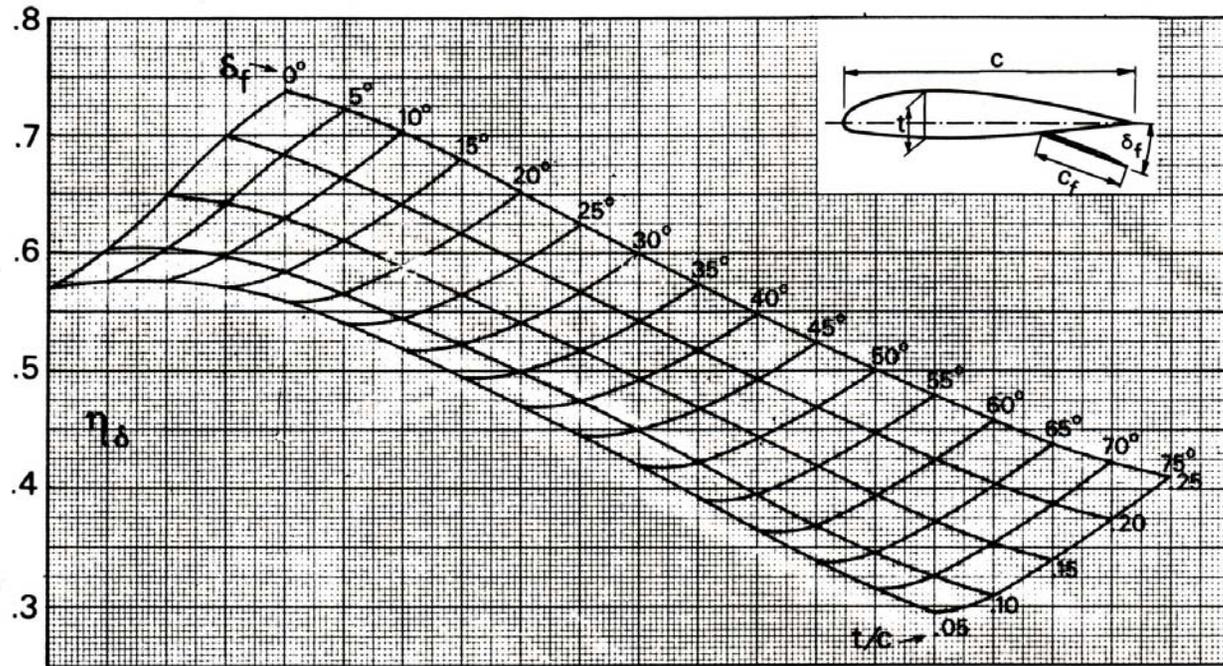


Fig. G-3. Lift-effectiveness factor for split flaps (derived from experimental data in Ref. G-34 and the USAF Datcom, Table 6.1.1.1.-24)

HIGHT LIFT DEVICES

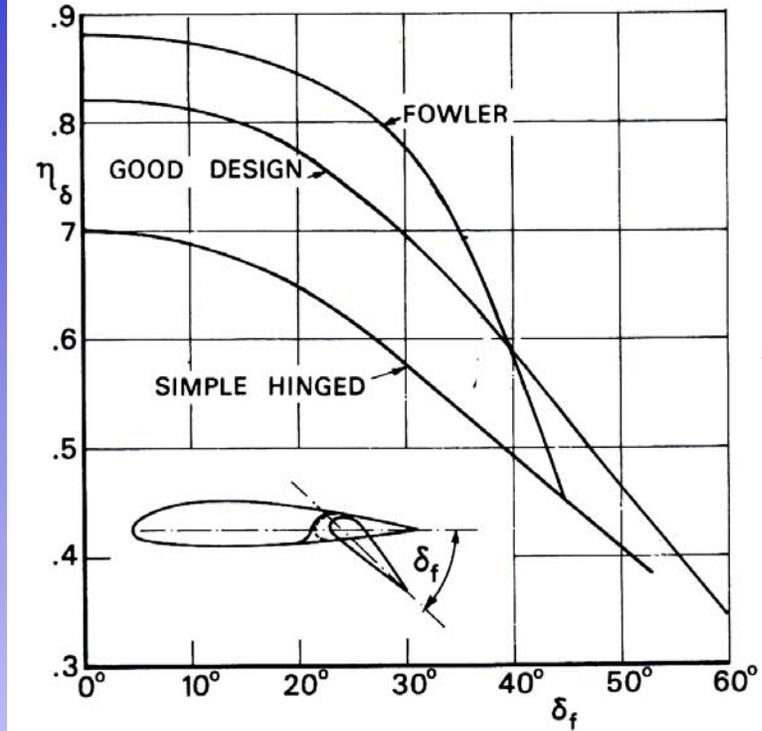


Fig. G-5. Lift effectiveness of single slotted (Fowler) flaps (derived from experimental data in Refs. G-33, G-35, G-37 and G-19)

HIGHT LIFT DEVICES

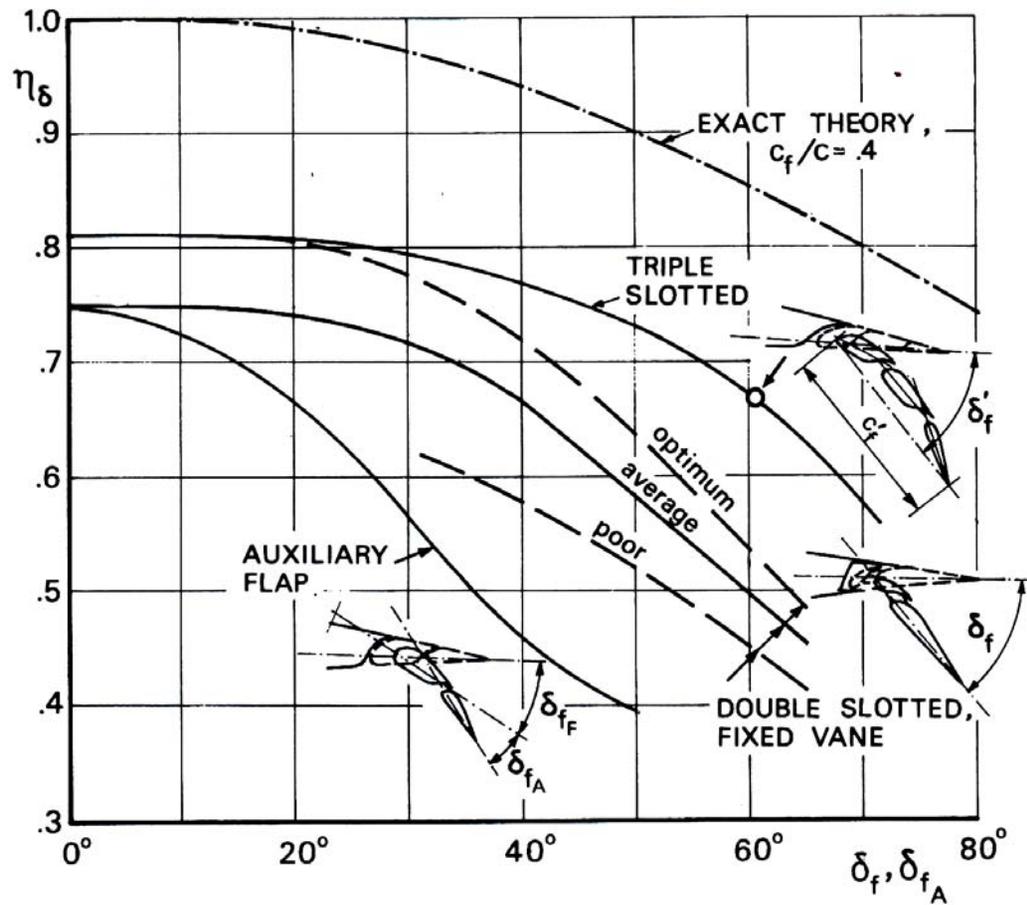


Fig. G-6. Flap effectiveness factor for double and triple slotted flaps (derived from experimental data in Refs. G-3, G-19, G-29, G-39, G-44 and G-48)

HIGHT LIFT DEVICES