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Upper-Surface Modifications for $c_{\ell_{max}}$ Improvement of Selected NACA 6-Series Airfoils

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NOMENCLATURE

a_i	polynomial coefficients, i = 1,4
b_i	polynomial coefficients, i = 1,5
C_i	polynomial constants, i = 1,2
c	airfoil chord, cm
c_d	section drag coefficient
c_l	section lift coefficient
c_m	section pitching-moment coefficient referenced to quarter chord
c_p	pressure coefficient $\frac{p_L - p_\infty}{q_\infty}$
M	Mach number
p	static pressure, N/m^2
q	dynamic pressure, N/m^2
Re	Reynolds number based on free-stream conditions and airfoil chord
$\bar{s}$	search direction
x	airfoil abscissa, cm
y	airfoil ordinate, cm
α	angle of attack, deg
κ	curvature

Subscripts:

L	local
max	maximum
∞	free-stream

UPPER-SURFACE MODIFICATIONS FOR $c_{\ell_{max}}$ IMPROVEMENT OF SELECTED NACA 6-SERIES AIRFOILS

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SUMMARY

Contour modifications were designed to increase the maximum lift coefficients of 64 representative sections of the NACA 6-series family of airfoils. The modification consists of increasing the thickness of the upper surface from the leading edge to the position of maximum thickness. The modifications were generated using a numerical optimization routine coupled with an aerodynamic analysis code. The type of modification presented here can be used for new aircraft design or for the retrofit of current aircraft to improve the stall characteristics and climb performance. The coordinates of the modified airfoils are presented with plots of the forward 45% of the profiles and pressure distributions for both the modified and unmodified sections at an angle of attack of 14°.

INTRODUCTION

The NACA 6-series laminar-flow airfoil sections were designed for low drag coefficients near the design lift coefficients. In practice, however, these sections rarely achieve low drag in flight because manufacturing tolerances or poor care do not allow the laminar flow demonstrated in the wind tunnel under controlled conditions. Furthermore, laminar-flow sections usually exhibit a greater decrease in maximum lift coefficients with decreasing Reynolds numbers than the NACA 4- and 5-digit sections. Because of these characteristics, a method has been developed to modify the contour of the NACA 6-series sections to achieve greater maximum lift coefficients without adversely affecting the drag near the design lift coefficient for a turbulent boundary layer.

The contour modification consists of increasing the thickness of the upper surface forward of the point of maximum thickness. This type of modification, suggested in reference 1, was evaluated in two wind-tunnel tests conducted at Ames Research Center and a flight test conducted by Ohio State University. The sections tested were the NACA 64-212 (ref. 2), the NACA 63-215 (ref. 3), and the NACA 63A415.[1] These tests showed increased maximum-lift coefficients with no drag penalty at the cruise conditions and can be

[1]Gregorek, G. M.: Oral presentation at the Business Aircraft Meeting of the Society of Automotive Engineers. Wichita, Kansas, April 1979.

interpreted to mean improved stall characteristics and better climb performance. These experimental results particularly apply to aircraft with typical aluminum construction where rivets, lap joints, and surface waviness common to most general aviation aircraft prevent the development of laminar flow.

The results presented in this paper extend the concepts discussed in references 1-3 to a family of widely used 6-series sections.

DESIGN PHILOSOPHY

The contour modifications presented herein were developed to improve the aerodynamic characteristics of the NACA 6-series sections during climb and landing. The original 6-series profiles show large pressure "spikes" near the leading edge for high angles of attack. The modifications were designed to reduce the pressure "spike" and relieve the adverse pressure gradients by adding bluntness to the upper surface forward of the position of maximum thickness. To achieve this "spike" reduction, the curvature was minimized at several chordwise stations near the leading edge. The profiles obtained from the curvature minimizations were compared to determine which gave the lowest pressure "spike" with reasonable leading-edge bluntness. The "best" airfoil obtained was selected for inclusion in this handbook.

Curvature minimization was chosen over the more direct method of reducing the pressure coefficients at the "spike." The computation of curvature is a straightforward calculation involving only the geometry of the airfoil section. The computation of pressure coefficients, however, requires a complete flow analysis and is therefore much more time-consuming and costly (typically, an order of magnitude more costly). Test cases were run using both the method of curvature minimization and direct pressure "spike" reduction, and similar results were found for both techniques.

Two types of design constraints were needed to ensure the pressure "spike" reduction using the curvature-minimization technique. The first constraint was imposed on the thickness at $x/c = 0.005$, requiring that the ordinate of the modified section be greater than the ordinate of the original 6-series airfoil. This constraint ensures that the reduction of curvature would be achieved by adding rather than subtracting bluntness from the upper surface. The second type of constraint was imposed on the second derivative y'' at all points from the leading edge to the position of maximum thickness to prevent reflexed curvature. The second derivatives were constrained to help promote smooth pressure distributions near the region where the modification blends with the original section. Both types of design constraints depend only on the airfoil geometry. They are easily calculated, as is the curvature, making a complete flow analysis necessary only for the initial and final profiles.

The computer program used for the design of these modifications consists of an NACA 6-series ordinate generation program (ref. 4), a polynomial fit procedure, an aerodynamic analysis program (ref. 5), and an optimization routine (ref. 6). These routines were coupled to facilitate the generation of the multiple optimization runs necessary for determining the best chordwise

position for curvature minimization. The computer program developed here can be used to generate modifications for any 6-series section not presented here, including all 6A-series sections, and can be obtained from Ames Research Center.

DESIGN METHOD

The first step in the modification of the 6-series sections consisted of fitting a polynomial to the upper surface forward of the position of maximum thickness (the match point). The polynomial

$$y = b_1x^{1/2} + b_2x + b_3x^2 + b_4x^3 + b_5x^4 \tag{1}$$

was fitted to the 6-series profile by specifying three ordinates along the region to be modified, and by specifying the ordinate and slope at the match point. The terms that make up this polynomial are shown in figure 1. Two boundary conditions were imposed on the modified region, namely, that the ordinate y and the slope y' match the original profile at the match point. The second derivative y'' at the match point was not chosen as a boundary condition in order to provide more design variables and hence more flexibility in the profile design. This lack of a y'' boundary condition results in a minute reflex in the pressure distribution at the match point. Such reflex is not apparent in any of the figures contained herein due to the compressed scale needed for the high angle-of-attack pressure distribution. Since the irregularity was found to be insignificant, a sample pressure distribution at 0°-angle-of-attack has not been included.

The exponential power of the first term of equation (1) (the square root term) was allowed to change during the design process to assist in blunting the leading edge. The equation now becomes

$$y = a_1x^{a_4} + C_1x + a_2x^2 + a_3x^3 + C_2x^4 \tag{2}$$

where a_1 through a_4 are the design variables perturbed by the optimization routine to achieve the desired improvement, and C_1 and C_2 are constants determined by the initial section and the boundary conditions. The original profile, with the forward region of the upper surface described by the fitted polynomial, was the initial airfoil required to start optimization.

The optimization process is depicted in figure 2. The aerodynamic coefficients and the curvature κ at a point are calculated for the initial airfoil section. The profile is then changed by perturbing the first coefficient in equation (2) while keeping coefficients a_2 through a_4 constant. The curvature is calculated for the new shape, and the partial derivative of curvature with respect to a_1 is computed using a one-sided finite difference. The other three coefficients are perturbed in turn, and the four partial derivatives form the gradient of the curvature $\nabla\kappa$. The direction $\bar{s}$ in which the coefficients are changed to reduce the curvature is $-\nabla\kappa$ (the direction of

steepest descent). The optimization then increments the polynomial coefficients in this direction and searches until the curvature increases (due to the nonlinearity of the design space) or until a constraint is reached.

If curvature does increase or a constraint is violated, a new gradient is calculated and a new direction is found that will decrease the curvature without violating any constraints. When the curvature has been substantially reduced without any violated constraints, the aerodynamic analysis code calculates and prints the coordinates for the final airfoil section, together with the final pressure distribution and the aerodynamic coefficients. During development of the airfoil modifications presented here, κ was minimized at several values of x/c near the leading edge, and the profile giving the best reduction in the pressure "spike" with reasonable leading-edge bluntness was selected.

A graphical presentation of a hypothetical optimation problem using two design variables is shown in figure 3. The optimization problem depicted is curvature minimization with only a_1 and a_2 as design variables. Two constraints were imposed. The first is on the thickness at $x/c = 0.005$, and the second on y'', the second derivative.

The design space is broken into two regions, an infeasible region where one or more constraints are violated, and a feasible region where all constraints are satisfied. Minimum curvature in the feasible region is sought. Assumed starting values of a_1 and a_2 are depicted by point A. The gradient of curvature $\nabla\kappa$ is calculated for this point, giving the direction of change in a_1 and a_2 as $\bar{s} = -\nabla\kappa$. In this case, both a_1 and a_2 must be decreased to reduce curvature. Movement in direction $\bar{s}$ continues until the y'' constraint is encountered at point B. At this point, the gradient of the second derivative $\nabla y''$ is required along with $\nabla\kappa$ to define a new direction $\bar{s}$. Now a_1 must be increased, and a_2 decreased to minimize curvature by moving along the y'' constraint. The optimum is shown as the point where the line of constant curvature with the least value in the feasible region intersects the y'' constraint.

If the starting values of a_1 and a_2 are given by point C (fig. 3), the problem begins in the infeasible region. Now a direction $\bar{s}$ is determined that will move toward the feasible region with a minimum increase in curvature while overcoming the violated second-derivative constraint. Such a move requires an increase in both a_1 and a_2. When the feasible region is reached, a direction $\bar{s}$ is then determined that will move along the y'' constraint until the optimum is attained. A more complete discussion on airfoil design by numerical optimization is given in reference 7.

DESIGN RESULTS AND DISCUSSION

The purpose of the modified 6-series sections presented here is to improve the maximum-lift coefficients and reduce the drag for climb without incurring drag penalties at the cruise condition for aircraft of typical aluminum construction. This type of modification, referred to as Mod. B, was

tested for the NACA 64-212 (ref. 2) and the NACA 63-215 (ref. 3). Here the term Mod. B is used to define a general type of contour modification which is achieved by adding bluntness to the forward region of the upper surface of the airfoil. Wind-tunnel results for lift coefficient as a function of angle of attack, drag coefficient, and pitching-moment coefficient are shown in figures 4 and 5; note the substantial increase in $c_{\ell_{max}}$ for the Mod. B sections. Plots of experimental pressure coefficients for the NACA 63-215 and the Mod. B sections are shown in figure 6 to demonstrate the effect of this type of contour modification on pressure coefficients and pressure gradients. It is clear from the figure that the pressure recovery is better for the 63-215 Mod. B than for the 63-215 section at $\alpha \approx 12°$. The improved pressure recovery is consistant with the higher $c_{\ell_{max}}$ of the Mod. B profile (figs. 4 through 6 are reproduced from refs. 2 and 3).

The 64 6-series sections chosen for modification are representative of the 6-series sections currently used in industry. Modifications were developed for thickness ratios of 9, 12, 15, and 18% at theoretical design-lift coefficients of 0.0, 0.2, 0.4, and 0.6 for the 63, 64, 65, and 66 sections. The coordinates of the modified sections and graphs of the forward 45% of the profiles and the initial and final pressure distributions are presented in figures 7-70. The pressure distributions shown for the initial sections were calculated for the airfoils with the polynomial fit of the modified region; however, calculations have shown that the difference in pressure between the original 6-series section and the section with the polynomial fit is small.

The section modifications shown here can be used for new aircraft design or for the retrofit of current aircraft to improve the stall characteristics and climb performance.

CONCLUDING REMARKS

A handbook of NACA 6-series airfoil modifications has been developed. The modifications were designed to improve the maximum lift coefficients and hence improve the stall characteristics of aircraft using NACA 6-series sections The modifications shown here are similar to modifications found to give substantial improvements in the high-lift characteristics of both 12%- and 15%-thick NACA 6-series sections during previous investigations (refs. 2 and 3).

Such modifications could be used for the retrofit of existing aircraft or the design of new aircraft. Based on wind-tunnel and flight-test results of similar modifications, it appears reasonable to assume that these contour modifications will lead to increased maximum lift coefficients, similar pitching-moment characteristics, lower drag at moderate lift coefficients, and no drag penalty at cruise condition when compared with the corresponding 6-series sections for aircraft with typical aluminum construction.

REFERENCES

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2. Hicks, Raymond M.; Mendoza, Joel P.; and Bandettini, Angelo: Effects of Forward Contour Modification on the Aerodynamic Characteristics of the NACA 64_1-212 Airfoil Section. NASA TM X-3293, 1975.

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7. Vanderplaats, Garret N.; Hicks, Raymond M.; and Murman, Earll M.: Application of Numerical Optimization Techniques to Airfoil Design. NASA SP-347, 1975.

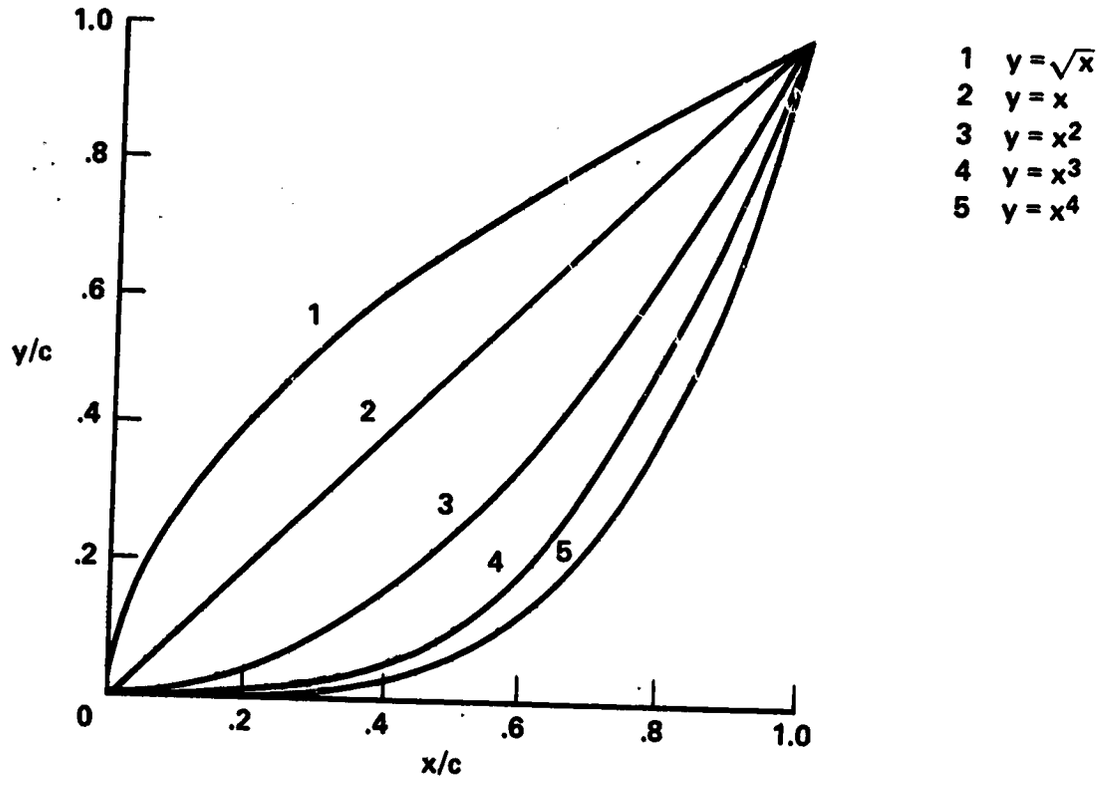


Figure 1.- Component functions for polynomial.

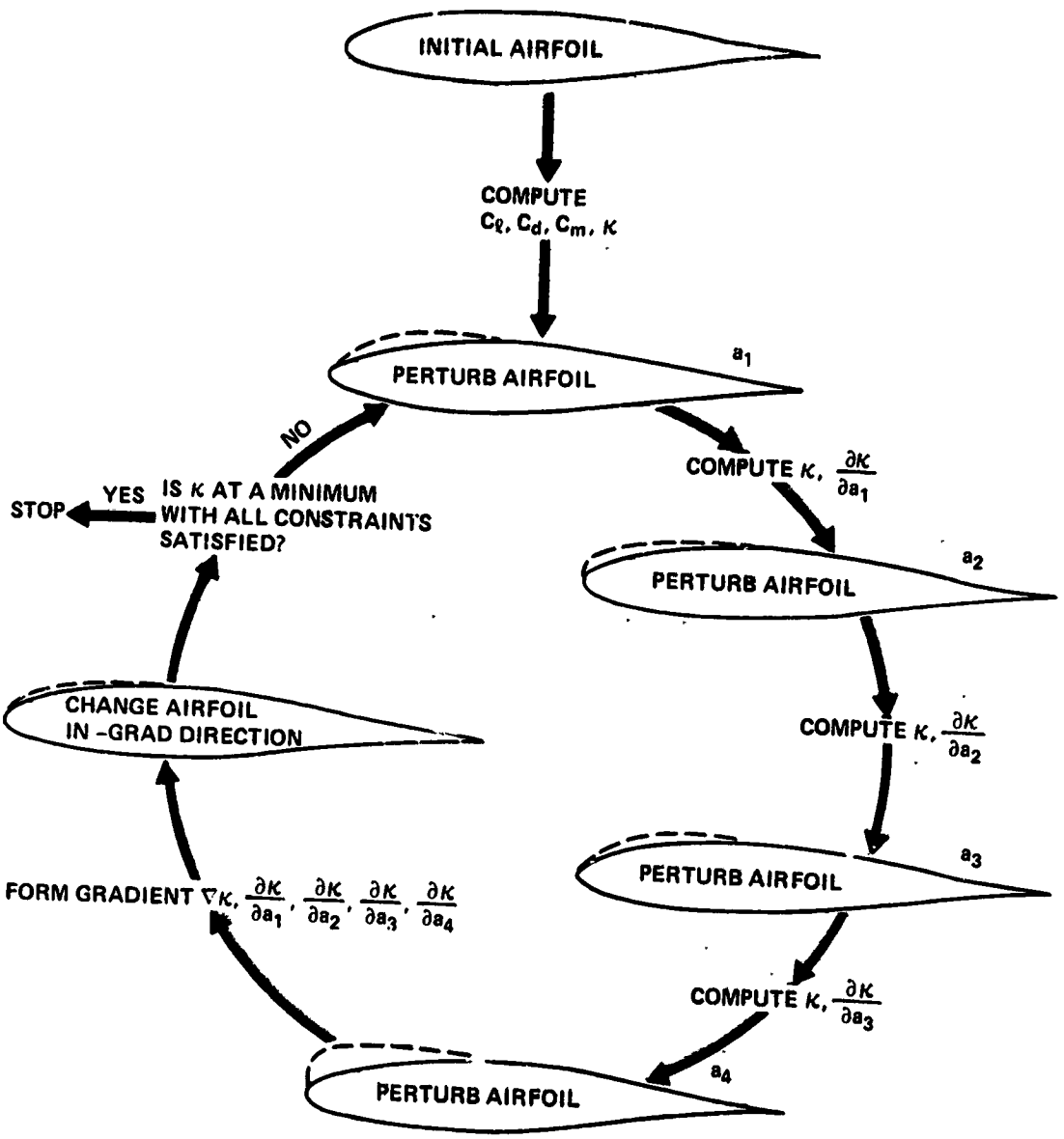


Figure 2.- Optimization history for curvature minimization.

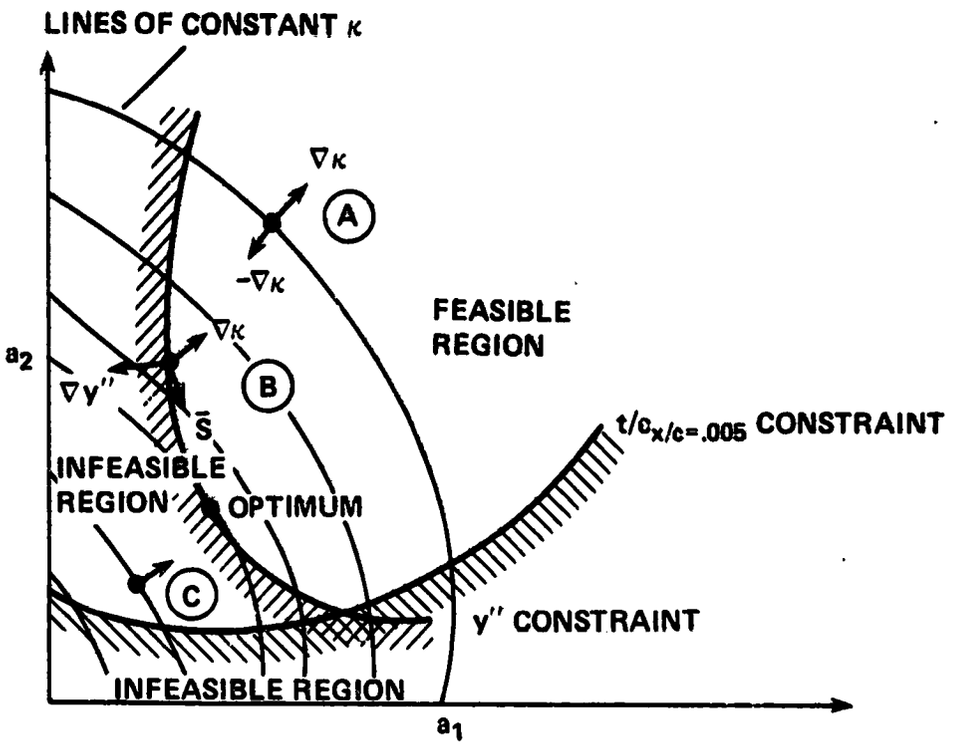


Figure 3.- Two-variable design problem.

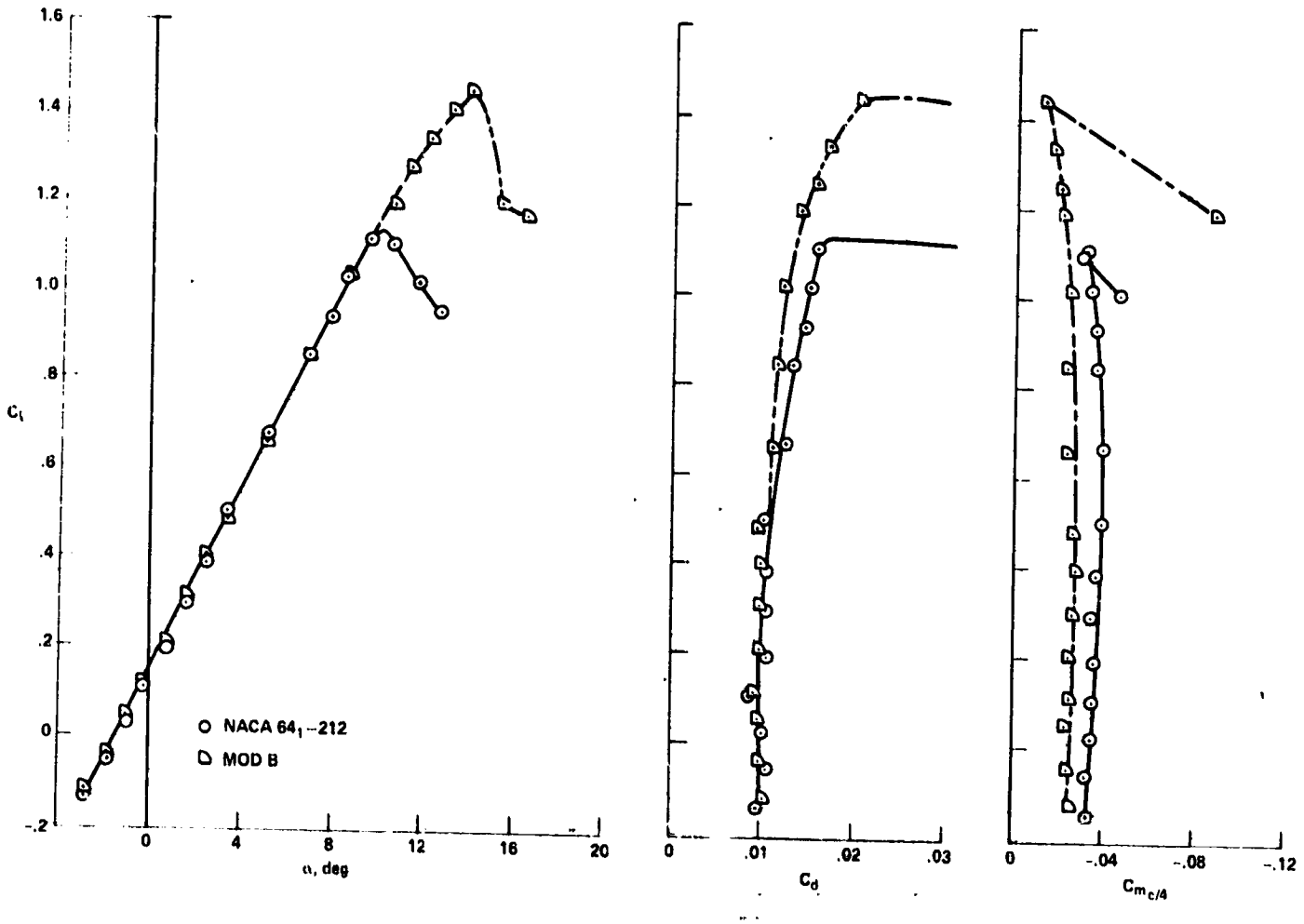


Figure 4.- Wind-tunnel data for NACA 64-212 and NACA 64-212 Mod. B_1, $M = 0.2$, $Re = 1.9 \times 10^6$.

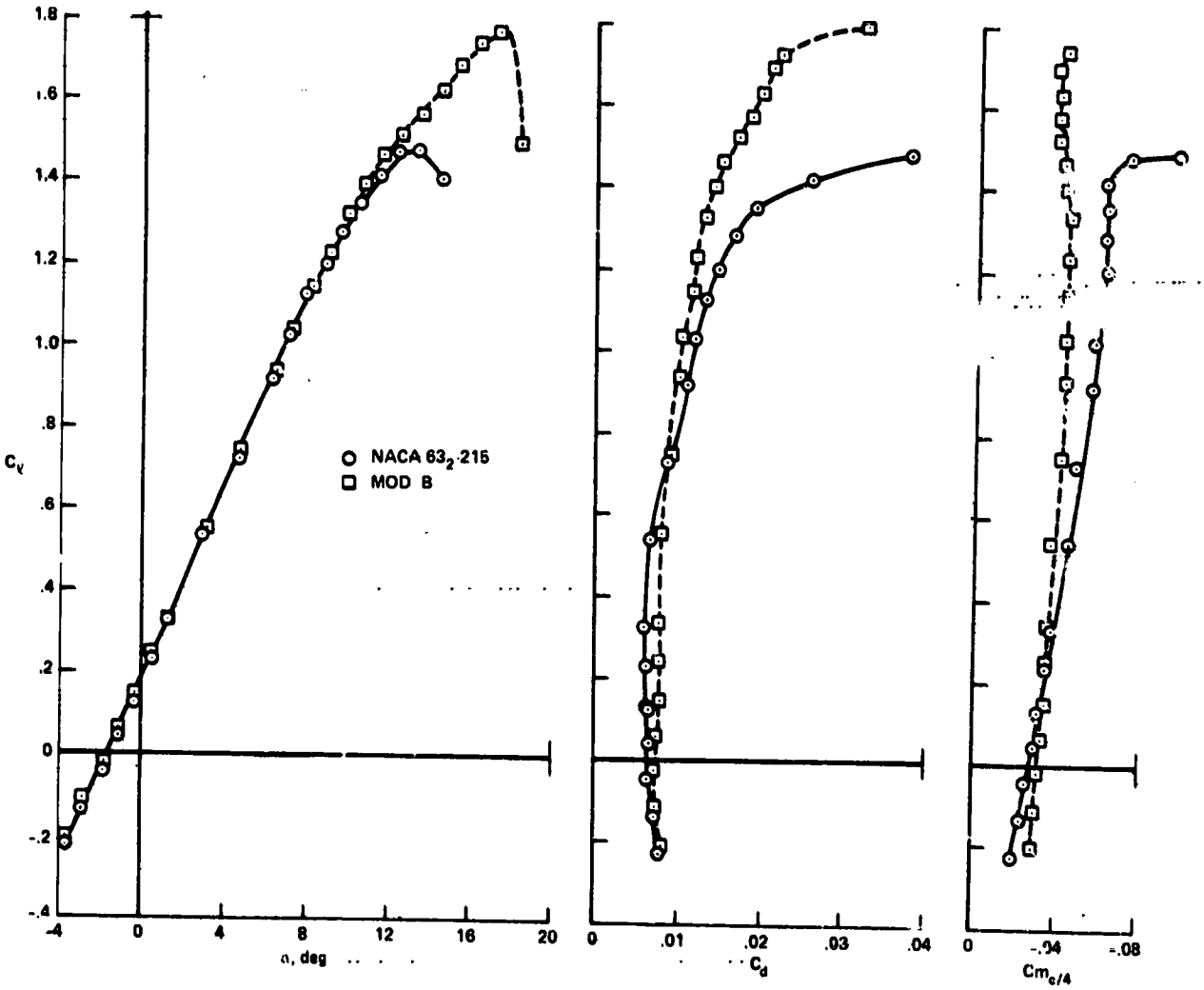
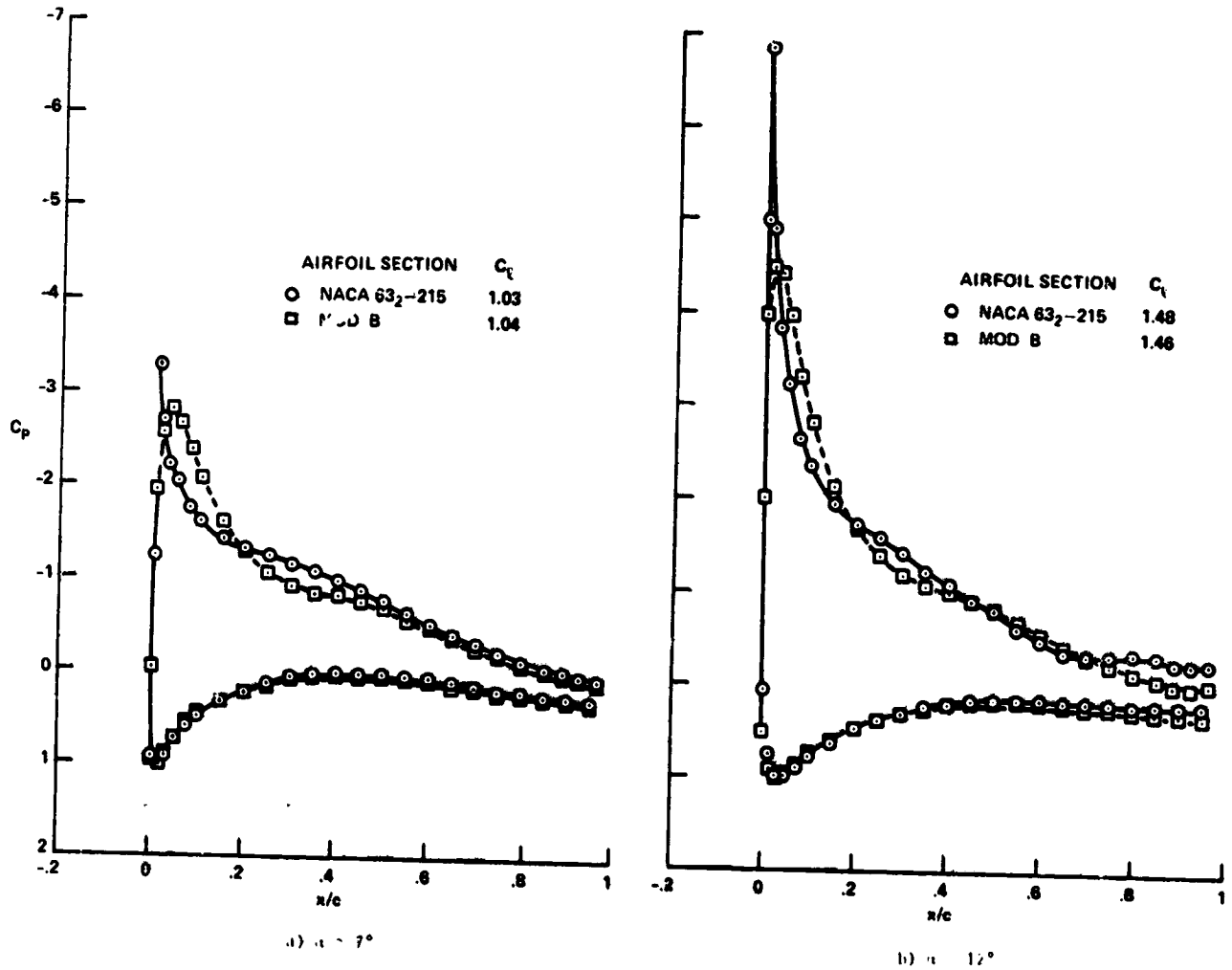


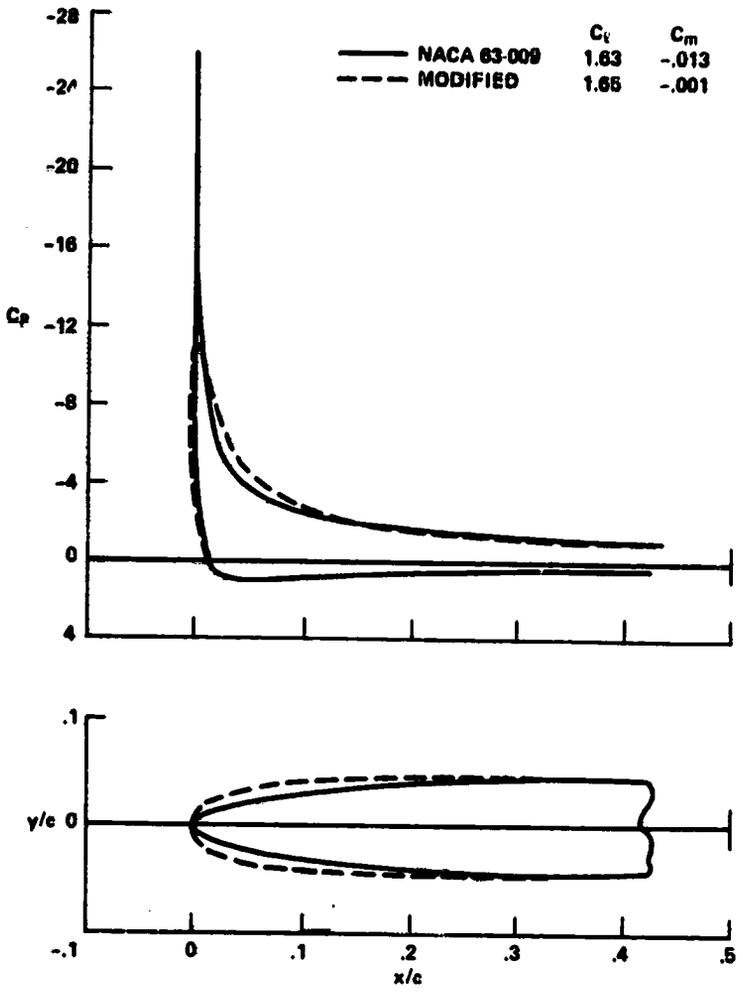
Figure 5.- Wind-tunnel data for NACA 63_2-215 and NACA 63_2-215 Mod. B; M = 0.2; Re = 2.5×10^6.



a) α = 7°

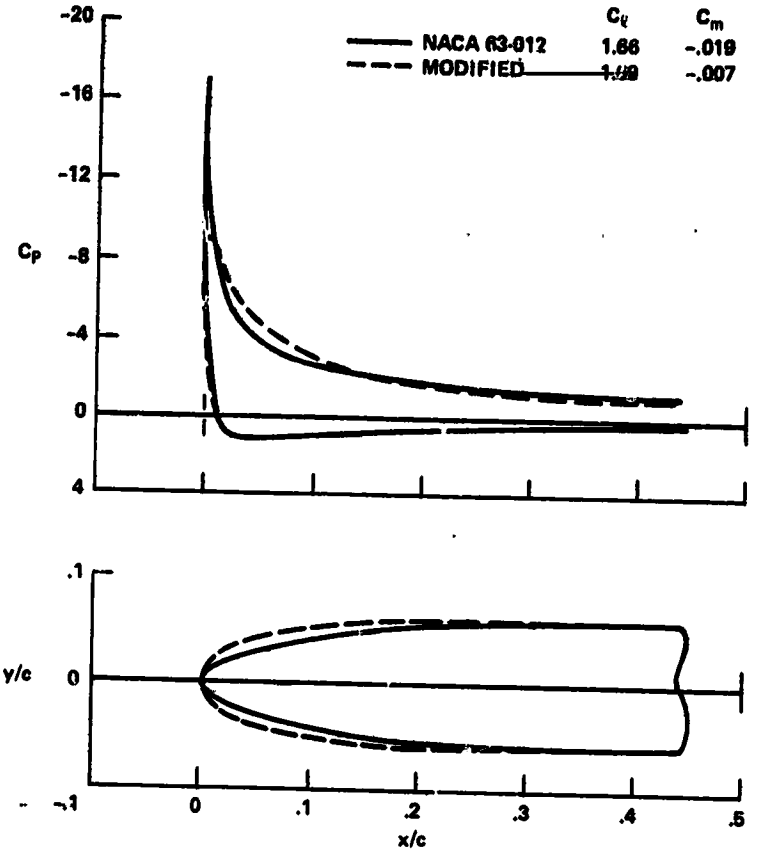
b) α = 12°

Figure 6.- Pressure distributions for NACA 63_2-215 and NACA 63_2-215 Mod. B; M = 0.2; Re = 2.5×10^6.



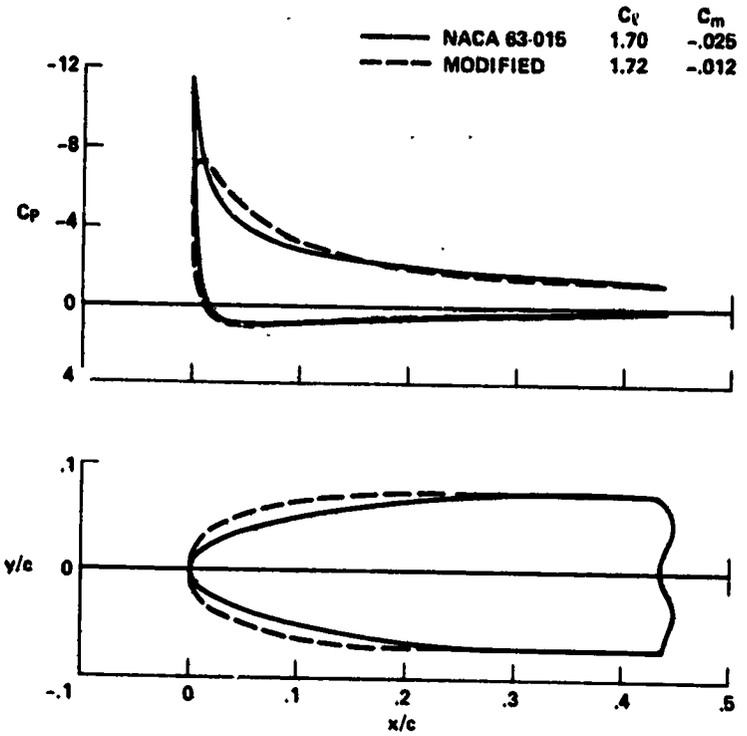
x	Y_U	Y_L	x	Y_U	Y_L
0.0000	0.0000	0.0000	.3750	.0449	-.0449
.0002	.0029	-.0029	.4000	.0445	-.0445
.0004	.0041	-.0041	.4250	.0439	-.0439
.0006	.0050	-.0050	.4500	.0430	-.0430
.0008	.0058	-.0058	.4750	.0419	-.0419
.0010	.0065	-.0065	.5000	.0406	-.0406
.0020	.0091	-.0091	.5250	.0391	-.0391
.0030	.0110	-.0110	.5500	.0374	-.0374
.0040	.0126	-.0126	.5750	.0356	-.0356
.0050	.0140	-.0140	.6000	.0336	-.0336
.0100	.0191	-.0191	.6250	.0315	-.0315
.0200	.0255	-.0255	.6500	.0293	-.0293
.0300	.0297	-.0297	.6750	.0270	-.0270
.0400	.0328	-.0328	.7000	.0246	-.0246
.0500	.0351	-.0351	.7250	.0221	-.0221
.0600	.0370	-.0370	.7500	.0197	-.0197
.0700	.0385	-.0385	.7750	.0172	-.0172
.0800	.0397	-.0397	.8000	.0147	-.0147
.0900	.0407	-.0407	.8250	.0122	-.0122
.1000	.0416	-.0416	.8500	.0099	-.0099
.1250	.0430	-.0430	.8750	.0076	-.0076
.1500	.0439	-.0439	.9000	.0055	-.0055
.1750	.0445	-.0445	.9250	.0036	-.0036
.2000	.0448	-.0448	.9500	.0020	-.0020
.2250	.0449	-.0449	.9800	.0014	-.0014
.2500	.0450	-.0450	.9700	.0009	-.0009
.2750	.0450	-.0450	.9800	.0005	-.0005
.3000	.0450	-.0450	.9900	.0002	-.0002
.3250	.0450	-.0450	.9950	.0001	-.0001
.3500	.0450	-.0450	1.0000	.0000	-.0000

Figure 7.- NACA 63-009 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



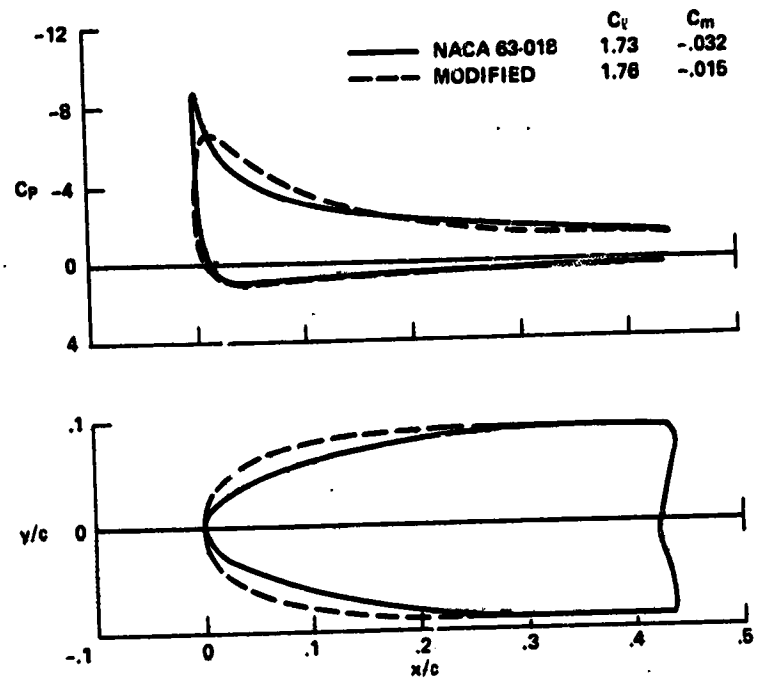
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0598	-.0598
.0002	.0039	-.0039	.4000	.0592	-.0592
.0004	.0054	-.0054	.4250	.0583	-.0583
.0006	.0065	-.0065	.4500	.0570	-.0570
.0008	.0074	-.0074	.4750	.0555	-.0555
.0010	.0082	-.0082	.5000	.0537	-.0537
.0020	.0112	-.0112	.5250	.0516	-.0516
.0030	.0134	-.0134	.5500	.0494	-.0494
.0040	.0153	-.0153	.5750	.0469	-.0469
.0050	.0168	-.0168	.6000	.0442	-.0442
.0100	.0227	-.0227	.6250	.0414	-.0414
.0200	.0302	-.0302	.6500	.0384	-.0384
.0300	.0353	-.0353	.6750	.0353	-.0353
.0400	.0392	-.0392	.7000	.0321	-.0321
.0500	.0424	-.0424	.7250	.0289	-.0289
.0600	.0450	-.0450	.7500	.0256	-.0256
.0700	.0472	-.0472	.7750	.0223	-.0223
.0800	.0491	-.0491	.8000	.0190	-.0190
.0900	.0507	-.0507	.8250	.0158	-.0158
.1000	.0521	-.0521	.8500	.0127	-.0127
.1250	.0549	-.0549	.8750	.0098	-.0098
.1500	.0568	-.0568	.9000	.0071	-.0071
.1750	.0581	-.0581	.9250	.0046	-.0046
.2000	.0590	-.0590	.9500	.0025	-.0025
.2250	.0595	-.0595	.9600	.0018	-.0018
.2500	.0598	-.0598	.9700	.0012	-.0012
.2750	.0600	-.0600	.9800	.0006	-.0006
.3000	.0600	-.0600	.9900	.0002	-.0002
.3250	.0600	-.0600	.9950	.0001	-.0001
.3500	.0600	-.0600	1.0000	.0000	-.0000

Figure 8.- NACA 63-012 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



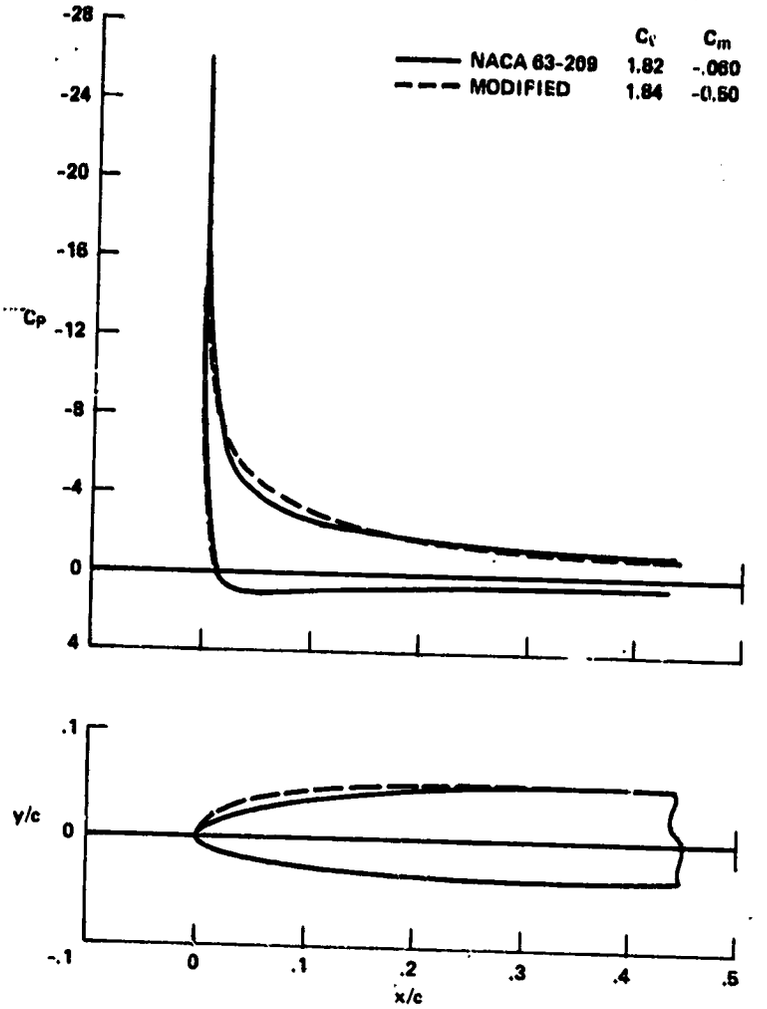
x	y_U	y_L	x	y_U	y_L
0.0000	0.0000	0.0000	.5750	.0746	-.0746
.0002	.0047	-.0047	.6000	.0739	-.0739
.0004	.0066	-.0066	.6250	.0726	-.0726
.0006	.0079	-.0079	.6500	.0710	-.0710
.0008	.0090	-.0090	.6750	.0690	-.0690
.0010	.0100	-.0100	.7000	.0666	-.0666
.0020	.0137	-.0137	.7250	.0640	-.0640
.0030	.0165	-.0165	.7500	.0611	-.0611
.0040	.0188	-.0188	.7750	.0579	-.0579
.0050	.0207	-.0207	.8000	.0545	-.0545
.0100	.0280	-.0280	.8250	.0509	-.0509
.0200	.0373	-.0373	.8500	.0472	-.0472
.0300	.0437	-.0437	.8750	.0433	-.0433
.0400	.0487	-.0487	.9000	.0393	-.0393
.0500	.0526	-.0526	.9250	.0353	-.0353
.0600	.0560	-.0560	.9500	.0312	-.0312
.0700	.0587	-.0587	.9750	.0271	-.0271
.0800	.0611	-.0611	.9800	.0231	-.0231
.0900	.0632	-.0632	.9850	.0192	-.0192
.1000	.0650	-.0650	.9900	.0154	-.0154
.1250	.0684	-.0684	.9750	.0118	-.0118
.1500	.0709	-.0709	.9800	.0085	-.0085
.1750	.0726	-.0726	.9250	.0056	-.0056
.2000	.0737	-.0737	.9500	.0040	-.0040
.2250	.0744	-.0744	.9600	.0022	-.0022
.2500	.0748	-.0748	.9700	.0014	-.0014
.2750	.0750	-.0750	.9800	.0008	-.0008
.3000	.0750	-.0750	.9900	.0003	-.0003
.3250	.0750	-.0750	.9950	.0001	-.0001
.3500	.0750	-.0750	1.0000	.0000	-.0000

Figure 9.- NACA 63-015 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



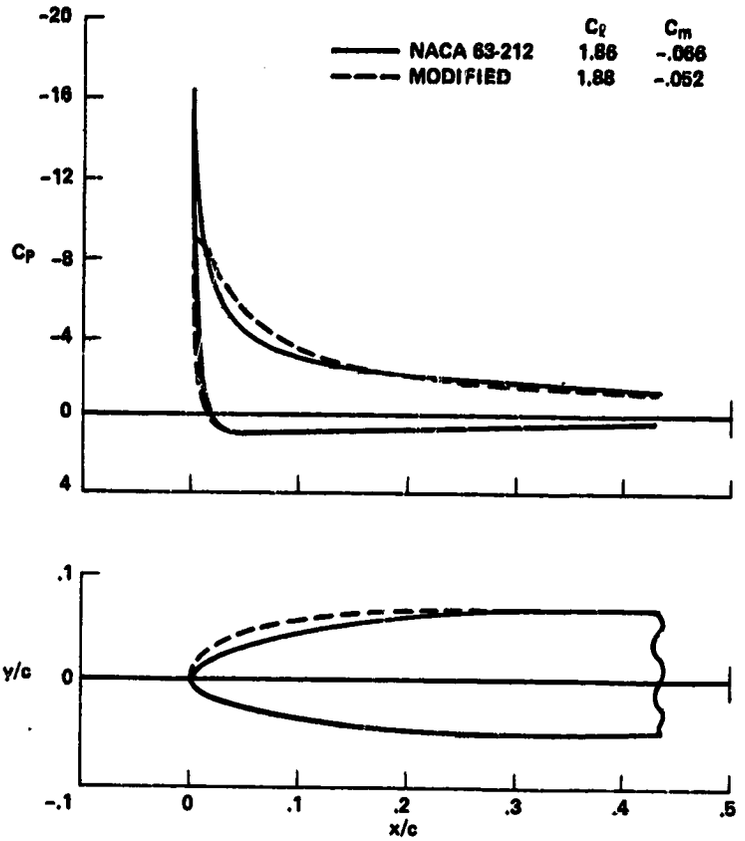
x	Y_U	Y_L	x	Y_U	Y_L
0.0000	0.0000	0.0000	.5750	.0845	-.0845
.0002	.0062	-.0062	.6000	.0814	-.0814
.0004	.0085	-.0085	.6250	.0780	-.0780
.0006	.0102	-.0102	.6500	.0744	-.0744
.0008	.0116	-.0116	.6750	.0723	-.0723
.0010	.0128	-.0128	.7000	.0701	-.0701
.0020	.0174	-.0174	.7250	.0726	-.0726
.0030	.0207	-.0207	.7500	.0687	-.0687
.0040	.0235	-.0235	.7750	.0646	-.0646
.0050	.0258	-.0258	.8000	.0602	-.0602
.0100	.0346	-.0346	.8250	.0557	-.0557
.0200	.0457	-.0457	.8500	.0510	-.0510
.0300	.0534	-.0534	.8750	.0462	-.0462
.0400	.0592	-.0592	.9000	.0414	-.0414
.0500	.0640	-.0640	.9250	.0365	-.0365
.0600	.0679	-.0679	.9500	.0317	-.0317
.0700	.0711	-.0711	.9750	.0269	-.0269
.0800	.0739	-.0739	.9900	.0223	-.0223
.0900	.0764	-.0764	.9250	.0179	-.0179
.1000	.0784	-.0784	.9500	.0137	-.0137
.1250	.0825	-.0825	.9750	.0099	-.0099
.1500	.0853	-.0853	.9900	.0064	-.0064
.1750	.0872	-.0872	.9250	.0035	-.0035
.2000	.0885	-.0885	.9500	.0025	-.0025
.2250	.0893	-.0893	.9600	.0016	-.0016
.2500	.0897	-.0897	.9700	.0009	-.0009
.2750	.0900	-.0900	.9800	.0003	-.0003
.3000	.0900	-.0900	.9900	.0002	-.0002
.3250	.0900	-.0900	.9950	.0000	-.0000
.3500	.0900	-.0900	1.0000		

Figure 10.- NACA 63-018 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



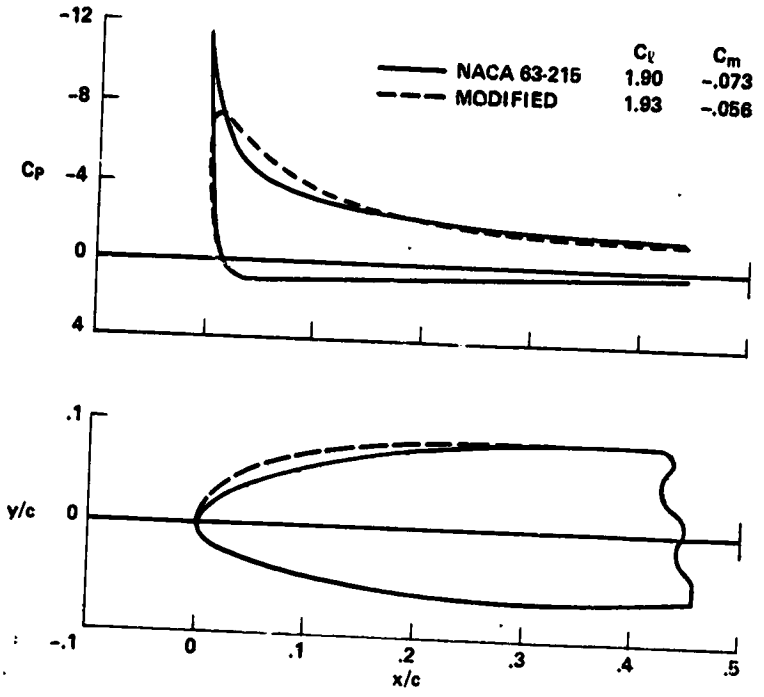
x	y_U	y_L	x	y_U	y_L
0.0000	0.0000	0.0000	.3750	.0534	-.0344
.0002	.0028	-.0008	.4000	.0552	-.0338
.0004	.0038	-.0017	.4250	.0547	-.0330
.0006	.0048	-.0021	.4500	.0539	-.0320
.0008	.0055	-.0025	.4750	.0529	-.0309
.0010	.0061	-.0028	.5000	.0516	-.0295
.0020	.0086	-.0041	.5250	.0501	-.0280
.0030	.0104	-.0051	.5500	.0483	-.0264
.0040	.0120	-.0059	.5750	.0464	-.0247
.0050	.0133	-.0066	.6000	.0443	-.0229
.0100	.0183	-.0091	.6250	.0420	-.0209
.0200	.0260	-.0124	.6500	.0396	-.0190
.0300	.0296	-.0148	.6750	.0370	-.0169
.0400	.0333	-.0169	.7000	.0343	-.0148
.0500	.0363	-.0186	.7250	.0315	-.0127
.0600	.0388	-.0201	.7500	.0286	-.0107
.0700	.0410	-.0215	.7750	.0257	-.0086
.0800	.0429	-.0228	.8000	.0227	-.0067
.0900	.0445	-.0239	.8250	.0196	-.0048
.1000	.0460	-.0249	.8500	.0166	-.0031
.1250	.0489	-.0272	.8750	.0136	-.0016
.1500	.0511	-.0291	.9000	.0107	-.0003
.1750	.0528	-.0307	.9250	.0079	.0006
.2000	.0537	-.0320	.9500	.0051	.0012
.2250	.0545	-.0330	.9600	.0041	.0013
.2500	.0550	-.0338	.9700	.0031	.0012
.2750	.0553	-.0343	.9800	.0021	.0011
.3000	.0554	-.0347	.9900	.0011	.0007
.3250	.0554	-.0348	.9950	.0005	.0004
.3500	.0554	-.0347	1.0000	.0000	.0000

Figure 11.- NACA 63-209 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



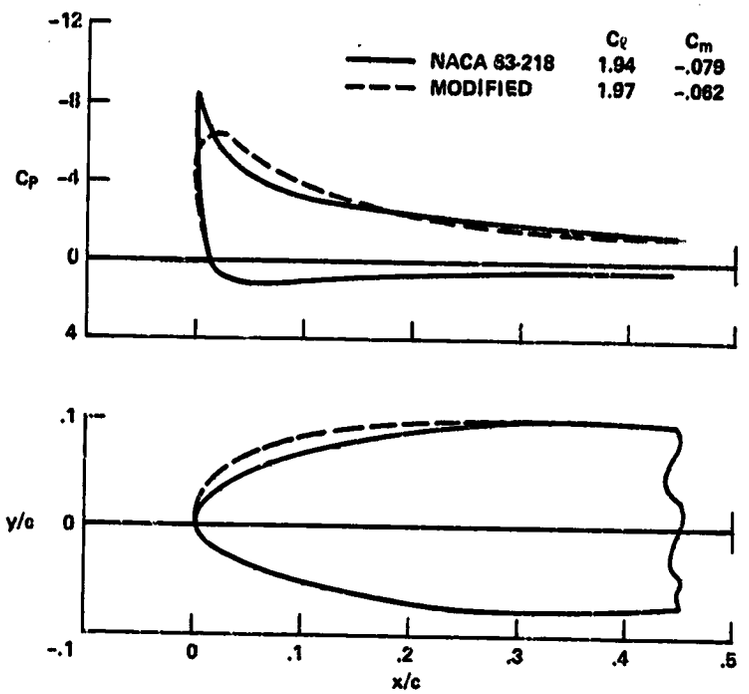
x	Y_U	Y_L	x	Y_U	Y_L
0.0000	0.0000	0.0000	.3750	.0703	-.0493
.0002	.0042	-.0010	.4000	.0699	-.0485
.0004	.0058	-.0020	.4250	.0691	-.0474
.0006	.0070	-.0026	.4500	.0680	-.0461
.0008	.0080	-.0031	.4750	.0665	-.0445
.0010	.0088	-.0036	.5000	.0647	-.0427
.0020	.0122	-.0053	.5250	.0626	-.0406
.0030	.0146	-.0066	.5500	.0603	-.0384
.0040	.0166	-.0077	.5750	.0577	-.0360
.0050	.0184	-.0086	.6000	.0549	-.0335
.0100	.0249	-.0122	.6250	.0519	-.0308
.0200	.0334	-.0168	.6500	.0487	-.0280
.0300	.0393	-.0203	.6750	.0454	-.0252
.0400	.0438	-.0232	.7000	.0419	-.0223
.0500	.0475	-.0257	.7250	.0383	-.0194
.0600	.0506	-.0280	.7500	.0346	-.0166
.0700	.0533	-.0300	.7750	.0308	-.0137
.0800	.0556	-.0318	.8000	.0270	-.0110
.0900	.0575	-.0334	.8250	.0232	-.0084
.1000	.0593	-.0350	.8500	.0195	-.0060
.1250	.0628	-.0383	.8750	.0158	-.0038
.1500	.0653	-.0411	.9000	.0125	-.0019
.1750	.0671	-.0434	.9250	.0089	-.0004
.2000	.0684	-.0454	.9500	.0057	.0006
.2250	.0693	-.0469	.9600	.0045	.0009
.2500	.0698	-.0481	.9700	.0033	.0010
.2750	.0701	-.0490	.9800	.0022	.0009
.3000	.0703	-.0496	.9900	.0011	.0007
.3250	.0704	-.0498	.9950	.0006	.0003
.3500	.0704	-.0497	1.0000	.0000	.0000

Figure 12.- NACA 63-212 Mod B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



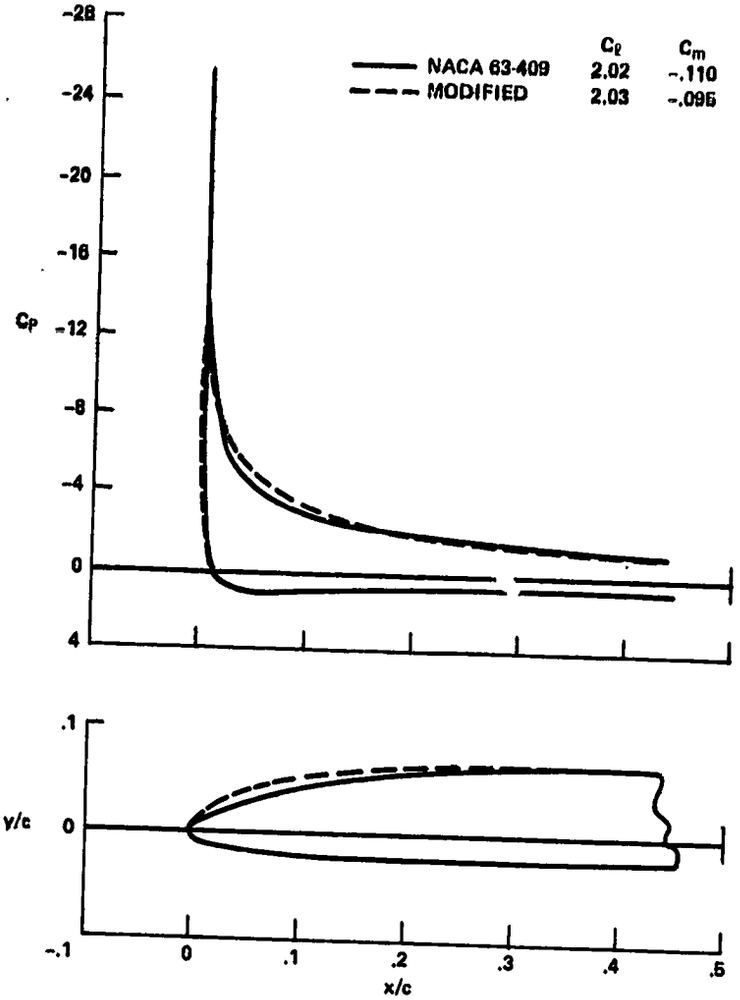
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.4750	.0852	-.0641
.0002	.0047	-.0011	.5000	.0845	-.0632
.0004	.0066	-.0022	.5250	.0835	-.0618
.0006	.0081	-.0030	.5500	.0819	-.0601
.0008	.0095	-.0037	.5750	.0800	-.0580
.0010	.0105	-.0042	.6000	.0777	-.0556
.0020	.0145	-.0063	.6250	.0750	-.0530
.0030	.0178	-.0079	.6500	.0720	-.0501
.0040	.0198	-.0093	.6750	.0688	-.0470
.0050	.0220	-.0104	.7000	.0653	-.0438
.0100	.0301	-.0150	.7250	.0615	-.0404
.0200	.0406	-.0211	.7500	.0575	-.0368
.0300	.0479	-.0256	.7750	.0534	-.0332
.0400	.0536	-.0294	.8000	.0491	-.0295
.0500	.0582	-.0328	.8250	.0447	-.0258
.0600	.0620	-.0357	.8500	.0402	-.0221
.0700	.0652	-.0384	.8750	.0357	-.0185
.0800	.0680	-.0408	.9000	.0311	-.0150
.0900	.0700	-.0430	.9250	.0266	-.0117
.1000	.0725	-.0450	.9500	.0222	-.0086
.1250	.0767	-.0494	.9750	.0179	-.0058
.1500	.0796	-.0531	.9000	.0137	-.0033
.1750	.0817	-.0562	.9250	.0098	-.0013
.2000	.0832	-.0588	.9500	.0062	.0001
.2250	.0841	-.0609	.9600	.0048	.0005
.2500	.0848	-.0625	.9700	.0036	.0007
.2750	.0851	-.0637	.9800	.0024	.0008
.3000	.0853	-.0645	.9900	.0012	.0006
.3250	.0854	-.0648	.9950	.0006	.0003
.3500	.0853	-.0647	1.0000	.0000	.0000

Figure 13.- NACA 63-215 Mod. B, airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



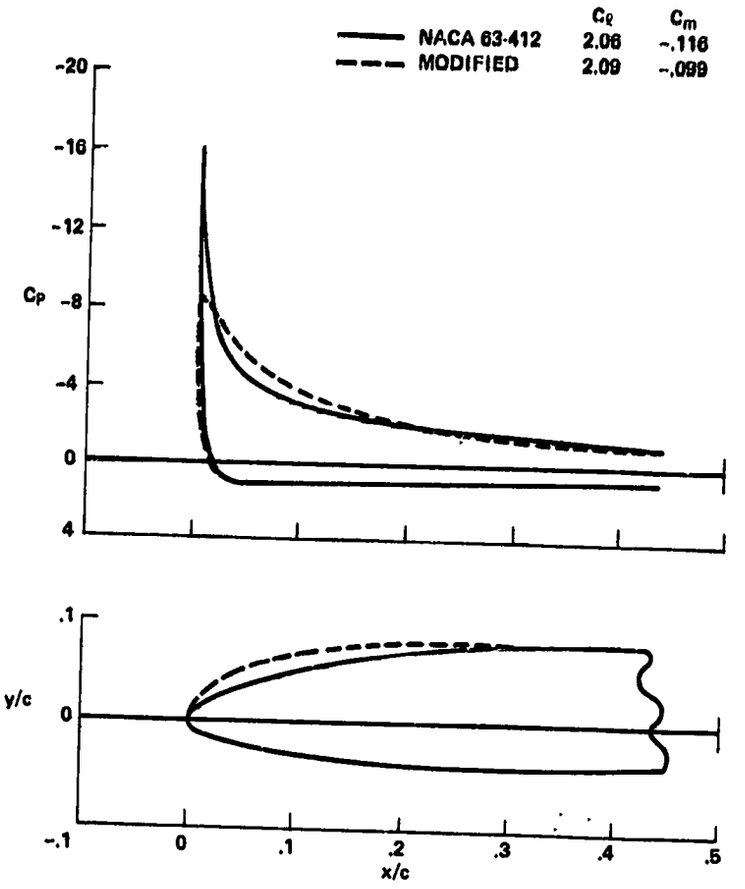
X	YU	YL	X	YU	YL
0.0000	0.0000	0.0000	.3750	.1000	-.0790
.0002	.0060	-.0012	.4000	.0991	-.0777
.0004	.0082	-.0024	.4250	.0977	-.0760
.0006	.0099	-.0034	.4500	.0957	-.0739
.0008	.0113	-.0041	.4750	.0933	-.0713
.0010	.0126	-.0047	.5000	.0904	-.0684
.0020	.0172	-.0072	.5250	.0872	-.0651
.0030	.0207	-.0091	.5500	.0835	-.0616
.0040	.0236	-.0106	.5750	.0796	-.0578
.0050	.0260	-.0120	.6000	.0754	-.0538
.0100	.0353	-.0175	.6250	.0708	-.0496
.0200	.0472	-.0260	.6500	.0661	-.0453
.0300	.0555	-.0307	.6750	.0612	-.0409
.0400	.0620	-.0354	.7000	.0561	-.0364
.0500	.0673	-.0396	.7250	.0509	-.0319
.0600	.0717	-.0433	.7500	.0456	-.0274
.0700	.0755	-.0466	.7750	.0403	-.0231
.0800	.0788	-.0496	.8000	.0350	-.0188
.0900	.0817	-.0524	.8250	.0298	-.0148
.1000	.0842	-.0549	.8500	.0247	-.0111
.1250	.0892	-.0605	.8750	.0198	-.0077
.1500	.0928	-.0652	.9000	.0151	-.0046
.1750	.0955	-.0691	.9250	.0107	-.0022
.2000	.0974	-.0723	.9500	.0067	-.0003
.2250	.0986	-.0749	.9600	.0052	.0002
.2500	.0994	-.0769	.9700	.0038	.0005
.2750	.0999	-.0784	.9800	.0024	.0007
.3000	.1002	-.0794	.9900	.0012	.0006
.3250	.1003	-.0798	.9950	.0006	.0003
.3500	.1003	-.0797	1.0000	.0000	.0000

Figure 14.- NACA 63-218 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



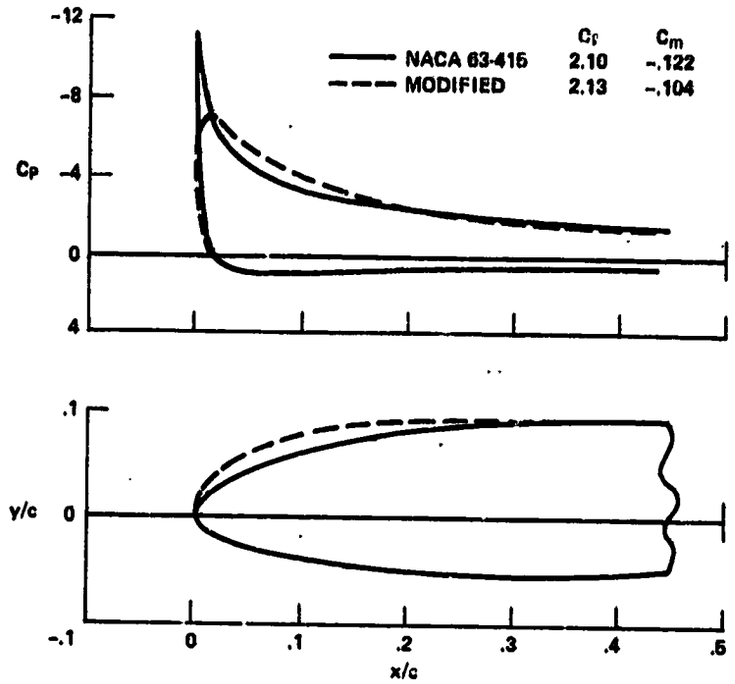
X	YU	YL	X	YU	YL
0.0000	0.0000	0.0000	.3750	.0660	-.0238
.0002	.0033	-.0006	.4000	.0659	-.0231
.0004	.0046	-.0012	.4250	.0655	-.0222
.0006	.0056	-.0017	.4500	.0649	-.0211
.0008	.0064	-.0021	.4750	.0639	-.0198
.0010	.0071	-.0024	.5000	.0626	-.0185
.0020	.0099	-.0036	.5250	.0611	-.0170
.0030	.0119	-.0044	.5500	.0593	-.0155
.0040	.0136	-.0051	.5750	.0573	-.0138
.0050	.0151	-.0057	.6000	.0550	-.0121
.0100	.0208	-.0080	.6250	.0526	-.0104
.0200	.0282	-.0107	.6500	.0499	-.0086
.0300	.0335	-.0125	.6750	.0471	-.0068
.0400	.0378	-.0140	.7000	.0441	-.0051
.0500	.0412	-.0153	.7250	.0409	-.0034
.0600	.0442	-.0164	.7500	.0376	-.0017
.0700	.0468	-.0174	.7750	.0342	-.0001
.0800	.0491	-.0182	.8000	.0307	.0013
.0900	.0511	-.0190	.8250	.0271	.0026
.1000	.0528	-.0197	.8500	.0234	.0036
.1250	.0565	-.0211	.8750	.0197	.0044
.1500	.0593	-.0223	.9000	.0159	.0049
.1750	.0614	-.0232	.9250	.0121	.0049
.2000	.0630	-.0240	.9500	.0083	.0043
.2250	.0641	-.0245	.9600	.0068	.0039
.2500	.0649	-.0248	.9700	.0052	.0034
.2750	.0654	-.0250	.9800	.0036	.0026
.3000	.0657	-.0250	.9900	.0020	.0016
.3250	.0659	-.0248	.9950	.0010	.0008
.3500	.0660	-.0244	1.0000	.0000	.0000

Figure 15.- NACA 63-409 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



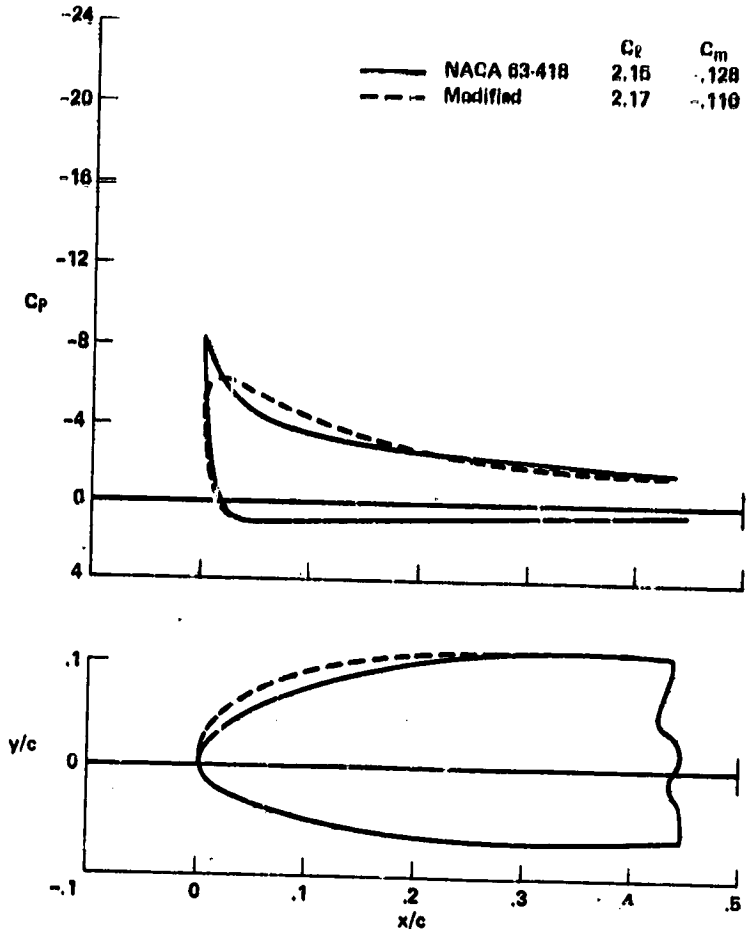
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0808	-.0387
.0002	.0040	-.0007	.4000	.0806	-.0378
.0004	.0057	-.0014	.4250	.0800	-.0366
.0006	.0069	-.0020	.4500	.0789	-.0352
.0008	.0080	-.0025	.4750	.0775	-.0335
.0010	.0089	-.0029	.5000	.0758	-.0316
.0020	.0125	-.0045	.5250	.0737	-.0296
.0030	.0151	-.0057	.5500	.0713	-.0274
.0040	.0173	-.0067	.5750	.0686	-.0251
.0050	.0193	-.0075	.6000	.0657	-.0227
.0100	.0266	-.0108	.6250	.0625	-.0202
.0200	.0362	-.0149	.6500	.0591	-.0177
.0300	.0430	-.0178	.6750	.0555	-.0151
.0400	.0484	-.0202	.7000	.0517	-.0126
.0500	.0528	-.0223	.7250	.0477	-.0100
.0600	.0565	-.0241	.7500	.0436	-.0076
.0700	.0597	-.0257	.7750	.0394	-.0052
.0800	.0625	-.0271	.8000	.0351	-.0030
.0900	.0649	-.0284	.8250	.0307	-.0010
.1000	.0670	-.0296	.8500	.0263	.0008
.1250	.0713	-.0322	.8750	.0219	.0022
.1500	.0745	-.0343	.9000	.0175	.0033
.1750	.0768	-.0360	.9250	.0131	.0039
.2000	.0784	-.0373	.9500	.0089	.0038
.2250	.0795	-.0384	.9600	.0072	.0035
.2500	.0803	-.0391	.9700	.0055	.0031
.2750	.0807	-.0396	.9800	.0038	.0025
.3000	.0809	-.0398	.9900	.0020	.0016
.3250	.0809	-.0398	.9950	.0010	.0008
.3500	.0809	-.0394	1.0000	.0000	.0000

Figure 16.- NACA 63-412 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



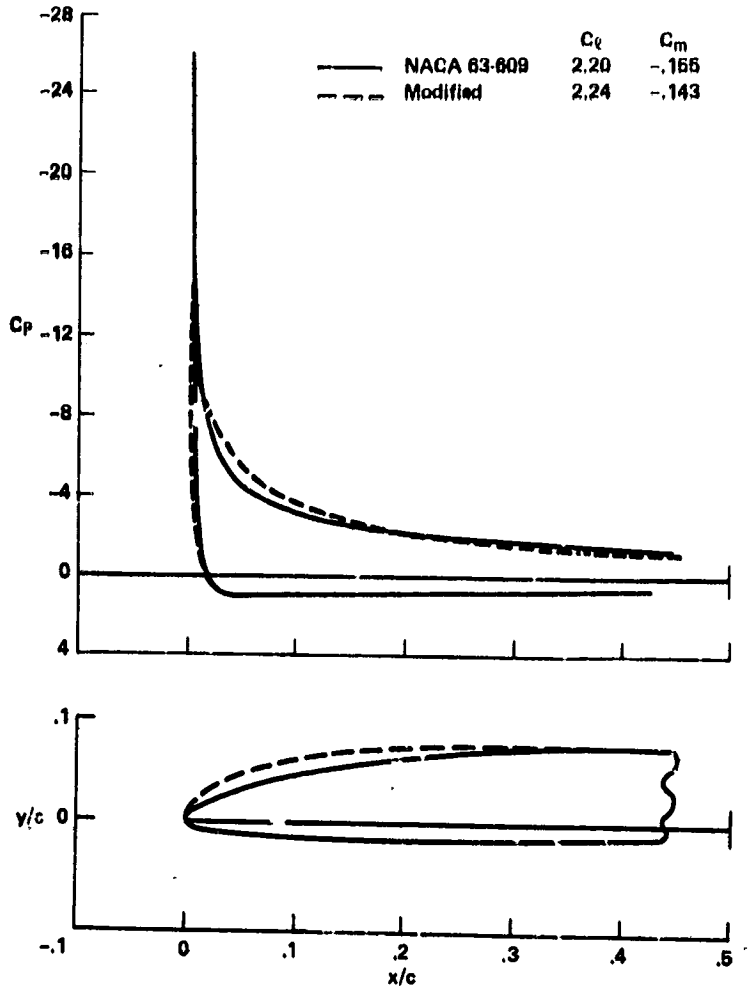
X	YU	YL	X	YU	YL
0.0000	0.0000	0.0000	.3750	.0957	-.0536
.0002	.0046	-.0007	.4000	.0952	-.0525
.0004	.0065	-.0015	.4250	.0943	-.0510
.0006	.0080	-.0022	.4500	.0929	-.0491
.0008	.0092	-.0028	.4750	.0910	-.0470
.0010	.0102	-.0033	.5000	.0887	-.0446
.0020	.0144	-.0052	.5250	.0860	-.0419
.0030	.0175	-.0067	.5500	.0830	-.0391
.0040	.0201	-.0080	.5750	.0797	-.0361
.0050	.0224	-.0090	.6000	.0761	-.0330
.0100	.0310	-.0133	.6250	.0721	-.0298
.0200	.0424	-.0188	.6500	.0680	-.0265
.0300	.0504	-.0228	.6750	.0635	-.0231
.0400	.0568	-.0262	.7000	.0589	-.0197
.0500	.0620	-.0291	.7250	.0542	-.0164
.0600	.0664	-.0317	.7500	.0493	-.0131
.0700	.0702	-.0339	.7750	.0443	-.0100
.0800	.0736	-.0359	.8000	.0392	-.0070
.0900	.0764	-.0378	.8250	.0341	-.0043
.1000	.0790	-.0395	.8500	.0290	-.0018
.1250	.0842	-.0432	.8750	.0239	.0002
.1500	.0879	-.0462	.9000	.0190	.0019
.1750	.0907	-.0487	.9250	.0141	.0029
.2000	.0927	-.0507	.9500	.0094	.0033
.2250	.0940	-.0523	.9600	.0075	.0032
.2500	.0949	-.0535	.9700	.0057	.0029
.2750	.0954	-.0543	.9800	.0039	.0024
.3000	.0957	-.0547	.9900	.0021	.0015
.3250	.0957	-.0548	.9950	.0010	.0008
.3500	.0957	-.0548	1.0000	.0000	.0000

Figure 17.- NACA 63-415 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



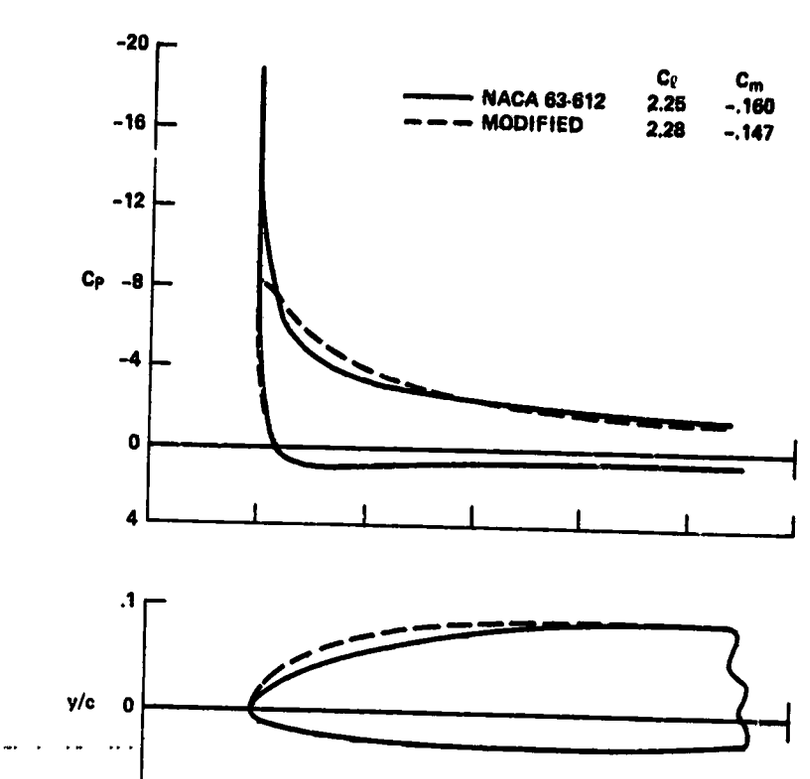
X	YU	YL	X	YU	YL
0.0000	0.0000	0.0000	.3750	.1105	-.0685
.0002	.0054	-.0008	.4000	.1098	-.0671
.0004	.0075	-.0016	.4250	.1085	-.0652
.0006	.0092	-.0023	.4500	.1066	-.0629
.0008	.0105	-.0031	.4750	.1043	-.0603
.0010	.0117	-.0036	.5000	.1015	-.0573
.0020	.0164	-.0058	.5250	.0982	-.0541
.0030	.0199	-.0076	.5500	.0945	-.0506
.0040	.0228	-.0090	.5750	.0905	-.0469
.0050	.0253	-.0103	.6000	.0861	-.0430
.0100	.0349	-.0154	.6250	.0815	-.0390
.0200	.0477	-.0225	.6500	.0765	-.0349
.0300	.0569	-.0276	.6750	.0713	-.0307
.0400	.0641	-.0319	.7000	.0659	-.0266
.0500	.0701	-.0357	.7250	.0604	-.0224
.0600	.0752	-.0390	.7500	.0547	-.0184
.0700	.0796	-.0420	.7750	.0489	-.0145
.0800	.0835	-.0446	.8000	.0431	-.0108
.0900	.0869	-.0471	.8250	.0373	-.0074
.1000	.0899	-.0493	.8500	.0315	-.0043
.1250	.0961	-.0541	.8750	.0259	-.0016
.1500	.1007	-.0581	.9000	.0203	.0006
.1750	.1041	-.0614	.9250	.0150	.0021
.2000	.1066	-.0641	.9500	.0099	.0028
.2250	.1083	-.0663	.9600	.0079	.0029
.2500	.1095	-.0679	.9700	.0059	.0027
.2750	.1102	-.0690	.9800	.0040	.0022
.3000	.1105	-.0696	.9900	.0021	.0015
.3250	.1106	-.0698	.9950	.0010	.0007
.3500	.1106	-.0694	1.0000	.0000	.0000

Figure 18.- NACA 63-418 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



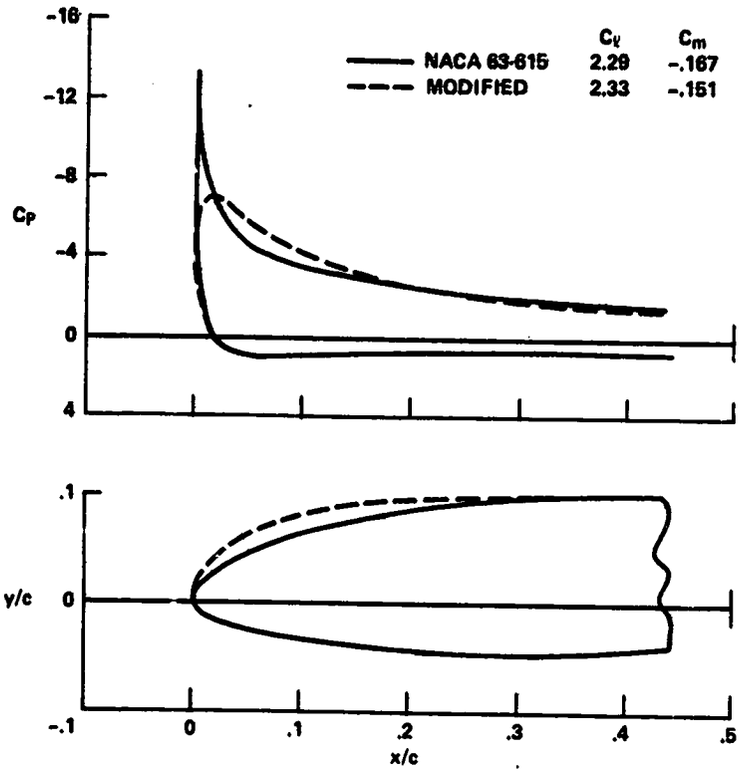
x	y_U	y_L	x	y_U	y_L
0.0000	0.0000	0.0000	.3750	.0766	-.0133
.0002	.0033	-.0005	.4000	.0766	-.0128
.0004	.0046	-.0009	.4250	.0764	-.0113
.0006	.0057	-.0014	.4500	.0758	-.0101
.0008	.0066	-.0017	.4750	.0749	-.0088
.0010	.0073	-.0020	.5000	.0737	-.0075
.0020	.0103	-.0031	.5250	.0721	-.0060
.0030	.0126	-.0038	.5500	.0703	-.0045
.0040	.0145	-.0045	.5750	.0681	-.0030
.0050	.0161	-.0050	.6000	.0658	-.0014
.0100	.0225	-.0069	.6250	.0631	.0002
.0200	.0309	-.0090	.6500	.0603	.0017
.0300	.0371	-.0103	.6750	.0572	.0032
.0400	.0419	-.0112	.7000	.0539	.0047
.0500	.0460	-.0120	.7250	.0503	.0060
.0600	.0495	-.0127	.7500	.0466	.0073
.0700	.0525	-.0133	.7750	.0427	.0084
.0800	.0552	-.0137	.8000	.0387	.0093
.0900	.0576	-.0141	.8250	.0345	.0100
.1000	.0597	-.0145	.8500	.0302	.0104
.1250	.0641	-.0151	.8750	.0257	.0104
.1500	.0676	-.0156	.9000	.0211	.0100
.1750	.0702	-.0159	.9250	.0164	.0091
.2000	.0722	-.0160	.9500	.0115	.0075
.2250	.0738	-.0160	.9600	.0099	.0068
.2500	.0749	-.0158	.9700	.0074	.0055
.2750	.0756	-.0156	.9800	.0052	.0042
.3000	.0761	-.0152	.9900	.0029	.0025
.3250	.0764	-.0147	.9950	.0014	.0012
.3500	.0766	-.0141	1.0000	.0000	.0000

Figure 19.- NACA 63-609 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



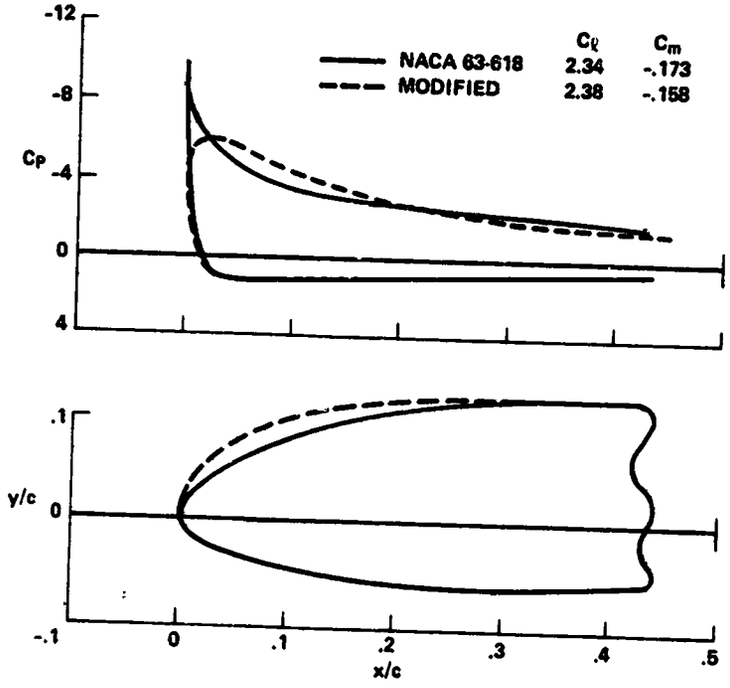
X	YU	YL	X	YU	YL
0.0000	0.0000	0.0000	.3750	.0914	-.0282
.0002	.0044	-.0005	.4000	.0913	-.0271
.0004	.0062	-.0010	.4250	.0908	-.0258
.0006	.0075	-.0015	.4500	.0899	-.0242
.0008	.0086	-.0020	.4750	.0885	-.0225
.0010	.0096	-.0024	.5000	.0868	-.0206
.0020	.0133	-.0038	.5250	.0847	-.0186
.0030	.0161	-.0049	.5500	.0823	-.0165
.0040	.0185	-.0058	.5750	.0795	-.0142
.0050	.0205	-.0065	.6000	.0764	-.0120
.0100	.0282	-.0094	.6250	.0731	-.0097
.0200	.0384	-.0130	.6500	.0695	-.0074
.0300	.0457	-.0154	.6750	.0656	-.0051
.0400	.0515	-.0173	.7000	.0615	-.0028
.0500	.0563	-.0189	.7250	.0571	-.0006
.0600	.0605	-.0203	.7500	.0526	.0014
.0700	.0640	-.0215	.7750	.0479	.0033
.0800	.0672	-.0225	.8000	.0431	.0050
.0900	.0700	-.0235	.8250	.0381	.0064
.1000	.0725	-.0243	.8500	.0331	.0075
.1250	.0777	-.0261	.8750	.0279	.0082
.1500	.0817	-.0275	.9000	.0227	.0085
.1750	.0847	-.0285	.9250	.0174	.0081
.2000	.0870	-.0293	.9500	.0121	.0070
.2250	.0887	-.0299	.9600	.0099	.0062
.2500	.0898	-.0302	.9700	.0076	.0053
.2750	.0906	-.0302	.9800	.0053	.0040
.3000	.0911	-.0301	.9900	.0029	.0024
.3250	.0913	-.0297	.9950	.0015	.0012
.3500	.0914	-.0291	1.0000	.0000	.0000

Figure 20.- NACA 63-612 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



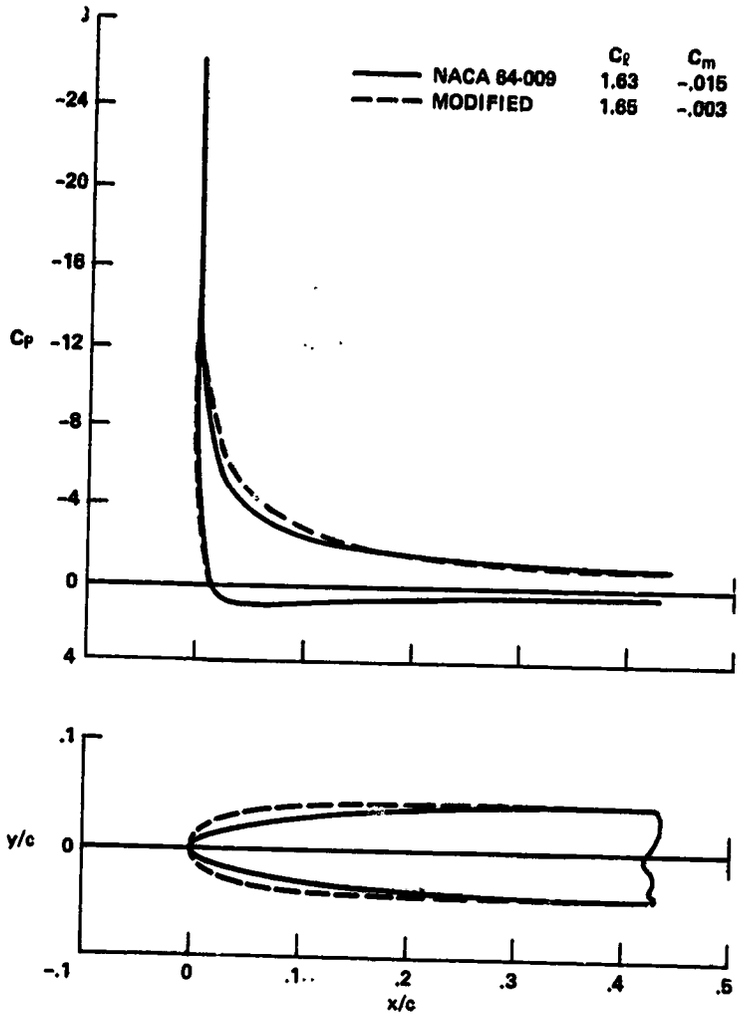
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.1062	-.0431
.0002	.0051	-.0005	.4000	.1059	-.0418
.0004	.0072	-.0011	.4250	.1051	-.0401
.0006	.0088	-.0016	.4500	.1038	-.0382
.0008	.0101	-.0022	.4750	.1020	-.0360
.0010	.0112	-.0027	.5000	.0997	-.0335
.0020	.0157	-.0044	.5250	.0971	-.0309
.0030	.0190	-.0057	.5500	.0940	-.0281
.0040	.0218	-.0069	.5750	.0906	-.0252
.0050	.0242	-.0078	.6000	.0868	-.0223
.0100	.0333	-.0116	.6250	.0827	-.0192
.0200	.0453	-.0167	.6500	.0783	-.0161
.0300	.0539	-.0202	.6750	.0737	-.0130
.0400	.0607	-.0231	.7000	.0688	-.0099
.0500	.0663	-.0255	.7250	.0636	-.0070
.0600	.0711	-.0277	.7500	.0583	-.0041
.0700	.0752	-.0295	.7750	.0529	-.0014
.0800	.0789	-.0312	.8000	.0473	.0010
.0900	.0821	-.0327	.8250	.0416	.0031
.1000	.0849	-.0341	.8500	.0358	.0049
.1250	.0908	-.0370	.8750	.0300	.0063
.1500	.0953	-.0393	.9000	.0242	.0071
.1750	.0987	-.0412	.9250	.0184	.0072
.2000	.1013	-.0427	.9500	.0126	.0065
.2250	.1031	-.0438	.9600	.0102	.0059
.2500	.1045	-.0445	.9700	.0079	.0050
.2750	.1053	-.0449	.9800	.0055	.0039
.3000	.1058	-.0450	.9900	.0030	.0024
.3250	.1061	-.0447	.9950	.0015	.0012
.3500	.1062	-.0441	1.0000	.0000	.0000

Figure 21.- NACA 63-615 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



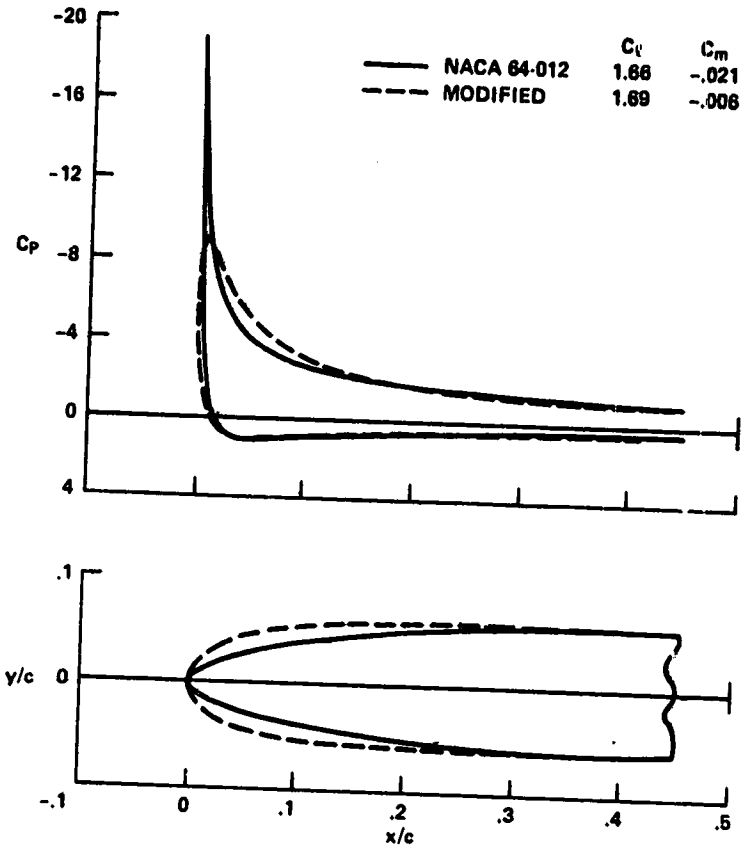
x	y_U	y_L	x	y_U	y_L
0.0000	0.0000	0.0000	.3750	.1210	-.0580
.0002	.0051	-.0006	.4000	.1205	-.0564
.0004	.0073	-.0011	.4250	.1193	-.0544
.0006	.0090	-.0017	.4500	.1176	-.0520
.0008	.0104	-.0023	.4750	.1153	-.0493
.0010	.0116	-.0029	.5000	.1125	-.0463
.0020	.0165	-.0058	.5250	.1092	-.0430
.0030	.0202	-.0084	.5500	.1055	-.0396
.0040	.0233	-.0077	.5750	.1014	-.0360
.0050	.0260	-.0089	.6000	.0969	-.0322
.0100	.0364	-.0135	.6250	.0921	-.0284
.0200	.0503	-.0200	.6500	.0869	-.0245
.0300	.0604	-.0247	.6750	.0815	-.0206
.0400	.0684	-.0286	.7000	.0758	-.0167
.0500	.0751	-.0319	.7250	.0699	-.0130
.0600	.0808	-.0348	.7500	.0638	-.0093
.0700	.0858	-.0374	.7750	.0575	-.0059
.0800	.0901	-.0397	.8000	.0512	-.0027
.0900	.0940	-.0418	.8250	.0448	.0001
.1000	.0974	-.0437	.8500	.0384	.0025
.1250	.1044	-.0478	.8750	.0320	.0044
.1500	.1097	-.0511	.9000	.0256	.0057
.1750	.1138	-.0539	.9250	.0193	.0064
.2000	.1165	-.0560	.9500	.0131	.0060
.2250	.1185	-.0577	.9600	.0106	.0055
.2500	.1198	-.0589	.9700	.0081	.0048
.2750	.1206	-.0596	.9800	.0056	.0038
.3000	.1210	-.0599	.9900	.0030	.0024
.3250	.1211	-.0598	.9950	.0015	.0012
.3500	.1211	-.0591	1.0000	.0000	.0000

Figure 22.- NACA 63-618 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



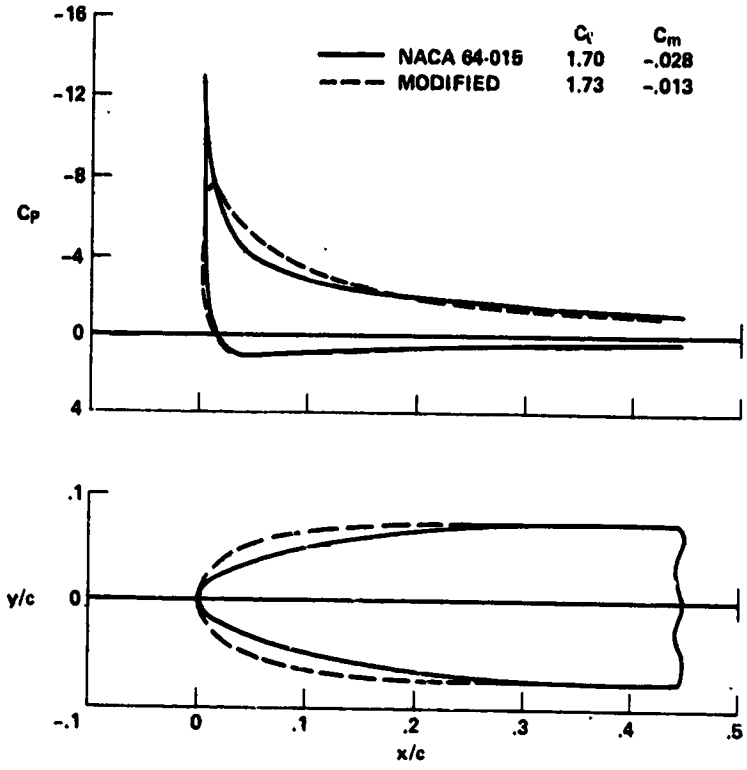
X	YU	YL	X	YU	YL
0.0000	0.0000	0.0000	.3750	.0450	-.0450
.0002	.0035	-.0035	.4000	.0449	-.0449
.0004	.0048	-.0048	.4250	.0444	-.0444
.0006	.0057	-.0057	.4500	.0437	-.0437
.0008	.0065	-.0065	.4750	.0426	-.0426
.0010	.0072	-.0072	.5000	.0414	-.0414
.0020	.0097	-.0097	.5250	.0399	-.0399
.0030	.0116	-.0116	.5500	.0383	-.0383
.0040	.0131	-.0131	.5750	.0365	-.0365
.0050	.0144	-.0144	.6000	.0345	-.0345
.0100	.0191	-.0191	.6250	.0325	-.0325
.0200	.0269	-.0269	.6500	.0303	-.0303
.0300	.0288	-.0288	.6750	.0280	-.0280
.0400	.0317	-.0317	.7000	.0256	-.0256
.0500	.0340	-.0340	.7250	.0232	-.0232
.0600	.0358	-.0358	.7500	.0207	-.0207
.0700	.0373	-.0373	.7750	.0182	-.0182
.0800	.0386	-.0386	.8000	.0156	-.0156
.0900	.0396	-.0396	.8250	.0131	-.0131
.1000	.0405	-.0405	.8500	.0107	-.0107
.1250	.0422	-.0422	.8750	.0084	-.0084
.1500	.0433	-.0433	.9000	.0061	-.0061
.1750	.0440	-.0440	.9250	.0041	-.0041
.2000	.0444	-.0444	.9500	.0023	-.0023
.2250	.0447	-.0447	.9600	.0016	-.0016
.2500	.0449	-.0449	.9700	.0011	-.0011
.2750	.0450	-.0450	.9800	.0006	-.0006
.3000	.0450	-.0450	.9900	.0002	-.0002
.3250	.0450	-.0450	.9950	.0001	-.0001
.3500	.0450	-.0450	1.0000	.0000	-.0000

Figure 23.- NACA 64-009 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



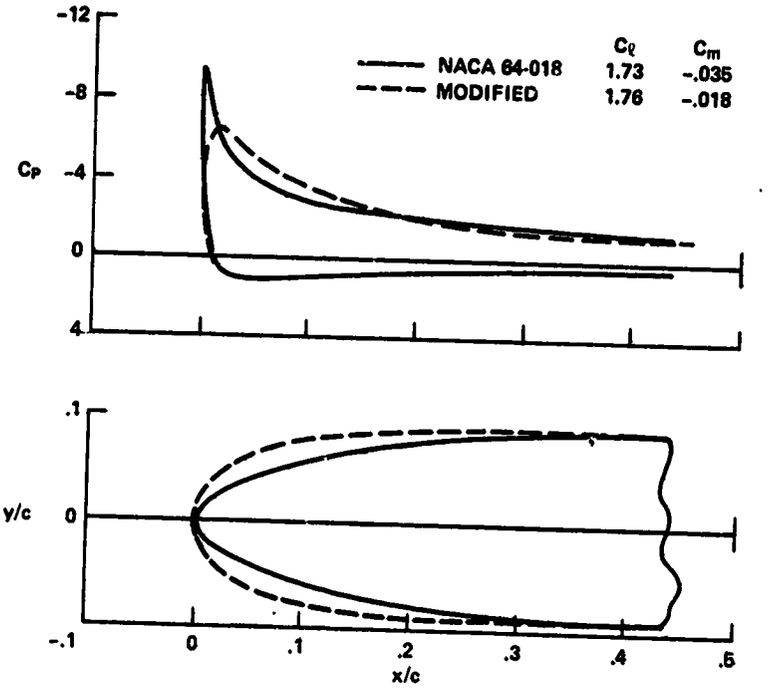
x	y_U	y_L	x	y_U	y_L
0.0000	0.0000	0.0000	.3750	.0600	-.0600
.0002	.0045	-.0045	.4000	.0598	-.0598
.0004	.0062	-.0062	.4250	.0591	-.0591
.0006	.0074	-.0074	.4500	.0580	-.0580
.0008	.0084	-.0084	.4750	.0565	-.0565
.0010	.0093	-.0093	.5000	.0548	-.0548
.0020	.0126	-.0126	.5250	.0528	-.0528
.0030	.0150	-.0150	.5500	.0506	-.0506
.0040	.0169	-.0169	.5750	.0481	-.0481
.0050	.0186	-.0186	.6000	.0455	-.0455
.0100	.0248	-.0248	.6250	.0427	-.0427
.0200	.0325	-.0325	.6500	.0397	-.0397
.0300	.0377	-.0377	.6750	.0367	-.0367
.0400	.0416	-.0416	.7000	.0335	-.0335
.0500	.0447	-.0447	.7250	.0302	-.0302
.0600	.0472	-.0472	.7500	.0269	-.0269
.0700	.0493	-.0493	.7750	.0236	-.0236
.0800	.0510	-.0510	.8000	.0203	-.0203
.0900	.0525	-.0525	.8250	.0170	-.0170
.1000	.0537	-.0537	.8500	.0138	-.0138
.1250	.0560	-.0560	.8750	.0108	-.0108
.1500	.0576	-.0576	.9000	.0079	-.0079
.1750	.0586	-.0586	.9250	.0052	-.0052
.2000	.0593	-.0593	.9500	.0029	-.0029
.2250	.0596	-.0596	.9600	.0021	-.0021
.2500	.0599	-.0599	.9700	.0014	-.0014
.2750	.0600	-.0600	.9800	.0007	-.0007
.3000	.0600	-.0600	.9900	.0003	-.0003
.3250	.0600	-.0600	.9950	.0001	-.0001
.3500	.0600	-.0600	1.0000	.0000	-.0000

Figure 24.- NACA 64-012 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



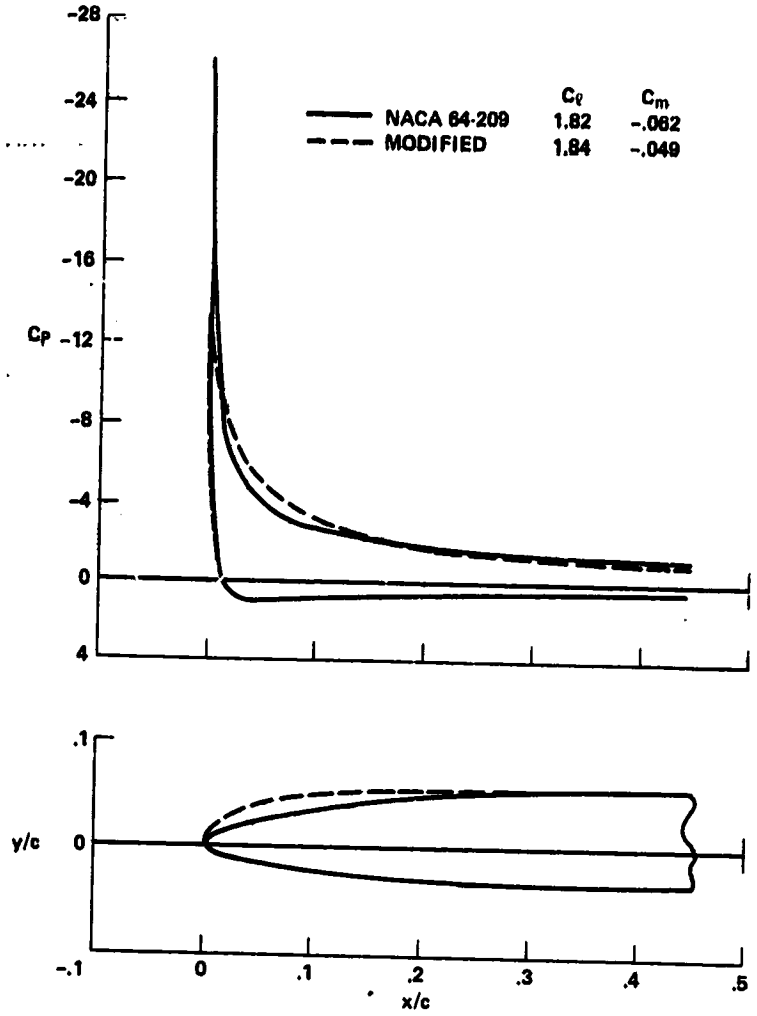
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0750	-.0750
.0002	.0049	-.0049	.4000	.0746	-.0746
.0004	.0068	-.0068	.4250	.0736	-.0736
.0006	.0081	-.0081	.4500	.0722	-.0722
.0008	.0092	-.0092	.4750	.0703	-.0703
.0010	.0102	-.0102	.5000	.0680	-.0680
.0020	.0139	-.0139	.5250	.0655	-.0655
.0030	.0167	-.0167	.5500	.0626	-.0626
.0040	.0189	-.0189	.5750	.0595	-.0595
.0050	.0209	-.0209	.6000	.0561	-.0561
.0100	.0291	-.0291	.6250	.0526	-.0526
.0200	.0373	-.0373	.6500	.0489	-.0489
.0300	.0437	-.0437	.6750	.0450	-.0450
.0400	.0486	-.0486	.7000	.0411	-.0411
.0500	.0526	-.0526	.7250	.0370	-.0370
.0600	.0556	-.0556	.7500	.0329	-.0329
.0700	.0586	-.0586	.7750	.0288	-.0288
.0800	.0610	-.0610	.8000	.0247	-.0247
.0900	.0630	-.0630	.8250	.0207	-.0207
.1000	.0648	-.0648	.8500	.0167	-.0167
.1250	.0682	-.0682	.8750	.0130	-.0130
.1500	.0706	-.0706	.9000	.0095	-.0095
.1750	.0723	-.0723	.9250	.0063	-.0063
.2000	.0735	-.0735	.9500	.0035	-.0035
.2250	.0742	-.0742	.9600	.0025	-.0025
.2500	.0746	-.0746	.9700	.0016	-.0016
.2750	.0749	-.0749	.9800	.0009	-.0009
.3000	.0750	-.0750	.9900	.0003	-.0003
.3250	.0750	-.0750	.9950	.0002	-.0002
.3500	.0750	-.0750	1.0000	.0000	-.0000

Figure 25.- NACA 64-015 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



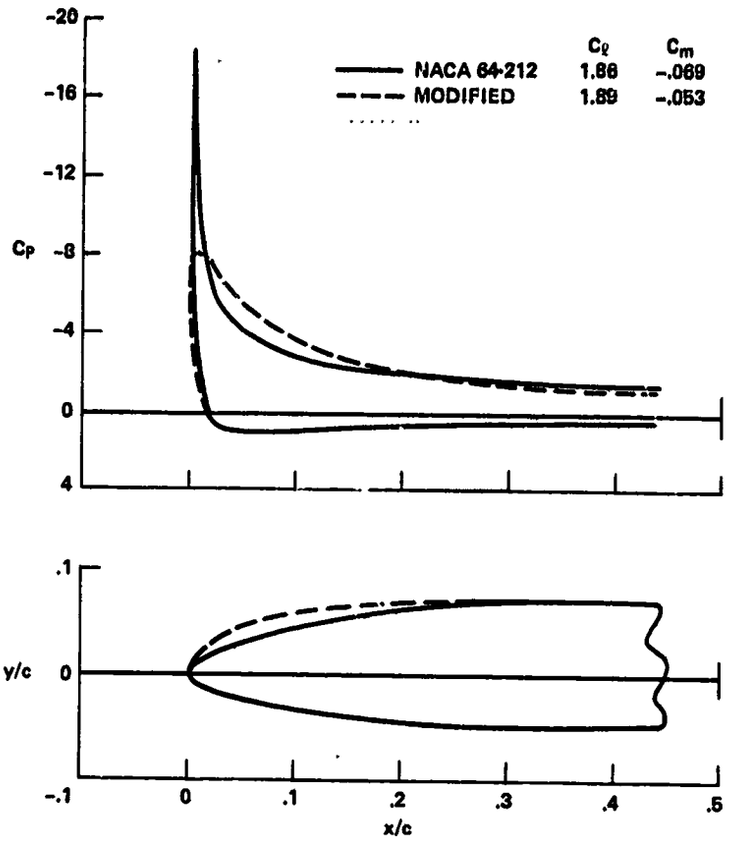
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0900	-.0900
.0002	.0057	-.0057	.4000	.0894	-.0894
.0004	.0078	-.0078	.4250	.0881	-.0881
.0006	.0094	-.0094	.4500	.0862	-.0862
.0008	.0107	-.0107	.4750	.0839	-.0839
.0010	.0119	-.0119	.5000	.0811	-.0811
.0020	.0163	-.0163	.5250	.0779	-.0779
.0030	.0196	-.0196	.5500	.0744	-.0744
.0040	.0223	-.0223	.5750	.0706	-.0706
.0050	.0246	-.0246	.6000	.0665	-.0665
.0100	.0332	-.0332	.6250	.0622	-.0622
.0200	.0444	-.0444	.6500	.0577	-.0577
.0300	.0521	-.0521	.6750	.0531	-.0531
.0400	.0580	-.0580	.7000	.0483	-.0483
.0500	.0628	-.0628	.7250	.0435	-.0435
.0600	.0668	-.0668	.7500	.0386	-.0386
.0700	.0702	-.0702	.7750	.0337	-.0337
.0800	.0731	-.0731	.8000	.0288	-.0288
.0900	.0756	-.0756	.8250	.0241	-.0241
.1000	.0777	-.0777	.8500	.0195	-.0195
.1250	.0819	-.0819	.8750	.0151	-.0151
.1500	.0848	-.0848	.9000	.0110	-.0110
.1750	.0868	-.0868	.9250	.0073	-.0073
.2000	.0882	-.0882	.9500	.0040	-.0040
.2250	.0890	-.0890	.9600	.0029	-.0029
.2500	.0895	-.0895	.9700	.0019	-.0019
.2750	.0898	-.0898	.9800	.0010	-.0010
.3000	.0900	-.0900	.9900	.0004	-.0004
.3250	.0900	-.0900	.9950	.0002	-.0002
.3500	.0900	-.0900	1.0000	.0000	-.0000

Figure 26.- NACA 64-018 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



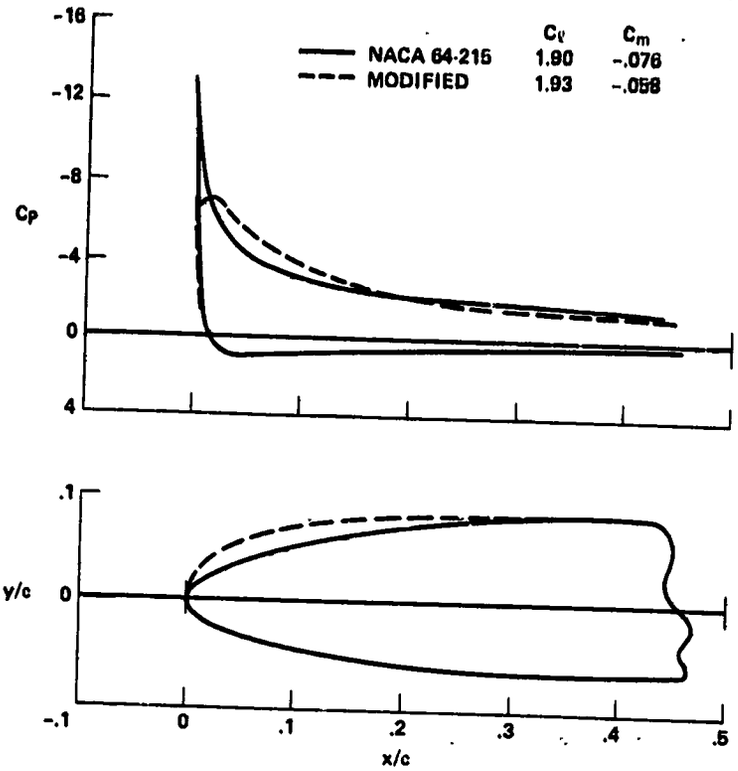
X	YU	YL	X	YU	YL
0.0000	0.0000	0.0000	.3750	.0556	-.0345
.0002	.0025	-.0008	.4000	.0556	-.0342
.0004	.0037	-.0016	.4250	.0553	-.0336
.0006	.0046	-.0021	.4500	.0546	-.0327
.0008	.0053	-.0025	.4750	.0536	-.0316
.0010	.0060	-.0028	.5000	.0524	-.0303
.0020	.0086	-.0041	.5250	.0509	-.0289
.0030	.0105	-.0050	.5500	.0492	-.0273
.0040	.0122	-.0058	.5750	.0473	-.0256
.0050	.0136	-.0065	.6000	.0453	-.0238
.0100	.0191	-.0090	.6250	.0430	-.0219
.0200	.0268	-.0121	.6500	.0406	-.0199
.0300	.0314	-.0143	.6750	.0381	-.0179
.0400	.0353	-.0161	.7000	.0354	-.0159
.0500	.0385	-.0178	.7250	.0326	-.0138
.0600	.0411	-.0192	.7500	.0297	-.0117
.0700	.0433	-.0205	.7750	.0267	-.0097
.0800	.0451	-.0216	.8000	.0236	-.0077
.0900	.0467	-.0227	.8250	.0206	-.0057
.1000	.0481	-.0237	.8500	.0175	-.0040
.1250	.0507	-.0259	.8750	.0144	-.0023
.1500	.0525	-.0278	.9000	.0113	-.0009
.1750	.0537	-.0293	.9250	.0083	.0002
.2000	.0545	-.0307	.9500	.0054	.0009
.2250	.0550	-.0318	.9600	.0043	.0011
.2500	.0553	-.0327	.9700	.0032	.0011
.2750	.0555	-.0335	.9800	.0021	.0010
.3000	.0556	-.0340	.9900	.0011	.0007
.3250	.0556	-.0343	.9950	.0005	.0003
.3500	.0556	-.0345	1.0000	.0000	.0000

Figure 27.- NACA 64-209 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



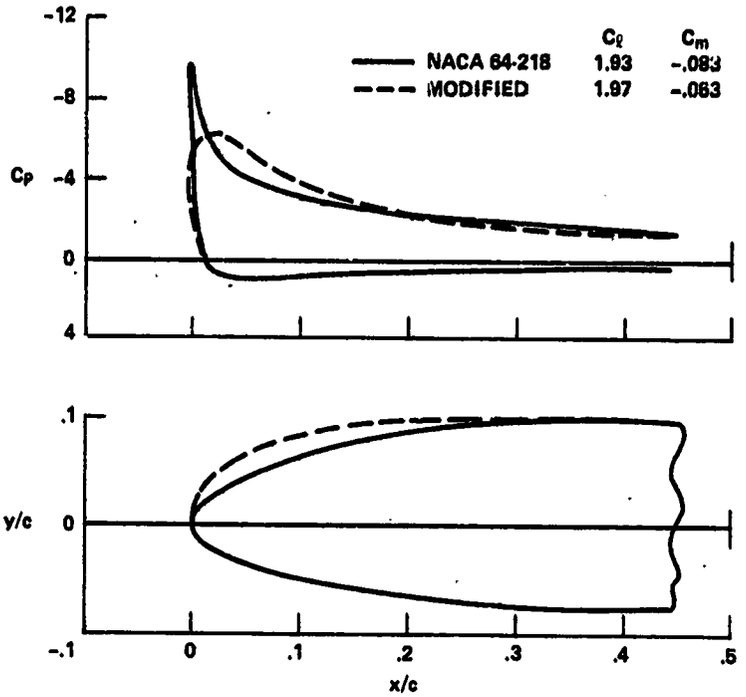
X	Y_U	Y_L	X	Y_U	Y_L
0.0000	0.0000	0.0000	.3750	.0706	-.0495
.0002	.0033	-.0010	.4000	.0705	-.0491
.0004	.0048	-.0020	.4250	.0699	-.0482
.0006	.0060	-.0026	.4500	.0689	-.0470
.0008	.0069	-.0031	.4750	.0675	-.0455
.0010	.0078	-.0036	.5000	.0658	-.0438
.0020	.0112	-.0053	.5250	.0638	-.0418
.0030	.0137	-.0066	.5500	.0615	-.0396
.0040	.0158	-.0076	.5750	.0590	-.0372
.0050	.0177	-.0086	.6000	.0562	-.0347
.0100	.0248	-.0120	.6250	.0532	-.0321
.0200	.0340	-.0164	.6500	.0501	-.0294
.0300	.0404	-.0196	.6750	.0468	-.0266
.0400	.0453	-.0223	.7000	.0433	-.0237
.0500	.0493	-.0246	.7250	.0397	-.0208
.0600	.0526	-.0267	.7500	.0360	-.0179
.0700	.0553	-.0286	.7750	.0322	-.0151
.0800	.0576	-.0303	.8000	.0283	-.0123
.0900	.0596	-.0318	.8250	.0245	-.0096
.1000	.0613	-.0333	.8500	.0206	-.0070
.1250	.0645	-.0365	.8750	.0168	-.0047
.1500	.0668	-.0393	.9000	.0131	-.0027
.1750	.0682	-.0416	.9250	.0095	-.0010
.2000	.0692	-.0437	.9500	.0061	.0003
.2250	.0698	-.0453	.9600	.0048	.0006
.2500	.0702	-.0467	.9700	.0035	.0008
.2750	.0704	-.0478	.9800	.0023	.0008
.3000	.0705	-.0486	.9900	.0012	.0006
.3250	.0705	-.0492	.9950	.0006	.0003
.3500	.0706	-.0495	1.0000	.0000	.0000

Figure 28.- NACA 64-212 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



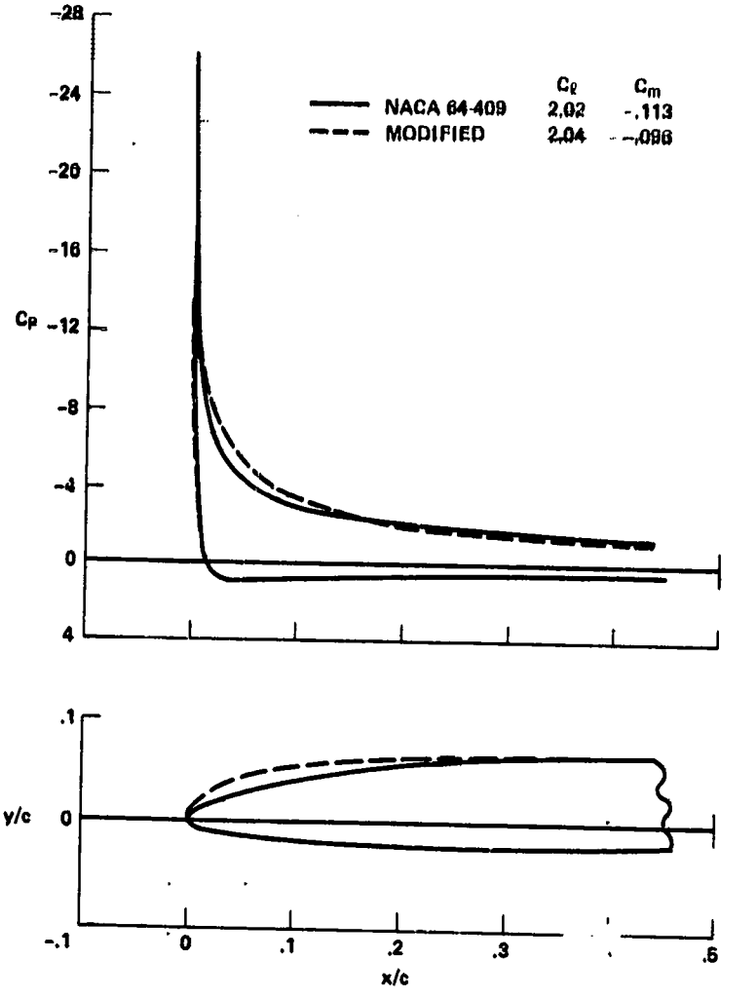
x	yU	yL	x	yU	yL
0.0000	0.0000	0.0000	.3750	.0855	-.0645
.0002	.0048	-.0011	.4000	.0853	-.0639
.0004	.0067	-.0022	.4250	.0845	-.0628
.0006	.0081	-.0031	.4500	.0831	-.0612
.0008	.0093	-.0037	.4750	.0813	-.0593
.0010	.0104	-.0043	.5000	.0791	-.0570
.0020	.0145	-.0064	.5250	.0765	-.0544
.0030	.0175	-.0080	.5500	.0736	-.0516
.0040	.0200	-.0093	.5750	.0704	-.0486
.0050	.0222	-.0105	.6000	.0669	-.0454
.0100	.0304	-.0149	.6250	.0632	-.0420
.0200	.0411	-.0205	.6500	.0593	-.0385
.0300	.0486	-.0247	.6750	.0552	-.0349
.0400	.0544	-.0282	.7000	.0509	-.0313
.0500	.0590	-.0313	.7250	.0465	-.0276
.0600	.0629	-.0341	.7500	.0420	-.0239
.0700	.0662	-.0366	.7750	.0374	-.0202
.0800	.0689	-.0388	.8000	.0327	-.0166
.0900	.0713	-.0409	.8250	.0281	-.0132
.1000	.0734	-.0428	.8500	.0235	-.0099
.1250	.0775	-.0471	.8750	.0191	-.0070
.1500	.0803	-.0508	.9000	.0147	-.0045
.1750	.0823	-.0540	.9250	.0106	-.0026
.2000	.0836	-.0566	.9500	.0066	-.0013
.2250	.0844	-.0589	.9600	.0052	.0002
.2500	.0850	-.0608	.9700	.0038	.0005
.2750	.0853	-.0622	.9800	.0024	.0007
.3000	.0854	-.0633	.9900	.0012	.0006
.3250	.0855	-.0641	.9950	.0006	.0003
.3500	.0855	-.0645	1.0000	.0000	.0000

Figure 29.- NACA 64-215 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



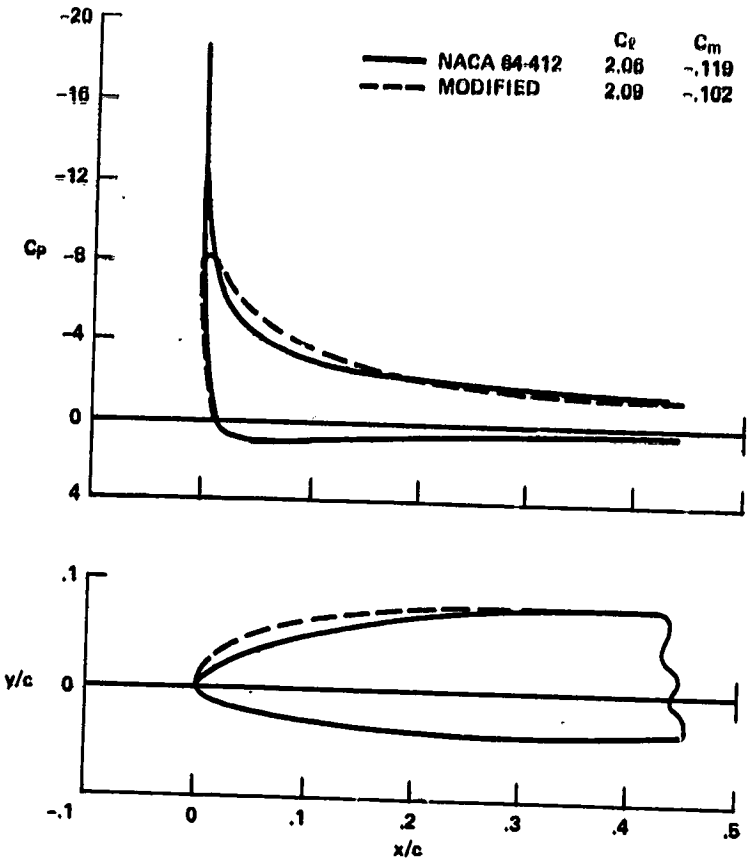
x	Y_U	Y_L	x	Y_U	Y_L
0.0000	0.0000	0.0000	.3750	.1005	-.0794
.0002	.0058	-.0012	.4000	.1001	-.0787
.0004	.0080	-.0025	.4250	.0989	-.0773
.0006	.0097	-.0035	.4500	.0972	-.0753
.0008	.0111	-.0042	.4750	.0949	-.0729
.0010	.0123	-.0049	.5000	.0921	-.0700
.0020	.0170	-.0074	.5250	.0889	-.0669
.0030	.0204	-.0093	.5500	.0854	-.0634
.0040	.0233	-.0109	.5750	.0815	-.0597
.0050	.0258	-.0123	.6000	.0773	-.0557
.0100	.0352	-.0176	.6250	.0728	-.0516
.0200	.0475	-.0245	.6500	.0682	-.0473
.0300	.0562	-.0297	.6750	.0633	-.0430
.0400	.0630	-.0341	.7000	.0582	-.0385
.0500	.0685	-.0379	.7250	.0530	-.0340
.0600	.0731	-.0414	.7500	.0477	-.0295
.0700	.0770	-.0445	.7750	.0423	-.0251
.0800	.0804	-.0473	.8000	.0369	-.0208
.0900	.0833	-.0499	.8250	.0316	-.0166
.1000	.0859	-.0523	.8500	.0263	-.0127
.1250	.0908	-.0577	.8750	.0212	-.0090
.1500	.0943	-.0623	.9000	.0162	-.0058
.1750	.0967	-.0663	.9250	.0115	-.0030
.2000	.0984	-.0696	.9500	.0072	-.0008
.2250	.0994	-.0725	.9600	.0056	-.0002
.2500	.1000	-.0748	.9700	.0040	.0003
.2750	.1004	-.0767	.9800	.0026	.0005
.3000	.1005	-.0781	.9900	.0013	.0005
.3250	.1006	-.0790	.9950	.0006	.0003
.3500	.1006	-.0795	1.0000	.0000	.0000

Figure 30.- NACA 64-218 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



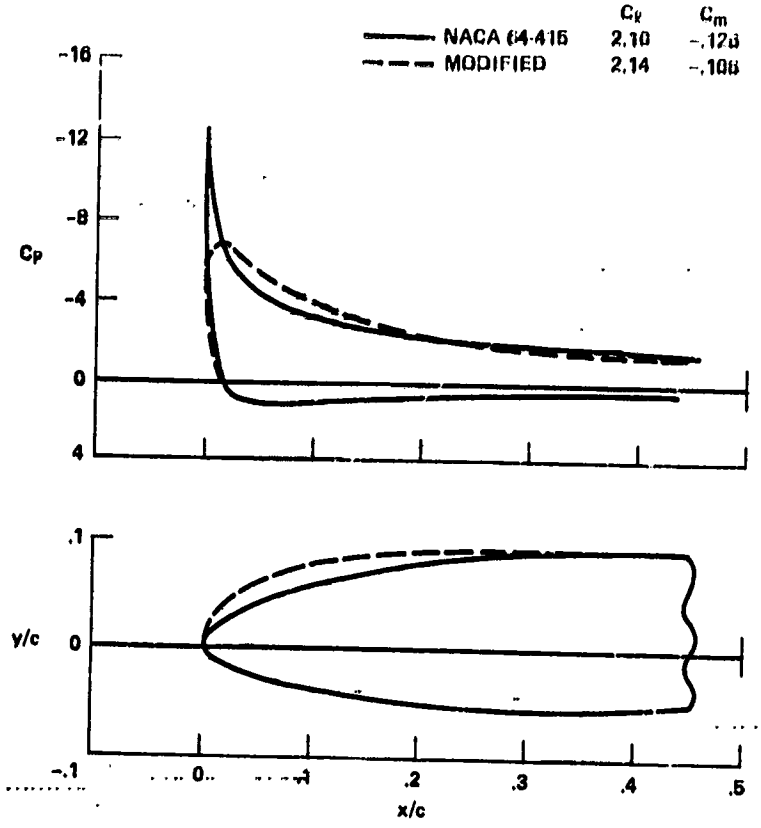
x	y_U	y_L	x	y_U	y_L
0.0000	0.0000	0.0000	.3750	.0662	-.0239
.0002	.0031	-.0006	.4000	.0663	-.0235
.0004	.0044	-.0012	.4250	.0661	-.0227
.0006	.0054	-.0017	.4500	.0656	-.0218
.0008	.0062	-.0020	.4750	.0646	-.0206
.0010	.0070	-.0023	.5000	.0634	-.0193
.0020	.0098	-.0035	.5250	.0619	-.0179
.0030	.0120	-.0044	.5500	.0602	-.0164
.0040	.0138	-.0051	.5750	.0582	-.0148
.0050	.0153	-.0056	.6000	.0560	-.0131
.0100	.0213	-.0078	.6250	.0536	-.0114
.0200	.0290	-.0103	.6500	.0509	-.0096
.0300	.0345	-.0120	.6750	.0481	-.0079
.0400	.0387	-.0133	.7000	.0451	-.0061
.0500	.0422	-.0145	.7250	.0420	-.0044
.0600	.0451	-.0155	.7500	.0387	-.0027
.0700	.0476	-.0163	.7750	.0352	-.0011
.0800	.0497	-.0171	.8000	.0317	.0003
.0900	.0516	-.0178	.8250	.0280	.0017
.1000	.0532	-.0184	.8500	.0242	.0028
.1250	.0564	-.0198	.8750	.0204	.0037
.1500	.0589	-.0210	.9000	.0165	.0042
.1750	.0607	-.0219	.9250	.0126	.0044
.2000	.0621	-.0227	.9500	.0086	.0041
.2250	.0632	-.0233	.9600	.0070	.0037
.2500	.0640	-.0238	.9700	.0054	.0032
.2750	.0647	-.0241	.9800	.0037	.0025
.3000	.0652	-.0243	.9900	.0020	.0016
.3250	.0657	-.0243	.9950	.0010	.0008
.3500	.0660	-.0242	1.0000	.0000	.0000

Figure 31.- NACA 64-409 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



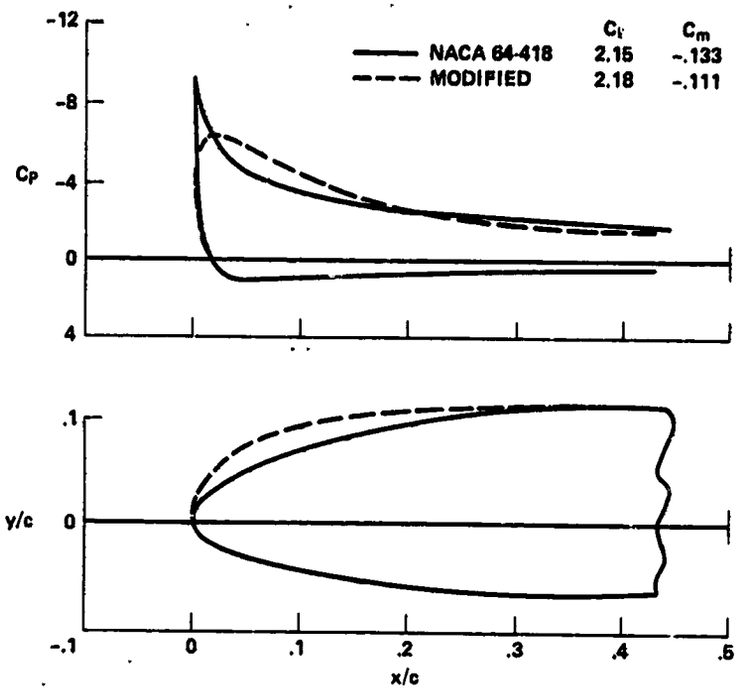
X	YU	YL	X	YU	YL
0.0000	0.0000	0.0000	.3750	.0812	-.0389
.0002	.0037	-.0007	.4000	.0812	-.0384
.0004	.0053	-.0014	.4250	.0808	-.0374
.0006	.0065	-.0020	.4500	.0799	-.0361
.0008	.0075	-.0025	.4750	.0785	-.0345
.0010	.0084	-.0029	.5000	.0769	-.0327
.0020	.0119	-.0045	.5250	.0748	-.0308
.0030	.0145	-.0057	.5500	.0725	-.0286
.0040	.0167	-.0066	.5750	.0699	-.0264
.0050	.0186	-.0075	.6000	.0670	-.0240
.0100	.0258	-.0106	.6250	.0638	-.0215
.0200	.0354	-.0145	.6500	.0604	-.0190
.0300	.0421	-.0171	.6750	.0568	-.0165
.0400	.0474	-.0193	.7000	.0531	-.0139
.0500	.0518	-.0212	.7250	.0491	-.0114
.0600	.0554	-.0228	.7500	.0450	-.0089
.0700	.0585	-.0243	.7750	.0407	-.0065
.0800	.0611	-.0256	.8000	.0364	-.0043
.0900	.0635	-.0268	.8250	.0319	-.0022
.1000	.0655	-.0280	.8500	.0274	-.0003
.1250	.0696	-.0304	.8750	.0228	.0013
.1500	.0726	-.0325	.9000	.0183	.0025
.1750	.0749	-.0342	.9250	.0138	.0033
.2000	.0766	-.0356	.9500	.0092	.0034
.2250	.0779	-.0368	.9600	.0074	.0033
.2500	.0789	-.0377	.9700	.0057	.0029
.2750	.0796	-.0384	.9800	.0039	.0024
.3000	.0802	-.0389	.9900	.0021	.0015
.3250	.0807	-.0392	.9950	.0010	.0008
.3500	.0810	-.0392	1.0000	.0000	.0000

Figure 32.- NACA 64-412 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



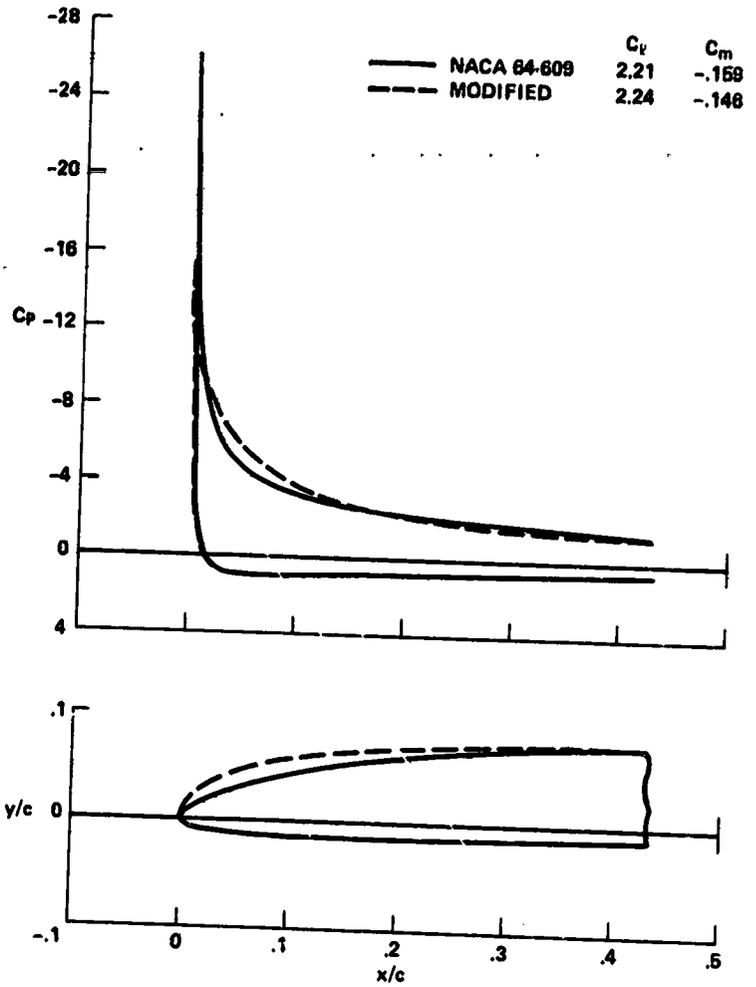
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0961	-.0539
.0002	.0048	-.0007	.4000	.0960	-.0532
.0004	.0067	-.0015	.4250	.0953	-.0520
.0006	.0082	-.0022	.4500	.0941	-.0503
.0008	.0095	-.0029	.4750	.0923	-.0483
.0010	.0105	-.0034	.5000	.0901	-.0460
.0020	.0147	-.0053	.5250	.0875	-.0434
.0030	.0179	-.0068	.5500	.0845	-.0406
.0040	.0205	-.0080	.5750	.0813	-.0377
.0050	.0228	-.0091	.6000	.0777	-.0346
.0100	.0315	-.0132	.6250	.0738	-.0314
.0200	.0430	-.0184	.6500	.0696	-.0281
.0300	.0513	-.0220	.6750	.0653	-.0248
.0400	.0578	-.0251	.7000	.0607	-.0215
.0500	.0631	-.0277	.7250	.0559	-.0181
.0600	.0676	-.0301	.7500	.0510	-.0148
.0700	.0715	-.0322	.7750	.0460	-.0117
.0800	.0748	-.0341	.8000	.0408	-.0086
.0900	.0777	-.0358	.8250	.0356	-.0058
.1000	.0802	-.0374	.8500	.0304	-.0032
.1250	.0853	-.0409	.8750	.0251	-.0009
.1500	.0889	-.0438	.9000	.0199	.0009
.1750	.0915	-.0464	.9250	.0148	.0022
.2000	.0933	-.0485	.9500	.0098	.0029
.2250	.0945	-.0503	.9600	.0079	.0029
.2500	.0953	-.0517	.9700	.0059	.0027
.2750	.0957	-.0528	.9800	.0040	.0022
.3000	.0960	-.0536	.9900	.0021	.0015
.3250	.0961	-.0540	.9950	.0011	.0007
.3500	.0961	-.0542	1.0000	.0000	.0000

Figure 33.- NACA 64-415 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



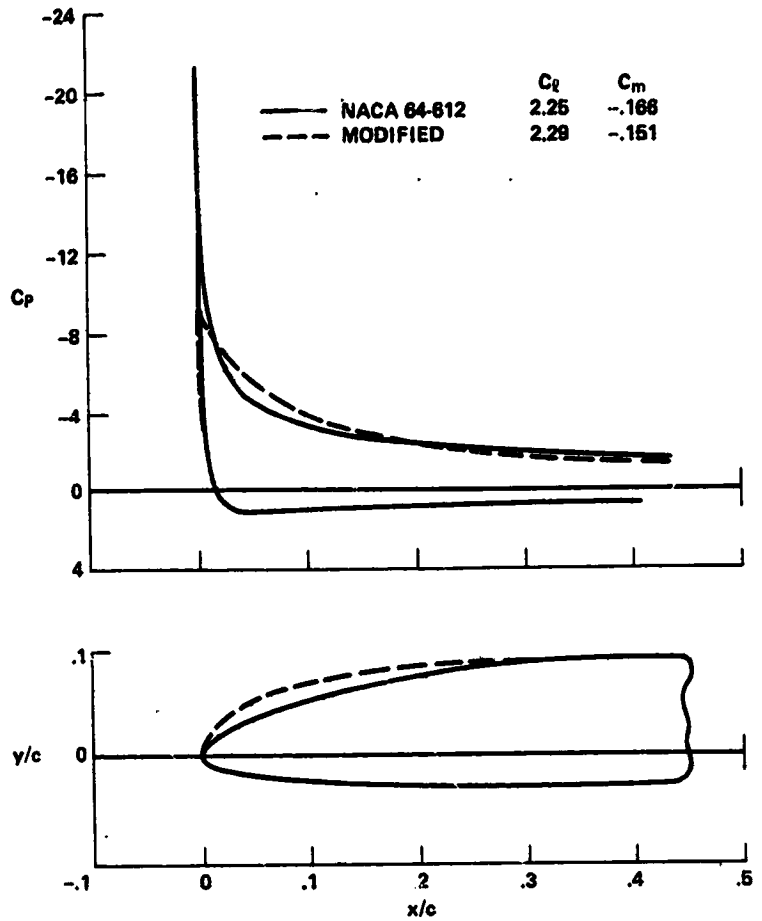
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.1110	-.0689
.0002	.0060	-.0008	.4000	.1108	-.0680
.0004	.0083	-.0016	.4250	.1098	-.0665
.0006	.0100	-.0024	.4500	.1081	-.0644
.0008	.0115	-.0032	.4750	.1059	-.0619
.0010	.0128	-.0037	.5000	.1031	-.0590
.0020	.0177	-.0060	.5250	.0999	-.0558
.0030	.0213	-.0078	.5500	.0964	-.0524
.0040	.0244	-.0093	.5750	.0924	-.0488
.0050	.0270	-.0106	.6000	.0881	-.0450
.0100	.0370	-.0155	.6250	.0835	-.0411
.0200	.0502	-.0221	.6500	.0786	-.0369
.0300	.0596	-.0267	.6750	.0734	-.0328
.0400	.0670	-.0307	.7000	.0681	-.0287
.0500	.0730	-.0341	.7250	.0625	-.0245
.0600	.0782	-.0372	.7500	.0568	-.0205
.0700	.0826	-.0399	.7750	.0509	-.0165
.0800	.0864	-.0423	.8000	.0450	-.0127
.0900	.0897	-.0446	.8250	.0391	-.0091
.1000	.0926	-.0467	.8500	.0332	-.0059
.1250	.0984	-.0514	.8750	.0273	-.0030
.1500	.1025	-.0553	.9000	.0215	-.0005
.1750	.1055	-.0587	.9250	.0158	.0013
.2000	.1076	-.0615	.9500	.0104	.0024
.2250	.1091	-.0638	.9600	.0083	.0025
.2500	.1100	-.0657	.9700	.0062	.0024
.2750	.1106	-.0672	.9800	.0042	.0021
.3000	.1109	-.0683	.9900	.0022	.0014
.3250	.1110	-.0690	.9950	.0011	.0007
.3500	.1110	-.0692	1.0000	.0000	.0000

Figure 34.- NACA 64-418 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



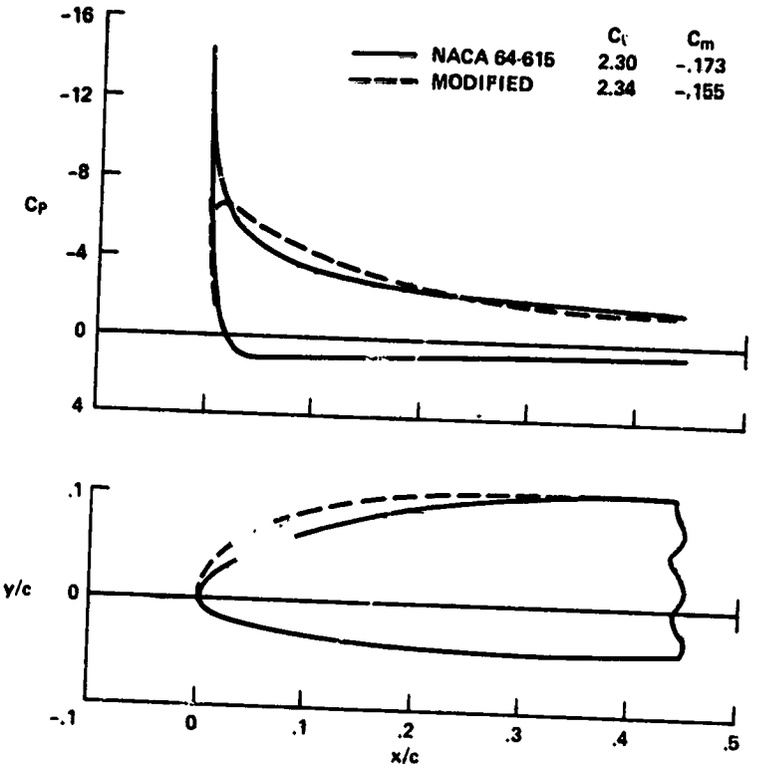
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0768	-.0134
.0002	.0030	-.0005	.4000	.0770	-.0128
.0004	.0043	-.0009	.4250	.0770	-.0119
.0006	.0054	-.0014	.4500	.0765	-.0108
.0008	.0062	-.0017	.4750	.0757	-.0096
.0010	.0070	-.0020	.5000	.0745	-.0083
.0020	.0100	-.0030	.5250	.0730	-.0069
.0030	.0124	-.0038	.5500	.0712	-.0054
.0040	.0143	-.0044	.5750	.0691	-.0039
.0050	.0160	-.0049	.6000	.0667	-.0024
.0100	.0225	-.0067	.6250	.0641	-.0008
.0200	.0317	-.0086	.6500	.0613	.0007
.0300	.0375	-.0097	.6750	.0582	.0022
.0400	.0424	-.0106	.7000	.0549	.0036
.0500	.0464	-.0112	.7250	.0514	.0050
.0600	.0498	-.0118	.7500	.0477	.0062
.0700	.0527	-.0122	.7750	.0438	.0074
.0800	.0552	-.0126	.8000	.0397	.0083
.0900	.0575	-.0129	.8250	.0354	.0090
.1000	.0594	-.0132	.8500	.0310	.0095
.1250	.0634	-.0138	.8750	.0264	.0097
.1500	.0665	-.0142	.9000	.0217	.0094
.1750	.0689	-.0145	.9250	.0169	.0086
.2000	.0708	-.0147	.9500	.0118	.0072
.2250	.0723	-.0148	.9600	.0097	.0064
.2500	.0735	-.0148	.9700	.0075	.0054
.2750	.0745	-.0147	.9800	.0053	.0041
.3000	.0753	-.0145	.9900	.0029	.0025
.3250	.0760	-.0143	.9950	.0014	.0012
.3500	.0765	-.0139	1.0000	.0000	.0000

Figure 35.- NACA 64-609 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



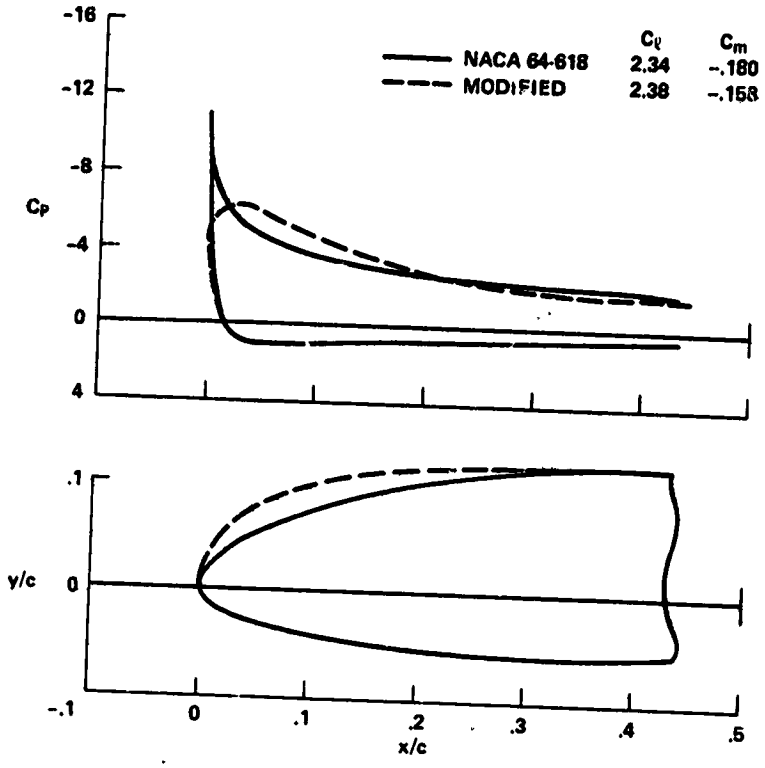
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0918	-.0284
.0002	.0037	-.0005	.4000	.0919	-.0277
.0004	.0053	-.0010	.4250	.0916	-.0266
.0006	.0065	-.0015	.4500	.0909	-.0252
.0008	.0075	-.0021	.4750	.0896	-.0235
.0010	.0085	-.0024	.5000	.0879	-.0217
.0020	.0121	-.0038	.5250	.0859	-.0197
.0030	.0149	-.0049	.5500	.0835	-.0177
.0040	.0172	-.0058	.5750	.0807	-.0155
.0050	.0192	-.0065	.6000	.0777	-.0133
.0100	.0270	-.0093	.6250	.0744	-.0110
.0200	.0375	-.0126	.6500	.0708	-.0087
.0300	.0450	-.0147	.6750	.0670	-.0064
.0400	.0509	-.0164	.7000	.0629	-.0042
.0500	.0558	-.0178	.7250	.0585	-.0020
.0600	.0599	-.0191	.7500	.0540	.0001
.0700	.0635	-.0201	.7750	.0493	.0020
.0800	.0666	-.0210	.8000	.0444	.0037
.0900	.0693	-.0219	.8250	.0394	.0052
.1000	.0717	-.0227	.8500	.0342	.0065
.1250	.0766	-.0243	.8750	.0289	.0073
.1500	.0803	-.0256	.9000	.0235	.0077
.1750	.0831	-.0267	.9250	.0180	.0075
.2000	.0853	-.0278	.9500	.0124	.0066
.2250	.0871	-.0283	.9600	.0101	.0059
.2500	.0884	-.0288	.9700	.0078	.0051
.2750	.0895	-.0291	.9800	.0054	.0039
.3000	.0903	-.0292	.9900	.0029	.0024
.3250	.0910	-.0291	.9950	.0015	.0012
.3500	.0915	-.0289	1.0000	.0000	.0000

Figure 36.- NACA 64-612 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



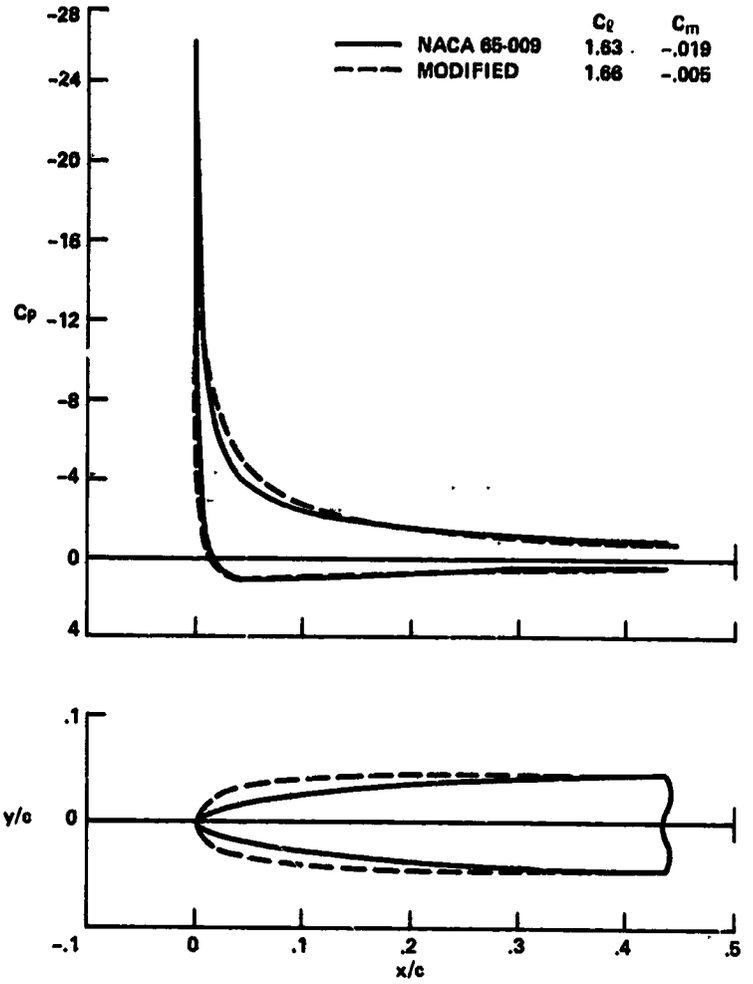
x	yu	yl
0.0000	0.0000	0.0000
.0002	.0045	-.0006
.0004	.0063	-.0011
.0006	.0078	-.0017
.0008	.0096	-.0022
.0010	.0100	-.0027
.0020	.0142	-.0045
.0030	.0174	-.0058
.0040	.0200	-.0069
.0050	.0223	-.0079
.0100	.0313	-.0116
.0200	.0438	-.0165
.0300	.0523	-.0195
.0400	.0594	-.0220
.0500	.0653	-.0242
.0600	.0704	-.0261
.0700	.0748	-.0278
.0800	.0786	-.0293
.0900	.0820	-.0307
.1000	.0850	-.0320
.1250	.0912	-.0347
.1500	.0958	-.0370
.1750	.0992	-.0389
.2000	.1017	-.0405
.2250	.1035	-.0418
.2500	.1048	-.0427
.2750	.1057	-.0434
.3000	.1062	-.0438
.3250	.1065	-.0440
.3500	.1067	-.0439
.3750	.1067	-.0434
.4000	.1067	-.0425
.4250	.1062	-.0411
.4500	.1050	-.0394
.4750	.1033	-.0373
.5000	.1011	-.0349
.5250	.0985	-.0324
.5500	.0955	-.0297
.5750	.0921	-.0268
.6000	.0884	-.0239
.6250	.0844	-.0208
.6500	.0800	-.0178
.6750	.0754	-.0147
.7000	.0705	-.0117
.7250	.0654	-.0087
.7500	.0601	-.0058
.7750	.0546	-.0031
.8000	.0489	-.0006
.8250	.0431	.0017
.8500	.0372	.0036
.8750	.0312	.0051
.9000	.0252	.0061
.9250	.0191	.0065
.9500	.0130	.0060
.9600	.0106	.0055
.9700	.0081	.0048
.9800	.0056	.0038
.9900	.0030	.0024
.9950	.0015	.0012
1.0000	.0000	.0000

Figure 37.- NACA 65-615 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



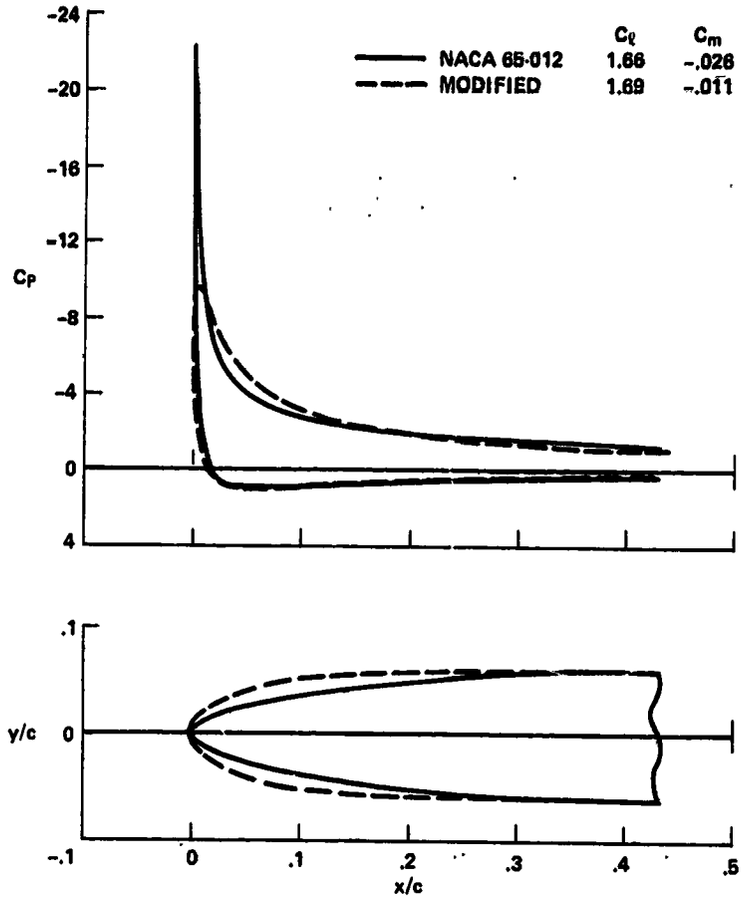
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.1216	-.0584
.0002	.0057	-.0006	.4000	.1215	-.0573
.0004	.0081	-.0012	.4250	.1206	-.0556
.0006	.0098	-.0017	.4500	.1190	-.0535
.0008	.0113	-.0023	.4750	.1169	-.0509
.0010	.0126	-.0029	.5000	.1142	-.0480
.0020	.0176	-.0049	.5250	.1110	-.0448
.0030	.0214	-.0066	.5500	.1073	-.0414
.0040	.0246	-.0079	.5750	.1033	-.0379
.0050	.0274	-.0091	.6000	.0989	-.0342
.0100	.0380	-.0136	.6250	.0941	-.0304
.0200	.0522	-.0187	.6500	.0890	-.0265
.0300	.0625	-.0230	.6750	.0836	-.0227
.0400	.0706	-.0274	.7000	.0779	-.0188
.0500	.0774	-.0304	.7250	.0720	-.0151
.0600	.0831	-.0330	.7500	.0659	-.0114
.0700	.0881	-.0354	.7750	.0596	-.0079
.0800	.0924	-.0375	.8000	.0532	-.0046
.0900	.0962	-.0394	.8250	.0466	-.0017
.1000	.0995	-.0412	.8500	.0400	.0009
.1250	.1062	-.0451	.8750	.0334	.0031
.1500	.1112	-.0484	.9000	.0267	.0046
.1750	.1148	-.0511	.9250	.0201	.0055
.2000	.1173	-.0533	.9500	.0136	.0055
.2250	.1191	-.0552	.9600	.0110	.0052
.2500	.1202	-.0567	.9700	.0083	.0046
.2750	.1210	-.0578	.9800	.0057	.0037
.3000	.1214	-.0585	.9900	.0030	.0023
.3250	.1215	-.0589	.9950	.0015	.0012
.3500	.1216	-.0589	1.0000	.0000	.0000

Figure 38.- NACA 64-618 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



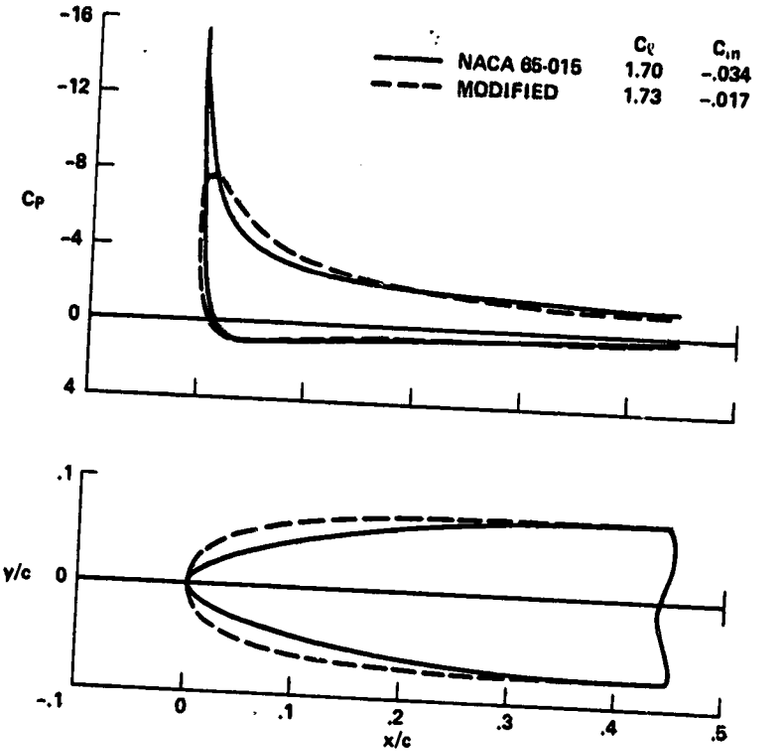
x	Y_U	Y_L	x	Y_U	Y_L
0.0000	0.0000	0.0000	.3750	.0450	-.0450
.0002	.0037	-.0037	.4000	.0450	-.0450
.0004	.0050	-.0050	.4250	.0450	-.0450
.0006	.0059	-.0059	.4500	.0447	-.0447
.0008	.0067	-.0067	.4750	.0441	-.0441
.0010	.0074	-.0074	.5000	.0433	-.0433
.0020	.0100	-.0100	.5250	.0422	-.0422
.0030	.0118	-.0118	.5500	.0409	-.0409
.0040	.0134	-.0134	.5750	.0393	-.0393
.0050	.0146	-.0146	.6000	.0374	-.0374
.0100	.0193	-.0193	.6250	.0354	-.0354
.0200	.0251	-.0251	.6500	.0333	-.0333
.0300	.0290	-.0290	.6750	.0310	-.0310
.0400	.0318	-.0318	.7000	.0285	-.0285
.0500	.0340	-.0340	.7250	.0260	-.0260
.0600	.0358	-.0358	.7500	.0234	-.0234
.0700	.0373	-.0373	.7750	.0207	-.0207
.0800	.0386	-.0386	.8000	.0180	-.0180
.0900	.0396	-.0396	.8250	.0153	-.0153
.1000	.0405	-.0405	.8500	.0126	-.0126
.1250	.0421	-.0421	.8750	.0099	-.0099
.1500	.0432	-.0432	.9000	.0073	-.0073
.1750	.0439	-.0439	.9250	.0049	-.0049
.2000	.0444	-.0444	.9500	.0027	-.0027
.2250	.0447	-.0447	.9600	.0020	-.0020
.2500	.0449	-.0449	.9700	.0013	-.0013
.2750	.0449	-.0449	.9800	.0007	-.0007
.3000	.0450	-.0450	.9900	.0003	-.0003
.3250	.0450	-.0450	.9950	.0001	-.0001
.3500	.0450	-.0450	1.0000	.0000	-.0000

Figure 39.- NACA 65-009 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



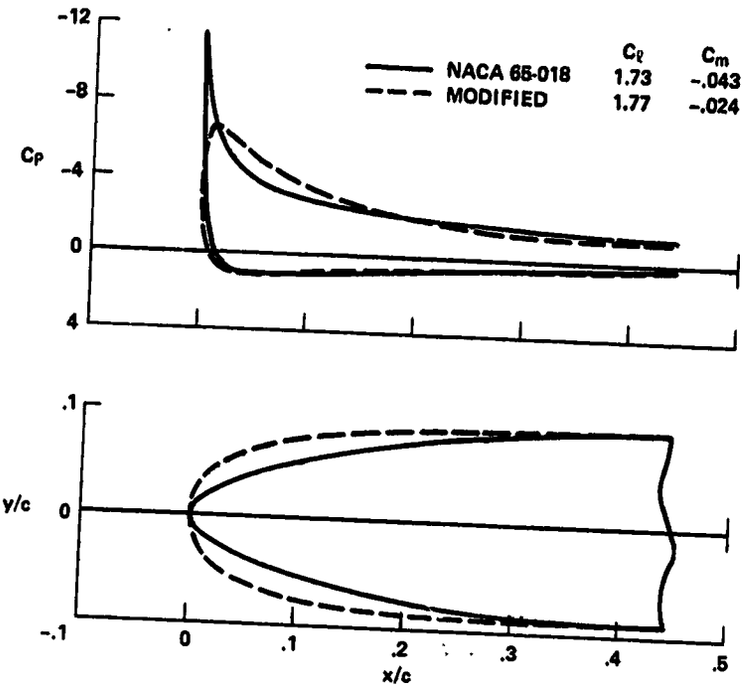
x	Y_U	Y_L	x	Y_U	Y_L
0.0000	0.0000	0.0000	.3750	.0600	-.0600
.0002	.0042	-.0042	.4000	.0600	-.0600
.0004	.0057	-.0057	.4250	.0599	-.0599
.0006	.0069	-.0069	.4500	.0595	-.0595
.0008	.0078	-.0078	.4750	.0587	-.0587
.0010	.0087	-.0087	.5000	.0576	-.0576
.0020	.0118	-.0118	.5250	.0560	-.0560
.0030	.0141	-.0141	.5500	.0541	-.0541
.0040	.0160	-.0160	.5750	.0519	-.0519
.0050	.0176	-.0176	.6000	.0494	-.0494
.0100	.0235	-.0235	.6250	.0467	-.0467
.0200	.0310	-.0310	.6500	.0438	-.0438
.0300	.0361	-.0361	.6750	.0407	-.0407
.0400	.0399	-.0399	.7000	.0374	-.0374
.0500	.0430	-.0430	.7250	.0340	-.0340
.0600	.0455	-.0455	.7500	.0306	-.0306
.0700	.0477	-.0477	.7750	.0270	-.0270
.0800	.0494	-.0494	.8000	.0234	-.0234
.0900	.0510	-.0510	.8250	.0198	-.0198
.1000	.0523	-.0523	.8500	.0163	-.0163
.1250	.0548	-.0548	.8750	.0128	-.0128
.1500	.0566	-.0566	.9000	.0095	-.0095
.1750	.0578	-.0578	.9250	.0063	-.0063
.2000	.0587	-.0587	.9500	.0035	-.0035
.2250	.0592	-.0592	.9600	.0026	-.0026
.2500	.0596	-.0596	.9700	.0017	-.0017
.2750	.0598	-.0598	.9800	.0009	-.0009
.3000	.0599	-.0599	.9900	.0003	-.0003
.3250	.0600	-.0600	.9950	.0002	-.0002
.3500	.0600	-.0600	1.0000	.0000	-.0000

Figure 40.- NACA 65-012 Mod. B airfoil section with pressure distribution and coordinates; α = 14°.



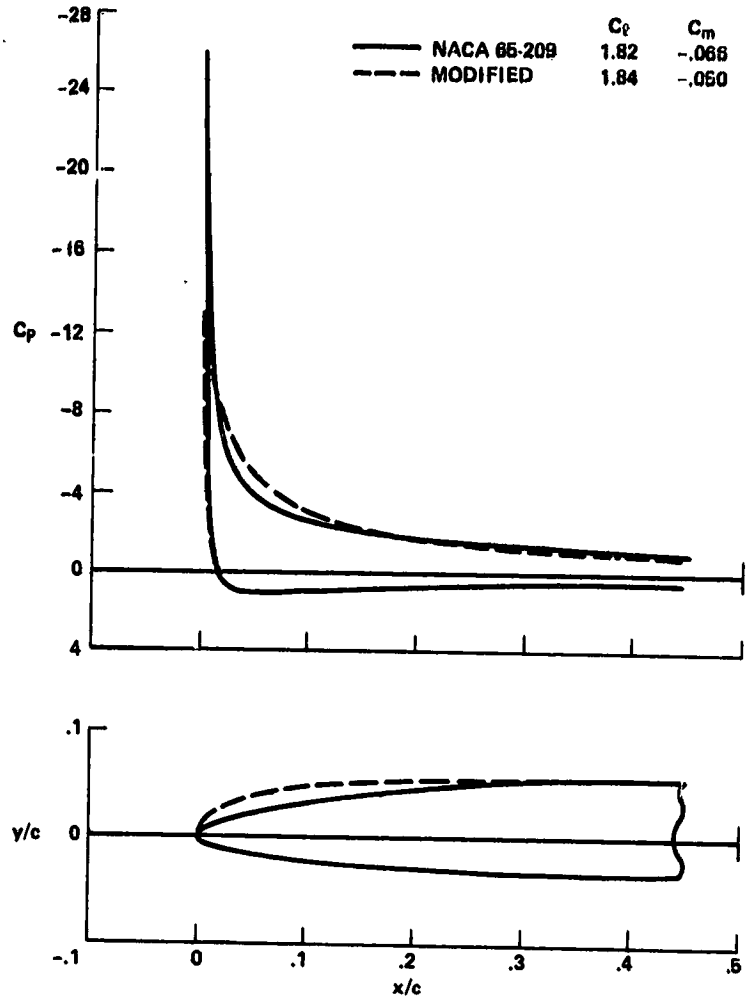
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0750	-.0750
.0002	.0059	-.0059	.4000	.0750	-.0750
.0004	.0079	-.0079	.4250	.0749	-.0749
.0006	.0093	-.0093	.4500	.0743	-.0743
.0008	.0105	-.0105	.4750	.0732	-.0732
.0010	.0115	-.0115	.5000	.0717	-.0717
.0020	.0153	-.0153	.5250	.0697	-.0697
.0040	.0180	-.0180	.5500	.0672	-.0672
.0050	.0202	-.0202	.5750	.0644	-.0644
.0100	.0221	-.0221	.6000	.0612	-.0612
.0200	.0290	-.0290	.6250	.0577	-.0577
.0300	.0337	-.0337	.6500	.0540	-.0540
.0400	.0373	-.0373	.6750	.0501	-.0501
.0500	.0403	-.0403	.7000	.0460	-.0460
.0600	.0429	-.0429	.7250	.0418	-.0418
.0700	.0451	-.0451	.7500	.0374	-.0374
.0800	.0470	-.0470	.7750	.0330	-.0330
.0900	.0488	-.0488	.8000	.0286	-.0286
.1000	.0504	-.0504	.8250	.0241	-.0241
.1250	.0537	-.0537	.8500	.0198	-.0198
.1500	.0564	-.0564	.8750	.0155	-.0155
.1750	.0586	-.0586	.9000	.0114	-.0114
.2000	.0604	-.0604	.9250	.0077	-.0077
.2250	.0618	-.0618	.9500	.0043	-.0043
.2500	.0629	-.0629	.9600	.0031	-.0031
.2750	.0637	-.0637	.9700	.0020	-.0020
.3000	.0643	-.0643	.9800	.0011	-.0011
.3250	.0647	-.0647	.9900	.0004	-.0004
.3500	.0650	-.0650	.9950	.0002	-.0002
.3750	.0650	-.0650	1.0000	.0000	-.0000

Figure 41.- NACA 65-015 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



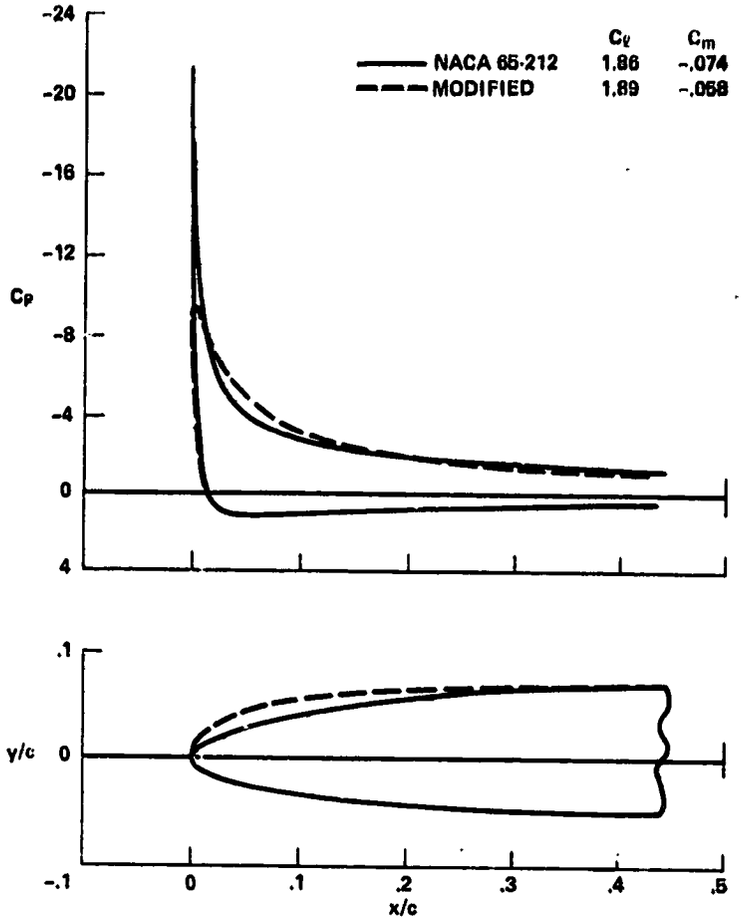
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0900	-.0900
.0002	.0057	-.0057	.4000	.0900	-.0900
.0004	.0079	-.0079	.4250	.0898	-.0898
.0006	.0095	-.0095	.4500	.0890	-.0890
.0008	.0108	-.0108	.4750	.0876	-.0876
.0010	.0119	-.0119	.5000	.0857	-.0857
.0020	.0163	-.0163	.5250	.0831	-.0831
.0030	.0195	-.0195	.5500	.0801	-.0801
.0040	.0221	-.0221	.5750	.0766	-.0766
.0050	.0244	-.0244	.6000	.0727	-.0727
.0100	.0329	-.0329	.6250	.0685	-.0685
.0200	.0438	-.0438	.6500	.0640	-.0640
.0300	.0514	-.0514	.6750	.0592	-.0592
.0400	.0572	-.0572	.7000	.0543	-.0543
.0500	.0620	-.0620	.7250	.0492	-.0492
.0600	.0659	-.0659	.7500	.0440	-.0440
.0700	.0692	-.0692	.7750	.0388	-.0388
.0800	.0721	-.0721	.8000	.0335	-.0335
.0900	.0746	-.0746	.8250	.0282	-.0282
.1000	.0767	-.0767	.8500	.0231	-.0231
.1250	.0809	-.0809	.8750	.0181	-.0181
.1500	.0840	-.0840	.9000	.0133	-.0133
.1750	.0861	-.0861	.9250	.0089	-.0089
.2000	.0876	-.0876	.9500	.0050	-.0050
.2250	.0886	-.0886	.9600	.0036	-.0036
.2500	.0892	-.0892	.9700	.0024	-.0024
.2750	.0896	-.0896	.9800	.0013	-.0013
.3000	.0898	-.0898	.9900	.0005	-.0005
.3250	.0900	-.0900	.9950	.0002	-.0002
.3500	.0900	-.0900	1.0000	.0000	-.0000

Figure 42.- NACA 65-018 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



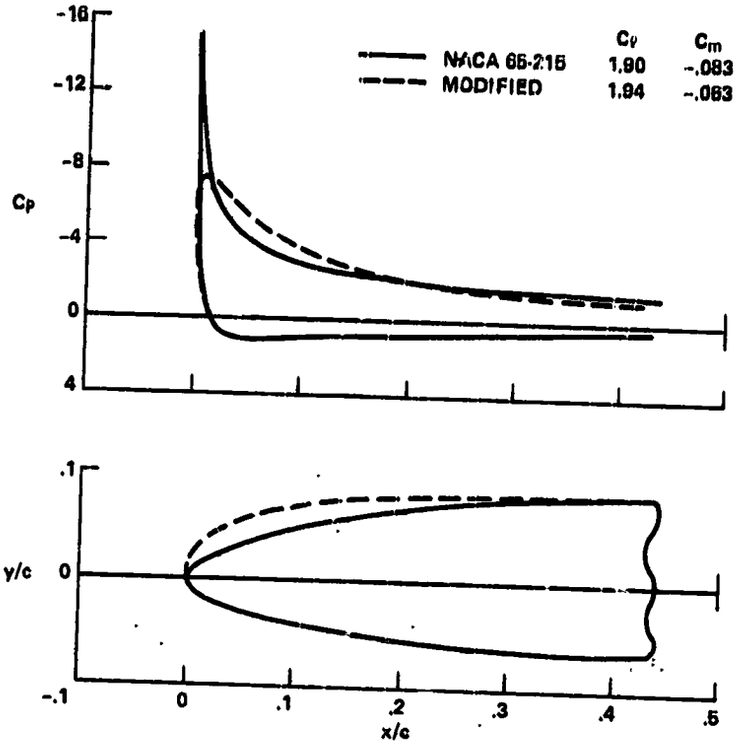
x	y_u	y_l	x	y_u	y_l
0.0000	0.0000	0.0000	.3750	.0558	-.0342
.0002	.0030	-.0008	.4000	.0558	-.0343
.0004	.0043	-.0016	.4250	.0558	-.0341
.0006	.0052	-.0020	.4500	.0556	-.0337
.0008	.0060	-.0024	.4750	.0551	-.0331
.0010	.0067	-.0027	.5000	.0544	-.0323
.0020	.0094	-.0039	.5250	.0532	-.0312
.0030	.0113	-.0048	.5500	.0518	-.0299
.0040	.0130	-.0055	.5750	.0501	-.0284
.0050	.0144	-.0061	.6000	.0482	-.0267
.0100	.0197	-.0084	.6250	.0460	-.0249
.0200	.0267	-.0111	.6500	.0436	-.0229
.0300	.0315	-.0131	.6750	.0410	-.0209
.0400	.0352	-.0148	.7000	.0383	-.0188
.0500	.0382	-.0163	.7250	.0354	-.0166
.0600	.0407	-.0177	.7500	.0324	-.0144
.0700	.0428	-.0189	.7750	.0293	-.0122
.0800	.0446	-.0200	.8000	.0260	-.0100
.0900	.0462	-.0211	.8250	.0227	-.0079
.1000	.0475	-.0221	.8500	.0193	-.0058
.1250	.0502	-.0243	.8750	.0159	-.0039
.1500	.0520	-.0262	.9000	.0125	-.0021
.1750	.0534	-.0278	.9250	.0092	-.0007
.2000	.0543	-.0293	.9500	.0059	.0004
.2250	.0549	-.0305	.9600	.0047	.0007
.2500	.0553	-.0315	.9700	.0034	.0009
.2750	.0556	-.0324	.9800	.0023	.0009
.3000	.0557	-.0331	.9900	.0011	.0006
.3250	.0558	-.0336	.9950	.0006	.0003
.3500	.0558	-.0340	1.0000	.0000	.0000

Figure 43.- NACA 65-209 Mod. B airfoil section with pressure distribution and coordinates; α = 14°.



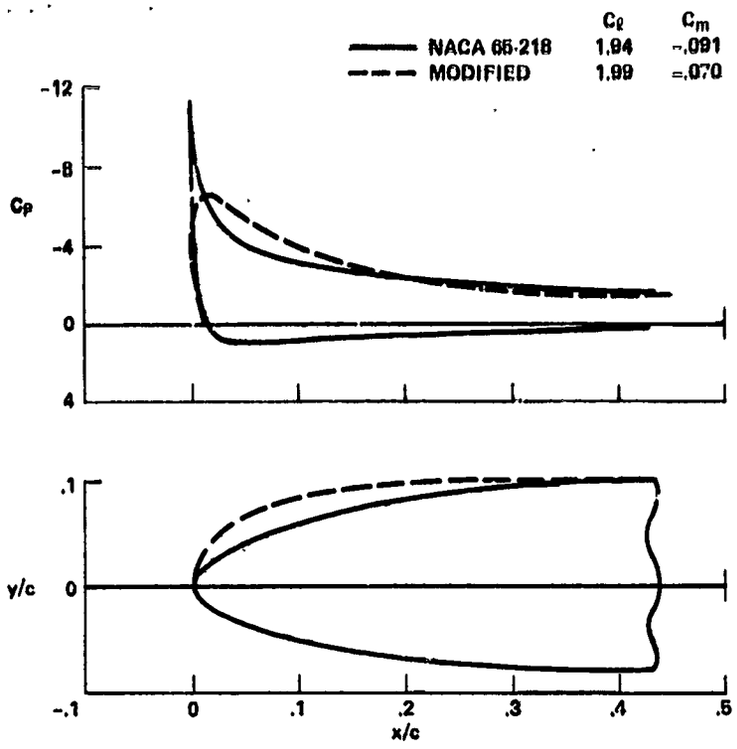
X	YU	YL	X	YU	YL
0.0000	0.0000	0.0000	.3750	.0707	-.0492
.0002	.0042	-.0010	.4000	.0708	-.0493
.0004	.0057	-.0019	.4250	.0708	-.0491
.0006	.0069	-.0025	.4500	.0704	-.0486
.0008	.0079	-.0030	.4750	.0697	-.0477
.0010	.0087	-.0034	.5000	.0686	-.0465
.0020	.0119	-.0050	.5250	.0670	-.0450
.0040	.0163	-.0072	.5500	.0651	-.0432
.0060	.0199	-.0088	.5750	.0628	-.0410
.0080	.0229	-.0102	.6000	.0602	-.0387
.0100	.0241	-.0112	.6250	.0573	-.0361
.0200	.0322	-.0151	.6500	.0542	-.0334
.0300	.0379	-.0180	.6750	.0508	-.0306
.0400	.0423	-.0204	.7000	.0472	-.0276
.0500	.0459	-.0226	.7250	.0435	-.0246
.0600	.0489	-.0246	.7500	.0396	-.0215
.0700	.0515	-.0264	.7750	.0356	-.0185
.0800	.0538	-.0281	.8000	.0315	-.0154
.0900	.0557	-.0296	.8250	.0273	-.0124
.1000	.0575	-.0311	.8500	.0231	-.0095
.1250	.0610	-.0344	.8750	.0189	-.0068
.1500	.0636	-.0373	.9000	.0147	-.0042
.1750	.0655	-.0396	.9250	.0106	-.0021
.2000	.0670	-.0417	.9500	.0067	-.0004
.2250	.0681	-.0435	.9600	.0052	.0001
.2500	.0689	-.0450	.9700	.0038	.0005
.2750	.0696	-.0463	.9800	.0025	.0006
.3000	.0700	-.0474	.9900	.0012	.0006
.3250	.0703	-.0482	.9950	.0006	.0003
.3500	.0704	-.0488	1.0000	.0000	.0000

Figure 44.- NACA 65-212 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



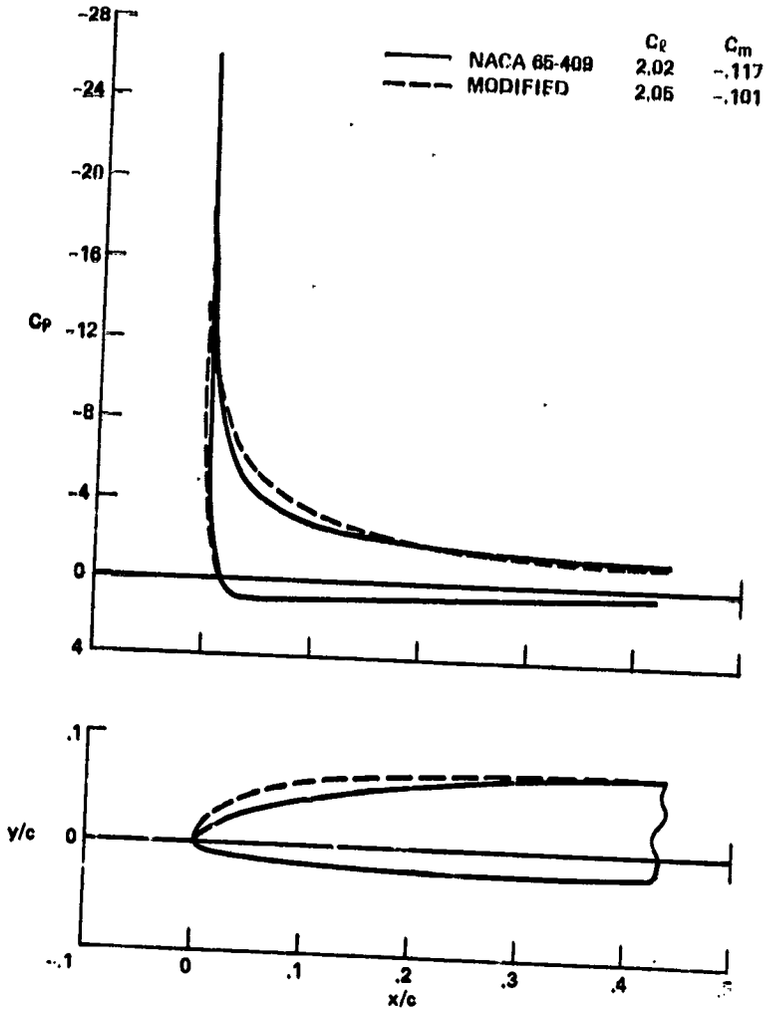
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0858	-.0641
.0002	.0052	-.0011	.4000	.0858	-.0643
.0004	.0071	-.0022	.4250	.0857	-.0640
.0006	.0086	-.0029	.4500	.0852	-.0633
.0008	.0098	-.0035	.4750	.0842	-.0622
.0010	.0109	-.0040	.5000	.0827	-.0607
.0020	.0150	-.0060	.5250	.0807	-.0586
.0030	.0180	-.0075	.5500	.0782	-.0562
.0040	.0204	-.0087	.5750	.0752	-.0535
.0050	.0226	-.0098	.6000	.0720	-.0504
.0100	.0306	-.0138	.6250	.0683	-.0471
.0200	.0409	-.0188	.6500	.0644	-.0437
.0300	.0481	-.0226	.6750	.0602	-.0400
.0400	.0537	-.0259	.7000	.0558	-.0362
.0500	.0582	-.0288	.7250	.0512	-.0323
.0600	.0620	-.0315	.7500	.0465	-.0284
.0700	.0652	-.0338	.7750	.0416	-.0244
.0800	.0680	-.0361	.8000	.0367	-.0205
.0900	.0704	-.0381	.8250	.0316	-.0167
.1000	.0724	-.0401	.8500	.0266	-.0130
.1250	.0766	-.0444	.8750	.0216	-.0094
.1500	.0795	-.0481	.9000	.0167	-.0062
.1750	.0817	-.0513	.9250	.0119	-.0034
.2000	.0832	-.0541	.9500	.0075	-.0011
.2250	.0842	-.0565	.9600	.0058	-.0004
.2500	.0849	-.0586	.9700	.0042	.0001
.2750	.0853	-.0603	.9800	.0027	.0004
.3000	.0856	-.0617	.9900	.0013	.0005
.3250	.0857	-.0628	.9950	.0006	.0002
.3500	.0858	-.0636	1.0000	.0000	.0000

Figure 45.- NACA 65-215 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



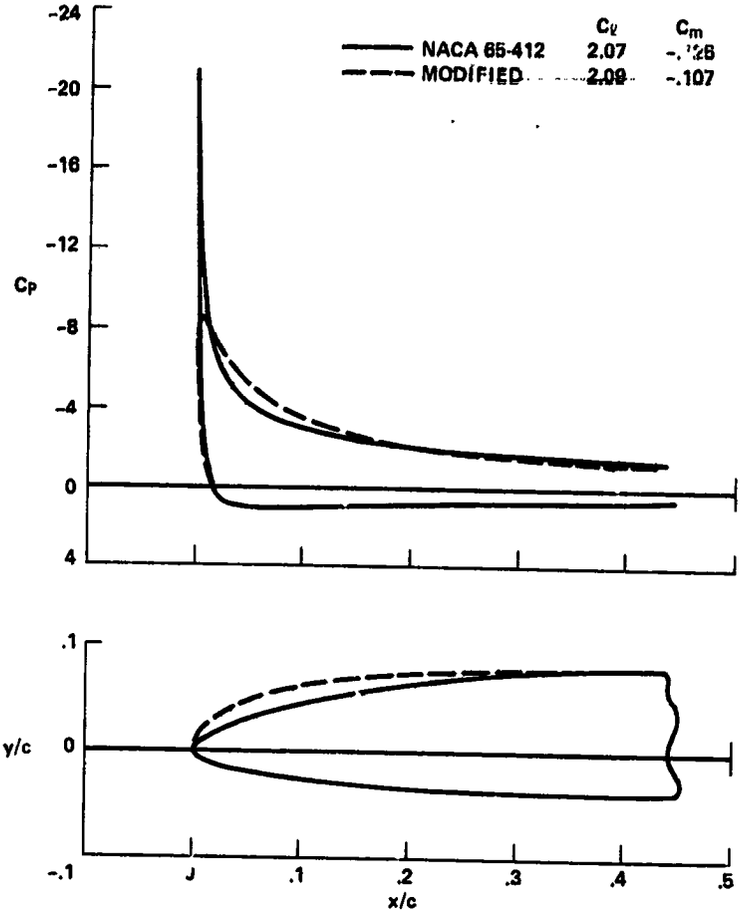
x	y_U	y_L	x	y_U	y_L
0.0000	0.0000	0.0000	.3750	.1008	-.0791
.0002	.0058	-.0012	.4000	.1008	-.0793
.0004	.0081	-.0024	.4250	.1006	-.0789
.0006	.0098	-.0033	.4500	.0999	-.0781
.0008	.0112	-.0040	.4750	.0986	-.0766
.0010	.0124	-.0046	.5000	.0967	-.0747
.0020	.0171	-.0069	.5250	.0942	-.0721
.0030	.0206	-.0087	.5500	.0911	-.0691
.0040	.0234	-.0101	.5750	.0875	-.0657
.0050	.0259	-.0114	.6000	.0835	-.0619
.0100	.0353	-.0162	.6250	.0791	-.0579
.0200	.0474	-.0224	.6500	.0744	-.0536
.0300	.0556	-.0271	.6750	.0694	-.0491
.0400	.0624	-.0312	.7000	.0642	-.0444
.0500	.0678	-.0349	.7250	.0587	-.0397
.0600	.0722	-.0381	.7500	.0532	-.0349
.0700	.0761	-.0411	.7750	.0474	-.0301
.0800	.0793	-.0439	.8000	.0416	-.0254
.0900	.0822	-.0465	.8250	.0358	-.0207
.1000	.0847	-.0489	.8500	.0299	-.0162
.1250	.0896	-.0543	.8750	.0242	-.0120
.1500	.0932	-.0590	.9000	.0186	-.0081
.1750	.0957	-.0630	.9250	.0132	-.0046
.2000	.0976	-.0665	.9500	.0082	-.0018
.2250	.0988	-.0695	.9600	.0065	-.0009
.2500	.0996	-.0721	.9700	.0045	-.0002
.2750	.1002	-.0743	.9800	.0029	.0003
.3000	.1005	-.0761	.9900	.0014	.0004
.3250	.1007	-.0775	.9950	.0007	.0002
.3500	.1007	-.0785	1.0000	.0000	.0000

Figure 46.- NACA 65-218 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



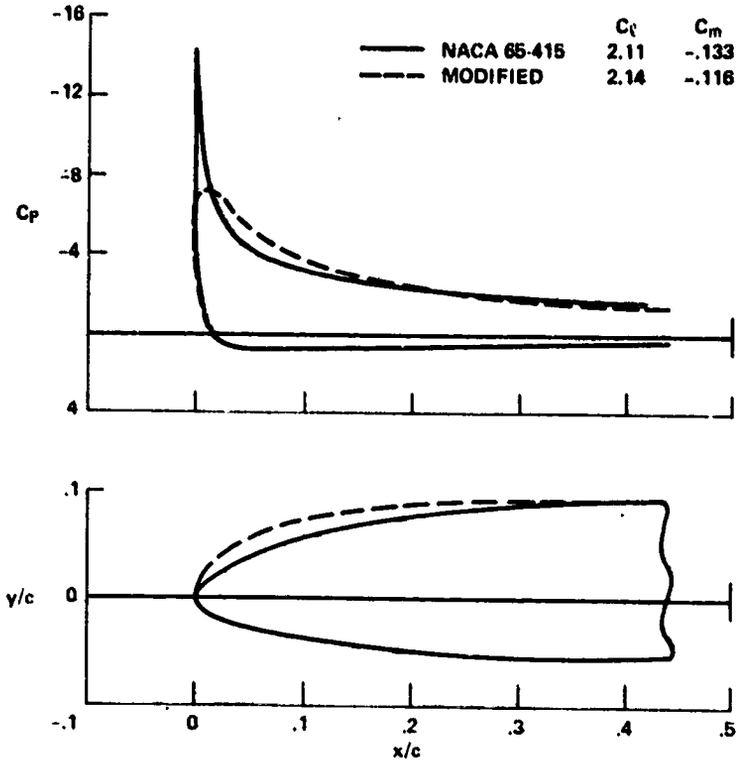
X	YU	YL	X	YU	YL
0.0000	0.0000	0.0000	.3750	.0664	-.0257
.0002	.0027	-.0006	.4000	.0666	-.0256
.0004	.0039	-.0012	.4250	.0667	-.0253
.0006	.0049	-.0016	.4500	.0666	-.0248
.0008	.0057	-.0020	.4750	.0662	-.0241
.0010	.0064	-.0022	.5000	.0654	-.0233
.0020	.0093	-.0033	.5250	.0643	-.0222
.0030	.0115	-.0041	.5500	.0628	-.0189
.0040	.0134	-.0048	.5750	.0610	-.0175
.0050	.0150	-.0053	.6000	.0589	-.0160
.0100	.0212	-.0073	.6250	.0565	-.0143
.0200	.0294	-.0094	.6500	.0540	-.0126
.0300	.0351	-.0108	.6750	.0511	-.0108
.0400	.0396	-.0120	.7000	.0481	-.0090
.0500	.0432	-.0131	.7250	.0448	-.0072
.0600	.0462	-.0140	.7500	.0414	-.0054
.0700	.0487	-.0148	.7750	.0378	-.0037
.0800	.0508	-.0155	.8000	.0340	-.0020
.0900	.0527	-.0162	.8250	.0301	-.0005
.1000	.0543	-.0168	.8500	.0261	.0009
.1250	.0575	-.0182	.8750	.0220	.0021
.1500	.0598	-.0194	.9000	.0178	.0030
.1750	.0615	-.0204	.9250	.0134	.0036
.2000	.0628	-.0213	.9500	.0091	.0036
.2250	.0638	-.0220	.9600	.0073	.0034
.2500	.0645	-.0225	.9700	.0056	.0030
.2750	.0651	-.0230	.9800	.0038	.0024
.3000	.0655	-.0233	.9900	.0020	.0015
.3250	.0659	-.0236	.9950	.0010	.0008
.3500	.0662	-.0237	1.0000	.0000	.0000

Figure 47.- NACA 65-409 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



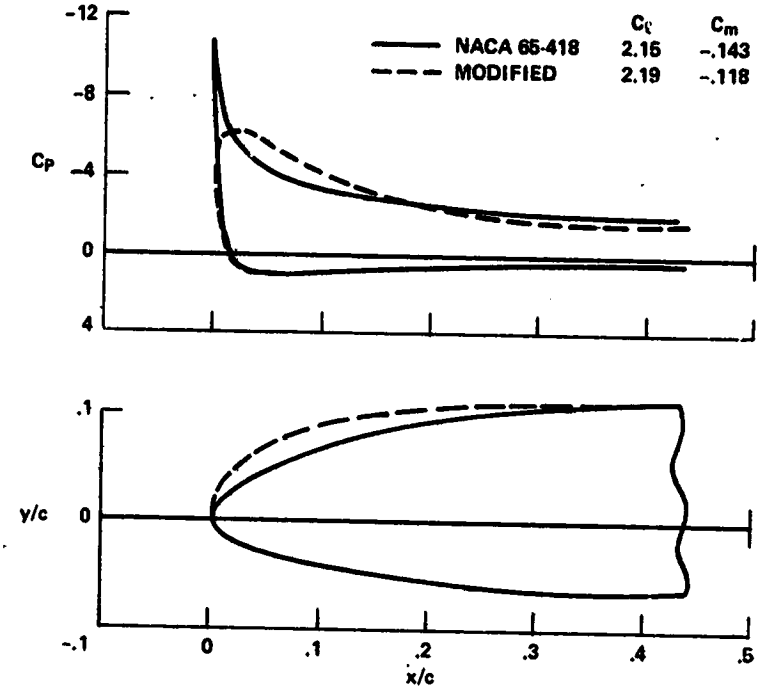
x	Y_U	Y_L	x	Y_U	Y_L
0.0000	0.0000	0.0000	.3750	.0814	-.0386
.0002	.0038	-.0007	.4000	.0816	-.0386
.0004	.0054	-.0013	.4250	.0816	-.0382
.0006	.0066	-.0020	.4500	.0814	-.0376
.0008	.0076	-.0024	.4750	.0807	-.0367
.0010	.0085	-.0028	.5000	.0796	-.0355
.0020	.0119	-.0043	.5250	.0780	-.0340
.0030	.0144	-.0054	.5500	.0761	-.0322
.0040	.0166	-.0063	.5750	.0737	-.0302
.0050	.0184	-.0070	.6000	.0709	-.0279
.0100	.0255	-.0099	.6250	.0679	-.0256
.0200	.0368	-.0132	.6500	.0645	-.0231
.0300	.0414	-.0156	.6750	.0609	-.0205
.0400	.0465	-.0175	.7000	.0570	-.0179
.0500	.0507	-.0193	.7250	.0529	-.0152
.0600	.0543	-.0208	.7500	.0486	-.0125
.0700	.0574	-.0222	.7750	.0442	-.0099
.0800	.0600	-.0235	.8000	.0395	-.0074
.0900	.0624	-.0247	.8250	.0348	-.0050
.1000	.0644	-.0258	.8500	.0299	-.0027
.1250	.0686	-.0282	.8750	.0249	-.0007
.1500	.0718	-.0303	.9000	.0199	.0009
.1750	.0742	-.0321	.9250	.0149	.0022
.2000	.0761	-.0336	.9500	.0099	.0028
.2250	.0775	-.0350	.9600	.0079	.0028
.2500	.0786	-.0361	.9700	.0060	.0026
.2750	.0795	-.0369	.9800	.0041	.0022
.3000	.0802	-.0377	.9900	.0021	.0015
.3250	.0807	-.0382	.9950	.0011	.0007
.3500	.0811	-.0385	1.0000	.0000	.0000

Figure 48.- NACA 65-412 Mod. B airfoil section with pressure distribution and coordinates; α = 14°.



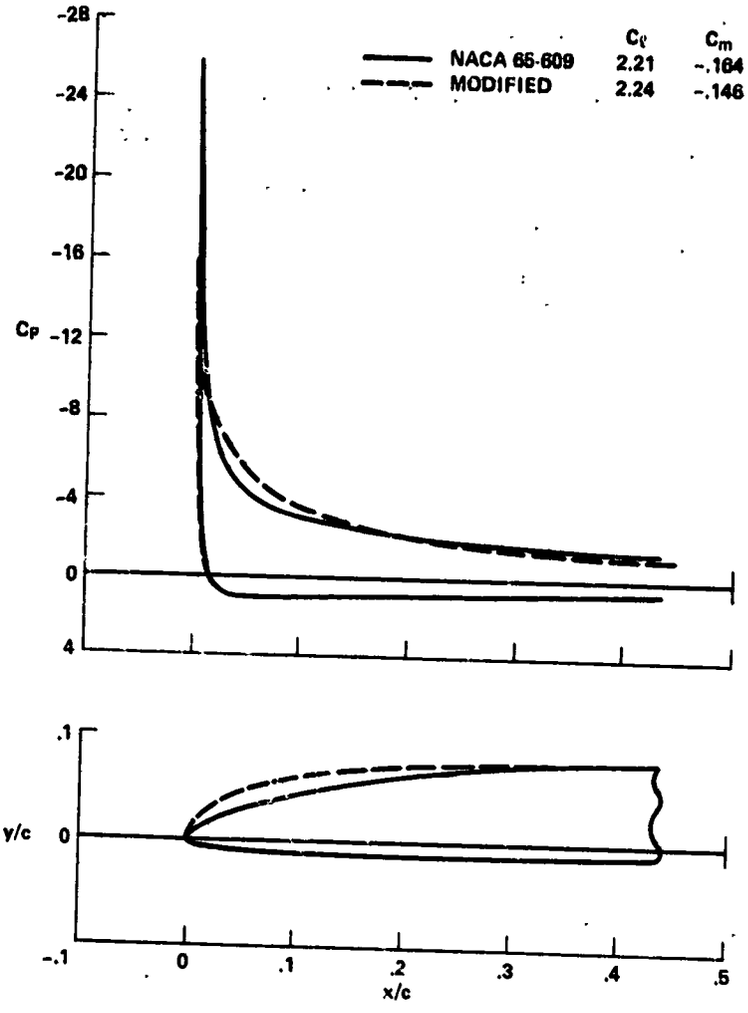
x	yU	yL	x	yU	yL
0.0000	0.0000	0.0000	.3750	.0964	-.0536
.0002	.0041	-.0007	.4000	.0965	-.0536
.0004	.0058	-.0015	.4250	.0965	-.0532
.0006	.0071	-.0022	.4500	.0962	-.0524
.0008	.0082	-.0027	.4750	.0952	-.0512
.0010	.0092	-.0032	.5000	.0938	-.0496
.0020	.0130	-.0050	.5250	.0917	-.0476
.0030	.0159	-.0064	.5500	.0892	-.0453
.0040	.0184	-.0075	.5750	.0861	-.0426
.0050	.0205	-.0085	.6000	.0827	-.0397
.0100	.0286	-.0122	.6250	.0789	-.0365
.0200	.0398	-.0168	.6500	.0748	-.0333
.0300	.0472	-.0201	.6750	.0704	-.0299
.0400	.0533	-.0228	.7000	.0657	-.0264
.0500	.0580	-.0253	.7250	.0607	-.0229
.0600	.0627	-.0275	.7500	.0556	-.0193
.0700	.0660	-.0295	.7750	.0503	-.0159
.0800	.0697	-.0313	.8000	.0448	-.0125
.0900	.0725	-.0330	.8250	.0391	-.0092
.1000	.0751	-.0346	.8500	.0334	-.0062
.1250	.0803	-.0381	.8750	.0277	-.0034
.1500	.0844	-.0412	.9000	.0219	-.0010
.1750	.0874	-.0438	.9250	.0162	.0009
.2000	.0897	-.0460	.9500	.0107	.0021
.2250	.0916	-.0479	.9600	.0085	.0023
.2500	.0930	-.0496	.9700	.0064	.0024
.2750	.0941	-.0509	.9800	.0043	.0020
.3000	.0950	-.0520	.9900	.0022	.0014
.3250	.0956	-.0528	.9950	.0011	.0007
.3500	.0961	-.0533	1.0000	.0000	.0000

Figure 49. NACA 65-415 Mod. B airfoil section with pressure distribution and coordinates; c = 6".



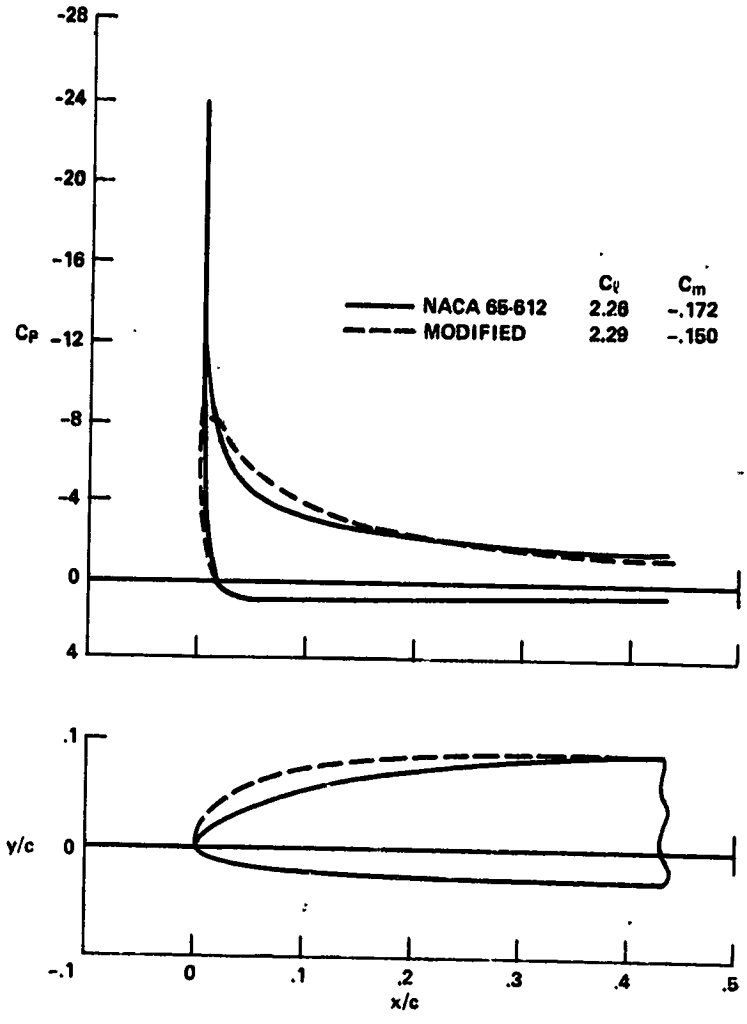
x	y_U	y_L	x	y_U	y_L
0.0000	0.0000	0.0000	.3750	.1116	-.0686
.0002	.0058	-.0008	.4000	.1116	-.0686
.0004	.0080	-.0015	.4250	.1115	-.0681
.0006	.0098	-.0023	.4500	.1109	-.0671
.0008	.0112	-.0030	.4750	.1096	-.0656
.0010	.0124	-.0035	.5000	.1078	-.0636
.0020	.0174	-.0057	.5250	.1052	-.0611
.0040	.0244	-.0073	.5500	.1021	-.0581
.0060	.0298	-.0086	.5750	.0984	-.0548
.0080	.0340	-.0098	.6000	.0943	-.0511
.0100	.0376	-.0108	.6250	.0897	-.0472
.0150	.0464	-.0201	.6500	.0848	-.0432
.0200	.0537	-.0215	.6750	.0796	-.0389
.0250	.0601	-.0229	.7000	.0741	-.0346
.0300	.0721	-.0311	.7250	.0683	-.0302
.0400	.0772	-.0340	.7500	.0623	-.0258
.0500	.0816	-.0366	.7750	.0561	-.0215
.0600	.0854	-.0390	.8000	.0498	-.0173
.0700	.0887	-.0412	.8250	.0435	-.0132
.0800	.0916	-.0433	.8500	.0368	-.0094
.1000	.0975	-.0480	.8750	.0303	-.0059
.1250	.1019	-.0519	.9000	.0239	-.0028
.1500	.1050	-.0554	.9250	.0175	-.0004
.1750	.1073	-.0584	.9500	.0114	.0014
.2000	.1089	-.0609	.9600	.0090	.0018
.2250	.1100	-.0631	.9700	.0067	.0019
.2500	.1108	-.0649	.9800	.0045	.0018
.2750	.1112	-.0665	.9900	.0023	.0013
.3000	.1114	-.0679	.9950	.0011	.0007
.3250	.1115	-.0682	1.0000	.0000	.0000
.3500					

Figure 50.- NACA 65-418 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



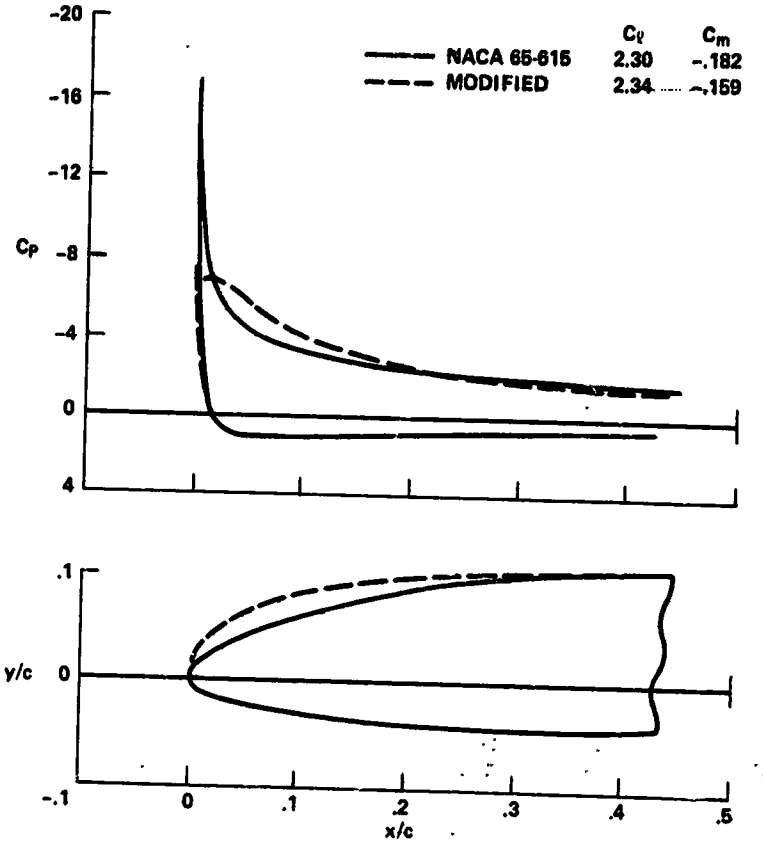
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0774	-.0132
.0002	.0036	-.0004	.4000	.0775	-.0124
.0004	.0050	-.0009	.4250	.0776	-.0124
.0006	.0061	-.0013	.4500	.0775	-.0118
.0008	.0070	-.0016	.4750	.0772	-.0111
.0010	.0078	-.0019	.5000	.0768	-.0102
.0020	.0108	-.0029	.5250	.0763	-.0092
.0030	.0131	-.0036	.5500	.0757	-.0080
.0040	.0150	-.0041	.5750	.0718	-.0067
.0050	.0167	-.0046	.6000	.0696	-.0053
.0100	.0230	-.0062	.6250	.0671	-.0038
.0200	.0315	-.0077	.6500	.0643	-.0023
.0300	.0375	-.0086	.6750	.0612	-.0008
.0400	.0424	-.0093	.7000	.0578	.0007
.0500	.0464	-.0098	.7250	.0542	.0022
.0600	.0498	-.0103	.7500	.0504	.0035
.0700	.0528	-.0107	.7750	.0465	.0048
.0800	.0554	-.0110	.8000	.0421	.0060
.0900	.0577	-.0113	.8250	.0376	.0069
.1000	.0598	-.0116	.8500	.0329	.0077
.1250	.0641	-.0122	.8750	.0280	.0081
.1500	.0674	-.0127	.9000	.0230	.0082
.1750	.0700	-.0130	.9250	.0177	.0078
.2000	.0719	-.0133	.9500	.0123	.0067
.2250	.0735	-.0135	.9600	.0100	.0060
.2500	.0747	-.0136	.9700	.0078	.0051
.2750	.0756	-.0136	.9800	.0054	.0040
.3000	.0762	-.0136	.9900	.0029	.0024
.3250	.0767	-.0135	.9950	.0015	.0012
.3500	.0771	-.0134	1.0000	.0000	.0000

Figure 51.- NACA 65-609 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



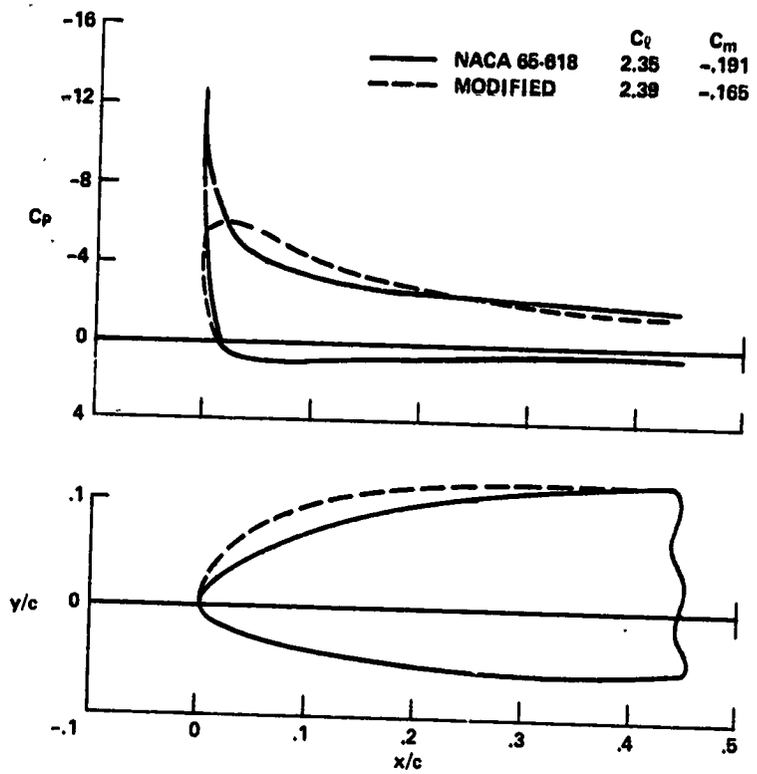
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0922	-.0281
.0002	.0049	-.0005	.4000	.0924	-.0278
.0004	.0068	-.0010	.4250	.0925	-.0274
.0006	.0082	-.0015	.4500	.0923	-.0267
.0008	.0094	-.0020	.4750	.0917	-.0257
.0010	.0104	-.0023	.5000	.0907	-.0245
.0020	.0143	-.0036	.5250	.0891	-.0230
.0030	.0172	-.0046	.5500	.0870	-.0212
.0040	.0196	-.0054	.5750	.0845	-.0193
.0050	.0217	-.0061	.6000	.0817	-.0172
.0100	.0295	-.0086	.6250	.0784	-.0150
.0200	.0398	-.0114	.6500	.0749	-.0127
.0300	.0470	-.0132	.6750	.0710	-.0104
.0400	.0527	-.0147	.7000	.0668	-.0081
.0500	.0574	-.0159	.7250	.0624	-.0058
.0600	.0614	-.0170	.7500	.0577	-.0035
.0700	.0648	-.0180	.7750	.0527	-.0014
.0800	.0678	-.0189	.8000	.0476	.0006
.0900	.0704	-.0197	.8250	.0422	.0025
.1000	.0728	-.0205	.8500	.0367	.0040
.1250	.0776	-.0221	.8750	.0310	.0053
.1500	.0812	-.0235	.9000	.0252	.0061
.1750	.0840	-.0247	.9250	.0192	.0064
.2000	.0862	-.0256	.9500	.0131	.0060
.2250	.0879	-.0264	.9600	.0106	.0055
.2500	.0892	-.0271	.9700	.0082	.0048
.2750	.0902	-.0276	.9800	.0056	.0038
.3000	.0909	-.0279	.9900	.0030	.0023
.3250	.0915	-.0281	.9950	.0015	.0012
.3500	.0919	-.0283	1.0000	.0000	.0000

Figure 52.- NACA 65-612 Mod. 6 airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



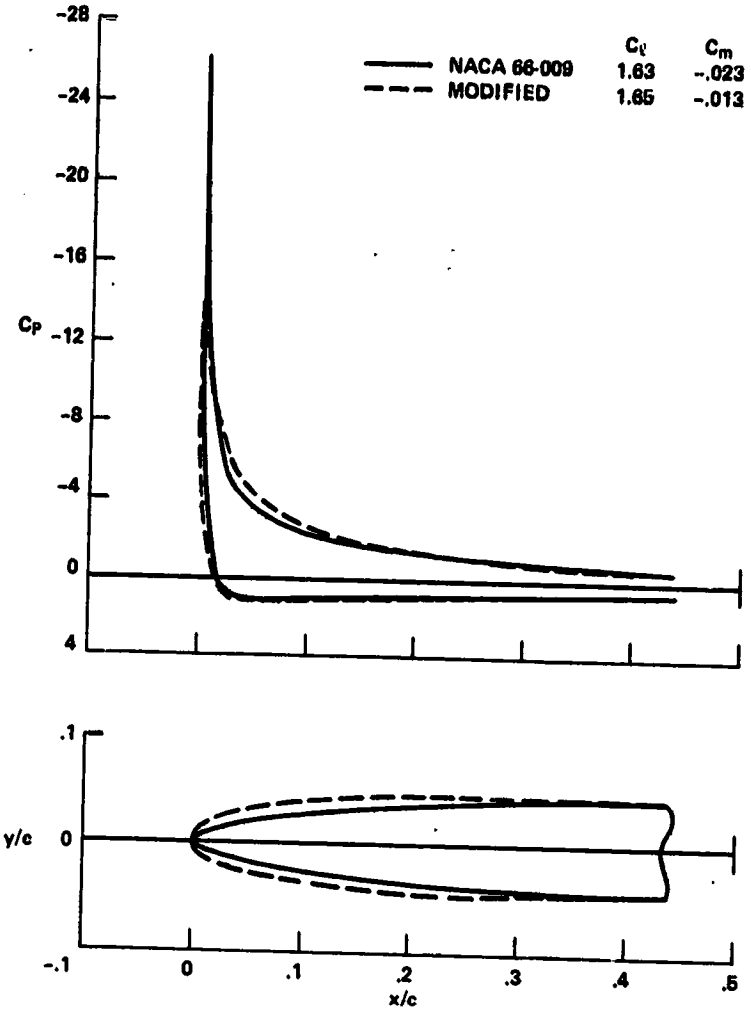
x	yu	yl	x	yu	yl
0.0000	0.0000	0.0000	.3750	.1071	-.0431
.0002	.0048	-.0005	.4000	.1074	-.0429
.0004	.0068	-.0011	.4250	.1074	-.0423
.0006	.0084	-.0016	.4500	.1071	-.0414
.0008	.0096	-.0022	.4750	.1062	-.0402
.0010	.0108	-.0026	.5000	.1048	-.0386
.0020	.0151	-.0042	.5250	.1027	-.0366
.0030	.0184	-.0055	.5500	.1001	-.0343
.0040	.0211	-.0065	.5750	.0970	-.0317
.0050	.0235	-.0074	.6000	.0935	-.0289
.0100	.0326	-.0108	.6250	.0895	-.0260
.0200	.0447	-.0148	.6500	.0852	-.0229
.0300	.0533	-.0175	.6750	.0805	-.0197
.0400	.0601	-.0198	.7000	.0755	-.0166
.0500	.0657	-.0218	.7250	.0702	-.0134
.0600	.0704	-.0236	.7500	.0647	-.0103
.0700	.0745	-.0252	.7750	.0589	-.0073
.0800	.0781	-.0266	.8000	.0529	-.0044
.0900	.0812	-.0280	.8250	.0467	-.0018
.1000	.0840	-.0292	.8500	.0403	.0006
.1250	.0897	-.0320	.8750	.0338	.0026
.1500	.0940	-.0343	.9000	.0272	.0042
.1750	.0973	-.0363	.9250	.0206	.0051
.2000	.0998	-.0379	.9500	.0139	.0052
.2250	.1018	-.0394	.9600	.0112	.0049
.2500	.1033	-.0406	.9700	.0085	.0044
.2750	.1045	-.0415	.9800	.0058	.0036
.3000	.1055	-.0422	.9900	.0031	.0023
.3250	.1062	-.0427	.9950	.0015	.0011
.3500	.1067	-.0430	1.0000	.0000	.0000

Figure 53.- NACA 65-615 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



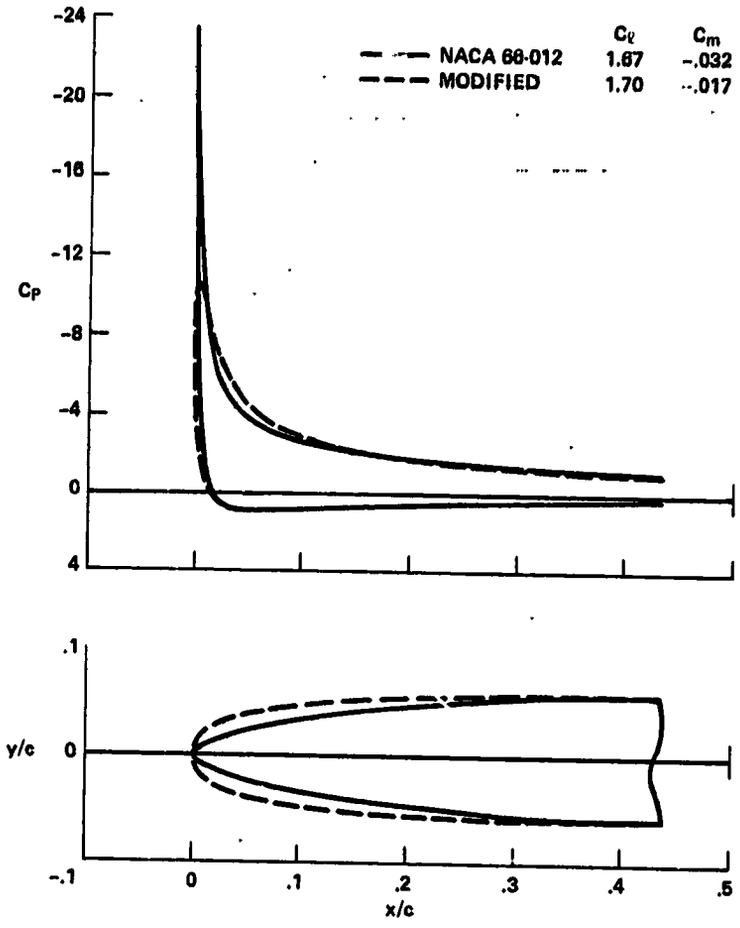
x	y_U	y_L
0.0000	0.0000	0.0000
.0002	.0059	-.0006
.0004	.0083	-.0011
.0006	.0101	-.0017
.0008	.0115	-.0023
.0010	.0128	-.0028
.0020	.0178	-.0047
.0030	.0215	-.0062
.0040	.0246	-.0074
.0050	.0273	-.0085
.0100	.0378	-.0126
.0200	.0514	-.0179
.0300	.0613	-.0216
.0400	.0692	-.0247
.0500	.0758	-.0275
.0600	.0814	-.0299
.0700	.0863	-.0321
.0800	.0905	-.0342
.0900	.0943	-.0360
.1000	.0977	-.0378
.1250	.1045	-.0417
.1500	.1097	-.0450
.1750	.1136	-.0478
.2000	.1165	-.0502
.2250	.1187	-.0523
.2500	.1201	-.0540
.2750	.1211	-.0554
.3000	.1218	-.0565
.3250	.1221	-.0575
.3500	.1223	-.0578
.3750	.1224	-.0580
.4000	.1223	-.0579
.4250	.1223	-.0573
.4500	.1218	-.0562
.4750	.1209	-.0546
.5000	.1198	-.0526
.5250	.1162	-.0501
.5500	.1131	-.0471
.5750	.1093	-.0439
.6000	.1051	-.0403
.6250	.1004	-.0366
.6500	.0953	-.0328
.6750	.0898	-.0288
.7000	.0839	-.0247
.7250	.0778	-.0207
.7500	.0714	-.0168
.7750	.0648	-.0129
.8000	.0579	-.0092
.8250	.0509	-.0057
.8500	.0437	-.0026
.8750	.0365	.0002
.9000	.0292	.0024
.9250	.0219	.0039
.9500	.0146	.0045
.9600	.0117	.0044
.9700	.0089	.0041
.9800	.0060	.0034
.9900	.0032	.0022
.9950	.0016	.0011
1.0000	.0000	.0000

Figure 54.- NACA 65-618 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



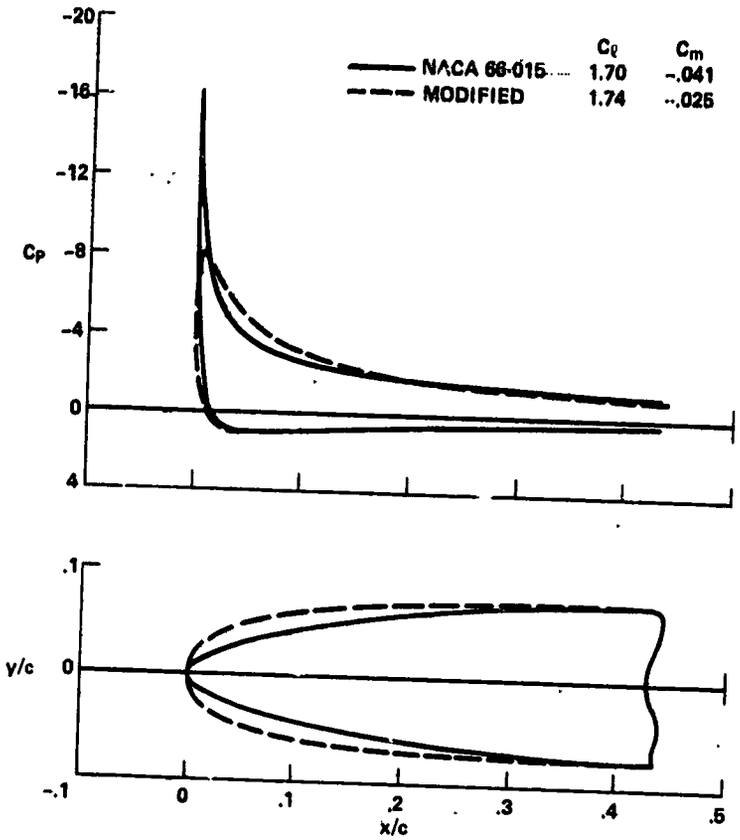
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0450	-.0450
.0002	.0025	-.0025	.4000	.0450	-.0450
.0004	.0035	-.0035	.4250	.0450	-.0450
.0006	.0043	-.0043	.4500	.0450	-.0450
.0008	.0049	-.0049	.4750	.0450	-.0450
.0010	.0054	-.0054	.5000	.0448	-.0448
.0020	.0075	-.0075	.5250	.0444	-.0444
.0030	.0091	-.0091	.5500	.0438	-.0438
.0040	.0104	-.0104	.5750	.0430	-.0430
.0050	.0115	-.0115	.6000	.0420	-.0420
.0100	.0157	-.0157	.6250	.0407	-.0407
.0200	.0211	-.0211	.6500	.0389	-.0389
.0300	.0248	-.0248	.6750	.0367	-.0367
.0400	.0276	-.0276	.7000	.0343	-.0343
.0500	.0300	-.0300	.7250	.0316	-.0316
.0600	.0319	-.0319	.7500	.0288	-.0288
.0700	.0335	-.0335	.7750	.0258	-.0258
.0800	.0349	-.0349	.8000	.0226	-.0226
.0900	.0361	-.0361	.8250	.0194	-.0194
.1000	.0372	-.0372	.8500	.0161	-.0161
.1250	.0394	-.0394	.8750	.0128	-.0128
.1500	.0410	-.0410	.9000	.0096	-.0096
.1750	.0421	-.0421	.9250	.0066	-.0066
.2000	.0430	-.0430	.9500	.0037	-.0037
.2250	.0437	-.0437	.9600	.0027	-.0027
.2500	.0441	-.0441	.9700	.0018	-.0018
.2750	.0445	-.0445	.9800	.0010	-.0010
.3000	.0447	-.0447	.9900	.0004	-.0004
.3250	.0448	-.0448	.9950	.0002	-.0002
.3500	.0449	-.0449	1.0000	.0000	-.0000

Figure 55.- NACA 66-009 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



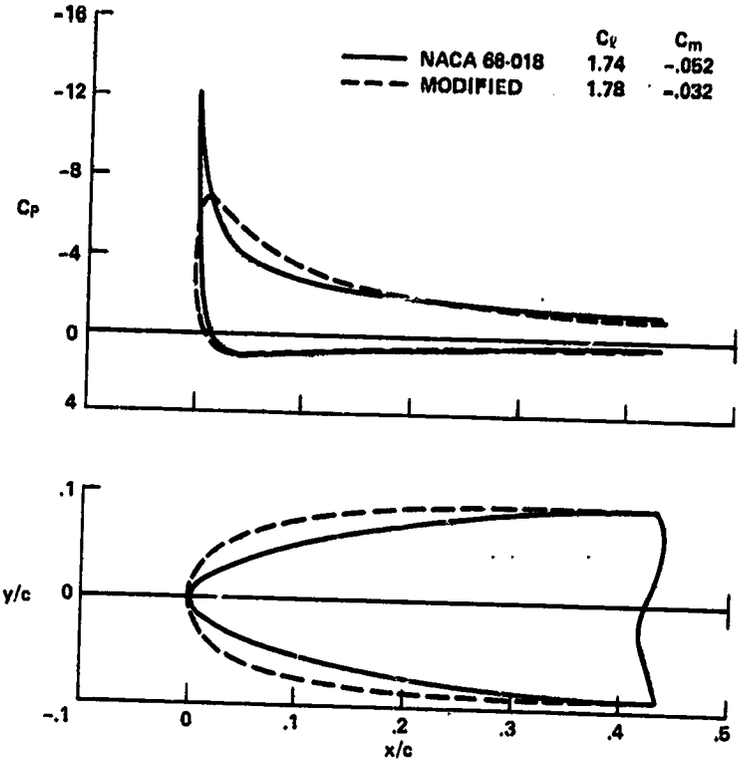
X	YU	YL	X	YU	YL
0.0000	0.0000	0.0000	.5750	.0599	-.0599
.0002	.0053	-.0053	.6000	.0600	-.0600
.0004	.0069	-.0069	.6250	.0600	-.0600
.0006	.0080	-.0080	.6500	.0600	-.0600
.0008	.0090	-.0090	.6750	.0599	-.0599
.0010	.0098	-.0098	.7000	.0597	-.0597
.0020	.0127	-.0127	.7250	.0591	-.0591
.0030	.0148	-.0148	.7500	.0583	-.0583
.0040	.0165	-.0165	.7750	.0573	-.0573
.0050	.0179	-.0179	.8000	.0559	-.0559
.0100	.0231	-.0231	.8250	.0540	-.0540
.0200	.0296	-.0296	.8500	.0515	-.0515
.0300	.0340	-.0340	.8750	.0485	-.0485
.0400	.0374	-.0374	.9000	.0451	-.0451
.0500	.0401	-.0401	.9250	.0415	-.0415
.0600	.0425	-.0425	.9500	.0377	-.0377
.0700	.0444	-.0444	.9750	.0336	-.0336
.0800	.0462	-.0462	.8000	.0294	-.0294
.0900	.0477	-.0477	.8250	.0251	-.0251
.1000	.0490	-.0490	.8500	.0208	-.0208
.1250	.0518	-.0518	.8750	.0165	-.0165
.1500	.0539	-.0539	.9000	.0123	-.0123
.1750	.0555	-.0555	.9250	.0084	-.0084
.2000	.0568	-.0568	.9500	.0047	-.0047
.2250	.0578	-.0578	.9600	.0034	-.0034
.2500	.0585	-.0585	.9700	.0023	-.0023
.2750	.0590	-.0590	.9800	.0012	-.0012
.3000	.0594	-.0594	.9900	.0004	-.0004
.3250	.0597	-.0597	.9950	.0002	-.0002
.3500	.0598	-.0598	1.0000	.0000	-.0000

Figure 56.- NACA 66-012 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



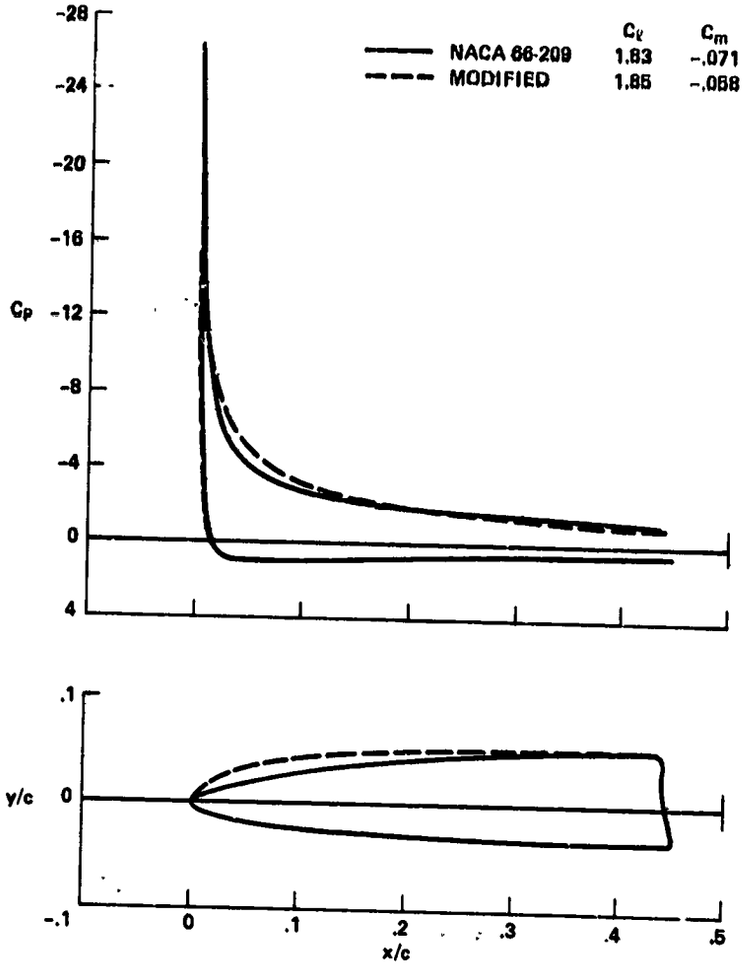
X	YU	YL
0.0000	0.0000	0.0000
.0002	.0056	-.0056
.0004	.0075	-.0075
.0006	.0089	-.0089
.0008	.0100	-.0100
.0010	.0109	-.0109
.0020	.0145	-.0145
.0030	.0170	-.0170
.0040	.0191	-.0191
.0050	.0209	-.0209
.0100	.0274	-.0274
.0200	.0356	-.0356
.0300	.0413	-.0413
.0400	.0457	-.0457
.0500	.0493	-.0493
.0600	.0523	-.0523
.0700	.0549	-.0549
.0800	.0571	-.0571
.0900	.0591	-.0591
.1000	.0609	-.0609
.1250	.0644	-.0644
.1500	.0672	-.0672
.1750	.0693	-.0693
.2000	.0709	-.0709
.2250	.0722	-.0722
.2500	.0731	-.0731
.2750	.0738	-.0738
.3000	.0742	-.0742
.3250	.0746	-.0746
.3500	.0748	-.0748
.3750	.0749	-.0749
.4000	.0750	-.0750
.4250	.0750	-.0750
.4500	.0750	-.0750
.4750	.0749	-.0749
.5000	.0745	-.0745
.5250	.0739	-.0739
.5500	.0729	-.0729
.5750	.0715	-.0715
.6000	.0696	-.0696
.6250	.0671	-.0671
.6500	.0639	-.0639
.6750	.0600	-.0600
.7000	.0557	-.0557
.7250	.0511	-.0511
.7500	.0463	-.0463
.7750	.0412	-.0412
.8000	.0359	-.0359
.8250	.0306	-.0306
.8500	.0252	-.0252
.8750	.0200	-.0200
.9000	.0148	-.0148
.9250	.0100	-.0100
.9500	.0056	-.0056
.9600	.0041	-.0041
.9700	.0027	-.0027
.9800	.0015	-.0015
.9900	.0005	-.0005
.9950	.0003	-.0003
1.0000	.0000	-.0000

Figure 57.- NACA 66-015 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



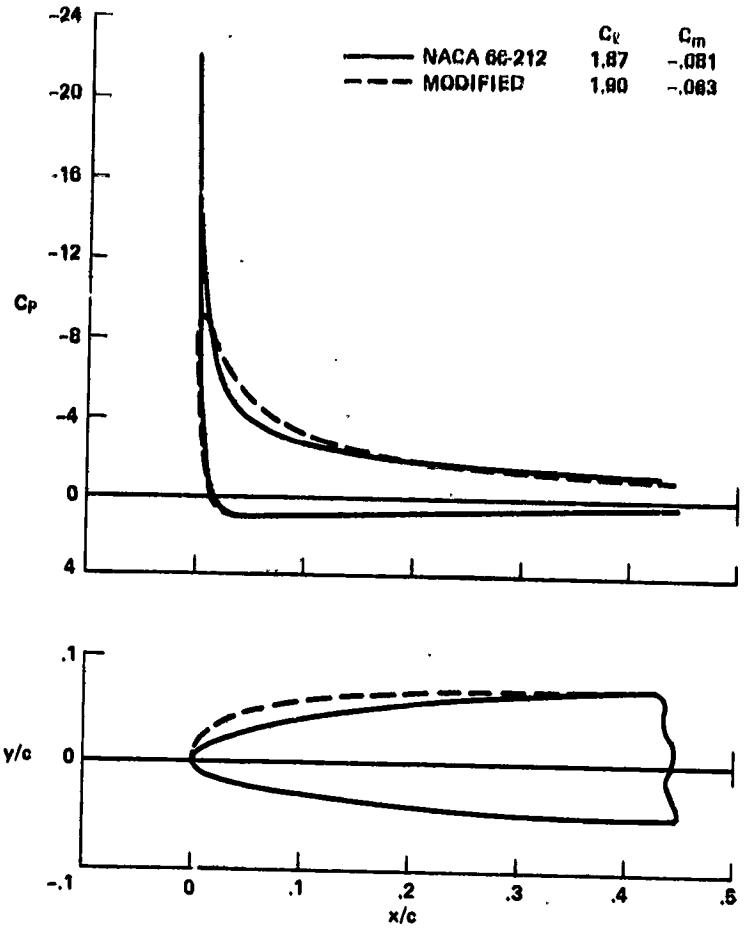
X	Y_U	Y_L	X	Y_U	Y_L
0.0000	0.0000	0.0000	.3750	.0900	-.0900
.0002	.0065	-.0065	.4000	.0900	-.0900
.0004	.0087	-.0087	.4250	.0900	-.0900
.0006	.0104	-.0104	.4500	.0900	-.0900
.0008	.0117	-.0117	.4750	.0899	-.0899
.0010	.0129	-.0129	.5000	.0894	-.0894
.0020	.0172	-.0172	.5250	.0886	-.0886
.0030	.0204	-.0204	.5500	.0874	-.0874
.0040	.0229	-.0229	.5750	.0856	-.0856
.0050	.0251	-.0251	.6000	.0833	-.0833
.0100	.0332	-.0332	.6250	.0801	-.0801
.0200	.0435	-.0435	.6500	.0760	-.0760
.0300	.0505	-.0505	.6750	.0712	-.0712
.0400	.0559	-.0559	.7000	.0660	-.0660
.0500	.0603	-.0603	.7250	.0604	-.0604
.0600	.0640	-.0640	.7500	.0545	-.0545
.0700	.0672	-.0672	.7750	.0484	-.0484
.0800	.0699	-.0699	.8000	.0421	-.0421
.0900	.0723	-.0723	.8250	.0357	-.0357
.1000	.0744	-.0744	.8500	.0294	-.0294
.1250	.0786	-.0786	.8750	.0231	-.0231
.1500	.0818	-.0818	.9000	.0171	-.0171
.1750	.0841	-.0841	.9250	.0115	-.0115
.2000	.0859	-.0859	.9500	.0064	-.0064
.2250	.0872	-.0872	.9600	.0047	-.0047
.2500	.0882	-.0882	.9700	.0031	-.0031
.2750	.0889	-.0889	.9800	.0017	-.0017
.3000	.0893	-.0893	.9900	.0006	-.0006
.3250	.0897	-.0897	.9950	.0003	-.0003
.3500	.0898	-.0898	1.0000	.0000	-.0000

Figure 58.- NACA 66-018 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



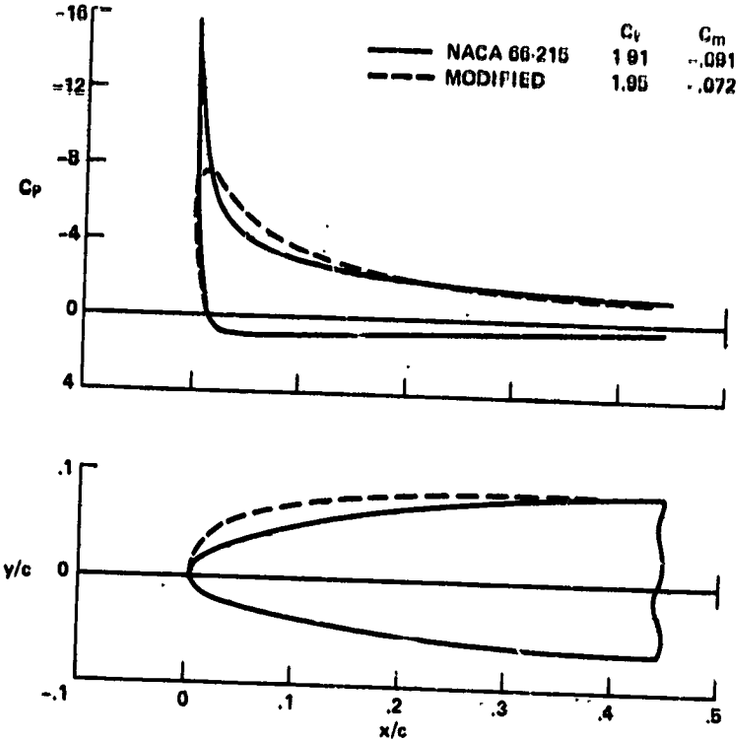
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0559	-.0336
.0002	.0028	-.0008	.4000	.0560	-.0339
.0004	.0039	-.0016	.4250	.0560	-.0340
.0006	.0048	-.0020	.4500	.0560	-.0340
.0008	.0055	-.0023	.4750	.0560	-.0339
.0010	.0061	-.0026	.5000	.0558	-.0337
.0020	.0085	-.0038	.5250	.0554	-.0334
.0030	.0103	-.0047	.5500	.0548	-.0329
.0040	.0118	-.0054	.5750	.0539	-.0322
.0050	.0131	-.0060	.6000	.0527	-.0313
.0100	.0179	-.0082	.6250	.0512	-.0301
.0200	.0243	-.0107	.6500	.0492	-.0286
.0300	.0288	-.0125	.6750	.0468	-.0267
.0400	.0323	-.0141	.7000	.0441	-.0245
.0500	.0352	-.0155	.7250	.0410	-.0222
.0600	.0377	-.0168	.7500	.0378	-.0198
.0700	.0398	-.0179	.7750	.0343	-.0172
.0800	.0416	-.0190	.8000	.0306	-.0146
.0900	.0433	-.0200	.8250	.0268	-.0119
.1000	.0447	-.0210	.8500	.0229	-.0093
.1250	.0476	-.0231	.8750	.0189	-.0068
.1500	.0499	-.0250	.9000	.0149	-.0044
.1750	.0516	-.0266	.9250	.0108	-.0023
.2000	.0529	-.0280	.9500	.0069	-.0006
.2250	.0538	-.0292	.9600	.0054	-.0000
.2500	.0546	-.0303	.9700	.0040	.0004
.2750	.0551	-.0312	.9800	.0026	.0006
.3000	.0555	-.0320	.9900	.0012	.0005
.3250	.0557	-.0326	.9950	.0006	.0003
.3500	.0559	-.0332	1.0000	.0000	.0000

Figure 59.- NACA 66-209 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



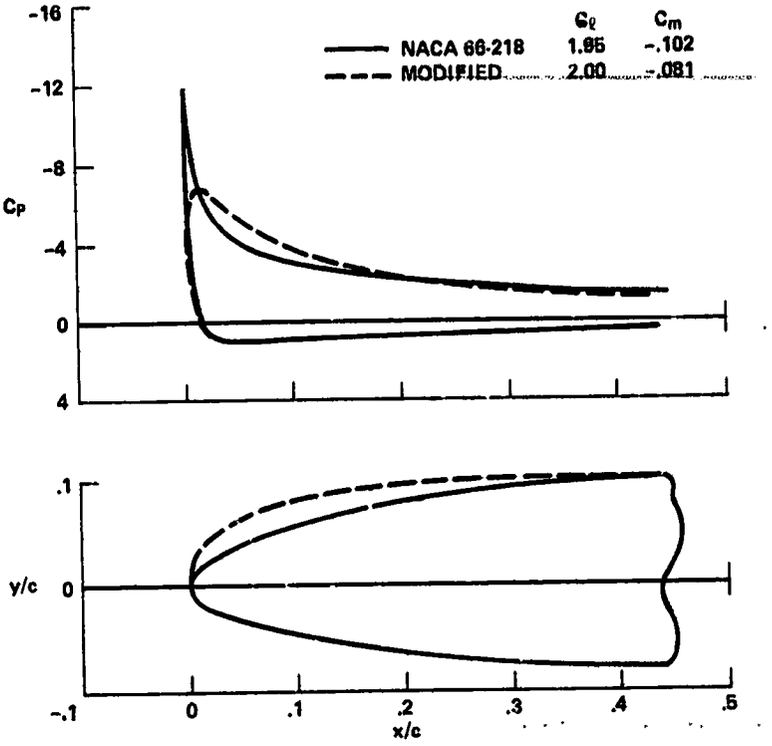
x	YU	YL	x	YU	YL
0.0030	0.0000	0.0000	.3750	.0709	-.0483
.0002	.0046	-.0010	.4000	.0710	-.0487
.0004	.0063	-.0019	.4250	.0710	-.0490
.0006	.0075	-.0025	.4500	.0710	-.0490
.0008	.0085	-.0030	.4750	.0709	-.0489
.0010	.0094	-.0034	.5000	.0707	-.0486
.0020	.0127	-.0050	.5250	.0701	-.0481
.0030	.0152	-.0062	.5500	.0693	-.0474
.0040	.0172	-.0071	.5750	.0681	-.0464
.0050	.0188	-.0080	.6000	.0666	-.0451
.0100	.0252	-.0110	.6250	.0645	-.0434
.0200	.0333	-.0146	.6500	.0618	-.0411
.0300	.0389	-.0172	.6750	.0586	-.0384
.0400	.0432	-.0194	.7000	.0549	-.0353
.0500	.0467	-.0215	.7250	.0510	-.0321
.0600	.0497	-.0234	.7500	.0467	-.0286
.0700	.0522	-.0251	.7750	.0422	-.0251
.0800	.0544	-.0267	.8000	.0375	-.0214
.0900	.0563	-.0282	.8250	.0326	-.0177
.1000	.0580	-.0296	.8500	.0276	-.0140
.1250	.0614	-.0327	.8750	.0226	-.0105
.1500	.0640	-.0355	.9000	.0176	-.0071
.1750	.0660	-.0379	.9250	.0127	-.0041
.2000	.0674	-.0399	.9500	.0079	-.0016
.2250	.0686	-.0418	.9600	.0061	-.0008
.2500	.0694	-.0434	.9700	.0044	-.0001
.2750	.0700	-.0447	.9800	.0028	.0003
.3000	.0704	-.0459	.9900	.0013	.0004
.3250	.0707	-.0469	.9950	.0007	.0002
.3500	.0708	-.0477	1.0000	.0000	.0000

Figure 60.- NACA 66-212 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



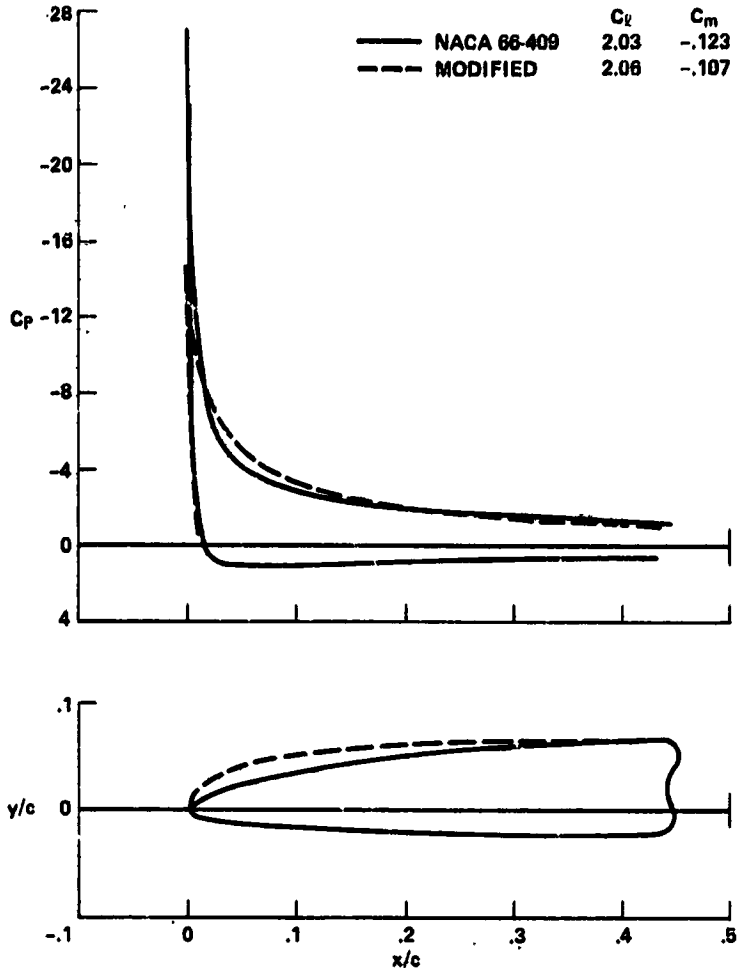
x	yu	yl	x	yu	yl
0.0000	0.0000	0.0000	.3750	.0859	-.0630
.0002	.0058	-.0011	.4000	.0860	-.0636
.0004	.0078	-.0022	.4250	.0860	-.0639
.0006	.0093	-.0030	.4500	.0860	-.0640
.0008	.0105	-.0036	.4750	.0859	-.0639
.0010	.0116	-.0041	.5000	.0856	-.0635
.0020	.0156	-.0061	.5250	.0849	-.0628
.0030	.0185	-.0075	.5500	.0838	-.0619
.0040	.0209	-.0087	.5750	.0824	-.0606
.0050	.0230	-.0098	.6000	.0804	-.0589
.0100	.0306	-.0136	.6250	.0777	-.0565
.0200	.0403	-.0182	.6500	.0742	-.0535
.0300	.0470	-.0216	.6750	.0701	-.0498
.0400	.0521	-.0242	.7000	.0656	-.0458
.0500	.0564	-.0264	.7250	.0606	-.0416
.0600	.0599	-.0279	.7500	.0554	-.0372
.0700	.0630	-.0292	.7750	.0498	-.0325
.0800	.0656	-.0303	.8000	.0441	-.0278
.0900	.0679	-.0312	.8250	.0381	-.0230
.1000	.0700	-.0321	.8500	.0321	-.0184
.1250	.0742	-.0423	.8750	.0261	-.0138
.1500	.0773	-.0459	.9000	.0201	-.0096
.1750	.0797	-.0491	.9250	.0143	-.0057
.2000	.0816	-.0519	.9500	.0088	-.0024
.2250	.0829	-.0543	.9600	.0068	-.0014
.2500	.0839	-.0564	.9700	.0049	-.0005
.2750	.0847	-.0582	.9800	.0030	.0001
.3000	.0852	-.0598	.9900	.0014	.0004
.3250	.0856	-.0611	.9950	.0007	.0002
.3500	.0858	-.0622	1.0000	.0000	.0000

Figure 61.- NACA 66-215 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



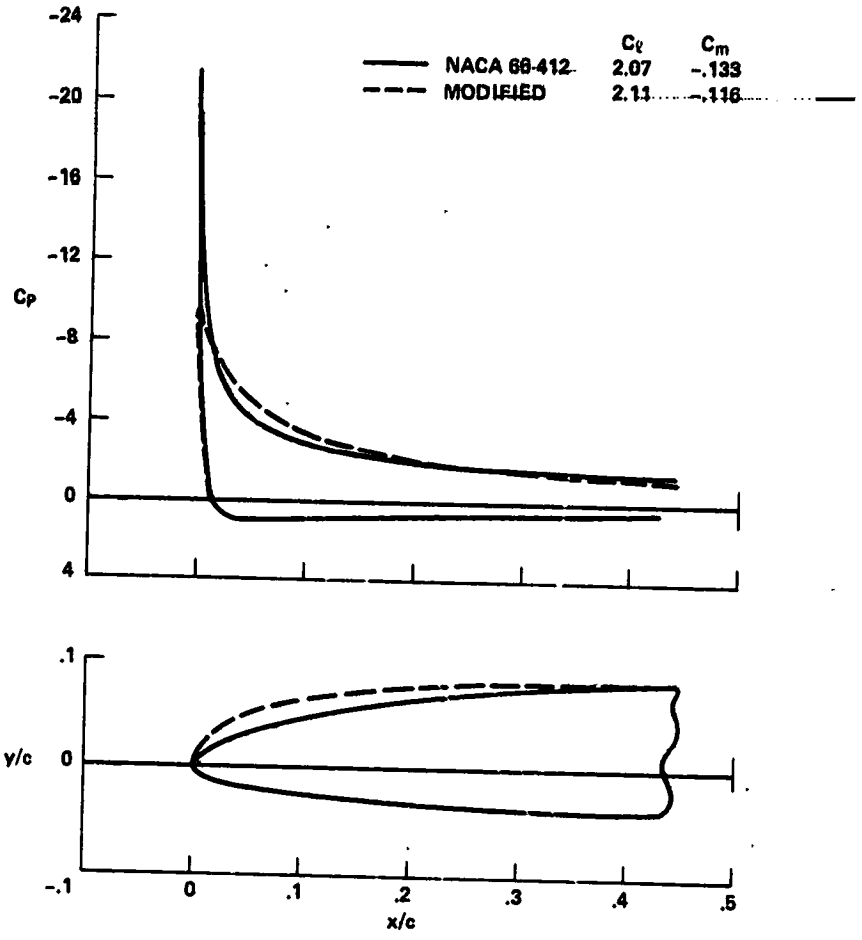
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.1009	-.0777
.0002	.0063	-.0012	.4000	.1009	-.0784
.0004	.0085	-.0024	.4250	.1010	-.0789
.0006	.0102	-.0034	.4500	.1010	-.0790
.0008	.0116	-.0041	.4750	.1009	-.0789
.0010	.0128	-.0047	.5000	.1005	-.0784
.0020	.0174	-.0070	.5250	.0996	-.0776
.0030	.0208	-.0088	.5500	.0983	-.0764
.0040	.0236	-.0102	.5750	.0965	-.0747
.0050	.0259	-.0114	.6000	.0941	-.0725
.0100	.0348	-.0160	.6250	.0907	-.0695
.0200	.0462	-.0217	.6500	.0864	-.0656
.0300	.0541	-.0259	.6750	.0814	-.0610
.0400	.0603	-.0297	.7000	.0759	-.0561
.0500	.0653	-.0331	.7250	.0700	-.0508
.0600	.0695	-.0363	.7500	.0637	-.0454
.0700	.0732	-.0391	.7750	.0571	-.0397
.0800	.0764	-.0417	.8000	.0503	-.0339
.0900	.0791	-.0442	.8250	.0433	-.0281
.1000	.0816	-.0465	.8500	.0363	-.0224
.1250	.0866	-.051	.8750	.0293	-.0170
.1500	.0905	-.056	.9000	.0229	-.0118
.1750	.0934	-.0602	.9250	.0159	-.0072
.2000	.0956	-.0637	.9500	.0097	-.0032
.2250	.0973	-.0668	.9600	.0074	-.0020
.2500	.0985	-.0694	.9700	.0052	-.0009
.2750	.0994	-.0717	.9800	.0032	-.0001
.3000	.1000	-.0737	.9900	.0015	.0003
.3250	.1005	-.0753	.9950	.0007	.0002
.3500	.1007	-.0767	1.0000	.0000	.0000

Figure 62.- NACA 66-218 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



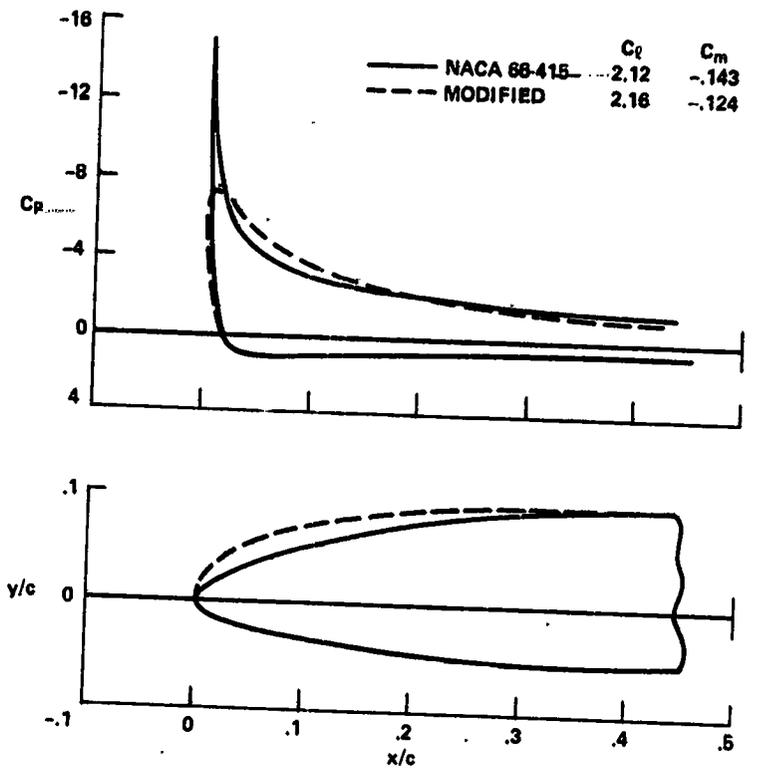
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0669	-.0230
.0032	.0030	-.0006	.4000	.0670	-.0231
.0094	.0043	-.0012	.4250	.0670	-.0232
.0006	.0053	-.0016	.4500	.0670	-.0231
.0008	.0061	-.0019	.4750	.0670	-.0229
.0010	.0068	-.0022	.5000	.0668	-.0227
.0020	.0095	-.0033	.5250	.0664	-.0223
.0030	.0116	-.0041	.5500	.0657	-.0219
.0040	.0133	-.0047	.5750	.0648	-.0213
.0050	.0148	-.0052	.6000	.0635	-.0206
.0100	.0205	-.0071	.6250	.0618	-.0196
.0200	.0281	-.0090	.6500	.0596	-.0182
.0300	.0335	-.0102	.6750	.0569	-.0166
.0400	.0377	-.0113	.7000	.0538	-.0148
.0500	.0412	-.0122	.7250	.0504	-.0128
.0600	.0442	-.0131	.7500	.0468	-.0108
.0700	.0468	-.0138	.7750	.0429	-.0087
.0800	.0490	-.0145	.8000	.0387	-.0066
.0900	.0510	-.0151	.8250	.0343	-.0045
.1000	.0528	-.0157	.8500	.0297	-.0026
.1250	.0564	-.0171	.8750	.0250	-.0008
.1500	.0592	-.0182	.9000	.0201	.0008
.1750	.0613	-.0192	.9250	.0151	.0019
.2000	.0630	-.0200	.9500	.0101	.0026
.2250	.0642	-.0207	.9600	.0081	.0026
.2500	.0651	-.0213	.9700	.0061	.0025
.2750	.0658	-.0218	.9800	.0041	.0021
.3000	.0663	-.0223	.9900	.0021	.0014
.3250	.0666	-.0226	.9950	.0011	.0007
.3500	.0668	-.0229	1.0000	.0000	.0000

Figure 63.- NACA 66-409 Mod. B airfoil section with pressure distribution and coordirates; $\alpha = 14°$.



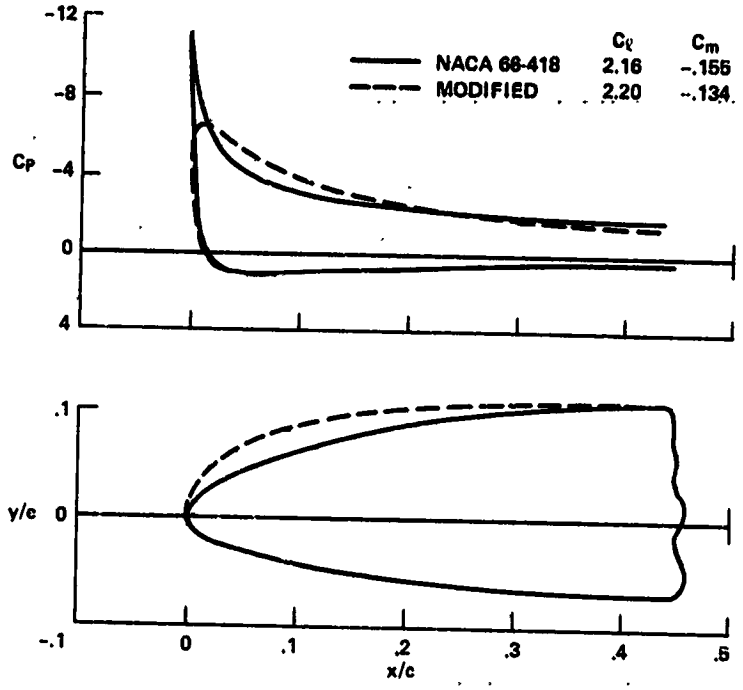
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0819	-.0377
.0002	.0040	-.0007	.4000	.0820	-.0380
.0004	.0055	-.0013	.4250	.0820	-.0381
.0006	.0067	-.0020	.4500	.0820	-.0381
.0008	.0077	-.0028	.4750	.0820	-.0379
.0010	.0086	-.0028	.5000	.0817	-.0376
.0020	.0119	-.0043	.5250	.0812	-.0371
.0030	.0143	-.0053	.5500	.0803	-.0364
.0040	.0164	-.0062	.5750	.0790	-.0356
.0050	.0181	-.0070	.6000	.0773	-.0344
.0100	.0249	-.0097	.6250	.0751	-.0328
.0200	.0338	-.0127	.6500	.0722	-.0308
.0300	.0401	-.0148	.6750	.0687	-.0283
.0400	.0452	-.0166	.7000	.0648	-.0255
.0500	.0494	-.0182	.7250	.0604	-.0226
.0600	.0529	-.0196	.7500	.0558	-.0196
.0700	.0561	-.0209	.7750	.0509	-.0165
.0800	.0588	-.0221	.8000	.0456	-.0133
.0900	.0613	-.0232	.8250	.0401	-.0102
.1000	.0636	-.0243	.8500	.0345	-.0072
.1250	.0680	-.0266	.8750	.0287	-.0044
.1500	.0715	-.0286	.9000	.0229	-.0019
.1750	.0743	-.0304	.9250	.0170	.0002
.2000	.0764	-.0319	.9500	.0111	.0016
.2250	.0781	-.0332	.9600	.0088	.0019
.2500	.0793	-.0344	.9700	.0066	.0020
.2750	.0803	-.0354	.9800	.0044	.0019
.3000	.0809	-.0362	.9900	.0022	.0013
.3250	.0814	-.0368	.9950	.0011	.0007
.3500	.0817	-.0374	1.0000	.0000	.0000

Figure 64.- NACA 66-412 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



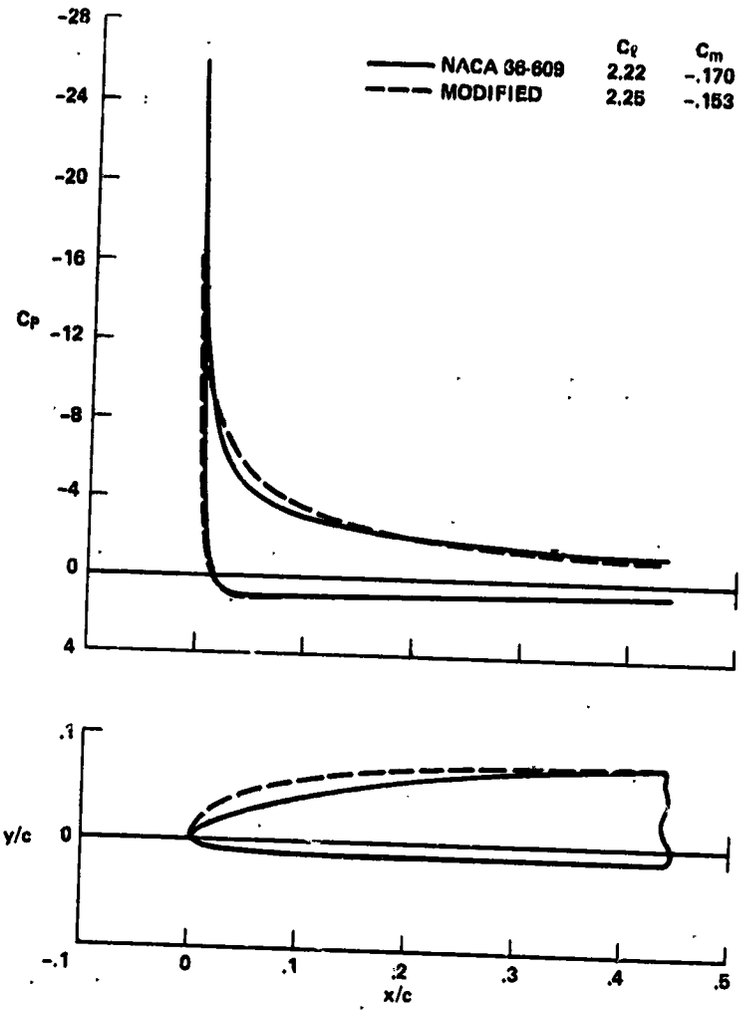
X	YU	YL	X	YU	YL
0.0000	0.0000	0.0000	.3750	.0969	-.0524
.0002	.0049	-.0007	.4000	.0970	-.0529
.0004	.0068	-.0015	.4250	.0970	-.0531
.0006	.0082	-.0022	.4500	.0970	-.0531
.0008	.0094	-.0028	.4750	.0969	-.0529
.0010	.0105	-.0032	.5000	.0966	-.0525
.0020	.0144	-.0051	.5250	.0959	-.0518
.0030	.0173	-.0064	.5500	.0948	-.0509
.0040	.0198	-.0076	.5750	.0932	-.0497
.0050	.0219	-.0085	.6000	.0911	-.0481
.0100	.0298	-.0121	.6250	.0883	-.0459
.0200	.0404	-.0162	.6500	.0846	-.0431
.0300	.0479	-.0191	.6750	.0803	-.0397
.0400	.0538	-.0216	.7000	.0754	-.0360
.0500	.0587	-.0239	.7250	.0702	-.0321
.0600	.0629	-.0260	.7500	.0645	-.0281
.0700	.0666	-.0278	.7750	.0585	-.0239
.0800	.0698	-.0296	.8000	.0522	-.0197
.0900	.0727	-.0312	.8250	.0457	-.0155
.1000	.0753	-.0327	.8500	.0390	-.0115
.1250	.0806	-.0361	.8750	.0322	-.0078
.1500	.0847	-.0390	.9000	.0254	-.0043
.1750	.0880	-.0416	.9250	.0187	-.0014
.2000	.0905	-.0438	.9500	.0121	.0007
.2250	.0924	-.0457	.9600	.0095	.0013
.2500	.0939	-.0474	.9700	.0070	.0016
.2750	.0950	-.0488	.9800	.0046	.0017
.3000	.0958	-.0500	.9900	.0023	.0013
.3250	.0963	-.0510	.9950	.0012	.0006
.3500	.0967	-.0518	1.0000	.0000	.0000

Figure 65.- NACA 66-415 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



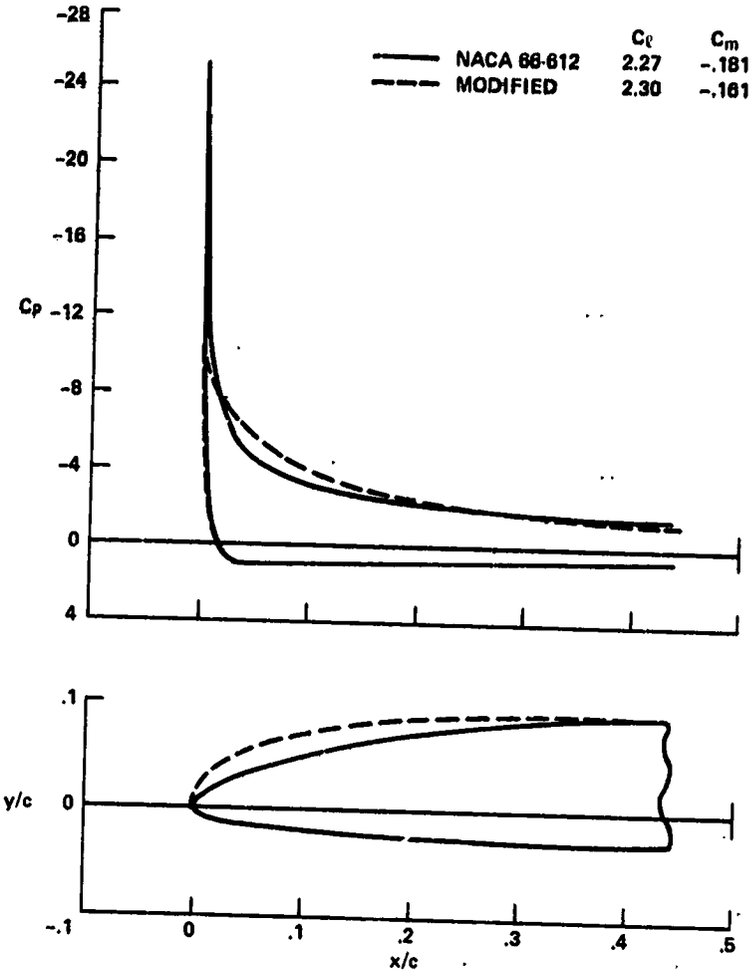
X	YU	YL	X	YU	YL
0.0000	0.0000	0.0000	.3750	.1118	-.0671
.0002	.0057	-.0008	.4000	.1119	-.0677
.0004	.0079	-.0016	.4250	.1119	-.0680
.0006	.0095	-.0023	.4500	.1120	-.0681
.0008	.0109	-.0031	.4750	.1119	-.0679
.0010	.0121	-.0036	.5000	.1115	-.0674
.0020	.0166	-.0058	.5250	.1106	-.0666
.0030	.0199	-.0074	.5500	.1093	-.0654
.0040	.0227	-.0088	.5750	.1074	-.0639
.0050	.0251	-.0099	.6000	.1048	-.0617
.0100	.0342	-.0142	.6250	.1013	-.0588
.0200	.0481	-.0195	.6500	.0969	-.0551
.0300	.0586	-.0232	.6750	.0916	-.0508
.0400	.0614	-.0265	.7000	.0858	-.0462
.0500	.0671	-.0294	.7250	.0796	-.0413
.0600	.0719	-.0322	.7500	.0729	-.0362
.0700	.0761	-.0346	.7750	.0659	-.0310
.0800	.0798	-.0369	.8000	.0585	-.0257
.0900	.0831	-.0390	.8250	.0509	-.0205
.1000	.0861	-.0409	.8500	.0433	-.0155
.1250	.0923	-.0454	.8750	.0355	-.0108
.1500	.0972	-.0493	.9000	.0278	-.0066
.1750	.1010	-.0526	.9250	.0202	-.0029
.2000	.1040	-.0556	.9500	.0129	-.0000
.2250	.1063	-.0581	.9600	.0101	.0007
.2500	.1081	-.0603	.9700	.0074	.0013
.2750	.1095	-.0623	.9800	.0048	.0015
.3000	.1104	-.0640	.9900	.0020	.0012
.3250	.1111	-.0652	.9950	.0012	.0006
.3500	.1115	-.0663	1.0000	.0000	.0000

Figure 66.- NACA 66-418 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



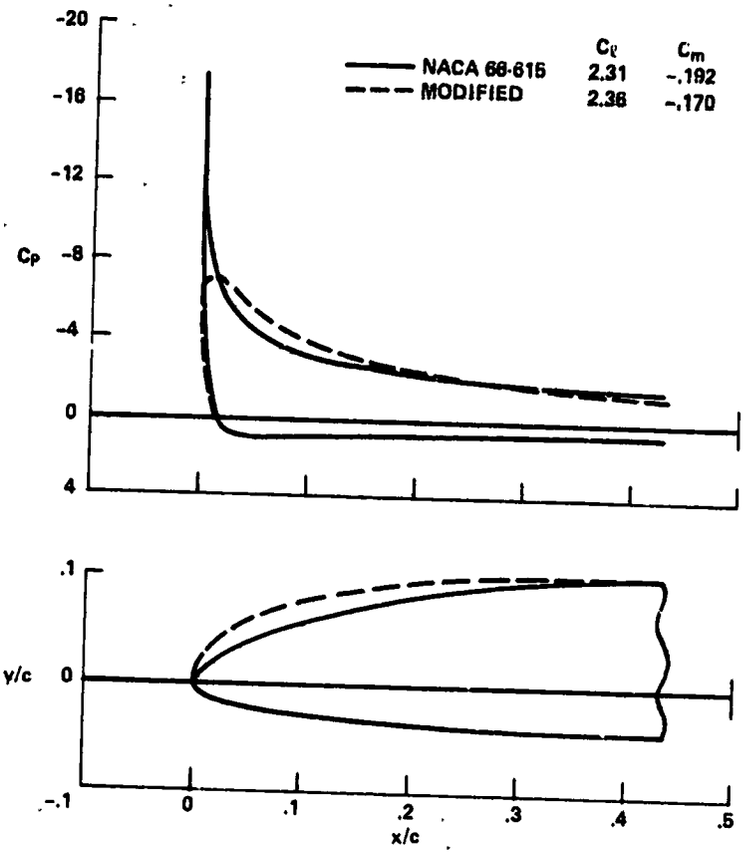
x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.0774	-.0125
.0002	.0037	-.0004	.4000	.0777	-.0124
.0004	.0051	-.0009	.4250	.0779	-.0123
.0006	.0062	-.0013	.4500	.0780	-.0121
.0008	.0071	-.0016	.4750	.0780	-.0119
.0010	.0079	-.0019	.5000	.0778	-.0117
.0020	.0109	-.0029	.5250	.0774	-.0113
.0030	.0132	-.0035	.5500	.0767	-.0109
.0040	.0150	-.0041	.5750	.0756	-.0105
.0050	.0167	-.0045	.6000	.0742	-.0099
.0100	.0228	-.0061	.6250	.0723	-.0090
.0200	.0310	-.0074	.6500	.0699	-.0079
.0300	.0369	-.0080	.6750	.0670	-.0065
.0400	.0415	-.0086	.7000	.0636	-.0050
.0500	.0454	-.0090	.7250	.0599	-.0034
.0600	.0487	-.0094	.7500	.0558	-.0018
.0700	.0516	-.0097	.7750	.0514	-.0002
.0800	.0541	-.0100	.8000	.0467	.0014
.0900	.0564	-.0103	.8250	.0418	.0029
.1000	.0584	-.0105	.8500	.0365	.0042
.1250	.0627	-.0110	.8750	.0310	.0052
.1500	.0661	-.0115	.9000	.0253	.0060
.1750	.0687	-.0118	.9250	.0194	.0062
.2000	.0709	-.0120	.9500	.0133	.0058
.2250	.0726	-.0122	.9600	.0108	.0053
.2500	.0740	-.0124	.9700	.0083	.0046
.2750	.0751	-.0125	.9800	.0057	.0037
.3000	.0759	-.0125	.9900	.0030	.0023
.3250	.0766	-.0126	.9950	.0015	.0012
.3500	.0771	-.0126	1.0000	.0000	.0000

Figure 67.- NACA 66-609 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



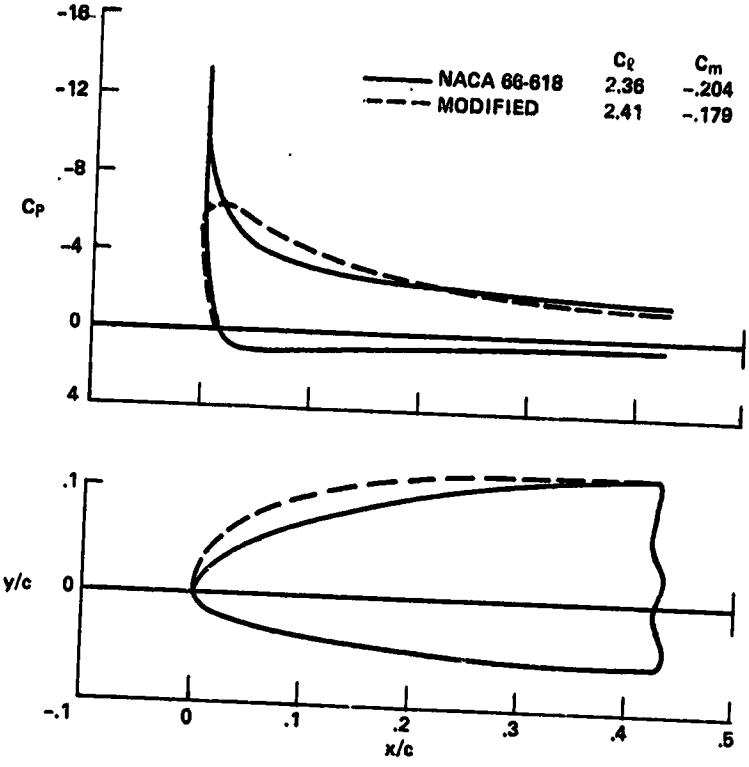
x	y_U	y_L	x	y_U	y_L
0.0000	0.0000	0.0000	.3750	.0929	-.0272
.0002	.0044	-.0005	.4000	.0930	-.0273
.0004	.0061	-.0010	.4250	.0930	-.0273
.0006	.0074	-.0015	.4500	.0930	-.0271
.0008	.0085	-.0020	.4750	.0930	-.0269
.0010	.0095	-.0023	.5000	.0927	-.0266
.0020	.0132	-.0036	.5250	.0922	-.0261
.0030	.0159	-.0046	.5500	.0912	-.0255
.0040	.0182	-.0054	.5750	.0899	-.0247
.0050	.0202	-.0061	.6000	.0881	-.0237
.0100	.0278	-.0085	.6250	.0857	-.0225
.0200	.0378	-.0110	.6500	.0826	-.0204
.0300	.0450	-.0125	.6750	.0788	-.0182
.0400	.0507	-.0137	.7000	.0746	-.0157
.0500	.0555	-.0149	.7250	.0699	-.0132
.0600	.0596	-.0159	.7500	.0649	-.0106
.0700	.0631	-.0167	.7750	.0595	-.0079
.0800	.0663	-.0176	.8000	.0537	-.0053
.0900	.0690	-.0183	.8250	.0477	-.0027
.1000	.0715	-.0190	.8500	.0414	-.0004
.1250	.0768	-.0205	.8750	.0348	.0016
.1500	.0808	-.0218	.9000	.0281	.0033
.1750	.0840	-.0230	.9250	.0213	.0044
.2000	.0865	-.0239	.9500	.0144	.0048
.2250	.0884	-.0247	.9600	.0116	.0046
.2500	.0899	-.0254	.9700	.0088	.0042
.2750	.0910	-.0260	.9800	.0060	.0034
.3000	.0918	-.0264	.9900	.0031	.0022
.3250	.0923	-.0268	.9950	.0016	.0011
.3500	.0927	-.0270	1.0000	.0000	.0000

Figure 68.- NACA 66-612 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



x	YU	YL	x	YU	YL
0.0000	0.0000	0.0000	.3750	.1078	-.0419
.0002	.0054	-.0005	.4000	.1079	-.0421
.0004	.0073	-.0011	.4250	.1080	-.0422
.0006	.0089	-.0016	.4500	.1080	-.0421
.0008	.0102	-.0022	.4750	.1079	-.0419
.0010	.0113	-.0026	.5000	.1076	-.0414
.0020	.0156	-.0043	.5250	.1069	-.0408
.0030	.0188	-.0055	.5500	.1058	-.0400
.0040	.0215	-.0066	.5750	.1041	-.0389
.0050	.0238	-.0074	.6000	.1019	-.0374
.0100	.0325	-.0107	.6250	.0989	-.0353
.0200	.0441	-.0143	.6500	.0951	-.0327
.0300	.0524	-.0167	.6750	.0905	-.0296
.0400	.0590	-.0187	.7000	.0853	-.0262
.0500	.0645	-.0205	.7250	.0797	-.0226
.0600	.0692	-.0221	.7500	.0737	-.0190
.0700	.0733	-.0236	.7750	.0672	-.0153
.0800	.0769	-.0249	.8000	.0604	-.0116
.0900	.0801	-.0261	.8250	.0533	-.0080
.1000	.0830	-.0273	.8500	.0459	-.0047
.1250	.0891	-.0299	.8750	.0384	-.0017
.1500	.0938	-.0321	.9000	.0308	.0009
.1750	.0975	-.0341	.9250	.0230	.0028
.2000	.1004	-.0357	.9500	.0153	.0039
.2250	.1026	-.0371	.9600	.0122	.0040
.2500	.1043	-.0384	.9700	.0092	.0038
.2750	.1056	-.0394	.9800	.0062	.0032
.3000	.1065	-.0403	.9900	.0032	.0021
.3250	.1072	-.0410	.9950	.0016	.0011
.3500	.1076	-.0415	1.0000	.0000	.0000

Figure 69.- NACA 66-615 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.



X	YU	YL
0.0000	0.0000	0.0000
.0002	.0058	-.0006
.0004	.0082	-.0011
.0006	.0099	-.0017
.0008	.0114	-.0023
.0010	.0127	-.0029
.0020	.0177	-.0048
.0030	.0214	-.0063
.0040	.0245	-.0075
.0050	.0272	-.0086
.0100	.0374	-.0126
.0200	.0509	-.0174
.0300	.0605	-.0206
.0400	.0681	-.0233
.0500	.0744	-.0259
.0600	.0798	-.0281
.0700	.0845	-.0302
.0800	.0886	-.0321
.0900	.0922	-.0338
.1000	.0955	-.0355
.1250	.1023	-.0391
.1500	.1075	-.0423
.1750	.1116	-.0451
.2000	.1147	-.0474
.2250	.1172	-.0495
.2500	.1190	-.0513
.2750	.1204	-.0528
.3000	.1214	-.0541
.3250	.1221	-.0551
.3500	.1225	-.0560
.3750	.1228	-.0566
.4000	.1229	-.0570
.4250	.1229	-.0572
.4500	.1229	-.0571
.4750	.1229	-.0569
.5000	.1225	-.0563
.5250	.1216	-.0555
.5500	.1203	-.0545
.5750	.1183	-.0530
.6000	.1156	-.0510
.6250	.1120	-.0482
.6500	.1073	-.0447
.6750	.1019	-.0406
.7000	.0958	-.0363
.7250	.0892	-.0317
.7500	.0821	-.0271
.7750	.0746	-.0223
.8000	.0668	-.0176
.8250	.0586	-.0130
.8500	.0503	-.0087
.8750	.0418	-.0047
.9000	.0332	-.0013
.9250	.0246	.0014
.9500	.0162	.0031
.9600	.0129	.0034
.9700	.0096	.0034
.9800	.0064	.0030
.9900	.0033	.0021
.9950	.0016	.0010
1.0000	.0000	.0000

Figure 70.- NACA 66-618 Mod. B airfoil section with pressure distribution and coordinates; $\alpha = 14°$.