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# RESEARCH MEMORANDUM

## PRESSURE DISTRIBUTIONS ON THE BLADE SECTIONS OF THE NACA 10-(3)(090)-03 PROPELLER UNDER OPERATING CONDITIONS

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NATIONAL ADVISORY COMMITTEE
FOR AERONAUTICS

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# PRESSURE DISTRIBUTIONS ON THE BLADE SECTIONS OF THE NACA 10-(3)(090)-03 PROPELLER UNDER OPERATING CONDITIONS

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## SUMMARY

This paper is the third of a series which present the results of pressure-distribution measurements on five related propellers. All five propellers were designed to have NACA 16-series airfoil sections over the entire blade except a small region at the tip. Chordwise distributions of pressure are presented for the NACA 10-(3)(090)-03 propeller at nine radial stations. At the innermost station investigated, which had a thickness ratio of 0.300, the section helical Mach number varied from 0.28 to 0.70; for the section nearest the tip, which had a thickness ratio of 0.053, the helical Mach number varied from 0.57 to 1.18. The pressure distributions have been reduced by integration to the form of blade-section aerodynamic coefficients. The tables which form the essential part of this paper present the basic pressure data, the aerodynamic coefficients, and a complete description of the operating conditions for each test point.

## INTRODUCTION

The development of efficient propellers for use on high-speed aircraft has been impeded by a lack of airfoil data at transonic and supersonic speeds. The scarcity of information at transonic speeds was due principally to the natural limitations of conventional wind tunnels in this speed range. Inasmuch as the aerodynamic characteristics of propeller-blade sections are not necessarily identical with two-dimensional airfoil characteristics, the idea of determining propeller section characteristics directly by means of pressure measurements appeared attractive, especially because such work could be done in a conventional wind tunnel. Accordingly, the NACA initiated an

investigation of high-speed propeller-blade section characteristics for the NACA 10-(3)(08)-03 propeller, results of which are reported in reference 1. Encouraged by these results, a new program was authorized for the design and testing of five related propellers embodying NACA 16-series blade sections.

The five propellers had identical rectangular blade plan forms with 8-inch chord and 10-foot diameter, and all had the same design blade twist. The designations for these blade designs are:

(1) NACA 10-(3)(066)-03

(2) NACA 10-(3)(049)-03

(3) NACA 10-(3)(090)-03

(4) NACA 10-(5)(066)-03

(5) NACA 10-(0)(066)-03

The solidities of all five blades are the same. References 2 and 3 have erroneous solidities in the propeller-blade designations. Reference 2 presents a complete description of the test apparatus and reduction of data with the tabular data from tests of the NACA 10-(3)(066)-03 propeller, and reference 3 presents the data obtained from the tests of the NACA 10-(3)(049)-03 propeller. The purpose of this paper is to present in tabular form the data obtained with the NACA 10-(3)(090)-03 blade design which had thicker blade sections than did the other propellers in this series of five. No attempt has been made to analyze the data thoroughly or to formulate conclusions. In order to expedite the transfer of the information contained in this paper to the agencies concerned with its ultimate use, the data have been analyzed only to the extent necessary to ensure their validity and to facilitate their use.

It is important to note that the values of induced angle presented in the tables are calculated as for a propeller operating with Betz loading by use of Goldstein tip correction factors. Because, in general, the blade loading was not optimum, the values of induced angle must be calculated for the actual arbitrary loading.

## SYMBOLS

The symbols used throughout this paper, some of which are defined in figure 1, are defined as follows:

| | |
|---|---|
| B | number of blades |
| b | blade chord, feet |

[redacted]

| | |
|---|---|
| $c$ | distance from section leading edge to any point on chord, feet |
| $c_c$ | section chordwise-force coefficient |
| $c_l$ | section lift coefficient |
| $c_{l_d}$ | blade-section design lift coefficient |
| $c_m$ | section pitching-moment coefficient about quarter-chord point |
| $c_n$ | section normal-force coefficient |
| $D$ | propeller diameter, feet |
| $F_c$ | section chordwise pressure force, pounds |
| $F_n$ | section normal pressure force, pounds |
| $G$ | Goldstein induced-velocity correction factor for finite number of blades |
| $h$ | blade-section maximum thickness, feet |
| $J$ | advance ratio (V/nD) |
| $M$ | Mach number of advance |
| $M_x$ | helical section Mach number $\left(M\sqrt{1+\left(\frac{\pi x}{J}\right)^2}\right)$ |
| $m'$ | section pitching moment, pound-feet |
| $N$ | propeller rotational speed, rpm |
| $n$ | propeller rotational speed, rps |
| $P$ | pressure coefficient $\left(\frac{p-p_o}{q_x}\right)$ |
| $p$ | static pressure at point on airfoil surface, pounds per square foot |

[redacted]

| | |
|---|---|
| $p_o$ | free-stream static pressure, pounds per square foot |
| $q_x$ | resultant dynamic pressure at radial station x, pounds per square foot $\left(\frac{1}{2}\rho W_o^2\right)$ |
| R | propeller-tip radius, feet |
| r | radius to blade element, feet |
| $r_p$ | polar ordinate, feet |
| s | distance along surface of blade section, feet |
| V | velocity of advance (corrected for wind-tunnel-wall interference effects), feet per second |
| $W_o$ | velocity vector $\left(V\sqrt{1+\left(\frac{\pi x}{J}\right)^2}\right)$ |
| W | resultant velocity at blade section, feet per second |
| $w_i$ | induced velocity at blade section, feet per second |
| x | fraction of propeller-tip radius (r/R) |
| y | normal distance from chord line to upper or lower surface of airfoil, inches |
| $\alpha_i$ | induced angle of attack, degrees |
| $\alpha_x$ | angle of attack of blade element, corrected for induced flow and blade deflection, at radial station x, degrees $\left(\beta_x - \phi + \Delta\beta\right)$ |
| $\alpha_x'$ | geometric angle of attack of blade element at radial station x, degrees $\left(\beta_x - \phi_o\right)$ |
| $\beta$ | blade angle, degrees |
| $\beta_{0.75R}$ | blade angle at 0.75 tip radius, degrees |
| $\Delta\beta$ | change in blade angle caused by operation loads, degrees |
| $\theta$ | polar angular ordinate, radians |

[redacted]

$\rho$ mass density of air in free stream, slugs per cubic foot

$\sigma$ solidity $\left(B \frac{b}{D} / \pi x\right)$

$\phi$ helix angle, degrees $\left(\phi_o + \alpha_i\right)$

$\phi_o$ geometric helix angle, degrees $\left(\tan^{-1}(J/\pi x)\right)$

$\Psi$ slope angle at surface of section; referenced to chord, degrees

Subscripts:

L lower-surface value

U upper-surface value

## APPARATUS

The 2000-horsepower propeller dynamometer used in making these propeller tests in the Langley 16-foot high-speed tunnel is described in detail in reference 4. Reference 2 presents a description of the propeller spinner and hubs used, a description and diagram of the pressure-transfer device and pressure-measuring apparatus, and the details of the optical deflectometer used to measure the torsional deflection of the blade. Figure 2 is a diagram of the pressure-distribution propeller test installation.

Propeller blades.- The test data presented herein were obtained by taking pressure-distribution measurements at nine blade sections of the NACA 10-(3)(090)-03 propeller. The foregoing designation indicates a 10-foot-diameter propeller having values of the design parameters at the 0.70 radius station as follows: section design lift coefficient, 0.30; section thickness ratio, 0.090; and solidity per blade, 0.03. NACA 16-series airfoil sections were used throughout the blade except very near the tip. The propeller-blade form characteristics are presented in figure 3 with the section locations where pressure measurements were taken indicated on the blade plan form. The portion of the blade enclosed by the spinner is also indicated. The lift-coefficient curve shows a sharp decrease from design value of 0.3 at the $x = 0.95$ station to 0.223 at $x = 0.975$. Owing to the fairing down of the blade to a fine edge at the tip in the final manufacturing processes, the dimensions

were slightly changed. Measurements at $x = 0.975$ showed the blade section to be approximately of the NACA 16-series with a design lift coefficient of 0.223. Details of the blade construction, pressure tube and orifice installation, and temperature measurements are described in reference 2.

## TESTS

All tests on the NACA 10-(3)(090)-03 propeller were made with the blade angle at the 0.75 tip radius set at 45°. Since the blade section angle of attack is a function of the section blade angle and advance ratio, the angle of attack was varied during a run by changing the advance ratio. For the low-speed tests, the propeller rotational speed was held constant and the advance ratio (section angle of attack) was changed by varying the tunnel airspeed. At the higher speeds, tunnel air-stream Mach number was held constant and the advance ratio varied by varying the propeller rotational speed. Because each test covered approximately the same range of advance ratio, the data provide blade section characteristics over a given range of angle of attack at different values of section helical Mach number. The range covered and operating conditions for each test are specified in the data tables 1 to 10. The table index presents an outline of the test schedule.

In order to extend the test range of the data to higher section angles of attack beyond the power limitations of the two-blade propeller configuration, some one-blade propeller tests were run and pressure data were obtained for the $x = 0.85$ section. The procedures employed in making these tests are described in reference 2.

## REDUCTION OF DATA

The usual wind-tunnel-wall corrections described in reference 4 have been applied to the data to obtain equivalent free airspeed.

The following equations, repeated from reference 1 with abbreviated explanation, have been used in the reduction of the data presented herein.

The pressure coefficient

$$P = \frac{p - p_o}{q_x}$$

[redacted]

The normal force

$$F_n = \oint p \cos \psi \, ds = \int_0^b \left[ \left( p_L - p_o \right) - \left( p_U - p_o \right) \right] dc$$

making the normal-force coefficient

$$c_n = \frac{F_n}{q_x b} \int_0^{1.0} \left( P_L - P_U \right) d \frac{c}{b}$$

The chordwise force

$$F_c = \oint p \sin \psi \, ds = \int_0^b \left[ \left( p_U - p_o \right) \tan \psi_U - \left( p_L - p_o \right) \tan \psi_L \right] dc$$

making the chordwise-force coefficient

$$c_c = \frac{F_c}{q_x b} \int_0^{1.0} \left( P_U \tan \psi_U - P_L \tan \psi_L \right) d \frac{c}{b} \qquad (1)$$

or, in polar coordinates

$$c_c = \int_0^{2\pi} (P) \left( \frac{\sin \psi}{\sin (\theta - \psi)} \right) \left( \frac{r_p}{b} \right) d\theta \qquad (2)$$

[redacted]

where equation (1) is used to evaluate that portion of chordwise-force coefficient from $\frac{c}{b} = 0.025$ to $\frac{c}{b} = 1.0$ and equation (2) is used to evaluate the chordwise-force coefficient from $\frac{c}{b} = 0$ to $\frac{c}{b} = 0.025$.

The pitching-moment coefficient

$$c_m = \frac{m}{q_x b^2} = \frac{\bar{c}}{b} \int_0^{1.0} \left(P_L - P_U\right) d\frac{c}{b} - \int_0^{1.0} \left(P_L - P_U\right) \frac{c}{b} \, d\frac{c}{b}$$

and the moments have been taken about $\frac{\bar{c}}{b} = 0.25$.

The induced angle

$$\alpha_i = \tan^{-1}\left(\frac{\sigma c_l}{4G \sin \phi}\right)$$

For the first approximation in the calculation of the angle, it is assumed that $c_l$ is equal to $c_n$ and $\phi$ is equal to $\phi_0$.

## RESULTS AND DISCUSSION

The data obtained from measuring blade-section pressure distribution at nine radial stations of the NACA 10-(3)(090)-03 propeller are presented in tabular form as itemized in the table index.

Pressure distribution.- For each value of advance ratio at which pressure measurements were recorded, there are tabulated the values of pressure coefficient for all orifice locations on the blade section instrumented. There is also listed the value of stagnation pressure computed for the section Mach number. There is negligible error in assuming the stagnation point to occur on the leading edge for all except the highest angles of attack on the most inboard sections. The trailing-edge pressure coefficient is listed as the faired intersection of the upper-surface and lower-surface distributions at the trailing edge except where they cannot be reasonably assumed to coincide. In this case, the value tabulated is taken from the lower-surface fairing and a note of the fact appears at the bottom of the table. In all cases

where faulty readings were obtained because of leaking or stopped pressure tubes, faired values are tabulated and noted.

Figure 4 illustrates the form used in obtaining the pressure distribution as a function of the pressure coefficient P and orifice location c/b. The values from which the distributions were plotted were obtained from table 8 for the NACA 16-(3)(06.50) blade section at $x = 0.95$. These plots show the variation with Mach number of the pressure distribution on this section at a constant angle of attack of approximately $0.8^\circ$ (including the Goldstein correction for induced angle) and give the consequent change in section normal-force and pitching-moment coefficients. At a section helical Mach number of 0.64, the pressure distribution is obtained with the entire section operating in a subsonic field. When the Mach number is increased to 0.89 the effects of shock appear on the upper surface at about 0.75 chord. At speeds in the low supersonic range where $M_x = 1.09$, the shock moves back to the trailing edge.

The section normal-force and pitching-moment coefficient were derived by integration of the pressure-distribution plots and are listed for all test points in the tables. The method for obtaining the chordwise-force coefficients tabulated is described in detail in reference 2. For one test (table 6(e)), a plot of the normal-force, pitching-moment, and chordwise-force coefficients together with section Mach number and angle of attack are shown in figure 5 to illustrate a convenient form for use in further analysis of the blade-section data.

Blade-angle deflection.- The physical deflection of the propeller blade during the tests was measured by means of an optical deflectometer. These measurements were closely checked by independent computations, and the accuracy of this correction is believed to be within $0.1^\circ$. Owing to the thickness of the sections incorporated in the NACA 10-(3)(090)-03 propeller blade, the deflections measured are less than on the other blades in the series tested, and $\Delta\beta$ in no case exceeds $1^\circ$ in the tests on this blade.

Induced-angle correction.- The correction for induced angle tabulated in the paper was computed using Goldstein's correction as would be applied to a propeller having an optimum loading. Since the propeller did not operate with an optimum loading, this induced angle may be somewhat in error. A study of references 5 and 6 has indicated that the corrections used may be close to being correct for the arbitrary loadings obtained in these tests at radii up to $x = 0.70$ but may be considerably in error near the tip. A detailed analysis of the problem of the induced-angle correction to be applied to the data from this series of tests is not within the scope of this paper and is the subject of further work.

[redacted]

Figure 6 shows the effect of the induced-angle correction on the normal-force-coefficient curve for the NACA 16-309 airfoil section at the 0.7 radius station operating at a helical Mach number of 0.70. The slope $dc_n/d\alpha$ increased from 0.085 for the uncorrected angle $(\alpha = \beta_x - \phi_o + \Delta\beta)$ to 0.115 for the corrected angle of attack $(\alpha_x = \beta_x - \phi_o + \Delta\beta - \alpha_i)$. For reference, the Langley 24-inch-tunnel data (reference 7) for the same airfoil section are plotted in the figure. The induced-angle correction brings the propeller data closer to agreement with that from the Langley 24-inch tunnel although it is not certain that the data from airfoils operating as propeller-blade sections can be practically and consistently corrected to agree with two-dimensional airfoil data.

Blade loadings.- The variation of the normal-force coefficient along the blade radius at an advance ratio of 2.2 for three values of stream Mach number is shown in figure 7. At a forward Mach number of 0.38 all the blade sections operate at subcritical speeds and the load distribution is free from abrupt changes. When the air-stream Mach number is increased to 0.56 the lift distribution at radii between $x = 0.60$ and $x = 0.80$ undergoes little change, but inboard of $x = 0.60$, where thickness ratio varies from 0.10 to greater than 0.30 and helical Mach number varies from about 0.60 to 0.75, compressibility effects result in a loss of lift; outboard of $x = 0.80$ where the helical Mach number varies from 0.85 to 0.97, a loss of lift is also experienced. With a further increase in air-stream Mach number to 0.65, a further loss of lift occurs over most of the blade; the loss is most pronounced in the region operating at helical Mach numbers between 0.85 and 0.97 ($x = 0.60$ to 0.80), but outboard of $x = 0.80$ where the section speeds are slightly supersonic the loss is relatively less than for other portions of the blade. This tendency toward loss of lift at section Mach numbers between 0.85 and 1.00 and subsequent recovery of lift at supersonic speeds is indicated by the data obtained with this thick propeller blade, as well as in the cases of the thinner propellers (references 2 and 3). The severe loss of lift over the inboard sections of this propeller indicates the very adverse effects of compressibility which result from operation of thick sections at supercritical subsonic speeds. This fact becomes apparent upon comparison of the radial load distributions obtained with this thick propeller with those obtained with the thinner propellers of references 2 and 3. The loss of lift at relatively low Mach numbers on the inboard portions of this thick propeller points to the desirability of using as thin sections as possible over the entire length of the blade, inboard as well as near the tip.

The distortion of the blade load distribution with changes in speed, shown in figure 7, points to one of the problems encountered in the

[redacted]

determination of the induced angle of attack. The loading does not correspond to a Betz or Goldstein loading, even at low speeds, and changes with Mach number. A sound approach to the determination of the induced angle will involve application of a method such as is presented in reference 5, to a large number of actual load distributions obtainable from these data, so that the effects of systematic changes in Mach number and advance ratio upon the induced angle may be ascertained.

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[redacted]

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[redacted]

TABLE I.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(30.00) PROPELLER BLADE SECTION (x = 0.30)

$\left[\beta_{0.75R} = 45°;\ \beta_x = 68.8°;\ B = 2\right]$

(a) N = 1140 rpm.

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J | 2.554 | 2.369 | 2.207 | 2.034 | 1.879 | 1.721 | 1.555 | 1.401 | 1.350 | 1.476 | 1.624 | 1.791 | 1.942 | 2.122 | 2.278 | 2.461 |
| $M_x$ | .465 | .434 | .410 | .381 | .359 | .333 | .310 | .287 | .277 | .297 | .323 | .346 | .372 | .396 | .423 | .452 |
| $\alpha_x'$ | -.95 | .49 | 1.92 | 3.66 | 5.44 | 7.50 | 10.02 | 12.73 | 13.72 | 11.36 | 8.93 | 6.55 | 4.69 | 2.75 | 1.28 | -.24 |
| $\Delta\beta$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| $\alpha_i$ | -.18 | -.09 | 0 | .09 | .36 | .69 | 1.02 | 1.36 | 1.53 | 1.19 | .88 | .50 | .23 | .08 | -.04 | -.13 |
| $\alpha_n$ | -.0806 | -.0387 | 0 | .0368 | .1503 | .2825 | .4103 | .5335 | .5981 | .4789 | .3568 | .2065 | .0974 | .0039 | -.0187 | -.0561 |
| $\alpha_m$ | .0051 | .0298 | .0652 | .0983 | .1057 | .1077 | .1183 | .1304 | .1316 | .1267 | .1142 | .1097 | .1054 | .0852 | .0525 | .0161 |
| $\alpha_o$ | | | | | | | | | | | | | | | | |
| x/b | Pressure coefficient, P | | | | | | | | | | | | | | | |
| Upper surface [a] 0.000 | 1.056 | 1.048 | 1.043 | 1.034 | 1.033 | 1.028 | 1.024 | 1.021 | 1.020 | 1.022 | 1.027 | 1.030 | 1.035 | 1.040 | 1.046 | 1.053 |
| .025 | .295 | .129 | -.043 | -.284 | -.567 | -.920 | -1.362 | -1.888 | -2.093 | -1.610 | -1.160 | -.739 | -.438 | -.145 | .032 | .222 |
| .050 | -.062 | -.232 | -.397 | -.625 | -.881 | -1.192 | -1.560 | -1.994 | -2.156 | -1.765 | -1.399 | -1.036 | -.763 | -.493 | -.328 | -.138 |
| .100 | -.253 | -.378 | -.501 | -.661 | -.832 | -1.051 | -1.304 | -1.594 | -1.675 | -1.437 | -1.187 | -.951 | -.763 | -.566 | -.446 | -.305 |
| .200 | -.555 | -.643 | -.724 | -.814 | -.916 | -1.051 | -1.194 | -1.334 | -1.396 | -1.251 | -1.128 | -.998 | -.876 | -.723 | -.684 | -.586 |
| .300 | -.696 | -.749 | -.793 | -.848 | -.912 | -.991 | -1.073 | -1.154 | -1.187 | -1.102 | -1.030 | -.970 | -.889 | -.808 | -.769 | -.708 |
| .400 | -.774 | -.802 | -.818 | -.830 | -.868 | -.910 | -.945 | -.967 | -.964 | -.941 | -.921 | -.904 | -.855 | -.808 | -.809 | -.773 |
| .500 | -.810 | -.811 | -.800 | -.771 | -.779 | -.795 | -.788 | -.747 | -.720 | -.756 | -.791 | -.805 | -.780 | -.767 | -.799 | -.790 |
| .600 | -.779 | -.755 | -.710 | -.641 | -.620 | -.624 | -.568 | -.434 | -.392 | -.489 | -.596 | -.636 | -.630 | -.658 | -.720 | -.746 |
| .700 | -.502 | -.438 | -.352 | -.221 | -.192 | -.272 | -.220 | -.220 | -.252 | -.192 | -.249 | -.240 | -.191 | -.273 | -.374 | -.448 |
| .800 | -.057 | -.039 | -.005 | .035 | .016 | -.031 | -.139 | -.220 | -.252 | -.167 | -.097 | -.014 | .022 | .027 | -.024 | -.033 |
| .900 | -.040 | -.033 | -.015 | .015 | -.002 | -.031 | -.151 | -.233 | -.266 | -.186 | -.107 | -.019 | -.008 | .005 | -.031 | -.027 |
| .950 | -.037 | -.030 | -.001 | .035 | .016 | -.051 | -.151 | -.227 | -.259 | -.180 | -.113 | -.019 | .018 | .027 | -.011 | -.024 |
| Lower surface .0375 | -.392 | -.198 | -.029 | .180 | .387 | .582 | .748 | .894 | .933 | .830 | .679 | .461 | .293 | .075 | -.090 | -.284 |
| .075 | -.505 | -.350 | -.220 | -.036 | .144 | .315 | .475 | .647 | .703 | .576 | .413 | .207 | .059 | -.127 | -.265 | -.416 |
| .150 | -.619 | -.506 | -.411 | -.272 | -.125 | .014 | .151 | .314 | .368 | .248 | .099 | -.080 | -.195 | -.339 | -.443 | -.553 |
| .250 | -.669 | -.590 | -.526 | -.421 | -.302 | -.192 | -.087 | .047 | .096 | 0 | -.129 | -.273 | -.362 | -.471 | -.545 | -.618 |
| .350 | -.691 | -.630 | -.592 | -.515 | -.426 | -.333 | -.249 | -.140 | -.106 | -.186 | -.287 | -.400 | -.471 | -.551 | -.601 | -.650 |
| .450 | -.716 | -.677 | -.661 | -.610 | -.536 | -.468 | -.406 | -.327 | -.280 | -.347 | -.433 | -.523 | -.580 | -.632 | -.661 | -.688 |
| .550 | -.727 | -.714 | -.724 | -.704 | -.647 | -.604 | -.574 | -.514 | -.476 | -.520 | -.574 | -.650 | -.680 | -.712 | -.710 | -.711 |
| .650 | -.710 | -.724 | -.762 | -.779 | -.744 | -.724 | -.713 | -.687 | -.671 | -.694 | -.721 | -.758 | -.767 | -.771 | -.740 | -.711 |
| .750 | -.514 | -.602 | -.665 | -.708 | -.665 | -.709 | -.736 | -.747 | -.740 | -.731 | -.721 | -.725 | -.713 | -.687 | -.641 | -.539 |
| .850 | -.145 | -.276 | -.376 | -.464 | -.528 | -.594 | -.638 | -.667 | -.671 | -.638 | -.612 | -.574 | -.509 | -.427 | -.341 | -.188 |
| .925 | -.020 | -.058 | -.154 | -.252 | -.293 | -.333 | -.423 | -.560 | -.594 | -.471 | -.384 | -.325 | -.283 | -.215 | -.123 | -.012 |
| .975 | -.020 | [b].030 | -.022 | -.052 | -.077 | -.142 | -.267 | -.367 | -.392 | -.316 | -.205 | -.104 | -.070 | -.042 | -.021 | -.001 |
| [a] 1.000 | -.020 | .055 | .038 | .080 | .065 | -.063 | -.150 | -.213 | -.225 | -.163 | -.123 | .010 | .050 | .090 | .030 | .010 |

[a] No orifice.

[b] Faired value.

TABLE 1.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(30.00) PROPELLER BLADE SECTION (x = 0.30) - Continued

(b) N = 1350 rpm.

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.533 | 2.389 | 2.266 | 2.076 | 1.940 | 1.791 | 1.657 | 1.492 | 1.415 | 1.565 | 1.715 | 1.863 | 1.998 | 2.159 | 2.309 | 2.471 |
| | $M_x$ | .552 | .521 | .496 | .462 | .435 | .407 | .384 | .357 | .343 | .370 | .395 | .423 | .448 | .477 | .505 | .537 |
| | $\alpha_x$, | -.79 | .33 | 1.38 | 3.22 | 4.71 | 6.55 | 8.43 | 11.08 | 12.47 | 9.86 | 7.59 | 5.63 | 4.05 | 2.38 | 1.00 | -.32 |
| | $\Delta\beta$ | 0 | 0 | 0 | 0 | 0 | .01 | .01 | .01 | .01 | .01 | .01 | .01 | .01 | 0 | 0 | 0 |
| | $\alpha_i$ | -.16 | -.09 | 0 | .04 | .30 | .53 | .80 | 1.12 | 1.31 | .96 | .71 | .42 | .15 | -.02 | -.04 | -.11 |
| | $c_n$ | -.0723 | -.0406 | -.0013 | .0161 | .1258 | .2194 | .3277 | .4445 | .5142 | .3865 | .2910 | .1755 | .0645 | -.0097 | -.0161 | -.0490 |
| | $c_m$ | -.0080 | .0170 | .0537 | .0931 | .0998 | .1118 | .1186 | .1311 | .1321 | .1255 | .1114 | .1055 | .1000 | .0798 | .0292 | .0029 |
| | $c_c$ | | | | | | | | | | | | | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.078 | 1.069 | 1.063 | 1.055 | 1.049 | 1.042 | 1.038 | 1.032 | 1.030 | 1.035 | 1.040 | 1.046 | 1.052 | 1.059 | 1.065 | 1.074 |
| | .025 | .334 | .194 | .041 | -.204 | -.439 | -.746 | -1.099 | -1.575 | -1.828 | -1.332 | -.945 | -.590 | -.324 | -.076 | .099 | .269 |
| | .050 | -.034 | -.188 | -.323 | -.568 | -.787 | -1.066 | -1.371 | -1.758 | -1.971 | -1.561 | -1.239 | -.925 | -.686 | -.447 | -.273 | -.101 |
| | .100 | -.237 | -.354 | -.445 | -.630 | -.781 | -.983 | -1.184 | -1.441 | -1.579 | -1.307 | -1.092 | -.882 | -.713 | -.537 | -.417 | -.288 |
| | .200 | -.567 | -.645 | -.685 | -.816 | -.905 | -1.035 | -1.146 | -1.262 | -1.350 | -1.194 | -1.092 | -.971 | -.867 | -.752 | -.686 | -.602 |
| | .300 | -.726 | -.766 | -.769 | -.863 | -.908 | -1.004 | -1.045 | -1.114 | -1.164 | -1.073 | -1.018 | -.955 | -.888 | -.818 | -.790 | -.741 |
| | .400 | -.810 | -.823 | -.797 | -.847 | -.871 | -.934 | -.932 | -.940 | -.968 | -.932 | -.919 | -.899 | -.864 | -.823 | -.830 | -.813 |
| | .500 | -.847 | -.830 | -.769 | -.785 | -.787 | -.816 | -.788 | -.743 | -.739 | -.737 | -.790 | -.804 | -.787 | -.778 | -.826 | -.837 |
| | .600 | -.814 | -.768 | -.670 | -.624 | -.619 | -.638 | -.571 | -.453 | -.419 | -.502 | -.591 | -.636 | -.612 | -.646 | -.746 | -.793 |
| | .700 | -.513 | -.428 | -.284 | -.171 | -.197 | -.255 | -.214 | -.189 | -.233 | -.173 | -.226 | -.246 | -.155 | -.214 | -.386 | -.473 |
| | .800 | -.093 | -.066 | -.016 | -.021 | -.023 | -.033 | -.105 | -.184 | -.233 | -.139 | -.071 | -.016 | -.025 | -.017 | -.059 | -.079 |
| | .900 | -.068 | -.048 | -.004 | -.035 | -.045 | -.026 | -.113 | -.189 | -.243 | -.148 | -.075 | .001 | -.046 | -.017 | -.040 | -.060 |
| | .950 | -.059 | -.039 | .006 | -.013 | -.001 | -.047 | -.113 | -.184 | -.233 | -.143 | -.083 | -.006 | -.022 | -.002 | -.030 | -.049 |
| Lower surface | .0375 | -.383 | -.213 | -.024 | .139 | .325 | .482 | .649 | .822 | .875 | .749 | .592 | .408 | .233 | .051 | -.126 | -.303 |
| | .075 | -.511 | -.371 | -.205 | -.078 | .083 | .221 | .381 | .563 | .626 | .486 | .330 | .155 | .002 | -.147 | -.297 | -.445 |
| | .150 | -.649 | -.537 | -.400 | -.314 | -.194 | -.074 | .047 | .227 | .283 | .157 | .021 | -.124 | -.250 | -.365 | -.482 | -.595 |
| | .250 | -.709 | -.624 | -.512 | -.458 | -.349 | -.269 | -.159 | -.023 | .020 | -.077 | -.189 | -.308 | -.407 | -.492 | -.581 | -.665 |
| | .350 | -.728 | -.668 | -.579 | -.551 | -.464 | -.409 | -.318 | -.207 | -.171 | -.256 | -.340 | -.433 | -.514 | -.574 | -.636 | -.697 |
| | .450 | -.755 | -.714 | -.648 | -.644 | -.573 | -.534 | -.462 | -.372 | -.348 | -.410 | -.477 | -.551 | -.615 | -.654 | -.693 | -.734 |
| | .550 | -.760 | -.748 | -.707 | -.723 | -.681 | -.666 | -.614 | -.636 | -.539 | -.573 | -.617 | -.669 | -.719 | -.730 | -.742 | -.750 |
| | .650 | -.718 | -.748 | -.744 | -.804 | -.775 | -.781 | -.753 | -.721 | -.720 | -.731 | -.753 | -.774 | -.802 | -.783 | -.756 | -.728 |
| | .750 | -.438 | -.553 | -.611 | -.720 | -.716 | -.750 | -.753 | -.757 | -.777 | -.752 | -.738 | -.731 | -.730 | -.691 | -.590 | -.488 |
| | .850 | -.082 | -.167 | -.289 | -.458 | -.486 | -.579 | -.625 | -.658 | -.691 | -.640 | -.595 | -.528 | -.484 | -.404 | -.232 | -.097 |
| | .925 | -.070 | -.034 | -.031 | -.255 | -.278 | -.342 | -.408 | -.488 | -.548 | -.448 | -.370 | -.288 | -.283 | -.184 | -.028 | -.053 |
| | .975 | -.074 | -.030 | .018 | -.086 | -.066 | -.120 | -.210 | -.309 | -.367 | -.260 | -.164 | -.081 | -.093 | -.047 | -.013 | -.055 |
| | [a]1.000 | -.076 | -.017 | .038 | .010 | .086 | -.031 | -.106 | -.187 | -.219 | -.135 | -.091 | -.010 | .025 | .020 | 0 | -.060 |

[redacted]

[a]No orifice.

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TABLE 1.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(30.00) PROPELLER BLADE SECTION (x = 0.30) - Continued

(c) N = 1500 rpm.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 1.653 | 1.786 | 1.899 | 2.029 | 2.145 | 2.282 | 2.395 | 2.514 | 2.454 | 2.352 | 2.218 | 2.094 | 1.968 | 1.849 | 1.736 |
| | $M_x$ | .429 | .452 | .475 | .503 | .526 | .555 | .580 | .607 | .593 | .569 | .540 | .514 | .486 | .465 | .440 |
| | $\alpha_x'$ | 8.49 | 6.62 | 5.19 | 3.72 | 2.52 | 1.26 | .28 | -.65 | -.19 | .64 | 1.82 | 3.03 | 4.37 | 5.81 | 7.30 |
| | $\Delta\beta$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | $c_l$ | .79 | .57 | .34 | .14 | .01 | -.16 | -.20 | -.30 | -.24 | -.23 | -.08 | .07 | .24 | .47 | .67 |
| | $c_n$ | .3260 | .2348 | .1432 | .0581 | .0032 | -.0677 | -.0877 | -.1323 | -.1039 | -.0994 | -.0342 | .0297 | .1013 | .1941 | .2761 |
| | $c_m$ | .1234 | .1124 | .1085 | .0936 | .0778 | .0639 | .0436 | .0282 | .0372 | .0371 | .0736 | .0864 | .1008 | .1093 | .1178 |
| | $c_d$ | | | | | | | | | | | | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.047 | 1.053 | 1.058 | 1.065 | 1.071 | 1.079 | 1.086 | 1.095 | 1.091 | 1.083 | 1.075 | 1.068 | 1.061 | 1.056 | 1.050 |
| | .025 | -1.091 | -.770 | -.518 | -.262 | -.070 | .110 | .223 | [b].431 | .282 | .181 | .018 | -.168 | -.373 | -.633 | -.917 |
| | .050 | -1.392 | -1.112 | -.883 | -.640 | -.449 | -.271 | -.156 | -.032 | -.093 | -.197 | -.361 | -.544 | -.745 | -.986 | -1.234 |
| | .100 | -1.211 | -1.026 | -.870 | -.698 | -.562 | -.433 | -.350 | -.251 | -.302 | -.378 | -.500 | -.634 | -.773 | -.941 | -1.110 |
| | .200 | -1.167 | -1.069 | -.970 | -.866 | -.780 | -.702 | -.657 | -.588 | -.624 | -.667 | -.739 | -.827 | -.912 | -1.013 | -1.110 |
| | .300 | -1.063 | -1.023 | -.965 | -.902 | -.852 | -.810 | -.799 | -.758 | -.781 | -.792 | -.829 | -.878 | -.932 | -.988 | -1.041 |
| | .400 | -.930 | -.940 | -.907 | -.876 | -.852 | -.841 | -.860 | -.845 | -.855 | -.840 | -.843 | -.867 | -.892 | -.922 | -.932 |
| | .500 | -.781 | -.810 | -.801 | -.801 | -.801 | -.814 | -.860 | -.868 | -.867 | -.828 | -.805 | -.804 | -.806 | -.808 | -.796 |
| | .600 | -.546 | -.629 | -.616 | -.637 | -.667 | -.710 | -.778 | -.804 | -.794 | -.735 | -.686 | -.653 | -.624 | -.628 | -.600 |
| | .700 | -.163 | -.267 | -.211 | -.202 | -.248 | -.288 | -.362 | -.392 | -.386 | -.319 | -.254 | -.214 | -.191 | -.262 | -.222 |
| | .800 | -.099 | -.060 | -.024 | -.019 | -.001 | -.008 | -.045 | -.050 | -.051 | -.020 | -.006 | -.019 | -.024 | -.032 | -.080 |
| | .900 | -.112 | -.071 | -.044 | -.050 | -.028 | -.022 | -.063 | -.061 | -.065 | -.031 | -.025 | -.057 | -.052 | -.043 | -.092 |
| | .950 | -.109 | -.080 | -.043 | -.026 | -.012 | -.010 | -.042 | -.045 | -.045 | -.020 | -.010 | -.029 | -.032 | -.057 | -.092 |
| Lower surface | .0375 | [b].648 | .507 | .375 | .217 | .073 | -.086 | -.217 | -.328 | -.275 | -.165 | -.010 | .138 | .282 | .434 | .579 |
| | .075 | .401 | .247 | .126 | -.014 | -.135 | -.271 | -.383 | -.478 | -.432 | -.338 | -.205 | -.078 | .044 | .182 | .319 |
| | .150 | .081 | -.051 | -.154 | -.264 | -.364 | -.475 | -.564 | -.642 | -.604 | -.529 | -.418 | -.319 | -.219 | -.106 | .008 |
| | .250 | -.157 | -.255 | -.336 | -.423 | -.502 | -.590 | -.659 | -.719 | -.691 | -.631 | -.547 | -.467 | -.388 | -.298 | -.204 |
| | .350 | -.305 | -.396 | -.460 | -.532 | -.596 | -.659 | -.709 | -.751 | -.731 | -.688 | -.628 | -.565 | -.505 | -.431 | -.355 |
| | .450 | -.454 | -.528 | -.579 | -.635 | -.680 | -.727 | -.760 | -.788 | -.776 | -.747 | -.705 | -.660 | -.614 | -.553 | -.491 |
| | .550 | -.610 | -.667 | -.703 | -.734 | -.760 | -.788 | -.799 | -.804 | -.802 | -.796 | -.775 | -.750 | -.722 | -.683 | -.636 |
| | .650 | -.762 | -.793 | -.806 | -.813 | -.818 | -.814 | -.799 | -.783 | -.791 | -.810 | -.818 | -.818 | -.816 | -.800 | -.772 |
| | .750 | -.765 | -.761 | -.756 | -.734 | -.711 | -.690 | -.680 | -.592 | -.643 | -.708 | -.700 | -.727 | -.748 | -.755 | -.757 |
| | .850 | -.616 | -.635 | -.558 | -.474 | -.402 | -.351 | -.337 | -.282 | -.310 | -.358 | -.369 | -.449 | -.510 | -.600 | -.654 |
| | .925 | -.403 | -.353 | -.315 | -.221 | -.146 | -.124 | -.141 | -.109 | -.125 | -.149 | -.136 | -.200 | -.270 | -.331 | -.370 |
| | .975 | -.214 | -.174 | -.130 | -.055 | -.030 | -.029 | -.049 | -.050 | -.047 | -.043 | -.034 | -.052 | -.088 | -.145 | -.207 |
| | [a]1.000 | -.083 | -.103 | -.043 | .005 | .011 | .017 | -.012 | .002 | -.006 | -.017 | .009 | .017 | .012 | -.063 | -.106 |

[a]No orifice.

[b]Faired value.

TABLE 1.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(30.00) PROPELLER BLADE SECTION (x = 0.30) -- Continued

(d) N = 1600 rpm.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.465 | 2.419 | 2.364 | 2.310 | 2.244 | 2.192 | 2.135 | 2.070 | 2.017 | 1.952 | 1.902 | 1.846 |
| | $M_x$ | .638 | .627 | .614 | .600 | .586 | .574 | .560 | .544 | .534 | .519 | .508 | .494 |
| | $\alpha_x'$ | -.28 | .09 | .54 | .99 | 1.58 | 2.07 | 2.62 | 3.28 | 3.85 | 4.57 | 5.16 | 5.85 |
| | $\Delta\beta$ | .01 | .01 | .01 | .01 | .01 | .01 | .01 | .01 | .01 | .01 | .01 | .01 |
| | $\alpha_i$ | -.05 | 0 | .03 | .02 | 0 | .02 | .04 | .09 | .17 | .28 | .35 | .43 |
| | $c_n$ | -.0213 | .0019 | .0110 | .0103 | .0013 | .0071 | .0168 | .0387 | .0716 | .1174 | .1484 | .1774 |
| | $c_m$ | -.0170 | -.0108 | -.0023 | .0203 | .0493 | .0655 | .0783 | .0896 | .0962 | .1014 | .1100 | .1196 |
| | $c_c$ | | | | | | | | | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.104 | 1.102 | 1.097 | 1.093 | 1.088 | 1.085 | 1.080 | 1.076 | 1.073 | 1.069 | 1.066 | 1.062 |
| | .025 | [b].390 | .283 | .217 | .151 | .076 | .004 | -.077 | -.176 | -.266 | -.389 | -.502 | -.601 |
| | .050 | -.051 | -.099 | -.171 | -.240 | -.315 | -.389 | -.472 | -.569 | -.659 | -.777 | -.884 | -1.000 |
| | .100 | -.258 | -.294 | -.349 | -.403 | -.463 | -.516 | -.578 | -.649 | -.712 | -.795 | -.872 | -.926 |
| | .200 | -.624 | -.644 | -.682 | -.715 | -.751 | -.781 | -.822 | -.863 | -.903 | -.949 | -.998 | -1.015 |
| | .300 | -.808 | -.812 | -.831 | -.842 | -.859 | -.870 | -.895 | -.917 | -.936 | -.961 | -.991 | -.988 |
| | .400 | -.898 | -.889 | -.891 | -.888 | -.886 | -.881 | -.889 | -.897 | -.903 | -.912 | -.929 | -.909 |
| | .500 | -.928 | -.908 | -.896 | -.877 | -.856 | -.834 | -.828 | -.821 | -.813 | -.814 | -.817 | -.777 |
| | .600 | -.865 | -.841 | -.818 | -.782 | -.721 | -.681 | -.653 | -.628 | -.611 | -.612 | -.610 | -.551 |
| | .700 | -.577 | -.558 | -.532 | -.458 | -.305 | -.238 | -.191 | -.165 | -.158 | -.182 | -.188 | -.132 |
| | .800 | -.185 | -.168 | -.146 | -.103 | -.070 | -.053 | -.051 | -.047 | -.044 | -.037 | -.042 | -.020 |
| | .900 | -.095 | -.080 | -.070 | -.048 | -.041 | -.038 | -.045 | -.049 | -.044 | -.030 | -.038 | -.022 |
| | .950 | -.090 | -.077 | -.070 | -.051 | -.036 | -.032 | -.039 | -.040 | -.039 | -.033 | -.045 | -.027 |
| Lower surface | .0375 | -.280 | -.221 | -.160 | -.088 | -.028 | .037 | .098 | .163 | .229 | .317 | .377 | .469 |
| | .075 | -.447 | -.396 | -.342 | -.280 | -.229 | -.171 | -.122 | -.062 | -.004 | .071 | .124 | .211 |
| | .150 | -.634 | -.586 | -.542 | -.488 | -.446 | -.397 | -.360 | -.312 | -.263 | -.200 | -.154 | -.079 |
| | .250 | -.729 | -.685 | -.648 | -.605 | -.573 | -.532 | -.504 | -.469 | -.428 | -.377 | -.343 | -.276 |
| | .350 | -.769 | -.733 | -.707 | -.673 | -.651 | -.618 | -.598 | -.575 | -.540 | -.497 | -.469 | -.410 |
| | .450 | -.813 | -.783 | -.765 | -.738 | -.725 | -.701 | -.690 | -.673 | -.646 | -.609 | -.590 | -.539 |
| | .550 | -.818 | -.800 | -.795 | -.784 | -.787 | -.775 | -.775 | -.768 | -.751 | -.724 | -.714 | -.670 |
| | .650 | -.754 | -.755 | -.774 | -.787 | -.820 | -.823 | -.832 | -.842 | -.837 | -.823 | -.824 | -.789 |
| | .750 | -.385 | -.418 | -.475 | -.539 | -.634 | -.671 | -.718 | -.745 | -.750 | -.749 | -.760 | -.740 |
| | .850 | -.090 | -.080 | -.087 | -.124 | -.263 | -.342 | -.397 | -.435 | -.463 | -.497 | -.529 | -.559 |
| | .925 | -.100 | -.084 | -.082 | -.104 | -.066 | -.104 | -.146 | -.172 | -.204 | -.267 | -.312 | -.320 |
| | .975 | -.103 | -.089 | -.066 | -.104 | -.038 | -.032 | -.037 | -.038 | -.044 | -.083 | -.135 | -.146 |
| | [a]1.000 | -.093 | -.098 | -.086 | -.085 | -.030 | -.024 | .006 | .013 | -.014 | -.038 | .009 | 0 |

[a]No orifice.

[b]Faired value.

NACA

TABLE 1.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(30.00) PROPELLER BLADE SECTION (x = 0.30) - Continued

(e) M = 0.56.

| | J | 2.508 | 2.462 | 2.414 | 2.368 | 2.325 | 2.279 | 2.231 | 2.179 | 2.138 | 2.097 | 2.058 | 2.017 | 1.977 | 1.951 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_x$ | .601 | .605 | .606 | .608 | .610 | .611 | .613 | .612 | .614 | .616 | .618 | .619 | .620 | .624 |
| | $\alpha_x'$ | -.60 | -.24 | .10 | .50 | .83 | 1.24 | 1.70 | 2.19 | 2.59 | 3.00 | 3.40 | 3.80 | 4.29 | 4.58 |
| | $\Delta\beta$ | 0 | 0 | 0 | .01 | .01 | .01 | .02 | .02 | .02 | .02 | .02 | .02 | .03 | .03 |
| | $\alpha_i$ | -.19 | -.15 | -.12 | .02 | .03 | .06 | .05 | .02 | .04 | .08 | .13 | .20 | .26 | .30 |
| | $c_n$ | -.0819 | -.0639 | -.0523 | .0065 | .0148 | .0245 | .0200 | .0090 | .0161 | .0361 | .0568 | .0832 | .1084 | .1252 |
| | $c_m$ | .0051 | .0087 | .0141 | -.0007 | .0084 | .0192 | .0367 | .0600 | .0711 | .0729 | .0760 | .0834 | .0867 | .0934 |
| | $c_a$ | | | | | | | | | | | | | | |
| | x/b | Pressure coefficient, P | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.093 | 1.094 | 1.095 | 1.095 | 1.096 | 1.096 | 1.097 | 1.096 | 1.097 | 1.098 | 1.099 | 1.099 | 1.099 | 1.101 |
| | .025 | [b].225 | [b].175 | .266 | .224 | .188 | .136 | .089 | .039 | -.011 | -.054 | -.103 | -.162 | -.218 | -.273 |
| | .050 | -.032 | -.065 | -.112 | -.159 | -.201 | -.254 | -.306 | -.361 | -.418 | -.464 | -.517 | -.585 | -.649 | -.711 |
| | .100 | -.237 | -.262 | -.300 | -.341 | -.373 | -.419 | -.460 | -.504 | -.552 | -.591 | -.631 | -.686 | -.736 | -.785 |
| | .200 | -.587 | -.606 | -.636 | -.670 | -.698 | -.732 | -.764 | -.800 | -.839 | -.871 | -.904 | -.949 | -.987 | -1.019 |
| | .300 | -.756 | -.769 | -.790 | -.818 | -.838 | -.865 | -.884 | -.909 | -.942 | -.966 | -.988 | -1.019 | -1.056 | -1.081 |
| | .400 | -.847 | -.850 | -.860 | -.880 | -.892 | -.904 | -.909 | -.920 | -.938 | -.950 | -.960 | -.972 | -.995 | -1.000 |
| | .500 | -.879 | -.873 | -.874 | -.889 | -.886 | -.884 | -.870 | -.860 | -.866 | -.866 | -.864 | -.855 | -.867 | -.852 |
| | .600 | -.827 | -.816 | -.802 | -.820 | -.799 | -.778 | -.731 | -.663 | -.642 | -.629 | -.620 | -.594 | -.615 | -.587 |
| | .700 | -.502 | -.503 | -.473 | -.542 | -.499 | -.436 | -.328 | -.182 | -.164 | -.165 | -.165 | -.159 | -.182 | -.168 |
| | .800 | -.119 | -.115 | -.105 | -.156 | -.128 | -.111 | -.089 | -.094 | -.106 | -.107 | -.101 | -.093 | -.074 | -.073 |
| | .900 | -.079 | -.065 | -.058 | -.070 | -.062 | -.057 | -.048 | -.069 | -.083 | -.080 | -.073 | -.070 | -.078 | -.089 |
| | .950 | -.076 | -.061 | -.057 | -.070 | -.064 | -.061 | -.048 | -.057 | -.067 | -.068 | -.066 | -.070 | -.069 | -.075 |
| Lower surface | .0375 | -.348 | -.291 | -.227 | -.177 | -.121 | -.068 | -.006 | .040 | .081 | .127 | .177 | .235 | .277 | .319 |
| | .075 | -.497 | -.449 | -.395 | -.355 | -.307 | -.265 | -.209 | -.170 | -.138 | -.100 | -.055 | -.006 | .032 | .071 |
| | .150 | -.658 | -.621 | -.580 | -.549 | -.513 | -.479 | -.437 | -.405 | -.383 | -.349 | -.312 | -.274 | -.244 | -.210 |
| | .250 | -.730 | -.704 | -.673 | -.654 | -.625 | -.601 | -.570 | -.548 | -.533 | -.508 | -.480 | -.449 | -.427 | -.401 |
| | .350 | -.759 | -.742 | -.722 | -.706 | -.689 | -.674 | -.651 | -.639 | -.631 | -.612 | -.592 | -.568 | -.554 | -.533 |
| | .450 | -.792 | -.781 | -.770 | -.761 | -.750 | -.743 | -.731 | -.727 | -.727 | -.713 | -.699 | -.681 | -.674 | -.659 |
| | .550 | -.799 | -.796 | -.795 | -.790 | -.789 | -.794 | -.793 | -.801 | -.811 | -.803 | -.797 | -.787 | -.790 | -.785 |
| | .650 | -.779 | -.760 | -.767 | -.766 | -.776 | -.798 | -.815 | -.844 | -.864 | -.863 | -.867 | -.869 | -.882 | -.892 |
| | .750 | -.486 | -.494 | -.510 | -.467 | -.497 | -.539 | -.587 | -.651 | -.690 | -.696 | -.711 | -.726 | -.747 | -.770 |
| | .850 | -.150 | -.153 | -.166 | -.084 | -.094 | -.116 | -.163 | -.281 | -.344 | -.354 | -.375 | -.395 | -.408 | -.439 |
| | .925 | -.114 | -.106 | -.101 | -.079 | -.077 | -.073 | -.061 | -.089 | -.115 | -.121 | -.125 | -.143 | -.142 | -.170 |
| | .975 | -.108 | -.097 | -.093 | -.084 | -.080 | -.077 | -.057 | -.053 | -.057 | -.058 | -.052 | -.060 | -.060 | -.068 |
| | [a]1.000 | -.090 | -.085 | -.080 | -.090 | -.085 | -.080 | -.055 | -.040 | -.040 | -.040 | -.040 | -.040 | -.035 | -.035 |

[a]No orifice.

[b]Faired value.

[redacted]

TABLE 1.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(30.00) PROPELLER BLADE SECTION (x = 0.30) - Continued

(f) M = 0.60.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.426 | 2.397 | 2.361 | 2.312 | 2.268 | 2.225 | 2.200 | 2.150 | 2.116 | 2.081 | 2.048 | 2.020 | 1.984 |
| | $M_x$ | .649 | .650 | .652 | .653 | .655 | .655 | .660 | .657 | .659 | .660 | .662 | .669 | .670 |
| | $\alpha_x'$ | .03 | .27 | .56 | .98 | 1.37 | 1.76 | 1.99 | 2.47 | 2.81 | 3.17 | 3.51 | 3.81 | 4.21 |
| | $\Delta\beta$ | -.01 | -.01 | 0 | 0 | 0 | .01 | .01 | .01 | .02 | .02 | .02 | .02 | .02 |
| | $\alpha_i$ | -.14 | -.12 | -.09 | -.05 | .01 | .03 | .06 | .11 | .13 | .17 | .21 | .24 | .28 |
| | $c_n$ | -.0600 | -.0503 | -.0387 | -.0232 | -.0045 | .0123 | .0252 | .0452 | .0561 | .0716 | .0884 | .1032 | .1187 |
| | $c_m$ | .0134 | .0161 | .0187 | .0280 | .0292 | .0431 | .0451 | .0587 | .0636 | .0688 | .0737 | .0732 | .0760 |
| | $c_c$ | | | | | | | | | | | | | .0297 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.110 | 1.110 | 1.111 | 1.111 | 1.112 | 1.112 | 1.113 | 1.112 | 1.113 | 1.113 | 1.114 | 1.117 | 1.114 |
| | .025 | [b].120 | [b].145 | .257 | .217 | .184 | .128 | .104 | .044 | .016 | -.020 | -.066 | -.087 | -.130 |
| | .050 | -.067 | -.089 | -.130 | -.174 | -.211 | -.275 | -.300 | -.370 | -.402 | -.443 | -.493 | -.518 | -.569 |
| | .100 | -.272 | -.290 | -.324 | -.359 | -.392 | -.446 | -.464 | -.522 | -.549 | -.583 | -.623 | -.642 | -.682 |
| | .200 | -.644 | -.657 | -.687 | -.713 | -.744 | -.796 | -.809 | -.866 | -.892 | -.889 | -.940 | -.947 | -1.001 |
| | .300 | -.833 | -.841 | -.864 | -.881 | -.910 | -.956 | -.967 | -1.016 | -1.046 | -1.072 | -1.103 | -1.113 | -1.147 |
| | .400 | -.924 | -.926 | -.939 | -.946 | -.966 | -.999 | -.996 | -1.029 | -1.048 | -1.064 | -1.081 | -1.088 | -1.129 |
| | .500 | -.943 | -.932 | -.935 | -.923 | -.934 | -.946 | -.933 | -.942 | -.944 | -.909 | -.933 | -.917 | -.917 |
| | .600 | -.824 | -.799 | -.790 | -.755 | -.762 | -.749 | -.720 | -.710 | -.696 | -.680 | -.653 | -.626 | -.604 |
| | .700 | -.342 | -.306 | -.303 | -.264 | -.292 | -.280 | -.255 | -.247 | -.236 | -.230 | -.218 | -.209 | -.212 |
| | .800 | -.128 | -.122 | -.122 | -.112 | -.113 | -.117 | -.103 | -.107 | -.102 | -.095 | -.099 | -.098 | -.119 |
| | .900 | -.097 | -.089 | -.089 | -.078 | -.075 | -.083 | -.071 | -.082 | -.085 | -.115 | -.108 | -.117 | -.141 |
| | .950 | -.084 | -.076 | -.080 | -.072 | -.075 | -.082 | -.074 | -.085 | -.085 | -.085 | -.091 | -.092 | -.117 |
| Lower surface | .0375 | -.256 | -.211 | -.166 | -.099 | -.062 | -.014 | .034 | .075 | .111 | .155 | .194 | .234 | .268 |
| | .075 | -.432 | -.391 | -.354 | -.296 | -.268 | -.227 | -.179 | -.146 | -.114 | -.077 | -.043 | -.008 | .024 |
| | .150 | -.627 | -.592 | -.563 | -.514 | -.493 | -.464 | -.422 | -.399 | -.373 | -.344 | -.316 | -.283 | -.259 |
| | .250 | -.730 | -.702 | -.679 | -.641 | -.628 | -.607 | -.574 | -.559 | -.541 | -.518 | -.496 | -.468 | -.452 |
| | .350 | -.777 | -.755 | -.741 | -.712 | -.705 | -.696 | -.666 | -.661 | -.649 | -.634 | -.620 | -.598 | -.588 |
| | .450 | -.829 | -.812 | -.806 | -.784 | -.786 | -.785 | -.760 | -.763 | -.759 | -.750 | -.743 | -.725 | -.719 |
| | .550 | -.841 | -.832 | -.835 | -.826 | -.834 | -.846 | -.832 | -.850 | -.853 | -.854 | -.857 | -.847 | -.849 |
| | .650 | -.790 | -.757 | -.801 | -.805 | -.821 | -.853 | -.848 | -.885 | -.903 | -.920 | -.937 | -.941 | -.962 |
| | .750 | -.487 | -.494 | -.514 | -.532 | -.553 | -.604 | -.602 | -.664 | -.686 | -.706 | -.726 | -.726 | -.740 |
| | .850 | -.155 | -.157 | -.167 | -.180 | -.191 | -.243 | -.230 | -.296 | -.316 | -.335 | -.353 | -.352 | -.375 |
| | .925 | -.122 | -.115 | -.111 | -.101 | -.088 | -.106 | -.095 | -.111 | -.112 | -.118 | -.129 | -.128 | -.151 |
| | .975 | -.112 | -.105 | -.101 | -.091 | -.079 | -.085 | -.074 | -.072 | -.064 | -.071 | -.078 | -.080 | -.101 |
| | [a]1.000 | -.069 | -.080 | -.095 | -.087 | -.080 | -.082 | -.075 | -.068 | -.052 | -.058 | -.058 | -.068 | -.089 |

[redacted]

[a]No orifice.

[b]Paired value.

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TABLE 1.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(30.00) PROPELLER BLADE SECTION (x = 0.30) - Concluded

(g) M = 0.64

| | J | 2.374 | 2.344 | 2.319 | 2.286 | 2.255 | 2.231 | 2.199 | 2.172 | 2.142 | 2.125 | 2.095 | 2.069 | 2.042 | 2.020 | 1.999 | 1.984 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_\Sigma$ | .680 | .683 | .687 | .689 | .691 | .691 | .692 | .694 | .694 | .698 | .698 | .700 | .701 | .701 | .701 | .701 |
| | $\alpha_r'$ | .45 | .70 | .87 | 1.20 | 1.48 | 1.70 | 2.00 | 2.26 | 2.56 | 2.70 | 3.00 | 3.29 | 3.58 | 3.80 | 4.00 | 4.20 |
| | $\Delta\beta$ | .01 | .02 | .02 | .02 | .02 | .02 | .02 | .03 | .03 | .03 | .04 | .04 | .04 | .04 | .04 | .04 |
| | $\alpha_i$ | -.21 | -.20 | -.17 | -.13 | -.09 | -.04 | .02 | .06 | .10 | .11 | .18 | .30 | .30 | .31 | .35 | .42 |
| | $c_n$ | -.0897 | -.0877 | -.0723 | -.0581 | -.0374 | -.0174 | .0065 | .0277 | .0419 | .0458 | .0781 | .1277 | .1258 | .1297 | .1465 | .1768 |
| | $c_m$ | .0361 | .0415 | .0454 | .0485 | .0475 | .0505 | .0505 | .0531 | .0537 | .0577 | .0551 | .0397 | .0485 | .0515 | .0516 | .0460 |
| | $c_c$ | .0357 | .0367 | .0376 | .0371 | .0371 | .0365 | .0380 | .0393 | .0398 | .0402 | .0427 | .0381 | .0395 | .0401 | .0389 | .0391 |
| | o/b | Pressure coefficient, P | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.121 | 1.123 | 1.124 | 1.125 | 1.126 | 1.126 | 1.126 | 1.127 | 1.127 | 1.128 | 1.128 | 1.129 | 1.130 | 1.130 | 1.130 | 1.130 |
| | .025 | [b].250 | [b].295 | .253 | .230 | .200 | .177 | .150 | .127 | .102 | .086 | .055 | .020 | .009 | -.012 | -.035 | -.045 |
| | .050 | -.085 | -.111 | -.137 | -.164 | -.196 | -.223 | -.254 | -.280 | -.308 | -.327 | -.363 | -.383 | -.413 | -.435 | -.462 | -.475 |
| | .100 | -.286 | -.308 | -.329 | -.352 | -.378 | -.401 | -.426 | -.449 | -.470 | -.485 | -.514 | -.532 | -.553 | -.570 | -.590 | -.599 |
| | .200 | -.676 | -.697 | -.715 | -.737 | -.761 | -.783 | -.809 | -.834 | -.856 | -.865 | -.898 | -.914 | -.915 | -.934 | -.966 | -.985 |
| | .300 | -.879 | -.899 | -.918 | -.941 | -.961 | -.976 | -.995 | -1.011 | -1.027 | -1.035 | -1.068 | -1.087 | -1.115 | -1.133 | -1.161 | -1.174 |
| | .400 | -.975 | -.991 | -1.005 | -1.015 | -1.026 | -1.043 | -1.060 | -1.084 | -1.110 | -1.129 | -1.167 | -1.177 | -1.170 | -1.161 | -1.193 | -1.204 |
| | .500 | -.951 | -.955 | -.949 | -.955 | -.962 | -.970 | -.986 | -.997 | -.995 | -.991 | -1.007 | -1.026 | -1.009 | -1.003 | -.998 | -1.002 |
| | .600 | -.721 | -.690 | -.667 | -.656 | -.663 | -.671 | -.688 | -.691 | -.671 | -.660 | -.676 | -.703 | -.666 | -.651 | -.632 | -.638 |
| | .700 | -.220 | -.206 | -.200 | -.201 | -.223 | -.244 | -.275 | -.289 | -.287 | -.287 | -.312 | -.354 | -.311 | -.303 | -.281 | -.293 |
| | .800 | -.132 | -.141 | -.145 | -.152 | -.151 | -.145 | -.143 | -.140 | -.141 | -.139 | -.152 | -.158 | -.151 | -.150 | -.165 | -.180 |
| | .900 | -.132 | -.129 | -.127 | -.128 | -.122 | -.111 | -.114 | -.116 | -.128 | -.129 | -.147 | -.150 | -.176 | -.181 | -.191 | -.204 |
| | .950 | -.099 | -.097 | -.095 | -.098 | -.099 | -.102 | -.111 | -.118 | -.128 | -.127 | -.144 | -.150 | -.151 | -.149 | -.160 | -.174 |
| Lower surface | .0375 | -.171 | -.136 | -.097 | -.065 | -.028 | .008 | .036 | .068 | .094 | .124 | .152 | .179 | .202 | .233 | .251 | .264 |
| | .075 | -.359 | -.329 | -.294 | -.265 | -.235 | -.201 | -.179 | -.150 | -.125 | -.100 | -.076 | -.050 | -.031 | -.004 | .012 | .025 |
| | .150 | -.588 | -.567 | -.535 | -.513 | -.486 | -.460 | -.439 | -.419 | -.399 | -.375 | -.356 | -.332 | -.318 | -.294 | -.278 | -.266 |
| | .250 | -.715 | -.699 | -.676 | -.658 | -.636 | -.615 | -.600 | -.583 | -.567 | -.549 | -.533 | -.512 | -.505 | -.481 | -.472 | -.463 |
| | .350 | -.782 | -.771 | -.753 | -.740 | -.729 | -.709 | -.699 | -.688 | -.674 | -.660 | -.653 | -.635 | -.631 | -.614 | -.606 | -.597 |
| | .450 | -.847 | -.843 | -.831 | -.827 | -.818 | -.806 | -.800 | -.794 | -.784 | -.804 | -.771 | -.759 | -.758 | -.744 | -.742 | -.735 |
| | .550 | -.885 | -.888 | -.887 | -.889 | -.892 | -.890 | -.892 | -.895 | -.895 | -.895 | -.898 | -.887 | -.899 | -.892 | -.897 | -.891 |
| | .650 | -.857 | -.870 | -.879 | -.889 | -.901 | -.908 | -.921 | -.939 | -.949 | -.971 | -.982 | -.965 | -.998 | -1.010 | -1.024 | -1.006 |
| | .750 | -.584 | -.592 | -.604 | -.618 | -.627 | -.632 | -.643 | -.650 | -.657 | -.663 | -.669 | -.597 | -.613 | -.634 | -.596 | -.540 |
| | .850 | -.273 | -.281 | -.290 | -.297 | -.300 | -.303 | -.309 | -.316 | -.320 | -.318 | -.324 | -.237 | -.250 | -.267 | -.246 | -.216 |
| | .925 | -.144 | -.142 | -.140 | -.143 | -.143 | -.140 | -.140 | -.143 | -.149 | -.142 | -.152 | -.135 | -.152 | -.152 | -.174 | -.186 |
| | .975 | -.111 | -.106 | -.098 | -.094 | -.092 | -.088 | -.091 | -.096 | -.105 | -.101 | -.114 | -.120 | -.133 | -.132 | -.155 | -.175 |
| | [a]1.000 | -.080 | -.082 | -.082 | -.065 | -.060 | -.072 | -.083 | -.081 | -.087 | -.100 | -.104 | -.120 | -.135 | -.130 | -.141 | -.170 |

[a]No orifice.

[b]Faired value.

TABLE 2.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(17.30) PROPELLER BLADE SECTION (x = 0.45)

$\left[\beta_{0.75R} = 45°;\ \beta_x = 59.3°;\ B = 2\right]$

(a) N = 1140 rpm.

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.606 | 2.446 | 2.261 | 2.072 | 1.919 | 1.750 | 1.585 | 1.386 | 1.482 | 1.675 | 1.833 | 1.982 | 2.157 | 2.354 | 2.500 |
| | $M_x$ | .498 | .476 | .448 | .423 | .399 | .376 | .355 | .328 | .341 | .370 | .392 | .409 | .433 | .462 | .485 |
| | $\alpha_x'$ | -2.22 | -.67 | 1.32 | 3.61 | 5.68 | 8.23 | 11.03 | 14.87 | 12.95 | 9.46 | 6.94 | 4.80 | 2.54 | .29 | -1.21 |
| | $\Delta\beta$ | 0 | .01 | .01 | .02 | .02 | .03 | .04 | .04 | .04 | .03 | .03 | .02 | .02 | .01 | 0 |
| | $\alpha_i$ | -.10 | .11 | .46 | .77 | 1.06 | 1.44 | 1.91 | 2.49 | 2.19 | 1.65 | 1.26 | .95 | .65 | .29 | .01 |
| | $c_m$ | -.0445 | .0487 | .1929 | .3206 | .4381 | .5845 | .7639 | .9806 | .8703 | .6690 | .5168 | .3910 | .2703 | .1245 | .0058 |
| | $c_R$ | -.0467 | -.0314 | -.0172 | .0018 | .0187 | .0395 | .0490 | .0421 | .0469 | .0428 | .0298 | .0128 | -.0083 | -.0288 | -.0308 |
| | $c_c$ | | | | | | | | | | | | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.063 | 1.058 | 1.051 | 1.046 | 1.041 | 1.036 | 1.032 | 1.027 | 1.030 | 1.035 | 1.039 | 1.043 | 1.048 | 1.055 | 1.060 |
| | .025 | .373 | .152 | -.164 | -.573 | -1.001 | -1.580 | -2.255 | -2.969 | -2.496 | -1.935 | -1.306 | -.805 | -.402 | .002 | .241 |
| | .050 | .089 | -.109 | -.370 | -.698 | -1.027 | -1.449 | -1.934 | -2.533 | -2.235 | -1.668 | -1.249 | -.874 | -.560 | -.237 | -.031 |
| | .100 | -.130 | -.282 | -.471 | -.704 | -.929 | -1.185 | -1.503 | -1.885 | -1.689 | -1.317 | -1.067 | -.822 | -.607 | -.375 | -.221 |
| | .200 | -.309 | -.412 | -.532 | -.684 | -.829 | -.969 | -1.151 | -1.378 | -1.252 | -1.037 | -.885 | -.737 | -.619 | -.470 | -.370 |
| | .300 | -.426 | -.500 | -.582 | -.691 | -.785 | -.885 | -.991 | -1.145 | -1.053 | -.916 | -.825 | -.736 | -.644 | -.542 | -.468 |
| | .400 | -.494 | -.545 | -.594 | -.671 | -.731 | -.793 | -.849 | -.942 | -.882 | -.795 | -.749 | -.702 | -.638 | -.564 | -.519 |
| | .500 | -.538 | -.567 | -.591 | -.638 | -.677 | -.698 | -.707 | -.750 | -.716 | -.678 | -.681 | -.654 | -.619 | -.575 | -.550 |
| | .600 | -.575 | -.583 | -.582 | -.606 | -.620 | -.594 | -.546 | -.527 | -.521 | -.544 | -.590 | -.598 | -.595 | -.581 | -.571 |
| | .700 | -.516 | -.508 | -.506 | -.477 | -.461 | -.370 | -.279 | -.269 | -.246 | -.297 | -.401 | -.461 | -.501 | -.509 | -.499 |
| | .800 | -.380 | -.322 | -.288 | -.257 | -.188 | -.066 | -.075 | -.187 | -.113 | -.034 | -.095 | -.212 | -.278 | -.306 | -.319 |
| | .900 | -.042 | -.034 | .009 | .071 | .086 | .014 | -.057 | -.187 | -.103 | .003 | .061 | .105 | .042 | -.031 | -.001 |
| | .950 | .163 | .158 | .157 | .143 | .096 | .014 | -.061 | -.213 | -.122 | -.005 | .061 | .132 | .139 | .136 | .182 |
| Lower surface | .0375 | -.663 | -.391 | -.070 | .202 | .410 | .641 | .842 | .983 | .931 | .772 | .556 | .336 | .092 | -.225 | -.478 |
| | .075 | -.604 | -.412 | -.170 | .041 | .212 | .417 | .619 | .790 | .723 | .547 | .341 | .153 | -.045 | -.287 | -.473 |
| | .150 | -.516 | -.388 | -.217 | -.077 | .042 | .205 | .379 | .537 | .466 | .317 | .148 | .008 | -.135 | -.303 | -.427 |
| | .250 | -.472 | -.386 | -.264 | -.156 | -.066 | .054 | .201 | .329 | .276 | .145 | .015 | -.092 | -.200 | -.325 | -.414 |
| | .350 | -.441 | -.378 | -.282 | -.205 | -.137 | -.038 | .077 | .182 | .143 | .045 | -.068 | -.150 | -.234 | -.331 | -.396 |
| | .450 | -.443 | -.402 | -.323 | -.264 | -.209 | -.134 | -.039 | .051 | .020 | -.064 | -.151 | -.223 | -.290 | -.362 | -.414 |
| | .550 | -.438 | -.410 | -.353 | -.310 | -.274 | -.218 | -.146 | -.081 | -.103 | -.160 | -.227 | -.281 | -.331 | -.381 | -.417 |
| | .650 | -.414 | -.402 | -.362 | -.343 | -.321 | -.290 | -.235 | -.193 | -.198 | -.239 | -.288 | -.319 | -.352 | -.381 | -.406 |
| | .750 | -.386 | -.388 | -.383 | -.330 | -.332 | -.322 | -.288 | -.279 | -.274 | -.281 | -.310 | -.323 | -.327 | -.328 | -.337 |
| | .850 | -.111 | -.149 | -.170 | -.211 | -.249 | -.274 | -.271 | -.289 | -.265 | -.247 | -.250 | -.223 | -.197 | -.148 | -.147 |
| | .925 | .188 | .110 | .080 | .002 | -.058 | -.106 | -.133 | -.182 | -.151 | -.097 | -.079 | -.026 | .033 | .108 | .102 |
| | .975 | .197 | .211 | .216 | .130 | .028 | -.050 | -.110 | -.198 | -.141 | -.059 | -.004 | .084 | .176 | .219 | .200 |
| | [a]1.000 | .216 | .221 | .236 | .174 | .053 | -.025 | -.115 | -.254 | -.181 | -.050 | .010 | .117 | .217 | .245 | .236 |

[a]No orifice.

[redacted]

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TABLE 2.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(17.30) PROPELLER BLADE SECTION (x = 0.45) - Continued

(b) N = 1350 rpm.

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.358 | 2.408 | 2.268 | 2.097 | 1.951 | 1.817 | 1.676 | 1.420 | 1.564 | 1.759 | 1.891 | 2.011 | 2.181 | 2.344 | 2.484 |
| | $M_x$ | .585 | .597 | .530 | .502 | .477 | .456 | .433 | .398 | .419 | .448 | .472 | .490 | .520 | .547 | .572 |
| | $\alpha_x$, | -1.77 | -.28 | 1.24 | 3.29 | 5.23 | 7.18 | 9.45 | 14.17 | 11.41 | 8.09 | 6.08 | 4.41 | 2.25 | .40 | -1.06 |
| | $\Delta\beta$ | .02 | .02 | .03 | .04 | .05 | .06 | .06 | .08 | .07 | .06 | .05 | .04 | .04 | .02 | .02 |
| | $\alpha_i$ | -.11 | .12 | .38 | .74 | 1.00 | 1.31 | 1.67 | 2.41 | 1.98 | 1.45 | 1.15 | .89 | .57 | .24 | -.01 |
| | $c_n$ | -.0481 | .0510 | .1994 | .3068 | .4142 | .5395 | .6729 | .9484 | .7948 | .5903 | .4716 | .3671 | .2368 | .0997 | -.0042 |
| | $c_m$ | -.0354 | -.0197 | -.0084 | .0055 | .0233 | .0388 | .0490 | .0470 | .0519 | .0436 | .0323 | .0154 | -.0048 | -.0152 | -.0258 |
| | $c_c$ | | | | | | | | | | | | | | | |
| | x/b | Pressure coefficient, P | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.088 | 1.079 | 1.072 | 1.064 | 1.058 | 1.053 | 1.048 | 1.041 | 1.045 | 1.052 | 1.057 | 1.062 | 1.069 | 1.077 | 1.084 |
| | .025 | .478 | .138 | -.112 | -.512 | -.920 | -1.384 | -1.950 | -2.982 | -2.490 | -1.640 | -1.149 | -.732 | -.305 | .023 | .243 |
| | .050 | .090 | -.130 | -.343 | -.667 | -.983 | -1.330 | -1.736 | -2.450 | -2.065 | -1.519 | -1.151 | -.843 | -.503 | -.230 | -.040 |
| | .100 | -.130 | -.307 | -.471 | -.699 | -.910 | -1.133 | -1.373 | -1.860 | -1.594 | -1.234 | -1.018 | -.817 | -.585 | -.384 | -.240 |
| | .200 | -.314 | -.442 | -.550 | -.694 | -.885 | -.984 | -1.094 | -1.364 | -1.205 | -1.007 | -.880 | -.772 | -.624 | -.493 | -.401 |
| | .300 | -.439 | -.536 | -.609 | -.706 | -.786 | -.866 | -.969 | -1.131 | -1.089 | -.919 | -.812 | -.768 | -.661 | -.569 | -.509 |
| | .400 | -.506 | -.577 | -.625 | -.689 | -.733 | -.786 | -.852 | -.934 | -.870 | -.816 | -.750 | -.721 | -.659 | -.594 | -.558 |
| | .500 | -.549 | -.593 | -.620 | -.655 | -.675 | -.701 | -.727 | -.737 | -.717 | -.710 | -.674 | -.676 | -.640 | -.603 | -.591 |
| | .600 | -.576 | -.597 | -.605 | -.619 | -.607 | -.593 | -.578 | -.515 | -.531 | -.587 | -.592 | -.613 | -.615 | -.598 | -.605 |
| | .700 | -.500 | -.520 | -.526 | -.476 | -.441 | -.371 | -.312 | -.270 | -.246 | -.339 | -.400 | -.464 | -.503 | -.523 | -.528 |
| | .800 | -.287 | -.291 | -.279 | -.246 | -.154 | -.058 | -.057 | -.198 | -.093 | -.048 | -.091 | -.206 | -.273 | -.287 | -.303 |
| | .900 | .033 | .026 | .036 | .064 | .083 | .030 | -.032 | -.198 | -.083 | -.001 | -.064 | .077 | .035 | .089 | .019 |
| | .950 | .208 | .175 | .154 | .132 | .094 | .030 | -.038 | -.219 | -.093 | -.001 | -.067 | .100 | .138 | .172 | .176 |
| Lower surface | .0375 | -.574 | -.342 | -.114 | .173 | .394 | .574 | .740 | .961 | .870 | .652 | .490 | .289 | .035 | -.228 | -.469 |
| | .075 | -.544 | -.381 | -.200 | .023 | .199 | .354 | .511 | .765 | .641 | .428 | .284 | .112 | -.085 | -.287 | -.475 |
| | .150 | -.479 | -.379 | -.259 | -.095 | .036 | .155 | .278 | .502 | .395 | .211 | .099 | -.029 | -.176 | -.318 | -.446 |
| | .250 | -.449 | -.385 | -.299 | -.173 | -.072 | .019 | .117 | .305 | .212 | .064 | -.023 | -.125 | -.236 | -.342 | -.436 |
| | .350 | -.424 | -.387 | -.321 | -.224 | -.122 | -.067 | .002 | .160 | .086 | -.036 | -.101 | -.186 | -.278 | -.354 | -.424 |
| | .450 | -.435 | -.418 | -.369 | -.287 | -.222 | -.160 | -.107 | .021 | -.033 | -.131 | -.183 | -.257 | -.328 | -.392 | -.446 |
| | .550 | -.435 | -.434 | -.400 | -.338 | -.288 | -.243 | -.206 | -.106 | -.149 | -.225 | -.259 | -.317 | -.374 | -.417 | -.456 |
| | .650 | -.416 | -.432 | -.416 | -.367 | -.335 | -.308 | -.287 | -.216 | -.248 | -.295 | -.316 | -.358 | -.392 | -.422 | -.444 |
| | .750 | -.327 | -.371 | -.374 | -.357 | -.346 | -.340 | -.333 | -.303 | -.305 | -.337 | -.340 | -.358 | -.365 | -.371 | -.369 |
| | .850 | -.099 | -.181 | -.211 | -.229 | -.259 | -.280 | -.299 | -.314 | -.292 | -.289 | -.264 | -.252 | -.218 | -.190 | -.163 |
| | .925 | .147 | .079 | .040 | -.008 | -.062 | -.106 | -.138 | -.198 | -.153 | -.122 | -.082 | -.050 | .021 | .063 | .092 |
| | .975 | .216 | .195 | .188 | .127 | .036 | -.035 | -.097 | -.208 | -.153 | -.066 | -.004 | .062 | .173 | .193 | .188 |
| | [a]1.000 | .240 | .225 | .220 | .165 | .075 | 0 | -.085 | -.230 | -.140 | -.060 | .025 | .100 | .200 | .210 | .210 |

[redacted]

[a]No orifice.

[redacted]

TABLE 2.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(17.30) PROPELLER BLADE SECTION (x = 0.45) - Continued

(c) N = 1500 rpm.

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.535 | 2.402 | 2.221 | 2.087 | 1.963 | 1.854 | 1.731 | 1.599 | 1.662 | 1.792 | 1.906 | 1.958 | 2.012 | 2.143 | 2.311 | 2.478 |
| | $M_r$ | .653 | .621 | .583 | .558 | .535 | .516 | .492 | .473 | .483 | .503 | .524 | .535 | .545 | .571 | .601 | .638 |
| | $\alpha_{R'}$ | -1.55 | -.22 | 1.78 | 3.41 | 5.06 | 6.63 | 8.54 | 10.78 | 9.68 | 7.57 | 5.87 | 5.13 | 4.39 | 2.71 | .75 | -.99 |
| | $\Delta\beta$ | .01 | .01 | .02 | .03 | .04 | .05 | .05 | .06 | .06 | .05 | .04 | .04 | .04 | .03 | .02 | .01 |
| | $c_l$ | -.21 | 0 | .45 | .72 | .94 | 1.25 | 1.57 | 1.92 | 1.79 | 1.41 | 1.09 | .97 | .85 | .62 | .27 | -.01 |
| | $c_n$ | -.0888 | 0 | .1903 | .3006 | .3877 | .5097 | .6361 | .7697 | .7206 | .5723 | .4458 | .4006 | .3510 | .2594 | .1139 | -.0548 |
| | $c_m$ | -.0158 | .0014 | .0013 | .0167 | .0326 | .0426 | .0483 | .0564 | .0547 | .0464 | .0383 | .0338 | .0272 | .0082 | -.0080 | -.0042 |
| | $c_c$ | | | | | | | | | | | | | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.111 | 1.100 | 1.088 | 1.080 | 1.073 | 1.068 | 1.062 | 1.057 | 1.060 | 1.065 | 1.070 | 1.073 | 1.076 | 1.084 | 1.093 | 1.106 |
| | .025 | .371 | .168 | -.176 | -.514 | -.873 | -1.295 | -1.805 | -2.692 | -2.217 | -1.530 | -1.089 | -.898 | -.722 | -.404 | .004 | .275 |
| | .050 | .076 | -.113 | -.414 | -.693 | -.975 | -1.297 | -1.675 | -2.004 | -1.899 | -1.473 | -1.146 | -.998 | -.860 | -.572 | -.257 | -.015 |
| | .100 | -.156 | -.308 | -.535 | -.732 | -.923 | -1.127 | -1.315 | -1.589 | -1.483 | -1.242 | -1.033 | -.937 | -.849 | -.649 | -.418 | -.232 |
| | .200 | -.356 | -.459 | -.611 | -.732 | -.849 | -.953 | -1.082 | -1.218 | -1.157 | -1.004 | -.912 | -.854 | -.807 | -.682 | -.532 | -.412 |
| | .300 | -.495 | -.561 | -.668 | -.746 | -.818 | -.881 | -.969 | -1.050 | -1.009 | -.925 | -.844 | -.823 | -.794 | -.716 | -.613 | -.534 |
| | .400 | -.569 | -.605 | -.677 | -.724 | -.761 | -.799 | -.849 | -.893 | -.868 | -.826 | -.777 | -.760 | -.756 | -.702 | -.635 | -.592 |
| | .500 | -.622 | -.629 | -.660 | -.681 | -.689 | -.706 | -.727 | -.736 | -.722 | -.720 | -.703 | -.688 | -.692 | -.670 | -.640 | -.632 |
| | .600 | -.646 | -.626 | -.632 | -.624 | -.613 | -.597 | -.577 | -.549 | -.553 | -.591 | -.606 | -.610 | -.616 | -.633 | -.624 | -.640 |
| | .700 | -.532 | -.499 | -.507 | -.495 | -.412 | -.358 | -.299 | -.251 | -.238 | -.334 | -.386 | -.409 | -.436 | -.467 | -.530 | -.517 |
| | .800 | -.242 | -.210 | -.260 | -.159 | -.073 | -.039 | -.049 | -.091 | -.066 | -.040 | -.053 | -.069 | -.100 | -.223 | -.268 | -.220 |
| | .900 | .082 | .099 | .042 | .053 | .066 | .028 | -.024 | -.080 | -.050 | .003 | .049 | .066 | .066 | .047 | .053 | .095 |
| | .950 | .127 | .109 | .120 | .049 | .066 | .026 | -.029 | -.091 | -.055 | -.002 | .049 | .066 | .070 | .082 | .151 | .113 |
| Lower surface | .0375 | -.625 | -.373 | -.047 | .183 | .370 | .538 | .694 | .776 | .752 | .608 | .458 | .378 | .292 | .092 | -.196 | -.512 |
| | .075 | -.614 | -.418 | -.154 | .088 | .178 | .326 | .466 | .597 | .552 | .387 | .253 | .186 | .116 | -.044 | -.268 | -.525 |
| | .150 | -.553 | -.418 | -.237 | -.100 | .016 | .131 | .244 | .353 | .317 | .181 | .073 | .023 | -.036 | -.154 | -.317 | -.497 |
| | .250 | -.527 | -.428 | -.290 | -.184 | -.093 | 0 | .089 | .174 | .148 | .037 | -.046 | -.086 | -.133 | -.225 | -.351 | -.487 |
| | .350 | -.503 | -.432 | -.324 | -.239 | -.165 | -.088 | -.014 | .053 | .036 | -.057 | -.125 | -.158 | -.199 | -.272 | -.371 | -.478 |
| | .450 | -.521 | -.466 | -.378 | -.306 | -.246 | -.181 | -.119 | -.067 | -.076 | -.156 | -.215 | -.243 | -.275 | -.335 | -.414 | -.503 |
| | .550 | -.524 | -.490 | -.423 | -.367 | -.318 | -.265 | -.217 | -.185 | -.180 | -.245 | -.291 | -.313 | -.341 | -.387 | -.449 | -.517 |
| | .650 | -.505 | -.492 | -.444 | -.404 | -.370 | -.334 | -.294 | -.275 | -.266 | -.319 | -.352 | -.366 | -.387 | -.418 | -.458 | -.510 |
| | .750 | -.411 | -.432 | -.408 | -.392 | -.381 | -.362 | -.344 | -.338 | -.326 | -.358 | -.372 | -.379 | -.390 | -.396 | -.407 | -.433 |
| | .850 | -.185 | -.248 | -.243 | -.272 | -.290 | -.297 | -.307 | -.313 | -.300 | -.305 | -.293 | -.287 | -.284 | -.253 | -.220 | -.232 |
| | .925 | .044 | -.010 | .004 | -.066 | -.191 | -.116 | -.142 | -.161 | -.146 | -.129 | -.104 | -.091 | -.083 | -.028 | .037 | .005 |
| | .975 | .126 | .099 | .150 | .028 | -.001 | -.041 | -.087 | -.140 | -.107 | -.064 | -.021 | -.001 | .006 | .098 | .166 | .102 |
| | [a]1.000 | .148 | .120 | .177 | .042 | .049 | 0 | -.051 | -.113 | -.097 | -.038 | .019 | .057 | .060 | .126 | .230 | .136 |

[a]No orifice.

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TABLE 2.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(17.30) PROPELLER BLADE SECTION (x = 0.45) - Continued

(d) N = 1600 rpm.

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.492 | 2.423 | 2.342 | 2.260 | 2.173 | 2.088 | 2.028 | 1.941 | 1.772 | 1.837 | 1.959 | 2.048 | 2.136 | 2.223 | 2.300 | 2.374 | 2.470 |
| | $M_x$ | .680 | .666 | .647 | .632 | .610 | .593 | .581 | .564 | .530 | .543 | .568 | .588 | .603 | .623 | .639 | .655 | .676 |
| | $\alpha_x'$ | -1.13 | -.44 | .42 | 1.10 | 2.35 | 3.40 | 4.18 | 5.37 | 7.88 | 6.88 | 5.12 | 3.92 | 2.80 | 1.75 | .88 | .07 | -.92 |
| | $\Delta\beta$ | .06 | .06 | .07 | .07 | .08 | .09 | .09 | .10 | .11 | .11 | .10 | .09 | .08 | .08 | .07 | .06 | .06 |
| | $\alpha_l$ | -.24 | -.10 | .07 | .22 | .44 | .66 | .80 | 1.03 | 1.50 | 1.29 | .99 | .76 | .54 | .34 | .14 | .01 | -.18 |
| | $c_n$ | -.1045 | -.0406 | .0306 | .0913 | .1845 | .2742 | .3323 | .4213 | .6071 | .5265 | .4052 | .3129 | .2258 | .1423 | .0574 | .0035 | -.0761 |
| | $c_m$ | .0048 | .0052 | .0118 | .0184 | .0244 | .0308 | .0367 | .0428 | .0516 | .0470 | .0415 | .0341 | .0285 | .0210 | .0168 | .0103 | .0017 |
| | $c_c$ | | | | | | | | | | | | | | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.121 | 1.116 | 1.109 | 1.103 | 1.096 | 1.090 | 1.087 | 1.082 | 1.072 | 1.075 | 1.083 | 1.089 | 1.094 | 1.100 | 1.106 | 1.112 | 1.120 |
| | .025 | .335 | .231 | .097 | -.029 | -.244 | -.499 | -.664 | -.955 | -1.650 | -1.350 | -.899 | -.597 | -.358 | -.140 | .020 | .150 | .302 |
| | .050 | .037 | -.059 | -.181 | -.293 | -.482 | -.696 | -.829 | -1.064 | -1.595 | -1.371 | -1.022 | -.778 | -.572 | -.394 | -.253 | -.134 | .008 |
| | .100 | -.196 | -.276 | -.370 | -.454 | -.599 | -.748 | -.841 | -.995 | -1.329 | -1.195 | -.970 | -.808 | -.663 | -.532 | -.429 | -.337 | -.219 |
| | .200 | -.398 | -.453 | -.515 | -.567 | -.666 | -.757 | -.814 | -.903 | -1.068 | -1.006 | -.891 | -.810 | -.702 | -.619 | -.555 | -.495 | -.415 |
| | .300 | -.542 | -.581 | -.615 | -.648 | -.720 | -.774 | -.810 | -.857 | -.971 | -.925 | -.855 | -.799 | -.739 | -.683 | -.644 | -.604 | -.553 |
| | .400 | -.624 | -.648 | -.658 | -.671 | -.720 | -.748 | -.770 | -.788 | -.855 | -.840 | -.785 | -.767 | -.720 | -.687 | -.671 | -.652 | -.625 |
| | .500 | -.670 | -.673 | -.664 | -.659 | -.684 | -.694 | -.697 | -.708 | -.727 | -.729 | -.706 | -.703 | -.681 | -.668 | -.672 | -.668 | -.667 |
| | .600 | -.670 | -.661 | -.640 | -.621 | -.634 | -.612 | -.611 | -.603 | -.577 | -.598 | -.609 | -.612 | -.619 | -.623 | -.638 | -.649 | -.667 |
| | .700 | -.480 | -.486 | -.470 | -.446 | -.437 | -.417 | -.398 | -.364 | -.296 | -.336 | -.372 | -.412 | -.419 | -.437 | -.463 | -.476 | -.492 |
| | .800 | -.095 | -.155 | -.161 | -.140 | -.099 | -.050 | -.024 | -.020 | -.041 | -.032 | -.021 | -.038 | -.063 | -.118 | -.150 | -.159 | -.152 |
| | .900 | .069 | .073 | .076 | .070 | .047 | .058 | .064 | .049 | -.015 | .010 | .050 | .059 | .052 | .050 | .071 | .075 | .080 |
| | .950 | .079 | .082 | .090 | .084 | .042 | .054 | .064 | .049 | -.019 | .006 | .050 | .059 | .045 | .051 | .083 | .086 | .083 |
| Lower surface | .0375 | -.557 | -.430 | -.277 | -.145 | .018 | .192 | .286 | .419 | .649 | .550 | .390 | .242 | .101 | -.056 | -.209 | -.335 | -.513 |
| | .075 | -.586 | -.480 | -.350 | -.237 | -.109 | .032 | .106 | .222 | .428 | .337 | .197 | .072 | -.038 | -.162 | -.296 | -.401 | -.544 |
| | .150 | -.544 | -.471 | -.380 | -.300 | -.209 | -.100 | -.041 | .047 | .211 | .138 | .029 | -.072 | -.155 | -.245 | -.342 | -.415 | -.520 |
| | .250 | -.531 | -.475 | -.406 | -.343 | -.276 | -.187 | -.139 | -.068 | .061 | .002 | -.085 | -.166 | -.233 | -.304 | -.379 | -.434 | -.513 |
| | .350 | -.519 | -.479 | -.422 | -.372 | -.319 | -.245 | -.204 | -.146 | -.037 | -.088 | -.158 | -.227 | -.280 | -.338 | -.402 | -.444 | -.506 |
| | .450 | -.547 | -.513 | -.468 | -.426 | -.382 | -.319 | -.285 | -.235 | -.139 | -.183 | -.245 | -.302 | -.312 | -.397 | -.452 | -.487 | -.535 |
| | .550 | -.559 | -.538 | -.502 | -.468 | -.436 | -.380 | -.354 | -.313 | -.238 | -.275 | -.323 | -.370 | -.406 | -.445 | -.492 | -.518 | -.553 |
| | .650 | -.548 | -.537 | -.514 | -.490 | -.460 | -.425 | -.404 | -.372 | -.316 | -.345 | -.378 | -.416 | -.444 | -.473 | -.512 | -.527 | -.544 |
| | .750 | -.454 | -.460 | -.455 | -.444 | -.439 | -.414 | -.404 | -.386 | -.360 | -.377 | -.390 | -.412 | -.424 | -.437 | -.458 | -.459 | -.455 |
| | .850 | -.247 | -.262 | -.274 | -.281 | -.297 | -.291 | -.294 | -.297 | -.309 | -.309 | -.295 | -.295 | -.293 | -.283 | -.287 | -.271 | -.244 |
| | .925 | -.032 | -.033 | -.040 | -.052 | -.079 | -.087 | -.089 | -.104 | -.139 | -.130 | -.102 | -.093 | -.081 | -.066 | -.062 | -.041 | -.018 |
| | .975 | .061 | .071 | .071 | .055 | .011 | .006 | .005 | -.016 | -.077 | -.054 | -.013 | 0 | .007 | .034 | .046 | .068 | .075 |
| | [a]1.000 | .084 | .084 | .097 | .086 | .022 | .040 | .032 | .017 | -.058 | -.020 | .012 | .041 | .027 | .050 | .079 | .090 | .083 |

[a]No orifice.

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TABLE 2.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(17.30) PROPELLER BLADE SECTION (x = 0.45) - Continued

(e) M = 0.56.

| | J | 1.947 | 1.965 | 1.988 | 2.021 | 2.055 | 2.083 | 2.112 | 2.142 | 2.175 | 2.200 | 2.245 | 2.279 | 2.304 | 2.338 | 2.388 | 2.416 | 2.460 | 2.504 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_r$ | .694 | .690 | .687 | .685 | .683 | .681 | .679 | .676 | .673 | .668 | .668 | .665 | .661 | .658 | .656 | .652 | .649 | .647 |
| | $\alpha_r'$ | 5.28 | 5.03 | 4.72 | 4.27 | 3.83 | 3.46 | 3.10 | 2.73 | 2.32 | 2.02 | 1.50 | 1.11 | .83 | .46 | -.07 | -.37 | -.81 | -1.25 |
| | $\Delta\beta$ | .13 | .12 | .12 | .11 | .10 | .10 | .09 | .08 | .08 | .07 | .06 | .05 | .04 | .04 | .02 | .02 | 0 | 0 |
| | $\alpha_i$ | .89 | .85 | .77 | .73 | .63 | .57 | .49 | .44 | .38 | .35 | .25 | .18 | .12 | .07 | -.02 | -.08 | -.13 | -.19 |
| | $c_n$ | .3665 | .3490 | .3200 | .3006 | .2619 | .2387 | .2032 | .1839 | .1568 | .1446 | .1041 | .0758 | .0500 | .0287 | -.0077 | -.0348 | -.0565 | -.0833 |
| | $c_m$ | .0536 | .0533 | .0519 | .0488 | .0462 | .0420 | .0410 | .0372 | .0333 | .0281 | .0251 | .0242 | .0163 | .0114 | .0079 | .0037 | -.0012 | -.0056 |
| | $c_o$ | | | | | | | | | | | | | | | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.127 | 1.125 | 1.124 | 1.123 | 1.122 | 1.121 | 1.121 | 1.120 | 1.119 | 1.117 | 1.117 | 1.115 | 1.114 | 1.113 | 1.112 | 1.111 | 1.109 | 1.109 |
| | .025 | -.614 | -.576 | -.527 | -.468 | -.401 | -.341 | -.279 | -.233 | -.167 | -.123 | -.050 | 0 | .054 | .106 | .180 | .822 | .279 | .334 |
| | .050 | -.888 | -.844 | -.789 | -.727 | -.661 | -.599 | -.539 | -.494 | -.432 | -.391 | -.322 | -.272 | -.221 | -.172 | -.105 | -.066 | -.012 | .041 |
| | .100 | -.957 | -.927 | -.886 | -.831 | -.775 | -.726 | -.673 | -.634 | -.582 | -.549 | -.490 | -.448 | -.409 | -.366 | -.312 | -.278 | -.232 | -.188 |
| | .200 | -1.000 | -.963 | -.925 | -.880 | -.845 | -.806 | -.765 | -.731 | -.688 | -.658 | -.611 | -.576 | -.548 | -.515 | -.475 | -.450 | -.415 | -.379 |
| | .300 | -1.071 | -1.046 | -1.018 | -.960 | -.919 | -.878 | -.839 | -.807 | -.772 | -.745 | -.704 | -.672 | -.647 | -.620 | -.589 | -.567 | -.539 | -.509 |
| | .400 | -1.127 | -1.061 | -.995 | -.927 | -.887 | -.855 | -.829 | -.801 | -.775 | -.761 | -.726 | -.703 | -.687 | -.665 | -.643 | -.630 | -.605 | -.585 |
| | .500 | -.742 | -.745 | -.755 | -.748 | -.754 | -.754 | -.745 | -.735 | -.722 | -.714 | -.698 | -.686 | -.681 | -.668 | -.659 | -.653 | -.638 | -.625 |
| | .600 | -.556 | -.573 | -.588 | -.590 | -.606 | -.616 | -.627 | -.626 | -.633 | -.638 | -.636 | -.633 | -.641 | -.639 | -.640 | -.643 | -.638 | -.637 |
| | .700 | -.199 | -.230 | -.257 | -.277 | -.310 | -.338 | -.356 | -.365 | -.389 | -.409 | -.421 | -.425 | -.448 | -.460 | -.468 | -.482 | -.484 | -.495 |
| | .800 | 0 | .005 | .006 | .012 | .008 | .004 | -.008 | -.012 | -.037 | -.061 | -.090 | -.087 | -.126 | -.145 | -.153 | -.169 | -.174 | -.189 |
| | .900 | -.045 | -.020 | .002 | .018 | .023 | .025 | .027 | .034 | .027 | .023 | .037 | .063 | .081 | .082 | .082 | .081 | .085 | .089 |
| | .950 | .006 | .013 | .017 | .024 | .024 | .024 | .027 | .034 | .031 | .026 | .045 | .068 | .089 | .092 | .090 | .090 | .094 | .098 |
| Lower surface | .0375 | .354 | .320 | .282 | .249 | .197 | .153 | .104 | .070 | .012 | -.027 | -.097 | -.147 | -.211 | -.266 | -.355 | -.423 | -.484 | -.573 |
| | .075 | .165 | .138 | .105 | .078 | .032 | -.004 | -.044 | -.072 | -.118 | -.151 | -.207 | -.247 | -.296 | -.341 | -.416 | -.469 | -.510 | -.575 |
| | .150 | -.003 | -.026 | -.053 | -.073 | -.107 | -.133 | -.165 | -.185 | -.219 | -.242 | -.283 | -.309 | -.345 | -.374 | -.424 | -.458 | -.484 | -.527 |
| | .250 | -.121 | -.141 | -.162 | -.175 | -.203 | -.223 | -.250 | -.264 | -.290 | -.307 | -.337 | -.358 | -.383 | -.401 | -.438 | -.463 | -.479 | -.508 |
| | .350 | -.207 | -.221 | -.240 | -.247 | -.271 | -.283 | -.305 | -.317 | -.337 | -.350 | -.375 | -.387 | -.409 | -.420 | -.448 | -.464 | -.473 | -.491 |
| | .450 | -.310 | -.319 | -.337 | -.337 | -.357 | -.367 | -.383 | -.393 | -.408 | -.419 | -.437 | -.444 | -.461 | -.466 | -.487 | -.498 | -.500 | -.513 |
| | .550 | -.407 | -.415 | -.425 | -.421 | -.435 | -.441 | -.455 | -.460 | -.469 | -.476 | -.488 | -.492 | -.502 | -.503 | -.516 | -.524 | -.518 | -.523 |
| | .650 | -.487 | -.489 | -.495 | -.486 | -.493 | -.496 | -.505 | -.506 | -.509 | -.512 | -.518 | -.517 | -.521 | -.517 | -.522 | -.524 | -.513 | -.509 |
| | .750 | -.499 | -.497 | -.497 | -.485 | -.487 | -.482 | -.484 | -.482 | -.479 | -.476 | -.474 | -.469 | -.467 | -.457 | -.452 | -.450 | -.434 | -.425 |
| | .850 | -.373 | -.370 | -.366 | -.354 | -.349 | -.341 | -.336 | -.328 | -.321 | -.313 | -.303 | -.295 | -.287 | -.274 | -.263 | -.257 | -.237 | -.222 |
| | .925 | -.151 | -.144 | -.140 | -.128 | -.122 | -.116 | -.111 | -.104 | -.096 | -.086 | -.076 | -.068 | -.055 | -.042 | -.032 | -.029 | -.012 | -.001 |
| | .975 | -.049 | -.045 | -.042 | -.032 | -.029 | -.023 | -.018 | -.009 | -.002 | .007 | .023 | .036 | .053 | .069 | .073 | .074 | .090 | .095 |
| | [a]1.000 | .065 | .052 | .023 | -.002 | .029 | .014 | .027 | .031 | .031 | .023 | .053 | .077 | .085 | .095 | .096 | .097 | .109 | .115 |

[a]No orifice.

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TABLE 2.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(17.30) PROPELLER BLADE SECTION (x = 0.45) - Continued

(f) M = 0.60.

| | J | 1.961 | 1.985 | 2.017 | 2.042 | 2.073 | 2.106 | 2.131 | 2.158 | 2.192 | 2.223 | 2.264 | 2.294 | 2.328 | 2.358 | 2.390 | 2.434 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_x$ | .740 | .737 | .734 | .728 | .727 | .725 | .722 | .719 | .716 | .715 | .713 | .711 | .708 | .703 | .701 | .699 |
| | $\alpha_x'$ | 5.09 | 4.76 | 4.32 | 3.98 | 3.60 | 3.17 | 2.87 | 2.52 | 2.11 | 1.74 | 1.27 | .94 | .56 | .24 | -.10 | -.56 |
| | $\Delta\beta$ | .11 | .10 | .09 | .09 | .08 | .07 | .06 | .05 | .04 | .03 | .02 | .01 | 0 | -.01 | -.02 | -.03 |
| | $\alpha_1$ | .77 | .74 | .66 | .60 | .49 | .42 | .36 | .30 | .23 | .18 | .09 | .06 | .01 | -.04 | -.11 | -.17 |
| | $\alpha_n$ | .3187 | .3039 | .2789 | .2497 | .2032 | .1755 | .1497 | .1232 | .0955 | .0748 | .0394 | .0258 | .0038 | -.0174 | -.0459 | -.0697 |
| | $\alpha_m$ | .0493 | .0511 | .0527 | .0511 | .0539 | .0519 | .0462 | .0424 | .0429 | .0390 | .0338 | .0213 | .0154 | .0121 | .0085 | .0057 |
| | $\alpha_o$ | .0168 | .0128 | .0096 | .0086 | .0082 | .0088 | .0089 | .0104 | .0117 | .0138 | | | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.145 | 1.144 | 1.143 | 1.141 | 1.140 | 1.139 | 1.138 | 1.137 | 1.135 | 1.135 | 1.134 | 1.133 | 1.132 | 1.131 | 1.130 | 1.129 |
| | .025 | -.375 | -.361 | -.316 | -.283 | -.228 | -.176 | -.133 | -.102 | -.041 | -.003 | .065 | .110 | .166 | .199 | .247 | .289 |
| | .050 | -.654 | -.641 | -.596 | -.559 | -.506 | -.453 | -.412 | -.379 | -.321 | -.284 | -.219 | -.176 | -.125 | -.091 | -.045 | -.004 |
| | .100 | -.771 | -.767 | -.735 | -.705 | -.661 | -.619 | -.581 | -.553 | -.505 | -.472 | -.413 | -.379 | -.335 | -.309 | -.268 | -.233 |
| | .200 | -.893 | -.904 | -.882 | -.841 | -.789 | -.748 | -.716 | -.691 | -.652 | -.623 | -.575 | -.551 | -.514 | -.492 | -.460 | -.431 |
| | .300 | -.998 | -.992 | -.960 | -.943 | -.921 | -.893 | -.862 | -.827 | -.790 | -.758 | -.709 | -.691 | -.655 | -.634 | -.603 | -.576 |
| | .400 | -1.143 | -1.148 | -1.124 | -1.108 | -1.072 | -1.028 | -.976 | -.914 | -.866 | -.823 | -.777 | -.765 | -.736 | -.715 | -.687 | -.664 |
| | .500 | -1.098 | -1.080 | -1.073 | -.954 | -.875 | -.851 | -.834 | -.810 | -.793 | -.774 | -.749 | -.754 | -.737 | -.730 | -.711 | -.699 |
| | .600 | -.462 | -.483 | -.504 | -.535 | -.544 | -.579 | -.597 | -.607 | -.623 | -.634 | -.638 | -.669 | -.674 | -.683 | -.681 | -.684 |
| | .700 | -.232 | -.221 | -.223 | -.239 | -.209 | -.241 | -.263 | -.288 | -.318 | -.341 | -.359 | -.419 | -.438 | -.457 | -.468 | -.475 |
| | .800 | -.109 | -.089 | -.063 | -.047 | -.024 | -.018 | -.013 | -.011 | -.018 | -.026 | -.027 | -.093 | -.115 | -.139 | -.144 | -.127 |
| | .900 | -.139 | -.111 | -.062 | -.036 | -.013 | 0 | .010 | -.006 | .024 | .031 | .047 | .030 | .053 | .074 | .086 | .084 |
| | .950 | -.106 | -.088 | -.052 | -.033 | -.010 | .001 | .010 | -.007 | .024 | .030 | .044 | .040 | .068 | .086 | .093 | .089 |
| Lower surface | .0375 | .279 | .250 | .212 | .178 | .132 | .082 | .043 | .014 | -.051 | -.097 | -.153 | -.222 | -.275 | -.335 | -.395 | -.457 |
| | .075 | .099 | .075 | .044 | .014 | -.024 | -.067 | -.097 | -.121 | -.177 | -.215 | -.260 | -.319 | -.363 | -.414 | -.465 | -.514 |
| | .150 | -.060 | -.081 | -.105 | -.128 | -.157 | -.191 | -.214 | -.231 | -.273 | -.299 | -.328 | -.370 | -.399 | -.435 | -.458 | -.500 |
| | .250 | -.178 | -.196 | -.215 | -.232 | -.255 | -.280 | -.298 | -.310 | -.343 | -.363 | -.382 | -.416 | -.433 | -.463 | -.484 | -.507 |
| | .350 | -.267 | -.281 | -.294 | -.308 | -.324 | -.346 | -.357 | -.367 | -.392 | -.407 | -.418 | -.445 | -.456 | -.480 | -.495 | -.508 |
| | .450 | -.380 | -.392 | -.399 | -.408 | -.423 | -.439 | -.447 | -.451 | -.472 | -.481 | -.486 | -.508 | -.514 | -.533 | -.540 | -.549 |
| | .550 | -.498 | -.506 | -.508 | -.509 | -.519 | -.530 | -.531 | -.529 | -.544 | -.546 | -.544 | -.559 | -.560 | -.570 | -.570 | -.574 |
| | .650 | -.624 | -.620 | -.611 | -.598 | -.602 | -.604 | -.597 | -.587 | -.595 | -.589 | -.578 | -.585 | -.577 | -.580 | -.573 | -.570 |
| | .750 | -.640 | -.624 | -.597 | -.580 | -.580 | -.571 | -.558 | -.544 | -.541 | -.535 | -.516 | -.514 | -.500 | -.495 | -.481 | -.473 |
| | .850 | -.443 | -.440 | -.413 | -.398 | -.396 | -.385 | -.371 | -.358 | -.352 | -.344 | -.322 | -.310 | -.286 | -.277 | -.258 | -.248 |
| | .925 | -.212 | -.202 | -.176 | -.164 | -.159 | -.148 | -.136 | -.124 | -.119 | -.112 | -.092 | -.076 | -.049 | -.039 | -.022 | -.028 |
| | .975 | -.133 | -.122 | -.094 | -.075 | -.060 | -.047 | -.035 | -.025 | -.020 | -.011 | .007 | .027 | .052 | .062 | .074 | .075 |
| | [a]1.000 | -.115 | -.097 | -.040 | -.030 | -.010 | 0 | .011 | -.010 | .023 | .018 | .033 | .050 | .070 | .090 | .090 | .090 |

[a]No orifice.

TABLE 2.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(17.30) PROPELLER BLADE SECTION (x = 0.45) - Concluded

(g) M = 0.63.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 1.973 | 1.992 | 2.056 | 2.089 | 2.109 | 2.146 | 2.161 | 2.188 | 2.213 | 2.248 | 2.275 | 2.308 | 2.336 | 2.376 |
| | $M_x$ | .780 | .774 | .765 | .762 | .756 | .756 | .748 | .745 | .740 | .741 | .736 | .733 | .730 | .727 |
| | $\alpha_x'$ | 4.92 | 4.66 | 3.81 | 3.38 | 3.13 | 2.68 | 2.49 | 2.17 | 1.87 | 1.46 | 1.16 | .79 | .48 | .05 |
| | $\Delta\beta$ | .11 | .11 | .09 | .09 | .08 | .08 | .07 | .07 | .06 | .06 | .06 | .05 | .04 | .04 |
| | $\alpha_i$ | .54 | .56 | .50 | .44 | .39 | .32 | .26 | .23 | .17 | .12 | .07 | .01 | -.05 | -.12 |
| | $c_n$ | .2200 | .2297 | .2077 | .1845 | .1626 | .1335 | .1097 | .0942 | .0729 | .0497 | .0297 | .0045 | -.0206 | -.0516 |
| | $c_m$ | .0519 | .0444 | .0354 | .0362 | .0347 | .0364 | .0362 | .0321 | .0277 | .0249 | .0226 | .0226 | .0197 | .0164 |
| | $c_c$ | .0454 | .0425 | .0321 | .0311 | .0278 | .0249 | .0234 | .0217 | .0194 | .0186 | .0181 | .0181 | .0173 | .0174 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.162 | 1.159 | 1.155 | 1.154 | 1.152 | 1.152 | 1.149 | 1.148 | 1.145 | 1.146 | 1.144 | 1.142 | 1.141 | 1.140 |
| | .025 | -.198 | -.183 | -.107 | -.082 | -.053 | -.017 | :009 | .038 | .071 | .114 | .146 | .186 | .217 | .269 |
| | .050 | -.475 | -.465 | -.387 | -.365 | -.336 | -.301 | -.274 | -.250 | -.217 | -.174 | -.144 | -.107 | -.076 | -.026 |
| | .100 | -.617 | -.613 | -.556 | -.536 | -.515 | -.485 | -.464 | -.445 | -.419 | -.383 | -.357 | -.323 | -.295 | -.254 |
| | .200 | -.793 | -.798 | -.735 | -.699 | -.665 | -.636 | -.622 | -.609 | -.588 | -.560 | -.541 | -.514 | -.489 | -.455 |
| | .300 | -.874 | -.869 | -.833 | -.822 | -.813 | -.794 | -.782 | -.773 | -.749 | -.722 | -.703 | -.677 | -.655 | -.622 |
| | .400 | -1.029 | -1.038 | -1.007 | -1.000 | -.991 | -.966 | -.938 | -.919 | -.895 | -.868 | -.843 | -.799 | -.768 | -.735 |
| | .500 | -1.031 | -1.084 | -1.108 | -1.092 | -1.072 | -1.029 | -1.003 | -.983 | -.957 | -.944 | -.919 | -.862 | -.823 | -.789 |
| | .600 | -.499 | -.544 | -.771 | -.700 | -.745 | -.730 | -.743 | -.752 | -.765 | -.758 | -.751 | -.748 | -.747 | -.747 |
| | .700 | -.314 | -.324 | -.332 | -.287 | -.292 | -.297 | -.307 | -.333 | -.370 | -.393 | -.411 | -.421 | -.434 | -.451 |
| | .800 | -.263 | -.265 | -.177 | -.175 | -.137 | -.088 | -.067 | -.076 | -.099 | -.110 | -.109 | -.106 | -.102 | -.092 |
| | .900 | -.249 | -.234 | -.116 | -.131 | -.103 | -.062 | -.043 | -.026 | .006 | .032 | .060 | .071 | .078 | .079 |
| | .950 | -.234 | -.213 | -.089 | -.101 | -.073 | -.038 | -.025 | -.007 | .031 | .053 | .070 | .077 | .081 | .082 |
| Lower surface | .0375 | .235 | .213 | .130 | .095 | .052 | .017 | -.031 | -.074 | -.115 | -.169 | -.209 | -.258 | -.310 | -.381 |
| | .075 | .059 | .042 | -.026 | -.056 | -.092 | -.124 | -.164 | -.202 | -.237 | -.283 | -.317 | -.357 | -.403 | -.468 |
| | .150 | -.086 | -.103 | -.157 | -.180 | -.213 | -.234 | -.267 | -.295 | -.322 | -.354 | -.380 | -.405 | -.437 | -.479 |
| | .250 | -.203 | -.214 | -.260 | -.279 | -.305 | -.322 | -.349 | -.374 | -.395 | -.419 | -.437 | -.454 | -.478 | -.506 |
| | .350 | -.287 | -.291 | -.333 | -.347 | -.369 | -.380 | -.403 | -.424 | -.438 | -.455 | -.466 | -.479 | -.495 | -.513 |
| | .450 | -.401 | -.406 | -.442 | -.453 | -.472 | -.480 | -.498 | -.514 | -.523 | -.537 | -.545 | -.547 | -.558 | -.567 |
| | .550 | -.528 | -.530 | -.558 | -.566 | -.581 | -.582 | -.595 | -.605 | -.607 | -.613 | -.611 | -.607 | -.607 | -.606 |
| | .650 | -.706 | -.708 | -.723 | -.721 | -.726 | -.715 | -.712 | -.707 | -.690 | -.677 | -.664 | -.645 | -.633 | -.617 |
| | .750 | -.851 | -.833 | -.758 | -.721 | -.684 | -.647 | -.622 | -.605 | -.583 | -.567 | -.553 | -.537 | -.527 | -.512 |
| | .850 | -.522 | -.488 | -.408 | -.401 | -.386 | -.369 | -.364 | -.358 | -.341 | -.332 | -.323 | -.310 | -.303 | -.291 |
| | .925 | -.273 | -.238 | -.167 | -.164 | -.146 | -.128 | -.121 | -.108 | -.086 | -.077 | -.066 | -.054 | -.051 | -.044 |
| | .975 | -.218 | -.187 | -.079 | -.079 | -.057 | -.033 | -.025 | -.007 | .027 | .037 | .048 | .060 | .061 | .065 |
| | [a]1.000 | -.210 | -.184 | -.056 | -.056 | -.030 | .006 | -.003 | .019 | .050 | .064 | .068 | .083 | .089 | .085 |

[a]No orifice.

TABLE 3.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(10.40) PROPELLER BLADE SECTION (x = 0.60)

$\left[\beta_{0.75R} = 46°;\ \beta_x = 51.4°;\ B = 2\right]$

(a) N = 1140 rpm.

| | J | 1.540 | 1.671 | 1.779 | 1.894 | 1.972 | 2.074 | 2.191 | 2.318 | 2.443 | 2.569 | 2.510 | 2.412 | 2.379 | 2.270 | 2.138 | 2.019 | 1.901 | 1.768 | 1.654 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_x$ | .401 | .421 | .433 | .444 | .457 | .468 | .484 | .500 | .515 | .536 | .528 | .512 | .508 | .494 | .476 | .461 | .449 | .433 | .418 |
| | $\alpha_x'$ | 12.15 | 9.84 | 8.06 | 6.26 | 5.11 | 3.66 | 2.11 | .52 | -.95 | -.233 | -1.69 | -.59 | -.21 | 1.11 | 2.80 | 4.43 | 6.16 | 8.23 | 10.13 |
| | $\Delta\beta$ | .19 | .16 | .14 | .13 | .11 | .10 | .08 | .05 | .02 | -.01 | .01 | .03 | .04 | .06 | .08 | .11 | .12 | .15 | .17 |
| | $\alpha_i$ | 2.50 | 2.20 | 1.91 | 1.57 | 1.37 | 1.11 | .81 | .49 | .25 | .02 | .13 | .30 | .38 | .64 | .93 | 1.24 | 1.57 | 1.94 | 2.26 |
| | $c_n$ | .9540 | .8426 | .7316 | .6065 | .5310 | .4310 | .3197 | .1916 | .0990 | .0097 | .0529 | .1174 | .1484 | .2519 | .3652 | .4839 | .6090 | .7458 | .8632 |
| | $c_m$ | .0036 | -.0121 | -.0157 | -.0192 | -.0190 | -.0269 | -.0323 | -.0387 | -.0452 | -.0558 | -.0518 | -.0437 | -.0409 | -.0329 | -.0292 | -.0228 | -.0188 | -.0162 | -.0100 |
| | $c_c$ | | | | | | | | | | | | | | | | | | | |
| | c/h | Pressure coefficient, P | | | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.041 | 1.045 | 1.048 | 1.051 | 1.053 | 1.056 | 1.062 | 1.064 | 1.068 | 1.073 | 1.071 | 1.067 | 1.066 | 1.062 | 1.058 | 1.055 | 1.052 | 1.048 | 1.045 |
| | .025 | -2.631 | -2.491 | -1.772 | -1.474 | -1.176 | -.802 | -.449 | -.105 | .139 | .365 | .268 | .089 | .015 | -.246 | -.594 | .997 | -1.476 | -1.837 | -2.662 |
| | .050 | -2.585 | -1.772 | -1.475 | -1.173 | -.980 | -.732 | -.495 | -.253 | -.070 | .105 | .027 | -.108 | -.162 | -.350 | -.594 | -.857 | -1.161 | -1.512 | -1.843 |
| | .100 | -2.059 | -1.361 | -1.182 | -.978 | -.844 | -.672 | -.513 | -.346 | -.209 | -.078 | -.138 | -.239 | -.278 | -.412 | -.575 | -.754 | -.966 | -1.192 | -1.407 |
| | .200 | -1.107 | -1.003 | -.889 | -.778 | -.701 | -.602 | -.498 | -.389 | -.297 | -.221 | -.254 | -.320 | -.344 | -.430 | -.538 | -.651 | -.769 | -.904 | -1.027 |
| | .300 | -.861 | -.836 | -.758 | -.686 | -.636 | -.561 | -.493 | -.411 | -.342 | -.286 | -.314 | -.364 | -.377 | -.440 | -.515 | -.593 | -.678 | -.773 | -.845 |
| | .400 | -.735 | -.737 | -.693 | -.642 | -.610 | -.558 | -.503 | -.450 | -.400 | -.360 | -.392 | -.418 | -.424 | -.465 | -.523 | -.582 | -.636 | -.698 | -.742 |
| | .500 | -.608 | -.642 | -.618 | -.592 | -.568 | -.537 | -.503 | -.460 | -.425 | -.405 | -.417 | -.439 | -.440 | -.470 | -.503 | -.548 | -.583 | -.623 | -.643 |
| | .600 | -.496 | -.533 | -.528 | -.518 | -.508 | -.491 | -.475 | -.445 | -.425 | -.420 | -.424 | -.434 | -.433 | -.450 | -.472 | -.493 | -.513 | -.529 | -.527 |
| | .700 | -.362 | -.395 | -.415 | -.423 | -.428 | -.428 | -.426 | -.414 | -.404 | -.416 | -.415 | -.413 | -.405 | -.410 | -.417 | -.420 | -.418 | -.416 | -.389 |
| | .800 | -.197 | -.202 | -.228 | -.252 | -.263 | -.279 | -.298 | -.300 | -.306 | -.329 | -.321 | -.311 | -.297 | -.286 | -.277 | -.264 | -.247 | -.225 | -.194 |
| | .900 | -.067 | -.028 | -.004 | -.002 | -.002 | -.016 | -.041 | -.047 | -.067 | -.093 | -.085 | -.071 | -.056 | -.038 | -.013 | .003 | .009 | -.003 | -.028 |
| | .950 | -.039 | .009 | .049 | .079 | .095 | .108 | .114 | .116 | .107 | .094 | .100 | .103 | .114 | .121 | .124 | .109 | .082 | .047 | .001 |
| Lower surface | .0375 | .853 | .777 | .660 | .504 | .388 | .285 | .031 | -.195 | -.400 | -.668 | -.546 | -.371 | -.287 | -.087 | .132 | .326 | .507 | .673 | .794 |
| | .075 | .681 | .603 | .498 | .368 | .274 | .152 | .011 | -.149 | -.292 | -.468 | -.390 | -.271 | -.212 | -.072 | .082 | .225 | .368 | .510 | .619 |
| | .150 | .480 | .413 | .327 | .226 | .155 | .065 | -.035 | -.144 | -.239 | -.399 | -.303 | -.229 | -.188 | -.087 | .018 | .120 | .227 | .335 | .424 |
| | .250 | .336 | .275 | .205 | .123 | .067 | 0 | -.077 | -.156 | -.223 | -.303 | -.268 | -.220 | -.186 | -.112 | -.032 | .042 | .127 | .213 | .286 |
| | .350 | .231 | .183 | .127 | .058 | .013 | -.038 | -.100 | -.159 | -.209 | -.268 | -.245 | -.208 | -.181 | -.127 | -.063 | -.006 | .062 | .135 | .193 |
| | .450 | .147 | .110 | .062 | .005 | -.033 | -.076 | -.125 | -.173 | -.209 | -.253 | -.234 | -.211 | -.188 | -.142 | -.092 | -.047 | .006 | .066 | .117 |
| | .550 | .059 | .022 | -.004 | -.051 | -.078 | -.111 | -.151 | -.188 | -.209 | -.242 | -.230 | -.220 | -.198 | -.163 | -.124 | -.089 | -.047 | 0 | .041 |
| | .650 | 0 | -.021 | -.047 | -.087 | -.113 | -.133 | -.167 | -.190 | -.205 | -.223 | -.219 | -.211 | -.198 | -.177 | -.140 | -.117 | -.082 | -.047 | -.019 |
| | .750 | -.067 | -.067 | -.082 | -.110 | -.124 | -.138 | -.161 | -.173 | -.170 | -.175 | -.176 | -.180 | -.169 | -.162 | -.143 | -.125 | -.106 | -.081 | -.065 |
| | .850 | -.060 | -.047 | -.051 | -.066 | -.076 | -.073 | -.077 | -.074 | -.063 | -.056 | -.058 | -.073 | -.068 | -.070 | -.066 | -.072 | -.062 | -.050 | -.048 |
| | .925 | -.032 | -.008 | -.004 | -.022 | -.022 | .011 | .021 | .035 | .052 | .065 | .058 | .040 | .043 | .032 | .024 | -.003 | -.018 | -.006 | -.012 |
| | .975 | -.025 | .012 | .021 | .031 | .047 | .065 | .096 | .116 | .139 | .148 | .140 | .129 | .128 | .111 | .082 | .061 | .038 | .017 | .005 |
| | [a]1.000 | -.022 | .045 | .076 | .094 | .135 | .135 | .197 | .177 | .213 | .190 | .184 | .183 | .208 | .179 | .180 | .137 | .099 | .060 | .010 |

[a]No orifice.

TABLE 3.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(10.40) PROPELLER BLADE SECTION (x = 0.60) - Continued

(b) N = 1350 rpm.

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.551 | 2.423 | 2.271 | 2.142 | 2.025 | 1.905 | 1.792 | 1.652 | 1.427 | 1.525 | 1.710 | 1.850 | 1.948 | 2.095 | 2.211 | 2.362 | 2.498 |
| | $M_x$ | .643 | .617 | .591 | .574 | .556 | .539 | .520 | .502 | .472 | .483 | .512 | .531 | .544 | .566 | .582 | .608 | .626 |
| | $\alpha_x'$ | -2.14 | -.72 | 1.09 | 2.75 | 4.35 | 6.10 | 7.85 | 10.17 | 14.27 | 12.43 | 9.19 | 6.94 | 5.46 | 3.38 | 1.85 | -.01 | -1.56 |
| | $\Delta\beta$ | .01 | .05 | .10 | .13 | .16 | .19 | .22 | .25 | .28 | .27 | .24 | .21 | .18 | .14 | .11 | .07 | .03 |
| | $c_l$ | -.06 | .22 | .57 | .91 | 1.86 | 1.62 | 1.99 | 2.34 | 2.77 | 2.57 | 2.24 | 1.78 | 1.49 | 1.09 | .78 | .39 | .07 |
| | $c_n$ | -.0245 | .0852 | .2242 | .3561 | .4903 | .6665 | .7671 | .8974 | 1.0471 | .9768 | .8686 | .6903 | .5787 | .4257 | .3055 | .1532 | .0282 |
| | $c_m$ | -.0511 | -.0429 | -.0320 | -.0265 | -.0188 | -.0134 | -.0023 | .0048 | -.0487 | 0 | .0018 | -.0079 | -.0147 | -.0215 | -.0294 | -.0391 | -.0464 |
| | $\alpha_c$ | | | | | | | | | | | | | | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.108 | 1.098 | 1.090 | 1.085 | 1.079 | 1.074 | 1.069 | 1.064 | 1.057 | 1.060 | 1.067 | 1.072 | 1.076 | 1.082 | 1.087 | 1.095 | 1.101 |
| | .025 | .385 | .160 | -.179 | -.562 | -1.012 | -1.602 | -2.870 | -3.200 | -1.490 | -2.513 | -3.165 | -2.161 | -1.362 | -.782 | -.381 | .005 | .293 |
| | .050 | .115 | -.071 | -.331 | -.603 | -.908 | -1.242 | -1.475 | -2.368 | -1.522 | -2.423 | -2.046 | -1.486 | -1.132 | -.758 | -.481 | -.193 | .034 |
| | .100 | -.082 | -.223 | -.414 | -.603 | -.806 | -1.044 | -1.227 | -1.574 | -1.573 | -2.119 | -1.361 | -1.194 | -.967 | -.709 | -.522 | -.317 | -.146 |
| | .200 | -.236 | -.328 | -.454 | -.576 | -.706 | -.833 | -.943 | -1.068 | -1.538 | -1.261 | -1.028 | -.987 | -.792 | -.649 | -.526 | -.391 | -.280 |
| | .300 | -.316 | -.383 | -.474 | -.562 | -.645 | -.734 | -.804 | -.882 | -1.330 | -.923 | -.864 | -.868 | -.707 | -.608 | -.526 | -.428 | -.351 |
| | .400 | -.401 | -.449 | -.513 | -.576 | -.629 | -.687 | -.727 | -.766 | -1.060 | -.749 | -.765 | -.804 | -.669 | -.604 | -.541 | -.471 | -.421 |
| | .500 | -.449 | -.476 | -.518 | -.560 | -.594 | -.627 | -.645 | -.655 | -.822 | -.613 | -.663 | -.735 | -.618 | -.582 | -.547 | -.496 | -.462 |
| | .600 | -.463 | -.471 | -.493 | -.516 | -.531 | -.545 | -.543 | -.531 | -.641 | -.482 | -.550 | -.642 | -.544 | -.528 | -.513 | -.480 | -.467 |
| | .700 | -.449 | -.442 | -.445 | -.452 | -.449 | -.439 | -.416 | -.391 | -.502 | -.357 | -.411 | -.528 | -.445 | -.453 | -.458 | -.444 | -.448 |
| | .800 | -.337 | -.319 | -.308 | -.301 | -.276 | -.248 | -.214 | -.207 | -.392 | -.234 | -.211 | -.327 | -.257 | -.291 | -.311 | -.313 | -.330 |
| | .900 | -.052 | -.040 | -.025 | -.012 | .004 | .006 | -.005 | -.035 | -.301 | -.147 | -.023 | -.093 | .009 | -.002 | -.025 | -.034 | -.052 |
| | .950 | .115 | .120 | .116 | .107 | .093 | .062 | .034 | .006 | -.264 | -.111 | .015 | -.046 | .075 | .099 | .110 | .122 | .115 |
| Lower surface | .0375 | -.754 | -.449 | -.150 | .089 | .306 | .491 | .650 | .785 | .861 | .862 | .734 | .477 | .430 | .198 | -.018 | -.294 | -.612 |
| | .075 | -.521 | -.328 | -.124 | .047 | .212 | .360 | .493 | .613 | .703 | .693 | .564 | .329 | .307 | .129 | -.033 | -.225 | -.436 |
| | .150 | -.403 | -.276 | -.130 | -.014 | .106 | .217 | .323 | .424 | .513 | .498 | .383 | .172 | .176 | .044 | -.070 | -.207 | -.348 |
| | .250 | -.350 | -.259 | -.161 | -.066 | .024 | .114 | .198 | .284 | .356 | .345 | .246 | .057 | .081 | -.024 | -.110 | -.211 | -.313 |
| | .350 | -.314 | -.245 | -.170 | -.097 | -.023 | .050 | .120 | .190 | .246 | .242 | .159 | -.015 | .020 | -.061 | -.134 | -.209 | -.287 |
| | .450 | -.301 | -.249 | -.190 | -.128 | -.068 | -.009 | .052 | .110 | .147 | .150 | .083 | -.077 | -.031 | -.101 | -.161 | -.221 | -.280 |
| | .550 | -.288 | -.250 | -.209 | -.165 | -.115 | -.067 | -.016 | .030 | .049 | .058 | .010 | -.139 | -.086 | -.141 | -.189 | -.229 | -.273 |
| | .650 | -.268 | -.245 | -.220 | -.188 | -.145 | -.105 | -.064 | -.033 | -.037 | -.019 | -.049 | -.183 | -.120 | -.164 | -.206 | -.230 | -.262 |
| | .750 | -.216 | -.207 | -.198 | -.180 | -.155 | -.131 | -.102 | -.081 | -.122 | -.086 | -.093 | -.214 | -.141 | -.170 | -.191 | -.202 | -.216 |
| | .850 | -.083 | -.090 | -.097 | -.097 | -.090 | -.084 | -.070 | -.064 | -.149 | -.093 | -.070 | -.174 | -.090 | -.099 | -.099 | -.091 | -.089 |
| | .925 | .043 | .032 | .013 | 0 | -.007 | -.034 | -.025 | -.026 | -.154 | -.075 | -.027 | -.128 | -.027 | -.006 | .007 | .026 | .038 |
| | .975 | .128 | .120 | .092 | .070 | .040 | .015 | .002 | -.001 | -.200 | -.091 | -.004 | -.091 | .020 | .048 | .086 | .116 | .134 |
| | [a]1.000 | .208 | .215 | .174 | .180 | .150 | .085 | .057 | .040 | -.231 | -.101 | .048 | -.025 | .110 | .150 | .148 | .190 | .181 |

[a]No orifice.

TABLE 3.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(10.40) PROPELLER BLADE SECTION (x = 0.60) - Continued.

(c) N = 1500 rpm.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 1.663 | 1.757 | 1.899 | 1.985 | 2.121 | 2.259 | 2.393 | 2.523 | 2.455 | 2.334 | 2.192 | 2.069 | 1.951 | 1.834 | 1.701 |
| | Mx | .561 | .575 | .597 | .612 | .634 | .660 | .684 | .709 | .696 | .672 | .646 | .625 | .604 | .587 | .564 |
| | $\alpha_x'$ | 9.98 | 8.41 | 6.19 | 4.92 | 3.03 | 1.24 | -.37 | -1.84 | -1.08 | .32 | 2.09 | 3.73 | 5.41 | 7.19 | 9.34 |
| | $\Delta\beta$ | .23 | .20 | .15 | .13 | .10 | .08 | .04 | -.01 | .02 | .06 | .09 | .12 | .14 | .17 | .22 |
| | $\alpha_1$ | 2.53 | 2.22 | 1.79 | 1.44 | 1.03 | .66 | .27 | -.06 | .10 | .40 | .81 | 1.20 | 1.56 | 1.98 | 2.37 |
| | $c_n$ | .9703 | .8561 | .6910 | .5626 | .4035 | .2584 | .1065 | -.0219 | .0384 | .1597 | .3194 | .4665 | .6084 | .7665 | .9116 |
| | $c_m$ | .0146 | .2175 | -.0054 | -.0151 | -.0248 | -.0297 | -.0396 | -.0500 | -.0449 | -.0362 | -.0277 | -.0200 | -.0108 | .0008 | .0100 |
| | $\alpha_0$ | | | | | | | | | | | | | | | |
| | x/b | Pressure coefficient, P | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.081 | 1.085 | 1.092 | 1.097 | 1.104 | 1.114 | 1.123 | 1.133 | 1.128 | 1.118 | 1.109 | 1.101 | 1.094 | 1.089 | 1.088 |
| | .025 | -3.060 | -2.810 | -2.023 | -1.208 | -.648 | -.214 | .142 | .397 | .282 | .017 | -.393 | -.827 | -1.414 | -2.366 | -2.981 |
| | .050 | -2.848 | -2.663 | -1.358 | -1.068 | -.693 | -.379 | -.099 | .120 | .021 | -.199 | -.510 | -.817 | -1.191 | -1.892 | -2.879 |
| | .100 | -1.875 | -1.294 | -1.143 | -.925 | -.688 | -.469 | -.259 | -.084 | -.167 | -.337 | -.565 | -.769 | -1.010 | -1.200 | -1.562 |
| | .200 | -1.086 | -1.009 | -.897 | -.785 | -.645 | -.507 | -.372 | -.250 | -.306 | -.421 | -.565 | -.693 | -.824 | -.954 | -1.089 |
| | .300 | -.880 | -.857 | -.780 | -.711 | -.617 | -.521 | -.430 | -.344 | -.385 | -.464 | -.562 | -.645 | -.733 | -.818 | -.868 |
| | .400 | -.759 | -.757 | -.716 | -.679 | -.618 | -.554 | -.496 | -.438 | -.466 | -.520 | -.585 | -.637 | -.688 | -.742 | -.762 |
| | .500 | -.645 | -.660 | -.646 | -.631 | -.598 | -.559 | -.529 | -.501 | -.516 | -.541 | -.578 | -.607 | -.630 | -.659 | -.656 |
| | .600 | -.511 | -.537 | -.547 | -.548 | -.538 | -.519 | -.514 | -.509 | -.511 | -.517 | -.529 | -.539 | -.542 | -.549 | -.524 |
| | .700 | -.362 | -.386 | -.421 | -.442 | -.451 | -.450 | -.463 | -.478 | -.470 | -.460 | -.453 | -.446 | -.427 | -.412 | -.375 |
| | .800 | -.176 | -.175 | -.206 | -.237 | -.265 | -.279 | -.303 | -.325 | -.316 | -.295 | -.275 | -.254 | -.218 | -.192 | -.171 |
| | .900 | -.025 | -.005 | .030 | .037 | .031 | .027 | .008 | -.010 | -.007 | .010 | .024 | .038 | .039 | .012 | -.006 |
| | .950 | .013 | .028 | .071 | .099 | .117 | .131 | .137 | .143 | .140 | .133 | .127 | .117 | .089 | .046 | .030 |
| Lower surface | .0375 | .799 | .703 | .540 | .387 | .163 | -.087 | -.408 | -.795 | -.598 | -.285 | .027 | .256 | .454 | .617 | .761 |
| | .075 | .631 | .547 | .405 | .279 | .106 | -.075 | -.300 | -.537 | -.423 | -.217 | .006 | .177 | .334 | .467 | .599 |
| | .150 | .446 | .369 | .258 | .159 | .031 | -.101 | -.259 | -.409 | -.340 | -.202 | -.039 | .084 | .202 | .306 | .417 |
| | .250 | .305 | .241 | .146 | .069 | -.033 | -.139 | -.256 | -.364 | -.312 | -.212 | -.085 | .012 | .104 | .186 | .280 |
| | .350 | .211 | .157 | .078 | .012 | -.069 | -.153 | -.246 | -.331 | -.293 | -.215 | -.116 | -.034 | .042 | .111 | .190 |
| | .450 | .130 | .080 | .016 | -.039 | -.109 | -.180 | -.256 | -.318 | -.290 | -.229 | -.148 | -.079 | -.015 | .042 | .112 |
| | .550 | .048 | .006 | -.047 | -.096 | -.153 | -.202 | -.262 | -.308 | -.290 | -.243 | -.184 | -.129 | -.071 | -.026 | .034 |
| | .650 | -.015 | -.050 | -.091 | -.136 | -.180 | -.216 | -.258 | -.287 | -.278 | -.246 | -.204 | -.161 | -.109 | -.075 | -.026 |
| | .750 | -.070 | -.093 | -.120 | -.151 | -.178 | -.196 | -.221 | -.230 | -.230 | -.217 | -.192 | -.165 | -.132 | -.111 | -.075 |
| | .850 | -.052 | -.068 | -.076 | -.085 | -.091 | -.094 | -.096 | -.085 | -.095 | -.100 | -.096 | -.086 | -.080 | -.073 | -.053 |
| | .925 | -.013 | -.021 | -.023 | -.004 | .006 | .019 | .029 | .052 | .039 | .023 | .011 | .007 | -.012 | -.028 | -.010 |
| | .975 | .007 | -.002 | .023 | .046 | .074 | .101 | .119 | .147 | .130 | .106 | .083 | .065 | .030 | .005 | .006 |
| | [a]1.000 | .018 | .007 | .070 | .120 | .150 | .172 | .193 | .229 | .207 | .192 | .175 | .143 | .101 | .061 | .040 |

[a]No orifice.

TABLE 3.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(10.40) PROPELLER BLADE SECTION (x = 0.60) - Continued

(d) N = 1600 rpm.

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 1.840 | 1.922 | 1.980 | 2.058 | 2.137 | 2.231 | 2.301 | 2.371 | 2.494 | 2.422 | 2.350 | 2.273 | 2.196 | 2.105 | 2.041 | 1.962 | 1.892 |
| | $M_R$ | .623 | .639 | .650 | .663 | .677 | .698 | .710 | .722 | .747 | .731 | .715 | .702 | .685 | .669 | .656 | .642 | .628 |
| | $\alpha_R'$ | 7.09 | 5.84 | 4.99 | 3.89 | 2.81 | 1.59 | .73 | -.12 | -1.52 | -.71 | .13 | 1.07 | 2.04 | 3.24 | 4.12 | 5.25 | 6.29 |
| | $\Delta\beta$ | .28 | .26 | .22 | .18 | .14 | .11 | .08 | .05 | 0 | .03 | .06 | .09 | .12 | .16 | .19 | .24 | .26 |
| | $c_t$ | 1.98 | 1.73 | 1.53 | 1.27 | 1.04 | .74 | .52 | .31 | 0 | .17 | .40 | .58 | .84 | 1.13 | 1.31 | 1.57 | 1.80 |
| | $c_n$ | .7658 | .6710 | .5961 | .4948 | .4077 | .2903 | .2035 | .1210 | -.0019 | .0677 | .1568 | .2303 | .3297 | .4432 | .5084 | .6090 | .6961 |
| | $c_m$ | .0016 | -.0070 | -.0121 | -.0166 | -.0228 | -.0289 | -.0352 | -.0377 | -.0585 | -.0451 | -.0366 | -.0325 | -.0238 | -.0210 | -.0175 | -.0136 | -.0069 |
| | $c_c$ | | | | | | | | | | | | | | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.100 | 1.106 | 1.110 | 1.115 | 1.120 | 1.128 | 1.133 | 1.138 | 1.148 | 1.141 | 1.135 | 1.130 | 1.123 | 1.117 | 1.112 | 1.107 | 1.102 |
| | .025 | -2.194 | -1.761 | -1.274 | -.889 | -.579 | -.252 | -.042 | .140 | .383 | .248 | .066 | -.101 | -.364 | -.704 | -.980 | -1.359 | -1.950 |
| | .050 | -1.973 | -1.521 | -1.203 | -.902 | -.664 | -.414 | -.249 | -.099 | .111 | -.007 | -.159 | -.293 | -.495 | -.755 | -.963 | -1.262 | -1.689 |
| | .100 | -1.447 | -1.151 | -1.010 | -.858 | -.696 | -.518 | -.391 | -.275 | -.101 | -.199 | -.322 | -.425 | -.576 | -.763 | -.896 | -1.052 | -1.143 |
| | .200 | -.973 | -.919 | -.850 | -.759 | -.667 | -.562 | -.479 | -.398 | -.272 | -.345 | -.429 | -.497 | -.592 | -.704 | -.778 | -.868 | -.952 |
| | .300 | -.855 | -.807 | -.762 | -.704 | -.645 | -.580 | -.525 | -.471 | -.377 | -.432 | -.490 | -.533 | -.597 | -.668 | -.714 | -.773 | -.827 |
| | .400 | -.778 | -.747 | -.723 | -.690 | -.654 | -.618 | -.582 | -.524 | -.490 | -.529 | -.562 | -.584 | -.624 | -.668 | -.697 | -.729 | -.760 |
| | .500 | -.689 | -.671 | -.662 | -.649 | -.631 | -.618 | -.602 | -.595 | -.573 | -.588 | -.594 | -.599 | -.618 | -.639 | -.651 | -.665 | -.682 |
| | .600 | -.570 | -.561 | -.563 | -.566 | -.558 | -.564 | -.559 | -.565 | -.581 | -.571 | -.559 | -.554 | -.556 | -.563 | -.567 | -.563 | -.568 |
| | .700 | -.421 | -.425 | -.438 | -.453 | -.456 | -.471 | -.476 | -.487 | -.514 | -.500 | -.480 | -.470 | -.464 | -.459 | -.454 | -.435 | -.429 |
| | .800 | -.186 | -.194 | -.215 | -.240 | -.251 | -.271 | -.281 | -.293 | -.317 | -.306 | -.287 | -.277 | -.264 | -.250 | -.237 | -.208 | -.197 |
| | .900 | .009 | .035 | .043 | .046 | .047 | .037 | .036 | .035 | .022 | .023 | .033 | .039 | .042 | .049 | .043 | .043 | .026 |
| | .950 | .045 | .072 | .088 | .104 | .120 | .123 | .129 | .135 | .144 | .142 | .135 | .132 | .122 | .116 | .100 | .082 | .058 |
| Lower surface | .0375 | .584 | .502 | .406 | .270 | .137 | -.064 | -.225 | -.411 | -.842 | -.558 | -.327 | -.168 | .015 | .198 | .307 | .437 | .528 |
| | .075 | .442 | .376 | .298 | .189 | .090 | -.063 | -.176 | -.305 | -.564 | -.400 | -.246 | -.135 | -.004 | .133 | .218 | .320 | .395 |
| | .150 | .286 | .234 | .173 | .093 | .020 | -.094 | -.176 | -.272 | -.424 | -.330 | -.228 | -.143 | -.049 | .052 | .113 | .192 | .249 |
| | .250 | .171 | .131 | .084 | .014 | -.048 | -.138 | -.199 | -.266 | -.384 | -.314 | -.234 | -.174 | -.101 | -.016 | .031 | .094 | .141 |
| | .350 | .094 | .063 | .020 | -.036 | -.085 | -.160 | -.209 | -.263 | -.354 | -.297 | -.237 | -.188 | -.131 | -.059 | -.021 | .033 | .070 |
| | .450 | .028 | .002 | -.036 | -.083 | -.124 | -.189 | -.228 | -.272 | -.344 | -.300 | -.249 | -.209 | -.163 | -.103 | -.070 | -.025 | .006 |
| | .550 | -.041 | -.061 | -.093 | -.135 | -.165 | -.218 | -.251 | -.286 | -.338 | -.306 | -.269 | -.235 | -.197 | -.152 | -.124 | -.084 | -.058 |
| | .650 | -.092 | -.109 | -.138 | -.172 | -.190 | -.234 | -.258 | -.283 | -.316 | -.296 | -.269 | -.245 | -.218 | -.182 | -.163 | -.126 | -.106 |
| | .750 | -.126 | -.137 | -.155 | -.177 | -.187 | -.217 | -.229 | -.241 | -.250 | -.245 | -.235 | -.220 | -.206 | -.182 | -.170 | -.149 | -.136 |
| | .850 | -.087 | -.084 | -.068 | -.095 | -.096 | -.110 | -.109 | -.109 | -.096 | -.103 | -.107 | -.103 | -.103 | -.093 | -.094 | -.089 | -.090 |
| | .925 | -.037 | -.015 | -.010 | .004 | .006 | .006 | .015 | .023 | .044 | .031 | .021 | .018 | .007 | .006 | -.005 | -.011 | -.025 |
| | .975 | -.003 | .020 | .038 | .058 | .079 | .088 | .101 | .111 | .134 | .119 | .105 | .099 | .081 | .066 | .049 | .023 | -.001 |
| | [a]1.000 | .053 | .091 | .096 | .124 | .176 | .211 | .201 | .191 | .207 | .189 | .181 | .201 | .173 | .171 | .127 | .090 | .082 |

[a]No orifice.

TABLE 3.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(10.40) PROPELLER BLADE SECTION (x = 0.60) - Continued

(c) M = 0.56.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | .1.972 | 1.986 | 2.022 | 2.053 | 2.091 | 2.125 | 2.165 | 2.205 | 2.241 | 2.284 | 2.326 | 2.371 | 2.410 | 2.476 | 2.517 |
| | $M_x$ | .784 | .775 | .770 | .762 | .757 | .751 | .745 | .742 | .736 | .730 | .725 | .722 | .715 | .714 | .703 |
| | $\alpha_i'$ | 5.11 | 4.91 | 4.39 | 3.96 | 3.43 | 2.98 | 2.45 | 1.93 | 1.47 | .93 | .42 | .11 | -.57 | -1.32 | -1.77 |
| | $\Delta\beta$ | .26 | .25 | .24 | .22 | .20 | .18 | .17 | .14 | .13 | .11 | .09 | .07 | .05 | .02 | 0 |
| | $\alpha_l$ | 1.50 | 1.44 | 1.33 | 1.23 | 1.09 | 1.02 | .90 | .79 | .68 | .53 | .44 | .33 | .22 | .09 | -.03 |
| | $c_n$ | .5839 | .5613 | .5174 | .4774 | .4252 | .4000 | .3503 | .3077 | .2665 | .2090 | .1729 | .1297 | .0852 | .0355 | -.0129 |
| | $c_m$ | -.0346 | -.0295 | -.0234 | -.0202 | -.0206 | -.0231 | -.0236 | -.0254 | -.0285 | -.0356 | -.0380 | -.0401 | -.0442 | -.0500 | -.0506 |
| | $c_c$ | .0014 | -.0018 | | | | | | | | | | | | | |
| | x/b | Pressure coefficient, P | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.163 | 1.160 | 1.158 | 1.154 | 1.152 | 1.150 | 1.147 | 1.146 | 1.143 | 1.141 | 1.139 | 1.138 | 1.135 | 1.135 | 1.131 |
| | .025 | -.751 | -.742 | -.708 | -.659 | -.567 | -.503 | -.425 | -.343 | -.258 | -.170 | -.088 | -.013 | .072 | .178 | .246 |
| | .050 | -.920 | -.916 | -.882 | -.825 | -.729 | -.669 | -.601 | -.528 | -.457 | -.384 | -.314 | -.250 | -.177 | -.085 | -.024 |
| | .100 | -.935 | -.886 | -.850 | -.840 | -.810 | -.773 | -.718 | -.660 | -.597 | -.534 | -.477 | -.423 | -.363 | -.283 | -.232 |
| | .200 | -1.026 | -1.027 | -1.011 | --.983 | -.881 | -.829 | -.782 | -.734 | -.685 | -.633 | -.587 | -.545 | -.499 | -.435 | -.401 |
| | .300 | -1.054 | -1.051 | -.995 | -.917 | -.885 | -.858 | -.814 | -.775 | -.734 | -.688 | -.651 | -.615 | -.578 | -.524 | -.491 |
| | .400 | -1.069 | -1.052 | -1.009 | -.973 | -.963 | -.942 | -.888 | -.842 | -.808 | -.763 | -.728 | -.694 | -.664 | -.615 | -.589 |
| | .500 | -1.154 | -1.147 | -1.120 | -1.099 | -1.051 | -.976 | -.918 | -.880 | -.838 | -.795 | -.764 | -.736 | -.710 | -.671 | -.649 |
| | .600 | --.975 | -1.158 | -.975 | -.870 | -.803 | -.778 | -.766 | -.760 | -.750 | -.730 | -.720 | -.707 | -.697 | -.671 | -.658 |
| | .700 | -.523 | -.499 | -.508 | -.527 | -.564 | -.580 | -.595 | -.609 | -.623 | -.622 | -.629 | -.630 | -.638 | -.632 | -.629 |
| | .800 | -.350 | -.282 | -.273 | -.291 | -.315 | -.332 | -.352 | -.373 | -.394 | -.404 | -.426 | -.440 | -.458 | -.465 | -.478 |
| | .900 | -.200 | -.140 | -.109 | -.080 | -.079 | -.073 | -.075 | -.080 | -.087 | -.090 | -.104 | -.117 | -.135 | -.144 | -.164 |
| | .950 | -.167 | -.107 | -.080 | -.049 | -.041 | -.030 | -.024 | -.020 | -.016 | -.010 | -.012 | -.010 | -.008 | .001 | -.007 |
| Lower surface | .0375 | .187 | .143 | .104 | .062 | -.012 | -.056 | -.123 | -.193 | -.277 | -.354 | -.451 | -.541 | -.661 | -.795 | -.944 |
| | .075 | .109 | .069 | .035 | .003 | -.055 | -.091 | -.142 | -.193 | -.257 | -.310 | -.379 | -.440 | -.520 | -.601 | -.698 |
| | .150 | 0 | -.033 | -.059 | -.083 | -.128 | -.153 | -.190 | -.229 | -.274 | -.311 | -.364 | -.406 | -.457 | -.501 | -.557 |
| | .250 | -.094 | -.123 | -.142 | -.163 | -.202 | -.220 | -.250 | -.281 | -.315 | -.340 | -.376 | -.405 | -.441 | -.470 | -.509 |
| | .350 | -.159 | -.184 | -.200 | -.215 | -.247 | -.260 | -.283 | -.308 | -.334 | -.352 | -.380 | -.401 | -.427 | -.445 | -.476 |
| | .450 | -.229 | -.249 | -.261 | -.272 | -.298 | -.307 | -.324 | -.343 | -.364 | -.376 | -.396 | -.412 | -.430 | -.439 | -.460 |
| | .550 | -.307 | -.323 | -.329 | -.333 | -.352 | -.358 | -.368 | -.383 | -.397 | -.402 | -.416 | -.424 | -.436 | -.436 | -.452 |
| | .650 | -.372 | -.381 | -.379 | -.376 | -.389 | -.389 | -.395 | -.403 | -.410 | -.411 | -.419 | -.423 | -.427 | -.419 | -.430 |
| | .750 | -.397 | -.397 | -.389 | -.381 | -.385 | -.381 | -.382 | -.385 | -.386 | -.381 | -.383 | -.383 | -.382 | -.367 | -.373 |
| | .850 | -.302 | -.296 | -.286 | -.275 | -.275 | -.269 | -.267 | -.265 | -.263 | -.255 | -.255 | -.250 | -.247 | -.228 | -.230 |
| | .925 | -.204 | -.192 | -.180 | -.165 | -.162 | -.153 | -.148 | -.143 | -.138 | -.127 | -.126 | -.122 | -.115 | -.096 | -.096 |
| | .975 | -.163 | -.143 | -.126 | -.101 | -.094 | -.081 | -.072 | -.065 | -.057 | -.044 | -.043 | -.039 | -.031 | -.011 | -.010 |
| | [a]1.000 | -.152 | -.077 | -.070 | -.021 | -.029 | -.007 | .003 | .026 | .025 | .043 | .016 | .021 | .047 | .073 | .049 |

[a]No orifice.

TABLE 3.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(10.40) PROPELLER BLADE SECTION (x = 0.60) - Continued

(f) M = 0.60.

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.465 | 2.439 | 2.406 | 2.366 | 2.333 | 2.302 | 2.274 | 2.234 | 2.204 | 2.168 | 2.142 | 2.116 | 2.092 | 2.062 | 2.050 | 2.010 | 1.998 | 1.965 |
| | $M_x$ | .759 | .765 | .768 | .771 | .778 | .782 | .786 | .789 | .792 | .795 | .802 | .806 | .810 | .814 | .823 | .824 | .833 | .834 |
| | $\alpha_r$ | -1.20 | -.90 | -.52 | -.06 | .34 | .71 | 1.05 | 1.55 | 1.94 | 2.40 | 2.75 | 3.09 | 3.42 | 3.83 | 4.00 | 4.56 | 4.73 | 5.21 |
| | $\Delta\beta$ | -.01 | .01 | .04 | .06 | .09 | .11 | .12 | .14 | .16 | .17 | .17 | .18 | .18 | .19 | .20 | .20 | .20 | .21 |
| | $\sigma_1$ | 0 | .03 | .07 | .21 | .25 | .32 | .39 | .52 | .56 | .64 | .72 | .80 | .87 | .93 | .96 | 1.04 | 1.03 | 1.07 |
| | $\sigma_n$ | .0006 | .0129 | .0290 | .0816 | .0987 | .1277 | .1516 | .2058 | .2213 | .2516 | .2813 | .3142 | .3381 | .3608 | .3735 | .4045 | .4000 | .4129 |
| | $\sigma_m$ | -.0502 | -.0481 | -.0424 | -.0420 | -.0338 | -.0324 | -.0282 | -.0267 | -.0218 | -.0200 | -.0200 | -.0198 | -.0218 | -.0210 | -.0216 | -.0216 | -.0100 | -.0064 |
| | $c_c$ | | | | | .0135 | .0129 | .0128 | .0116 | .0110 | .0121 | .0155 | .0187 | .0213 | .0233 | .0256 | .0280 | .0306 | .0323 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.174 | 1.177 | 1.180 | 1.181 | 1.185 | 1.187 | 1.190 | 1.192 | 1.194 | 1.195 | 1.200 | 1.202 | 1.205 | 1.208 | 1.213 | 1.215 | 1.220 | 1.221 |
| | .025 | .361 | .331 | .300 | .230 | .182 | .143 | .095 | .005 | -.036 | -.092 | -.128 | -.175 | -.209 | -.248 | -.271 | -.325 | -.351 | -.374 |
| | .050 | .092 | .067 | .040 | -.023 | -.062 | -.096 | -.137 | -.214 | -.247 | -.296 | -.326 | -.369 | -.400 | -.438 | -.462 | -.519 | -.541 | -.561 |
| | .100 | -.115 | -.139 | -.161 | -.213 | -.249 | -.276 | -.309 | -.375 | -.404 | -.446 | -.468 | -.493 | -.507 | -.518 | -.516 | -.533 | -.535 | -.565 |
| | .200 | -.281 | -.302 | -.318 | -.359 | -.388 | -.410 | -.436 | -.492 | -.520 | -.549 | -.555 | -.609 | -.650 | -.672 | -.681 | -.713 | -.720 | -.728 |
| | .300 | -.382 | -.403 | -.415 | -.450 | -.473 | -.492 | -.512 | -.554 | -.581 | -.612 | -.622 | -.642 | -.650 | -.672 | -.696 | -.745 | -.760 | -.769 |
| | .400 | -.509 | -.530 | -.543 | -.572 | -.588 | -.604 | -.639 | -.677 | -.687 | -.707 | -.715 | -.725 | -.737 | -.754 | -.756 | -.782 | -.795 | -.810 |
| | .500 | -.605 | -.630 | -.639 | -.674 | -.711 | -.725 | -.729 | -.764 | -.794 | -.826 | -.843 | -.859 | -.865 | -.872 | -.873 | -.894 | -.898 | -.904 |
| | .600 | -.618 | -.657 | -.678 | -.707 | -.742 | -.783 | -.834 | -.857 | -.886 | -.921 | -.941 | -.964 | -.974 | -.974 | -.958 | -.958 | -.818 | -.783 |
| | .700 | -.516 | -.521 | -.485 | -.493 | -.487 | -.469 | -.455 | -.442 | -.392 | -.385 | -.398 | -.372 | -.360 | -.357 | -.358 | -.376 | -.377 | -.384 |
| | .800 | -.297 | -.289 | -.271 | -.246 | -.232 | -.217 | -.200 | -.181 | -.170 | -.174 | -.195 | -.222 | -.254 | -.278 | -.298 | -.335 | -.344 | -.358 |
| | .900 | .029 | .030 | .037 | .048 | .045 | .046 | .042 | .034 | .025 | -.008 | -.060 | -.126 | -.176 | -.212 | -.245 | -.293 | -.318 | -.337 |
| | .950 | .132 | .123 | .122 | .118 | .109 | .106 | .093 | .080 | .066 | .027 | -.032 | -.099 | -.157 | -.195 | -.230 | -.281 | -.311 | -.336 |
| Lower surface | .0375 | -.789 | -.740 | -.652 | -.506 | -.432 | -.358 | -.290 | -.177 | -.129 | -.070 | -.028 | .030 | .064 | .104 | .135 | .181 | .212 | .255 |
| | .075 | -.589 | -.505 | -.454 | -.369 | -.324 | -.272 | -.226 | -.145 | -.109 | -.067 | -.034 | .012 | .038 | .068 | .093 | .128 | .155 | .189 |
| | .150 | -.399 | -.391 | -.364 | -.314 | -.287 | -.250 | -.217 | -.157 | -.132 | -.102 | -.077 | -.043 | -.024 | -.002 | .017 | .044 | .064 | .094 |
| | .250 | -.370 | -.369 | -.351 | -.313 | -.296 | -.269 | -.245 | -.202 | -.183 | -.159 | -.140 | -.112 | -.096 | -.079 | -.064 | -.043 | -.024 | 0 |
| | .350 | -.347 | -.351 | -.338 | -.312 | -.302 | -.280 | -.264 | -.230 | -.216 | -.201 | -.187 | -.161 | -.150 | -.136 | -.122 | -.106 | -.092 | -.071 |
| | .450 | -.341 | -.350 | -.343 | -.326 | -.322 | -.307 | -.295 | -.270 | -.262 | -.250 | -.241 | -.221 | -.212 | -.201 | -.192 | -.179 | -.169 | -.149 |
| | .550 | -.340 | -.354 | -.354 | -.346 | -.350 | -.341 | -.337 | -.321 | -.321 | -.317 | -.314 | -.303 | -.297 | -.291 | -.285 | -.276 | -.270 | -.254 |
| | .650 | -.319 | -.336 | -.340 | -.341 | -.353 | -.348 | -.352 | -.347 | -.357 | -.367 | -.373 | -.375 | -.377 | -.378 | -.378 | -.376 | -.377 | -.365 |
| | .750 | -.255 | -.271 | -.278 | -.287 | -.301 | -.301 | -.310 | -.318 | -.333 | -.354 | -.376 | -.403 | -.420 | -.442 | -.464 | -.482 | -.506 | -.502 |
| | .850 | -.102 | -.117 | -.122 | -.134 | -.149 | -.149 | -.160 | -.171 | -.185 | -.207 | -.232 | -.263 | -.287 | -.310 | -.335 | -.373 | -.465 | -.523 |
| | .925 | .033 | .023 | .017 | .004 | -.010 | -.010 | -.022 | -.035 | -.048 | -.073 | -.105 | -.143 | -.176 | -.200 | -.224 | -.263 | -.318 | -.363 |
| | .975 | .113 | .105 | .104 | .091 | .078 | .078 | .065 | .050 | .036 | .002 | -.039 | -.098 | -.140 | -.174 | -.209 | -.259 | -.311 | -.351 |
| | [a]1.000 | .185 | .162 | .140 | .190 | .122 | .130 | .113 | .090 | .087 | .040 | -.010 | -.080 | -.140 | -.180 | -.220 | -.275 | -.315 | -.350 |

[a]No orifice

[redacted]

NACA

TABLE 3.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(10.40) PROPELLER BLADE SECTION (x = 0.60) - Concluded

(g) M = 0.63.

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 1.981 | 1.998 | 2.033 | 2.053 | 2.079 | 2.107 | 2.132 | 2.157 | 2.188 | 2.210 | 2.242 | 2.272 | 2.306 | 2.332 | 2.362 | 2.391 |
| | $M_x$ | .875 | .872 | .866 | .858 | .853 | .849 | .842 | .838 | .833 | .826 | .822 | .817 | .816 | .809 | .802 | .799 |
| | $\alpha_x'$ | 4.98 | 4.73 | 4.24 | 3.96 | 3.60 | 3.22 | 2.88 | 2.55 | 2.15 | 1.86 | 1.45 | 1.08 | .66 | .35 | -.01 | -.35 |
| | $\Delta\beta$ | .17 | .16 | .14 | .12 | .11 | .10 | .08 | .07 | .06 | .05 | .05 | .04 | .03 | .03 | .03 | .02 |
| | $c_t$ | .80 | .73 | .71 | .64 | .60 | .53 | .49 | .45 | .39 | .35 | .32 | .30 | .26 | .23 | .17 | .10 |
| | $c_n$ | .3084 | .2826 | .2742 | .2503 | .2323 | .2052 | .1916 | .1755 | .1542 | .1387 | .1258 | .1187 | .1013 | .0884 | .0658 | .0406 |
| | $c_m$ | .0052 | .0082 | .0098 | .0103 | .0085 | .0057 | .0010 | -.0020 | -.0064 | -.0092 | -.0151 | -.0233 | -.0297 | -.0364 | -.0421 | -.0475 |
| | $c_c$ | .0435 | .0419 | .0416 | .0400 | .0379 | .0356 | .0330 | .0308 | .0280 | .0262 | .0253 | .0241 | .0217 | .0203 | .0183 | .0179 |
| | c/b | Pressure coefficients, P | | | | | | | | | | | | | | | |
| Upper Surface | [a]0.000 | 1.206 | 1.204 | 1.201 | 1.197 | 1.195 | 1.193 | 1.189 | 1.188 | 1.185 | 1.183 | 1.181 | 1.178 | 1.178 | 1.174 | 1.171 | 1.170 |
| | .025 | -.192 | -.162 | -.136 | -.109 | -.083 | -.044 | -.026 | .012 | .052 | .088 | .131 | .166 | .216 | .250 | .296 | .336 |
| | .050 | -.393 | -.366 | -.337 | -.309 | -.287 | -.250 | -.236 | -.205 | -.171 | -.140 | -.102 | -.073 | -.030 | -.005 | .036 | .071 |
| | .100 | -.420 | -.416 | -.411 | -.409 | -.409 | -.392 | -.389 | -.368 | -.341 | -.316 | -.285 | -.260 | -.224 | -.202 | -.167 | -.135 |
| | .200 | -.598 | -.586 | -.575 | -.568 | -.562 | -.534 | -.519 | -.480 | -.456 | -.444 | -.419 | -.396 | -.366 | -.350 | -.323 | -.298 |
| | .300 | -.645 | -.629 | -.611 | -.594 | -.578 | -.557 | -.560 | -.550 | -.530 | -.518 | -.497 | -.478 | -.454 | -.441 | -.419 | -.398 |
| | .400 | -.690 | -.676 | -.669 | -.665 | -.666 | -.651 | -.650 | -.644 | -.604 | -.620 | -.609 | -.602 | -.590 | -.581 | -.548 | -.526 |
| | .500 | -.785 | -.781 | -.781 | -.783 | -.783 | -.772 | -.776 | -.772 | -.756 | -.743 | -.726 | -.715 | -.686 | -.672 | -.668 | -.661 |
| | .600 | -.893 | -.894 | -.896 | -.902 | -.901 | -.888 | -.890 | -.882 | -.863 | -.852 | -.840 | -.827 | -.809 | -.809 | -.790 | -.762 |
| | .700 | -.408 | -.375 | -.381 | -.365 | -.347 | -.325 | -.315 | -.312 | -.315 | -.354 | -.432 | -.590 | -.727 | -.828 | -.751 | -.750 |
| | .800 | -.362 | -.335 | -.337 | -.322 | -.305 | -.280 | -.265 | -.246 | -.226 | -.217 | -.214 | -.202 | -.173 | -.181 | -.222 | -.247 |
| | .900 | -.335 | -.319 | -.317 | -.301 | -.278 | -.250 | -.231 | -.204 | -.167 | -.136 | -.107 | -.071 | -.010 | .029 | .041 | .039 |
| | .950 | -.335 | -.312 | -.308 | -.267 | -.267 | -.237 | -.214 | -.183 | -.142 | -.108 | -.069 | -.026 | .037 | .081 | .118 | .135 |
| Lower Surface | .0375 | .200 | .166 | .141 | .100 | .050 | .003 | -.029 | -.083 | -.129 | -.186 | -.248 | -.314 | -.391 | -.476 | -.575 | -.673 |
| | .075 | .153 | .126 | .108 | .073 | .031 | -.005 | -.032 | -.072 | -.108 | -.149 | -.194 | -.241 | -.294 | -.350 | -.408 | -.482 |
| | .150 | .070 | .049 | .036 | .009 | -.026 | -.053 | -.074 | -.106 | -.131 | -.162 | -.195 | -.229 | -.266 | -.306 | -.338 | -.371 |
| | .250 | -.013 | -.030 | -.041 | -.066 | -.098 | -.121 | -.141 | -.169 | -.188 | -.212 | -.235 | -.261 | -.289 | -.319 | -.343 | -.369 |
| | .350 | -.077 | -.090 | -.099 | -.123 | -.153 | -.173 | -.189 | -.211 | -.227 | -.248 | -.265 | -.286 | -.308 | -.333 | -.349 | -.366 |
| | .450 | -.146 | -.158 | -.167 | -.191 | -.217 | -.235 | -.250 | -.270 | -.280 | -.296 | -.312 | -.329 | -.343 | -.365 | -.372 | -.381 |
| | .550 | -.252 | -.263 | -.271 | -.295 | -.319 | -.334 | -.324 | -.364 | -.371 | -.385 | -.395 | -.406 | -.413 | -.423 | -.416 | -.416 |
| | .650 | -.360 | -.371 | -.379 | -.402 | -.425 | -.438 | -.449 | -.462 | -.463 | -.468 | -.469 | -.468 | -.457 | -.449 | -.419 | -.403 |
| | .750 | -.496 | -.505 | -.516 | -.537 | -.558 | -.567 | -.572 | -.576 | -.553 | -.520 | -.481 | -.443 | -.400 | -.372 | -.338 | -.315 |
| | .850 | -.592 | -.600 | -.606 | -.626 | -.631 | -.595 | -.501 | -.389 | -.314 | -.277 | -.252 | -.229 | -.198 | -.177 | -.145 | -.123 |
| | .925 | -.599 | -.591 | -.574 | -.525 | -.388 | -.293 | -.247 | -.213 | -.176 | -.149 | -.121 | -.092 | -.053 | -.024 | .016 | .038 |
| | .975 | -.518 | -.458 | -.405 | -.340 | -.294 | -.256 | -.229 | -.195 | -.149 | -.111 | -.075 | -.030 | .023 | .062 | .110 | .133 |
| | [a]1.000 | -.349 | -.320 | -.276 | -.228 | -.274 | -.232 | -.214 | -.188 | -.137 | -.097 | -.042 | .002 | .058 | .121 | .165 | .185 |

[a]No orifice.

TABLE 4.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(09.00) PROPELLER BLADE SECTION (x = 0.70)

$\left[\beta_{0.75R} = 45°;\ \beta_x = 47.0°;\ B = 2\right]$

(a) N = 1140 rpm.

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 1.373 | 1.520 | 1.658 | 1.812 | 1.973 | 2.127 | 2.277 | 2.423 | 2.573 | 2.495 | 2.362 | 2.210 | 2.057 | 1.908 | 1.750 | 1.605 | 1.447 |
| | $M_x$ | .449 | .466 | .480 | .500 | .517 | .534 | .553 | .573 | .589 | .581 | .564 | .543 | .527 | .508 | .490 | .473 | .455 |
| | $\alpha_x'$ | 15.02 | 12.35 | 9.99 | 7.51 | 5.10 | 2.95 | 1.00 | -.77 | -2.26 | -1.61 | -.05 | 1.86 | 3.91 | 6.06 | 8.49 | 10.88 | 13.66 |
| | $\Delta\beta$ | .35 | .32 | .28 | .23 | .18 | .14 | .08 | .03 | -.02 | .01 | .05 | .11 | .16 | .21 | .25 | .30 | .34 |
| | $\alpha_l$ | 3.19 | 2.68 | 2.51 | 2.04 | 1.54 | 1.11 | .71 | .32 | .04 | .15 | .48 | .88 | 1.31 | 1.74 | 2.25 | 2.56 | 2.83 |
| | $c_n$ | 1.1097 | .9335 | .8852 | .7252 | .5497 | .4000 | .2548 | .1174 | .0139 | .0555 | .1732 | .3181 | .4723 | .6187 | .7987 | .8994 | .9864 |
| | $c_m$ | -.0790 | -.0134 | -.0082 | -.0256 | -.0320 | -.0374 | -.0437 | -.0483 | -.0499 | -.0516 | -.0469 | -.0397 | -.0329 | -.0293 | -.0182 | -.0052 | -.0406 |
| | $\alpha_0$ | | | | | | | | | | | | | | | | | |
| | x/b | Pressure coefficient, P | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.052 | 1.056 | 1.059 | 1.064 | 1.068 | 1.073 | 1.078 | 1.084 | 1.089 | 1.087 | 1.082 | 1.075 | 1.071 | 1.066 | 1.061 | 1.057 | 1.053 |
| | .025 | -1.611 | -2.114 | -2.650 | -1.904 | -1.316 | -.714 | -.237 | .135 | .391 | .285 | -.002 | -.447 | -1.002 | -1.634 | -2.735 | -2.250 | -1.926 |
| | .050 | -1.567 | -2.022 | -2.391 | -1.453 | -1.050 | -.662 | -.345 | -.078 | .124 | .038 | -.181 | -.489 | -.846 | -1.223 | -1.737 | -2.110 | -1.862 |
| | .100 | -1.475 | -1.858 | -1.630 | -1.119 | -.862 | -.618 | -.407 | -.218 | -.062 | -.128 | -.288 | -.504 | -.736 | -.982 | -1.192 | -1.874 | -1.677 |
| | .200 | -1.368 | -1.345 | -.972 | -.841 | -.688 | -.536 | -.409 | -.289 | -.186 | -.231 | -.347 | -.479 | -.614 | -.762 | -.897 | -1.220 | -1.330 |
| | .300 | -1.241 | -.957 | -.775 | -.721 | -.610 | -.502 | -.411 | -.326 | -.247 | -.280 | -.355 | -.451 | -.558 | -.663 | -.746 | -.834 | -1.063 |
| | .400 | -1.079 | -.708 | -.658 | -.632 | -.560 | -.484 | -.417 | -.357 | -.294 | -.320 | -.377 | -.447 | -.527 | -.604 | -.651 | -.635 | -.842 |
| | .500 | -.906 | -.552 | -.578 | -.585 | -.546 | -.493 | -.452 | -.407 | -.361 | -.382 | -.423 | -.470 | -.522 | -.576 | -.591 | -.521 | -.679 |
| | .600 | -.750 | -.432 | -.479 | -.510 | -.491 | -.460 | -.435 | -.409 | -.376 | -.391 | -.415 | -.447 | -.478 | -.514 | -.501 | -.421 | -.550 |
| | .700 | -.600 | -.333 | -.365 | -.417 | -.422 | -.413 | -.407 | -.400 | -.381 | -.389 | -.399 | -.409 | -.422 | -.436 | -.396 | -.317 | -.450 |
| | .800 | -.470 | -.246 | -.210 | -.237 | -.264 | -.272 | -.280 | -.287 | -.282 | -.286 | -.284 | -.277 | -.270 | -.268 | -.221 | -.195 | -.368 |
| | .900 | -.363 | -.180 | -.060 | -.020 | -.037 | -.051 | -.071 | -.092 | -.097 | -.094 | -.082 | -.064 | -.045 | -.039 | -.024 | -.090 | -.304 |
| | .950 | -.300 | -.148 | -.003 | .056 | .080 | .091 | .084 | .075 | .072 | .074 | .081 | .087 | .084 | .067 | .044 | -.044 | -.270 |
| Lower surface | .0375 | .890 | .847 | .790 | .660 | .444 | .206 | -.063 | -.369 | -.626 | -.510 | -.238 | .068 | .323 | .528 | .734 | .819 | .862 |
| | .075 | .720 | .667 | .604 | .484 | .302 | .122 | -.075 | -.284 | -.455 | -.376 | -.193 | .020 | .209 | .367 | .552 | .641 | .688 |
| | .150 | .538 | .492 | .433 | .333 | .194 | .065 | -.065 | -.202 | -.313 | -.263 | -.141 | -.001 | .124 | .242 | .389 | .467 | .506 |
| | .250 | .390 | .350 | .303 | .219 | .110 | .009 | -.088 | -.191 | -.263 | -.229 | -.141 | -.039 | .055 | .143 | .267 | .332 | .360 |
| | .350 | .289 | .257 | .220 | .151 | .057 | -.017 | -.096 | -.171 | -.228 | -.203 | -.137 | -.058 | .017 | .086 | .189 | .247 | .262 |
| | .450 | .191 | .172 | .145 | .087 | .011 | -.031 | -.114 | -.175 | -.217 | -.197 | -.149 | -.083 | -.025 | .032 | .122 | .167 | .173 |
| | .550 | .099 | .093 | .075 | .034 | -.030 | -.080 | -.130 | -.175 | -.204 | -.192 | -.153 | -.106 | -.058 | -.016 | .062 | .093 | .083 |
| | .650 | .006 | .011 | .013 | -.018 | -.069 | -.106 | -.145 | -.175 | -.195 | -.184 | -.159 | -.125 | -.092 | -.060 | .004 | .024 | -.004 |
| | .750 | -.063 | -.038 | -.018 | -.032 | -.069 | -.093 | -.116 | -.134 | -.140 | -.135 | -.123 | -.106 | -.085 | -.065 | -.016 | -.013 | -.068 |
| | .850 | -.109 | -.066 | -.021 | -.018 | -.033 | -.039 | -.047 | -.051 | -.044 | -.045 | -.046 | -.043 | -.041 | -.037 | -.009 | -.029 | -.110 |
| | .925 | -.132 | -.074 | .003 | .021 | .022 | .035 | .039 | .046 | .059 | .055 | .049 | .037 | .026 | .015 | .024 | -.018 | -.138 |
| | .975 | -.202 | -.126 | -.008 | .034 | .059 | .087 | .103 | .115 | .137 | .128 | .117 | .095 | .066 | .043 | .024 | -.039 | -.214 |
| | [a]1.000 | -.250 | -.142 | 0 | .066 | .128 | .189 | .169 | .195 | .250 | .208 | .198 | .181 | .171 | .139 | .050 | -.032 | -.258 |

[a]No orifice.

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TABLE 4.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(09.00) PROPELLER BLADE SECTION (x = 0.70) - Continued

(b) N = 1350 rpm.

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J | | 1.488 | 1.624 | 1.733 | 1.893 | 2.014 | 2.144 | 2.285 | 2.417 | 2.522 | 2.472 | 2.352 | 2.225 | 2.089 | 1.959 | 1.834 | 1.695 | 1.560 |
| $M_x$ | | .555 | .568 | .582 | .599 | .616 | .637 | .656 | .679 | .698 | .687 | .667 | .644 | .626 | .603 | .589 | .570 | .558 |
| $\alpha_r'$ | | 12.92 | 10.56 | 8.44 | 6.28 | 4.52 | 2.73 | .90 | -.70 | -1.91 | -1.34 | .08 | 1.67 | 3.47 | 5.31 | 7.17 | 9.38 | 11.65 |
| $\Delta\beta$ | | .40 | .37 | .34 | .29 | .24 | .18 | .11 | .05 | 0 | .02 | .08 | .14 | .20 | .26 | .31 | .36 | .39 |
| $\alpha_i$ | | 2.85 | 2.68 | 2.42 | 2.01 | 1.56 | 1.13 | .67 | .31 | .03 | .15 | .49 | .89 | 1.32 | 1.75 | 2.16 | 2.58 | 2.75 |
| $\sigma_n$ | | .9910 | .9406 | .8581 | .7174 | .5581 | .4065 | .2426 | .1119 | .0113 | .0545 | .1777 | .3213 | .4729 | .6258 | .7671 | .9116 | .9632 |
| $\sigma_m$ | | -.0324 | -.0033 | -.0126 | -.0188 | -.0290 | -.0351 | -.0454 | -.0486 | -.0541 | -.0517 | -.0455 | -.0391 | -.0331 | -.0251 | -.0157 | -.0095 | -.0115 |
| $\sigma_a$ | | | | | | | | | | | | | | | | | | |
| c/b | | Pressure coefficient, P | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.079 | 1.083 | 1.087 | 1.092 | 1.098 | 1.105 | 1.112 | 1.121 | 1.128 | 1.124 | 1.116 | 1.108 | 1.101 | 1.094 | 1.089 | 1.083 | 1.079 |
| | .025 | -1.873 | -2.554 | -2.823 | -1.933 | -1.217 | -.611 | -.157 | .188 | .390 | .305 | .032 | -.348 | -.869 | -1.495 | -2.335 | -2.828 | -2.342 |
| | .050 | -1.653 | -2.280 | -2.688 | -1.660 | -1.029 | -.634 | -.314 | -.053 | .117 | .044 | -.174 | -.453 | -.803 | -1.235 | -2.085 | -2.500 | -2.127 |
| | .100 | -1.607 | -1.924 | -1.214 | -1.071 | -.852 | -.621 | -.402 | -.211 | -.079 | -.136 | -.299 | -.506 | -.788 | -.959 | -1.097 | -1.619 | -1.761 |
| | .200 | -1.362 | -1.222 | -.918 | -.821 | -.695 | -.556 | -.424 | -.299 | -.208 | -.249 | -.358 | -.487 | -.619 | -.752 | -.867 | -.947 | -1.284 |
| | .300 | -1.058 | -.861 | -.781 | -.707 | -.623 | -.530 | -.438 | -.350 | -.281 | -.311 | -.390 | -.484 | -.573 | -.661 | -.737 | -.744 | -.970 |
| | .400 | -.813 | -.670 | -.682 | -.633 | -.581 | -.517 | -.452 | -.390 | -.340 | -.362 | -.418 | -.485 | -.546 | -.604 | -.653 | -.635 | -.737 |
| | .500 | -.643 | -.547 | -.621 | -.597 | -.567 | -.530 | -.490 | -.451 | -.416 | -.433 | -.469 | -.514 | -.549 | -.581 | -.605 | -.571 | -.577 |
| | .600 | -.514 | -.428 | -.524 | -.523 | -.510 | -.494 | -.473 | -.451 | -.432 | -.441 | -.459 | -.488 | -.502 | -.516 | -.522 | -.466 | -.450 |
| | .700 | -.414 | -.312 | -.410 | -.425 | -.431 | -.436 | -.433 | -.430 | -.423 | -.427 | -.430 | -.440 | -.436 | -.431 | -.416 | -.347 | -.350 |
| | .800 | -.331 | -.189 | -.220 | -.292 | -.251 | -.269 | -.280 | -.286 | -.288 | -.287 | -.280 | -.280 | -.263 | -.248 | -.220 | -.168 | -.298 |
| | .900 | -.266 | -.089 | -.015 | .001 | -.009 | -.029 | -.043 | -.056 | -.063 | -.061 | -.048 | -.042 | -.021 | -.006 | -.001 | .012 | -.184 |
| | .950 | -.239 | -.060 | .063 | .083 | .098 | .105 | .106 | .104 | .104 | .103 | .106 | .100 | .102 | .093 | .070 | .080 | -.147 |
| Lower surface | .0375 | .862 | .824 | .788 | .580 | .397 | .164 | -.103 | -.412 | -.664 | -.554 | -.253 | .015 | .273 | .482 | .643 | .820 | .843 |
| | .075 | .688 | .645 | .549 | .419 | .271 | .090 | -.103 | -.313 | -.475 | -.406 | -.205 | -.021 | .173 | .336 | .474 | .639 | .663 |
| | .150 | .509 | .475 | .391 | .318 | .176 | .046 | -.085 | -.223 | -.327 | -.282 | -.149 | -.034 | .104 | .224 | .329 | .475 | .491 |
| | .250 | .367 | .337 | .270 | .184 | .093 | -.007 | -.107 | -.208 | -.282 | -.249 | -.156 | -.069 | .036 | .134 | .218 | .347 | .352 |
| | .350 | .268 | .250 | .194 | .123 | .046 | -.035 | -.114 | -.192 | -.246 | -.222 | -.153 | -.085 | .002 | .079 | .149 | .265 | .256 |
| | .450 | .174 | .169 | .123 | .063 | -.002 | -.068 | -.136 | -.194 | -.236 | -.219 | -.165 | -.111 | -.042 | .024 | .085 | .191 | .172 |
| | .550 | .085 | .093 | .059 | .009 | -.044 | -.098 | -.150 | -.197 | -.227 | -.215 | -.173 | -.132 | -.075 | -.022 | .027 | .123 | .088 |
| | .650 | -.002 | .021 | .002 | -.038 | -.080 | -.126 | -.164 | -.197 | -.215 | -.211 | -.180 | -.152 | -.106 | -.065 | -.025 | .060 | .008 |
| | .750 | -.061 | -.020 | -.021 | -.049 | -.078 | -.108 | -.132 | -.150 | -.159 | -.157 | -.142 | -.126 | -.096 | -.067 | -.040 | .033 | -.043 |
| | .850 | -.106 | -.036 | -.009 | -.024 | -.037 | -.048 | -.057 | -.060 | -.056 | -.060 | -.057 | -.058 | -.045 | -.031 | -.021 | .037 | -.072 |
| | .925 | -.127 | -.028 | .028 | .029 | .031 | .032 | .037 | .047 | .056 | .052 | .043 | .029 | .029 | .029 | .022 | .068 | -.076 |
| | .975 | -.198 | -.058 | .042 | .052 | .069 | .088 | .106 | .122 | .136 | .128 | .116 | .092 | .077 | .063 | .038 | .070 | -.123 |
| | [a]1.000 | -.215 | -.058 | .112 | .205 | .140 | .179 | .169 | .191 | .189 | .167 | .187 | .171 | .208 | .146 | .090 | .110 | -.118 |

[a]No orifice.

TABLE 4.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(09.00) PROPELLER BLADE SECTION (x = 0.70) - Continued

(o) N = 1500 rpm.

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J | 1.643 | 1.762 | 1.890 | 2.019 | 2.105 | 2.237 | 2.343 | 2.474 | 2.533 | 2.418 | 2.283 | 2.175 | 2.065 | 1.966 | 1.837 | 1.694 |
| $M_x$ | .615 | .630 | .651 | .668 | .683 | .707 | .724 | .747 | .759 | .735 | .711 | .692 | .675 | .659 | .640 | .619 |
| $\alpha_x'$ | 10.24 | 8.30 | 6.32 | 4.45 | 3.25 | 1.51 | .18 | -1.37 | -2.04 | -.71 | .93 | 2.32 | 3.80 | 5.19 | 7.13 | 9.39 |
| $\Delta\beta$ | .37 | .31 | .26 | .20 | .17 | .11 | .06 | -.01 | -.05 | .02 | .10 | .14 | .18 | .22 | .28 | .35 |
| $\alpha_1$ | 2.85 | 2.45 | 2.07 | 1.58 | 1.31 | .92 | .58 | .22 | .05 | .36 | .72 | 1.10 | 1.42 | 1.75 | 2.25 | 2.71 |
| $c_n$ | 1.0045 | .8697 | .7348 | .5684 | .4697 | .3294 | .2116 | .0800 | .0184 | .1316 | .2619 | .3955 | .5110 | .6277 | .8039 | .9658 |
| $c_m$ | .0031 | -.0066 | -.0156 | -.0247 | -.0313 | -.0408 | -.0556 | -.0627 | -.0661 | -.0574 | -.0483 | -.0366 | -.0292 | -.0241 | -.0075 | -.0003 |
| $c_c$ | | | | | | | | | | | | | | | | |

| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Upper surface | [a]0.000 | 1.098 | 1.102 | 1.110 | 1.117 | 1.123 | 1.132 | 1.138 | 1.148 | 1.153 | 1.143 | 1.134 | 1.126 | 1.119 | 1.113 | 1.106 | 1.099 |
| | .025 | -2.847 | -2.395 | -1.805 | -1.177 | -.785 | -.279 | .043 | .324 | .434 | .213 | -.130 | -.520 | -.947 | -1.395 | -2.122 | -2.702 |
| | .050 | -2.759 | -2.356 | -1.868 | -1.168 | -.809 | -.430 | -.180 | .053 | .152 | -.042 | -.312 | -.610 | -.931 | -1.503 | -2.122 | -2.627 |
| | .100 | -2.500 | -2.082 | -1.491 | -.880 | -.737 | -.492 | -.310 | -.126 | -.046 | -.201 | -.405 | -.612 | -.801 | -.904 | -1.829 | -2.358 |
| | .200 | -1.196 | -.799 | -.851 | -.754 | -.657 | -.515 | -.400 | -.257 | -.211 | -.322 | -.462 | -.584 | -.697 | -.803 | -.839 | -.951 |
| | .300 | -.742 | -.755 | -.744 | -.673 | -.614 | -.519 | -.443 | -.347 | -.305 | -.385 | -.481 | -.565 | -.641 | -.705 | -.758 | -.734 |
| | .400 | -.663 | -.679 | -.667 | -.624 | -.587 | -.529 | -.480 | -.415 | -.386 | -.441 | -.503 | -.558 | -.605 | -.641 | -.675 | -.666 |
| | .500 | -.604 | -.627 | -.628 | -.605 | -.591 | -.562 | -.543 | -.506 | -.491 | -.521 | -.553 | -.577 | -.602 | -.616 | -.631 | -.612 |
| | .600 | -.498 | -.525 | -.541 | -.537 | -.537 | -.531 | -.532 | -.526 | -.528 | -.524 | -.528 | -.531 | -.540 | -.539 | -.535 | -.506 |
| | .700 | -.383 | -.407 | -.430 | -.445 | -.456 | -.470 | -.489 | -.502 | -.512 | -.490 | -.474 | -.462 | -.454 | -.439 | -.417 | -.390 |
| | .800 | -.208 | -.208 | -.220 | -.242 | -.261 | -.282 | -.304 | -.319 | -.328 | -.307 | -.290 | -.274 | -.258 | -.235 | -.211 | -.202 |
| | .900 | -.027 | -.001 | .016 | .007 | .002 | -.016 | -.030 | -.035 | -.049 | -.036 | -.026 | -.011 | -.001 | .009 | .006 | -.011 |
| | .950 | .038 | .058 | .083 | .096 | .110 | .121 | .123 | .129 | .123 | .126 | .122 | .114 | .102 | .089 | .064 | .057 |
| Lower surface | .0375 | .806 | .711 | .583 | .395 | .248 | -.004 | -.253 | -.588 | -.782 | -.435 | -.113 | .127 | .307 | .475 | .642 | .780 |
| | .075 | .630 | .541 | .426 | .270 | .156 | -.031 | -.208 | -.446 | -.680 | -.334 | -.113 | .062 | .198 | .334 | .480 | .606 |
| | .150 | .462 | .387 | .293 | .172 | .090 | -.041 | -.157 | -.286 | -.362 | -.227 | -.093 | .024 | .122 | .224 | .337 | .445 |
| | .250 | .331 | .266 | .189 | .089 | .024 | -.076 | -.162 | -.257 | -.318 | -.217 | -.114 | -.026 | .047 | .130 | .224 | .316 |
| | .350 | .245 | .190 | .125 | .039 | -.012 | -.092 | -.160 | -.230 | -.274 | -.201 | -.123 | -.052 | .005 | .075 | .153 | .233 |
| | .450 | .164 | .119 | .061 | -.010 | -.051 | -.119 | -.176 | -.226 | -.263 | -.205 | -.145 | -.086 | -.038 | .020 | .087 | .158 |
| | .550 | .092 | .055 | .006 | -.053 | -.088 | -.145 | -.186 | -.221 | -.248 | -.208 | -.164 | -.117 | -.077 | -.029 | .027 | .090 |
| | .650 | .031 | .001 | -.045 | -.094 | -.120 | -.164 | -.191 | -.210 | -.230 | -.205 | -.178 | -.145 | -.113 | -.074 | -.025 | .029 |
| | .750 | -.004 | -.028 | -.057 | -.095 | -.111 | -.135 | -.147 | -.149 | -.160 | -.152 | -.144 | -.126 | -.110 | -.080 | -.045 | -.002 |
| | .850 | .001 | -.014 | -.031 | -.055 | -.054 | -.057 | -.053 | -.038 | -.040 | -.048 | -.059 | -.058 | -.058 | -.042 | -.025 | .007 |
| | .925 | .034 | .026 | .023 | .016 | .027 | .039 | .053 | .077 | .080 | .062 | .044 | .030 | .019 | .020 | .021 | .043 |
| | .975 | .059 | .035 | .047 | .053 | .075 | .105 | .121 | .144 | .153 | .133 | .111 | .085 | .060 | .048 | .032 | .054 |
| | [a]1.000 | .076 | .059 | .106 | .144 | .167 | .207 | .215 | .213 | .213 | .224 | .174 | .176 | .148 | .141 | .106 | .091 |

[a]No orifice.

[redacted]

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TABLE 4.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(09.00) PROPELLER BLADE SECTION (x = 0.70) - Continued

(d) N = 1600 rpm.

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.454 | 2.357 | 2.295 | 2.211 | 2.137 | 2.062 | 1.971 | 1.887 | 1.916 | 2.010 | 2.103 | 2.174 | 2.258 | 2.336 | 2.393 |
| | $M_x$ | .803 | .789 | .777 | .760 | .746 | .731 | .716 | .702 | .709 | .723 | .741 | .752 | .770 | .783 | .797 |
| | $\alpha_i'$ | -1.13 | .05 | .78 | 1.85 | 2.82 | 3.84 | 5.13 | 6.37 | 5.94 | 4.57 | 3.28 | 2.33 | 1.24 | .27 | -.42 |
| | $\Delta\beta$ | -.04 | .04 | .09 | .15 | .21 | .28 | .37 | .43 | .41 | .33 | .24 | .18 | .12 | .06 | .02 |
| | $c_l$ | .12 | .44 | .65 | 1.00 | 1.25 | 1.52 | 1.84 | 2.22 | 2.09 | 1.71 | 1.39 | 1.14 | .81 | .54 | .34 |
| | $c_n$ | .0452 | .1581 | .2368 | .3616 | .4494 | .5458 | .6581 | .7916 | .7471 | .6142 | .5006 | .4110 | .2942 | .1945 | .1229 |
| | $c_m$ | -.0665 | -.0549 | -.0491 | -.0408 | -.0354 | -.0297 | -.0225 | -.0202 | -.0205 | -.0265 | -.0321 | -.0387 | -.0446 | -.0506 | -.0641 |
| | $c_c$ | .0180 | | | | | | | | | | | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.172 | 1.165 | 1.160 | 1.153 | 1.147 | 1.142 | 1.135 | 1.130 | 1.133 | 1.138 | 1.146 | 1.150 | 1.158 | 1.163 | 1.169 |
| | .025 | .365 | .168 | .009 | -.256 | -.497 | -.795 | -1.065 | -1.445 | -1.327 | -.947 | -.668 | -.399 | -.109 | .099 | .258 |
| | .050 | .090 | -.084 | -.215 | -.440 | -.656 | -1.039 | -1.315 | -1.577 | -1.488 | -1.206 | -.858 | -.568 | -.318 | -.141 | -.006 |
| | .100 | -.103 | -.246 | -.351 | -.526 | -.680 | -.817 | -1.243 | -1.497 | -1.423 | -1.085 | -.769 | -.620 | -.433 | -.298 | -.183 |
| | .200 | -.261 | -.374 | -.451 | -.575 | -.683 | -.866 | -.997 | -1.464 | -1.384 | -.943 | -.792 | -.641 | -.512 | -.407 | -.325 |
| | .300 | -.353 | -.440 | -.499 | -.588 | -.662 | -.730 | -.763 | -.783 | -.761 | -.754 | -.702 | -.637 | -.544 | -.465 | -.403 |
| | .400 | -.453 | -.527 | -.571 | -.634 | -.682 | -.716 | -.722 | -.675 | -.694 | -.737 | -.705 | -.666 | -.604 | -.543 | -.493 |
| | .500 | -.577 | -.638 | -.665 | -.694 | -.698 | -.684 | -.673 | -.652 | -.663 | -.685 | -.694 | -.705 | -.687 | -.648 | -.611 |
| | .600 | -.669 | -.704 | -.671 | -.620 | -.599 | -.584 | -.579 | -.569 | -.576 | -.585 | -.588 | -.607 | -.650 | -.690 | -.691 |
| | .700 | -.775 | -.543 | -.499 | -.480 | -.476 | -.462 | -.457 | -.455 | -.459 | -.463 | -.465 | -.479 | -.489 | -.505 | -.646 |
| | .800 | -.276 | -.267 | -.263 | -.252 | -.251 | -.238 | -.234 | -.240 | -.239 | -.236 | -.238 | -.251 | -.258 | -.262 | -.274 |
| | .900 | -.004 | .013 | .016 | .018 | .016 | .013 | .015 | .012 | .012 | .015 | .019 | .019 | .016 | .016 | .001 |
| | .950 | .127 | .121 | .120 | .115 | .106 | .091 | .090 | .098 | .093 | .088 | .102 | .112 | .116 | .126 | .130 |
| Lower surface | .0375 | -.585 | -.371 | -.196 | .013 | .144 | .286 | .428 | .548 | .511 | .371 | .236 | .097 | -.090 | -.274 | -.482 |
| | .075 | -.707 | -.307 | -.177 | -.023 | .073 | .184 | .298 | .401 | .369 | .251 | .142 | .037 | -.102 | -.235 | -.413 |
| | .150 | -.324 | -.219 | -.139 | -.036 | .030 | .110 | .196 | .278 | .252 | .158 | .079 | .004 | -.091 | -.175 | -.270 |
| | .250 | -.332 | -.226 | -.160 | -.078 | -.027 | .036 | .106 | .176 | .154 | .074 | .012 | -.047 | -.122 | -.190 | -.266 |
| | .350 | -.304 | -.224 | -.169 | -.101 | -.059 | -.004 | .053 | .111 | .092 | .027 | -.025 | -.076 | -.137 | -.191 | -.251 |
| | .450 | -.307 | -.241 | -.195 | -.137 | -.101 | -.055 | -.003 | .049 | .030 | -.028 | -.072 | -.115 | -.168 | -.213 | -.261 |
| | .550 | -.305 | -.253 | -.215 | -.166 | -.137 | -.098 | -.054 | -.007 | -.022 | -.075 | -.112 | -.146 | -.192 | -.228 | -.267 |
| | .650 | -.292 | -.256 | -.227 | -.188 | -.167 | -.136 | -.098 | -.054 | -.071 | -.118 | -.147 | -.175 | -.210 | -.236 | -.264 |
| | .750 | -.210 | -.199 | -.182 | -.159 | -.147 | -.129 | -.100 | -.063 | -.078 | -.115 | -.134 | -.152 | -.173 | -.186 | -.198 |
| | .850 | -.075 | -.085 | -.081 | -.075 | -.076 | -.072 | -.072 | -.028 | -.038 | -.064 | -.071 | -.076 | -.081 | -.079 | -.075 |
| | .925 | .054 | .033 | .029 | .023 | .014 | .007 | .013 | .033 | .025 | .008 | .014 | .019 | .023 | .034 | .048 |
| | .975 | .130 | .102 | .096 | .083 | .065 | .047 | .046 | .064 | .055 | .047 | .039 | .074 | .088 | .105 | .124 |
| | [a]1.000 | .228 | .210 | .205 | .162 | .163 | .134 | .136 | .142 | .132 | .120 | .156 | .159 | .190 | .210 | .228 |

[a]No orifice.

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TABLE 4.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(09.00) PROPELLER BLADE SECTION (x = 0.70) - Continued

(e) M = 0.56.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J | 2.518 | 2.464 | 2.406 | 2.366 | 2.327 | 2.283 | 2.236 | 2.196 | 2.161 | 2.128 | 2.083 | 2.055 | 2.019 | 1.987 | 1.958 |
| $M_x$ | .750 | .758 | .763 | .768 | .777 | .785 | .789 | .795 | .802 | .811 | .816 | .825 | .833 | .839 | .845 |
| $\alpha_x'$ | -1.87 | -1.25 | -.57 | -.09 | .38 | .93 | 1.52 | 2.04 | 2.50 | 2.94 | 3.55 | 3.94 | 4.45 | 4.90 | 5.32 |
| $\Delta\beta$ | -.03 | .01 | .05 | .07 | .09 | .11 | .14 | .16 | .18 | .21 | .24 | .26 | .28 | .31 | .32 |
| $\alpha_i$ | .04 | .16 | .33 | .43 | .56 | .68 | .81 | .94 | 1.03 | 1.14 | 1.27 | 1.35 | 1.43 | 1.52 | 1.60 |
| $c_n$ | .0155 | .0374 | .1203 | .3571 | .2042 | .2465 | .2929 | .3381 | .3729 | .4090 | .4587 | .4839 | .5135 | .5439 | .5723 |
| $c_m$ | -.0660 | -.0651 | -.0617 | -.0596 | -.0556 | -.0529 | -.0460 | -.0441 | -.0397 | -.0398 | -.0431 | -.0439 | -.0470 | -.0436 | -.0439 |
| $c_c$ | | | | | | | | | .0050 | .0057 | .0076 | .0108 | .0140 | .0171 | .0173 |
| c/b | Pressure coefficient, P | | | | | | | | | | | | | | |
| Upper surface [a]0.000 | 1.149 | 1.153 | 1.155 | 1.157 | 1.160 | 1.164 | 1.166 | 1.168 | 1.171 | 1.175 | 1.178 | 1.182 | 1.186 | 1.188 | 1.191 |
| .025 | .421 | .353 | .244 | .174 | .085 | .008 | -.079 | -.164 | -.218 | -.281 | -.340 | -.374 | -.422 | -.439 | -.464 |
| .050 | .142 | .078 | -.017 | -.076 | -.151 | -.218 | -.295 | -.373 | -.424 | -.490 | -.581 | -.649 | -.695 | -.702 | -.719 |
| .100 | -.058 | -.110 | -.188 | -.237 | -.299 | -.355 | -.419 | -.479 | -.515 | -.539 | -.550 | -.539 | -.641 | -.678 | -.712 |
| .200 | -.213 | -.258 | -.320 | -.360 | -.408 | -.454 | -.511 | -.577 | -.623 | -.643 | -.678 | -.695 | -.709 | -.734 | -.779 |
| .300 | -.302 | -.340 | -.392 | -.426 | -.466 | -.501 | -.544 | -.584 | -.618 | -.665 | -.711 | -.732 | -.753 | -.767 | -.789 |
| .400 | -.381 | -.419 | -.466 | -.500 | -.543 | -.573 | -.610 | -.635 | -.641 | -.674 | -.720 | -.752 | -.785 | -.798 | -.823 |
| .500 | -.476 | -.514 | -.558 | -.591 | -.637 | -.681 | -.726 | -.765 | -.785 | -.795 | -.816 | -.839 | -.879 | -.891 | -.912 |
| .600 | -.506 | -.541 | -.579 | -.613 | -.657 | -.727 | -.790 | -.832 | -.853 | -.876 | -.905 | -.924 | -.951 | -.964 | -.926 |
| .700 | -.492 | -.507 | -.519 | -.519 | -.509 | -.493 | -.489 | -.487 | -.516 | -.511 | -.446 | -.405 | -.403 | -.396 | -.392 |
| .800 | -.321 | -.317 | -.310 | -.298 | -.274 | -.247 | -.225 | -.203 | -.186 | -.182 | -.218 | -.273 | -.319 | -.337 | -.348 |
| .900 | -.058 | -.043 | -.030 | -.017 | .009 | .030 | .032 | .029 | .018 | -.016 | -.082 | -.160 | -.240 | -.287 | -.317 |
| .950 | .119 | .127 | .128 | .128 | .127 | .074 | .110 | .094 | .074 | .033 | -.031 | -.113 | -.205 | -.267 | -.304 |
| Lower surface .0375 | -.748 | -.647 | -.487 | -.388 | -.272 | -.173 | -.095 | -.013 | .042 | .112 | .172 | .229 | .282 | .314 | .363 |
| .075 | -.539 | -.492 | -.377 | -.310 | -.231 | -.161 | -.105 | -.045 | -.001 | .052 | .098 | .145 | .188 | .214 | .255 |
| .150 | -.357 | -.317 | -.256 | -.219 | -.171 | -.127 | -.093 | -.053 | -.023 | -.007 | .051 | .087 | .119 | .140 | .172 |
| .250 | -.311 | -.283 | -.242 | -.219 | -.183 | -.151 | -.129 | -.101 | -.076 | -.045 | -.018 | .012 | .037 | .053 | .083 |
| .350 | -.270 | -.253 | -.225 | -.210 | -.185 | -.161 | -.147 | -.125 | -.108 | -.083 | -.062 | -.036 | -.016 | -.003 | .021 |
| .450 | -.259 | -.248 | -.229 | -.219 | -.205 | -.191 | -.185 | -.170 | -.158 | -.139 | -.122 | -.102 | -.087 | -.078 | -.057 |
| .550 | -.248 | -.241 | -.231 | -.227 | -.219 | -.212 | -.214 | -.206 | -.204 | -.190 | -.181 | -.168 | -.160 | -.156 | -.140 |
| .650 | -.229 | -.230 | -.227 | -.227 | -.226 | -.226 | -.236 | -.237 | -.239 | -.239 | -.240 | -.239 | -.242 | -.248 | -.238 |
| .750 | -.162 | -.163 | -.167 | -.171 | -.175 | -.181 | -.196 | -.203 | -.212 | -.223 | -.236 | -.247 | -.270 | -.293 | -.300 |
| .850 | -.043 | -.047 | -.055 | -.062 | -.070 | -.078 | -.097 | -.108 | -.120 | -.137 | -.160 | -.182 | -.223 | -.260 | -.290 |
| .925 | .076 | .070 | .061 | .050 | .041 | .033 | .012 | -.001 | -.015 | -.037 | -.064 | -.099 | -.152 | -.198 | -.234 |
| .975 | .148 | .142 | .133 | .122 | .106 | .099 | .078 | .063 | .045 | .014 | -.026 | -.074 | -.132 | -.219 | -.276 |
| [a]1.000 | .191 | .176 | .167 | .158 | .142 | .144 | .150 | .130 | .080 | .047 | -.010 | -.070 | -.161 | -.240 | -.248 |

[a]No orifice.

TABLE 4.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(09.00) PROPELLER BLADE SECTION (x = 0.70) - Continued

(f) M = 0.60.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.453 | 2.414 | 2.363 | 2.326 | 2.290 | 2.251 | 2.212 | 2.173 | 2.140 | 2.106 | 2.080 | 2.049 | 2.020 | 1.983 |
| | $M_x$ | .810 | .818 | .824 | .830 | .839 | .846 | .849 | .856 | .866 | .870 | .882 | .889 | .896 | .896 |
| | $\alpha_x'$ | -1.12 | -.67 | -.06 | .39 | .84 | 1.33 | 1.83 | 2.34 | 2.78 | 3.24 | 3.59 | 4.02 | 4.43 | 4.96 |
| | $\Delta\beta$ | -.01 | .03 | .08 | .11 | .14 | .16 | .19 | .20 | .22 | .23 | .24 | .24 | .25 | .26 |
| | $\alpha_l$ | .14 | .22 | .31 | .40 | .51 | .61 | .71 | .76 | .77 | .85 | .94 | 1.02 | 1.11 | 1.26 |
| | $c_n$ | .0510 | .0806 | .1135 | .1445 | .1832 | .2213 | .2568 | .2748 | .2781 | .3065 | .3355 | .3639 | .3987 | .4516 |
| | $c_m$ | -.0678 | -.0647 | -.0567 | -.0513 | -.0534 | -.0469 | -.0365 | -.0302 | -.0195 | -.0195 | -.0161 | -.0180 | -.0246 | -.0300 |
| | $c_c$ | .0182 | .0185 | .0201 | .0223 | .0244 | .0260 | .0263 | .0284 | .0290 | .0301 | .0310 | .0327 | .0337 | .0335 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.175 | 1.179 | 1.181 | 1.184 | 1.188 | 1.191 | 1.193 | 1.196 | 1.201 | 1.203 | 1.209 | 1.213 | 1.217 | 1.217 |
| | .025 | .379 | .337 | .276 | .219 | .166 | .113 | .034 | -.019 | -.062 | -.103 | -.129 | -.166 | -.197 | -.248 |
| | .050 | .106 | .070 | .017 | -.031 | -.079 | -.125 | -.194 | -.243 | -.287 | -.331 | -.375 | -.440 | -.472 | -.513 |
| | .100 | -.086 | -.115 | -.160 | -.200 | -.239 | -.277 | -.331 | -.366 | -.385 | -.387 | -.379 | -.375 | -.409 | -.499 |
| | .200 | -.247 | -.269 | -.305 | -.338 | -.372 | -.406 | -.470 | -.495 | -.505 | -.521 | -.534 | -.549 | -.551 | -.586 |
| | .300 | -.341 | -.357 | -.384 | -.408 | -.431 | -.456 | -.493 | -.533 | -.554 | -.576 | -.578 | -.594 | -.603 | -.631 |
| | .400 | -.441 | -.452 | -.471 | -.488 | -.503 | -.513 | -.540 | -.568 | -.587 | -.600 | -.615 | -.638 | -.649 | -.676 |
| | .500 | -.562 | -.583 | -.609 | -.628 | -.646 | -.659 | -.678 | -.685 | -.702 | -.711 | -.709 | -.733 | -.743 | -.769 |
| | .600 | -.660 | -.677 | -.705 | -.724 | -.736 | -.751 | -.776 | -.782 | -.791 | -.800 | -.800 | -.810 | -.819 | -.845 |
| | .700 | -.774 | -.825 | -.842 | -.869 | -.850 | -.807 | -.723 | -.687 | -.538 | -.544 | -.502 | -.523 | -.561 | -.569 |
| | .800 | -.264 | -.234 | -.210 | -.198 | -.217 | -.238 | -.265 | -.283 | -.276 | -.289 | -.297 | -.330 | -.354 | -.384 |
| | .900 | .010 | .026 | .012 | -.048 | -.125 | -.140 | -.176 | -.222 | -.242 | -.263 | -.274 | -.311 | -.337 | -.366 |
| | .950 | .124 | .108 | .078 | .006 | -.046 | -.085 | -.128 | -.199 | -.235 | -.258 | -.273 | -.314 | -.338 | -.368 |
| Lower surface | .0375 | -.592 | -.520 | -.443 | -.352 | -.259 | -.179 | -.087 | -.018 | .052 | .107 | .160 | .213 | .260 | .312 |
| | .075 | -.718 | -.585 | -.436 | -.323 | -.234 | -.169 | -.101 | -.046 | .010 | .054 | .098 | .141 | .180 | .220 |
| | .150 | -.305 | -.292 | -.259 | -.214 | -.169 | -.130 | -.087 | -.051 | -.008 | .025 | .061 | .098 | .123 | .155 |
| | .250 | -.337 | -.310 | -.275 | -.240 | -.202 | -.169 | -.134 | -.107 | -.071 | -.042 | -.012 | .014 | .040 | .068 |
| | .350 | -.310 | -.291 | -.266 | -.242 | -.213 | -.189 | -.162 | -.141 | -.112 | -.085 | -.059 | -.037 | -.014 | .010 |
| | .450 | -.313 | -.305 | -.289 | -.277 | -.257 | -.238 | -.216 | -.202 | -.175 | -.152 | -.127 | -.108 | -.088 | -.069 |
| | .550 | -.309 | -.310 | -.308 | -.310 | -.301 | -.291 | -.278 | -.270 | -.248 | -.228 | -.204 | -.188 | -.169 | -.153 |
| | .650 | -.294 | -.305 | -.318 | -.340 | -.352 | -.357 | -.357 | -.361 | -.347 | -.330 | -.307 | -.294 | -.276 | -.262 |
| | .750 | -.212 | -.224 | -.247 | -.275 | -.304 | -.332 | -.363 | -.428 | -.440 | -.430 | -.414 | -.408 | -.390 | -.376 |
| | .850 | -.076 | -.091 | -.116 | -.146 | -.174 | -.204 | -.240 | -.324 | -.412 | -.448 | -.461 | -.470 | -.457 | -.445 |
| | .925 | .049 | .032 | .003 | -.033 | -.063 | -.094 | -.199 | -.197 | -.262 | -.316 | -.391 | -.474 | -.476 | -.469 |
| | .975 | .120 | .099 | .065 | .013 | -.026 | -.079 | -.104 | -.176 | -.246 | -.284 | -.324 | -.441 | -.476 | -.484 |
| | [a]1.000 | .173 | .140 | .085 | .025 | 0 | -.046 | -.030 | -.170 | -.240 | -.278 | -.276 | -.330 | -.359 | -.410 |

[a]No orifice.

TABLE 4.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(09.00) PROPELLER BLADE SECTION (x = 0.70) - Concluded

(g) M = 0.64.

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 1.997 | 2.017 | 2.038 | 2.058 | 2.079 | 2.097 | 2.114 | 2.138 | 2.154 | 2.178 | 2.201 | 2.223 | 2.242 | 2.267 | 2.290 | 2.313 | 2.332 | 2.360 | 2.378 |
| | $M_x$ | .957 | .953 | .947 | .943 | .934 | .930 | .926 | .921 | .915 | .907 | .905 | .902 | .895 | .890 | .886 | .882 | .875 | .871 | .868 |
| | $\alpha_x'$ | 4.76 | 4.47 | 4.18 | 3.90 | 3.66 | 3.36 | 3.13 | 2.81 | 2.59 | 2.28 | 1.97 | 1.69 | 1.45 | 1.13 | .84 | .55 | .32 | -.02 | -.24 |
| | $\Delta\beta$ | .19 | .17 | .15 | .13 | .12 | .10 | .09 | .08 | .07 | .06 | .05 | .04 | .02 | .01 | 0 | -.01 | -.01 | -.02 | -.03 |
| | $\alpha_i$ | 1.21 | 1.14 | 1.07 | .96 | .93 | .86 | .76 | .64 | .54 | .47 | .36 | .30 | .25 | .21 | .13 | .09 | .03 | -.04 | -.07 |
| | $c_n$ | .4323 | .4090 | .3819 | .3432 | .3329 | .3077 | .2748 | .2884 | .1935 | .1684 | .1284 | .1071 | .0910 | .0755 | .0458 | .0316 | .0110 | -.0142 | -.0239 |
| | $c_m$ | -.0703 | -.0670 | -.0577 | -.0506 | -.0505 | -.0464 | -.0346 | -.0231 | -.0102 | -.0066 | .0010 | .0008 | -.0011 | -.0097 | -.0157 | -.0193 | -.0208 | -.0229 | -.0269 |
| | $c_c$ | .0538 | .0534 | .0520 | .0516 | .0526 | .0535 | .0517 | .0506 | .0488 | .0476 | .0464 | .0448 | .0437 | .0426 | .0415 | .0400 | .0387 | .0363 | .0337 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.250 | 1.248 | 1.244 | 1.242 | 1.237 | 1.235 | 1.233 | 1.230 | 1.227 | 1.223 | 1.222 | 1.220 | 1.217 | 1.214 | 1.211 | 1.209 | 1.206 | 1.204 | 1.203 |
| | .025 | -.057 | -.038 | -.021 | .015 | .030 | .065 | .078 | .097 | .123 | .131 | .163 | .186 | .211 | .244 | .273 | .290 | .317 | .350 | .368 |
| | .050 | -.322 | -.305 | -.280 | -.228 | -.199 | -.165 | -.152 | -.132 | -.107 | -.099 | -.069 | -.050 | -.027 | 0 | .025 | .040 | .063 | .092 | .108 |
| | .100 | -.273 | -.243 | -.244 | -.240 | -.244 | -.236 | -.240 | -.242 | -.232 | -.232 | -.212 | -.197 | -.182 | -.158 | -.139 | -.128 | -.111 | -.088 | -.075 |
| | .200 | -.423 | -.419 | -.419 | -.402 | -.396 | -.379 | -.377 | -.376 | -.369 | -.373 | -.360 | -.350 | -.333 | -.304 | -.288 | -.278 | -.263 | -.243 | -.232 |
| | .300 | -.478 | -.471 | -.465 | -.446 | -.446 | -.435 | -.437 | -.430 | -.417 | -.419 | -.403 | -.390 | -.370 | -.358 | -.351 | -.344 | -.332 | -.319 | -.312 |
| | .400 | -.527 | -.517 | -.511 | -.494 | -.490 | -.475 | -.472 | -.468 | -.463 | -.465 | -.451 | -.439 | -.430 | -.418 | -.414 | -.411 | -.408 | -.399 | -.397 |
| | .500 | -.619 | -.612 | -.609 | -.591 | -.589 | -.581 | -.586 | -.587 | -.585 | -.587 | -.576 | -.549 | -.569 | -.566 | -.564 | -.563 | -.558 | -.552 | -.547 |
| | .600 | -.687 | -.681 | -.680 | -.668 | -.674 | -.668 | -.673 | -.672 | -.671 | -.676 | -.669 | -.665 | -.665 | -.659 | -.656 | -.657 | -.654 | -.645 | -.640 |
| | .700 | -.800 | -.798 | -.800 | -.791 | -.796 | -.791 | -.796 | -.798 | -.802 | -.809 | -.806 | -.804 | -.803 | -.800 | -.801 | -.802 | -.800 | -.797 | -.796 |
| | .800 | -.806 | -.792 | -.694 | -.618 | -.652 | -.654 | -.552 | -.474 | -.404 | -.373 | -.326 | -.312 | -.298 | -.310 | -.312 | -.300 | -.282 | -.244 | -.222 |
| | .900 | -.431 | -.419 | -.404 | -.388 | -.391 | -.382 | -.364 | -.348 | -.324 | -.313 | -.283 | -.264 | -.252 | -.251 | -.247 | -.238 | -.222 | -.188 | -.156 |
| | .950 | -.480 | -.415 | -.400 | -.383 | -.387 | -.376 | -.359 | -.345 | -.321 | -.310 | -.278 | -.248 | -.232 | -.215 | -.207 | -.196 | -.179 | -.148 | -.114 |
| Lower surface | .0375 | .277 | .257 | .224 | .187 | .152 | .124 | .095 | .038 | .007 | -.038 | -.087 | -.126 | -.174 | -.225 | -.261 | -.291 | -.336 | -.378 | -.407 |
| | .075 | .199 | .185 | .157 | .128 | .098 | .075 | .048 | -.001 | -.028 | -.064 | -.108 | -.144 | -.196 | -.271 | -.341 | -.404 | -.516 | -.595 | -.636 |
| | .150 | .150 | .139 | .117 | .096 | .073 | .057 | .033 | -.006 | -.026 | -.055 | -.083 | -.106 | -.136 | -.166 | -.188 | -.204 | -.219 | -.245 | -.307 |
| | .250 | .071 | .062 | .043 | .026 | .005 | -.011 | -.033 | -.069 | -.085 | -.112 | -.137 | -.157 | -.182 | -.208 | -.229 | -.249 | -.285 | -.311 | -.325 |
| | .350 | .024 | .015 | -.001 | -.017 | -.035 | -.050 | -.067 | -.100 | -.114 | -.137 | -.158 | -.173 | -.193 | -.212 | -.228 | -.242 | -.275 | -.306 | -.323 |
| | .450 | -.049 | -.056 | -.072 | -.086 | -.104 | -.116 | -.136 | -.167 | -.179 | -.202 | -.218 | -.232 | -.248 | -.264 | -.278 | -.291 | -.314 | -.329 | -.343 |
| | .550 | -.124 | -.131 | -.146 | -.157 | -.173 | -.185 | -.204 | -.233 | -.245 | -.266 | -.283 | -.297 | -.311 | -.326 | -.340 | -.353 | -.376 | -.391 | -.399 |
| | .650 | -.218 | -.224 | -.238 | -.249 | -.267 | -.277 | -.295 | -.323 | -.334 | -.356 | -.372 | -.383 | -.398 | -.410 | -.424 | -.437 | -.462 | -.475 | -.480 |
| | .750 | -.335 | -.339 | -.353 | -.364 | -.381 | -.392 | -.409 | -.434 | -.447 | -.467 | -.481 | -.492 | -.505 | -.514 | -.526 | -.537 | -.557 | -.562 | -.543 |
| | .850 | -.414 | -.419 | -.435 | -.443 | -.460 | -.473 | -.490 | -.514 | -.526 | -.543 | -.556 | -.565 | -.576 | -.579 | -.578 | -.554 | -.467 | -.345 | -.266 |
| | .925 | -.442 | -.448 | -.463 | -.471 | -.488 | -.499 | -.515 | -.540 | -.550 | -.567 | -.578 | -.578 | -.543 | -.358 | -.295 | -.231 | -.183 | -.152 | -.123 |
| | .975 | -.456 | -.461 | -.476 | -.483 | -.499 | -.506 | -.521 | -.540 | -.539 | -.539 | -.505 | -.393 | -.282 | -.197 | -.179 | -.160 | -.138 | -.116 | -.090 |
| | [a]1.000 | -.445 | -.454 | -.442 | -.442 | -.435 | -.482 | -.477 | -.485 | -.420 | -.401 | -.360 | -.250 | -.194 | -.145 | -.125 | -.125 | -.120 | -.085 | -.047 |

[a]No orifice.

TABLE 5.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(08.20) PROPELLER BLADE SECTION (x = 0.78)

$\left[\beta_{0.75R} = 45°;\ \beta_x = 43.85°;\ B = 2\right]$

(a) N = 1140 rpm.

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 1.405 | 1.553 | 1.707 | 1.870 | 2.031 | 2.172 | 2.336 | 2.481 | 2.584 | 2.542 | 2.417 | 2.250 | 2.103 | 1.942 | 1.770 | 1.611 | 1.458 |
| | $M_x$ | .487 | .506 | .523 | .541 | .555 | .573 | .591 | .609 | .620 | .615 | .601 | .581 | .562 | .546 | .528 | .508 | .495 |
| | $\alpha_x'$ | 14.02 | 11.49 | 8.99 | 6.50 | 4.20 | 2.30 | .22 | -1.51 | -2.67 | -2.20 | -.76 | 1.29 | 3.21 | 5.45 | 8.01 | 10.53 | 13.10 |
| | $\Delta\beta$ | .36 | .32 | .27 | .22 | .17 | .12 | .06 | 0 | -.05 | -.03 | .03 | .10 | .14 | .20 | .25 | .29 | .35 |
| | $\alpha_i$ | 2.97 | 2.80 | 2.65 | 2.13 | 1.60 | 1.13 | .62 | .24 | 0 | .09 | .43 | .87 | 1.35 | 1.83 | 2.47 | 2.74 | 2.95 |
| | $c_n$ | .9310 | .8826 | .8355 | .6768 | .5097 | .3629 | .2000 | .0765 | .0010 | .0287 | .1371 | .2803 | .4323 | .5832 | .7813 | .8619 | .9258 |
| | $c_m$ | -.0595 | -.0054 | -.0146 | -.0262 | -.0352 | -.0461 | -.0564 | -.0635 | -.0651 | -.0647 | -.0596 | -.0537 | -.0385 | -.0292 | -.0226 | -.0041 | -.0262 |
| | $c_c$ | | | | | | | | | | | | | | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.061 | 1.065 | 1.070 | 1.075 | 1.079 | 1.084 | 1.090 | 1.096 | 1.099 | 1.097 | 1.093 | 1.087 | 1.081 | 1.076 | 1.072 | 1.066 | 1.063 |
| | .025 | -1.307 | -2.041 | -3.384 | -1.980 | -1.083 | -.510 | -.003 | .322 | .499 | .431 | .183 | -.249 | -.783 | -1.493 | -2.868 | -2.564 | -1.812 |
| | .050 | -1.277 | -1.921 | -1.718 | -1.284 | -.895 | -.550 | -.213 | .031 | .174 | .118 | -.076 | -.383 | -.720 | -1.149 | -1.501 | -2.189 | -1.774 |
| | .100 | -1.251 | -1.714 | -1.183 | -.935 | -.675 | -.478 | -.264 | -.098 | .008 | -.032 | -.169 | -.375 | -.579 | -.808 | -1.079 | -1.619 | -1.559 |
| | .200 | -1.141 | -1.171 | -.865 | -.733 | -.575 | -.459 | -.321 | -.209 | -.137 | -.165 | -.257 | -.396 | -.518 | -.664 | -.826 | -1.007 | -1.183 |
| | .300 | -1.003 | -.836 | -.722 | -.632 | -.525 | -.445 | -.349 | -.267 | -.211 | -.232 | -.301 | -.402 | -.485 | -.587 | -.701 | -.760 | -.929 |
| | .400 | -.858 | -.641 | -.638 | -.584 | -.507 | -.455 | -.383 | -.320 | -.281 | -.295 | -.347 | -.425 | -.481 | -.552 | -.632 | -.624 | -.741 |
| | .500 | -.705 | -.504 | -.564 | -.536 | -.484 | -.451 | -.405 | -.363 | -.335 | -.345 | -.382 | -.435 | -.473 | -.518 | -.571 | -.523 | -.591 |
| | .600 | -.582 | -.397 | -.481 | -.474 | -.442 | -.431 | -.403 | -.374 | -.357 | -.362 | -.386 | -.424 | -.440 | -.466 | -.496 | -.420 | -.473 |
| | .700 | -.475 | -.302 | -.376 | -.398 | -.384 | -.393 | -.383 | -.371 | -.362 | -.369 | -.375 | -.394 | -.391 | -.400 | -.407 | -.317 | -.380 |
| | .800 | -.391 | -.222 | -.230 | -.264 | -.270 | -.294 | -.306 | -.308 | -.307 | -.306 | -.305 | -.313 | -.287 | -.273 | -.268 | -.202 | -.305 |
| | .900 | -.317 | -.154 | -.045 | -.047 | -.057 | -.101 | -.117 | -.127 | -.135 | -.130 | -.120 | -.119 | -.080 | -.056 | -.056 | -.097 | -.242 |
| | .950 | -.281 | -.125 | .027 | .070 | .082 | .062 | .050 | .046 | .039 | .042 | .049 | .046 | .073 | .070 | .037 | -.056 | -.215 |
| Lower surface | .0375 | .817 | .783 | .720 | .566 | .346 | .110 | -.185 | -.459 | -.661 | -.566 | -.329 | -.035 | .228 | .455 | .657 | .762 | .811 |
| | .075 | .669 | .630 | .565 | .430 | .252 | .076 | -.132 | -.319 | -.451 | -.390 | -.232 | -.030 | .165 | .339 | .504 | .606 | .658 |
| | .150 | .493 | .455 | .395 | .289 | .159 | .032 | -.108 | -.231 | -.319 | -.281 | -.171 | -.039 | .093 | .219 | .347 | .432 | .477 |
| | .250 | .360 | .328 | .279 | .197 | .094 | -.002 | -.100 | -.184 | -.244 | -.218 | -.140 | -.055 | .044 | .139 | .240 | .310 | .347 |
| | .350 | .263 | .238 | .203 | .133 | .051 | -.025 | -.102 | -.166 | -.210 | -.190 | -.136 | -.070 | .007 | .085 | .167 | .224 | .252 |
| | .450 | .179 | .163 | .138 | .083 | .011 | -.049 | -.110 | -.155 | -.189 | -.176 | -.135 | -.084 | -.023 | .040 | .108 | .152 | .169 |
| | .550 | .092 | .087 | .076 | .030 | -.035 | -.075 | -.121 | -.154 | -.177 | -.165 | -.138 | -.101 | -.054 | -.005 | .051 | .082 | .086 |
| | .650 | .015 | .026 | .032 | 0 | -.047 | -.085 | -.119 | -.139 | -.154 | -.148 | -.129 | -.105 | -.072 | -.033 | .012 | .027 | .019 |
| | .750 | -.059 | -.032 | -.003 | -.025 | -.057 | -.085 | -.099 | -.109 | -.116 | -.111 | -.103 | -.097 | -.072 | -.050 | -.017 | -.018 | -.032 |
| | .850 | -.097 | -.047 | .011 | .002 | -.014 | -.023 | -.023 | -.021 | -.018 | -.019 | -.021 | -.028 | -.023 | -.013 | .003 | -.021 | -.082 |
| | .925 | -.120 | -.047 | .038 | .043 | .036 | .060 | .069 | .078 | .082 | .081 | .074 | .064 | .050 | .032 | .040 | -.009 | -.094 |
| | .975 | -.186 | -.076 | .052 | .074 | .090 | .120 | .137 | .144 | .148 | .148 | .139 | .132 | .103 | .075 | .058 | -.016 | -.149 |
| | [a]1.000 | -.248 | -.092 | .085 | .190 | .127 | .158 | .175 | .178 | .183 | .177 | .170 | .165 | .170 | .110 | .063 | -.025 | -.180 |

[a]No orifice.

TABLE 5.– PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(08.20) PROPELLER BLADE SECTION (x = 0.78) – Continued

(b) N = 1350 rpm.

| | J | 1.497 | 1.628 | 1.766 | 1.897 | 2.031 | 2.168 | 2.305 | 2.445 | 2.532 | 2.490 | 2.370 | 2.241 | 2.112 | 1.971 | 1.830 | 1.693 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_x$ | .597 | .609 | .626 | .639 | .660 | .676 | .698 | .718 | .732 | .725 | .705 | .686 | .666 | .648 | .630 | .612 |
| | $\alpha_x'$ | 12.43 | 10.25 | 8.07 | 1.10 | 4.20 | 2.35 | .60 | -1.09 | -2.08 | -1.61 | -.20 | 1.40 | 3.09 | 5.04 | 7.10 | 9.21 |
| | $\Delta\beta$ | .49 | .46 | .41 | .35 | .28 | .20 | .12 | .03 | -.02 | 0 | .07 | .16 | .23 | .31 | .38 | .44 |
| | $\alpha_i$ | 2.84 | 2.91 | 2.66 | 2.08 | 1.62 | 1.19 | .73 | .38 | .09 | .20 | .55 | .94 | 1.37 | 1.82 | 2.36 | 2.81 |
| | $\rho_n$ | .8942 | .9200 | .8419 | .6026 | .5181 | .3813 | .2339 | .1213 | .0294 | .0658 | .1768 | .3032 | .4406 | .5789 | .7471 | .8884 |
| | $c_m$ | -.0305 | .0025 | -.0113 | -.0261 | -.0326 | -.0451 | -.0578 | -.0673 | -.0739 | -.0704 | -.0624 | -.0476 | -.0404 | -.0243 | -.0216 | -.0067 |
| | $c_c$ | | | | | | | | | | | | | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.092 | 1.096 | 1.102 | 1.106 | 1.114 | 1.120 | 1.128 | 1.136 | 1.142 | 1.139 | 1.131 | 1.124 | 1.116 | 1.109 | 1.103 | 1.097 |
| | .025 | -1.659 | -2.844 | -2.346 | -1.781 | -1.071 | -.460 | -.004 | .318 | .486 | .415 | .159 | -.211 | -.709 | -1.430 | -2.083 | -2.693 |
| | .050 | -1.526 | -2.705 | -2.243 | -1.687 | -.976 | -.368 | -.241 | .016 | .161 | .096 | -.113 | -.392 | -.736 | -1.295 | -2.040 | -2.509 |
| | .100 | -1.452 | -1.835 | -1.802 | -.803 | -.727 | -.508 | -.296 | -.117 | -.009 | -.058 | -.209 | -.395 | -.607 | -.788 | -1.006 | -1.908 |
| | .200 | -1.189 | -1.015 | -.779 | -.749 | -.627 | -.497 | -.364 | -.244 | -.165 | -.200 | -.307 | -.429 | -.555 | -.689 | -.780 | -.857 |
| | .300 | -.932 | -.749 | -.704 | -.657 | -.575 | -.486 | -.396 | -.309 | -.253 | -.278 | -.355 | -.444 | -.523 | -.613 | -.686 | -.712 |
| | .400 | -.720 | -.627 | -.641 | -.612 | -.559 | -.499 | -.439 | -.378 | -.337 | -.353 | -.410 | -.468 | -.523 | -.580 | -.627 | -.640 |
| | .500 | -.563 | -.530 | -.576 | -.564 | -.532 | -.499 | -.461 | -.425 | -.402 | -.413 | -.445 | -.480 | -.514 | -.544 | -.572 | -.572 |
| | .600 | -.447 | -.425 | -.492 | -.494 | -.482 | -.473 | -.453 | -.439 | -.433 | -.436 | -.448 | -.463 | -.478 | -.484 | -.495 | -.482 |
| | .700 | -.360 | -.312 | -.389 | -.405 | -.411 | -.420 | -.421 | -.423 | -.433 | -.427 | -.425 | -.419 | -.416 | -.402 | -.398 | -.373 |
| | .800 | -.296 | -.184 | -.232 | -.249 | -.271 | -.297 | -.311 | -.326 | -.343 | -.337 | -.323 | -.305 | -.287 | -.255 | -.240 | -.223 |
| | .900 | -.241 | -.066 | -.026 | -.018 | -.033 | -.062 | -.081 | -.095 | -.110 | -.105 | -.094 | -.072 | -.054 | -.019 | -.020 | -.036 |
| | .950 | -.217 | -.020 | -.065 | .081 | .095 | .095 | .089 | .087 | .079 | .082 | .088 | .090 | .096 | .093 | .040 | .046 |
| Lower surface | .0375 | .811 | .772 | .669 | .521 | .336 | .111 | -.158 | -.452 | -.795 | -.550 | -.294 | -.028 | .214 | .437 | .598 | .727 |
| | .075 | .660 | .621 | .527 | .398 | .249 | .077 | -.115 | -.323 | -.445 | -.398 | -.208 | -.024 | .158 | .332 | .463 | .577 |
| | .150 | .486 | .450 | .371 | .269 | .156 | .034 | -.096 | -.224 | -.323 | -.282 | -.155 | -.036 | .088 | .218 | .321 | .415 |
| | .250 | .357 | .329 | .265 | .181 | .091 | -.002 | -.093 | -.182 | -.251 | -.220 | -.134 | -.052 | .041 | .140 | .223 | .286 |
| | .350 | .260 | .244 | .190 | .118 | .045 | -.028 | -.101 | -.170 | -.221 | -.198 | -.134 | -.069 | .006 | .086 | .154 | .220 |
| | .450 | .173 | .169 | .125 | .066 | .006 | -.053 | -.112 | -.134 | -.200 | -.185 | -.137 | -.068 | -.025 | .040 | .098 | .150 |
| | .550 | .090 | .096 | .065 | .013 | -.036 | -.081 | -.127 | -.134 | -.190 | -.197 | -.145 | -.110 | -.060 | -.006 | .040 | .087 |
| | .650 | .018 | .042 | .022 | -.020 | -.060 | -.094 | -.127 | -.150 | -.168 | -.160 | -.138 | -.116 | -.079 | -.036 | .001 | .039 |
| | .750 | -.054 | -.006 | -.010 | -.044 | -.071 | -.091 | -.108 | -.113 | -.121 | -.117 | -.109 | -.104 | -.080 | -.052 | -.029 | 0 |
| | .850 | -.084 | -.008 | .009 | -.012 | -.023 | -.027 | -.026 | -.016 | -.014 | -.016 | -.020 | -.030 | -.024 | -.015 | -.004 | .010 |
| | .925 | -.095 | .014 | .051 | .040 | .048 | .060 | .071 | .093 | .095 | .093 | .086 | .061 | .058 | .050 | .045 | .048 |
| | [a]1.000 | -.200 | -.005 | .070 | .100 | .150 | .165 | .194 | .182 | .192 | .188 | .176 | .168 | .157 | .090 | .060 | .080 |

[a]No orifice.

[b]Lower surface only.

[redacted]

TABLE 5.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(08,20) PROPELLER BLADE SECTION (x = 0.78) - Continued

(a) N = 1500 rpm.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 1.716 | 1.829 | 1.968 | 2.092 | 2.214 | 2.326 | 2.451 | 2.513 | 2.476 | 2.389 | 2.264 | 2.137 | 2.033 | 1.910 | 1.801 |
| | $M_R$ | .687 | .704 | .720 | .738 | .758 | .777 | .799 | .809 | .802 | .787 | .763 | .744 | .727 | .708 | .692 |
| | $\alpha_R'$ | 8.85 | 7.11 | 5.08 | 3.36 | 1.75 | .34 | -1.16 | -1.87 | -1.45 | -.42 | 1.11 | 2.76 | 4.17 | 5.92 | 7.54 |
| | $\Delta\beta$ | .45 | .38 | .30 | .23 | .15 | .07 | -.03 | -.07 | -.04 | .02 | .12 | .20 | .26 | .34 | .40 |
| | $\alpha_1$ | 3.04 | 2.50 | 1.95 | 1.52 | 1.12 | .67 | .36 | .08 | .22 | .51 | .91 | 1.34 | 1.72 | 2.21 | 2.63 |
| | $c_n$ | .9664 | .7923 | .6213 | .4845 | .3587 | .2161 | .1161 | .0271 | .0700 | .1623 | .2919 | .4306 | .5497 | .7052 | .8329 |
| | $c_m$ | -.0133 | -.0177 | -.0283 | -.0411 | -.0515 | -.0633 | -.0769 | -.0842 | -.0787 | -.0728 | -.0579 | -.0466 | -.0329 | -.0262 | -.0169 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.125 | 1.131 | 1.137 | 1.145 | 1.152 | 1.160 | 1.170 | 1.174 | 1.172 | 1.165 | 1.154 | 1.147 | 1.140 | 1.132 | 1.126 |
| | .025 | -1.956 | -1.553 | -1.085 | -.641 | -.194 | .143 | .392 | .503 | .442 | .286 | -.039 | -.452 | -.870 | -1.305 | -1.691 |
| | .050 | -2.024 | -1.673 | -1.303 | -.858 | -.422 | -.143 | .073 | .178 | .122 | -.021 | -.293 | -.643 | -1.116 | -1.477 | -1.809 |
| | .100 | -1.933 | -1.588 | -1.247 | -.685 | -.440 | -.242 | -.078 | .007 | -.041 | -.150 | -.348 | -.582 | -.914 | -1.436 | -1.722 |
| | .200 | -1.801 | -1.479 | -.724 | -.647 | -.497 | -.359 | -.236 | -.165 | -.204 | -.289 | -.437 | -.587 | -.680 | -1.160 | -1.591 |
| | .300 | -1.337 | -.565 | -.635 | -.603 | -.513 | -.419 | -.325 | -.268 | -.301 | -.366 | -.475 | -.571 | -.635 | -.596 | -.602 |
| | .400 | -.549 | -.369 | -.637 | -.619 | -.567 | -.514 | -.441 | -.393 | -.419 | -.473 | -.554 | -.604 | -.632 | -.619 | -.549 |
| | .500 | -.566 | -.561 | -.593 | -.585 | -.571 | -.550 | -.510 | -.477 | -.496 | -.529 | -.568 | -.585 | -.590 | -.587 | -.552 |
| | .600 | -.519 | -.500 | -.525 | -.533 | -.543 | -.564 | -.592 | -.575 | -.585 | -.582 | -.557 | -.541 | -.527 | -.520 | -.493 |
| | .700 | -.435 | -.406 | -.426 | -.441 | -.459 | -.481 | -.550 | -.656 | -.585 | -.511 | -.474 | -.457 | -.428 | -.425 | -.403 |
| | .800 | -.290 | -.244 | -.256 | -.276 | -.298 | -.313 | -.326 | -.326 | -.306 | -.327 | -.311 | -.296 | -.259 | -.259 | -.249 |
| | .900 | -.078 | -.009 | -.006 | -.021 | -.032 | -.044 | -.049 | -.042 | -.053 | -.053 | -.047 | -.034 | -.006 | -.012 | -.020 |
| | .950 | .042 | .106 | .102 | .114 | .119 | .118 | .123 | .127 | .120 | .119 | .109 | .110 | .100 | .106 | .103 |
| Lower surface | .0375 | .639 | .578 | .415 | .232 | .007 | -.257 | -.570 | -.867 | -.708 | -.423 | -.116 | .135 | .324 | .491 | .621 |
| | .075 | .501 | .452 | .316 | .172 | .005 | -.188 | -.466 | -.793 | -.595 | -.307 | -.089 | .097 | .244 | .378 | .489 |
| | .150 | .348 | .317 | .209 | .097 | -.016 | -.144 | -.274 | -.298 | -.306 | -.211 | -.081 | .045 | .150 | .259 | .348 |
| | .250 | .241 | .223 | .131 | .051 | -.042 | -.134 | -.226 | -.271 | -.251 | -.183 | -.090 | .004 | .089 | .174 | .247 |
| | .350 | .162 | .153 | .077 | .007 | -.067 | -.142 | -.209 | -.246 | -.229 | -.178 | -.107 | -.030 | .039 | .112 | .175 |
| | .450 | .095 | .097 | .028 | -.029 | -.088 | -.150 | -.200 | -.226 | -.214 | -.178 | -.123 | -.061 | -.003 | .059 | .115 |
| | .550 | .033 | .038 | -.020 | -.070 | -.116 | -.165 | -.199 | -.217 | -.209 | -.183 | -.146 | -.095 | -.048 | .007 | .055 |
| | .650 | -.014 | -.001 | -.053 | -.092 | -.125 | -.162 | -.181 | -.188 | -.187 | -.170 | -.150 | -.112 | -.076 | -.028 | .013 |
| | .750 | -.047 | -.026 | -.070 | -.095 | -.115 | -.132 | -.134 | -.134 | -.136 | -.131 | -.131 | -.110 | -.087 | -.046 | -.014 |
| | .850 | -.023 | .006 | -.023 | -.032 | -.032 | -.035 | -.018 | -.013 | -.019 | -.022 | -.043 | -.039 | -.034 | -.007 | .016 |
| | .925 | .028 | .062 | .047 | .054 | .068 | .074 | .098 | .105 | .100 | .090 | .062 | .056 | .041 | .057 | .070 |
| | .975 | .059 | .098 | .084 | .106 | .129 | .142 | .163 | .171 | .165 | .156 | .125 | .112 | .080 | .097 | .107 |
| | [a]1.000 | .083 | .120 | .118 | .125 | .153 | .192 | .216 | .230 | .194 | .192 | .184 | .188 | .143 | .129 | .164 |

[a]No orifice.

[redacted]

NACA

[redacted]

TABLE 5.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(08.20) PROPELLER BLADE SECTION (x = 0.78) - Continued

(d) N = 1600 rpm.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J | | 1.871 | 1.958 | 2.030 | 2.113 | 2.202 | 2.290 | 2.366 | 2.456 | 2.405 | 2.332 | 2.253 | 2.167 | 2.080 | 2.017 | 1.920 |
| $M_R$ | | .750 | .766 | .777 | .792 | .806 | .825 | .838 | .855 | .844 | .831 | .816 | .799 | .783 | .776 | .757 |
| $\alpha_R$ | | 6.49 | 5.22 | 4.21 | 3.08 | 1.91 | .79 | -.15 | -1.22 | -.61 | .27 | 1.28 | 2.36 | 3.52 | 4.39 | 5.77 |
| $\Delta\beta$ | | .56 | .48 | .40 | .30 | .20 | .10 | .02 | -.09 | -.03 | .06 | .14 | .24 | .35 | .42 | .52 |
| $\alpha_i$ | | 2.60 | 2.15 | 1.86 | 1.52 | 1.09 | .79 | .40 | -.06 | .18 | .59 | .91 | 1.25 | 1.58 | 1.89 | 2.31 |
| $c_n$ | | .8252 | .6858 | .5935 | .4877 | .3503 | .2542 | .1290 | -.0181 | .0574 | .1903 | .2968 | .4019 | .5065 | .6032 | .7355 |
| $c_m$ | | -.0342 | -.0390 | -.0423 | -.0539 | -.0567 | -.0654 | -.0652 | -.0642 | -.0623 | -.0646 | -.0583 | -.0526 | -.0441 | -.0416 | -.0387 |
| $c_c$ | | | | | | | .0140 | .0182 | .0221 | .0205 | .0160 | | | | | |
| c/b | | Pressure coefficient, P | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.149 | 1.156 | 1.160 | 1.167 | 1.173 | 1.182 | 1.188 | 1.196 | 1.190 | 1.186 | 1.178 | 1.170 | 1.163 | 1.160 | 1.152 |
| | .025 | -1.155 | -.873 | -.668 | -.405 | -.114 | .131 | .318 | .473 | .398 | .233 | .016 | -.227 | -.502 | -.706 | -.964 |
| | .050 | -1.340 | -1.118 | -.944 | -.682 | -.379 | -.159 | .007 | .155 | .085 | -.066 | -.259 | -.491 | -.782 | -.969 | -1.183 |
| | .100 | -1.331 | -1.118 | -.925 | -.593 | -.417 | -.259 | -.127 | -.004 | -.066 | -.184 | -.335 | -.491 | -.701 | -.958 | -1.188 |
| | .200 | -1.284 | -1.064 | -.860 | -.685 | -.500 | -.379 | -.272 | -.169 | -.221 | -.316 | -.434 | -.577 | -.717 | -.903 | -1.136 |
| | .300 | -1.257 | -1.047 | -.846 | -.694 | -.560 | -.433 | -.347 | -.262 | -.306 | -.380 | -.489 | -.609 | -.742 | -.863 | -1.116 |
| | .400 | -1.244 | -.942 | -.786 | -.724 | -.618 | -.550 | -.480 | -.400 | -.440 | -.506 | -.581 | -.661 | -.739 | -.765 | -1.062 |
| | .500 | -.510 | -.569 | -.826 | -.815 | -.732 | -.667 | -.597 | -.522 | -.561 | -.621 | -.700 | -.763 | -.828 | -.773 | -.523 |
| | .600 | -.433 | -.493 | -.499 | -.758 | -.781 | -.734 | -.674 | -.602 | -.639 | -.692 | -.757 | -.797 | -.547 | -.501 | -.471 |
| | .700 | -.374 | -.407 | -.405 | -.383 | -.412 | -.801 | -.794 | -.735 | -.768 | -.800 | -.572 | -.397 | -.401 | -.408 | -.394 |
| | .800 | -.236 | -.239 | -.236 | -.222 | -.218 | -.209 | -.211 | -.221 | -.221 | -.207 | -.214 | -.229 | -.234 | -.235 | -.239 |
| | .900 | -.010 | .007 | .009 | .018 | .018 | .016 | .011 | -.040 | -.003 | .022 | .017 | .013 | .011 | .013 | .003 |
| | .950 | .122 | .120 | .111 | .119 | .119 | .102 | .079 | .025 | .062 | .104 | .114 | .115 | .114 | .116 | .126 |
| Lower surface | .0375 | .522 | .409 | .309 | .185 | .003 | -.212 | -.424 | -.630 | -.503 | -.322 | -.104 | .067 | .223 | .334 | .455 |
| | .075 | .409 | .315 | .234 | .139 | 0 | -.159 | -.368 | -.669 | -.587 | -.240 | -.079 | .047 | .170 | .255 | .353 |
| | .150 | .286 | .208 | .142 | .071 | -.023 | -.135 | -.239 | -.540 | -.292 | -.181 | -.076 | .008 | .094 | .159 | .239 |
| | .250 | .199 | .140 | .086 | .028 | -.047 | -.138 | -.213 | -.292 | -.259 | -.172 | -.092 | -.023 | .046 | .100 | .165 |
| | .350 | .135 | .080 | .032 | -.017 | -.080 | -.159 | -.218 | -.303 | -.255 | -.184 | -.121 | -.061 | -.002 | .044 | .103 |
| | .450 | .079 | .030 | -.017 | -.056 | -.109 | -.178 | -.225 | -.289 | -.253 | -.196 | -.144 | -.086 | -.045 | -.002 | .050 |
| | .550 | .025 | -.020 | -.060 | -.096 | -.141 | -.204 | -.246 | -.292 | -.268 | -.219 | -.173 | -.128 | -.085 | -.049 | -.001 |
| | .650 | -.015 | -.056 | -.091 | -.121 | -.158 | -.212 | -.246 | -.283 | -.266 | -.221 | -.185 | -.150 | -.110 | -.079 | -.038 |
| | .750 | -.035 | -.068 | -.098 | -.121 | -.145 | -.184 | -.209 | -.233 | -.220 | -.188 | -.166 | -.140 | -.113 | -.090 | -.054 |
| | .850 | .009 | -.016 | -.037 | -.047 | -.057 | -.079 | -.092 | -.106 | -.097 | -.078 | -.069 | -.059 | -.045 | -.031 | -.004 |
| | .925 | .087 | .064 | .047 | .046 | .044 | .032 | .021 | .002 | .015 | .035 | .040 | .042 | .045 | .052 | .075 |
| | .975 | .135 | .108 | .095 | .100 | .103 | .093 | .077 | .048 | .068 | .094 | .100 | .099 | .095 | .097 | .120 |
| | [a]1.000 | .236 | .164 | .167 | .151 | .173 | .140 | .118 | .072 | .093 | .125 | .170 | .165 | .164 | .158 | .181 |

[a]No orifice.

[redacted]

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TABLE 5.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(08.20) PROPELLER BLADE SECTION (x = 0.78) - Continued

(e) M = 0.56.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J | 1.954 | 1.985 | 2.015 | 2.066 | 2.090 | 2.128 | 2.177 | 2.210 | 2.263 | 2.307 | 2.349 | 2.387 | 2.446 | 2.504 |
| $M_x$ | .901 | .890 | .883 | .870 | .866 | .857 | .849 | .841 | .837 | .829 | .816 | .807 | .800 | .787 |
| $\alpha_x'$ | 5.28 | 4.84 | 4.42 | 3.71 | 3.38 | 2.87 | 2.23 | 1.79 | 1.12 | .57 | .05 | -.40 | -1.10 | -1.78 |
| $\Delta\beta$ | .39 | .36 | .34 | .29 | .27 | .24 | .20 | .17 | .13 | .09 | .06 | .03 | -.02 | -.06 |
| $\alpha_i$ | 1.56 | 1.46 | 1.40 | 1.34 | 1.25 | 1.18 | 1.08 | .95 | .80 | .66 | .58 | .45 | .27 | .06 |
| $c_n$ | .4961 | .4652 | .4477 | .4290 | .4000 | .3774 | .3465 | .3058 | .2581 | .2135 | .1852 | .1452 | .0865 | .0181 |
| $c_m$ | -.0428 | -.0410 | -.0423 | -.0511 | -.0539 | -.0574 | -.0603 | -.0636 | -.0623 | -.0695 | -.0714 | -.0754 | -.0759 | -.0791 |
| $c_o$ | .0265 | .0236 | .0219 | .0214 | .0204 | .0200 | .0186 | .0165 | .0156 | .0151 | | | | |
| | x/b | Pressure coefficient, P | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.220 | 1.214 | 1.210 | 1.203 | 1.201 | 1.197 | 1.193 | 1.189 | 1.187 | 1.184 | 1.178 | 1.174 | 1.171 | 1.165 |
| | .025 | -.237 | -.226 | -.207 | -.157 | -.104 | -.064 | -.003 | .050 | .137 | .202 | .267 | .335 | .421 | .505 |
| | .050 | -.522 | -.515 | -.496 | -.445 | -.392 | -.350 | -.283 | -.232 | -.152 | -.095 | -.038 | .025 | .103 | .180 |
| | .100 | -.555 | -.544 | -.521 | -.437 | -.373 | -.369 | -.335 | -.304 | -.249 | -.206 | -.163 | -.116 | -.053 | .006 |
| | .200 | -.600 | -.586 | -.553 | -.527 | -.505 | -.494 | -.460 | -.418 | -.372 | -.337 | -.302 | -.264 | -.213 | -.163 |
| | .300 | -.654 | -.642 | -.619 | -.606 | -.574 | -.557 | -.515 | -.495 | -.442 | -.396 | -.372 | -.346 | -.302 | -.260 |
| | .400 | -.688 | -.680 | -.667 | -.651 | -.626 | -.614 | -.585 | -.553 | -.528 | -.515 | -.496 | -.472 | -.422 | -.374 |
| | .500 | -.781 | -.781 | -.765 | -.759 | -.735 | -.725 | -.691 | -.673 | -.658 | -.628 | -.597 | -.538 | -.491 | -.432 |
| | .600 | -.846 | -.848 | -.839 | -.832 | -.804 | -.792 | -.768 | -.752 | -.729 | -.698 | -.648 | -.616 | -.570 | -.513 |
| | .700 | -.497 | -.452 | -.453 | -.531 | -.524 | -.564 | -.699 | -.835 | -.844 | -.795 | -.733 | -.625 | -.530 | -.495 |
| | .800 | -.361 | -.338 | -.322 | -.319 | -.296 | -.294 | -.250 | -.210 | -.208 | -.216 | -.257 | -.298 | -.321 | -.339 |
| | .900 | -.330 | -.293 | -.262 | -.231 | -.200 | -.198 | -.131 | -.042 | .004 | .015 | -.001 | -.025 | -.046 | -.063 |
| | .950 | -.323 | -.276 | -.232 | -.177 | -.132 | -.120 | -.057 | .027 | .083 | .120 | .129 | .128 | .124 | .116 |
| Lower surface | .0375 | .318 | .282 | .248 | .182 | .147 | .058 | -.010 | -.082 | -.188 | -.274 | -.375 | -.480 | -.629 | -.917 |
| | .075 | .259 | .227 | .199 | .146 | .119 | .046 | -.007 | -.062 | -.141 | -.205 | -.279 | -.371 | -.519 | -.784 |
| | .150 | .172 | .146 | .124 | .083 | .066 | .009 | -.027 | -.063 | -.117 | -.153 | -.194 | -.237 | -.287 | -.320 |
| | .250 | .104 | .084 | .066 | .031 | .020 | -.030 | -.058 | -.086 | -.129 | -.149 | -.176 | -.202 | -.231 | -.261 |
| | .350 | .036 | .018 | .004 | -.028 | -.034 | -.077 | -.096 | -.119 | -.150 | -.163 | -.182 | -.195 | -.213 | -.234 |
| | .450 | -.029 | -.044 | -.056 | -.083 | -.086 | -.122 | -.135 | -.149 | -.171 | -.176 | -.184 | -.191 | -.200 | -.213 |
| | .550 | -.117 | -.128 | -.136 | -.158 | -.154 | -.184 | -.186 | -.192 | -.204 | -.199 | -.198 | -.195 | -.198 | -.203 |
| | .650 | -.205 | -.214 | -.216 | -.231 | -.221 | -.238 | -.226 | -.217 | -.218 | -.201 | -.192 | -.184 | -.179 | -.179 |
| | .750 | -.318 | -.320 | -.311 | -.301 | -.266 | -.257 | -.223 | -.203 | -.190 | -.165 | -.151 | -.138 | -.130 | -.126 |
| | .850 | -.368 | -.344 | -.294 | -.238 | -.181 | -.163 | -.126 | -.100 | -.084 | -.057 | -.042 | -.026 | -.015 | -.012 |
| | .925 | -.344 | -.252 | -.197 | -.137 | -.086 | -.069 | -.030 | .002 | .026 | .056 | .071 | .085 | .098 | .100 |
| | .975 | -.298 | -.258 | -.210 | -.133 | -.075 | -.051 | -.006 | .042 | .082 | .119 | .137 | .151 | .164 | .165 |
| | [b]1.000 | -.268 | -.260 | -.180 | -.137 | -.079 | -.051 | -.001 | .060 | .126 | .141 | .170 | .209 | .196 | .211 |

[a]No orifice.

TABLE 5.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS, OF AN NACA 16-(3)(08.20) PROPELLER BLADE SECTION (x = 0.78) - Continued

(f) M = 0.60.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.464 | 2.430 | 2.386 | 2.347 | 2.306 | 2.232 | 2.182 | 2.151 | 2.121 | 2.080 | 2.051 | 2.012 | 1.981 | 2.301 |
| | $M_x$ | .850 | .859 | .868 | .875 | .883 | .898 | .905 | .916 | .923 | .929 | .939 | .947 | .955 | .881 |
| | $\alpha_x'$ | -1.31 | -.91 | -.39 | .09 | .59 | 1.52 | 2.17 | 2.57 | 2.97 | 3.52 | 3.92 | 4.46 | 4.90 | .65 |
| | $\Delta\beta$ | -.07 | -.03 | .02 | .06 | .10 | .17 | .20 | .22 | .24 | .26 | .27 | .28 | .29 | .11 |
| | $\alpha$ | .02 | .05 | .12 | .24 | .31 | .50 | .67 | .77 | .89 | 1.04 | 1.16 | 1.33 | 1.50 | .31 |
| | $c_n$ | .0064 | .0161 | .0387 | .0781 | .0987 | .1606 | .2155 | .2477 | .2845 | .3335 | .3690 | .4245 | .4768 | .0987 |
| | $c_m$ | -.0897 | -.0737 | -.0649 | -.0582 | -.0493 | -.0346 | -.0305 | -.0285 | -.0341 | -.0403 | -.0508 | -.0624 | -.0793 | -.0508 |
| | $c_c$ | .0230 | .0248 | .0270 | .0294 | .0304 | .0328 | .0358 | .0398 | .0405 | .0407 | .0424 | .0439 | .0458 | .0311 |
| c/b | | Pressure coefficient, P | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.194 | 1.198 | 1.202 | 1.206 | 1.210 | 1.218 | 1.221 | 1.227 | 1.231 | 1.234 | 1.240 | 1.244 | 1.249 | 1.209 |
| | .025 | .500 | .464 | .420 | .372 | .323 | .220 | .159 | .121 | .088 | .049 | .022 | -.017 | -.037 | .327 |
| | .050 | .186 | .151 | .110 | .066 | .022 | -.070 | -.128 | -.164 | -.201 | -.239 | -.264 | -.304 | -.324 | .025 |
| | .100 | .023 | -.002 | -.034 | -.064 | -.097 | -.163 | -.201 | -.197 | -.228 | -.239 | -.284 | -.346 | -.368 | -.099 |
| | .200 | -.152 | -.170 | -.195 | -.219 | -.243 | -.304 | -.343 | -.357 | -.365 | -.380 | -.384 | -.406 | -.428 | -.245 |
| | .300 | -.250 | -.259 | -.278 | -.300 | -.335 | -.384 | -.416 | -.433 | -.443 | -.459 | -.469 | -.485 | -.495 | -.335 |
| | .400 | -.389 | -.393 | -.404 | -.409 | -.420 | -.459 | -.488 | -.497 | -.502 | -.513 | -.522 | -.540 | -.544 | -.423 |
| | .500 | -.503 | -.516 | -.530 | -.543 | -.553 | -.571 | -.599 | -.610 | -.612 | -.621 | -.622 | -.636 | -.642 | -.558 |
| | .600 | -.588 | -.603 | -.615 | -.621 | -.633 | -.654 | -.673 | -.680 | -.683 | -.694 | -.697 | -.706 | -.707 | -.639 |
| | .700 | -.715 | -.732 | -.746 | -.750 | -.753 | -.767 | -.787 | -.786 | -.784 | -.792 | -.792 | -.799 | -.799 | -.760 |
| | .800 | -.467 | -.273 | -.232 | -.231 | -.243 | -.285 | -.351 | -.405 | -.416 | -.410 | -.514 | -.613 | -.762 | -.238 |
| | .900 | -.048 | -.102 | -.150 | -.183 | -.195 | -.203 | -.245 | -.290 | -.317 | -.335 | -.368 | -.406 | -.432 | -.198 |
| | .950 | .065 | -.023 | -.084 | -.120 | -.139 | -.154 | -.190 | -.251 | -.292 | -.314 | -.343 | -.390 | -.421 | -.145 |
| Lower surface | .0375 | -.713 | -.553 | -.441 | -.367 | -.305 | -.146 | -.067 | .007 | .077 | .144 | .187 | .241 | .286 | -.319 |
| | .075 | -.729 | -.620 | -.556 | -.433 | -.303 | -.111 | -.050 | .013 | .070 | .124 | .158 | .202 | .240 | -.329 |
| | .150 | -.620 | -.472 | -.324 | -.208 | -.174 | -.088 | -.051 | -.007 | .038 | .080 | .103 | .136 | .166 | -.187 |
| | .250 | -.293 | -.261 | -.247 | -.217 | -.180 | -.108 | -.079 | -.044 | -.003 | .035 | .054 | .082 | .110 | -.192 |
| | .350 | -.296 | -.280 | -.265 | -.234 | -.206 | -.145 | -.122 | -.090 | -.054 | -.020 | -.001 | .021 | .044 | -.218 |
| | .450 | -.280 | -.271 | -.266 | -.249 | -.230 | -.182 | -.164 | -.136 | -.104 | -.075 | -.058 | -.038 | -.016 | -.238 |
| | .550 | -.273 | -.280 | -.291 | -.285 | -.275 | -.238 | -.225 | -.201 | -.173 | -.146 | -.129 | -.112 | -.092 | -.283 |
| | .650 | -.248 | -.271 | -.303 | -.330 | -.342 | -.318 | -.311 | -.290 | -.261 | -.234 | -.220 | -.203 | -.184 | -.352 |
| | .750 | -.191 | -.220 | -.260 | -.314 | -.400 | -.424 | -.425 | -.406 | -.378 | -.354 | -.339 | -.325 | -.306 | -.405 |
| | .850 | -.057 | -.088 | -.122 | -.159 | -.205 | -.405 | -.469 | -.462 | -.437 | -.412 | -.399 | -.386 | -.369 | -.207 |
| | .925 | .064 | .022 | -.014 | -.051 | -.091 | -.167 | -.327 | -.467 | -.455 | -.433 | -.422 | -.411 | -.396 | -.094 |
| | .975 | .130 | .063 | .016 | -.027 | -.070 | -.119 | -.170 | -.360 | -.419 | -.420 | -.415 | -.411 | -.398 | -.082 |
| | [a]1.000 | .150 | .090 | .031 | -.010 | -.055 | -.099 | -.107 | -.217 | -.286 | -.300 | -.330 | -.380 | -.394 | -.085 |

[a]No orifice.

[redacted]

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TABLE 5.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(08.20) PROPELLER BLADE SECTION (x = 0.78) - Concluded

(g) M = 0.65.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.382 | 2.343 | 2.312 | 2.285 | 2.272 | 2.234 | 2.198 | 2.171 | 2.141 | 2.114 | 2.091 | 2.060 | 2.035 | 2.022 | 1.987 |
| | $M_x$ | .937 | .945 | .951 | .957 | .968 | .974 | .976 | .983 | .991 | .998 | 1.004 | 1.009 | 1.016 | 1.028 | 1.032 |
| | $\alpha_{x'}$ | -.34 | .14 | .52 | .85 | 1.01 | 1.50 | 1.96 | 2.31 | 2.71 | 3.07 | 3.38 | 3.80 | 4.14 | 4.32 | 4.81 |
| | $\Delta\beta$ | -.08 | -.06 | -.04 | -.02 | -.01 | .02 | .04 | .05 | .08 | .10 | .12 | .15 | .17 | .19 | .23 |
| | $\alpha_i$ | -.30 | -.19 | -.04 | .12 | .28 | .47 | .62 | .77 | .88 | .96 | 1.07 | 1.17 | 1.26 | 1.34 | 1.43 |
| | $c_n$ | -.0968 | -.0594 | -.0116 | .0387 | .0903 | .1516 | .1981 | .2452 | .2826 | .3058 | .3432 | .3748 | .4026 | .4284 | .4568 |
| | $c_m$ | -.0146 | -.0198 | -.0247 | -.0374 | -.0487 | -.0623 | -.0710 | -.0803 | -.0877 | -.0890 | -.0911 | -.0975 | -.1026 | -.1042 | -.1106 |
| | $c_c$ | .0309 | .0312 | .0323 | .0342 | .0378 | .0608 | .0636 | .0636 | .0636 | .0627 | .0619 | .0610 | .0603 | .0599 | .0597 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | |
| Upper surface | 0.000 | 1.238 | 1.243 | 1.247 | 1.250 | 1.256 | 1.259 | 1.261 | 1.265 | 1.269 | 1.273 | 1.277 | 1.280 | 1.284 | 1.293 | 1.295 |
| | [a].025 | .505 | .477 | .435 | .411 | .398 | .366 | .340 | .297 | .288 | .268 | .231 | .194 | .164 | .148 | .130 |
| | .050 | .804 | .178 | .140 | .117 | .105 | .076 | .052 | .011 | -.003 | -.021 | -.063 | -.097 | -.122 | -.138 | -.157 |
| | .100 | .060 | .040 | .011 | -.005 | -.009 | -.029 | -.046 | -.072 | -.077 | -.079 | -.096 | -.120 | -.168 | -.194 | -.216 |
| | .200 | -.097 | -.110 | -.133 | -.147 | -.157 | -.178 | -.189 | -.208 | -.210 | -.211 | -.231 | -.247 | -.255 | -.263 | -.283 |
| | .300 | -.186 | -.206 | -.233 | -.246 | -.242 | -.254 | -.267 | -.287 | -.289 | -.292 | -.311 | -.328 | -.342 | -.343 | -.356 |
| | .400 | -.293 | -.298 | -.315 | -.326 | -.328 | -.348 | -.350 | -.359 | -.358 | -.356 | -.373 | -.390 | -.404 | -.407 | -.417 |
| | .500 | -.422 | -.424 | -.435 | -.441 | -.438 | -.447 | -.455 | -.470 | -.467 | -.462 | -.472 | -.481 | -.491 | -.493 | -.505 |
| | .600 | -.503 | -.506 | -.520 | -.527 | -.522 | -.527 | -.529 | -.541 | -.540 | -.535 | -.545 | -.555 | -.563 | -.559 | -.569 |
| | .700 | -.623 | -.621 | -.632 | -.636 | -.631 | -.635 | -.637 | -.643 | -.639 | -.632 | -.640 | -.647 | -.655 | -.649 | -.656 |
| | .800 | -.736 | -.738 | -.742 | -.744 | -.737 | -.740 | -.739 | -.744 | -.737 | -.728 | -.735 | -.741 | -.744 | -.738 | -.742 |
| | .900 | -.247 | -.264 | -.309 | -.384 | -.559 | -.725 | -.821 | -.847 | -.854 | -.844 | -.841 | -.849 | -.856 | -.850 | -.853 |
| | .950 | -.226 | -.243 | -.285 | -.345 | -.403 | -.452 | -.486 | -.505 | -.536 | -.513 | -.510 | -.534 | -.554 | -.563 | -.611 |
| Lower surface | .0375 | -.345 | -.279 | -.235 | -.201 | -.156 | -.115 | -.077 | -.013 | .034 | .087 | .136 | .190 | .231 | .272 | .299 |
| | .075 | -.443 | -.408 | -.371 | -.332 | -.274 | -.195 | -.116 | -.015 | .037 | .086 | .127 | .171 | .206 | .240 | .260 |
| | .150 | -.417 | -.375 | -.310 | -.238 | -.153 | -.091 | -.044 | -.015 | .038 | .075 | .101 | .132 | .158 | .184 | .199 |
| | .250 | -.375 | -.289 | -.193 | -.153 | -.122 | -.095 | -.069 | -.030 | .002 | .035 | .058 | .086 | .108 | .131 | .142 |
| | .350 | -.272 | -.219 | -.207 | -.187 | -.153 | -.125 | -.105 | -.075 | -.047 | -.015 | .004 | .028 | .049 | .069 | .080 |
| | .450 | -.281 | -.268 | -.255 | -.231 | -.198 | -.174 | -.154 | -.123 | -.093 | -.062 | -.044 | -.024 | -.005 | .015 | .023 |
| | .550 | -.330 | -.311 | -.294 | -.274 | -.245 | -.222 | -.202 | -.171 | -.140 | -.110 | -.093 | -.072 | -.054 | -.036 | -.028 |
| | .650 | -.391 | -.371 | -.357 | -.341 | -.313 | -.292 | -.273 | -.244 | -.217 | -.190 | -.177 | -.159 | -.144 | -.126 | -.119 |
| | .750 | -.488 | -.470 | -.460 | -.441 | -.417 | -.397 | -.380 | -.354 | -.329 | -.305 | -.293 | -.276 | -.260 | -.241 | -.234 |
| | .850 | -.543 | -.526 | -.516 | -.500 | -.474 | -.454 | -.438 | -.415 | -.393 | -.368 | -.355 | -.340 | -.323 | -.304 | -.298 |
| | .925 | -.565 | -.548 | -.539 | -.524 | -.498 | -.479 | -.464 | -.442 | -.419 | -.394 | -.382 | -.366 | -.349 | -.330 | -.324 |
| | .975 | -.417 | -.447 | -.491 | -.515 | -.500 | -.487 | -.473 | -.453 | -.431 | -.407 | -.394 | -.380 | -.363 | -.343 | -.337 |
| | [a]1.000 | -.220 | -.240 | -.280 | -.310 | -.305 | -.350 | -.380 | -.415 | -.405 | -.400 | -.384 | -.360 | -.363 | -.346 | -.326 |

[a]No orifice.

TABLE 6.– PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.50) PROPELLER BLADE SECTION (x = 0.85)

$\left[\beta_{0.75R} = 45°;\ \beta_x = 41.3°;\ B = 2\right]$

(a) N = 1140 rpm.

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J | | 1.368 | 1.512 | 1.660 | 1.798 | 1.982 | 2.132 | 2.234 | 2.373 | 2.538 | 2.625 | 2.468 | 2.312 | 2.183 | 2.079 | 1.900 | 1.765 | 1.607 | 1.440 |
| $M_x$ | | .506 | .523 | .536 | .547 | .564 | .582 | .592 | .607 | .627 | .639 | .616 | .600 | .582 | .571 | .554 | .543 | .527 | .511 |
| $\alpha_x'$ | | 14.17 | 11.78 | 9.43 | 7.35 | 4.72 | 2.71 | 1.38 | -.33 | -2.24 | -3.21 | -.144 | .41 | 2.04 | 3.40 | 5.87 | 7.85 | 10.26 | 12.96 |
| $\Delta\beta$ | | .37 | .33 | .28 | .24 | .17 | .11 | .07 | .01 | -.06 | -.09 | -.02 | .04 | .09 | .14 | .21 | .25 | .30 | .35 |
| $\alpha_1$ | | 2.59 | 3.03 | 2.97 | 2.54 | 1.87 | 1.38 | 1.01 | .63 | .17 | -.03 | .32 | .77 | 1.18 | 1.54 | 2.11 | 2.72 | 3.05 | 3.15 |
| $c_n$ | | .6806 | .8000 | .7903 | .6768 | .5019 | .3719 | .2732 | .1716 | .0468 | -.0084 | .0868 | .2087 | .3194 | .4129 | .5645 | .7245 | .8110 | .8316 |
| $c_m$ | | -.0647 | -.0177 | -.0133 | -.0308 | -.0349 | -.0429 | -.0537 | -.0625 | -.0686 | -.0794 | -.0681 | -.0605 | -.0504 | -.0397 | -.0323 | -.0256 | -.0079 | -.0251 |
| $c_o$ | | | | | | | | | | | | | | | | | | | |
| c/b | | Pressure coefficient, P | | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.065 | 1.070 | 1.073 | 1.077 | 1.082 | 1.087 | 1.090 | 1.095 | 1.102 | 1.106 | 1.098 | 1.093 | 1.087 | 1.084 | 1.079 | 1.076 | 1.071 | 1.066 |
| | .025 | -.746 | -1.427 | -2.149 | -1.865 | -1.150 | -.564 | -.175 | .154 | .482 | .610 | .375 | .010 | -.354 | -.748 | -1.435 | -2.833 | -2.036 | -1.352 |
| | .050 | -.724 | -1.402 | -1.980 | -1.376 | -.942 | -.607 | -.371 | -.144 | .109 | .224 | .022 | -.246 | -.480 | -.722 | -1.112 | -1.426 | -1.885 | -1.328 |
| | .100 | -.696 | -1.397 | -1.563 | -.951 | -.672 | -.488 | -.349 | -.194 | -.021 | .065 | -.087 | -.272 | -.419 | -.567 | -.787 | -1.004 | -1.654 | -1.331 |
| | .200 | -.629 | -1.167 | -.852 | -.731 | -.578 | -.461 | -.382 | -.280 | -.164 | -.106 | -.208 | -.336 | -.421 | -.514 | -.638 | -.757 | -.979 | -1.180 |
| | .300 | -.579 | -.859 | -.638 | -.613 | -.504 | -.418 | -.369 | -.295 | -.219 | -.179 | -.247 | -.339 | -.396 | -.461 | -.547 | -.625 | -.664 | -.928 |
| | [a].400 | -.538 | -.618 | -.549 | -.551 | -.470 | -.410 | -.381 | -.322 | -.266 | -.244 | -.287 | -.355 | -.395 | -.454 | -.504 | -.557 | -.547 | -.707 |
| | .500 | -.517 | -.461 | -.481 | -.509 | -.455 | -.414 | -.395 | -.356 | -.318 | -.299 | -.334 | -.387 | -.408 | -.443 | -.479 | -.505 | -.460 | -.525 |
| | .600 | -.498 | -.358 | -.415 | -.469 | -.435 | -.411 | -.408 | -.377 | -.356 | -.341 | -.370 | -.407 | -.413 | -.439 | -.450 | -.457 | -.390 | -.407 |
| | .700 | -.481 | -.277 | -.331 | -.404 | -.391 | -.380 | -.390 | -.374 | -.366 | -.359 | -.374 | -.396 | -.388 | -.402 | -.396 | -.380 | -.307 | -.323 |
| | .800 | -.462 | -.211 | -.212 | -.268 | -.272 | -.278 | -.301 | -.297 | -.306 | -.309 | -.307 | -.316 | -.289 | -.291 | -.272 | -.244 | -.199 | -.259 |
| | .900 | -.443 | -.155 | -.075 | -.076 | -.082 | -.095 | -.123 | -.130 | -.174 | -.224 | -.146 | -.144 | -.110 | -.105 | -.078 | -.057 | -.089 | -.210 |
| | .950 | -.419 | -.128 | -.007 | .030 | .051 | .055 | .036 | .033 | .002 | -.018 | .018 | .018 | .042 | .037 | .046 | .033 | -.035 | -.186 |
| Lower surface | .0375 | .730 | .737 | .679 | .561 | .348 | .163 | -.033 | -.205 | -.503 | -.649 | -.395 | -.151 | .061 | .206 | .439 | .618 | .698 | .744 |
| | .075 | .597 | .596 | .533 | .419 | .248 | .099 | -.050 | -.171 | -.385 | -.490 | -.315 | -.138 | .019 | .127 | .315 | .474 | .555 | .601 |
| | .150 | .445 | .440 | .386 | .292 | .164 | .063 | -.039 | -.108 | -.246 | -.312 | -.206 | -.096 | .008 | .078 | .216 | .339 | .404 | .445 |
| | .250 | .316 | .316 | .271 | .195 | .095 | .020 | -.056 | -.105 | -.197 | -.242 | -.170 | -.100 | -.019 | .027 | .133 | .233 | .287 | .318 |
| | .350 | .225 | .233 | .198 | .132 | .055 | -.003 | -.064 | -.095 | -.162 | -.192 | -.146 | -.100 | -.038 | -.006 | .082 | .167 | .208 | .228 |
| | .450 | .144 | .160 | .136 | .083 | .017 | -.026 | -.075 | -.095 | -.147 | -.169 | -.132 | -.101 | -.053 | -.030 | .042 | .113 | .143 | .155 |
| | .550 | .055 | .088 | .077 | .030 | -.022 | -.053 | -.090 | -.096 | -.135 | -.151 | -.126 | -.111 | -.076 | -.061 | -.001 | .059 | .082 | .080 |
| | .650 | -.019 | .031 | .035 | .003 | -.039 | -.060 | -.090 | -.091 | -.116 | -.126 | -.112 | -.107 | -.078 | -.071 | -.024 | .025 | .035 | .019 |
| | .750 | -.105 | -.022 | 0 | -.021 | -.047 | -.058 | -.078 | -.072 | -.085 | -.086 | -.086 | -.094 | -.072 | -.075 | -.041 | -.001 | -.008 | -.042 |
| | .850 | -.162 | -.038 | .008 | .005 | -.009 | -.012 | -.029 | -.004 | 0 | .006 | -.009 | -.028 | -.022 | -.030 | -.007 | .018 | -.005 | -.068 |
| | .925 | -.195 | -.036 | .039 | .043 | .031 | .051 | .071 | .089 | .099 | .114 | .088 | .062 | .069 | .018 | .034 | .055 | .019 | -.068 |
| | .975 | -.310 | -.082 | .039 | .051 | .075 | .095 | .094 | .128 | .157 | .180 | .136 | .105 | .092 | .070 | .063 | .063 | .008 | -.122 |
| | [a]1.000 | -.350 | -.105 | .053 | .122 | .177 | .144 | .108 | .143 | .189 | .212 | .163 | .123 | .102 | .110 | .130 | .082 | -.010 | -.140 |

[a]No orifice.

TABLE 6.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.50) PROPELLER BLADE SECTION (x = 0.85) - Continued

(b) N = 1350 rpm.

| | J | 1.468 | 1.600 | 1.744 | 1.880 | 2.013 | 2.142 | 2.276 | 2.410 | 2.543 | 2.488 | 2.364 | 2.208 | 2.087 | 1.953 | 1.809 | 1.676 | 1.536 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_x$ | .618 | .634 | .648 | .665 | .682 | .695 | .714 | .734 | .756 | .747 | .724 | .703 | .687 | .671 | .658 | .640 | .628 |
| | $\alpha_x'$ | 12.50 | 10.37 | 8.15 | 6.15 | 4.30 | 2.57 | .86 | -.77 | -2.30 | -1.67 | -.22 | 1.71 | 3.29 | 5.12 | 7.19 | 9.19 | 11.39 |
| | $\Delta\beta$ | .57 | .54 | .49 | .41 | .33 | .24 | .14 | .04 | -.07 | -.02 | .07 | .19 | .28 | .37 | .45 | .52 | .56 |
| | $\alpha_l$ | 3.10 | 3.24 | 3.06 | 2.37 | 1.87 | 1.39 | .90 | .47 | .05 | .28 | .68 | 1.17 | 1.60 | 2.05 | 2.68 | 3.24 | 3.12 |
| | $c_n$ | .8200 | .8639 | .8174 | .6335 | .5032 | .3761 | .2432 | .1284 | .0142 | .0761 | .1889 | .3165 | .4303 | .5490 | .7168 | .8626 | .8271 |
| | $c_m$ | -.0254 | .0013 | -.0115 | -.0323 | -.0349 | -.0441 | -.0572 | -.0653 | -.0726 | -.0676 | -.0623 | -.0486 | -.0416 | -.0321 | -.0236 | -.0123 | -.0077 |
| | $c_a$ | | | | | | | | | | | | | | | | | |
| | a/b | Pressure coefficient, P | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.098 | 1.104 | 1.109 | 1.115 | 1.122 | 1.127 | 1.135 | 1.143 | 1.152 | 1.147 | 1.139 | 1.131 | 1.124 | 1.118 | 1.113 | 1.107 | 1.102 |
| | .025 | -1.410 | -2.572 | -2.020 | -1.275 | -.991 | -.438 | .001 | .340 | .560 | .468 | .200 | -.204 | -.688 | -1.166 | -1.772 | -2.332 | -2.004 |
| | .050 | -1.389 | -2.538 | -2.147 | -1.781 | -1.005 | -.596 | -.281 | -.021 | .174 | .087 | -.134 | -.430 | -.773 | -1.316 | -1.857 | -2.364 | -1.711 |
| | .100 | -1.293 | -2.153 | -1.921 | -.849 | -.677 | -.495 | -.302 | -.122 | .023 | -.042 | -.201 | -.398 | -.592 | -.786 | -1.407 | -2.156 | -1.486 |
| | .200 | -1.115 | -.901 | -.676 | -.710 | -.610 | -.490 | -.377 | -.259 | -.159 | -.205 | -.314 | -.437 | -.546 | -.651 | -.708 | -.759 | -1.149 |
| | .300 | -.882 | -.634 | -.611 | -.607 | -.529 | -.448 | -.374 | -.292 | -.220 | -.253 | -.332 | -.414 | -.487 | -.558 | -.613 | -.604 | -.808 |
| | .400 | -.682 | -.564 | -.588 | -.588 | -.534 | -.483 | -.438 | -.384 | -.334 | -.356 | -.409 | -.465 | -.510 | -.549 | -.586 | -.587 | -.586 |
| | .500 | -.534 | -.488 | -.513 | -.520 | -.487 | -.451 | -.423 | -.389 | -.359 | -.374 | -.408 | -.443 | -.472 | -.495 | -.517 | -.514 | -.450 |
| | .600 | -.419 | -.422 | -.463 | -.481 | -.463 | -.450 | -.440 | -.426 | -.415 | -.419 | -.436 | -.452 | -.460 | -.464 | -.472 | -.459 | -.349 |
| | .700 | -.334 | -.332 | -.383 | -.409 | -.405 | -.409 | -.418 | -.419 | -.425 | -.422 | -.422 | -.420 | -.410 | -.401 | -.395 | -.374 | -.270 |
| | .800 | -.266 | -.202 | -.232 | -.256 | -.259 | -.277 | -.295 | -.307 | -.320 | -.315 | -.308 | -.296 | -.275 | -.254 | -.245 | -.231 | -.201 |
| | .900 | -.217 | -.062 | -.038 | -.043 | -.047 | -.066 | -.088 | -.100 | -.113 | -.107 | -.106 | -.089 | -.060 | -.043 | -.046 | -.053 | -.149 |
| | .950 | -.193 | .007 | .061 | .070 | .080 | .080 | .069 | .065 | .059 | .060 | .060 | .070 | .078 | .075 | .057 | .042 | -.125 |
| Lower surface | .0375 | .747 | .715 | .631 | .507 | .335 | .133 | -.097 | -.359 | -.948 | -.446 | -.244 | .011 | .222 | .402 | .569 | .685 | .749 |
| | .075 | .605 | .572 | .491 | .381 | .238 | .076 | -.097 | -.292 | -.415 | -.395 | -.201 | -.014 | .149 | .294 | .436 | .542 | .604 |
| | .150 | .452 | .420 | .359 | .268 | .162 | .050 | -.065 | -.192 | -.301 | -.257 | -.134 | -.014 | .097 | .201 | .312 | .400 | .451 |
| | .250 | .325 | .302 | .253 | .178 | .096 | .011 | -.074 | -.158 | -.237 | -.202 | -.124 | -.038 | .045 | .126 | .214 | .285 | .325 |
| | .350 | .232 | .218 | .180 | .115 | .049 | -.018 | -.087 | -.147 | -.204 | -.178 | -.124 | -.056 | .009 | .073 | .147 | .207 | .236 |
| | .450 | .159 | .155 | .128 | .070 | .017 | -.037 | -.091 | -.137 | -.180 | -.161 | -.121 | -.070 | -.018 | .036 | .098 | .147 | .165 |
| | .550 | .084 | .093 | .074 | .018 | -.024 | -.068 | -.104 | -.136 | -.167 | -.154 | -.125 | -.092 | -.052 | -.009 | .044 | .087 | .090 |
| | .650 | .011 | .034 | .027 | -.012 | -.045 | -.076 | -.109 | -.129 | -.148 | -.141 | -.122 | -.096 | -.066 | -.032 | .010 | .046 | .031 |
| | .750 | -.027 | -.008 | -.004 | -.030 | -.053 | -.074 | -.097 | -.103 | -.110 | -.107 | -.102 | -.095 | -.069 | -.046 | -.011 | .014 | -.025 |
| | .850 | -.086 | -.008 | .014 | .004 | -.010 | -.022 | -.023 | -.014 | -.012 | -.015 | -.019 | -.031 | -.019 | -.007 | .018 | .034 | -.041 |
| | .925 | -.083 | .030 | .064 | .049 | .037 | .076 | .069 | .086 | .091 | .087 | .078 | .061 | .048 | .036 | .060 | .076 | -.031 |
| | .975 | -.161 | .012 | [b].058 | [b].073 | [b].080 | [b].088 | [b].114 | .139 | .146 | .141 | .128 | .096 | .079 | .069 | .071 | .087 | -.079 |
| | [a]1.000 | -.185 | -.005 | [b].037 | [b].089 | [b].091 | [b].105 | [b].136 | .165 | .210 | .171 | .152 | .107 | .135 | .160 | .140 | .085 | -.118 |

[a]No orifice.

[b]Lower surface only.

TABLE 6.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.50) PROPELLER BLADE SECTION (x = 0.85) - Continued

(c) N = 1500 rpm.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J | 2.561 | 2.455 | 2.312 | 2.197 | 2.083 | 1.957 | 1.850 | 1.709 | 1.779 | 1.904 | 2.009 | 2.140 | 2.254 | 2.382 | 2.507 |
| $M_x$ | .828 | .808 | .784 | .766 | .751 | .734 | .718 | .701 | .712 | .725 | .742 | .763 | .778 | .801 | .820 |
| $\alpha_x'$ | -2.50 | -1.29 | .41 | 1.86 | 3.35 | 5.07 | 6.59 | 8.68 | 7.63 | 5.81 | 4.35 | 2.59 | 1.13 | -.43 | -1.89 |
| $\Delta\beta$ | -.18 | -.07 | .07 | .18 | .29 | .39 | .47 | .56 | .52 | .43 | .35 | .24 | .13 | .01 | -.12 |
| $\alpha_i$ | .03 | .45 | .89 | 1.34 | 1.67 | 2.13 | 2.66 | 3.34 | 3.00 | 2.45 | 1.94 | 1.54 | 1.19 | .69 | .26 |
| $c_n$ | .0071 | .1219 | .2419 | .3639 | .4497 | .5723 | .7123 | .8935 | .8006 | .6587 | .5213 | .4168 | .3226 | .1877 | .0697 |
| $c_m$ | -.0993 | -.0887 | -.0710 | -.0556 | -.0398 | -.0341 | -.0275 | -.0198 | -.0225 | -.0288 | -.0352 | -.0497 | -.0598 | -.0760 | -.0919 |
| $c_o$ | | | | | | | | | | | | | | | |
| o/b | Pressure coefficient, P | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.183 | 1.174 | 1.163 | 1.156 | 1.150 | 1.142 | 1.136 | 1.130 | 1.134 | 1.139 | 1.146 | 1.155 | 1.161 | 1.171 | 1.179 |
| | .025 | .609 | .462 | .164 | -.164 | -.547 | -.870 | -1.030 | -1.786 | -1.527 | -.983 | -.764 | -.370 | -.013 | .316 | .532 |
| | .050 | .225 | .081 | -.178 | -.449 | -.817 | -1.207 | -1.496 | -1.870 | -1.659 | -1.412 | -1.081 | -.647 | -.327 | -.052 | .147 |
| | .100 | .068 | -.051 | -.242 | -.427 | -.631 | -1.137 | -1.460 | -1.752 | -1.625 | -1.354 | -.960 | -.542 | -.348 | -.151 | .003 |
| | .200 | -.138 | -.234 | -.372 | -.492 | -.606 | -.612 | -1.336 | -1.726 | -1.589 | -1.163 | -.614 | -.561 | -.444 | -.309 | -.192 |
| | .300 | -.217 | -.291 | -.388 | -.465 | -.522 | -.561 | -.501 | -.889 | -.654 | -.499 | -.365 | -.500 | -.437 | -.346 | -.260 |
| | [a].400 | -.310 | -.335 | -.367 | -.401 | -.430 | -.462 | -.480 | -.508 | -.513 | -.548 | -.524 | -.550 | -.514 | -.463 | -.415 |
| | .500 | -.419 | -.460 | -.493 | -.509 | -.518 | -.535 | -.518 | -.445 | -.485 | -.528 | -.527 | -.513 | -.506 | -.482 | -.444 |
| | .600 | -.527 | -.544 | -.533 | -.522 | -.504 | -.507 | -.494 | -.442 | -.472 | -.501 | -.502 | -.510 | -.527 | -.542 | -.542 |
| | .700 | -.635 | -.587 | -.501 | -.473 | -.439 | -.430 | -.419 | -.377 | -.403 | -.428 | -.427 | -.451 | -.484 | -.524 | -.625 |
| | .800 | -.368 | -.354 | -.328 | -.304 | -.270 | -.263 | -.258 | -.242 | -.256 | -.265 | -.260 | -.284 | -.312 | -.336 | -.350 |
| | .900 | -.056 | -.069 | -.063 | -.054 | -.034 | -.033 | -.040 | -.059 | -.054 | -.039 | -.030 | -.042 | -.057 | -.062 | -.062 |
| | .950 | .111 | .099 | .097 | .099 | .098 | .088 | .081 | .051 | .066 | .085 | .090 | .099 | .097 | .099 | .105 |
| Lower surface | .0375 | -.941 | -.652 | -.180 | .037 | .224 | .381 | .512 | .651 | .590 | .464 | .331 | .153 | -.043 | -.311 | -.838 |
| | .075 | -.950 | -.385 | -.159 | .003 | .150 | .275 | .390 | .516 | .459 | .345 | .231 | .089 | -.062 | -.266 | -.776 |
| | .150 | -.631 | -.248 | -.101 | .002 | .101 | .191 | .278 | .381 | .332 | .242 | .157 | .061 | -.041 | -.167 | -.239 |
| | .250 | -.197 | -.202 | -.106 | -.026 | .046 | .114 | .185 | .269 | .230 | .156 | .088 | .015 | -.060 | -.152 | -.221 |
| | .350 | -.181 | -.176 | -.107 | -.047 | .009 | .062 | .123 | .196 | .161 | .099 | .042 | .001 | -.073 | -.139 | -.191 |
| | .450 | -.171 | -.162 | -.110 | -.064 | -.022 | .022 | .073 | .138 | .106 | .053 | .004 | -.037 | -.084 | -.134 | -.174 |
| | .550 | -.166 | -.158 | -.122 | -.091 | -.059 | -.025 | .021 | .076 | .049 | .003 | -.039 | -.070 | -.104 | -.152 | -.168 |
| | .650 | -.142 | -.139 | -.119 | -.093 | -.073 | -.050 | -.009 | .036 | .013 | -.025 | -.059 | -.079 | -.106 | -.129 | -.144 |
| | .750 | -.093 | -.097 | -.095 | -.081 | -.073 | -.061 | -.029 | .009 | -.010 | -.042 | -.069 | -.080 | -.092 | -.095 | -.098 |
| | .850 | .016 | .005 | -.008 | -.021 | -.022 | -.015 | .010 | .036 | .023 | .001 | -.021 | -.027 | -.014 | -.001 | .007 |
| | .925 | .121 | .107 | .092 | .089 | .058 | .027 | .054 | .080 | .066 | .043 | .031 | .072 | .085 | .100 | .111 |
| | .975 | .159 | .145 | .127 | .097 | .082 | .074 | .085 | .094 | .089 | .084 | .073 | .090 | .113 | .134 | .148 |
| | [a]1.000 | .215 | .185 | .220 | .160 | .180 | .177 | .150 | .150 | .136 | .145 | .125 | .115 | .135 | .098 | .095 |

[a]No orifice.

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TABLE 6.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.50) PROPELLER BLADE SECTION (x = 0.85) - Continued

(d) N = 1600 rpm.

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J | 1.791 | 1.869 | 1.961 | 2.062 | 2.141 | 2.248 | 2.326 | 2.412 | 2.519 | 2.464 | 2.361 | 2.280 | 2.195 | 2.095 | 2.023 | 1.931 | 1.827 |
| $M_x$ | .763 | .780 | .788 | .803 | .817 | .831 | .844 | .858 | .879 | .869 | .850 | .835 | .819 | .804 | .793 | .778 | .762 |
| $\alpha_x'$ | 7.45 | 6.31 | 5.01 | 3.62 | 2.58 | 1.21 | .25 | -.79 | -2.03 | -1.40 | -.18 | .81 | 1.88 | 3.19 | 4.15 | 5.43 | 6.92 |
| $\Delta\beta$ | .67 | .64 | .55 | .44 | .33 | .17 | .05 | -.08 | -.24 | -.16 | 0 | .12 | .25 | .39 | .48 | .58 | .66 |
| $\alpha_1$ | 3.00 | 2.64 | 2.26 | 1.87 | 1.60 | 1.25 | .86 | .39 | -.18 | .12 | .64 | 1.03 | 1.42 | 1.72 | 2.05 | 2.39 | 2.84 |
| $c_n$ | .8045 | .7071 | .6071 | .5045 | .4316 | .3381 | .2323 | .1052 | -.0484 | .0335 | .1742 | .2800 | .3832 | .4665 | .5510 | .6420 | .7606 |
| $c_m$ | -.0269 | -.0279 | -.0328 | -.0423 | -.0572 | -.0675 | -.0800 | -.0824 | -.0846 | -.0819 | -.0783 | -.0747 | -.0605 | -.0477 | -.0420 | -.0333 | -.0257 |
| $c_c$ | | | | | | | | .0207 | .0235 | .0221 | .0182 | | | | | | |

| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Upper surface | [a]0.000 | 1.155 | 1.162 | 1.165 | 1.172 | 1.178 | 1.185 | 1.191 | 1.198 | 1.208 | 1.204 | 1.194 | 1.186 | 1.179 | 1.172 | 1.167 | 1.161 | 1.154 |
| | .025 | -.967 | -.775 | -.638 | -.431 | -.192 | .078 | .287 | .471 | .598 | .536 | .376 | .170 | -.062 | -.333 | -.538 | -.716 | -.847 |
| | .050 | -1.332 | -1.171 | -.978 | -.741 | -.523 | -.264 | -.075 | .092 | .224 | .157 | .001 | -.181 | -.393 | -.647 | -.853 | -1.068 | -1.291 |
| | .100 | -1.319 | -1.159 | -.969 | -.729 | -.472 | -.299 | -.167 | -.034 | .075 | .021 | -.107 | -.246 | -.391 | -.581 | -.846 | -1.059 | -1.288 |
| | .200 | -1.332 | -1.171 | -1.008 | -.787 | -.648 | -.464 | -.338 | -.228 | -.130 | -.178 | -.286 | -.406 | -.566 | -.720 | -.897 | -1.085 | -1.288 |
| | .300 | -1.287 | -1.128 | -.963 | -.743 | -.589 | -.434 | -.362 | -.280 | -.199 | -.240 | -.324 | -.409 | -.512 | -.674 | -.838 | -1.035 | -1.237 |
| | [a].400 | -.958 | -.823 | -.680 | -.599 | -.613 | -.540 | -.456 | -.395 | -.327 | -.351 | -.420 | -.502 | -.544 | -.598 | -.623 | -.690 | -.839 |
| | .500 | -.573 | -.411 | -.380 | -.449 | -.632 | -.613 | -.575 | -.516 | -.445 | -.480 | -.546 | -.604 | -.618 | -.520 | -.457 | -.387 | -.439 |
| | .600 | -.359 | -.359 | -.460 | -.557 | -.592 | -.677 | -.649 | -.597 | -.541 | -.571 | -.624 | -.670 | -.657 | -.576 | -.534 | -.456 | -.370 |
| | .700 | -.285 | -.358 | -.427 | -.453 | -.507 | -.715 | -.745 | -.710 | -.672 | -.695 | -.727 | -.734 | -.548 | -.469 | -.445 | -.419 | -.354 |
| | .800 | -.183 | -.227 | -.251 | -.251 | -.255 | -.234 | -.245 | -.280 | -.256 | -.251 | -.268 | -.239 | -.255 | -.259 | -.255 | -.254 | -.229 |
| | .900 | -.014 | -.020 | -.017 | -.007 | -.003 | .008 | .013 | -.033 | -.106 | -.073 | .004 | .006 | -.002 | -.010 | -.013 | -.023 | -.028 |
| | .950 | .088 | .105 | .113 | .118 | .123 | .117 | .093 | .028 | -.060 | -.020 | .080 | .109 | .115 | .114 | .113 | .105 | .091 |
| Lower surface | .0375 | .558 | .463 | .370 | .254 | .119 | -.054 | -.242 | -.595 | -.748 | -.700 | -.364 | -.140 | .029 | .184 | .304 | .402 | .508 |
| | .075 | .434 | .353 | .273 | .175 | .070 | -.067 | -.216 | -.573 | -.768 | -.711 | -.322 | -.134 | -.001 | .118 | .219 | .299 | .391 |
| | .150 | .317 | .256 | .194 | .123 | .049 | -.043 | -.134 | -.225 | -.748 | -.538 | -.190 | -.084 | -.001 | .081 | .153 | .213 | .283 |
| | .250 | .220 | .170 | .117 | .062 | .006 | -.067 | -.136 | -.211 | -.604 | -.229 | -.172 | -.102 | -.034 | .030 | .085 | .134 | .191 |
| | .350 | .150 | .109 | .067 | .020 | -.026 | -.083 | -.135 | -.189 | -.289 | -.196 | -.161 | -.108 | -.056 | -.007 | .039 | .079 | .126 |
| | .450 | .095 | .061 | .025 | -.015 | -.051 | -.097 | -.139 | -.182 | -.172 | -.185 | -.160 | -.119 | -.076 | -.038 | .001 | .036 | .076 |
| | .550 | .038 | .010 | -.024 | -.056 | -.084 | -.120 | -.155 | -.193 | -.185 | -.201 | -.172 | -.138 | -.105 | -.078 | -.045 | -.015 | .020 |
| | .650 | .004 | -.017 | -.070 | -.074 | -.097 | -.123 | -.149 | -.179 | -.187 | -.191 | -.161 | -.138 | -.111 | -.092 | -.066 | -.041 | -.012 |
| | .750 | -.020 | -.032 | -.056 | -.075 | -.088 | -.101 | -.117 | -.141 | -.161 | -.152 | -.124 | -.112 | -.094 | -.087 | -.070 | -.051 | -.029 |
| | .850 | .017 | .013 | -.003 | -.017 | -.014 | -.009 | -.018 | -.035 | -.064 | -.047 | -.021 | -.016 | -.025 | -.027 | -.014 | 0 | .012 |
| | .925 | .063 | .059 | .063 | .089 | .092 | .092 | .082 | .058 | .024 | .044 | -.078 | .087 | .089 | .091 | .064 | .051 | .037 |
| | .975 | .095 | .115 | .107 | .096 | .114 | .123 | .108 | .067 | .019 | .039 | .098 | .113 | .096 | .081 | .092 | .100 | .101 |
| | [a]1.000 | .135 | .157 | .117 | .155 | .160 | .187 | .124 | .068 | 0 | .036 | .112 | .135 | .135 | .115 | .148 | .142 | .150 |

[a]No orifice.

TABLE 6.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.50) PROPELLER BLADE SECTION (x = 0.85) - Continued

(c) M = 0.56.

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.534 | 2.482 | 2.440 | 2.397 | 2.364 | 2.328 | 2.286 | 2.254 | 2.222 | 2.184 | 2.151 | 2.124 | 2.092 | 2.066 | 2.030 | 2.007 | 1.982 | 1.954 | 1.951 |
| | $M_x$ | .823 | .830 | .838 | .846 | .852 | .860 | .866 | .876 | .883 | .888 | .899 | .911 | .914 | .921 | .928 | .937 | .948 | .952 | .961 |
| | $\alpha_x'$ | -2.20 | -1.61 | -1.12 | -.61 | -.22 | .22 | .74 | 1.13 | 1.54 | 2.02 | 2.45 | 2.80 | 3.23 | 3.57 | 4.06 | 4.37 | 4.72 | 5.11 | 5.15 |
| | $\Delta\beta$ | -.12 | -.08 | -.04 | .01 | .04 | .07 | .11 | .14 | .18 | .21 | .24 | .27 | .30 | .33 | .36 | .38 | .41 | .43 | .44 |
| | $c_l$ | 0 | .15 | .28 | .41 | .53 | .63 | .75 | .84 | .94 | 1.04 | 1.11 | 1.17 | 1.27 | 1.34 | 1.47 | 1.55 | 1.70 | 1.84 | 1.88 |
| | $c_n$ | 0 | .0400 | .0768 | .1119 | .1445 | .1710 | .2039 | .2284 | .2535 | .2800 | .2994 | .3148 | .3394 | .3594 | .3948 | .4155 | .4561 | .4948 | .5045 |
| | $c_m$ | -.0839 | -.0811 | -.0778 | -.0715 | -.0700 | -.0672 | -.0629 | -.0547 | -.0533 | -.0500 | -.0439 | -.0377 | -.0364 | -.0328 | -.0374 | -.0420 | -.0531 | -.0660 | -.0718 |
| | $c_o$ | | | | | .0164 | .0173 | .0189 | .0222 | .0224 | .0234 | .0244 | .0245 | .0248 | .0262 | .0274 | .0282 | .0300 | .0318 | .0331 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.181 | 1.184 | 1.188 | 1.192 | 1.195 | 1.199 | 1.201 | 1.207 | 1.210 | 1.213 | 1.219 | 1.225 | 1.227 | 1.230 | 1.234 | 1.236 | 1.245 | 1.248 | 1.253 |
| | .025 | .585 | .537 | .483 | .444 | .392 | .339 | .289 | .242 | .206 | .164 | .121 | .124 | .041 | .012 | -.018 | -.029 | -.044 | -.063 | -.056 |
| | .050 | .202 | .156 | .105 | .066 | .021 | -.025 | -.071 | -.114 | -.147 | -.186 | -.227 | -.221 | -.295 | -.311 | -.332 | -.339 | -.349 | -.367 | -.358 |
| | .100 | .053 | .015 | -.026 | -.054 | -.086 | -.123 | -.152 | -.181 | -.200 | -.221 | -.249 | -.223 | -.287 | -.325 | -.366 | -.382 | -.395 | -.417 | -.409 |
| | .200 | -.147 | -.179 | -.213 | -.240 | -.267 | -.302 | -.329 | -.371 | -.406 | -.423 | -.442 | -.408 | -.471 | -.481 | -.493 | -.502 | -.511 | -.528 | -.519 |
| | .300 | -.224 | -.252 | -.281 | -.295 | -.312 | -.335 | -.360 | -.393 | -.405 | -.424 | -.450 | -.423 | -.491 | -.505 | -.521 | -.525 | -.529 | -.543 | -.536 |
| | .400 | -.368 | -.403 | -.446 | -.463 | -.476 | -.489 | -.495 | -.519 | -.534 | -.542 | -.556 | -.518 | -.581 | -.589 | -.605 | -.611 | -.613 | -.623 | -.614 |
| | .500 | -.412 | -.438 | -.472 | -.506 | -.532 | -.558 | -.571 | -.585 | -.598 | -.608 | -.627 | -.590 | -.647 | -.649 | -.658 | -.666 | -.671 | -.682 | -.674 |
| | .600 | -.507 | -.537 | -.555 | -.578 | -.606 | -.634 | -.652 | -.670 | -.678 | -.686 | -.698 | -.665 | -.727 | -.735 | -.738 | -.739 | -.739 | -.752 | -.743 |
| | .700 | -.583 | -.626 | -.670 | -.679 | -.706 | -.739 | -.757 | -.773 | -.763 | -.744 | -.713 | -.580 | -.531 | -.538 | -.617 | -.661 | -.758 | -.826 | -.820 |
| | .800 | -.288 | -.271 | -.242 | -.218 | -.200 | -.194 | -.177 | -.196 | -.201 | -.207 | -.225 | -.186 | -.243 | -.261 | -.285 | -.297 | -.332 | -.381 | -.413 |
| | .900 | -.045 | -.033 | -.012 | .013 | .022 | 0 | -.045 | -.114 | -.128 | -.147 | -.180 | -.151 | -.218 | -.239 | -.263 | -.274 | -.306 | -.354 | -.376 |
| | .950 | .110 | .110 | .112 | .118 | .110 | .064 | .007 | -.073 | -.095 | -.123 | -.163 | -.138 | -.211 | -.234 | -.257 | -.266 | -.299 | -.345 | -.370 |
| Lower surface | .0375 | -.926 | -.851 | -.718 | -.549 | -.395 | -.317 | -.226 | -.162 | -.108 | -.035 | .009 | .118 | .129 | .175 | .222 | .258 | .295 | .329 | .338 |
| | .075 | -.930 | -.842 | -.655 | -.489 | -.365 | -.292 | -.208 | -.154 | -.112 | -.053 | -.018 | .079 | .081 | .122 | .160 | .192 | .225 | .254 | .263 |
| | .150 | -.377 | -.259 | -.248 | -.231 | -.204 | -.181 | -.136 | -.106 | -.079 | -.034 | -.012 | .073 | .062 | .092 | .122 | .148 | .173 | .196 | .204 |
| | .250 | -.210 | -.220 | -.216 | -.197 | -.177 | -.167 | -.137 | -.123 | -.104 | -.070 | -.054 | .023 | .007 | .033 | .059 | .082 | .102 | .120 | .130 |
| | .350 | -.194 | -.200 | -.197 | -.184 | -.171 | -.169 | -.150 | -.142 | -.129 | -.104 | -.094 | -.022 | -.045 | -.021 | -.001 | .021 | .039 | .055 | .064 |
| | .450 | -.181 | -.188 | -.187 | -.177 | -.171 | -.175 | -.162 | -.163 | -.155 | -.134 | -.128 | -.060 | -.087 | -.059 | -.050 | -.032 | -.016 | -.002 | .006 |
| | .550 | -.178 | -.186 | -.189 | -.184 | -.183 | -.196 | -.195 | -.207 | -.204 | -.190 | -.190 | -.125 | -.158 | -.144 | -.127 | -.111 | -.096 | -.086 | -.078 |
| | .650 | -.160 | -.171 | -.177 | -.177 | -.181 | -.201 | -.211 | -.238 | -.245 | -.241 | -.246 | -.185 | -.157 | -.208 | -.195 | -.178 | -.166 | -.157 | -.149 |
| | .750 | -.117 | -.128 | -.136 | -.140 | -.147 | -.173 | -.193 | -.238 | -.270 | -.295 | -.317 | -.264 | -.306 | -.299 | -.289 | -.274 | -.265 | -.258 | -.252 |
| | .850 | -.010 | -.023 | -.032 | -.034 | -.043 | -.071 | -.093 | -.135 | -.158 | -.186 | -.249 | -.272 | -.369 | -.378 | -.374 | -.362 | -.353 | -.347 | -.340 |
| | .925 | .095 | .083 | .073 | .072 | .062 | .029 | .002 | -.046 | -.066 | -.089 | -.127 | -.107 | -.191 | -.265 | -.322 | -.333 | -.335 | -.336 | -.332 |
| | .975 | .143 | .129 | .118 | .113 | .100 | .059 | .014 | -.052 | -.080 | -.111 | -.160 | -.148 | -.227 | -.247 | -.285 | -.311 | -.318 | -.323 | -.319 |
| | [a]1.000 | .211 | .182 | .160 | .145 | .132 | .089 | .044 | -.061 | [b]-.095 | -.132 | -.180 | -.160 | [b]-.270 | -.248 | -.274 | -.303 | -.300 | -.321 | -.302 |

[redacted]

[a]No orifice.

[b]Lower surface only.

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TABLE 6.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.50) PROPELLER BLADE SECTION (x = 0.85) - Continued

(f) M = 0.60.

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J | 1.958 | 1.977 | 2.019 | 2.045 | 2.073 | 2.095 | 2.129 | 2.146 | 2.198 | 2.240 | 2.257 | 2.290 | 2.336 | 2.363 | 2.403 | 2.436 | 2.460 |
| $M_x$ | 1.018 | 1.008 | 1.000 | .993 | .984 | .972 | .966 | .953 | .951 | .946 | .934 | .926 | .919 | .910 | .904 | .895 | .890 |
| $\alpha_x$' | 5.05 | 4.78 | 4.21 | 3.85 | 3.48 | 3.18 | 2.73 | 2.52 | 1.84 | 1.32 | 1.09 | .68 | .12 | -.21 | -.68 | -1.07 | -1.35 |
| $\Delta\beta$ | .33 | .31 | .28 | .26 | .24 | .23 | .20 | .18 | .14 | .11 | .09 | .06 | .02 | -.01 | -.06 | -.10 | -.13 |
| $\alpha_i$ | 1.85 | 1.76 | 1.52 | 1.39 | 1.32 | 1.17 | 1.01 | .83 | .61 | .40 | .31 | .20 | .07 | -.02 | -.10 | -.16 | -.22 |
| $c_n$ | .4968 | .4716 | .4071 | .3723 | .3535 | .3148 | .2726 | .2297 | .1645 | .1084 | .0842 | .0542 | .0187 | -.0058 | -.0271 | -.0439 | -.0587 |
| $c_m$ | -.1147 | -.1091 | -.0873 | -.0793 | -.0741 | -.0708 | -.0589 | -.0434 | -.0348 | -.0246 | -.0235 | -.0274 | -.0324 | -.0388 | -.0503 | -.0598 | -.0641 |
| $c_o$ | .0511 | .0500 | .0453 | .0442 | .0444 | .0439 | .0420 | .0386 | .0390 | .0376 | .0355 | .0338 | .0320 | .0301 | .0284 | .0261 | .0256 |
| x/b | Pressure coefficient, P | | | | | | | | | | | | | | | | |
| Upper surface [a]0.000 | 1.286 | 1.280 | 1.275 | 1.271 | 1.265 | 1.258 | 1.255 | 1.248 | 1.247 | 1.244 | 1.237 | 1.233 | 1.229 | 1.224 | 1.222 | 1.217 | 1.213 |
| .025 | .099 | .108 | .142 | .167 | .192 | .209 | .224 | .243 | .311 | .360 | .386 | .387 | .457 | .482 | .523 | .551 | .570 |
| .050 | -.202 | -.204 | -.176 | -.161 | -.149 | -.139 | -.128 | -.111 | -.046 | .005 | .028 | .029 | .093 | .116 | .155 | .182 | .201 |
| .100 | -.259 | -.258 | -.223 | -.189 | -.156 | -.147 | -.150 | -.146 | -.098 | -.065 | -.054 | -.063 | -.011 | .001 | .031 | .051 | .064 |
| .200 | -.381 | -.365 | -.358 | -.350 | -.341 | -.337 | -.338 | -.338 | -.307 | -.278 | -.259 | -.255 | -.204 | -.196 | -.167 | -.149 | -.136 |
| .300 | -.406 | -.414 | -.393 | -.382 | -.369 | -.364 | -.364 | -.359 | -.323 | -.291 | -.284 | -.299 | -.249 | -.240 | -.219 | -.211 | -.202 |
| .400 | -.488 | -.499 | -.478 | -.468 | -.460 | -.460 | -.462 | -.462 | -.440 | -.423 | -.419 | -.433 | -.391 | -.394 | -.381 | -.380 | -.375 |
| .500 | -.546 | -.559 | -.536 | -.530 | -.524 | -.527 | -.534 | -.539 | -.515 | -.493 | -.488 | -.506 | -.468 | -.474 | -.460 | -.454 | -.446 |
| .600 | -.615 | -.630 | -.612 | -.612 | -.610 | -.613 | -.618 | -.618 | -.593 | -.576 | -.575 | -.594 | -.562 | -.567 | -.554 | -.549 | -.543 |
| .700 | -.690 | -.711 | -.697 | -.698 | -.696 | -.702 | -.706 | -.707 | -.693 | -.683 | -.684 | -.707 | -.678 | -.686 | -.675 | -.674 | -.668 |
| .800 | -.753 | -.781 | -.777 | -.786 | -.789 | -.790 | -.682 | -.477 | -.452 | -.374 | -.300 | -.281 | -.230 | -.225 | -.220 | -.214 | -.213 |
| .900 | -.826 | -.761 | -.478 | -.392 | -.368 | -.356 | -.329 | -.295 | -.271 | -.244 | -.222 | -.226 | -.176 | -.163 | -.141 | -.122 | -.111 |
| .950 | -.586 | -.497 | -.416 | -.374 | -.357 | -.345 | -.320 | -.282 | -.255 | -.225 | -.204 | -.205 | -.156 | -.141 | -.113 | -.082 | -.067 |
| Lower surface .0375 | .333 | .294 | .258 | .205 | .177 | .136 | .071 | .024 | -.062 | -.138 | -.188 | -.255 | -.319 | -.451 | -.538 | -.612 | -.655 |
| .075 | .263 | .227 | .197 | .149 | .127 | .091 | .032 | -.012 | -.089 | -.191 | -.281 | -.383 | -.411 | -.479 | -.563 | -.640 | -.680 |
| .150 | .216 | .186 | .164 | .126 | .111 | .083 | .036 | .005 | -.044 | -.092 | -.124 | -.178 | -.264 | -.386 | -.448 | -.503 | -.545 |
| .250 | .146 | .118 | .100 | .067 | .107 | .030 | -.013 | -.039 | -.080 | -.120 | -.150 | -.201 | -.203 | -.252 | -.351 | -.448 | -.509 |
| .350 | .083 | .056 | .043 | .013 | .005 | -.017 | -.057 | -.080 | -.112 | -.143 | -.168 | -.216 | -.222 | -.256 | -.271 | -.286 | -.316 |
| .450 | .032 | .008 | -.002 | -.029 | -.036 | -.057 | -.091 | -.112 | -.131 | -.152 | -.170 | -.210 | -.208 | -.235 | -.237 | -.222 | -.209 |
| .550 | -.043 | -.066 | -.075 | -.098 | -.107 | -.126 | -.160 | -.179 | -.197 | -.216 | -.230 | -.266 | -.247 | -.256 | -.245 | -.233 | -.219 |
| .650 | -.123 | -.148 | -.155 | -.178 | -.184 | -.204 | -.237 | -.254 | -.268 | -.282 | -.293 | -.326 | -.299 | -.300 | -.276 | -.258 | -.241 |
| .750 | -.219 | -.244 | -.250 | -.269 | -.277 | -.296 | -.326 | -.342 | -.355 | -.366 | -.374 | -.403 | -.370 | -.367 | -.335 | -.270 | -.235 |
| .850 | -.305 | -.329 | -.334 | -.352 | -.358 | -.378 | -.404 | -.418 | -.428 | -.436 | -.442 | -.462 | -.395 | -.294 | -.191 | -.136 | -.117 |
| .925 | -.308 | -.331 | -.333 | -.348 | -.353 | -.371 | -.396 | -.406 | -.414 | -.418 | -.384 | -.267 | -.149 | -.115 | -.078 | -.041 | -.025 |
| .975 | -.297 | -.320 | -.323 | -.340 | -.346 | -.364 | -.387 | -.393 | -.392 | -.368 | -.263 | -.210 | -.152 | -.135 | -.096 | -.051 | -.030 |
| [a]1.000 | -.290 | -.306 | -.320 | -.331 | -.333 | -.341 | -.354 | -.323 | -.322 | -.262 | -.198 | -.190 | -.157 | -.151 | -.109 | -.060 | -.039 |

[a]No orifice.

TABLE 6.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.50) PROPELLER BLADE SECTION (x = 0.85) - Concluded

(g) M = 0.64.

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J | | 2.386 | 2.357 | 2.323 | 2.308 | 2.270 | 2.231 | 2.208 | 2.186 | 2.157 | 2.131 | 2.098 | 2.079 | 2.049 | 2.031 | 2.002 | 1.983 |
| $M_{x'}$ | | .962 | .969 | .976 | .988 | .993 | 1.000 | 1.007 | 1.018 | 1.026 | 1.034 | 1.039 | 1.048 | 1.058 | 1.064 | 1.072 | 1.082 |
| $\alpha_{x'}$ | | -.48 | -.13 | .28 | .46 | .93 | 1.42 | 1.71 | 1.99 | 2.37 | 2.71 | 3.14 | 3.40 | 3.80 | 4.04 | 4.44 | 4.70 |
| $\Delta\alpha$ | | -.14 | -.12 | -.09 | -.08 | -.04 | -.01 | .01 | .03 | .06 | .09 | .12 | .14 | .17 | .19 | .23 | .25 |
| $\alpha_l$ | | -.32 | -.16 | .03 | .15 | .33 | .55 | .72 | .85 | .95 | 1.07 | 1.16 | 1.24 | 1.36 | 1.45 | 1.52 | 1.62 |
| $c_n$ | | -.0871 | -.0439 | .0090 | .0394 | .0884 | .1484 | .1942 | .2303 | .2574 | .2871 | .3103 | .3329 | .3658 | .3897 | .4084 | .4361 |
| $c_m$ | | -.0305 | -.0403 | -.0465 | -.0480 | -.0605 | -.0759 | -.0900 | -.0980 | -.1018 | -.1024 | -.1068 | -.1096 | -.1127 | -.1132 | -.1167 | -.1196 |
| $c_a$ | | .0473 | .0490 | .0498 | .0497 | .0521 | .0560 | .0590 | .0590 | .0582 | .0580 | .0573 | .0569 | .0563 | .0555 | .0550 | .0545 |
| | x/b | Pressure coefficient, P | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.253 | 1.257 | 1.260 | 1.268 | 1.270 | 1.275 | 1.278 | 1.286 | 1.291 | 1.296 | 1.299 | 1.305 | 1.312 | 1.315 | 1.321 | 1.326 |
| | .025 | .558 | .539 | .518 | .502 | .468 | .432 | .415 | .390 | .369 | .341 | .327 | .317 | .288 | .268 | .258 | .233 |
| | .050 | .205 | .187 | .169 | .154 | .121 | .087 | .068 | .041 | .021 | -.004 | -.013 | -.016 | -.032 | -.043 | -.051 | -.069 |
| | .100 | .081 | .070 | .059 | .053 | .031 | .007 | -.006 | -.023 | -.033 | -.043 | -.044 | -.043 | -.072 | -.098 | -.112 | -.137 |
| | .200 | -.113 | -.122 | -.131 | -.143 | -.174 | -.195 | -.201 | -.211 | -.217 | -.223 | -.223 | -.220 | -.228 | -.235 | -.242 | -.260 |
| | .300 | -.158 | -.169 | -.174 | -.174 | -.189 | -.213 | -.221 | -.232 | -.240 | -.246 | -.248 | -.245 | -.258 | -.267 | -.273 | -.285 |
| | .400 | -.304 | -.309 | -.311 | -.311 | -.322 | -.336 | -.337 | -.343 | -.345 | -.350 | -.350 | -.344 | -.349 | -.354 | -.361 | -.373 |
| | .500 | -.378 | -.381 | -.382 | -.380 | -.391 | -.408 | -.410 | -.413 | -.414 | -.413 | -.410 | -.403 | -.408 | -.412 | -.417 | -.428 |
| | .600 | -.475 | -.474 | -.472 | -.468 | -.474 | -.488 | -.491 | -.498 | -.498 | -.497 | -.495 | -.486 | -.487 | -.486 | -.488 | -.498 |
| | .700 | -.586 | -.585 | -.580 | -.572 | -.576 | -.584 | -.582 | -.585 | -.586 | -.584 | -.581 | -.571 | -.571 | -.571 | -.571 | -.574 |
| | .800 | -.711 | -.709 | -.702 | -.691 | -.690 | -.699 | -.694 | -.690 | -.686 | -.683 | -.679 | -.668 | -.666 | -.663 | -.661 | -.663 |
| | .900 | -.306 | -.398 | -.421 | -.428 | -.587 | -.779 | -.801 | -.799 | -.794 | -.782 | -.776 | -.764 | -.761 | -.756 | -.752 | -.747 |
| | .950 | -.265 | -.318 | -.328 | -.330 | -.372 | -.507 | -.751 | -.820 | -.818 | -.807 | -.801 | -.788 | -.783 | -.779 | -.776 | -.773 |
| Lower surface | .0375 | -.396 | -.332 | -.255 | -.171 | -.113 | -.080 | -.041 | .011 | .049 | .101 | .145 | .192 | .241 | .285 | .306 | .351 |
| | .075 | -.428 | -.365 | -.315 | -.281 | -.247 | -.209 | -.156 | -.070 | -.009 | .053 | .098 | .144 | .189 | .229 | .249 | .286 |
| | .150 | -.346 | -.308 | -.269 | -.222 | -.152 | -.074 | -.018 | .011 | .034 | .069 | .102 | .138 | .170 | .202 | .217 | .245 |
| | .250 | -.361 | -.318 | -.244 | -.170 | -.105 | -.088 | -.067 | -.032 | -.008 | .025 | .055 | .090 | .116 | .143 | .157 | .181 |
| | .350 | -.351 | -.285 | -.212 | -.170 | -.154 | -.136 | -.110 | -.074 | -.051 | -.021 | .004 | .035 | .058 | .084 | .100 | .118 |
| | .450 | -.309 | -.248 | -.208 | -.185 | -.169 | -.150 | -.126 | -.093 | -.074 | -.047 | -.020 | .012 | .032 | .055 | .066 | .084 |
| | .550 | -.309 | -.279 | -.251 | -.225 | -.210 | -.193 | -.172 | -.140 | -.123 | -.101 | -.081 | -.055 | -.037 | -.016 | -.005 | .014 |
| | .650 | -.347 | -.330 | -.305 | -.279 | -.268 | -.256 | -.238 | -.214 | -.199 | -.177 | -.158 | -.132 | -.114 | -.094 | -.083 | -.066 |
| | .750 | -.421 | -.407 | -.384 | -.360 | -.351 | -.343 | -.325 | -.303 | -.289 | -.269 | -.248 | -.225 | -.208 | -.190 | -.178 | -.162 |
| | .850 | -.480 | -.472 | -.450 | -.427 | -.421 | -.416 | -.398 | -.379 | -.366 | -.347 | -.329 | -.306 | -.290 | -.272 | -.261 | -.245 |
| | .925 | -.465 | -.462 | -.440 | -.417 | -.414 | -.411 | -.398 | -.382 | -.371 | -.353 | -.336 | -.313 | -.296 | -.279 | -.269 | -.253 |
| | .975 | -.405 | -.428 | -.413 | -.393 | -.389 | -.387 | -.376 | -.360 | -.349 | -.332 | -.317 | -.296 | -.281 | -.263 | -.252 | -.236 |
| | [a]1.000 | -.256 | -.300 | -.284 | -.296 | -.320 | -.280 | -.360 | -.342 | -.325 | -.314 | -.298 | -.270 | -.285 | -.258 | -.243 | -.215 |

[a]No orifice.

TABLE 7.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.00) PROPELLER BLADE SECTION (x = 0.90)

$\left[\beta_{0.75R} = 45°;\ \beta_x = 39.63°;\ B = 2\right]$

(a) N = 1140 rpm.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $c_c'$ | 2.532 | 2.485 | 2.406 | 2.332 | 2.248 | 2.179 | 2.072 | 2.000 | 1.926 | 1.848 | 1.774 | 1.685 | 1.616 | 1.543 | 1.461 |
| $c_m'$ | .663 | .648 | .637 | .630 | .623 | .614 | .604 | .594 | .586 | .583 | .574 | .565 | .562 | .553 | .545 |
| $\Delta c_{m_{ac}}'$ | -2.44 | -1.68 | -.76 | .12 | 1.14 | 2.01 | 3.40 | 4.36 | 5.37 | 6.46 | 7.52 | 8.84 | 9.88 | 11.01 | 12.30 |
| $c_n'$ | -.08 | -.05 | -.02 | .02 | .05 | .08 | .12 | .16 | .19 | .22 | .25 | .28 | .30 | .32 | .35 |
| $c_p'$ | .09 | .28 | .55 | .78 | 1.12 | 1.39 | 1.71 | 2.04 | 2.29 | 2.59 | 2.92 | 3.21 | 3.42 | 3.47 | 3.47 |
| $\eta$ | .0197 | .0632 | .1226 | .1739 | .2487 | .3084 | .3797 | .4516 | .5077 | .5723 | .6445 | .7071 | .7555 | .7665 | .7639 |
| $c_c'$ | -.0623 | -.0615 | -.0580 | -.0579 | -.0510 | -.0474 | -.0415 | -.0347 | -.0328 | -.0300 | -.0270 | -.0218 | -.0141 | -.0070 | -.0149 |

| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Upper surface | [a]0.000 | 1.115 | 1.109 | 1.105 | 1.102 | 1.100 | 1.097 | 1.094 | 1.091 | 1.088 | 1.087 | 1.085 | 1.082 | 1.081 | 1.078 | 1.076 |
| | .025 | .553 | .437 | .281 | .116 | -.097 | -.319 | -.685 | -1.016 | -1.384 | -1.756 | -2.262 | -2.904 | -2.756 | -2.112 | -1.628 |
| | .050 | .198 | .104 | -.017 | -.125 | -.262 | -.393 | -.599 | -.772 | -.949 | -1.118 | -1.248 | -1.482 | -1.766 | -1.834 | -1.507 |
| | .100 | .022 | -.049 | -.136 | -.203 | -.293 | -.374 | -.497 | -.591 | -.687 | -.788 | -.884 | -.960 | -1.266 | -1.498 | -1.399 |
| | .200 | -.108 | -.155 | -.220 | -.253 | -.310 | -.354 | -.425 | -.481 | -.539 | -.594 | -.647 | -.697 | -.801 | -.931 | -1.048 |
| | .300 | -.231 | -.265 | -.316 | -.332 | -.372 | -.402 | -.450 | -.490 | -.525 | -.557 | -.592 | -.621 | -.630 | -.646 | -1756 |
| | .400 | -.255 | -.273 | -.325 | -.335 | -.365 | -.388 | -.424 | -.453 | -.478 | -.510 | -.520 | -.535 | -.532 | -.580 | -.576 |
| | .500 | -.287 | -.308 | -.341 | -.339 | -.360 | -.374 | -.400 | -.418 | -.435 | -.455 | -.469 | -.477 | -.459 | -.428 | -.436 |
| | .600 | -.307 | -.322 | -.351 | -.341 | -.355 | -.361 | -.380 | -.390 | -.401 | -.413 | -.422 | -.421 | -.393 | -.353 | -.349 |
| | .700 | -.297 | -.306 | -.331 | -.315 | -.325 | -.324 | -.334 | -.341 | -.345 | -.351 | -.355 | -.347 | -.314 | -.275 | -.277 |
| | .800 | -.272 | -.275 | -.294 | -.273 | -.277 | -.272 | -.271 | -.267 | -.266 | -.265 | -.261 | -.247 | -.216 | -.191 | -.218 |
| | .900 | -.122 | -.120 | -.137 | -.112 | -.111 | -.104 | -.094 | -.086 | -.079 | -.079 | -.073 | -.072 | -.081 | -.096 | -.163 |
| | .950 | .022 | .028 | .008 | .032 | .034 | .040 | .044 | .043 | .045 | .042 | .036 | .020 | -.012 | -.052 | -.135 |
| Lower surface | .0375 | -.546 | -.445 | -.342 | -.179 | -.051 | .064 | .203 | .309 | .404 | .488 | .573 | .642 | .684 | .708 | .725 |
| | .075 | -.401 | -.308 | -.247 | -.137 | -.049 | .034 | .136 | .217 | .291 | .361 | .430 | .494 | .531 | .556 | .576 |
| | .150 | -.247 | -.193 | -.159 | -.086 | -.034 | .020 | .082 | .137 | .190 | .240 | .293 | .344 | .374 | .396 | .413 |
| | .250 | -.183 | -.147 | -.133 | -.074 | -.040 | -.002 | .040 | .078 | .118 | .156 | .199 | .236 | .259 | .280 | .293 |
| | .350 | -.158 | -.131 | -.128 | -.076 | -.051 | -.022 | .008 | .038 | .069 | .098 | .130 | .164 | .184 | .197 | .206 |
| | .450 | -.142 | -.121 | -.124 | -.081 | -.061 | -.041 | -.020 | .004 | .030 | .052 | .081 | .108 | .121 | .130 | .134 |
| | .550 | -.130 | -.115 | -.121 | -.086 | -.073 | -.055 | -.039 | -.021 | 0 | .019 | .042 | .064 | .072 | .078 | .075 |
| | .650 | -.115 | -.107 | -.118 | -.086 | -.078 | -.066 | -.056 | -.044 | -.027 | -.012 | .009 | .026 | .029 | .029 | .019 |
| | .750 | -.084 | -.078 | -.095 | -.069 | -.065 | -.057 | -.056 | -.049 | -.038 | -.027 | -.013 | .002 | -.002 | -.009 | -.027 |
| | .850 | 0 | .003 | -.015 | .006 | .006 | .008 | .002 | .003 | .009 | .015 | .021 | .024 | .013 | -.002 | -.038 |
| | .925 | .073 | .074 | .053 | .070 | .067 | .064 | .047 | .045 | .041 | .042 | .042 | .050 | .029 | .004 | -.048 |
| | .975 | .137 | .139 | .115 | .131 | .125 | .121 | .098 | .087 | .081 | .073 | .070 | .074 | .049 | .014 | -.057 |
| | [a]1.000 | .179 | .173 | .152 | .169 | .161 | .158 | .127 | .125 | .138 | .120 | .110 | .089 | .060 | .010 | -.082 |

[redacted]

[a]No orifice.

[redacted]

TABLE 7.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.00) PROPELLER BLADE SECTION (x = 0.90) - Continued

(b) N = 1350 rpm.

| | J | 2.575 | 2.501 | 2.445 | 2.381 | 2.312 | 2.246 | 2.181 | 2.111 | 2.033 | 1.970 | 1.894 | 1.834 | 1.759 | 1.696 | 1.618 | 1.552 | 1.511 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_R$ | .781 | .768 | .760 | .750 | .743 | .732 | .725 | .714 | .706 | .698 | .688 | .684 | .678 | .667 | .660 | .651 | .653 |
| | $\alpha_R$ | -2.69 | -1.86 | -1.22 | -.47 | .36 | 1.17 | 1.98 | 2.88 | 3.91 | 4.76 | 5.81 | 6.66 | 7.74 | 8.67 | 9.85 | 10.87 | 11.51 |
| | $\Delta\beta$ | -.14 | -.06 | -.01 | .04 | .10 | .17 | .22 | .28 | .34 | .39 | .44 | .48 | .52 | .55 | .58 | .59 | .60 |
| | $\alpha_i$ | -.01 | .29 | .51 | .74 | .94 | 1.24 | 1.45 | 1.72 | 2.06 | 2.24 | 2.52 | 2.91 | 3.29 | 3.41 | 3.70 | 3.66 | 3.58 |
| | $c_n$ | -.0026 | .0652 | .1148 | .1661 | .2094 | .2765 | .3242 | .3829 | .4581 | .4974 | .5600 | .6452 | .7277 | .7548 | .8174 | .8090 | .7916 |
| | $c_m$ | -.0850 | -.0765 | -.0710 | -.0668 | -.0605 | -.0511 | -.0465 | -.0433 | -.0395 | -.0339 | -.0295 | -.0272 | -.0193 | -.0146 | -.0098 | -.0025 | -.0043 |
| | $c_c$ | | | | | | | | | | | | | | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.162 | 1.157 | 1.153 | 1.149 | 1.147 | 1.142 | 1.139 | 1.135 | 1.131 | 1.129 | 1.125 | 1.123 | 1.121 | 1.115 | 1.113 | 1.110 | 1.111 |
| | .025 | .611 | .580 | .423 | .288 | .132 | -.048 | -.265 | -.535 | -.876 | -1.100 | -1.308 | -1.451 | -1.765 | -2.029 | -2.263 | -2.398 | -2.383 |
| | .050 | .246 | .162 | .080 | -.025 | -.138 | -.267 | -.414 | -.589 | -.798 | -1.021 | -1.443 | -1.646 | -1.825 | -2.004 | -2.202 | -2.229 | -1.834 |
| | .100 | .053 | -.016 | -.077 | -.152 | -.233 | -.317 | -.410 | -.512 | -.619 | -.662 | -.686 | -1.214 | -1.668 | -1.834 | -2.027 | -1.833 | -1.346 |
| | .200 | -.109 | -.156 | -.197 | -.246 | -.296 | -.346 | -.396 | -.450 | -.501 | -.549 | -.594 | -.602 | -.576 | -.567 | -.690 | -.829 | -.975 |
| | .300 | -.220 | -.257 | -.283 | -.315 | -.345 | -.379 | -.410 | -.441 | -.480 | -.510 | -.544 | -.559 | -.568 | -.563 | -.547 | -.598 | -.708 |
| | [a].400 | -.296 | -.316 | -.335 | -.355 | -.378 | -.397 | -.416 | -.442 | -.505 | -.488 | -.516 | -.522 | -.534 | -.527 | -.580 | -.522 | -.542 |
| | .500 | -.349 | -.361 | -.372 | -.384 | -.396 | -.409 | -.418 | -.433 | -.449 | -.462 | -.479 | -.485 | -.493 | -.493 | -.481 | -.447 | -.420 |
| | .600 | -.385 | -.387 | -.390 | -.394 | -.397 | -.404 | -.404 | -.413 | -.420 | -.427 | -.436 | -.440 | -.439 | -.438 | -.423 | -.375 | -.335 |
| | .700 | -.382 | -.374 | -.372 | -.370 | -.367 | -.365 | -.360 | -.360 | -.359 | -.364 | -.367 | -.367 | -.363 | -.360 | -.341 | -.295 | -.264 |
| | .800 | -.329 | -.321 | -.314 | -.308 | -.297 | -.289 | -.276 | -.272 | -.265 | -.261 | -.261 | -.260 | -.254 | -.251 | -.238 | -.201 | -.200 |
| | .900 | -.119 | -.115 | -.108 | -.101 | -.090 | -.083 | -.073 | -.067 | -.061 | -.055 | -.058 | -.062 | -.064 | -.071 | -.070 | -.082 | -.138 |
| | .950 | .054 | .054 | .058 | .061 | .066 | .070 | .073 | .072 | .072 | .068 | .058 | .053 | .044 | .033 | .022 | -.015 | -.107 |
| Lower surface | .0375 | -1.089 | -.846 | -.516 | -.302 | -.172 | -.053 | .066 | .174 | .281 | .357 | .440 | .511 | .587 | .633 | .685 | .713 | .736 |
| | .075 | -.911 | -.312 | -.288 | -.217 | -.133 | -.050 | .034 | .115 | .199 | .256 | .324 | .384 | .451 | .491 | .540 | .566 | .587 |
| | .150 | -.215 | -.226 | -.182 | -.127 | -.083 | -.034 | .019 | .072 | .127 | .168 | .215 | .260 | .312 | .344 | .385 | .404 | .422 |
| | .250 | -.191 | -.172 | -.142 | -.105 | -.075 | -.044 | -.006 | .031 | .070 | .100 | .136 | .172 | .213 | .240 | .271 | .285 | .298 |
| | .350 | -.170 | -.151 | -.129 | -.105 | -.079 | -.055 | -.028 | .001 | .031 | .053 | .079 | .110 | .144 | .165 | .192 | .202 | .213 |
| | .450 | -.152 | -.140 | -.124 | -.105 | -.087 | -.070 | -.049 | -.030 | -.005 | .012 | .034 | .059 | .090 | .107 | .129 | .133 | .138 |
| | .550 | -.140 | -.129 | -.116 | -.105 | -.093 | -.081 | -.065 | -.050 | -.031 | -.017 | .001 | .023 | .047 | .062 | .079 | .078 | .079 |
| | .650 | -.122 | -.116 | -.109 | -.102 | -.097 | -.089 | -.079 | -.067 | -.053 | -.044 | -.028 | -.011 | .010 | .021 | .035 | .028 | .022 |
| | .750 | -.081 | -.080 | -.078 | -.075 | -.077 | -.075 | -.070 | -.065 | -.057 | -.053 | -.040 | -.026 | -.009 | -.001 | .008 | -.007 | -.024 |
| | .850 | .018 | .016 | .015 | .014 | .007 | .003 | .002 | 0 | .002 | .002 | -.004 | .008 | .019 | .024 | .028 | .002 | -.028 |
| | .925 | .098 | .095 | .093 | .086 | .074 | .067 | .062 | .055 | .049 | .044 | .028 | .038 | .050 | .054 | .057 | .022 | -.032 |
| | .975 | .161 | .158 | .153 | .148 | .134 | .125 | .119 | .111 | .098 | .090 | .078 | .080 | .078 | .079 | .081 | .046 | -.028 |
| | [a]1.000 | .192 | .188 | .183 | .182 | .160 | .155 | .150 | .147 | .135 | .171 | .119 | .153 | .144 | .137 | .095 | .052 | -.003 |

[a]No orifice.

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TABLE 7.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.00) PROPELLER BLADE SECTION (r = 0.90) - Continued

(c) N = 1500 rpm.

| | J | 2.555 | 2.510 | 2.449 | 2.410 | 2.364 | 2.318 | 2.256 | 2.210 | 2.153 | 2.112 | 2.041 | 1.988 | 1.930 | 1.883 | 1.822 | 1.760 | 1.715 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_x$ | .876 | .863 | .852 | .846 | .837 | .830 | .821 | .810 | .802 | .797 | .784 | .779 | .770 | .765 | .757 | .751 | .746 |
| | $\alpha_{x'}$ | -2.47 | -1.97 | -1.27 | -.81 | -.27 | .28 | 1.04 | 1.62 | 2.34 | 2.87 | 3.81 | 4.52 | 5.31 | 5.97 | 6.83 | 7.73 | 8.39 |
| | $\Delta\beta$ | -.22 | -.16 | -.09 | -.04 | .01 | .06 | .14 | .19 | .25 | .30 | .37 | .42 | .48 | .52 | .57 | .61 | .63 |
| | $\alpha_i$ | -.08 | .14 | .37 | .53 | .76 | .95 | 1.14 | 1.34 | 1.62 | 1.73 | 2.03 | 2.31 | 2.54 | 2.82 | 3.10 | 3.37 | 3.69 |
| | $c_n$ | -.0168 | .0316 | .0819 | .1197 | .1713 | .2132 | .2539 | .2981 | .3610 | .3855 | .4503 | .5142 | .5665 | .6271 | .6871 | .7432 | .8168 |
| | $c_m$ | -.1036 | -.1018 | -.0819 | -.0784 | -.0744 | -.0683 | -.0635 | -.0570 | -.0477 | -.0453 | -.0379 | -.0352 | -.0310 | -.0280 | -.0262 | -.0234 | -.0218 |
| | $c_o$ | .0217 | | | | | | | | | | | | | | | | |
| | o/b | Pressure coefficient, P | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.207 | 1.200 | 1.195 | 1.192 | 1.187 | 1.184 | 1.180 | 1.175 | 1.171 | 1.169 | 1.163 | 1.161 | 1.158 | 1.155 | 1.152 | 1.150 | 1.148 |
| | .025 | .638 | .585 | .506 | .443 | .355 | .256 | .104 | -.033 | -.222 | -.356 | -.571 | -.732 | -.859 | -.968 | -1.088 | -1.217 | -1.389 |
| | .050 | .281 | .230 | .156 | .098 | .028 | -.053 | -.175 | -.290 | -.440 | -.535 | -.704 | -.852 | -1.016 | -1.160 | -1.281 | -1.411 | -1.515 |
| | .100 | .085 | .040 | -.022 | -.071 | -.126 | -.190 | -.283 | -.367 | -.472 | -.559 | -.754 | -.884 | -1.039 | -1.175 | -1.291 | -1.392 | -1.494 |
| | .200 | -.098 | -.132 | -.183 | -.220 | -.261 | -.307 | -.370 | -.424 | -.489 | -.553 | -.606 | -.826 | -1.018 | -1.141 | -1.243 | -1.356 | -1.459 |
| | .300 | -.232 | -.256 | -.293 | -.321 | -.348 | -.379 | -.418 | -.446 | -.467 | -.476 | -.490 | -.447 | -.383 | -.416 | -.548 | -.726 | -.919 |
| | [a].400 | -.336 | -.345 | -.370 | -.400 | -.430 | -.436 | -.457 | -.468 | -.476 | -.491 | -.510 | -.482 | -.460 | -.460 | -.480 | -.428 | -.403 |
| | .500 | -.409 | -.410 | -.435 | -.451 | -.465 | -.478 | -.489 | -.492 | -.492 | -.500 | -.503 | -.504 | -.499 | -.480 | -.455 | -.416 | -.390 |
| | .600 | -.457 | -.471 | -.485 | -.490 | -.489 | -.492 | -.498 | -.494 | -.482 | -.482 | -.475 | -.474 | -.471 | -.461 | -.444 | -.421 | -.407 |
| | .700 | -.535 | -.551 | -.563 | -.564 | -.550 | -.494 | -.438 | -.422 | -.402 | -.401 | -.394 | -.392 | -.393 | -.388 | -.377 | -.361 | -.353 |
| | .800 | -.622 | -.523 | -.311 | -.289 | -.299 | -.305 | -.299 | -.286 | -.272 | -.270 | -.262 | -.264 | -.271 | -.270 | -.260 | -.251 | -.254 |
| | .900 | .005 | -.007 | -.027 | -.036 | -.040 | -.045 | -.045 | -.042 | -.035 | -.035 | -.031 | -.035 | -.047 | -.051 | -.047 | -.049 | -.063 |
| | .950 | .107 | .117 | .111 | .107 | .106 | .101 | .101 | .102 | .102 | .095 | .094 | .088 | .083 | .080 | .078 | .067 | .056 |
| Lower surface | .0375 | -.815 | -.813 | -.760 | -.638 | -.395 | -.251 | -.115 | -.013 | .098 | .158 | .253 | .326 | .392 | .456 | .513 | .575 | .616 |
| | .075 | -.780 | -.777 | -.675 | -.461 | -.250 | -.190 | -.097 | -.022 | .059 | .104 | .177 | .236 | .289 | .343 | .392 | .444 | .482 |
| | .150 | -.723 | -.680 | -.149 | -.175 | -.145 | -.112 | -.062 | -.016 | .036 | .064 | .114 | .156 | .196 | .235 | .273 | .313 | .341 |
| | .250 | -.542 | -.105 | -.150 | -.150 | -.124 | -.098 | -.067 | -.034 | .001 | .022 | .060 | .092 | .120 | .153 | .183 | .215 | .237 |
| | .350 | -.079 | -.118 | -.149 | -.142 | -.123 | -.103 | -.076 | -.054 | -.024 | -.012 | .018 | .042 | .068 | .095 | .119 | .144 | .164 |
| | .450 | -.094 | -.140 | -.149 | -.139 | -.126 | -.112 | -.093 | -.075 | -.054 | -.045 | -.020 | .001 | .021 | .045 | .065 | .088 | .103 |
| | .550 | -.124 | -.144 | -.146 | -.139 | -.126 | -.118 | -.103 | -.090 | -.075 | -.067 | -.047 | -.030 | -.013 | .007 | .025 | .045 | .057 |
| | .650 | -.135 | -.141 | -.138 | -.134 | -.126 | -.120 | -.112 | -.103 | -.092 | -.089 | -.074 | -.059 | -.044 | -.028 | -.012 | .007 | .015 |
| | .750 | -.099 | -.097 | -.097 | -.097 | -.094 | -.093 | -.093 | -.090 | -.084 | -.084 | -.076 | -.066 | -.053 | -.040 | -.027 | -.013 | -.006 |
| | .850 | .012 | .016 | .012 | .011 | .011 | .006 | .003 | -.002 | -.005 | -.010 | -.006 | .001 | .008 | .018 | .022 | .028 | .026 |
| | .925 | .089 | .101 | .096 | .091 | .089 | .084 | .076 | .070 | .063 | .054 | .052 | .054 | .057 | .063 | .065 | .063 | .059 |
| | .975 | .141 | .155 | .152 | .150 | .147 | .140 | .132 | .128 | .122 | .110 | .102 | .103 | .109 | .111 | .105 | .103 | .102 |
| | [a]1.000 | .163 | .200 | .197 | .170 | .180 | .175 | .171 | .159 | .164 | .160 | .146 | .175 | .158 | .150 | .140 | .125 | .141 |

[a]No orifice.

[redacted]

TABLE 7.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.00) PROPELLER BLADE SECTION (x = 0.90) - Continued

(d) N = 1600 rpm.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 1.842 | 1.913 | 1.990 | 2.075 | 2.157 | 2.244 | 2.310 | 2.396 | 2.277 | 2.207 | 2.117 | 2.039 | 1.941 | 1.890 |
| | $M_x$ | .804 | .815 | .830 | .840 | .856 | .870 | .877 | .895 | .871 | .860 | .846 | .834 | .816 | .810 |
| | $\alpha_x'$ | 6.54 | 5.54 | 4.49 | 3.35 | 2.29 | 1.19 | .38 | -.65 | .78 | 1.65 | 2.81 | 3.83 | 5.16 | 5.86 |
| | $\Delta\beta$ | .69 | .64 | .56 | .46 | .34 | .20 | .08 | -.07 | .14 | .26 | .40 | .50 | .62 | .66 |
| | $\alpha_1$ | 3.06 | 2.73 | 2.36 | 1.97 | 1.64 | 1.20 | .81 | .37 | .99 | 1.35 | 1.80 | 2.06 | 2.51 | 2.78 |
| | $c_p$ | .6800 | .6071 | .5226 | .4387 | .3645 | .2671 | .1813 | .0832 | .2226 | .2997 | .4006 | .4574 | .5587 | .6168 |
| | $c_m$ | -.0300 | -.0311 | -.0331 | -.0452 | -.0524 | -.0618 | -.0642 | -.0726 | -.0647 | -.0604 | -.0494 | -.0393 | -.0328 | -.0302 |
| | $c_c$ | | | | | | | .0170 | .0208 | | | | | | |
| c/b | | Pressure coefficient, P | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.172 | 1.177 | 1.184 | 1.188 | 1.197 | 1.204 | 1.207 | 1.217 | 1.204 | 1.198 | 1.192 | 1.186 | 1.178 | 1.175 |
| | .025 | -.822 | -.707 | -.542 | -.302 | -.065 | .160 | .316 | .515 | .257 | .093 | -.178 | -.405 | -.643 | -.749 |
| | .050 | -1.014 | -.866 | -.681 | -.474 | -.316 | -.131 | .001 | .183 | -.048 | -.188 | -.367 | -.563 | -.784 | -.922 |
| | .100 | -1.052 | -.923 | -.751 | -.580 | -.403 | -.252 | -.149 | .009 | -.188 | -.295 | -.479 | -.653 | -.851 | -.967 |
| | .200 | -1.084 | -.954 | -.820 | -.641 | -.525 | -.412 | -.311 | -.157 | -.344 | -.446 | -.558 | -.720 | -.896 | -.988 |
| | .300 | -1.034 | -.966 | -.832 | -.676 | -.569 | -.445 | -.359 | -.238 | -.371 | -.454 | -.592 | -.714 | -.890 | -.985 |
| | .400 | -.828 | -.748 | -.626 | -.579 | -.561 | -.495 | -.440 | -.368 | -.451 | -.484 | -.572 | -.487 | -.605 | -.684 |
| | .500 | -.435 | -.407 | -.373 | -.499 | -.530 | -.527 | -.517 | -.451 | -.527 | -.533 | -.536 | -.393 | -.351 | -.369 |
| | .600 | -.323 | -.350 | -.418 | -.468 | -.547 | -.569 | -.569 | -.491 | -.573 | -.559 | -.520 | -.465 | -.390 | -.355 |
| | .700 | -.317 | -.354 | -.400 | -.487 | -.602 | -.628 | -.616 | -.542 | -.622 | -.632 | -.513 | -.471 | -.376 | -.350 |
| | .800 | -.229 | -.248 | -.249 | -.230 | -.200 | -.224 | -.235 | -.268 | -.244 | -.207 | -.224 | -.244 | -.251 | -.246 |
| | .900 | -.028 | -.030 | -.019 | -.002 | .011 | .013 | -.018 | -.005 | .009 | .022 | .004 | -.011 | -.026 | -.032 |
| | .950 | .096 | .096 | .103 | .110 | .110 | .075 | .029 | .032 | .066 | .104 | .113 | .106 | .102 | .097 |
| Lower surface | .0375 | .486 | .402 | .314 | .201 | .068 | -.100 | -.304 | -.520 | -.208 | -.046 | .135 | .247 | .372 | .433 |
| | .075 | .372 | .302 | .226 | .137 | .032 | -.091 | -.224 | -.475 | -.166 | -.050 | .089 | .175 | .277 | .327 |
| | .150 | .262 | .209 | .153 | .090 | .018 | -.057 | -.125 | -.289 | -.094 | -.030 | .058 | .116 | .191 | .228 |
| | .250 | .178 | .131 | .088 | .041 | -.013 | -.068 | -.120 | -.097 | -.094 | -.045 | .019 | .062 | .121 | .150 |
| | .350 | .110 | .071 | .034 | -.004 | -.048 | -.091 | -.133 | -.106 | -.111 | -.075 | -.024 | .010 | .060 | .085 |
| | .450 | .058 | .024 | -.006 | -.041 | -.076 | -.111 | -.147 | -.127 | -.126 | -.096 | -.056 | -.028 | .015 | .038 |
| | .550 | .015 | -.015 | -.042 | -.069 | -.100 | -.127 | -.159 | -.142 | -.139 | -.114 | -.081 | -.060 | -.021 | -.002 |
| | .650 | -.020 | -.047 | -.071 | -.092 | -.120 | -.143 | -.174 | -.163 | -.152 | -.127 | -.102 | -.086 | -.052 | -.034 |
| | .750 | -.034 | -.055 | -.073 | -.087 | -.106 | -.120 | -.148 | -.131 | -.128 | -.108 | -.095 | -.086 | -.059 | -.045 |
| | .850 | .026 | .012 | 0 | -.006 | -.013 | -.021 | -.045 | -.015 | -.022 | -.009 | -.007 | -.005 | .012 | .019 |
| | .925 | .080 | .071 | .064 | .062 | .059 | .049 | .021 | .054 | .046 | .063 | .063 | .060 | .071 | .075 |
| | .975 | .134 | .131 | .125 | .124 | .121 | .099 | .061 | .086 | .085 | .111 | .119 | .116 | .125 | .129 |
| | [a]1.000 | .230 | .185 | .195 | .199 | .183 | .135 | .078 | .095 | .103 | .168 | .167 | .184 | .178 | .168 |

[a]No orifice.

[redacted]

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TABLE 7.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.00) PROPELLER BLADE SECTION (x = 0.90) - Continued

(e) M = 0.56.

| | J | 1.966 | 1.992 | 2.024 | 2.048 | 2.076 | 2.107 | 2.138 | 2.173 | 2.193 | 2.238 | 2.267 | 2.293 | 2.326 | 2.379 | 2.417 | 2.450 | 2.479 | 2.536 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_x$ | .985 | .976 | .967 | .960 | .951 | .944 | .935 | .930 | .917 | .910 | .903 | .893 | .883 | .877 | .870 | .863 | .851 | .840 |
| | $\alpha_x'$ | 4.82 | 4.46 | 4.03 | 3.71 | 3.34 | 2.94 | 2.53 | 2.09 | 1.83 | 1.27 | .91 | .59 | .19 | -.45 | -.89 | -1.28 | -1.61 | -2.26 |
| | $\Delta\beta$ | .47 | .44 | .40 | .38 | .35 | .31 | .28 | .24 | .22 | .16 | .13 | .11 | .07 | .01 | -.03 | -.07 | -.10 | -.16 |
| | $\alpha_1$ | 1.90 | 1.79 | 1.64 | 1.49 | 1.34 | 1.25 | 1.17 | 1.07 | 1.02 | .87 | .81 | .71 | .61 | .47 | .37 | .22 | .11 | -.02 |
| | $c_n$ | .4223 | .3994 | .3639 | .3306 | .2974 | .2774 | .2594 | .2374 | .2274 | .1935 | .1797 | .1577 | .1365 | .1039 | .0829 | .0503 | .0258 | -.0052 |
| | $c_m$ | -.0552 | -.0487 | -.0429 | -.0365 | -.0287 | -.0289 | -.0312 | -.0355 | -.0414 | -.0479 | -.0553 | -.0587 | -.0643 | -.0698 | -.0714 | -.0723 | -.0795 | -.0891 |
| | $c_c$ | .0280 | .0275 | .0278 | .0277 | .0260 | .0250 | .0245 | .0227 | .0214 | .0214 | .0207 | .0202 | .0193 | .0185 | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.266 | 1.261 | 1.256 | 1.252 | 1.247 | 1.243 | 1.237 | 1.235 | 1.228 | 1.224 | 1.221 | 1.211 | 1.210 | 1.207 | 1.204 | 1.200 | 1.194 | 1.189 |
| | .025 | -.020 | -.005 | .028 | .060 | .084 | .113 | .154 | .178 | .205 | .271 | .303 | .335 | .428 | .432 | .475 | .509 | .550 | .609 |
| | .050 | -.202 | -.192 | -.164 | -.149 | -.146 | -.137 | -.112 | -.096 | -.079 | -.026 | -.002 | .023 | .058 | .105 | .142 | .172 | .202 | .257 |
| | .100 | -.318 | -.319 | -.302 | -.285 | -.268 | -.249 | -.227 | -.211 | -.198 | -.158 | -.142 | -.127 | -.101 | -.064 | -.034 | -.010 | .016 | .060 |
| | .200 | -.425 | -.427 | -.407 | -.390 | -.378 | -.364 | -.349 | -.346 | -.351 | -.329 | -.314 | -.295 | -.262 | -.219 | -.191 | -.167 | -.148 | -.105 |
| | .300 | -.411 | -.423 | -.410 | -.402 | -.401 | -.396 | -.384 | -.374 | -.371 | -.336 | -.316 | -.303 | -.280 | -.251 | -.235 | -.217 | -.205 | -.170 |
| | [a].400 | -.525 | -.527 | -.516 | -.502 | -.498 | -.500 | -.488 | -.480 | -.482 | -.458 | -.405 | -.391 | -.373 | -.353 | -.331 | -.300 | -.299 | -.265 |
| | .500 | -.605 | -.613 | -.602 | -.587 | -.587 | -.587 | -.576 | -.566 | -.565 | -.543 | -.530 | -.514 | -.502 | -.492 | -.474 | -.421 | -.423 | -.392 |
| | .600 | -.649 | -.654 | -.646 | -.643 | -.644 | -.639 | -.626 | -.611 | -.610 | -.582 | -.556 | -.548 | -.550 | -.509 | -.492 | -.480 | -.466 | -.439 |
| | .700 | -.689 | -.696 | -.681 | -.667 | -.658 | -.647 | -.636 | -.627 | -.630 | -.613 | -.608 | -.613 | -.595 | -.585 | -.569 | -.554 | -.547 | -.510 |
| | .800 | -.312 | -.280 | -.264 | -.258 | -.214 | -.198 | -.191 | -.182 | -.180 | -.201 | -.213 | -.216 | -.242 | -.287 | -.304 | -.268 | -.267 | -.303 |
| | .900 | -.274 | -.253 | -.226 | -.207 | -.175 | -.153 | -.132 | -.113 | -.098 | -.081 | -.065 | -.053 | -.008 | .023 | .018 | -.004 | -.040 | -.061 |
| | .950 | -.275 | -.252 | -.223 | -.202 | -.169 | -.145 | -.122 | -.098 | -.076 | -.052 | -.031 | -.013 | .038 | .087 | .116 | .121 | .109 | .102 |
| Lower surface | .0375 | .326 | .292 | .248 | .203 | .160 | .117 | .065 | .025 | -.034 | -.132 | -.203 | -.294 | -.434 | -.565 | -.653 | -.727 | -.811 | -.899 |
| | .075 | .260 | .231 | .193 | .154 | .116 | .078 | .036 | .004 | -.041 | -.113 | -.163 | -.213 | -.299 | -.455 | -.581 | -.675 | -.766 | -.863 |
| | .150 | .199 | .177 | .149 | .119 | .089 | .062 | .031 | .031 | -.023 | -.066 | -.094 | -.123 | -.151 | -.158 | -.159 | -.203 | -.352 | -.377 |
| | .250 | .129 | .110 | .087 | .062 | .037 | .014 | -.008 | -.023 | -.050 | -.082 | -.101 | -.120 | -.135 | -.143 | -.145 | -.142 | -.136 | -.114 |
| | .350 | .060 | .044 | .024 | .002 | -.018 | -.036 | -.054 | -.064 | -.086 | -.108 | -.122 | -.133 | -.140 | -.144 | -.149 | -.148 | -.150 | -.137 |
| | .450 | -.006 | -.021 | -.037 | -.057 | -.076 | -.089 | -.101 | -.108 | -.123 | -.139 | -.147 | -.153 | -.154 | -.153 | -.153 | -.151 | -.154 | -.143 |
| | .550 | -.057 | -.070 | -.083 | -.101 | -.115 | -.126 | -.136 | -.140 | -.155 | -.166 | -.170 | -.171 | -.165 | -.159 | -.154 | -.150 | -.150 | -.139 |
| | .650 | -.118 | -.129 | -.141 | -.157 | -.171 | -.180 | -.190 | -.194 | -.207 | -.212 | -.209 | -.199 | -.178 | -.164 | -.154 | -.144 | -.141 | -.127 |
| | .750 | -.207 | -.220 | -.233 | -.248 | -.264 | -.274 | -.281 | -.282 | -.288 | -.275 | -.223 | -.188 | -.155 | -.133 | -.115 | -.108 | -.102 | -.087 |
| | .850 | -.259 | -.271 | -.284 | -.299 | -.309 | -.314 | -.311 | -.254 | -.161 | -.121 | -.094 | -.074 | -.045 | -.022 | -.007 | .003 | .010 | .022 |
| | .925 | -.300 | -.313 | -.321 | -.335 | -.339 | -.293 | -.166 | -.102 | -.077 | -.054 | -.026 | -.007 | .027 | .056 | .076 | .087 | .097 | .107 |
| | .975 | -.223 | -.237 | -.245 | -.252 | -.227 | -.150 | -.107 | -.081 | -.057 | -.026 | .005 | .027 | .068 | .105 | .134 | .150 | .163 | .170 |
| | [a]1.000 | -.177 | -.105 | -.180 | -.172 | -.075 | -.100 | -.086 | -.074 | -.048 | -.015 | .023 | .065 | .086 | .134 | .192 | .195 | .218 | .210 |

[a]No orifice.

TABLE 7.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.00) PROPELLER BLADE SECTION (x = 0.90) - Continued

(f) M = 0.62

| | J | 1.998 | 2.023 | 2.054 | 2.080 | 2.111 | 2.131 | 2.165 | 2.208 | 2.229 | 2.267 | 2.293 | 2.325 | 2.369 | 2.403 | 2.440 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_x$ | 1.068 | 1.059 | 1.048 | 1.041 | 1.031 | 1.020 | 1.010 | 1.003 | .992 | .988 | .976 | .968 | .963 | .954 | .946 |
| | $\alpha_x'$ | 4.38 | 4.05 | 3.63 | 3.29 | 2.88 | 2.63 | 2.19 | 1.64 | 1.38 | .91 | .59 | .20 | -.33 | -.73 | -1.21 |
| | $\Delta\beta$ | .30 | .27 | .23 | .20 | .17 | .15 | .12 | .08 | .06 | .02 | 0 | -.04 | -.08 | -.12 | -.16 |
| | $\alpha_1$ | 1.82 | 1.79 | 1.64 | 1.57 | 1.44 | 1.30 | 1.13 | .96 | .74 | .49 | .29 | .15 | -.04 | -.20 | -.30 |
| | $c_n$ | .4039 | .3974 | .3642 | .3484 | .3210 | .2897 | .2513 | .2135 | .1648 | .1084 | .0645 | .0335 | -.0081 | -.0448 | -.0665 |
| | $c_m$ | -.1047 | -.1051 | -.1068 | -.1053 | -.0986 | -.0965 | -.0892 | -.0804 | -.0667 | -.0564 | -.0468 | -.0482 | -.0507 | -.0574 | -.0664 |
| | $c_c$ | .0480 | .0493 | .0501 | .0501 | .0499 | .0498 | .0494 | .0486 | .0432 | .0403 | .0389 | .0376 | .0369 | .0347 | .0331 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.318 | 1.312 | 1.305 | 1.301 | 1.294 | 1.287 | 1.281 | 1.277 | 1.270 | 1.268 | 1.261 | 1.256 | 1.253 | 1.248 | 1.244 |
| | .025 | .202 | .222 | .254 | .272 | .291 | .326 | .355 | .383 | .399 | .440 | .468 | .490 | .508 | .537 | .587 |
| | .050 | -.001 | .004 | .016 | .019 | .025 | .049 | .069 | .090 | .101 | .136 | .158 | .176 | .209 | .234 | .255 |
| | .100 | -.138 | -.136 | -.116 | -.104 | -.093 | -.072 | -.056 | -.042 | -.035 | -.009 | .006 | .018 | .041 | .060 | .076 |
| | .200 | -.253 | -.255 | -.238 | -.232 | -.225 | -.206 | -.199 | -.199 | -.201 | -.185 | -.174 | -.160 | -.137 | -.115 | -.097 |
| | .300 | -.288 | -.305 | -.302 | -.304 | -.305 | -.290 | -.283 | -.278 | -.276 | -.255 | -.237 | -.222 | -.209 | -.195 | -.184 |
| | [a].400 | -.374 | -.367 | -.374 | -.395 | -.381 | -.366 | -.363 | -.362 | -.357 | -.343 | -.333 | -.313 | -.306 | -.296 | -.298 |
| | .500 | -.449 | -.462 | -.458 | -.459 | -.455 | -.440 | -.437 | -.437 | -.437 | -.427 | -.425 | -.419 | -.413 | -.408 | -.410 |
| | .600 | -.508 | -.521 | -.514 | -.516 | -.519 | -.508 | -.507 | -.508 | -.523 | -.505 | -.505 | -.502 | -.500 | -.496 | -.497 |
| | .700 | -.564 | -.580 | -.576 | -.581 | -.584 | -.572 | -.572 | -.576 | -.582 | -.575 | -.572 | -.565 | -.557 | -.551 | -.550 |
| | .800 | -.617 | -.641 | -.642 | -.645 | -.644 | -.632 | -.635 | -.646 | -.654 | -.654 | -.659 | -.661 | -.658 | -.638 | -.616 |
| | .900 | -.663 | -.697 | -.706 | -.722 | -.734 | -.738 | -.746 | -.702 | -.458 | -.313 | -.233 | -.195 | -.179 | -.155 | -.143 |
| | .950 | -.685 | -.717 | -.725 | -.734 | -.694 | -.627 | -.509 | -.358 | -.294 | -.248 | -.201 | -.171 | -.160 | -.138 | -.129 |
| Lower surface | .0375 | .307 | .263 | .218 | .179 | .135 | .081 | .023 | -.051 | -.110 | -.208 | -.288 | -.350 | -.411 | -.472 | -.532 |
| | .075 | .252 | .213 | .174 | .140 | .099 | .054 | .003 | -.053 | -.099 | -.171 | -.246 | -.315 | -.386 | -.451 | -.514 |
| | .150 | .212 | .181 | .154 | .128 | .098 | .069 | .035 | -.010 | -.048 | -.125 | -.189 | -.250 | -.332 | -.404 | -.469 |
| | .250 | .149 | .121 | .097 | .076 | .051 | .032 | .006 | -.035 | -.068 | -.103 | -.149 | -.212 | -.290 | -.351 | -.415 |
| | .350 | .099 | .076 | .057 | .038 | .017 | .001 | -.022 | -.054 | -.078 | -.115 | -.138 | -.159 | -.244 | -.332 | -.395 |
| | .450 | .023 | -.002 | -.020 | -.038 | -.057 | -.069 | -.091 | -.120 | -.138 | -.161 | -.176 | -.187 | -.214 | -.273 | -.350 |
| | .550 | -.028 | -.051 | -.067 | -.083 | -.099 | -.108 | -.127 | -.150 | -.164 | -.182 | -.191 | -.195 | -.206 | -.204 | -.208 |
| | .650 | -.098 | -.109 | -.133 | -.147 | -.161 | -.166 | -.184 | -.204 | -.215 | -.224 | -.227 | -.225 | -.231 | -.218 | -.192 |
| | .750 | -.172 | -.191 | -.204 | -.217 | -.228 | -.233 | -.250 | -.268 | -.282 | -.289 | -.296 | -.299 | -.300 | -.290 | -.265 |
| | .850 | -.215 | -.237 | -.249 | -.262 | -.272 | -.281 | -.297 | -.316 | -.329 | -.336 | -.344 | -.347 | -.346 | -.327 | -.242 |
| | .925 | -.260 | -.283 | -.294 | -.307 | -.318 | -.326 | -.342 | -.360 | -.373 | -.379 | -.388 | -.389 | -.375 | -.209 | -.081 |
| | .975 | -.207 | -.229 | -.240 | -.254 | -.266 | -.273 | -.288 | -.305 | -.315 | -.315 | -.310 | -.293 | -.220 | -.098 | -.052 |
| | [a]1.000 | -.183 | -.176 | -.190 | -.212 | -.230 | -.194 | -.224 | -.253 | -.209 | -.163 | -.200 | -.163 | -.150 | -.089 | -.051 |

[a]No orifice.

TABLE 7.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.00) PROPELLER BLADE SECTION (x = 0.90) - Concluded

(g) M = 0.65.

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.002 | 2.035 | 2.066 | 2.092 | 2.118 | 2.139 | 2.161 | 2.195 | 2.223 | 2.244 | 2.274 | 2.309 | 2.341 | 2.363 | 2.392 |
| | $M_x$ | 1.133 | 1.119 | 1.112 | 1.105 | 1.092 | 1.081 | 1.070 | 1.063 | 1.053 | 1.042 | 1.034 | 1.025 | 1.016 | 1.011 | 1.000 |
| | $\alpha_x'$ | 4.33 | 3.89 | 3.47 | 3.13 | 2.79 | 2.65 | 2.24 | 1.81 | 1.45 | 1.19 | .82 | .39 | .01 | -.26 | -.60 |
| | $\Delta\beta$ | .25 | .21 | .17 | .14 | .11 | .09 | .06 | .02 | 0 | -.02 | -.05 | -.08 | -.10 | -.12 | -.15 |
| | $\alpha_1$ | 1.69 | 1.61 | 1.50 | 1.35 | 1.26 | 1.12 | 1.02 | .90 | .78 | .62 | .52 | .32 | .14 | .01 | -.23 |
| | $c_n$ | .3768 | .3561 | .3329 | .2994 | .2794 | .2487 | .2274 | .2010 | .1789 | .1381 | .1148 | .0706 | .0303 | .0029 | -.0516 |
| | $c_m$ | -.1059 | -.1034 | -.0981 | -.0987 | -.0971 | -.0964 | -.0942 | -.0923 | -.0893 | -.0898 | -.0864 | -.0844 | -.0809 | -.0733 | -.0566 |
| | $c_c$ | .0498 | .0501 | .0508 | .0508 | .0509 | .0525 | .0526 | .0534 | .0536 | .0537 | .0543 | .0537 | .0536 | .0529 | .0507 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.362 | 1.352 | 1.346 | 1.342 | 1.334 | 1.327 | 1.324 | 1.315 | 1.309 | 1.301 | 1.296 | 1.290 | 1.285 | 1.282 | 1.274 |
| | .025 | .308 | .326 | .348 | .371 | .387 | .408 | .423 | .451 | .471 | .492 | .511 | .543 | .566 | .578 | .596 |
| | .050 | .102 | .106 | .116 | .127 | .133 | .141 | .149 | .173 | .188 | .205 | .220 | .248 | .262 | .273 | .286 |
| | .100 | -.042 | -.039 | -.021 | .003 | .013 | .018 | .020 | .037 | .047 | .060 | .070 | .090 | .100 | .102 | .110 |
| | .200 | -.159 | -.158 | -.140 | -.124 | -.120 | -.118 | -.118 | -.109 | -.108 | -.106 | -.101 | -.084 | -.073 | -.069 | -.060 |
| | .300 | -.211 | -.195 | -.177 | -.165 | -.165 | -.165 | -.163 | -.156 | -.150 | -.144 | -.133 | -.111 | -.094 | -.094 | -.091 |
| | [a].400 | -.285 | -.268 | -.255 | -.259 | -.250 | -.278 | -.256 | -.259 | -.243 | -.254 | -.250 | -.224 | -.197 | -.240 | -.233 |
| | .500 | -.358 | -.369 | -.359 | -.354 | -.355 | -.358 | -.360 | -.355 | -.354 | -.353 | -.350 | -.341 | -.337 | -.341 | -.343 |
| | .600 | -.415 | -.430 | -.418 | -.410 | -.413 | -.423 | -.429 | -.424 | -.425 | -.428 | -.426 | -.419 | -.417 | -.424 | -.426 |
| | .700 | -.471 | -.486 | -.477 | -.475 | -.481 | -.492 | -.500 | -.498 | -.500 | -.503 | -.502 | -.495 | -.494 | -.501 | -.503 |
| | .800 | -.548 | -.567 | -.562 | -.561 | -.565 | -.580 | -.590 | -.589 | -.593 | -.595 | -.593 | -.584 | -.584 | -.593 | -.598 |
| | .900 | -.592 | -.618 | -.622 | -.629 | -.641 | -.661 | -.673 | -.678 | -.687 | -.696 | -.697 | -.695 | -.697 | -.707 | -.702 |
| | .950 | -.608 | -.633 | -.635 | -.640 | -.653 | -.672 | -.685 | -.690 | -.700 | -.711 | -.719 | -.717 | -.664 | -.607 | -.335 |
| Lower surface | .0375 | .341 | .300 | .275 | .227 | .178 | .116 | .074 | .020 | -.043 | -.109 | -.174 | -.232 | -.283 | -.327 | -.372 |
| | .075 | .286 | .251 | .232 | .191 | .144 | .093 | .057 | .014 | -.033 | -.079 | -.137 | -.203 | -.257 | -.306 | -.353 |
| | .150 | .252 | .227 | .215 | .184 | .152 | .109 | .072 | .020 | -.032 | -.075 | -.118 | -.171 | -.226 | -.278 | -.328 |
| | .250 | .196 | .173 | .164 | .137 | .111 | .069 | .036 | .009 | -.031 | -.085 | -.141 | -.179 | -.210 | -.248 | -.293 |
| | .350 | .149 | .127 | .118 | .093 | .069 | .031 | .002 | -.024 | -.053 | -.080 | -.126 | -.179 | -.220 | -.258 | -.298 |
| | .450 | .071 | .050 | .042 | .019 | -.002 | -.036 | -.059 | -.080 | -.106 | -.125 | -.145 | -.187 | -.232 | -.281 | -.325 |
| | .550 | .023 | .004 | -.004 | -.025 | -.045 | -.078 | -.101 | -.118 | -.142 | -.160 | -.174 | -.185 | -.213 | -.258 | -.313 |
| | .650 | -.044 | -.061 | -.070 | -.089 | -.107 | -.139 | -.160 | -.175 | -.193 | -.209 | -.222 | -.223 | -.233 | -.266 | -.312 |
| | .750 | -.117 | -.135 | -.144 | -.160 | -.175 | -.204 | -.223 | -.237 | -.254 | -.266 | -.277 | -.278 | -.283 | -.300 | -.337 |
| | .850 | -.158 | -.176 | -.185 | -.199 | -.213 | -.242 | -.259 | -.269 | -.284 | -.297 | -.306 | -.307 | -.314 | -.327 | -.341 |
| | .925 | -.198 | -.219 | -.228 | -.240 | -.256 | -.285 | -.300 | -.312 | -.327 | -.339 | -.348 | -.348 | -.355 | -.369 | -.373 |
| | .975 | -.149 | -.171 | -.179 | -.191 | -.207 | -.233 | -.249 | -.260 | -.275 | -.289 | -.298 | -.298 | -.304 | -.318 | -.321 |
| | [a]1.000 | -.088 | -.116 | -.113 | -.143 | -.155 | -.205 | -.175 | -.208 | -.220 | -.241 | -.266 | -.255 | -.247 | -.280 | -.225 |

[a]No orifice.

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TABLE 8.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(06.50) PROPELLER BLADE SECTION (x = 0.95)

$\left[\beta_{0.75R} = 45°;\ \beta_x = 38.33°;\ B = 2\right]$

(a) N = 1140 rpm.

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.578 | 2.500 | 2.422 | 2.346 | 2.257 | 2.184 | 2.107 | 2.019 | 1.950 | 1.868 | 1.776 | 1.709 | 1.639 | 1.570 | 1.488 | 1.396 | 1.338 |
| | $M_x$ | .678 | .673 | .663 | .659 | .647 | .637 | .628 | .623 | .614 | .605 | .598 | .596 | .588 | .578 | .578 | .564 | .565 |
| | $\alpha_x'$ | -2.49 | -1.62 | -.73 | .16 | 1.23 | 2.13 | 3.11 | 4.25 | 5.17 | 6.29 | 7.57 | 8.53 | 9.56 | 10.58 | 11.83 | 13.26 | 14.18 |
| | $\Delta\beta$ | -.12 | -.08 | -.05 | -.02 | .03 | .06 | .10 | .14 | .18 | .21 | .25 | .27 | .29 | .32 | .34 | .36 | .38 |
| | $\alpha_1$ | .03 | .26 | .52 | .78 | 1.07 | 1.35 | 1.68 | 2.05 | 2.34 | 2.76 | 3.17 | 3.48 | 3.82 | 3.93 | 4.02 | 4.08 | 4.30 |
| | $c_n$ | .0045 | .0416 | .0845 | .1255 | .1723 | .2171 | .2690 | .3297 | .3774 | .4413 | .5077 | .5581 | .6084 | .6284 | .6400 | .6490 | .6858 |
| | $c_m$ | -.0472 | -.0475 | -.0433 | -.0410 | -.0388 | -.0350 | -.0329 | -.0280 | -.0249 | -.0252 | -.0244 | -.0226 | -.0179 | -.0136 | -.0046 | -.0128 | -.0129 |
| | $c_o$ | | | | | | | | | | | | | | | | | |
| | x/b | Pressure coefficient, P | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.120 | 1.119 | 1.115 | 1.113 | 1.109 | 1.105 | 1.102 | 1.100 | 1.097 | 1.094 | 1.092 | 1.091 | 1.089 | 1.086 | 1.086 | 1.081 | 1.082 |
| | .025 | .519 | .405 | .276 | .128 | -.047 | -.234 | -.469 | -.754 | -1.030 | -1.386 | -1.874 | -2.301 | -2.632 | -1.661 | -1.802 | -1.821 | -1.894 |
| | .050 | .188 | .098 | .009 | -.090 | -.197 | -.305 | -.436 | -.581 | -.715 | -.856 | -1.009 | -1.087 | -1.343 | -1.737 | -1.765 | -1.634 | -1.697 |
| | .100 | -.003 | -.067 | -.129 | -.193 | -.261 | -.325 | -.399 | -.480 | -.553 | -.639 | -.726 | -.779 | -.836 | -1.297 | -1.245 | -1.060 | -.827 |
| | .200 | -.112 | -.151 | -.189 | -.225 | -.263 | -.298 | -.336 | -.376 | -.423 | -.469 | -.521 | -.548 | -.591 | -.572 | -.678 | -.677 | -.692 |
| | .300 | -.170 | -.198 | -.221 | -.244 | -.268 | -.292 | -.316 | -.345 | -.377 | -.411 | -.449 | -.466 | -.498 | -.493 | -.541 | -.599 | -.664 |
| | [a].400 | -.203 | -.217 | -.237 | -.250 | -.267 | -.285 | -.301 | -.327 | -.351 | -.376 | -.411 | -.414 | -.441 | -.437 | -.454 | -.505 | -.585 |
| | .500 | -.227 | -.241 | -.252 | -.265 | -.276 | -.287 | -.299 | -.317 | -.338 | -.359 | -.385 | -.390 | -.411 | -.399 | -.390 | -.438 | -.501 |
| | .600 | -.266 | -.273 | -.280 | -.289 | -.296 | -.303 | -.314 | -.324 | -.342 | -.359 | -.381 | -.383 | -.398 | -.379 | -.351 | -.370 | -.408 |
| | .700 | -.266 | -.272 | -.274 | -.280 | -.284 | -.288 | -.294 | -.301 | -.315 | -.329 | -.347 | -.344 | -.356 | -.335 | -.298 | -.310 | -.338 |
| | .800 | -.238 | -.235 | -.233 | -.235 | -.237 | -.239 | -.239 | -.244 | -.254 | -.262 | -.275 | -.267 | -.279 | -.260 | -.224 | -.250 | -.273 |
| | .900 | -.111 | -.108 | -.106 | -.105 | -.104 | -.105 | -.104 | -.100 | -.106 | -.110 | -.117 | -.109 | -.128 | -.125 | -.120 | -.195 | -.217 |
| | .950 | .027 | .027 | .028 | .027 | .027 | .026 | .025 | .030 | .023 | .017 | .009 | .010 | -.012 | -.022 | -.056 | -.163 | -.191 |
| Lower surface | .0375 | -.574 | -.451 | -.359 | -.248 | -.132 | -.027 | .083 | .193 | .273 | .367 | .446 | .526 | .564 | .606 | .631 | .651 | .679 |
| | .075 | -.365 | -.286 | -.209 | -.142 | -.070 | 0 | .076 | .152 | .208 | .277 | .337 | .405 | .432 | .471 | .490 | .509 | .538 |
| | .150 | -.210 | -.167 | -.126 | -.086 | -.042 | -.002 | .046 | .098 | .134 | .182 | .224 | .275 | .294 | .325 | .340 | .356 | .381 |
| | .250 | -.161 | -.133 | -.109 | -.084 | -.053 | -.027 | .007 | .044 | .067 | .100 | .132 | .172 | .184 | .205 | .218 | .230 | .254 |
| | .350 | -.144 | -.125 | -.107 | -.090 | -.071 | -.052 | -.025 | .001 | .018 | .046 | .066 | .102 | .108 | .127 | .132 | .140 | .161 |
| | .450 | -.127 | -.113 | -.099 | -.087 | -.073 | -.059 | -.037 | -.017 | -.023 | .017 | .033 | .063 | .067 | .082 | .085 | .089 | .105 |
| | .550 | -.124 | -.114 | -.106 | -.097 | -.086 | -.075 | -.059 | -.043 | -.035 | -.019 | -.007 | .020 | .030 | .031 | .029 | .043 |
| | .650 | -.124 | -.119 | -.114 | -.107 | -.099 | -.094 | -.080 | -.069 | -.065 | -.053 | -.042 | -.019 | -.024 | -.016 | -.020 | -.029 | -.018 |
| | .750 | -.086 | -.082 | -.081 | -.078 | -.073 | -.070 | -.061 | -.051 | -.051 | -.040 | -.035 | -.018 | -.024 | -.020 | -.032 | -.047 | -.042 |
| | .850 | -.021 | -.026 | -.022 | -.023 | -.022 | -.022 | -.017 | -.015 | -.018 | -.013 | -.015 | -.001 | -.011 | -.012 | -.032 | -.067 | -.066 |
| | .925 | .036 | .034 | .028 | .025 | .024 | .020 | .019 | .016 | .007 | .005 | -.002 | .007 | -.005 | -.010 | -.046 | -.107 | -.114 |
| | .975 | .068 | .092 | .089 | .083 | .080 | .075 | .071 | .061 | .046 | .039 | .024 | .025 | .018 | .007 | -.050 | -.147 | -.167 |
| | [a]1.000 | .077 | .131 | .122 | .125 | .121 | .118 | .115 | .196 | .168 | .157 | .160 | .145 | .120 | .095 | .005 | -.144 | -.171 |

[a]No orifice.

TABLE 8.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(06.50) PROPELLER BLADE SECTION (x = 0.95) - Continued

(b) N = 1350 rpm.

| | J | 2.354 | 2.503 | 2.440 | 2.376 | 2.322 | 2.253 | 2.205 | 2.126 | 2.052 | 1.988 | 1.930 | 1.858 | 1.804 | 1.733 | 1.657 | 1.604 | 1.541 | 1.475 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_x$ | .812 | .804 | .793 | .782 | .773 | .764 | .757 | .750 | .743 | .732 | .725 | .717 | .713 | .705 | .694 | .693 | .691 | .682 |
| | $\alpha_x'$ | -2.23 | -1.66 | -.94 | -.19 | .45 | 1.28 | 1.87 | 2.87 | 3.82 | 4.66 | 5.44 | 6.43 | 7.18 | 8.19 | 9.29 | 10.07 | 11.02 | 12.03 |
| | $\Delta\beta$ | -.14 | -.09 | -.02 | .04 | .10 | .16 | .21 | .28 | .34 | .39 | .44 | .49 | .52 | .56 | .58 | .60 | .62 | .62 |
| | $\alpha_i$ | -.15 | .10 | .38 | .60 | .78 | 1.05 | 1.32 | 1.61 | 1.99 | 2.30 | 2.60 | 2.91 | 3.29 | 3.86 | 4.11 | 4.45 | 4.28 | 4.23 |
| | $c_n$ | -.0245 | .0168 | .0610 | .0974 | .1258 | .1684 | .2123 | .2584 | .3200 | .3684 | .4181 | .4658 | .5271 | .6168 | .6606 | .7123 | .6839 | .6735 |
| | $c_m$ | -.0569 | -.0521 | -.0479 | -.0442 | -.0430 | -.0403 | -.0362 | -.0348 | -.0293 | -.0259 | -.0249 | -.0226 | -.0215 | -.0147 | -.0161 | -.0102 | -.0079 | .0005 |
| | $c_a$ | | | | | | | | | | | | | | | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.176 | 1.172 | 1.167 | 1.162 | 1.159 | 1.155 | 1.152 | 1.149 | 1.146 | 1.142 | 1.139 | 1.136 | 1.134 | 1.131 | 1.127 | 1.127 | 1.126 | 1.122 |
| | .025 | .532 | .470 | .379 | .273 | .144 | .003 | -.151 | -.343 | -.603 | -.814 | -1.029 | -1.220 | -1.410 | -1.637 | -1.853 | -2.003 | -2.132 | -2.251 |
| | .050 | .201 | .146 | .072 | -.009 | -.101 | -.203 | -.305 | -.431 | -.594 | -.759 | -1.081 | -1.244 | -1.419 | -1.631 | -1.788 | -1.909 | -2.002 | -2.098 |
| | .100 | -.006 | -.047 | -.105 | -.162 | -.224 | -.291 | -.351 | -.424 | -.508 | -.564 | -.570 | -.650 | -1.063 | -1.480 | -1.683 | -1.780 | -1.888 | -1.335 |
| | .200 | -.136 | -.163 | -.193 | -.226 | -.261 | -.297 | -.325 | -.364 | -.403 | -.432 | -.464 | -.486 | -.493 | -.501 | -.530 | -.581 | -.620 | -.698 |
| | .300 | -.202 | -.219 | -.238 | -.257 | -.279 | -.302 | -.319 | -.343 | -.369 | -.393 | -.415 | -.437 | -.447 | -.461 | -.472 | -.476 | -.477 | -.490 |
| | .400 | -.231 | -.242 | -.253 | -.267 | -.280 | -.297 | -.307 | -.324 | -.343 | -.361 | -.376 | -.394 | -.407 | -.422 | -.433 | -.428 | -.424 | -.422 |
| | .500 | -.271 | -.278 | -.282 | -.292 | -.301 | -.312 | -.319 | -.332 | -.347 | -.361 | -.375 | -.392 | -.401 | -.418 | -.428 | -.424 | -.413 | -.401 |
| | .600 | -.323 | -.325 | -.324 | -.327 | -.333 | -.341 | -.343 | -.355 | -.364 | -.372 | -.382 | -.396 | -.404 | -.419 | -.425 | -.418 | -.400 | -.376 |
| | .700 | -.319 | -.316 | -.312 | -.315 | -.317 | -.322 | -.296 | -.332 | -.338 | -.342 | -.349 | -.361 | -.368 | -.380 | -.387 | -.379 | -.354 | -.324 |
| | .800 | -.270 | -.266 | -.260 | -.259 | -.261 | -.263 | -.261 | -.268 | -.271 | -.273 | -.275 | -.281 | -.287 | -.300 | -.306 | -.297 | -.276 | -.248 |
| | .900 | -.092 | -.092 | -.088 | -.089 | -.091 | -.095 | -.093 | -.099 | -.099 | -.097 | -.097 | -.100 | -.110 | -.125 | -.136 | -.136 | -.131 | -.130 |
| | .950 | .062 | .058 | .059 | .056 | .052 | .048 | .048 | .044 | .041 | .037 | .034 | .027 | .019 | .007 | -.007 | -.011 | -.019 | -.040 |
| Lower surface | .0375 | -.863 | -.749 | -.519 | -.383 | -.260 | -.154 | -.055 | .038 | .143 | .216 | .296 | .363 | .422 | .479 | .544 | .583 | .614 | .642 |
| | .075 | -.901 | -.326 | -.269 | -.210 | -.145 | -.082 | -.019 | .041 | .113 | .165 | .225 | .276 | .319 | .367 | .420 | .453 | .479 | .501 |
| | .150 | -.171 | -.187 | -.158 | -.125 | -.088 | -.053 | -.013 | .022 | .068 | .103 | .145 | .181 | .213 | .247 | .288 | .315 | .333 | .348 |
| | .250 | -.163 | -.158 | -.133 | -.114 | -.090 | -.069 | -.041 | -.018 | .015 | .038 | .070 | .095 | .120 | .148 | .179 | .200 | .214 | .224 |
| | .350 | -.156 | -.148 | -.130 | -.118 | -.103 | -.087 | -.067 | -.051 | -.029 | -.011 | .014 | .034 | .053 | .075 | .099 | .118 | .127 | .133 |
| | .450 | -.140 | -.132 | -.118 | -.109 | -.100 | -.087 | -.072 | -.060 | -.043 | -.029 | -.009 | .007 | .023 | .041 | .060 | .074 | .079 | .081 |
| | .550 | -.139 | -.133 | -.123 | -.118 | -.109 | -.102 | -.089 | -.082 | -.068 | -.059 | -.044 | -.033 | -.018 | -.006 | .012 | .023 | .025 | .024 |
| | .650 | -.144 | -.141 | -.133 | -.131 | -.124 | -.120 | -.112 | -.104 | -.098 | -.092 | -.080 | -.069 | -.057 | -.046 | -.032 | -.022 | -.024 | -.031 |
| | .750 | -.098 | -.099 | -.094 | -.095 | -.092 | -.091 | -.084 | -.082 | -.076 | -.071 | -.064 | -.057 | -.048 | -.039 | -.030 | -.023 | -.030 | -.042 |
| | .850 | -.029 | -.025 | -.024 | -.028 | -.031 | -.032 | -.030 | -.031 | -.033 | -.032 | -.028 | -.027 | -.023 | -.017 | -.013 | -.008 | -.019 | -.040 |
| | .925 | .045 | .041 | .037 | .031 | .027 | .022 | .019 | .013 | .008 | .001 | -.003 | -.004 | -.004 | -.003 | -.002 | -.001 | -.014 | -.046 |
| | .975 | .112 | .106 | .103 | .097 | .089 | .082 | .078 | .070 | .058 | .045 | .036 | .028 | .027 | .028 | .021 | .023 | .008 | -.035 |
| | [a]1.000 | .373 | .388 | .300 | .271 | .267 | .224 | .214 | .190 | .195 | [b].090 | [b].074 | [b].057 | [b].059 | [b].060 | .056 | b.061 | b.032 | [b]0 |

[redacted]

[a]No orifice.

[b]Lower surface only.

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TABLE 8.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(06.50) PROPELLER BLADE SECTION (x = 0.95) - Continued

(c) N = 1500 rpm.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.529 | 2.485 | 2.437 | 2.375 | 2.316 | 2.252 | 2.180 | 2.134 | 2.072 | 2.022 | 1.960 | 1.896 | 1.840 | 1.762 |
| | $M_x$ | .895 | .888 | .879 | .871 | .861 | .850 | .839 | .832 | .822 | .815 | .804 | .792 | .789 | .775 |
| | $\alpha_x'$ | -1.95 | -1.45 | -.90 | -.18 | .52 | 1.29 | 2.18 | 2.76 | 3.56 | 4.21 | 5.04 | 5.90 | 6.68 | 7.77 |
| | $\Delta\beta$ | -.24 | -.17 | -.09 | -.01 | .07 | .14 | .23 | .27 | .36 | .41 | .48 | .55 | .60 | .65 |
| | $\alpha_i$ | -.06 | .07 | .34 | .57 | .84 | 1.12 | 1.49 | 1.72 | 1.99 | 2.25 | 2.69 | 3.16 | 3.51 | 4.01 |
| | $c_n$ | -.0103 | .0116 | .0548 | .0923 | .1352 | .1803 | .2394 | .2761 | .3187 | .3600 | .4310 | .5071 | .5652 | .6426 |
| | $c_m$ | -.0695 | -.0616 | -.0497 | -.0492 | -.0456 | -.0436 | -.0383 | -.0369 | -.0338 | -.0295 | -.0293 | -.0254 | -.0251 | -.0231 |
| | $c_c$ | .0178 | | | | | | | | | | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.217 | 1.212 | 1.208 | 1.204 | 1.199 | 1.194 | 1.188 | 1.185 | 1.180 | 1.177 | 1.172 | 1.167 | 1.165 | 1.160 |
| | .025 | .547 | .495 | .436 | .341 | .239 | .098 | -.064 | -.203 | -.360 | -.503 | -.664 | -.804 | -.942 | -1.162 |
| | .050 | .222 | .176 | .121 | .038 | -.046 | -.157 | -.283 | -.385 | -.504 | -.689 | -.810 | -.921 | -1.019 | -1.244 |
| | .100 | .005 | -.035 | -.079 | -.147 | -.211 | -.293 | -.379 | -.450 | -.648 | -.737 | -.892 | -1.011 | -1.145 | -1.303 |
| | .200 | -.154 | -.176 | -.205 | -.247 | -.284 | -.322 | -.360 | -.390 | -.405 | -.413 | -.637 | -.946 | -1.088 | -1.224 |
| | .300 | -.240 | -.242 | -.259 | -.286 | -.306 | -.329 | -.354 | -.366 | -.384 | -.384 | -.378 | -.385 | -.414 | -.474 |
| | [a].400 | -.272 | -.284 | -.288 | -.308 | -.317 | -.329 | -.350 | -.353 | -.370 | -.366 | -.368 | -.350 | -.350 | -.380 |
| | .500 | -.308 | -.319 | -.326 | -.341 | -.350 | -.357 | -.370 | -.374 | -.383 | -.389 | -.396 | -.397 | -.399 | -.398 |
| | .600 | -.380 | -.389 | -.393 | -.401 | -.409 | -.414 | -.421 | -.419 | -.419 | -.421 | -.428 | -.433 | -.437 | -.432 |
| | .700 | -.476 | -.479 | -.480 | -.448 | -.388 | -.371 | -.373 | -.371 | -.374 | -.377 | -.388 | -.398 | -.406 | -.406 |
| | .800 | -.398 | -.284 | -.262 | -.269 | -.271 | -.274 | -.281 | -.281 | -.284 | -.287 | -.299 | -.312 | -.326 | -.330 |
| | .900 | -.001 | -.014 | -.028 | -.041 | -.046 | -.051 | -.061 | -.064 | -.068 | -.073 | -.084 | -.099 | -.115 | -.125 |
| | .950 | .110 | .109 | .102 | .093 | .090 | .086 | .075 | .075 | .068 | .064 | .055 | .048 | .038 | .031 |
| Lower surface | .0375 | -.608 | -.579 | -.524 | -.427 | -.335 | -.180 | -.065 | .027 | .111 | .187 | .263 | .337 | .395 | .478 |
| | .075 | -.766 | -.759 | -.710 | -.350 | -.167 | -.090 | -.020 | .042 | .099 | .153 | .210 | .264 | .309 | .375 |
| | .150 | -.604 | -.454 | -.124 | -.130 | -.102 | -.056 | -.014 | .025 | .061 | .099 | .138 | .177 | .208 | .259 |
| | .250 | -.243 | -.085 | -.129 | -.130 | -.106 | -.074 | -.047 | -.019 | .006 | .034 | .063 | .091 | .114 | .156 |
| | .350 | -.071 | -.124 | -.144 | -.135 | -.117 | -.095 | -.078 | -.056 | -.038 | -.017 | .005 | .027 | .046 | .081 |
| | .450 | -.107 | -.136 | -.138 | -.129 | -.115 | -.097 | -.085 | -.068 | -.054 | -.036 | -.021 | 0 | .013 | .041 |
| | .550 | -.143 | -.152 | -.148 | -.140 | -.129 | -.115 | -.107 | -.092 | -.083 | -.068 | -.055 | -.043 | -.030 | -.004 |
| | .650 | -.173 | -.171 | -.165 | -.160 | -.152 | -.139 | -.134 | -.120 | -.113 | -.104 | -.093 | -.078 | -.068 | -.045 |
| | .750 | -.124 | -.121 | -.117 | -.118 | -.113 | -.105 | -.103 | -.096 | -.092 | -.084 | -.075 | -.064 | -.058 | -.039 |
| | .850 | -.030 | -.030 | -.030 | -.036 | -.036 | -.035 | -.040 | -.037 | -.037 | -.034 | -.030 | -.024 | -.020 | -.009 |
| | .925 | .042 | .044 | .042 | .034 | .030 | .027 | .016 | .015 | .010 | .007 | .008 | .010 | .011 | .017 |
| | .975 | .101 | .104 | .103 | .098 | .092 | .088 | .075 | .071 | .060 | .053 | .049 | .051 | .051 | .055 |
| | [a]1.000 | .175 | .161 | .161 | .152 | .157 | .144 | .128 | .120 | .115 | .126 | .120 | .100 | .111 | .109 |

[a]No orifice.

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TABLE 8.— PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(06.50) PROPELLER BLADE SECTION (r = 0.95) — Continued

(a) N = 1600 rpm.

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 1.913 | 2.002 | 2.076 | 2.140 | 2.226 | 2.329 | 2.395 | 2.470 | 2.501 | 2.453 | 2.365 | 2.268 | 2.195 | 2.113 | 2.006 | 1.973 |
| | $M_x$ | .852 | .867 | .879 | .887 | .903 | .918 | .930 | .943 | .947 | .939 | .923 | .904 | .893 | .879 | .862 | .858 |
| | $\alpha_x'$, | 5.67 | 4.48 | 3.51 | 2.69 | 1.61 | .36 | -.42 | -1.28 | -1.63 | -1.09 | -.07 | 1.10 | 2.00 | 3.03 | 4.42 | 4.86 |
| | $\Delta\beta$ | .66 | .56 | .48 | .38 | .24 | .04 | -.09 | -.24 | -.29 | -.20 | -.03 | .16 | .30 | .42 | .56 | .60 |
| | $\alpha_i$ | 3.00 | 2.59 | 2.16 | 1.76 | 1.32 | .77 | .44 | .02 | -.26 | .01 | .50 | 1.01 | 1.41 | 1.93 | 2.50 | 2.77 |
| | $c_n$ | .4819 | .4168 | .3468 | .2823 | .2132 | .1245 | .0716 | .0026 | -.0416 | .0023 | .0797 | .1619 | .2277 | .3094 | .4013 | .4452 |
| | $c_m$ | -.0303 | -.0303 | -.0324 | -.0323 | -.0386 | -.0491 | -.0541 | -.0638 | -.0637 | -.0628 | -.0589 | -.0496 | -.0389 | -.0342 | -.0328 | -.0305 |
| | $c_d$ | | | | | .0126 | .0181 | .0213 | .0226 | .0248 | .0224 | .0192 | .0141 | .0111 | | | |
| | x/b | Pressure coefficient, P | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.195 | 1.202 | 1.207 | 1.212 | 1.221 | 1.229 | 1.235 | 1.242 | 1.245 | 1.240 | 1.231 | 1.221 | 1.216 | 1.208 | 1.200 | 1.198 |
| | .025 | -.519 | -.338 | -.162 | -.012 | .162 | .341 | .461 | .299 | .374 | .390 | .364 | .192 | .064 | -.119 | -.352 | -.430 |
| | .050 | -.692 | -.485 | -.339 | -.235 | -.123 | .013 | .079 | .198 | .239 | .194 | .092 | -.053 | -.155 | -.271 | -.494 | -.606 |
| | .100 | -.752 | -.684 | -.618 | -.511 | -.276 | -.152 | -.053 | .014 | .045 | 0 | -.094 | -.209 | -.268 | -.459 | -.635 | -.704 |
| | .200 | -.814 | -.700 | -.569 | -.473 | -.396 | -.299 | -.239 | -.165 | -.133 | -.175 | -.258 | -.355 | -.420 | -.497 | -.670 | -.735 |
| | .300 | -.661 | -.617 | -.543 | -.459 | -.402 | -.335 | -.304 | -.260 | -.235 | -.262 | -.313 | -.363 | -.412 | -.454 | -.571 | -.622 |
| | .400 | -.572 | -.484 | -.425 | -.413 | -.366 | -.328 | -.324 | -.324 | -.309 | -.335 | -.326 | -.350 | -.382 | -.424 | -.475 | -.501 |
| | .500 | -.521 | -.480 | -.451 | -.426 | -.379 | -.350 | -.325 | -.342 | -.330 | -.352 | -.348 | -.363 | -.381 | -.430 | -.450 | -.456 |
| | .600 | -.397 | -.465 | -.496 | -.459 | -.408 | -.414 | -.396 | -.409 | -.404 | -.413 | -.416 | -.429 | -.430 | -.458 | -.417 | -.399 |
| | .700 | -.357 | -.357 | -.451 | -.513 | -.524 | -.509 | -.495 | -.495 | -.498 | -.498 | -.512 | -.532 | -.533 | -.500 | -.426 | -.393 |
| | .800 | -.270 | -.257 | -.229 | -.206 | -.288 | -.401 | -.474 | -.507 | -.527 | -.511 | -.482 | -.369 | -.276 | -.235 | -.278 | -.283 |
| | .900 | -.046 | -.030 | -.019 | .002 | .005 | -.032 | -.055 | -.043 | -.055 | -.039 | -.019 | .002 | .002 | -.020 | -.048 | -.051 |
| | .950 | .058 | .063 | .072 | .076 | .065 | .031 | .020 | .010 | -.012 | .004 | .028 | .065 | .082 | .083 | .072 | .070 |
| Lower surface | .0375 | .280 | .182 | .078 | -.017 | -.159 | -.332 | -.439 | -.491 | -.524 | -.585 | -.637 | -.442 | -.271 | -.016 | .175 | .220 |
| | .075 | .228 | .151 | .074 | .007 | -.085 | -.381 | -.458 | -.560 | -.583 | -.574 | -.507 | -.153 | -.033 | .051 | .145 | .183 |
| | .150 | .149 | .091 | .040 | -.003 | -.060 | -.086 | -.363 | -.453 | -.497 | -.474 | -.212 | -.089 | -.041 | .023 | .088 | .114 |
| | .250 | .068 | .027 | -.014 | -.042 | -.080 | -.112 | -.047 | -.380 | -.446 | -.408 | -.132 | -.095 | -.059 | -.016 | .028 | .051 |
| | .350 | .007 | -.027 | -.055 | -.074 | -.103 | -.075 | -.002 | -.242 | -.339 | -.194 | -.099 | -.080 | -.057 | -.025 | .009 | .025 |
| | .450 | -.031 | -.058 | -.078 | -.093 | -.110 | -.060 | -.151 | -.119 | -.270 | -.127 | -.140 | -.122 | -.103 | -.074 | -.044 | -.027 |
| | .550 | -.056 | -.081 | -.117 | -.132 | -.157 | -.210 | -.208 | -.129 | -.183 | -.157 | -.176 | -.154 | -.132 | -.105 | -.079 | -.063 |
| | .650 | -.079 | -.102 | -.125 | -.139 | -.161 | -.185 | -.201 | -.179 | -.147 | -.194 | -.207 | -.168 | -.145 | -.118 | -.095 | -.082 |
| | .750 | -.082 | -.102 | -.119 | -.130 | -.148 | -.182 | -.205 | -.234 | -.195 | -.238 | -.205 | -.160 | -.139 | -.124 | -.119 | -.113 |
| | .850 | -.031 | -.040 | -.049 | -.052 | -.064 | -.121 | -.129 | -.131 | -.136 | -.129 | -.105 | -.081 | -.076 | -.071 | -.063 | -.051 |
| | .925 | .003 | .001 | .003 | .005 | -.001 | -.076 | -.071 | -.055 | -.068 | -.054 | -.036 | -.027 | -.030 | -.029 | -.023 | -.016 |
| | .975 | .037 | .042 | .052 | .056 | .051 | -.012 | -.011 | -.009 | -.028 | -.015 | .009 | .022 | .027 | .029 | .028 | .033 |
| | [a]1.000 | .168 | .160 | .140 | .140 | .103 | .058 | .077 | .041 | .008 | .026 | .053 | .109 | .127 | .123 | .136 | .155 |

[a]No orifice.

TABLE 8.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(06.50) PROPELLER BLADE SECTION (x = 0.95) - Continued

(e) M = 0.56.

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 1.967 | 2.000 | 2.037 | 2.073 | 2.098 | 2.129 | 2.161 | 2.188 | 2.234 | 2.253 | 2.309 | 2.346 | 2.384 | 2.416 | 2.460 | 2.494 | 2.536 | 2.550 |
| | $M_x$ | 1.014 | 1.004 | .995 | .987 | .977 | .968 | .958 | .947 | .940 | .931 | .923 | .914 | .905 | .895 | .885 | .878 | .869 | .864 |
| | $\alpha_x'$ | 4.94 | 4.50 | 4.02 | 3.55 | 3.22 | 2.83 | 2.42 | 2.08 | 1.51 | 1.28 | .60 | .16 | -.29 | -.63 | -1.17 | -1.55 | -2.02 | -2.18 |
| | $\Delta\beta$ | .51 | .47 | .42 | .38 | .35 | .31 | .27 | .24 | .18 | .16 | .09 | .05 | 0 | -.04 | -.09 | -.14 | -.19 | -.20 |
| | $\alpha_1$ | 2.24 | 2.08 | 1.90 | 1.68 | 1.49 | 1.39 | 1.27 | 1.20 | 1.04 | .95 | .81 | .65 | .55 | .37 | .14 | .04 | -.12 | -.21 |
| | $c_n$ | .3597 | .3348 | .3061 | .2722 | .2401 | .2225 | .2045 | .1919 | .1669 | .1542 | .1300 | .1042 | .0890 | .0590 | .0223 | .0058 | -.0200 | -.0342 |
| | $c_m$ | -.0592 | -.0535 | -.0472 | -.0412 | -.0380 | -.0354 | -.0406 | -.0435 | -.0478 | -.0515 | -.0588 | -.0610 | -.0610 | -.0624 | -.0633 | -.0662 | -.0701 | -.0683 |
| | $c_c$ | .0287 | .0282 | .0273 | .0259 | .0254 | .0246 | .0227 | .0217 | .0205 | .0196 | .0189 | .0180 | .0174 | .0159 | | | | |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.283 | 1.277 | 1.272 | 1.267 | 1.261 | 1.256 | 1.251 | 1.244 | 1.241 | 1.235 | 1.231 | 1.226 | 1.222 | 1.217 | 1.211 | 1.208 | 1.203 | 1.201 |
| | .025 | .020 | .044 | .089 | .105 | .131 | .152 | .179 | .198 | .246 | .272 | .329 | .370 | .444 | .436 | .474 | .503 | .538 | .552 |
| | .050 | -.190 | -.152 | -.107 | -.105 | -.096 | -.090 | -.078 | -.072 | -.045 | -.022 | .020 | .056 | .080 | .112 | .145 | .169 | .200 | .217 |
| | .100 | -.327 | -.319 | -.291 | -.288 | -.273 | -.255 | -.216 | -.199 | -.184 | -.176 | -.145 | -.120 | -.101 | -.076 | -.048 | -.028 | -.002 | .011 |
| | .200 | -.412 | -.405 | -.380 | -.370 | -.340 | -.335 | -.339 | -.349 | -.339 | -.329 | -.301 | -.281 | -.263 | -.219 | -.190 | -.174 | -.151 | -.140 |
| | .300 | -.435 | -.434 | -.414 | -.417 | -.411 | -.409 | -.405 | -.406 | -.396 | -.381 | -.356 | -.316 | -.312 | -.301 | -.281 | -.270 | -.253 | -.236 |
| | .400 | -.444 | -.434 | -.414 | -.414 | -.409 | -.406 | -.403 | -.409 | -.380 | -.361 | -.311 | -.316 | -.315 | -.300 | -.275 | -.274 | -.261 | -.251 |
| | .500 | -.424 | -.412 | -.392 | -.401 | -.402 | -.402 | -.398 | -.400 | -.386 | -.366 | -.352 | -.338 | -.326 | -.323 | -.297 | -.299 | -.296 | -.285 |
| | .600 | -.452 | -.448 | -.434 | -.446 | -.448 | -.450 | -.445 | -.444 | -.425 | -.410 | -.406 | -.403 | -.407 | -.388 | -.379 | -.366 | -.366 | -.368 |
| | .700 | -.523 | -.522 | -.514 | -.526 | -.527 | -.527 | -.522 | -.521 | -.512 | -.508 | -.510 | -.512 | -.509 | -.494 | -.472 | -.468 | -.420 | -.380 |
| | .800 | -.555 | -.556 | -.546 | -.558 | -.557 | -.559 | -.551 | -.541 | -.537 | -.527 | -.525 | -.502 | -.472 | -.360 | -.282 | -.281 | -.289 | -.291 |
| | .900 | -.438 | -.388 | -.292 | -.210 | -.167 | -.128 | -.086 | -.064 | -.048 | -.028 | -.009 | .014 | .016 | -.006 | -.029 | -.046 | -.060 | -.067 |
| | .950 | -.225 | -.212 | -.181 | -.155 | -.127 | -.098 | -.063 | -.040 | -.020 | .006 | .034 | .077 | .101 | .113 | .111 | .104 | .098 | .093 |
| Lower surface | .0375 | .224 | .185 | .149 | .082 | .026 | -.019 | -.071 | -.122 | -.183 | -.227 | -.324 | -.405 | -.481 | -.568 | -.634 | -.682 | -.733 | -.762 |
| | .075 | .210 | .180 | .154 | .095 | .050 | .017 | -.027 | -.077 | -.190 | -.282 | -.395 | -.492 | -.566 | -.658 | -.733 | -.784 | -.831 | -.855 |
| | .150 | .156 | .132 | .118 | .071 | .039 | .017 | -.009 | -.037 | -.063 | -.078 | -.089 | -.096 | -.132 | -.189 | -.278 | -.408 | -.528 | -.556 |
| | .250 | .073 | .055 | .042 | .001 | -.029 | -.046 | -.066 | -.088 | -.109 | -.121 | -.134 | -.129 | -.123 | -.113 | -.100 | -.089 | -.082 | -.083 |
| | .350 | -.002 | -.015 | -.022 | -.056 | -.075 | -.087 | -.098 | -.115 | -.126 | -.133 | -.141 | -.141 | -.143 | -.138 | -.132 | -.130 | -.123 | -.123 |
| | .450 | -.066 | -.078 | -.079 | -.106 | -.118 | -.126 | -.135 | -.149 | -.154 | -.155 | -.158 | -.155 | -.157 | -.150 | -.145 | -.146 | -.141 | -.142 |
| | .550 | -.066 | -.077 | -.078 | -.106 | -.118 | -.128 | -.138 | -.151 | -.160 | -.165 | -.171 | -.166 | -.164 | -.156 | -.150 | -.150 | -.148 | -.146 |
| | .650 | -.123 | -.134 | -.134 | -.161 | -.173 | -.182 | -.193 | -.205 | -.212 | -.212 | -.211 | -.193 | -.183 | -.164 | -.151 | -.149 | -.143 | -.141 |
| | .750 | -.195 | -.205 | -.206 | -.231 | -.244 | -.254 | -.261 | -.272 | -.275 | -.251 | -.212 | -.175 | -.157 | -.133 | -.119 | -.117 | -.112 | -.109 |
| | .850 | -.236 | -.246 | -.247 | -.270 | -.281 | -.288 | -.293 | -.274 | -.185 | -.132 | -.105 | -.073 | -.054 | -.034 | -.024 | -.023 | -.020 | -.018 |
| | .925 | -.250 | -.258 | -.260 | -.281 | -.289 | -.290 | -.241 | -.137 | -.098 | -.068 | -.039 | -.002 | .019 | .041 | .050 | .051 | .054 | .055 |
| | .975 | [b]-.275 | [b]-.286 | [b]-.287 | [b]-.303 | [b]-.300 | -.271 | -.157 | -.100 | -.066 | -.032 | .003 | .047 | .075 | .102 | .114 | .114 | .118 | .120 |
| | [a]1.000 | [b]-.245 | [b]-.260 | [b]-.244 | [b]-.263 | [b]-.255 | [b]-.205 | -.056 | -.065 | -.013 | .009 | .040 | .094 | .117 | .150 | .162 | .180 | .180 | .180 |

[a]No orifice.
[b]Lower surface only.

TABLE 8.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(06.50) PROPELLER BLADE SECTION (x = 0.95) - Continued

(f) M = 0.60.

| | J | 2.536 | 2.481 | 2.445 | 2.399 | 2.357 | 2.309 | 2.274 | 2.236 | 2.187 | 2.159 | 2.119 | 2.091 | 2.056 | 2.019 | 1.993 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_x'$ | .934 | .943 | .955 | .966 | .976 | .986 | .998 | 1.009 | 1.019 | 1.036 | 1.043 | 1.052 | 1.063 | 1.076 | 1.086 |
| | $\alpha_x'$ | -2.03 | -1.41 | -1.00 | -.46 | .03 | .60 | 1.03 | 1.49 | 2.10 | 2.45 | 2.96 | 3.31 | 3.77 | 4.25 | 4.60 |
| | $\Delta\beta$ | -.29 | -.24 | -.22 | -.17 | -.13 | -.08 | -.05 | -.01 | .05 | .09 | .14 | .18 | .22 | .27 | .30 |
| | $c_l$ | -.35 | -.31 | -.19 | -.12 | .03 | .21 | .48 | .76 | 1.04 | 1.24 | 1.45 | 1.65 | 1.76 | 1.92 | 1.96 |
| | $c_n$ | -.0571 | -.0500 | -.0300 | -.0187 | .0042 | .0339 | .0777 | .1216 | .1677 | .1997 | .2326 | .2658 | .2832 | .3065 | .3139 |
| | $c_m$ | -.0770 | -.0632 | -.0524 | -.0447 | -.0330 | -.0323 | -.0456 | -.0512 | -.0578 | -.0678 | -.0741 | -.0760 | -.0764 | -.0772 | -.0779 |
| | $c_c$ | .0228 | .0245 | .0258 | .0270 | .0287 | .0295 | .0337 | .0374 | .0366 | .0379 | .0389 | .0388 | .0396 | .0402 | .0403 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.237 | 1.242 | 1.249 | 1.255 | 1.261 | 1.267 | 1.274 | 1.280 | 1.286 | 1.297 | 1.302 | 1.307 | 1.314 | 1.324 | 1.330 |
| | .025 | .589 | .553 | .524 | .502 | .464 | .437 | .409 | .382 | -.010 | -.053 | -.051 | .260 | .305 | .270 | .267 |
| | .050 | .267 | .237 | .213 | .198 | .167 | .145 | .126 | .117 | .122 | .120 | .082 | .045 | .042 | .038 | .049 |
| | .100 | .062 | .040 | .023 | .013 | -.010 | -.026 | -.028 | -.046 | -.073 | -.060 | -.116 | -.127 | -.134 | -.101 | -.070 |
| | .200 | -.119 | -.149 | -.170 | -.172 | -.183 | -.199 | -.203 | -.226 | -.223 | -.199 | -.229 | -.240 | -.257 | -.296 | -.293 |
| | .300 | -.224 | -.234 | -.234 | -.231 | -.248 | -.259 | -.262 | -.272 | -.291 | -.269 | -.294 | -.290 | -.296 | -.300 | -.304 |
| | .400 | -.309 | -.326 | -.327 | -.325 | -.332 | -.340 | -.337 | -.339 | -.346 | -.319 | -.341 | -.329 | -.335 | -.354 | -.350 |
| | .500 | -.319 | -.327 | -.324 | -.319 | -.326 | -.329 | -.324 | -.328 | -.339 | -.314 | -.336 | -.324 | -.324 | -.343 | -.345 |
| | .600 | -.398 | -.402 | -.394 | -.383 | -.380 | -.378 | -.365 | -.365 | -.377 | -.353 | -.375 | -.362 | -.356 | -.367 | -.364 |
| | .700 | -.499 | -.501 | -.490 | -.476 | -.466 | -.459 | -.446 | -.444 | -.452 | -.429 | -.452 | -.438 | -.431 | -.436 | -.429 |
| | .800 | -.507 | -.521 | -.519 | -.509 | -.503 | -.495 | -.486 | -.483 | -.486 | -.460 | -.482 | -.469 | -.463 | -.471 | -.469 |
| | .900 | -.014 | -.044 | -.056 | -.074 | -.120 | -.177 | -.397 | -.571 | -.604 | -.584 | -.605 | -.590 | -.581 | -.582 | -.576 |
| | .950 | .023 | -.018 | -.029 | -.049 | -.076 | -.098 | -.151 | -.211 | -.273 | -.472 | -.612 | -.623 | -.612 | -.612 | -.605 |
| Lower surface | .0375 | -.543 | -.481 | -.419 | -.364 | -.290 | -.239 | -.168 | -.095 | -.200 | -.175 | -.158 | .107 | .175 | .214 | .248 |
| | .075 | -.654 | -.614 | -.558 | -.510 | -.446 | -.392 | -.315 | -.177 | -.173 | -.058 | -.004 | .090 | .157 | .188 | .207 |
| | .150 | -.571 | -.515 | -.443 | -.382 | -.316 | -.259 | -.171 | -.084 | .008 | .072 | .081 | .110 | .131 | .154 | .174 |
| | .250 | -.502 | -.442 | -.377 | -.326 | -.251 | -.194 | -.115 | -.088 | -.035 | .010 | .011 | .042 | .063 | .082 | .099 |
| | .350 | -.442 | -.400 | -.342 | -.285 | -.196 | -.153 | -.117 | -.111 | -.083 | -.042 | -.042 | -.011 | .005 | .017 | .029 |
| | .450 | -.208 | -.195 | -.162 | -.136 | -.117 | -.131 | -.129 | -.136 | -.126 | -.089 | -.095 | -.067 | -.052 | -.045 | -.034 |
| | .550 | -.075 | -.092 | -.096 | -.099 | -.118 | -.136 | -.133 | -.141 | -.124 | -.089 | -.100 | -.073 | -.060 | -.063 | -.055 |
| | .650 | -.143 | -.168 | -.176 | -.183 | -.194 | -.200 | -.191 | -.190 | -.175 | -.139 | -.149 | -.124 | -.110 | -.108 | -.099 |
| | .750 | -.163 | -.221 | -.244 | -.250 | -.260 | -.258 | -.249 | -.242 | -.232 | -.197 | -.208 | -.182 | -.169 | -.167 | -.158 |
| | .850 | -.070 | -.123 | -.244 | -.286 | -.307 | -.303 | -.294 | -.285 | -.276 | -.242 | -.255 | -.192 | -.215 | -.215 | -.207 |
| | .925 | -.015 | -.051 | -.091 | -.227 | -.314 | -.319 | -.311 | -.308 | -.294 | -.262 | -.276 | -.255 | -.239 | -.238 | -.227 |
| | .975 | .008 | -.034 | -.056 | -.100 | -.245 | -.288 | [b]-.306 | [b]-.315 | [b]-.306 | -.276 | -.293 | -.272 | -.254 | -.251 | -.242 |
| | [a]1.000 | .055 | -.027 | -.042 | -.045 | -.072 | -.100 | [b]-.279 | [b]-.285 | [b]-.280 | -.292 | -.319 | -.280 | -.255 | -.255 | -.247 |

[redacted]

[a]No orifice.
[b]Lower surface only.

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TABLE 8.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(06.50) PROPELLER BLADE SECTION (x = 0.95) - Concluded

(g) M = 0.65.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.014 | 2.043 | 2.074 | 2.113 | 2.132 | 2.156 | 2.179 | 2.213 | 2.243 | 2.270 | 2.302 | 2.333 | 2.356 | 2.383 |
| | $M_x$ | 1.164 | 1.154 | 1.143 | 1.134 | 1.122 | 1.110 | 1.097 | 1.093 | 1.083 | 1.073 | 1.066 | 1.052 | 1.046 | 1.035 |
| | $\alpha_x$, | 4.32 | 3.94 | 3.53 | 3.03 | 2.79 | 2.49 | 2.20 | 1.77 | 1.40 | 1.07 | .69 | .32 | .04 | -.28 |
| | $\Delta\beta$ | .24 | .21 | .17 | .12 | .10 | .07 | .04 | -.01 | -.06 | -.10 | -.15 | -.19 | -.23 | -.28 |
| | $c_l$ | 1.93 | 1.82 | 1.61 | 1.44 | 1.32 | 1.20 | 1.05 | .92 | .79 | .70 | .46 | .30 | .18 | -.02 |
| | $c_n$ | .3097 | .2919 | .2581 | .2313 | .2116 | .1926 | .1684 | .1468 | .1268 | .1132 | .0742 | .0484 | .0885 | -.0039 |
| | $c_m$ | -.0715 | -.0694 | -.0679 | -.0655 | -.0643 | -.0635 | -.0648 | -.0633 | -.0635 | -.0617 | -.0643 | -.0626 | -.0597 | -.0564 |
| | $c_c$ | .0395 | .0402 | .0411 | .0411 | .0420 | .0433 | .0434 | .0439 | .0442 | .0431 | .0444 | .0446 | .0456 | .0457 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.384 | 1.377 | 1.369 | 1.363 | 1.354 | 1.346 | 1.337 | 1.335 | 1.328 | 1.323 | 1.317 | 1.308 | 1.304 | 1.297 |
| | .025 | .316 | .329 | .360 | .372 | .390 | .401 | .414 | .436 | .447 | .308 | .476 | .510 | .520 | .533 |
| | .050 | .097 | .114 | .138 | .150 | .154 | .155 | .160 | .176 | .185 | .209 | .200 | .234 | .243 | .251 |
| | .100 | -.061 | -.058 | -.040 | -.006 | .040 | .056 | .067 | .081 | .086 | .027 | .112 | .115 | .111 | .110 |
| | .200 | -.173 | -.169 | -.149 | -.151 | -.146 | -.135 | -.122 | -.105 | -.104 | -.110 | -.115 | -.118 | -.106 | -.100 |
| | .300 | -.202 | -.204 | -.193 | -.189 | -.193 | -.204 | -.213 | -.217 | -.215 | -.189 | -.177 | -.164 | -.166 | -.171 |
| | .400 | -.260 | -.261 | -.255 | -.259 | -.272 | -.295 | -.306 | -.302 | -.304 | -.276 | -.268 | -.263 | -.265 | -.270 |
| | .500 | -.262 | -.264 | -.262 | -.266 | -.283 | -.294 | -.297 | -.294 | -.300 | -.292 | -.286 | -.280 | -.285 | -.292 |
| | .600 | -.275 | -.284 | -.288 | -.292 | -.309 | -.319 | -.324 | -.323 | -.329 | -.327 | -.323 | -.325 | -.335 | -.341 |
| | .700 | -.340 | -.352 | -.356 | -.358 | -.371 | -.391 | -.391 | -.393 | -.399 | -.400 | -.398 | -.404 | -.415 | -.423 |
| | .800 | -.370 | -.383 | -.386 | -.390 | -.395 | -.402 | -.411 | -.425 | -.423 | -.434 | -.438 | -.445 | -.459 | -.470 |
| | .900 | -.473 | -.489 | -.493 | -.494 | -.508 | -.525 | -.539 | -.544 | -.554 | -.555 | -.558 | -.567 | -.582 | -.592 |
| | .950 | -.510 | -.527 | -.534 | -.534 | -.545 | -.561 | -.576 | -.581 | -.592 | -.599 | -.601 | -.608 | -.621 | -.597 |
| Lower surface | .0375 | .309 | .280 | .228 | .165 | .132 | .093 | .057 | .029 | -.005 | -.096 | -.114 | -.137 | -.164 | -.199 |
| | .075 | .303 | .263 | .132 | .055 | .021 | -.019 | -.075 | -.127 | -.168 | -.211 | -.266 | -.303 | -.338 | -.379 |
| | .150 | .266 | .244 | .207 | .168 | .135 | .085 | .015 | -.015 | -.042 | .030 | -.035 | -.080 | -.126 | -.171 |
| | .250 | .177 | .159 | .126 | .092 | .068 | .039 | -.003 | -.034 | -.080 | -.095 | -.134 | -.185 | -.208 | -.244 |
| | .350 | .104 | .089 | .059 | .029 | .006 | -.022 | -.044 | -.067 | -.099 | -.128 | -.150 | -.173 | -.208 | -.246 |
| | .450 | .047 | .029 | 0 | -.025 | -.047 | -.072 | -.091 | -.103 | -.119 | -.154 | -.177 | -.198 | -.222 | -.247 |
| | .550 | .017 | -.003 | -.026 | -.046 | -.067 | -.090 | -.106 | -.117 | -.127 | -.139 | -.157 | -.187 | -.215 | -.236 |
| | .650 | -.016 | -.035 | -.057 | -.076 | -.096 | -.117 | -.134 | -.145 | -.155 | -.159 | -.164 | -.192 | -.229 | -.259 |
| | .750 | -.084 | -.101 | -.120 | -.137 | -.158 | -.180 | -.196 | -.206 | -.218 | -.222 | -.221 | -.234 | -.262 | -.298 |
| | .850 | -.136 | -.155 | -.171 | -.188 | -.207 | -.229 | -.245 | -.255 | -.266 | -.271 | -.271 | -.272 | -.294 | -.322 |
| | .925 | -.161 | -.180 | -.197 | -.210 | -.229 | -.250 | -.265 | -.276 | -.288 | -.292 | -.290 | -.290 | -.303 | -.329 |
| | .975 | -.172 | -.191 | -.208 | -.226 | -.246 | -.264 | -.282 | -.294 | -.306 | -.311 | -.313 | -.317 | -.328 | -.344 |
| | [a]1.000 | -.176 | -.198 | -.215 | -.236 | -.259 | -.272 | -.295 | -.306 | -.312 | -.328 | -.330 | -.336 | -.345 | -.363 |

[a]No orifice.

[redacted]

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TABLE 9.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(2)(05.34) PROPELLER BLADE SECTION (x = 0.975)

$[\beta_{0.75R} = 45°;\ \beta_x = 37.65°;\ B = 2]$

(a) N = 1140 rpm.

| | J | 1.352 | 1.454 | 1.617 | 1.778 | 1.922 | 2.077 | 2.236 | 2.404 | 2.553 | 2.620 | 2.481 | 2.326 | 2.171 | 1.999 | 1.871 | 1.686 | 1.533 | 1.403 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_x$ | .570 | .576 | .591 | .606 | .621 | .636 | .653 | .669 | .684 | .692 | .679 | .658 | .643 | .628 | .616 | .599 | .583 | .571 |
| | $\alpha_x$[1] | 13.84 | 12.26 | 9.82 | 7.52 | 5.55 | 3.51 | 1.52 | -.48 | -2.15 | -2.89 | -1.35 | .44 | 2.32 | 4.52 | 6.23 | 8.82 | 11.06 | 13.04 |
| | $\Delta\alpha$ | .38 | .35 | .30 | .25 | .18 | .11 | .04 | -.04 | -.11 | -.14 | -.08 | -.01 | .06 | .15 | .21 | .28 | .32 | .36 |
| | $c_l$ | 5.88 | 5.31 | 4.87 | 4.04 | 3.00 | 2.07 | 1.33 | .79 | .10 | -.15 | .32 | .87 | 1.62 | 2.50 | 3.33 | 4.49 | 5.11 | 5.37 |
| | $c_n$ | .6090 | .6148 | .5639 | .4697 | .3458 | .2387 | .1555 | .0694 | .0123 | -.0177 | .0374 | .1016 | .1887 | .2884 | .3839 | .5194 | .5942 | .6174 |
| | $c_c$ | -.0261 | -.0321 | -.0444 | -.0428 | -.0361 | -.0322 | -.0317 | -.0377 | -.0423 | -.0447 | -.0407 | -.0332 | -.0330 | -.0359 | -.0401 | -.0434 | -.0444 | -.0293 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | | |
| Upper surface | [2]0.000 | 1.083 | 1.085 | 1.090 | 1.094 | 1.099 | 1.105 | 1.111 | 1.117 | 1.123 | 1.126 | 1.121 | 1.113 | 1.107 | 1.102 | 1.097 | 1.092 | 1.087 | 1.084 |
| | .025 | -1.919 | -2.007 | -2.386 | -1.882 | -1.232 | -.728 | -.349 | -.004 | .264 | .348 | .139 | -.154 | -.493 | -.950 | -1.404 | -1.965 | -2.208 | -2.171 |
| | .050 | -1.463 | -1.541 | -1.122 | -.790 | -.610 | -.407 | -.243 | -.073 | -.047 | .124 | .002 | -.152 | -.317 | -.523 | -.671 | -.867 | -1.493 | -1.560 |
| | .100 | -1.023 | -.974 | -.714 | -.615 | -.488 | -.355 | -.271 | -.164 | -.075 | -.042 | -.121 | -.211 | -.314 | -.430 | -.528 | -.660 | -.839 | -.980 |
| | .200 | -.561 | -.533 | -.466 | -.399 | -.314 | -.224 | -.189 | -.161 | -.122 | -.106 | -.146 | -.179 | -.213 | -.281 | -.338 | -.426 | -.478 | -.552 |
| | .300 | -.435 | -.458 | -.427 | -.366 | -.300 | -.228 | -.209 | -.183 | -.158 | -.145 | -.174 | -.197 | -.224 | -.274 | -.319 | -.394 | -.443 | -.463 |
| | .400 | -.403 | -.423 | -.400 | -.348 | -.285 | -.221 | -.207 | -.188 | -.174 | -.163 | -.186 | -.200 | -.221 | -.264 | -.308 | -.370 | -.415 | -.424 |
| | .500 | -.395 | -.411 | -.402 | -.352 | -.293 | -.228 | -.215 | -.195 | -.186 | -.182 | -.195 | -.207 | -.228 | -.271 | -.308 | -.374 | -.409 | -.412 |
| | .600 | -.391 | -.411 | -.417 | -.374 | -.314 | -.241 | -.222 | -.216 | -.212 | -.223 | -.232 | -.234 | -.255 | -.333 | -.398 | -.460 | -.408 | |
| | .700 | -.351 | -.361 | -.370 | -.333 | -.279 | -.217 | -.205 | -.186 | -.180 | -.175 | -.187 | -.199 | -.221 | -.260 | -.294 | -.349 | -.374 | -.353 |
| | .800 | -.327 | -.351 | -.378 | -.348 | -.293 | -.236 | -.228 | -.211 | -.207 | -.207 | -.212 | -.223 | -.241 | -.277 | -.310 | -.361 | -.374 | -.329 |
| | .900 | -.279 | -.274 | -.312 | -.283 | -.237 | -.180 | -.170 | -.151 | -.160 | -.163 | -.160 | -.162 | -.183 | -.219 | -.251 | -.296 | -.309 | -.258 |
| | .950 | -.223 | -.153 | -.164 | -.134 | -.097 | -.046 | -.042 | -.024 | -.032 | -.038 | -.032 | -.034 | -.052 | -.084 | -.109 | -.145 | -.168 | -.175 |
| Lower surface | .0375 | .593 | .560 | .491 | .386 | .235 | .091 | -.096 | -.286 | -.490 | -.571 | -.401 | -.208 | -.032 | .146 | .290 | .440 | .589 | .590 |
| | .075 | .417 | .382 | .321 | .228 | .107 | .008 | -.129 | -.249 | -.359 | -.403 | -.312 | -.200 | -.085 | .044 | .151 | .274 | .357 | .412 |
| | .150 | .283 | .255 | .211 | .158 | .086 | .037 | -.047 | -.118 | -.180 | -.203 | -.151 | -.088 | -.023 | .048 | .116 | .187 | .234 | .278 |
| | .250 | .133 | .115 | .083 | .025 | -.044 | -.070 | -.127 | -.164 | -.201 | -.216 | -.189 | -.149 | -.113 | -.072 | -.023 | .065 | .108 | .132 |
| | .350 | .101 | .087 | .064 | .039 | .002 | -.011 | -.059 | -.084 | -.110 | -.124 | -.108 | -.079 | -.052 | -.021 | .018 | .053 | .077 | .101 |
| | .450 | .053 | .046 | .034 | .017 | -.033 | -.044 | -.082 | -.098 | -.116 | -.127 | -.111 | -.093 | -.075 | -.060 | -.005 | .027 | .043 | .057 |
| | .550 | .063 | .021 | .011 | -.001 | -.026 | -.031 | -.064 | -.078 | -.092 | -.100 | -.089 | -.076 | -.058 | -.046 | -.012 | .007 | .020 | .030 |
| | .650 | -.007 | -.005 | -.008 | -.018 | -.040 | -.041 | -.068 | -.081 | -.092 | -.097 | -.089 | -.079 | -.065 | -.058 | -.027 | -.010 | -.003 | .002 |
| | .750 | -.061 | -.048 | -.045 | -.044 | -.058 | -.048 | -.072 | -.079 | -.086 | -.089 | -.086 | -.082 | -.071 | -.070 | -.044 | -.041 | -.041 | -.047 |
| | .850 | -.067 | -.034 | -.023 | -.023 | -.026 | -.009 | -.029 | -.029 | -.029 | -.029 | -.034 | -.060 | -.030 | -.034 | -.023 | -.021 | -.022 | -.043 |
| | .925 | -.069 | -.013 | .011 | .021 | .023 | .047 | .031 | .034 | .041 | .042 | .034 | .027 | .028 | .022 | .027 | .018 | .010 | -.034 |
| | .975 | -.163 | -.039 | -.011 | .006 | .019 | .057 | .049 | .060 | .077 | .081 | .066 | .050 | .043 | .024 | .016 | -.002 | -.018 | -.105 |
| | [2]1.000 | -.207 | -.086 | -.031 | -.010 | .015 | .061 | .055 | .069 | .092 | .100 | .078 | .059 | .048 | .012 | .001 | -.049 | -.040 | -.150 |

[2]No orifice.

[redacted]

TABLE 9.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN

NACA 16-(2)(05.3)4 PROPELLER BLADE SECTION (x = 0.975) - Continued

(b) N = 1350 rpm.

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J | 1.475 | 1.586 | 1.685 | 1.779 | 1.877 | 2.000 | 2.189 | 2.582 | 2.534 | 2.478 | 2.407 | 2.350 | 2.283 | 2.221 | 2.153 | 2.076 | 2.011 | 1.933 | 1.845 | 1.751 | 1.648 | 1.550 |
| $M_x$ | .696 | .702 | .712 | .725 | .733 | .743 | .757 | .819 | .813 | .801 | .793 | .785 | .775 | .767 | .757 | .750 | .740 | .733 | .725 | .713 | .705 | .693 |
| $\alpha_x$° | 11.94 | 10.28 | 8.83 | 7.50 | 6.15 | 4.51 | 2.85 | 2.48 | 1.95 | 1.32 | -.51 | .15 | .95 | 1.70 | 2.55 | 3.52 | 4.36 | 5.40 | 6.59 | 7.90 | 9.37 | 10.81 |
| $\Delta\beta$ | .62 | .61 | .58 | .54 | .48 | .38 | .27 | -.17 | -.12 | -.06 | .01 | .06 | .14 | .19 | .25 | .32 | .38 | .44 | .49 | .54 | .59 | .62 |
| $\alpha_i$ | 5.42 | 5.42 | 4.64 | 4.05 | 3.98 | 2.71 | 1.98 | -.17 | .01 | .30 | .54 | .76 | 1.00 | 1.43 | 1.84 | 2.20 | 2.54 | 3.04 | 3.68 | 4.21 | 4.89 | 5.42 |
| $\alpha_n$ | .6890 | .6290 | .5394 | .4710 | .4123 | .3129 | .2290 | -.0197 | .0016 | .0348 | .0632 | .0881 | .1171 | .1668 | .2142 | .2542 | .2935 | .3515 | .4239 | .4871 | .5684 | .6258 |
| $\alpha_m$ | -.0388 | -.0434 | -.0485 | -.0431 | -.0393 | -.0375 | -.0341 | -.0504 | -.0462 | -.0442 | -.0421 | -.0401 | -.0405 | -.0347 | -.0339 | -.0365 | -.0377 | -.0398 | -.0403 | -.0447 | -.0482 | -.0447 |
| $\alpha_a$ | | | | | | | | | | | | | | | | | | | | | | |
| o/b | Pressure coefficient, P | | | | | | | | | | | | | | | | | | | | | |
| Upper surface | | | | | | | | | | | | | | | | | | | | | | |
| [a]0.000 | 1.128 | 1.130 | 1.134 | 1.139 | 1.142 | 1.147 | 1.152 | 1.179 | 1.176 | 1.172 | 1.167 | 1.164 | 1.159 | 1.156 | 1.152 | 1.149 | 1.145 | 1.142 | 1.139 | 1.134 | 1.131 | 1.127 |
| .025 | -2.204 | -2.067 | -1.827 | -1.661 | -1.486 | -1.094 | -.629 | .321 | .268 | .189 | .060 | -.046 | -.185 | -.346 | -.545 | -.749 | -.982 | -1.275 | -1.528 | -1.705 | -1.884 | -2.117 |
| .050 | -1.928 | -1.783 | -1.611 | -1.446 | -1.191 | -.486 | -.388 | .119 | .083 | .031 | -.042 | -.102 | -.173 | -.254 | -.354 | -.444 | -.494 | -.577 | -1.210 | -1.484 | -1.666 | -1.833 |
| .100 | -1.022 | -1.190 | -.767 | -.523 | -.508 | -.475 | -.377 | -.065 | -.088 | -.126 | -.172 | -.209 | -.252 | -.303 | -.354 | -.406 | -.460 | -.513 | -.539 | -.527 | -.779 | -1.017 |
| .200 | -.457 | -.453 | -.432 | -.408 | -.361 | -.309 | -.257 | -.121 | -.127 | -.147 | -.163 | -.179 | -.195 | -.219 | -.243 | -.271 | -.303 | -.337 | -.372 | -.407 | -.442 | -.454 |
| .300 | -.460 | -.452 | -.416 | -.380 | -.340 | -.296 | -.261 | -.182 | -.187 | -.198 | -.203 | -.211 | -.220 | -.236 | -.249 | -.268 | -.290 | -.319 | -.350 | -.383 | -.426 | -.453 |
| .400 | -.437 | -.428 | -.401 | -.364 | -.325 | -.282 | -.253 | -.192 | -.195 | -.204 | -.205 | -.211 | -.216 | -.230 | -.243 | -.260 | -.278 | -.305 | -.334 | -.366 | -.408 | -.429 |
| .500 | -.434 | -.430 | -.409 | -.371 | -.333 | -.293 | -.263 | -.213 | -.214 | -.221 | -.220 | -.224 | -.230 | -.243 | -.253 | -.270 | -.288 | -.315 | -.343 | -.375 | -.414 | -.429 |
| .600 | -.439 | -.444 | -.429 | -.395 | -.358 | -.319 | -.290 | -.246 | -.245 | -.252 | -.249 | -.252 | -.259 | -.269 | -.280 | -.295 | -.314 | -.340 | -.367 | -.398 | -.433 | -.442 |
| .700 | -.392 | -.403 | -.393 | -.360 | -.325 | -.288 | -.258 | -.213 | -.213 | -.218 | -.215 | -.220 | -.225 | -.236 | -.248 | -.264 | -.284 | -.308 | -.333 | -.360 | -.395 | -.401 |
| .800 | -.389 | -.410 | -.403 | -.373 | -.342 | -.307 | -.279 | -.240 | -.238 | -.242 | -.238 | -.242 | -.247 | -.257 | -.269 | -.285 | -.303 | -.327 | -.350 | -.373 | -.405 | -.408 |
| .900 | -.304 | -.326 | -.322 | -.294 | -.266 | -.232 | -.200 | -.156 | -.154 | -.157 | -.150 | -.153 | -.163 | -.177 | -.191 | -.209 | -.229 | -.254 | -.275 | -.297 | -.324 | -.324 |
| .950 | -.155 | -.158 | -.149 | -.129 | -.108 | -.079 | -.051 | -.006 | -.005 | -.010 | -.005 | -.009 | -.018 | -.032 | -.044 | -.059 | -.077 | -.097 | -.114 | -.132 | -.151 | -.158 |
| Lower surface | | | | | | | | | | | | | | | | | | | | | | |
| .0375 | .564 | .521 | .439 | .367 | .288 | .164 | .009 | -.703 | -.554 | -.481 | -.348 | -.267 | -.181 | -.100 | -.009 | .065 | .139 | .208 | .303 | .386 | .467 | .530 |
| .075 | .380 | .342 | .265 | .204 | .140 | .041 | -.073 | -.662 | -.377 | -.362 | -.298 | -.254 | -.199 | -.147 | -.083 | -.031 | .025 | .078 | .153 | .221 | .293 | .354 |
| .150 | .257 | .233 | .184 | .145 | .107 | .047 | -.020 | -.201 | -.194 | -.178 | -.140 | -.117 | -.087 | -.061 | -.025 | .004 | .036 | .065 | .112 | .156 | .200 | .239 |
| .250 | .085 | .067 | .028 | .002 | -.024 | -.065 | -.112 | -.228 | -.213 | -.204 | -.178 | -.163 | -.150 | -.137 | -.113 | -.094 | -.074 | -.057 | -.022 | .012 | .043 | .069 |
| .350 | .082 | .070 | .042 | .022 | .004 | -.023 | -.056 | -.134 | -.123 | -.119 | -.100 | -.092 | -.079 | -.070 | -.054 | -.043 | -.029 | -.018 | .006 | .031 | .053 | .074 |
| .450 | .035 | .023 | .001 | -.015 | -.027 | -.049 | -.073 | -.133 | -.122 | -.119 | -.103 | -.097 | -.088 | -.082 | -.069 | -.062 | -.054 | -.046 | -.026 | -.007 | .011 | .025 |
| .550 | .016 | .011 | -.007 | -.018 | -.028 | -.043 | -.065 | -.110 | -.102 | -.100 | -.086 | -.082 | -.074 | -.071 | -.061 | -.055 | -.048 | -.044 | -.028 | -.012 | .002 | .011 |
| .650 | -.011 | -.011 | -.028 | -.037 | -.044 | -.057 | -.075 | -.109 | -.102 | -.103 | -.090 | -.087 | -.081 | -.079 | -.070 | -.066 | -.061 | -.058 | -.042 | -.030 | -.017 | -.008 |
| .750 | -.042 | -.048 | -.051 | -.057 | -.060 | -.069 | -.082 | -.103 | -.098 | -.100 | -.091 | -.089 | -.086 | -.084 | -.078 | -.075 | -.073 | -.072 | -.062 | -.051 | -.042 | -.038 |
| .850 | -.033 | -.029 | -.029 | -.030 | -.030 | -.033 | -.040 | -.036 | -.034 | -.041 | -.036 | -.038 | -.036 | -.037 | -.034 | -.035 | -.035 | -.039 | -.032 | -.027 | -.023 | -.022 |
| .925 | -.005 | .011 | .009 | .013 | .020 | .024 | .023 | .044 | .044 | .037 | .035 | .032 | .033 | .028 | .028 | .025 | .021 | .014 | .015 | .014 | .011 | .007 |
| .975 | -.040 | -.016 | -.007 | .010 | .029 | .043 | .051 | .091 | .088 | .078 | .070 | .063 | .061 | .054 | .052 | .045 | .039 | .026 | .018 | .005 | -.013 | -.026 |
| [a]1.000 | -.073 | -.041 | -.020 | 0 | .025 | .080 | .073 | .116 | .110 | .090 | .089 | .075 | .071 | .065 | .059 | .055 | .040 | .023 | .010 | -.010 | -.026 | -.032 |

[a] No orifice.

[redacted]

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TABLE 9.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(2)(05.34) PROPELLER BLADE SECTION (x = 0.975) - Continued

(a) N = 1500 rpm.

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J | 1.683 | 1.740 | 1.811 | 1.899 | 1.960 | 2.044 | 2.150 | 2.275 | 2.380 | 2.502 | 2.622 | 2.573 | 2.458 | 2.325 | 2.213 | 2.106 | 2.012 | 1.873 | 1.784 |
| $M_x$ | .791 | .798 | .806 | .816 | .824 | .836 | .851 | .867 | .883 | .901 | .920 | .913 | .892 | .870 | .852 | .837 | .825 | .807 | .795 |
| $\alpha_x'$ | 8.86 | 8.05 | 7.06 | 5.85 | 5.04 | 3.94 | 2.58 | 1.05 | -.20 | -1.59 | -2.91 | -2.38 | -1.10 | .45 | 1.80 | 3.14 | 4.35 | 6.21 | 7.43 |
| $\Delta\beta$ | .74 | .71 | .65 | .56 | .49 | .40 | .27 | .12 | -.02 | -.21 | -.41 | -.32 | -.14 | .05 | .19 | .32 | .44 | .58 | .67 |
| $\alpha_i$ | 5.33 | 4.79 | 4.30 | 3.55 | 3.03 | 2.64 | 1.97 | 1.28 | .76 | .28 | -.42 | -.13 | .52 | 1.00 | 1.58 | 2.17 | 2.69 | 3.74 | 4.44 |
| $c_n$ | .6206 | .5555 | .4974 | .4084 | .3484 | .3032 | .2277 | .1494 | .0884 | .0323 | -.0490 | -.0155 | .0609 | .1171 | .1845 | .2510 | .3090 | .4316 | .5103 |
| $c_m$ | -.0546 | -.0509 | -.0479 | -.0408 | -.0413 | -.0385 | -.0433 | -.0389 | -.0469 | -.0585 | -.0631 | -.0600 | -.0516 | -.0457 | -.0414 | -.0396 | -.0401 | -.0433 | -.0495 |
| $c_o$ | | | | | | | | | | | | | | | | | | | |
| c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | | | |
| Upper surface [a]0.000 | 1.166 | 1.170 | 1.173 | 1.177 | 1.181 | 1.187 | 1.194 | 1.202 | 1.210 | 1.220 | 1.230 | 1.226 | 1.215 | 1.203 | 1.195 | 1.187 | 1.182 | 1.174 | 1.168 |
| .025 | -1.382 | -1.311 | -1.198 | -1.066 | -.967 | -.846 | -.543 | -.168 | .075 | .260 | .398 | .341 | .195 | -.041 | -.294 | -.674 | -.884 | -1.106 | -1.243 |
| .050 | -1.282 | -1.205 | -1.100 | -.939 | -.799 | -.673 | -.387 | -.184 | -.041 | .082 | .185 | .141 | .039 | -.111 | -.262 | -.448 | -.653 | -.994 | -1.157 |
| .100 | -1.223 | -1.148 | -1.034 | -.862 | -.676 | -.553 | -.429 | -.302 | -.198 | -.110 | -.026 | -.063 | -.136 | -.250 | -.351 | -.478 | -.553 | -.915 | -1.086 |
| .200 | -.730 | -.588 | -.480 | -.411 | -.346 | -.310 | -.277 | -.229 | -.200 | -.193 | -.161 | -.183 | -.186 | -.218 | -.251 | -.289 | -.312 | -.404 | -.489 |
| .300 | -.488 | -.429 | -.378 | -.336 | -.319 | -.300 | -.277 | -.255 | -.240 | -.221 | -.241 | -.232 | -.224 | -.251 | -.266 | -.287 | -.308 | -.348 | -.389 |
| .400 | -.395 | -.367 | -.355 | -.321 | -.304 | -.285 | -.264 | -.244 | -.231 | -.230 | -.249 | -.212 | -.227 | -.242 | -.256 | -.273 | -.294 | -.334 | -.371 |
| .500 | -.430 | -.404 | -.377 | -.350 | -.334 | -.314 | -.296 | -.278 | -.265 | -.260 | -.250 | -.248 | -.252 | -.270 | -.282 | -.301 | -.322 | -.360 | -.391 |
| .600 | -.477 | -.453 | -.428 | -.401 | -.384 | -.363 | -.349 | -.336 | -.323 | -.321 | -.302 | -.316 | -.308 | -.330 | -.343 | -.348 | -.368 | -.408 | -.439 |
| .700 | -.434 | -.409 | -.381 | -.353 | -.335 | -.314 | -.300 | -.291 | -.303 | -.332 | -.324 | -.334 | -.311 | -.294 | -.292 | -.300 | -.319 | -.361 | -.393 |
| .800 | -.462 | -.441 | -.416 | -.387 | -.366 | -.343 | -.328 | -.309 | -.305 | -.356 | -.357 | -.363 | -.329 | -.311 | -.319 | -.330 | -.349 | -.396 | -.428 |
| .900 | -.371 | -.340 | -.314 | -.280 | -.257 | -.227 | -.198 | -.161 | -.133 | -.118 | -.087 | -.078 | -.125 | -.152 | -.180 | -.209 | -.236 | -.291 | -.329 |
| .950 | -.197 | -.137 | -.114 | -.089 | -.071 | -.047 | -.022 | .009 | .032 | .047 | .067 | .058 | .041 | .017 | -.007 | -.033 | -.059 | -.101 | -.129 |
| Lower surface .0375 | .447 | .400 | .336 | .243 | .186 | .115 | -.005 | -.177 | -.317 | -.475 | -.563 | -.538 | -.401 | -.273 | -.117 | .039 | .131 | .268 | .350 |
| .075 | .281 | .236 | .183 | .108 | .062 | .007 | -.082 | -.204 | -.416 | -.696 | -.733 | -.724 | -.660 | -.263 | -.158 | -.047 | .020 | .129 | .197 |
| .150 | .197 | .171 | .135 | .086 | .059 | .027 | -.023 | -.088 | -.131 | -.391 | -.599 | -.527 | -.116 | -.115 | -.066 | -.005 | .034 | .100 | .142 |
| .250 | .049 | .020 | -.024 | -.063 | -.081 | -.101 | -.106 | -.167 | -.199 | -.153 | -.538 | -.369 | -.195 | -.184 | -.153 | -.119 | -.095 | -.048 | -.023 |
| .350 | .047 | .037 | .020 | -.009 | -.024 | -.038 | -.055 | -.085 | -.105 | -.109 | -.220 | -.058 | -.110 | -.098 | -.077 | -.051 | -.036 | -.003 | .019 |
| .450 | -.006 | -.007 | -.010 | -.030 | -.071 | -.082 | -.098 | -.111 | -.125 | -.137 | -.069 | -.109 | -.186 | -.119 | -.104 | -.087 | -.078 | -.053 | -.010 |
| .550 | -.015 | -.021 | -.029 | -.046 | -.059 | -.070 | -.078 | -.094 | -.106 | -.122 | -.084 | -.114 | -.110 | -.101 | -.090 | -.074 | -.068 | -.045 | -.031 |
| .650 | -.030 | -.037 | -.049 | -.068 | -.077 | -.082 | -.088 | -.104 | -.116 | -.132 | -.121 | -.136 | -.118 | -.110 | -.099 | -.087 | -.083 | -.064 | -.050 |
| .750 | -.048 | -.058 | -.063 | -.080 | -.088 | -.091 | -.096 | -.106 | -.113 | -.124 | -.127 | -.129 | -.110 | -.110 | -.104 | -.096 | -.095 | -.077 | -.066 |
| .850 | -.020 | -.022 | -.029 | -.038 | -.041 | -.043 | -.042 | -.046 | -.044 | -.040 | -.040 | -.040 | -.035 | -.047 | -.046 | -.044 | -.046 | -.037 | -.033 |
| .925 | .014 | .018 | .020 | .018 | .018 | .023 | .028 | .031 | .039 | .051 | .061 | .057 | .051 | .033 | .027 | .022 | .018 | .015 | .013 |
| .975 | -.008 | .003 | .016 | .025 | .033 | .044 | .056 | .064 | .077 | .095 | .113 | .105 | .090 | .064 | .052 | .043 | .030 | .015 | .003 |
| [a]1.000 | -.024 | -.003 | .002 | .025 | .045 | .050 | .062 | .112 | .096 | .113 | .136 | .120 | .100 | .075 | .058 | .050 | .044 | .012 | -.005 |

[a]No orifice.

[redacted]

TABLE 9.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(2)(05.34) PROPELLER BLADE SECTION (x = 0.975) - Continued

(d) N = 1600 rpm.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 1.922 | 2.046 | 2.125 | 2.190 | 2.291 | 2.368 | 2.458 | 2.469 | 2.427 | 2.344 | 2.262 | 2.168 | 2.108 | 2.010 | 1.956 |
| | $M_R$ | .877 | .896 | .907 | .915 | .932 | .943 | .960 | .961 | .952 | .938 | .921 | .909 | .901 | .884 | .875 |
| | $\alpha_R$ | 5.54 | 3.91 | 2.90 | 2.09 | .86 | -.06 | -1.10 | -1.22 | -.74 | .23 | 1.20 | 2.36 | 3.11 | 4.38 | 5.09 |
| | $\Delta\beta$ | .65 | .51 | .41 | .30 | .12 | -.04 | -.20 | -.23 | -.15 | .01 | .18 | .34 | .43 | .56 | .61 |
| | $\alpha_i$ | 3.68 | 2.72 | 2.13 | 1.56 | .91 | .41 | -.15 | -.34 | .06 | .54 | 1.11 | 1.80 | 2.27 | 2.91 | 3.24 |
| | $c_n$ | .4239 | .3189 | .2471 | .1797 | .1065 | .0477 | -.0171 | -.0397 | .0061 | .0639 | .1290 | .2074 | .2632 | .3348 | .3732 |
| | $c_m$ | -.0505 | -.0453 | -.0466 | -.0401 | -.0356 | -.0323 | -.0388 | -.0375 | -.0377 | -.0338 | -.0388 | -.0436 | -.0451 | -.0456 | -.0494 |
| | $c_c$ | | | | | .0131 | .0141 | .0168 | .0181 | .0158 | .0146 | | | | | |
| | x/b | Pressure coefficient, P | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.207 | 1.217 | 1.223 | 1.227 | 1.236 | 1.242 | 1.252 | 1.252 | 1.248 | 1.239 | 1.230 | 1.224 | 1.220 | 1.210 | 1.206 |
| | .025 | -.760 | -.569 | -.407 | -.218 | -.019 | .136 | .268 | .295 | .225 | .087 | -.079 | -.293 | -.454 | -.627 | -.706 |
| | .050 | -.672 | -.380 | -.259 | -.178 | -.063 | .039 | .131 | .149 | .100 | .008 | -.097 | -.217 | -.284 | -.498 | -.609 |
| | .100 | -.585 | -.473 | -.396 | -.306 | -.233 | -.161 | -.081 | -.066 | -.107 | -.186 | -.257 | -.327 | -.421 | -.518 | -.617 |
| | .200 | -.522 | -.472 | -.398 | -.337 | -.294 | -.248 | -.189 | -.173 | -.211 | -.265 | -.299 | -.349 | -.407 | -.485 | -.487 |
| | .300 | -.461 | -.367 | -.302 | -.286 | -.262 | -.260 | -.255 | -.253 | -.260 | -.221 | -.250 | -.293 | -.302 | -.382 | -.422 |
| | .400 | -.463 | -.362 | -.326 | -.303 | -.272 | -.259 | -.287 | -.284 | -.290 | -.265 | -.277 | -.310 | -.327 | -.371 | -.409 |
| | .500 | -.450 | -.379 | -.347 | -.320 | -.292 | -.269 | -.294 | -.299 | -.274 | -.275 | -.291 | -.330 | -.349 | -.384 | -.413 |
| | .600 | -.493 | -.437 | -.405 | -.366 | -.338 | -.315 | -.321 | -.337 | -.305 | -.323 | -.338 | -.369 | -.404 | -.412 | -.412 |
| | .700 | -.336 | -.459 | -.427 | -.394 | -.379 | -.362 | -.352 | -.370 | -.347 | -.367 | -.376 | -.389 | -.406 | -.357 | -.374 |
| | .800 | -.403 | -.309 | -.396 | -.440 | -.431 | -.409 | -.384 | -.390 | -.389 | -.415 | -.430 | -.432 | -.344 | -.372 | -.384 |
| | .900 | -.259 | -.202 | -.148 | -.095 | -.075 | -.095 | -.152 | -.165 | -.114 | -.073 | -.119 | -.171 | -.222 | -.246 | |
| | .950 | -.073 | -.005 | .007 | .032 | .040 | .031 | .013 | .005 | .030 | .043 | .047 | .080 | -.004 | -.041 | -.060 |
| Lower surface | .0375 | .214 | .092 | -.007 | -.112 | -.208 | -.261 | -.309 | -.325 | -.306 | -.252 | -.191 | -.082 | .011 | .115 | .166 |
| | .075 | .115 | .020 | -.055 | -.127 | -.241 | -.485 | -.545 | -.570 | -.536 | -.480 | -.184 | -.106 | -.039 | .035 | .073 |
| | .150 | .077 | .015 | -.090 | -.076 | -.115 | -.301 | -.382 | -.405 | -.369 | -.145 | -.102 | -.060 | -.019 | .028 | .052 |
| | .250 | -.072 | -.117 | -.146 | -.177 | -.209 | -.166 | -.391 | -.421 | -.381 | -.199 | -.188 | -.162 | -.135 | -.104 | -.088 |
| | .350 | -.036 | -.067 | -.086 | -.108 | -.127 | -.123 | -.265 | -.308 | -.128 | -.128 | -.114 | -.099 | -.079 | -.059 | -.048 |
| | .450 | -.061 | -.104 | -.120 | -.138 | -.153 | -.157 | -.170 | -.288 | -.117 | -.155 | -.141 | -.130 | -.114 | -.097 | -.089 |
| | .550 | -.067 | -.087 | -.103 | -.121 | -.137 | -.142 | -.099 | -.137 | -.121 | -.138 | -.124 | -.112 | -.096 | -.080 | -.073 |
| | .650 | -.083 | -.106 | -.122 | -.145 | -.171 | -.183 | -.154 | -.138 | -.173 | -.176 | -.148 | -.131 | -.114 | -.095 | -.088 |
| | .750 | -.094 | -.117 | -.133 | -.157 | -.190 | -.236 | -.233 | -.216 | -.244 | -.207 | -.163 | -.139 | -.123 | -.104 | -.098 |
| | .850 | -.045 | -.054 | -.064 | -.089 | -.114 | -.136 | -.212 | -.210 | -.157 | -.122 | -.091 | -.071 | -.057 | -.049 | -.046 |
| | .925 | .010 | .013 | .012 | -.007 | -.027 | -.042 | -.064 | -.076 | -.040 | -.030 | -.006 | .007 | .016 | .013 | .010 |
| | .975 | .036 | .053 | .056 | .038 | .017 | .004 | -.012 | -.020 | 0 | .012 | .035 | .050 | .054 | .045 | .037 |
| | [a]1.000 | [b].075 | .073 | .084 | .087 | .086 | .096 | .096 | .080 | .091 | .090 | .100 | .094 | .069 | .062 | .101 |

[a]No orifice.

[b]Lower surface only.

[redacted]

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TABLE 9.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(2)(05.34) PROPELLER BLADE SECTION (x = 0.975) - Continued

(a) M = 0.56.

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 1.968 | 1.998 | 2.046 | 2.065 | 2.093 | 2.135 | 2.155 | 2.189 | 2.228 | 2.266 | 2.298 | 2.342 | 2.377 | 2.437 | 2.488 | 2.537 | 2.574 |
| | $M_x$ | 1.038 | 1.023 | 1.014 | 1.004 | .996 | .986 | .973 | .963 | .957 | .947 | .938 | .927 | .915 | .904 | .893 | .883 | .875 |
| | $\alpha_x'$ | 4.93 | 4.53 | 3.91 | 3.66 | 3.31 | 2.77 | 2.32 | 2.10 | 1.62 | 1.16 | .77 | .25 | -.16 | -.86 | -1.44 | -1.98 | -2.39 |
| | $\Delta\beta$ | .52 | .48 | .42 | .40 | .36 | .31 | .28 | .24 | .19 | .14 | .10 | .05 | 0 | -.07 | -.14 | -.20 | -.25 |
| | $\alpha_i$ | 2.69 | 2.55 | 2.35 | 2.14 | 1.92 | 1.70 | 1.44 | 1.20 | .95 | .85 | .78 | .65 | .62 | .50 | .28 | .06 | -.10 |
| | $c_n$ | .3094 | .2932 | .2704 | .2465 | .2213 | .1955 | .1665 | .1394 | .1100 | .0994 | .0919 | .0765 | .0723 | .0581 | .0326 | .0071 | -.0116 |
| | $c_m$ | -.0670 | -.0671 | -.0662 | -.0531 | -.0483 | -.0427 | -.0302 | -.0267 | -.0283 | -.0288 | -.0325 | -.0410 | -.0495 | -.0551 | -.0554 | -.0569 | -.0580 |
| | $c_c$ | .0268 | .0272 | .0275 | .0263 | .0255 | .0244 | .0215 | .0186 | .0165 | .0150 | .0144 | .0136 | | | | | |
| | a/b | Pressure coefficient, P | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.295 | 1.289 | 1.283 | 1.277 | 1.273 | 1.267 | 1.259 | 1.254 | 1.251 | 1.243 | 1.239 | 1.233 | 1.227 | 1.221 | 1.215 | 1.210 | 1.206 |
| | .025 | -.311 | -.317 | -.298 | -.279 | -.243 | -.190 | -.146 | -.106 | -.047 | -.008 | .032 | .081 | .124 | .190 | .249 | .307 | .341 |
| | .050 | -.193 | -.179 | -.136 | -.135 | -.130 | -.126 | -.125 | -.112 | -.084 | -.066 | -.046 | -.021 | .001 | .040 | .077 | .113 | .136 |
| | .100 | -.293 | -.299 | -.283 | -.276 | -.268 | -.242 | -.236 | -.211 | -.203 | -.206 | -.203 | -.191 | -.174 | -.142 | -.110 | -.083 | -.064 |
| | .200 | -.313 | -.315 | -.305 | -.312 | -.304 | -.290 | -.286 | -.267 | -.280 | -.278 | -.266 | -.257 | -.223 | -.186 | -.164 | -.149 | -.134 |
| | .300 | -.322 | -.327 | -.313 | -.310 | -.295 | -.288 | -.291 | -.289 | -.280 | -.279 | -.259 | -.229 | -.244 | -.237 | -.217 | -.207 | -.197 |
| | .400 | -.296 | -.299 | -.288 | -.292 | -.288 | -.285 | -.288 | -.288 | -.280 | -.278 | -.265 | -.248 | -.225 | -.225 | -.217 | -.212 | -.203 |
| | .500 | -.313 | -.319 | -.307 | -.311 | -.303 | -.300 | -.301 | -.299 | -.288 | -.279 | -.275 | -.263 | -.269 | -.268 | -.256 | -.246 | -.236 |
| | .600 | -.354 | -.362 | -.352 | -.357 | -.356 | -.356 | -.357 | -.358 | -.345 | -.332 | -.329 | -.330 | -.337 | -.331 | -.313 | -.307 | -.297 |
| | .700 | -.400 | -.411 | -.402 | -.410 | -.407 | -.405 | -.406 | -.403 | -.385 | -.378 | -.366 | -.372 | -.367 | -.343 | -.304 | -.264 | -.243 |
| | .800 | -.424 | -.434 | -.428 | -.436 | -.435 | -.433 | -.433 | -.427 | -.417 | -.416 | -.415 | -.416 | -.403 | -.349 | -.296 | -.280 | -.269 |
| | .900 | -.587 | -.609 | -.608 | -.619 | -.617 | -.593 | -.414 | -.241 | -.166 | -.108 | -.087 | -.064 | -.078 | -.118 | -.135 | -.149 | -.151 |
| | .950 | -.630 | -.653 | -.633 | -.380 | -.245 | -.175 | -.112 | -.059 | -.025 | .012 | .038 | .062 | .059 | .035 | .026 | .014 | .010 |
| Lower surface | .0375 | .208 | .176 | .144 | .104 | .063 | .020 | -.026 | -.060 | -.108 | -.143 | -.183 | -.231 | -.287 | -.377 | -.470 | -.572 | -.682 |
| | .075 | .097 | .066 | .037 | 0 | -.035 | -.063 | -.096 | -.144 | -.310 | -.407 | -.474 | -.526 | -.582 | -.637 | -.699 | -.771 | -.816 |
| | .150 | .105 | .083 | .064 | .036 | .010 | -.013 | -.043 | -.063 | -.084 | -.093 | -.099 | -.108 | -.119 | -.120 | -.115 | -.140 | -.154 |
| | .250 | -.075 | -.095 | -.110 | -.135 | -.154 | -.169 | -.189 | -.203 | -.218 | -.228 | -.227 | -.219 | -.219 | -.257 | -.241 | -.253 | -.272 |
| | .350 | -.028 | -.042 | -.048 | -.065 | -.074 | -.081 | -.096 | -.105 | -.112 | -.118 | -.119 | -.121 | -.121 | -.141 | -.137 | -.143 | -.148 |
| | .450 | -.067 | -.079 | -.083 | -.099 | -.105 | -.110 | -.124 | -.129 | -.134 | -.137 | -.137 | -.139 | -.136 | -.140 | -.137 | -.141 | -.142 |
| | .550 | -.043 | -.057 | -.060 | -.075 | -.084 | -.093 | -.107 | -.116 | -.125 | -.130 | -.131 | -.129 | -.128 | -.122 | -.115 | -.115 | -.111 |
| | .650 | -.101 | -.116 | -.119 | -.134 | -.141 | -.148 | -.160 | -.165 | -.170 | -.172 | -.171 | -.162 | -.149 | -.131 | -.118 | -.115 | -.111 |
| | .750 | -.172 | -.187 | -.192 | -.205 | -.211 | -.219 | -.232 | -.237 | -.242 | -.233 | -.205 | -.179 | -.154 | -.121 | -.106 | -.102 | -.099 |
| | .850 | -.193 | -.211 | -.214 | -.229 | -.237 | -.245 | -.256 | -.259 | -.234 | -.163 | -.133 | -.102 | -.072 | -.042 | -.027 | -.024 | -.022 |
| | .925 | -.174 | -.191 | -.197 | -.211 | -.216 | -.225 | -.230 | -.188 | -.116 | -.075 | -.042 | -.008 | .024 | .045 | .059 | .061 | .062 |
| | .975 | -.255 | -.276 | -.284 | -.299 | -.307 | -.310 | -.278 | -.174 | -.094 | -.041 | -.004 | .040 | .069 | .093 | .105 | .106 | .108 |
| | [a]1.000 | -.305 | -.324 | -.333 | -.322 | [b]-.315 | [b]-.328 | [b]-.283 | [b]-.160 | [b]-.072 | [b]-.020 | .009 | .072 | .112 | .109 | .125 | .122 | .120 |

[a]No orifice.

[b]Lower surface only.

TABLE 9.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(2)(05.34) PROPELLER BLADE SECTION (x = 0.975) - Continued

(f) M = 0.60.

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.004 | 2.043 | 2.063 | 2.092 | 2.126 | 2.151 | 2.177 | 2.201 | 2.235 | 2.271 | 2.299 | 2.335 | 2.363 | 2.410 | 2.439 | 2.481 | 2.536 |
| | $M_r$ | 1.101 | 1.087 | 1.076 | 1.067 | 1.056 | 1.048 | 1.039 | 1.032 | 1.023 | 1.013 | 1.004 | .995 | .979 | .975 | .965 | .955 | .949 |
| | $\alpha_r$' | 4.46 | 3.95 | 3.69 | 3.32 | 2.89 | 2.57 | 2.25 | 1.95 | 1.54 | 1.10 | .76 | .33 | 0 | -.55 | -.88 | -1.35 | -1.97 |
| | $\Delta\beta$ | .29 | .24 | .21 | .17 | .13 | .10 | .06 | .04 | -.01 | -.04 | -.07 | -.11 | -.14 | -.18 | -.21 | -.24 | -.30 |
| | $\alpha_i$ | 2.25 | 2.19 | 2.05 | 1.95 | 1.68 | 1.55 | 1.46 | 1.31 | 1.15 | .90 | .69 | .52 | .33 | .14 | -.01 | -.21 | -.44 |
| | $c_n$ | .2587 | .2523 | .2368 | .2245 | .1932 | .1794 | .1687 | .1526 | .1332 | .1052 | .0800 | .0610 | .0390 | .0165 | -.0013 | -.0245 | -.0519 |
| | $c_m$ | -.0583 | -.0516 | -.0569 | -.0570 | -.0574 | -.0555 | -.0544 | -.0543 | -.0527 | -.0468 | -.0399 | -.0382 | -.0356 | -.0391 | -.0376 | -.0450 | -.0519 |
| | $c_o$ | .0284 | .0291 | .0292 | .0299 | .0302 | .0306 | .0304 | .0304 | .0301 | .0296 | .0276 | .0268 | .0251 | .0224 | .0190 | .0164 | .0146 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.341 | 1.331 | 1.324 | 1.318 | 1.310 | 1.305 | 1.296 | 1.292 | 1.289 | 1.283 | 1.277 | 1.272 | 1.263 | 1.260 | 1.254 | 1.249 | 1.245 |
| | .025 | -.096 | -.087 | -.069 | -.029 | .004 | .023 | .049 | .082 | .132 | .174 | .208 | .242 | .265 | .313 | .339 | .379 | .433 |
| | .050 | .017 | .033 | .044 | .015 | .053 | .051 | .050 | .058 | .080 | .103 | .100 | .138 | .146 | .175 | .188 | .212 | .248 |
| | .100 | -.120 | -.116 | -.105 | -.094 | -.077 | -.072 | -.068 | -.051 | -.028 | -.027 | -.029 | -.024 | -.025 | -.004 | .002 | .019 | .049 |
| | .200 | -.159 | -.159 | -.157 | -.164 | -.140 | -.140 | -.141 | -.139 | -.131 | -.127 | -.135 | -.119 | -.123 | -.109 | -.110 | -.093 | -.057 |
| | .300 | -.195 | -.193 | -.181 | -.174 | -.175 | -.179 | -.184 | -.186 | -.185 | -.189 | -.196 | -.194 | -.195 | -.176 | -.181 | -.186 | -.176 |
| | .400 | -.163 | -.161 | -.152 | -.155 | -.164 | -.165 | -.169 | -.164 | -.160 | -.160 | -.172 | -.174 | -.187 | -.188 | -.199 | -.200 | -.186 |
| | .500 | -.172 | -.172 | -.164 | -.171 | -.179 | -.183 | -.187 | -.184 | -.177 | -.156 | -.182 | -.182 | -.197 | -.202 | -.211 | -.218 | -.209 |
| | .600 | -.221 | -.220 | -.215 | -.222 | -.232 | -.236 | -.238 | -.237 | -.231 | -.229 | -.227 | -.228 | -.237 | -.237 | -.246 | -.259 | -.257 |
| | .700 | -.265 | -.267 | -.266 | -.272 | -.282 | -.284 | -.286 | -.283 | -.276 | -.268 | -.269 | -.268 | -.275 | -.269 | -.277 | -.281 | -.273 |
| | .800 | -.288 | -.286 | -.288 | -.296 | -.299 | -.302 | -.303 | -.298 | -.289 | -.288 | -.291 | -.292 | -.303 | -.298 | -.308 | -.306 | -.292 |
| | .900 | -.437 | -.447 | -.453 | -.462 | -.465 | -.469 | -.469 | -.466 | -.461 | -.461 | -.466 | -.469 | -.447 | -.298 | -.171 | -.090 | -.028 |
| | .950 | -.480 | -.488 | -.495 | -.503 | -.507 | -.510 | -.513 | -.509 | -.490 | -.387 | -.184 | -.092 | -.024 | -.035 | .068 | .100 | .138 |
| Lower surface | .0375 | .285 | .262 | .242 | .220 | .164 | .140 | .111 | .087 | .058 | .028 | .002 | -.033 | -.081 | -.134 | -.192 | -.268 | -.326 |
| | .075 | .179 | .151 | .125 | .077 | -.041 | -.103 | -.156 | -.195 | -.232 | -.269 | -.303 | -.333 | -.375 | -.410 | -.459 | -.504 | -.551 |
| | .150 | .194 | .174 | .158 | .140 | .099 | .086 | .073 | .056 | .006 | -.055 | -.121 | -.164 | -.202 | -.240 | -.290 | -.328 | -.360 |
| | .250 | .040 | .023 | .011 | -.002 | -.040 | -.055 | -.068 | -.074 | -.072 | -.099 | -.150 | -.191 | -.230 | -.264 | -.244 | -.344 | -.392 |
| | .350 | .067 | .055 | .048 | .030 | -.001 | -.014 | -.025 | -.029 | -.027 | -.026 | -.031 | -.045 | -.077 | -.139 | -.175 | -.230 | -.263 |
| | .450 | .011 | .006 | .005 | -.014 | -.029 | -.038 | -.046 | -.051 | -.051 | -.052 | -.054 | -.039 | -.032 | -.028 | -.044 | -.102 | -.131 |
| | .550 | .027 | .023 | .021 | .003 | -.013 | -.021 | -.032 | -.034 | -.037 | -.042 | -.045 | -.035 | -.036 | -.019 | -.020 | -.013 | -.001 |
| | .650 | -.014 | -.017 | -.021 | -.039 | -.053 | -.063 | -.071 | -.074 | -.075 | -.083 | -.088 | -.086 | -.092 | -.081 | -.080 | -.069 | -.047 |
| | .750 | .077 | -.081 | -.085 | -.099 | -.117 | -.126 | -.133 | -.138 | -.141 | -.149 | -.158 | -.160 | -.170 | -.163 | -.165 | -.146 | -.100 |
| | .850 | -.099 | -.104 | -.110 | -.123 | -.144 | -.152 | -.159 | -.164 | -.167 | -.177 | -.184 | -.190 | -.200 | -.189 | -.181 | -.104 | -.032 |
| | .925 | -.088 | -.093 | -.101 | -.114 | -.135 | -.143 | -.152 | -.157 | -.161 | -.169 | -.178 | -.184 | -.189 | -.194 | -.042 | .025 | .079 |
| | .975 | -.158 | -.169 | -.181 | -.196 | -.216 | -.225 | -.236 | -.242 | -.246 | -.252 | -.258 | -.236 | -.190 | -.054 | -.024 | .069 | .119 |
| | [a]1.000 | -.220 | -.230 | -.252 | -.270 | -.297 | -.303 | -.307 | -.315 | -.323 | -.312 | -.210 | -.175 | -.010 | .025 | .120 | .150 | .205 |

[a]No orifice.

[redacted]

TABLE 9.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(2)(05.34) PROPELLER BLADE SECTION (x = 0.975) - Concluded

(g) M = 0.64

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 1.989 | 2.024 | 2.043 | 2.074 | 2.098 | 2.128 | 2.148 | 2.177 | 2.206 | 2.235 | 2.263 | 2.296 | 2.326 | 2.359 | 2.387 | 2.428 |
| | $M_x$ | 1.184 | 1.172 | 1.160 | 1.149 | 1.141 | 1.130 | 1.118 | 1.108 | 1.099 | 1.091 | 1.082 | 1.072 | 1.063 | 1.054 | 1.043 | 1.032 |
| | $\alpha_x'$ | 4.65 | 4.19 | 3.95 | 3.55 | 3.24 | 2.86 | 2.61 | 2.25 | 1.89 | 1.53 | 1.19 | .80 | .44 | .05 | -.28 | -.75 |
| | $\Delta\beta$ | .28 | .24 | .21 | .18 | .15 | .11 | .08 | .04 | 0 | -.05 | -.09 | -.14 | -.20 | -.26 | -.31 | -.38 |
| | $\alpha_1$ | 2.14 | 2.08 | 1.93 | 1.76 | 1.60 | 1.48 | 1.33 | 1.20 | 1.08 | .92 | .77 | .61 | .44 | .32 | .12 | -.10 |
| | $c_a$ | .2462 | .2387 | .2213 | .2035 | .1842 | .1703 | .1532 | .1387 | .1232 | .1061 | .0894 | .0713 | .0516 | .0368 | .0139 | -.0116 |
| | $c_m$ | -.0515 | -.0531 | -.0530 | -.0533 | -.0517 | -.0506 | -.0498 | -.0486 | -.0487 | -.0467 | -.0468 | -.0497 | -.0475 | -.0480 | -.0453 | -.0396 |
| | $c_n$ | .0278 | .0282 | .0283 | .0281 | .0288 | .0289 | .0288 | .0293 | .0295 | .0291 | .0290 | .0292 | .0293 | .0299 | .0305 | .0312 |
| | x/b | Pressure coefficient, P | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.400 | 1.390 | 1.382 | 1.373 | 1.368 | 1.360 | 1.351 | 1.345 | 1.339 | 1.333 | 1.327 | 1.320 | 1.315 | 1.309 | 1.302 | 1.295 |
| | .025 | -.044 | -.048 | -.039 | -.013 | .017 | .045 | .079 | .111 | .140 | .168 | .204 | .243 | .265 | .281 | .308 | .342 |
| | .050 | .059 | .072 | .085 | .101 | .106 | .106 | .108 | .110 | .113 | .120 | .134 | .155 | .165 | .169 | .181 | .800 |
| | .100 | -.078 | -.076 | -.075 | -.062 | -.053 | -.047 | -.033 | -.023 | -.014 | -.002 | .011 | .021 | .018 | .018 | .013 | .020 |
| | .200 | -.127 | -.130 | -.132 | -.124 | -.121 | -.123 | -.121 | -.121 | -.123 | -.124 | -.117 | -.108 | -.118 | -.119 | -.118 | -.108 |
| | .300 | -.162 | -.168 | -.170 | -.160 | -.163 | -.170 | -.174 | -.179 | -.182 | -.185 | -.182 | -.174 | -.182 | -.191 | -.198 | -.185 |
| | .400 | -.133 | -.138 | -.140 | -.136 | -.142 | -.150 | -.155 | -.161 | -.166 | -.170 | -.170 | -.168 | -.178 | -.191 | -.193 | -.191 |
| | .500 | -.142 | -.150 | -.153 | -.149 | -.156 | -.164 | -.168 | -.174 | -.179 | -.184 | -.183 | -.188 | -.194 | -.206 | -.213 | -.214 |
| | .600 | -.188 | -.199 | -.200 | -.197 | -.206 | -.215 | -.220 | -.225 | -.231 | -.234 | -.236 | -.235 | -.248 | -.260 | -.268 | -.272 |
| | .700 | -.232 | -.244 | -.246 | -.244 | -.253 | -.260 | -.264 | -.266 | -.270 | -.273 | -.272 | -.270 | -.284 | -.298 | -.308 | -.311 |
| | .800 | -.253 | -.261 | -.264 | -.264 | -.271 | -.278 | -.280 | -.284 | -.284 | -.284 | -.278 | -.280 | -.296 | -.307 | -.316 | -.322 |
| | .900 | -.395 | -.413 | -.419 | -.421 | -.431 | -.439 | -.441 | -.445 | -.447 | -.447 | -.445 | -.447 | -.464 | -.478 | -.490 | -.500 |
| | .950 | -.432 | -.453 | -.459 | -.461 | -.471 | -.479 | -.481 | -.485 | -.488 | -.490 | -.489 | -.493 | -.509 | -.522 | -.537 | -.543 |
| Lower surface | .0375 | .317 | .293 | .263 | .239 | .210 | .182 | .155 | .129 | .104 | .077 | .051 | .027 | -.002 | -.034 | -.078 | -.137 |
| | .075 | .214 | .197 | .146 | .075 | .004 | -.050 | -.089 | -.123 | -.153 | -.183 | -.213 | -.244 | -.275 | -.307 | -.344 | -.386 |
| | .150 | .226 | .212 | .192 | .182 | .167 | .145 | .096 | .048 | .013 | -.020 | -.061 | -.096 | -.128 | -.163 | -.205 | -.251 |
| | .250 | .066 | .052 | .032 | .020 | -.004 | -.023 | -.041 | -.066 | -.089 | -.109 | -.131 | -.154 | -.185 | -.219 | -.252 | -.288 |
| | .350 | .080 | .064 | .047 | .038 | .016 | -.005 | -.021 | -.034 | -.049 | -.067 | -.082 | -.094 | -.122 | -.151 | -.181 | -.208 |
| | .450 | .028 | .014 | .002 | -.002 | -.021 | -.038 | -.051 | -.062 | -.070 | -.084 | -.099 | -.112 | -.131 | -.158 | -.189 | -.220 |
| | .550 | .043 | .029 | .017 | .015 | -.002 | -.019 | -.030 | -.042 | -.049 | -.054 | -.059 | -.075 | -.104 | -.131 | -.150 | -.173 |
| | .650 | .002 | -.013 | -.021 | -.025 | -.043 | -.059 | -.071 | -.082 | -.091 | -.098 | -.095 | -.096 | -.127 | -.158 | -.185 | -.203 |
| | .750 | -.060 | -.074 | -.082 | -.085 | -.104 | -.121 | -.133 | -.144 | -.153 | -.161 | -.162 | -.158 | -.172 | -.202 | -.240 | -.265 |
| | .850 | -.085 | -.100 | -.106 | -.112 | -.130 | -.147 | -.159 | -.170 | -.179 | -.189 | -.192 | -.192 | -.203 | -.214 | -.245 | -.279 |
| | .925 | -.072 | -.086 | -.094 | -.100 | -.119 | -.135 | -.147 | -.158 | -.168 | -.177 | -.180 | -.185 | -.199 | -.204 | -.221 | -.249 |
| | .975 | -.138 | -.157 | -.166 | -.175 | -.194 | -.209 | -.223 | -.236 | -.248 | -.260 | -.267 | -.273 | -.287 | -.290 | -.296 | -.311 |
| | [a]1.000 | -.310 | -.348 | -.316 | -.335 | -.365 | -.340 | -.357 | -.392 | -.400 | -.407 | -.351 | -.375 | -.392 | -.414 | -.444 | -.466 |

[a]No orifice.

[redacted]

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TABLE 10.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.50) PROPELLER BLADE SECTION (x = 0.85)

$\left[\beta_{0.75R} = 45°;\ \beta_x = 41.3°;\ B = 1\right]$

(a) One-blade propeller; N = 1500 rpm.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| J | 2.053 | 2.003 | 1.935 | 1.890 | 1.850 | 1.786 | 1.728 | 1.691 | 1.627 | 1.680 |
| $M_r$ | .751 | .742 | .728 | .722 | .721 | .709 | .699 | .697 | .690 | .696 |
| $\alpha_x$' | 3.75 | 4.43 | 5.37 | 6.01 | 6.59 | 7.52 | 8.39 | 8.96 | 9.95 | 9.13 |
| $\Delta\beta$ | .31 | .36 | .41 | .44 | .48 | .52 | .55 | .57 | .59 | .57 |
| $\alpha_1$ | 1.49 | 1.64 | 1.89 | 2.10 | 2.23 | 2.48 | 2.56 | 2.61 | 2.52 | 2.57 |
| $c_n$ | .4794 | .5297 | .6135 | .6813 | .7245 | .7994 | .8316 | .8439 | .8174 | .8290 |
| $c_m$ | -.0257 | -.0247 | -.0198 | -.0144 | -.0111 | -.0057 | -.0011 | .0041 | -.0088 | .0033 |
| $c_0$ | | | | | | | | | | |

| | c/b | Pressure coefficient, P | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Upper surface | [a]0.000 | 1.150 | 1.146 | 1.140 | 1.138 | 1.137 | 1.132 | 1.128 | 1.128 | 1.125 | 1.127 |
| | .025 | -.696 | -.940 | -1.304 | -1.463 | -1.566 | -1.747 | -1.893 | -1.989 | -1.954 | -1.962 |
| | .050 | -.722 | -.923 | -1.207 | -1.406 | -1.542 | -1.773 | -1.897 | -1.971 | -1.608 | -1.772 |
| | .100 | -.476 | -.501 | -.789 | -1.198 | -1.334 | -1.571 | -1.702 | -1.818 | -1.249 | -1.865 |
| | [a].200 | -.396 | -.421 | -.460 | -.539 | -.631 | -.902 | -.914 | -.876 | -.795 | -.790 |
| | .300 | -.340 | -.366 | -.390 | -.406 | -.410 | -.402 | -.383 | -.391 | -.358 | -.392 |
| | .400 | -.313 | -.329 | -.340 | -.350 | -.350 | -.348 | -.325 | -.322 | -.374 | -.310 |
| | .500 | -.279 | -.288 | -.288 | -.293 | -.290 | -.282 | -.256 | -.248 | -.242 | -.228 |
| | .600 | -.233 | -.236 | -.230 | -.229 | -.220 | -.207 | -.179 | -.165 | -.137 | -.143 |
| | .700 | -.148 | -.147 | -.134 | -.129 | -.117 | -.101 | -.074 | -.058 | -.052 | -.035 |
| | .800 | .012 | .012 | .027 | .032 | .042 | .049 | .070 | .078 | .015 | .093 |
| | .900 | .225 | .220 | .219 | .206 | .207 | .204 | .217 | .205 | .071 | .199 |
| | .950 | .313 | .293 | .283 | .256 | .255 | .253 | .267 | .243 | .098 | .230 |
| Lower surface | .0375 | .552 | .618 | .701 | .735 | .770 | .823 | .870 | .886 | .901 | .900 |
| | .075 | .466 | .520 | .589 | .618 | .650 | .700 | .743 | .760 | .777 | .773 |
| | .150 | .371 | .414 | .470 | .493 | .521 | .564 | .604 | .619 | .631 | .630 |
| | .250 | .297 | .334 | .381 | .398 | .422 | .459 | .496 | .507 | .517 | .518 |
| | .350 | .255 | .291 | .328 | .340 | .360 | .393 | .429 | .438 | .444 | .450 |
| | .450 | .213 | .256 | .284 | .290 | .307 | .319 | .354 | .363 | .372 | .409 |
| | .550 | .177 | .202 | .231 | .241 | .256 | .280 | .309 | .312 | .304 | .319 |
| | .650 | .140 | .165 | .190 | .198 | .211 | .230 | .257 | .257 | .238 | .263 |
| | .750 | .151 | .166 | .187 | .189 | .200 | .215 | .239 | .234 | .202 | .238 |
| | .850 | .188 | .195 | .212 | .210 | .217 | .227 | .247 | .234 | .181 | .233 |
| | [a].925 | .249 | .246 | .260 | .259 | .260 | .261 | .275 | .264 | .175 | .250 |
| | [a].975 | .308 | .309 | .310 | .304 | .301 | .305 | .300 | .288 | .171 | .273 |
| | [a]1.000 | .344 | .359 | .344 | .335 | .330 | .330 | .319 | .299 | .175 | .290 |

[a]No orifice.

TABLE 10.–PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.50) PROPELLER BLADE SECTION (x = 0.85) – Continued

(b) One-blade propeller; M = 0.57.

| | J | 2.456 | 2.349 | 2.286 | 2.239 | 2.190 | 2.159 | 2.136 | 2.106 | 2.081 | 2.063 | 2.042 | 2.017 | 2.000 | 1.978 | 1.958 | 1.938 | 1.921 | 1.900 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_x$ | .846 | .868 | .877 | .892 | .902 | .910 | .916 | .919 | .924 | .929 | .940 | .942 | .952 | .958 | .964 | .971 | .976 | .983 |
| | $\alpha_x$, deg | -1.30 | -.04 | .74 | 1.32 | 1.94 | 2.34 | 2.64 | 3.04 | 3.37 | 3.61 | 3.89 | 4.24 | 4.47 | 4.77 | 5.05 | 5.33 | 5.57 | 5.87 |
| | $\Delta\beta$ | -.05 | .05 | .11 | .16 | .21 | .24 | .26 | .29 | .31 | .33 | .35 | .37 | .39 | .41 | .43 | .46 | .47 | .49 |
| | $c_l$ | .24 | .53 | .70 | .77 | .85 | .90 | .97 | 1.07 | 1.15 | 1.27 | 1.36 | 1.46 | 1.53 | 1.61 | 1.67 | 1.76 | 1.83 | 1.87 |
| | $c_m$ | .0768 | .1729 | .2271 | .2503 | .2748 | .2929 | .3129 | .3439 | .3710 | .4090 | .4394 | .4697 | .4955 | .5219 | .5390 | .5710 | .5942 | .6071 |
| | $c_a$ | -.0649 | -.0593 | -.0585 | -.0511 | -.0408 | -.0398 | -.0408 | -.0449 | -.0534 | -.0641 | -.0714 | -.0793 | -.0878 | -.0932 | -.1012 | -.1102 | -.1206 | -.1224 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.191 | 1.203 | 1.206 | 1.215 | 1.220 | 1.224 | 1.228 | 1.229 | 1.232 | 1.234 | 1.241 | 1.242 | 1.247 | 1.250 | 1.254 | 1.258 | 1.261 | 1.265 |
| | .025 | .525 | .383 | .310 | .259 | .213 | .172 | .143 | .126 | .114 | .108 | .110 | .109 | .112 | .115 | .122 | .129 | .136 | .148 |
| | .050 | .149 | .031 | -.030 | -.079 | -.134 | -.173 | -.180 | -.163 | -.144 | -.126 | -.104 | -.086 | -.067 | -.052 | -.036 | -.020 | -.005 | .011 |
| | .100 | -.028 | -.113 | -.161 | -.190 | -.223 | -.266 | -.284 | -.314 | -.336 | -.344 | -.358 | -.373 | -.382 | -.392 | -.401 | -.411 | -.414 | -.418 |
| | [a].200 | -.170 | -.235 | -.285 | -.310 | -.350 | -.390 | -.406 | -.410 | -.420 | -.425 | -.425 | -.440 | -.455 | -.474 | -.473 | -.480 | -.480 | -.484 |
| | .300 | -.277 | -.343 | -.391 | -.417 | -.455 | -.486 | -.493 | -.500 | -.503 | -.503 | -.500 | -.508 | -.522 | -.532 | -.536 | -.539 | -.539 | -.541 |
| | .400 | -.418 | -.451 | -.484 | -.513 | -.532 | -.556 | -.569 | -.582 | -.587 | -.591 | -.592 | -.596 | -.595 | -.594 | -.594 | -.594 | -.589 | -.589 |
| | .500 | -.474 | -.551 | -.567 | -.591 | -.621 | -.641 | -.644 | -.644 | -.657 | -.661 | -.660 | -.664 | -.663 | -.663 | -.661 | -.663 | -.662 | -.659 |
| | .600 | -.533 | -.607 | -.640 | -.652 | -.676 | -.711 | -.715 | -.719 | -.720 | -.717 | -.713 | -.722 | -.726 | -.726 | -.728 | -.726 | -.723 | -.718 |
| | .700 | -.632 | -.717 | -.712 | -.610 | -.483 | -.409 | -.418 | -.415 | -.462 | -.592 | -.692 | -.760 | -.798 | -.801 | -.732 | -.788 | -.782 | -.777 |
| | .800 | -.175 | -.136 | -.147 | -.170 | -.198 | -.215 | -.231 | -.243 | -.264 | -.287 | -.302 | -.317 | -.341 | -.360 | -.384 | -.419 | -.579 | -.545 |
| | .900 | .039 | .080 | -.055 | -.100 | -.156 | -.183 | -.207 | -.223 | -.243 | -.264 | -.280 | -.295 | -.317 | -.331 | -.348 | -.366 | -.399 | -.392 |
| | .950 | .139 | .070 | -.014 | -.072 | -.144 | -.172 | -.199 | -.219 | -.239 | -.260 | -.274 | -.290 | -.312 | -.326 | -.345 | -.363 | -.393 | -.387 |
| Lower surface | .0375 | -.580 | -.804 | -.103 | -.011 | .071 | .123 | .158 | .208 | .235 | .265 | .303 | .329 | .358 | .381 | .408 | .429 | .448 | .474 |
| | .075 | -.443 | -.179 | -.089 | -.019 | .047 | .088 | .117 | .159 | .181 | .207 | .241 | .265 | .289 | .310 | .333 | .352 | .365 | .393 |
| | .150 | -.170 | -.104 | -.057 | -.010 | .033 | .061 | .084 | .117 | .135 | .154 | .183 | .200 | .221 | .239 | .259 | .275 | .290 | .309 |
| | .250 | -.174 | -.115 | -.085 | -.054 | -.021 | 0 | .018 | .046 | .062 | .079 | .104 | .119 | .137 | .152 | .171 | .183 | .197 | .217 |
| | [a].350 | -.177 | -.130 | -.110 | -.095 | -.080 | -.050 | -.035 | -.010 | .004 | .012 | .043 | .053 | .070 | .090 | .100 | .121 | .128 | .140 |
| | [a].450 | -.180 | -.155 | -.140 | -.135 | -.125 | -.100 | -.087 | -.065 | .056 | -.050 | -.020 | -.010 | .010 | .027 | .030 | .060 | .060 | .070 |
| | .550 | -.174 | -.174 | -.174 | -.170 | -.163 | -.151 | -.142 | -.123 | -.115 | -.104 | -.084 | -.073 | -.058 | -.045 | -.033 | -.020 | -.007 | .006 |
| | .650 | -.166 | -.186 | -.206 | -.216 | -.219 | -.211 | -.202 | -.185 | -.178 | -.169 | -.151 | -.138 | -.125 | -.112 | -.099 | -.086 | -.073 | -.059 |
| | .750 | -.117 | -.151 | -.188 | -.237 | -.275 | -.273 | -.274 | -.261 | -.260 | -.252 | -.236 | -.228 | -.217 | -.206 | -.195 | -.185 | -.175 | -.158 |
| | .850 | -.020 | -.060 | -.088 | -.119 | -.171 | -.214 | -.218 | -.191 | -.163 | -.142 | -.115 | -.093 | -.071 | -.052 | -.028 | -.012 | 0 | .031 |
| | [a].925 | .082 | .026 | -.012 | -.060 | -.125 | -.165 | -.190 | -.190 | -.177 | -.185 | -.160 | -.152 | -.143 | -.140 | -.105 | -.086 | -.107 | -.070 |
| | [a].975 | .168 | .090 | .033 | -.028 | -.110 | -.140 | -.190 | -.205 | -.206 | -.235 | -.220 | -.226 | -.237 | -.240 | -.210 | -.195 | -.250 | -.226 |
| | [a]1.000 | .225 | .130 | .050 | -.015 | -.100 | -.130 | -.195 | -.215 | -.223 | -.260 | -.255 | -.270 | -.290 | -.300 | -.270 | -.280 | -.332 | -.324 |

[a]No orifice.

TABLE 10.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.50) PROPELLER BLADE SECTION (x = 0.85) - Continued

(c) One-blade propeller; M = 0.59.

| | J | 2.479 | 2.403 | 2.333 | 2.275 | 2.202 | 2.143 | 2.075 | 2.061 | 2.037 | 2.002 | 1.978 | 1.960 | 1.946 | 1.929 | 1.906 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $M_x$ | .872 | .887 | .901 | .919 | .931 | .946 | .964 | .973 | .975 | .981 | .988 | .994 | .998 | 1.008 | 1.015 |
| | $c_{x'}$ | -1.57 | -.68 | .16 | .87 | 1.79 | 2.55 | 3.45 | 3.64 | 3.96 | 4.44 | 4.77 | 5.02 | 5.22 | 5.46 | 5.78 |
| | $\Delta\beta$ | -.07 | 0 | .07 | .12 | .20 | .25 | .32 | .33 | .35 | .39 | .41 | .43 | .44 | .46 | .49 |
| | $\alpha_i$ | .22 | .35 | .50 | .65 | .88 | 1.08 | 1.29 | 1.40 | 1.52 | 1.62 | 1.71 | 1.76 | 1.84 | 1.89 | 1.98 |
| | $c_n$ | .0716 | .1150 | .1613 | .2110 | .2658 | .3490 | .4174 | .4583 | .4890 | .5213 | .5503 | .5700 | .5950 | .6130 | .6410 |
| | $c_m$ | -.0734 | -.0744 | -.0670 | -.0662 | -.0705 | -.0782 | -.0949 | -.1039 | -.1241 | -.1257 | -.1331 | -.1468 | -.1549 | -.1605 | -.1729 |
| | $c_c$ | .0147 | .0191 | .0242 | .0285 | .0305 | .0338 | .0383 | .0404 | .0429 | .0444 | .0454 | .0461 | .0480 | .0485 | .0484 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.204 | 1.212 | 1.220 | 1.229 | 1.235 | 1.244 | 1.254 | 1.259 | 1.260 | 1.264 | 1.268 | 1.272 | 1.274 | 1.280 | 1.284 |
| | .025 | .516 | .532 | .547 | .554 | .568 | .580 | .606 | .615 | .624 | .632 | .638 | .647 | .661 | .665 | .684 |
| | .050 | -.200 | -.165 | -.127 | -.091 | -.055 | -.022 | .022 | .037 | .052 | .068 | .081 | .095 | .110 | .123 | .143 |
| | .100 | .028 | -.024 | -.060 | -.101 | -.143 | -.193 | -.242 | -.253 | -.256 | -.286 | -.305 | -.313 | -.318 | -.330 | -.332 |
| | [b].200 | -.091 | -.127 | -.180 | -.199 | -.262 | -.320 | -.331 | -.330 | -.350 | -.360 | -.410 | -.414 | -.415 | -.429 | -.440 |
| | .300 | -.235 | -.271 | -.302 | -.336 | -.381 | -.410 | -.416 | -.417 | -.414 | -.435 | -.458 | -.461 | -.462 | -.465 | -.463 |
| | .400 | -.375 | -.394 | -.400 | -.441 | -.465 | -.488 | -.502 | -.505 | -.506 | -.509 | -.504 | -.494 | -.481 | -.465 | -.445 |
| | .500 | -.459 | -.490 | -.499 | -.514 | -.551 | -.560 | -.571 | -.575 | -.580 | -.587 | -.593 | -.593 | -.591 | -.592 | -.588 |
| | .600 | -.537 | -.566 | -.580 | -.590 | -.615 | -.637 | -.636 | -.633 | -.636 | -.651 | -.659 | -.658 | -.656 | -.653 | -.648 |
| | .700 | -.657 | -.690 | -.699 | -.707 | -.719 | -.730 | -.739 | -.736 | -.733 | -.738 | -.738 | -.734 | -.732 | -.729 | -.722 |
| | .800 | -.162 | -.153 | -.167 | -.201 | -.220 | -.269 | -.366 | -.464 | -.648 | -.701 | -.718 | -.715 | -.703 | -.687 | -.665 |
| | .900 | .032 | -.047 | -.099 | -.157 | -.210 | -.240 | -.305 | -.332 | -.357 | -.371 | -.410 | -.479 | -.579 | -.669 | -.764 |
| | .950 | .092 | -.004 | -.073 | -.143 | -.185 | -.238 | -.302 | -.328 | -.351 | -.363 | -.392 | -.434 | -.463 | -.481 | -.494 |
| Lower surface | .0375 | -.630 | -.456 | -.266 | -.103 | .046 | .145 | .251 | .283 | .309 | .357 | .380 | .403 | .432 | .453 | .489 |
| | .075 | -.598 | -.400 | -.230 | -.091 | .030 | .110 | .201 | .229 | .252 | .294 | .312 | .334 | .359 | .377 | .410 |
| | .150 | -.365 | -.162 | -.121 | -.052 | .027 | .087 | .157 | .179 | .199 | .229 | .245 | .264 | .283 | .299 | .322 |
| | .250 | -.178 | -.170 | -.129 | -.085 | -.023 | .025 | .084 | .104 | .121 | .152 | .161 | .178 | .198 | .213 | .239 |
| | .350 | -.100 | -.106 | -.110 | -.079 | -.050 | 0 | .070 | .061 | .095 | .118 | .130 | .132 | .190 | .209 | .210 |
| | [b].450 | -.089 | -.072 | -.070 | -.050 | -.031 | .011 | .060 | .063 | .090 | .100 | .128 | .126 | .179 | .190 | .300 |
| | .550 | -.110 | -.096 | -.069 | -.041 | -.010 | .018 | .060 | .070 | .085 | .097 | .107 | .118 | .132 | .143 | .161 |
| | .650 | -.151 | -.165 | -.154 | -.134 | -.107 | -.078 | -.037 | -.025 | -.013 | -.001 | .010 | .022 | .036 | .046 | .064 |
| | .750 | -.148 | -.207 | -.284 | -.306 | -.289 | -.272 | -.239 | -.229 | -.218 | -.197 | -.190 | -.181 | -.165 | -.152 | -.133 |
| | .850 | -.004 | -.036 | -.058 | -.096 | -.120 | -.161 | -.098 | -.093 | -.087 | -.079 | -.069 | -.056 | -.043 | -.031 | -.011 |
| | [b].925 | .102 | .030 | -.040 | -.102 | -.100 | -.140 | -.112 | -.140 | -.116 | -.129 | -.105 | -.072 | -.081 | -.059 | .050 |
| | [b].975 | .140 | .050 | -.050 | -.123 | -.100 | -.151 | -.166 | -.200 | -.169 | -.210 | -.205 | -.119 | -.141 | -.080 | .085 |
| | [a]1.000 | .146 | .057 | -.060 | -.140 | -.101 | -.160 | -.201 | -.250 | -.200 | -.270 | -.291 | -.150 | -.180 | -.092 | .010 |

[a]No orifice.

[b]Paired value.

TABLE 10.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.50) PROPELLER BLADE SECTION (x = 0.85) - Continued

(d) One-blade propeller; M = 0.61.

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.360 | 2.295 | 2.234 | 2.177 | 2.148 | 2.132 | 2.108 | 2.089 | 2.062 | 2.037 | 2.018 | 1.998 | 1.974 | 1.952 | 1.936 | 1.921 |
| | $M_x$ | .926 | .941 | .955 | .969 | .976 | .981 | .987 | .993 | 1.003 | 1.008 | 1.014 | 1.022 | 1.026 | 1.033 | 1.039 | 1.044 |
| | $\alpha_x'$ | -.17 | .62 | 1.38 | 2.11 | 2.49 | 2.70 | 3.01 | 3.26 | 3.63 | 3.96 | 4.22 | 4.50 | 4.83 | 5.13 | 5.36 | 5.57 |
| | $\Delta\beta$ | -.01 | .06 | .11 | .16 | .18 | .20 | .22 | .23 | .25 | .27 | .29 | .30 | .32 | .33 | .34 | .35 |
| | $\alpha_i$ | .09 | .24 | .55 | .79 | .92 | 1.04 | 1.14 | 1.22 | 1.31 | 1.39 | 1.48 | 1.59 | 1.63 | 1.74 | 1.78 | 1.83 |
| | $c_n$ | .0284 | .0774 | .1800 | .2574 | .2981 | .3381 | .3684 | .3948 | .4245 | .4503 | .4794 | .5142 | .5303 | .5639 | .5761 | .5961 |
| | $c_m$ | -.0205 | -.0282 | -.0442 | -.0660 | -.0790 | -.0890 | -.0965 | -.1065 | -.1123 | -.1188 | -.1252 | -.1339 | -.1390 | -.1468 | -.1540 | -.1575 |
| | $c_c$ | .0305 | .0313 | .0332 | .0356 | .0373 | .0390 | .0394 | .0399 | .0415 | .0420 | .0430 | .0460 | .0465 | .0494 | .0501 | .0501 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | | | | |
| Upper surface | [a]0.000 | 1.233 | 1.241 | 1.249 | 1.257 | 1.261 | 1.264 | 1.267 | 1.271 | 1.277 | 1.280 | 1.283 | 1.288 | 1.291 | 1.296 | 1.299 | 1.302 |
| | .025 | .503 | .457 | .374 | .341 | .325 | .307 | .301 | .295 | .304 | .303 | .308 | .319 | .327 | .339 | .348 | .358 |
| | .050 | .154 | .128 | .058 | .012 | -.005 | -.025 | -.018 | -.005 | .017 | .028 | .043 | .060 | .071 | .086 | .099 | .111 |
| | .100 | -.010 | -.027 | -.067 | -.096 | -.112 | -.132 | -.139 | -.161 | -.169 | -.190 | -.205 | -.220 | -.233 | -.250 | -.253 | -.265 |
| | [a].200 | -.153 | -.158 | -.210 | -.228 | -.244 | -.258 | -.271 | -.282 | -.273 | -.311 | -.306 | -.326 | -.339 | -.348 | -.353 | -.355 |
| | .300 | -.257 | -.267 | -.310 | -.336 | -.343 | -.351 | -.351 | -.359 | -.354 | -.358 | -.365 | -.379 | -.390 | -.398 | -.397 | -.400 |
| | .400 | -.354 | -.374 | -.400 | -.416 | -.424 | -.437 | -.437 | -.447 | -.444 | -.449 | -.454 | -.453 | -.454 | -.455 | -.444 | -.432 |
| | .500 | -.457 | -.450 | -.507 | -.492 | -.495 | -.502 | -.503 | -.516 | -.510 | -.516 | -.518 | -.518 | -.521 | -.525 | -.525 | -.527 |
| | .600 | -.535 | -.528 | -.551 | -.573 | -.575 | -.580 | -.577 | -.578 | -.569 | -.578 | -.584 | -.585 | -.587 | -.591 | -.589 | -.588 |
| | .700 | -.658 | -.647 | -.661 | -.665 | -.668 | -.677 | -.675 | -.683 | -.672 | -.672 | -.671 | -.666 | -.667 | -.672 | -.671 | -.671 |
| | .800 | -.177 | -.205 | -.310 | -.465 | -.597 | -.726 | -.751 | -.767 | -.760 | -.760 | -.758 | -.752 | -.744 | -.725 | -.712 | -.696 |
| | .900 | -.125 | -.152 | -.222 | -.273 | -.300 | -.335 | -.349 | -.380 | -.440 | -.464 | -.519 | -.624 | -.680 | -.808 | -.828 | -.832 |
| | .950 | -.114 | -.149 | -.217 | -.270 | -.295 | -.327 | -.340 | -.368 | -.412 | -.422 | -.443 | -.469 | -.480 | -.541 | -.607 | -.642 |
| Lower surface | .0375 | -.313 | -.179 | -.020 | .093 | .129 | .168 | .200 | .233 | .280 | .317 | .345 | .380 | .403 | .433 | .451 | .485 |
| | .075 | -.309 | -.179 | -.027 | .071 | .099 | .132 | .161 | .188 | .229 | .261 | .286 | .318 | .337 | .362 | .380 | .409 |
| | .150 | -.166 | -.085 | -.006 | .064 | .084 | .109 | .131 | .151 | .184 | .206 | .227 | .247 | .263 | .281 | .295 | .308 |
| | .250 | -.155 | -.110 | -.048 | .008 | .026 | .044 | .065 | .081 | .111 | .135 | .152 | .176 | .189 | .207 | .221 | .245 |
| | [a].350 | -.158 | -.110 | -.069 | -.028 | -.011 | .003 | .036 | .040 | .052 | .070 | .092 | .123 | .131 | .145 | .159 | .187 |
| | [a].450 | -.169 | -.132 | -.103 | -.065 | -.057 | -.040 | -.023 | -.011 | -.001 | .012 | .032 | .060 | .068 | .082 | .093 | .115 |
| | .550 | -.209 | -.186 | -.158 | -.123 | -.112 | -.100 | -.085 | -.073 | -.052 | -.040 | -.026 | -.010 | 0 | .015 | .027 | .039 |
| | .650 | -.266 | -.250 | -.230 | -.198 | -.185 | -.173 | -.159 | -.148 | -.126 | -.114 | -.100 | -.083 | -.072 | -.058 | -.047 | -.036 |
| | .750 | -.326 | -.315 | -.300 | -.271 | -.260 | -.251 | -.236 | -.228 | -.207 | -.192 | -.180 | -.163 | -.152 | -.141 | -.131 | -.115 |
| | .850 | -.345 | -.309 | -.277 | -.242 | -.223 | -.237 | -.201 | -.186 | -.163 | -.150 | -.135 | -.118 | -.106 | -.090 | -.078 | -.064 |
| | [a].925 | -.268 | -.240 | -.247 | -.218 | -.208 | -.215 | -.162 | -.134 | -.119 | -.095 | -.078 | -.047 | -.045 | -.045 | -.025 | -.003 |
| | [a].975 | -.168 | -.173 | -.224 | -.203 | -.192 | -.200 | -.136 | -.100 | -.090 | -.054 | -.039 | -.003 | -.002 | -.017 | .004 | .037 |
| | [a]1.000 | -.106 | -.135 | -.210 | -.200 | -.185 | -.193 | -.121 | -.084 | -.075 | -.034 | -.020 | .029 | .021 | 0 | .019 | .058 |

[a]No orifice.

[redacted]

TABLE 10.- PRESSURE COEFFICIENTS AND AERODYNAMIC CHARACTERISTICS OF AN NACA 16-(3)(07.50) PROPELLER BLADE SECTION (x = 0.85) - Concluded

(e) One-blade propeller; M = 0.65.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | J | 2.224 | 2.212 | 2.189 | 2.171 | 2.148 | 2.121 | 2.106 | 2.087 | 2.066 | 2.047 | 2.030 | 2.000 | 1.979 |
| | $M_x$ | 1.005 | 1.014 | 1.018 | 1.023 | 1.032 | 1.037 | 1.044 | 1.050 | 1.056 | 1.062 | 1.068 | 1.073 | 1.080 |
| | $\alpha_x$, | 1.51 | 1.61 | 1.96 | 2.19 | 2.49 | 2.84 | 3.04 | 3.29 | 3.57 | 3.83 | 4.06 | 4.47 | 4.76 |
| | $\Delta\beta$ | 0 | 0 | .03 | .04 | .07 | .10 | .11 | .13 | .15 | .17 | .19 | .23 | .26 |
| | $c_l$ | .73 | .77 | .80 | .85 | .94 | 1.01 | 1.06 | 1.12 | 1.19 | 1.24 | 1.27 | 1.34 | 1.40 |
| | $c_n$ | .2348 | .2515 | .2613 | .2761 | .3026 | .3271 | .3420 | .3613 | .3819 | .3975 | .4090 | .4329 | .4561 |
| | $c_m$ | -.1110 | -.1146 | -.1150 | -.1150 | -.1164 | -.1204 | -.1224 | -.1229 | -.1263 | -.1308 | -.1316 | -.1357 | -.1360 |
| | $c_c$ | .0562 | .0560 | .0576 | .0578 | .0583 | .0584 | .0585 | .0586 | .0578 | .0576 | .0577 | .0577 | .0572 |
| | c/b | Pressure coefficient, P | | | | | | | | | | | | |
| Upper surface | 0.000 | 1.278 | 1.284 | 1.286 | 1.289 | 1.295 | 1.298 | 1.303 | 1.306 | 1.310 | 1.315 | 1.319 | 1.321 | 1.326 |
| | .025 | .474 | .484 | .491 | .488 | .501 | .510 | .521 | .529 | .543 | .551 | .559 | .571 | .582 |
| | .050 | .153 | .166 | .177 | .180 | .196 | .208 | .221 | .232 | .247 | .258 | .270 | .282 | .295 |
| | .100 | .022 | .020 | .012 | -.006 | -.022 | -.035 | -.046 | -.071 | -.084 | -.090 | -.094 | -.106 | -.128 |
| | [a].200 | -.119 | -.113 | -.130 | -.139 | -.146 | -.150 | -.155 | -.169 | -.174 | -.174 | -.180 | -.198 | -.220 |
| | .300 | -.227 | -.228 | -.235 | -.247 | -.253 | -.257 | -.258 | -.260 | -.261 | -.262 | -.262 | -.284 | -.299 |
| | .400 | -.317 | -.316 | -.320 | -.332 | -.339 | -.344 | -.347 | -.348 | -.350 | -.351 | -.351 | -.352 | -.348 |
| | .500 | -.402 | -.404 | -.405 | -.408 | -.406 | -.412 | -.417 | -.421 | -.421 | -.422 | -.420 | -.426 | -.431 |
| | .600 | -.483 | -.480 | -.480 | -.482 | -.483 | -.484 | -.478 | -.480 | -.484 | -.484 | -.486 | -.484 | -.499 |
| | .700 | -.571 | -.567 | -.569 | -.574 | -.578 | -.581 | -.578 | -.578 | -.576 | -.573 | -.566 | -.569 | -.576 |
| | .800 | -.665 | -.665 | -.664 | -.662 | -.657 | -.657 | -.652 | -.646 | -.634 | -.619 | -.603 | -.593 | -.577 |
| | .900 | -.727 | -.742 | -.741 | -.741 | -.735 | -.732 | -.730 | -.730 | -.728 | -.723 | -.718 | -.718 | -.716 |
| | .950 | -.674 | -.727 | -.761 | -.771 | -.769 | -.767 | -.764 | -.761 | -.759 | -.754 | -.748 | -.751 | -.746 |
| Lower surface | .0375 | .003 | .033 | .071 | .097 | .145 | .183 | .225 | .264 | .297 | .324 | .349 | .383 | .421 |
| | .075 | -.020 | .010 | .047 | .071 | .116 | .149 | .187 | .220 | .249 | .270 | .295 | .323 | .354 |
| | .150 | .030 | .048 | .069 | .081 | .111 | .135 | .165 | .190 | .212 | .230 | .248 | .265 | .285 |
| | .250 | -.026 | -.009 | .009 | .019 | .047 | .070 | .098 | .121 | .140 | .154 | .170 | .191 | .214 |
| | [a].350 | -.053 | -.049 | -.039 | -.029 | 0 | .020 | .045 | .061 | .080 | .097 | .110 | .129 | .148 |
| | [a].450 | -.086 | -.082 | -.074 | -.065 | -.040 | -.025 | -.004 | .010 | .025 | .041 | .059 | .066 | .086 |
| | .550 | -.128 | -.114 | -.100 | -.095 | -.078 | -.066 | -.050 | -.039 | -.024 | -.010 | .002 | .012 | .026 |
| | .650 | -.191 | -.178 | -.167 | -.161 | -.143 | -.132 | -.118 | -.107 | -.092 | -.079 | -.066 | -.056 | -.042 |
| | .750 | -.271 | -.260 | -.250 | -.243 | -.228 | -.216 | -.198 | -.183 | -.175 | -.159 | -.147 | -.135 | -.120 |
| | .850 | -.215 | -.228 | -.230 | -.231 | -.222 | -.214 | -.202 | -.191 | -.176 | -.162 | -.148 | -.137 | -.121 |
| | [a].925 | -.160 | -.173 | -.210 | -.226 | -.220 | -.205 | -.200 | -.191 | -.157 | -.149 | -.130 | -.128 | -.119 |
| | [a].975 | -.115 | -.132 | -.200 | -.221 | -.217 | -.195 | -.200 | -.190 | -.137 | -.130 | -.115 | -.118 | -.110 |
| | [b]1.000 | -.091 | -.110 | -.195 | -.220 | -.217 | -.187 | -.199 | -.189 | -.129 | -.120 | -.107 | -.110 | -.105 |

[a]Faired value.

[b]No orifice.

[redacted]

NACA

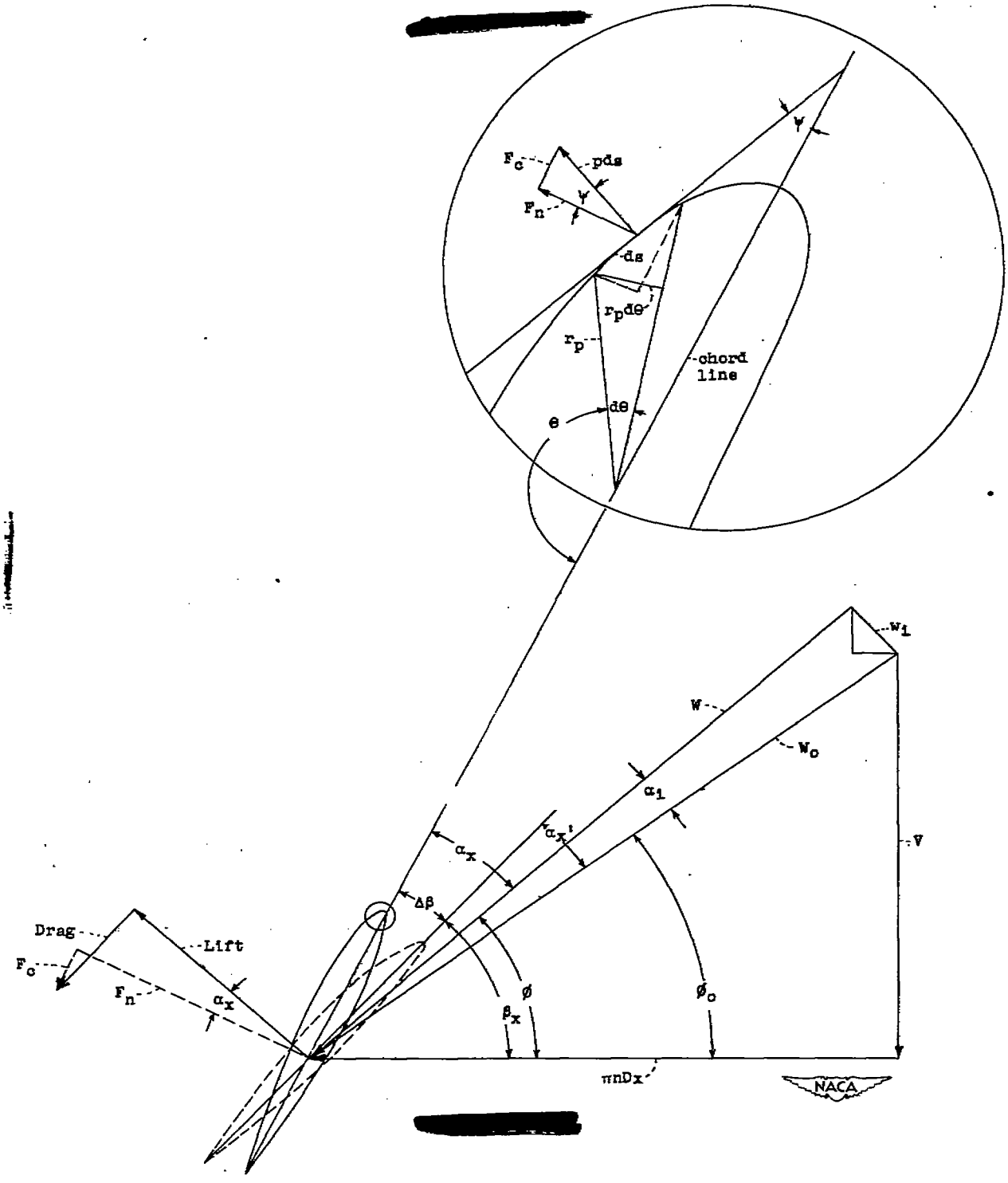


Figure 1.- Vector diagram of the velocities and forces acting on a blade section.

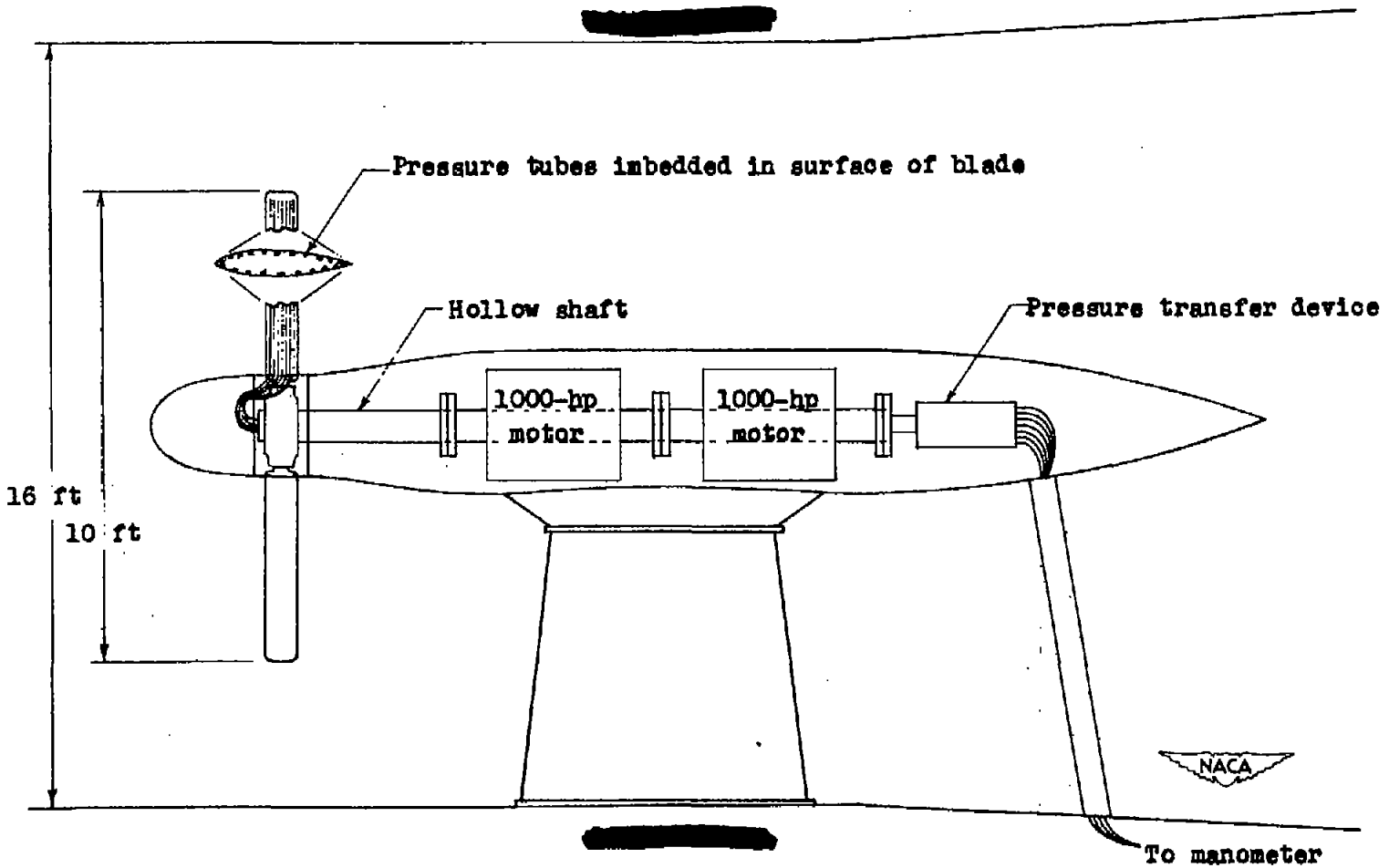


Figure 2.- Diagram of the apparatus used to obtain pressure distributions on the sections of operating propellers.

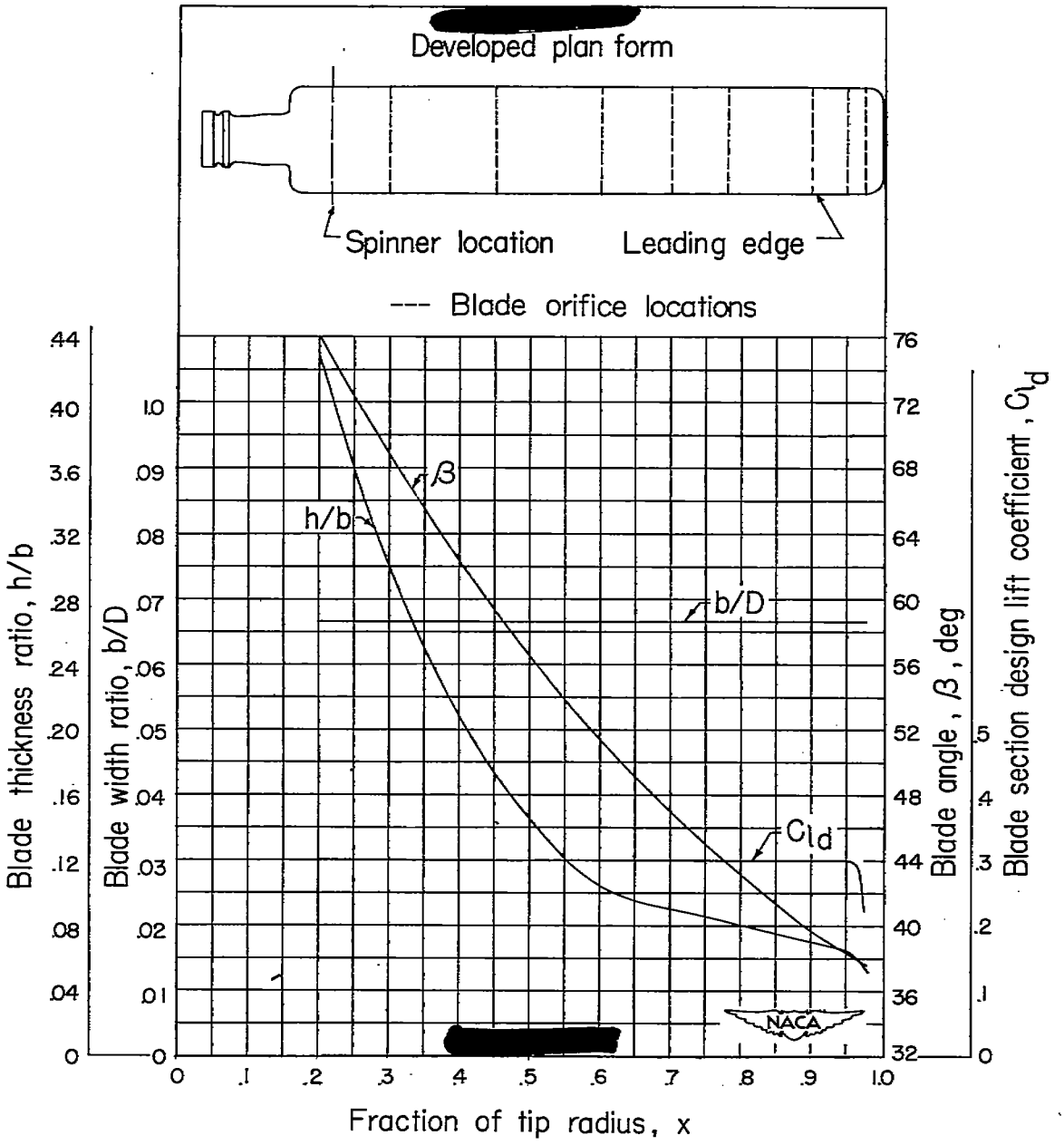


Figure 3.- Blade-form curves for NACA 10-(3)(090)-03 propeller.

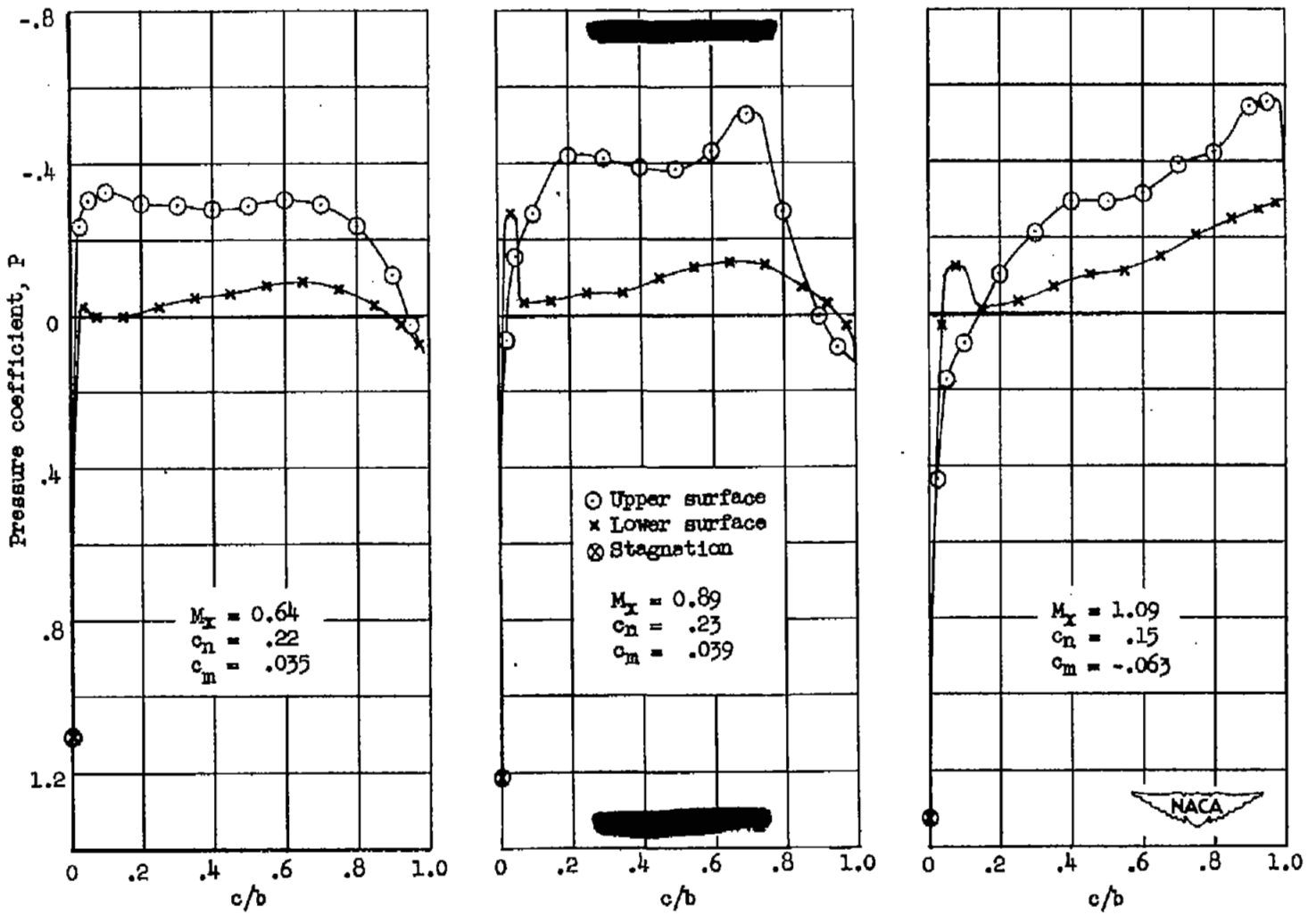


Figure 4.- Typical pressure distributions along the chord of the NACA 16-306.50 blade section located at the x = 0.95 radius; $\alpha_x$ = 0.8 (approx.).

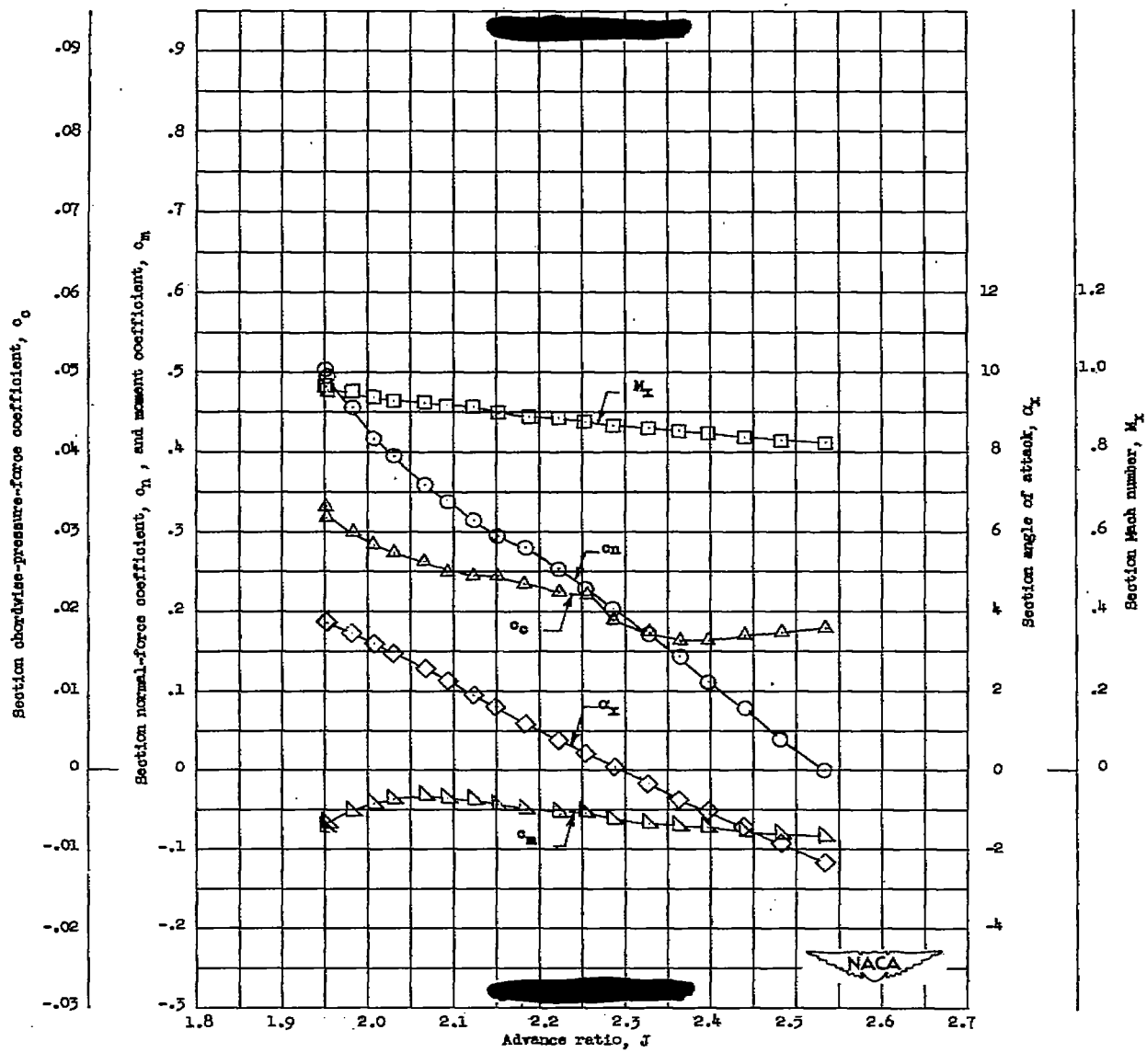


Figure 5.- Variation of section normal-force coefficient, moment coefficient, chordwise-pressure-force coefficient, angle of attack, and Mach number with advance ratio for the blade section at the x = 0.85 radius (from table 6(e)).

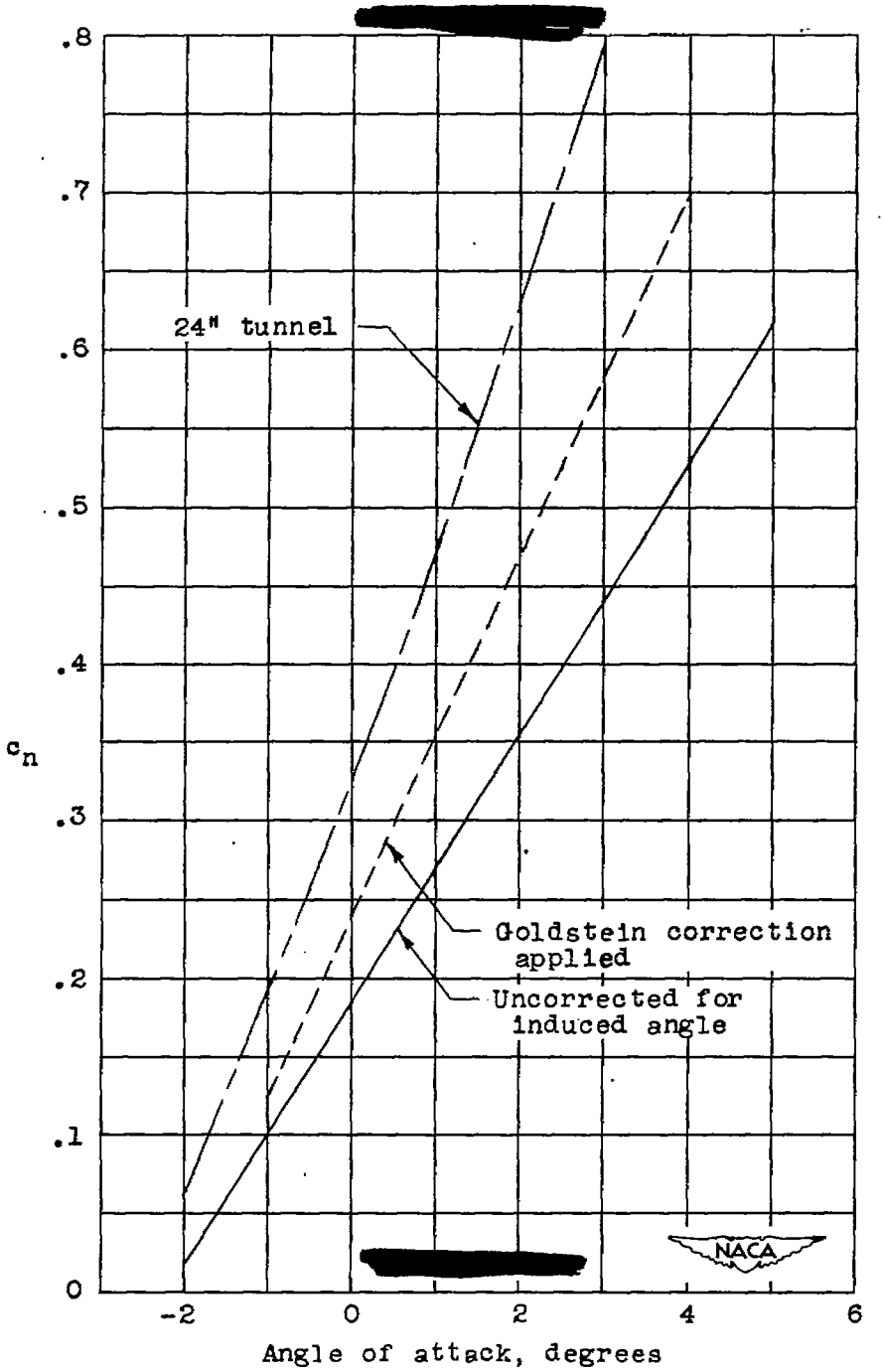


Figure 6.- Effect of induced-angle correction on the slope of the normal-force-coefficient curve of a NACA 16-309 blade section operating at $x = 0.7$; $M_x = 0.70$.

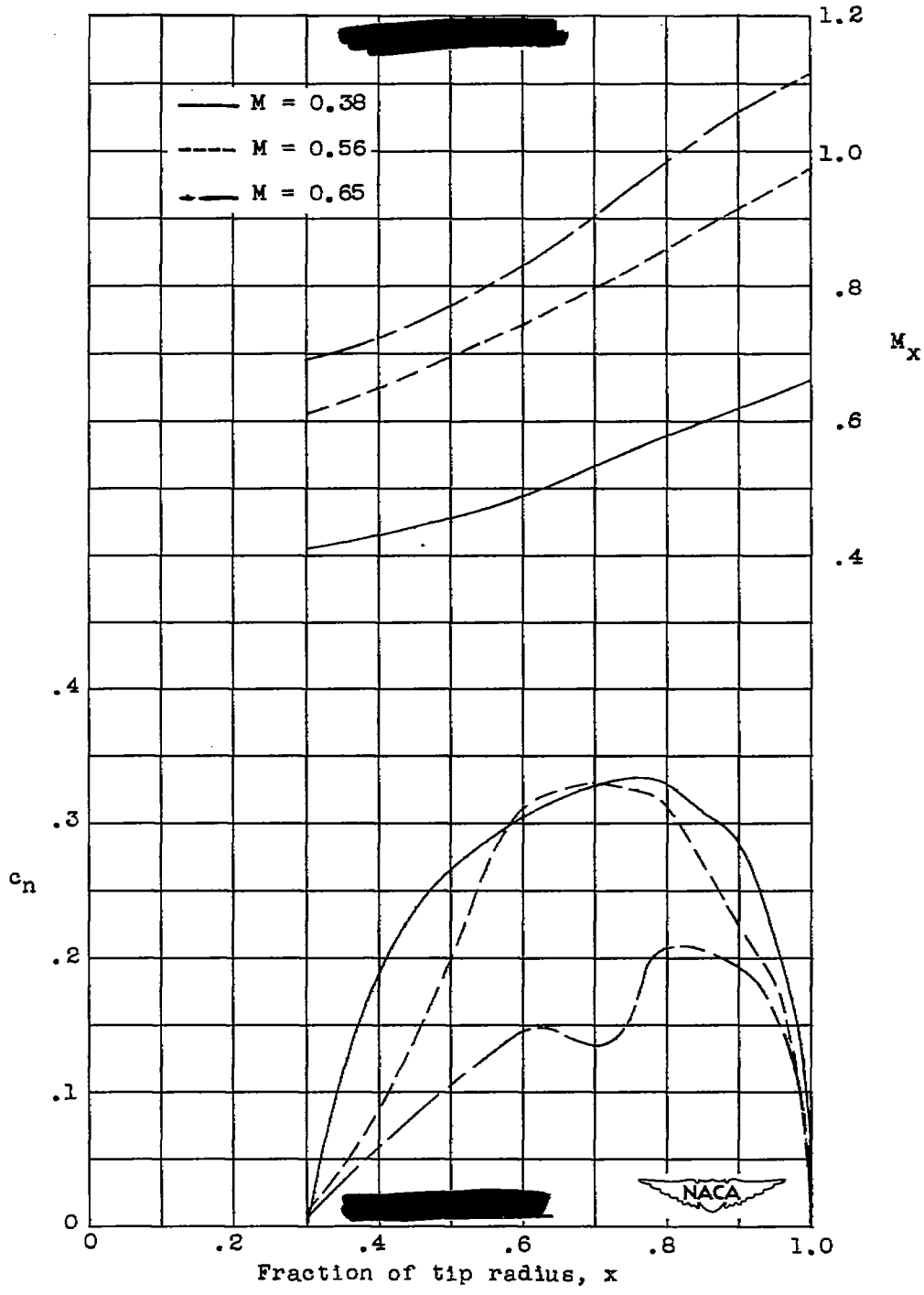


Figure 7.- Variation of the normal-force coefficient and section Mach number along the blade radius. $\beta_{0.75R} = 45°$; J = 2.2.

TABLE INDEX



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Table 7.– Continued



Table 8.– Pressure Coefficients and Aerodynamic Characteristics of an NACA 16–(3)(06.50) Propeller Blade Section ($x = 0.95$). [$\beta_{0.75R} = 45°$; $\beta_x = 38.33°$; B = 2]



Table 9.– Pressure Coefficients and Aerodynamic Characteristics of an NACA 16–(2)(05.34) Propeller Blade Section ($x = 0.975$). [$\beta_{0.75R} = 45°$; $\beta_x = 37.65°$; B = 2]



Table 10.– Pressure Coefficients and Aerodynamic Characteristics of an NACA 16–(3)(07.50) Propeller Blade Section ($x = 0.85$). [$\beta_{0.75R} = 45°$; $\beta_x = 41.3°$; B = 1]



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