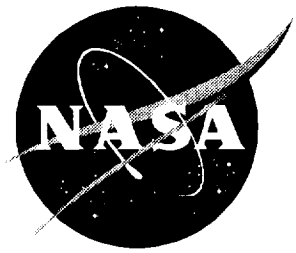
NASA/CR-1999-209328



Predicted Aerodynamic Characteristics of a NACA 0015 Airfoil Having a 25% Integral-Type Trailing Edge Flap

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Prepared for Langley Research Center
under Contract NAS1-20096 Task 6

May 1999

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Notation:

a_o	: airfoil lift curve slope
C	: airfoil chord length
c_f	: flap chord length
E	: ratio of flap chord length to airfoil chord length (i.e., c_f/C)
Minf	: free stream Mach number
α	: airfoil angle of attack (radians, unless specified otherwise)
α_o	: airfoil zero-lift angle (radians, unless specified otherwise)
δ	: flap deflection angle (radians, unless specified otherwise)

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1. Summary

Using the two-dimensional ARC2D Navier-Stokes flow solver analyses were conducted to predict the sectional aerodynamic characteristics of the flapped NACA-0015 airfoil section. To facilitate the analyses and the generation of the computational grids, the airfoil with the deflected trailing edge flap was treated as a single element airfoil with no allowance for a gap between the flap's leading edge and the base of the forward portion of the airfoil. Generation of the C-type computational grids was accomplished using the HYGRID hyperbolic grid generation program. In the analyses, a 25% integral-type trailing edge flap was assumed. Results were obtained for a wide range of Mach numbers, angles of attack and flap deflections. The predicted sectional lift, drag and pitching moment values for the airfoil were then cast in tabular format (C81) to be used in lifting-line helicopter rotor aerodynamic performance calculations. Similar tables providing the variation of the sectional lift and hinge moment values with Mach number, angle of attack and flap deflection angle were also generated for the flap.

Mathematical expressions providing the variation of the sectional lift and pitching moment coefficients for the airfoil and for the flap as a function of flap chord length and flap deflection angle were also derived within the context of thin airfoil theory. Similar expressions for the airfoil's sectional drag coefficient were also derived using the ARC2D drag predictions for equivalent two-dimensional flow conditions which are known to exist on a flapped model helicopter rotor blade in low speed descent flight and in level cruise flight.

2. Introduction

Earlier numerical studies [1,2], supported by recent wind tunnel experiments [3], have shown that helicopter rotor blade aerodynamics as well as dynamic and performance characteristics can be altered/enhanced via the use of a blade-mounted trailing edge flap. For example, in low speed descent flight, and in particular during conditions which give rise to strong blade-vortex interactions (BVI), careful and selective deployment of the flap on the advancing side of the rotor disk have been known to result in lower BVI noise levels. In high speed cruise flight, however, the deployment of the flap on the retreating side of the rotor disk can be used as means to reduce the otherwise large local angles of attack, and hence blade stall, by attaining higher lift levels with moderate deflections.

Because helicopter aerodynamics is a complex discipline which often requires an experimental approach to unravel underlying physical phenomena and estimate aerodynamic loads, designers are usually faced with a dilemma when new performance enhancement concepts, such as the use of a trailing edge flap, are being evaluated. In the preliminary design stage, rotor aerodynamic loads, and hence rotor performance, are generally estimated using simple analyses which are based on a lifting-line formulation such as that inherent in the NASA Langley CAMRAD.Mod1 code [4]. Since these analyses are based on locally two-dimensional (2-D) strip theory, they demand that the 2-D aerodynamic characteristics of the airfoil(s) which constitute the blade be a priori known. Traditionally, airfoil aerodynamic characteristics are acquired through 2-D wind tunnel testing. Once acquired, they are then furnished to the lifting-line code in tabular format (referred to here as a C81 format).

In trade studies where new airfoil designs, or modifications of existing airfoils are being evaluated for best rotor performance, wind tunnel testing of a large number of airfoils becomes no longer practical and an alternate approach must be adopted. This approach relies on using either simplified equations derived from thin airfoil theory to express the airfoil's aerodynamic characteristics, say as a function of flap deflection, or the use of more accurate state-of-the-art computational fluid dynamics (CFD) analysis tools. The use of CFD analysis tools, of course, circumvents the assumptions inherent in thin airfoil theory as they relate to compressibility, viscous effects and the limitation to small angles of attack, thin airfoils and small flap deflection angles.

Since thin airfoil theory is applicable only to incompressible potential flow, then other means must be used to arrive at the mathematical expression(s) which provide the variation of the airfoil's sectional drag as a function of flap deflection angle. In this report, these expressions are derived using drag predictions obtained using a CFD analysis code for two free stream conditions which are known to exist locally on a model rotor [3] having a NACA-0015 airfoil section and a 25% chord flap extending between the nondimensional 0.79 - 0.97 blade radial stations. In low speed descent flight, lifting-line simulations of the flapped model rotor have indicated that the equivalent two-dimensional flow, as seen by an observer located at the flap mid-span section at the 90 degree azimuth, corresponds to a free stream Mach number of 0.65 and an angle of attack of 5 degrees. These conditions existed for a peak flap deflection of -10 degrees. At an advance ratio which is typical of forward flight, say 0.30, an estimate of the local two-dimensional flow conditions which exist at the flap mid span position at the 270 degree azimuth yields a local free stream Mach number approximately equal to 0.40 and an angle of attack of 10 degrees. At this azimuth, the flap deflection is equal to +5 degrees. The objective here is to attain a local sectional lift value which is identical to that achieved by the single element airfoil at a higher angle of attack. It should be mentioned here that slight deviations from these equivalent 2-D free stream conditions are expected with any changes in the peak flap deflection and/or the radial position for placement of the flap.

In this report we present the mathematical expressions used to calculate the characteristics of the flapped NACA-0015 airfoil as well as the computed characteristics using a modern CFD Navier-Stokes-based analysis tool. The equations, as well as the CFD solutions are given here as functions of the flap deflection angle. Results of the CFD computations are cast in tabular C81 format. Unlike a single element airfoil, for a flapped airfoil section, two C81 tables are generated; the first expressing the airfoil's lift, drag and moment characteristics and the second expressing only the flap's characteristics. The second table is primarily used in the lifting-line code to determine the flap loads and, more importantly, the hinge moment which dictates the proper means for flap actuation (i.e., mechanical, hydraulic, pneumatic, etc.). In the following paragraphs a brief summary of the grid generation and CFD analysis tools is given. A detailed explanation of the procedure used to generate the C81

aerodynamics data tables for the baseline and for the flapped NACA-0015 is also included.

3. Numerical Grid Generation - HYGRID

In the present study, a C-type computational grid was generated using the NASA Ames "HYGRID" [5] hyperbolic grid generation code. The code requires that the approximate distance to the far field boundary as well as the normalized chordwise grid spacing near the leading and trailing edges of the airfoil be specified by the user. Typically, the far field boundary was located at a distance equal to six or seven airfoil chord lengths. The HYGRID code is run interactively on an HP9000/735 workstation. The generated grid is then displayed using the NASA Ames "PLOT3D" graphics software package [6] and examined for proper resolution. Appendix 1 contains a sample output file which is generated upon the completion of the interactive session. This file contains a summary of the grid parameters entered during the interactive session. An input file containing the coordinates of the airfoil starting from the lower surface trailing edge point, wrapping around the airfoil's leading edge and ending at the airfoil's upper surface trailing edge point is required. Note that the NACA-0015 airfoil geometry has an open trailing edge. This is acceptable for C-type grids with a topology that incorporates a wake cut which extends from the upper and lower surface trailing edge points to the two outflow boundaries located downstream of the airfoil.

Figure (1) depicts the physical extent of a typical computational grid for the NACA-0015 airfoil. For the airfoil with the 25% integral flap, the resolution of the computational grid was equal to 211x50 with 151 points lying on the surface of the airfoil (75 grid points on each surface), 31 points along each of the upper and lower surfaces of the wake cut, and 50 points in the direction approximately normal to the surface of the airfoil. An expanded view which illustrates the resolution of the grid near the airfoil's leading edge is shown in Fig. (2). Grid resolution on the flap and in the vicinity of the flap hinge point is also very important for accurate prediction of the flap sectional lift and hinge moment coefficients. Figure (3) illustrates an expanded view of the computational grid on the flap for a deflection of +20 degrees. Numerical results with a finer grid on the flap (i.e., having 30 points per surface rather than the 18 points shown in Fig. (3)) have indicated minor differences which are on the order of 2% in the

flap sectional lift and on the order of 4.5% in the hinge moment. These differences did not warrant the necessity for 25 additional grid points to maintain adequate resolution near the leading edge of the airfoil and, more importantly, the 35% increase in the computer CPU time requirements per case. To accurately resolve the details of the flow in the boundary layer, the grid spacing for the first grid point off the airfoil's surface was set at a nondimensional normal distance equal to 0.00001C. For a free stream Reynolds number of 3 million, this ensured that 9 grid points were located within a y^+ (nondimensional boundary layer length scale) value of 1. A typical interactive session for generating a computational grid lasts for about three minutes. Once all grid parameters are entered, the actual CPU time for generating the grid is less than 10 CPU seconds on the HP9000/735 workstation.

To obtain the geometry of the airfoil for any flap deflection, an interactive FORTRAN program "ROTATE" was written and used to rotate points lying on the upper and lower surfaces of the flap about the user specified hinge point. For the symmetric NACA-0015 airfoil with a 25% chord flap, the hinge point was located at x/C = 0.75 and y/C = 0. In deflecting the flap, solid body rotations were used with no attempt to smooth the resulting airfoil at the chordwise position corresponding to the location of the flap hinge point. A listing of the ROTATE code is included in appendix 2. Appendix 3 contains nearfield views of the various computational grids generated for the NACA-0015 airfoil with flap deflections equal to 0 (baseline configuration), +/-5, +/-10, +/-15 and +/-20 degrees respectively.

4. Flowfield Analysis Tool - ARC2D

In order to accurately predict the airfoil's sectional drag and moment coefficients it is necessary to use a two-dimensional flow solver which is based on the solutions to the laminar/turbulent Navier-Stokes equations. Among the myriad of available flow solvers, the accuracy of the "ARC2D" code [7] (developed at the NASA Ames research center) has been demonstrated for a number of helicopter blade airfoils [8]. The code is based on the solutions to the Reynolds averaged Navier-Stokes equations with the thin layer approximation. This feature limits, to some extent, the range of applicability of the code to angles of attack approaching the airfoil's stall angle. The algebraic Baldwin-Lomax turbulence model [9] is used to compute the turbulent eddy viscosity. An

alternating direction implicit (ADI) approximate factorization (AF) scheme is used to solve the discretized equations on a body-fitted curvilinear C-type grid. Three levels of grid sequencing with increasing time steps are used to accelerate convergence to a steady state. Second-order implicit and fourth-order explicit dissipation terms are added to the difference equations to improve numerical stability and to reduce solution oscillations in regions of large pressure gradients near shock waves at transonic free stream Mach numbers. Additional details relating to the solution algorithm are found in ref. [10]. A typical ARC2D run (i.e., for a given free stream angle of attack, Mach number and flap deflection angle) requires approximately 35 CPU minutes on an HP 9000/735 workstation.

In general, problems with the solver were encountered at transonic free stream Mach numbers in combination with large angles of attack and/or flap deflection angles. Problems were also encountered at relatively low Mach numbers and high angles of attack/flap deflection angles. The high speed problems were characterized by the sudden appearance of grid nodes having negative densities in the flow. On the other hand, the low speed problems were characterized by an oscillatory behavior in the computed airfoil sectional coefficients which ultimately ended with the calculation of a negative density in the flowfield. In certain calculations, especially those at the lower Mach numbers, the oscillatory behavior continued indicating the shedding of vorticity which is traditionally observed in unsteady flow calculations for airfoils at high angles of attack. For these calculations, the mean values for the coefficients were used to represent the steady 2-D values. It should be mentioned here that a typical converged solution required that the maximum L2 norm of the density residual be less than 0.5*10E-7. For severe cases where the solver had difficulty converging, this constraint was relaxed to 0.5*10E-5. Despite the relaxation of the convergence tolerance, some cases still failed to converge. A sample input for the solver and the corresponding output are found in appendix 4 for the NACA-0015 airfoil having a flap deflection of +15 degrees. The results are given for a free stream Mach number of 0.30 and an angle of attack equal to +5 degrees.

5. Mathematical Expressions For Aerodynamic Coefficients

Two approaches were utilized to arrive at relatively simple mathematical expressions which provide the variation of the airfoil's and flap's sectional

aerodynamic characteristics as a function of flap deflection angle δ. These expressions can be readily implemented into a lifting-line performance code such as CAMRAD.Modl [4] to provide the necessary aerodynamic coefficients for simulations of a flapped helicopter rotor.

In the first approach, thin airfoil theory with its inherent approximations is used to derive the mathematical expressions given in refs. [11,12] for an airfoil with an integral-type trailing edge flap. These expressions provide means for expressing the airfoil's sectional lift and quarter chord moment (pitching moment) characteristics, as well as the flap's sectional lift and hinge moment characteristics as a function of the flap's non-dimensional chord length, E, and the flap deflection angle δ. In these expressions the lift curve slope was obtained using the ARC2D predictions. For the symmetric NACA-0015 airfoil, at conditions of zero-lift and zero flap deflection, the pitching moment, flap hinge moment and flap lift were all set equal to zero.

In the second approach, since thin airfoil theory does not provide for similar expressions for the sectional drag, ARC2D predictions were used to provide, in polynomial form, the variation in the sectional drag coefficient as a function of flap deflection angle. A summary of these expressions for the NACA—001 5 airfoil is given in the following paragraphs.

The reader is reminded here that all mathematical expressions, with the exception of those relating to the sectional drag, are based on thin airfoil potential flow theory. in this respect, compressible flow and viscous flow effects are not accounted for. Additionally, the approximations inherent in thin airfoil theory, namely small angles of attack, small flap deflections, and hence small camber, must be equally recognized.

5.1.Airfoil Aerodynamic Coefficients

a) Airfoil sectional lift coefficient, CL

$$C_L=a_0(\alpha - \alpha_0 + k\delta) = C_L(\delta=0) + C_{L\delta} \qquad (1)$$

where k is a function of the flap chord ratio E, viz.,

$$k = \frac{1}{\pi}\left\{\cos^{-1}(1 - 2E) + 2\sqrt{E(1 - E)}\right\}$$

For the symmetric NACA-0015 airfoil, for conditions representative of BVI (i.e., for Minf = 0.65, α = +5 degrees) we have a_o equal to 7.3371 and α_o is equal to 0.0 degree. The lift curve slope a_o is obtained using a central difference expression utilizing the ARC2D-predicted sectional lift values at +/-1 degrees at a free stream Mach number of 0.65. Similarly, for conditions representative of level cruise flight (i.e., Minf = 0.40, α = +10 degrees), the lift curve slope is found to be equal to 6.383.

b) *Airfoil Quarter Chord moment coefficient,* C_m

$$C_m = C_{m_o} - m\,\delta = C_m(\delta=0) + C_{m\delta} \qquad (2)$$

where C_{m_o} is the moment at the quarter chord point at the condition of zero-lift and zero flap deflection. Here, m is a function of the flap chord ratio E and the airfoil lift curve slope a_o, viz.,

$$m = \frac{a_o}{\pi}(1 - E)\sqrt{E(1 - E)}$$

For the NACA-0015 airfoil, the magnitude of C_{m_o} is equal to 0.0. From Eq. (2) note that the pitching moment is negative (i.e., resulting in a nose down attitude) for positive flap deflections (i.e., flap down or for clockwise rotations of the flap) and is positive (i.e., resulting in a nose up attitude) for negative flap deflections (i.e., flap up or anticlockwise rotations of the flap). This sign convention is also adopted in the ARC2D predictions of the airfoil's pitching moments and the flap's hinge moments.

c) *Airfoil sectional drag coefficient,* C_d

These expressions were arrived at using the best fifth- and sixth-order polynomial fits to the predicted drag values obtained using the ARC2D Navier-Stokes flow solver. For conditions approximating those encountered during BVI (Minf = 0.65, Alfa = 5 degrees) we have

$$C_d = 0.029981 + 0.0038008\ \delta + 0.00011781\ \delta^2 - 5.124\,(10)^{-6}\ \delta^3 + 1.1991\,(10)^{-7}\ \delta^4$$

for $-20 \le \delta \le 20$ degrees

Similarly, for the conditions encountered during cruise flight (Minf = 0.40, Alfa = 10 degrees) we have

$$C_d = 0.029956 + 0.001964\ \delta + 0.000075\,\delta^2 - 1.466\,(10)^{-6}\ \delta^3 + 1.1758\,(10)^{-7}\ \delta^4$$

for $-20 \le \delta \le 20$ degrees

In the above expressions for the drag coefficient, δ is the flap deflection angle in degrees (not radians). Figures (4, 5) depict the ARC2D-predicted drag values as a function of flap deflection and the best fifth- and sixth-order polynomial fits to the drag values at the two free stream conditions considered. In the above expressions for C_d, higher order terms have been neglected, see the tables containing all the coefficients of the polynomials in Figs. (4, 5).

In a manner similar to that adopted for expressing the airfoil's sectional lift and moment coefficients, one can also express the drag coefficient as

$$C_d = C_d(\delta=0) + C_{d\delta} \tag{3}$$

d) *Section Coefficient Increments Due To Flap Deflection*

$$C_{L\delta} = k\,\delta\,a_o$$

$$C_{m\delta} = -\,m\,\delta$$

$$C_{d\delta} = a_1\,\delta + a_2\,\delta^2 + O(\delta^3, \delta^4) \tag{4}$$

In Eq. (4) for the drag increment, a_1 and a_2 are constants whose values are given in the tables shown in Figs. (4,5). Note that the increments due to the deflection of the flap, see Eqs. (1, 2, 3), are to be used with the baseline (i.e., with no flap deflection) NACA-0015 airfoil data (available in C81 format) to estimate a new sectional lift, moment and drag for the airfoil with the deflected flap, i.e.,

Flapped airfoil values = baseline airfoil values + coefficient increments

5.2. Flap Aerodynamic Coefficients

a) *Flap lift coefficient,* C_{L_f}

$$C_{L_f} = C_{L_{fo}} + n_o C_L - n \delta$$

where $C_{L_{fo}}$ is the flap lift coefficient at zero-lift and zero flap deflection conditions for the airfoil. n_o is a function of the flap chord ratio and airfoil lift curve slope and n is a function of the flap chord ratio, viz.,

$$n_o = \frac{4}{a_o E}\left\{\frac{\pi}{2} - \cos^{-1}(\sqrt{E}) - \sqrt{E(1-E)}\right\}$$

$$n = -2.5556\,(1 - E)$$

For the NACA-0015 airfoil, $C_{L_{fo}}$ is equal to zero due to the symmetry of the airfoil and hence the flap at zero deflection.

b) *Flap hinge moment coefficient,* C_{hf}

$$C_{hf} = C_{h_o} + h_o C_L - h \delta$$

where C_{h_o} is the flap hinge moment coefficient at zero-lift and zero flap deflection for the airfoil. h_o is a function of the lift curve slope and the flap chord ratio, and h is a function of the flap chord ratio as shown below

$$h_o = \frac{-2}{a_o E^2}\left\{\left(\frac{3}{2} - E\right)\sqrt{E(1-E)} - \left(\frac{3}{2} - 2E\right)\left[\frac{\pi}{2} - \cos^{-1}(\sqrt{E})\right]\right\}$$

$$h = \frac{4(1-E)\sqrt{E(1-E)}}{\pi E^2}\left\{\frac{\pi}{2} - \cos^{-1}(\sqrt{E}) - \sqrt{E(1-E)}\right\}$$

For the NACA-0015 airfoil, C_{h_o} is equal to 0.0.

The expressions presented in sections 5.1. and 5.2., though quite simple, also allow for the use of lifting-line codes to investigate the effects of flap chord length (or equivalently E) on the performance of helicopter rotor blades.

6. Aerodynamics Data Tables as an alternate option

An alternate approach (which circumvents the inherent limitations of thin airfoil theory) for expressing the airfoil's and flap's sectional aerodynamic characteristics into a lifting-line rotor code is through the use of tabulated aerodynamics data which vary with angle of attack, free stream Mach number and flap deflection angle. Traditionally, these tables are generated using two-dimensional (2-D) wind tunnel data for the airfoils which constitute the blade. In the absence of such data, predictive methods are used to generate these tables. For the flapped NACA-0015 airfoil, since no 2-D wind tunnel data was available, the tables were generated using the ARC2D code for a range of Mach numbers (0.20, 0.30, 0.40, 0.45, 0.50, 0.55, 0.60, 0.65, 0.70, 0.75, 0.80, 0.85, 0.90 and 1.0), angles of attack (-14 to +14 degrees with a 1 degree increment) and flap deflections (-20 to +20 degrees with a 5 degree increment). Despite the availability of 2-D wind tunnel data for the baseline NACA-0015 airfoil (i.e., at zero flap deflection), predictions were made to reproduce the data in order to maintain the consistency between all predicted table values rather than mix the existing 2-D wind tunnel data with those predicted for the flapped airfoil configurations.

For a given flap deflection angle, two C81 data tables were generated. The first table included the airfoil's sectional lift, quarter chord moment and drag coefficients. The second table included the flap's sectional lift, sectional drag and hinge moment coefficients. Note that the flap sectional drag values were set to zero due to the inability of the current approach to predict the drag contribution from the leading edge of the flap. Recall that the flapped airfoil was modeled as a single element airfoil to facilitate the grid generation process and to allow the use of the ARC2D Navier-Stokes code. In this respect, the flap's leading edge was 'buried' inside the main airfoil section.

7. Results And Discussion

In this section we present the various steps used in the generation of the aerodynamics data tables for the main airfoil and for the flap. Also included are selected flowfield results for a number of cases which were considered to be extreme in terms of the combination of free stream Mach number, angle of attack and flap deflection angle.

7.1. Generation Of The Aerodynamics Data Tables (C81 format)

Due to the large number of analyses required in this study, a FORTRAN program, designated "CREATE", was written to facilitate the tasks of creating the necessary input files for the ARC2D code and the command file which submits the various cases to the HP9000/735 workstation. A source listing of the CREATE program and an output command file can be found in Appendix 5.

To illustrate the sequence of events which lead to the generation of a C81 data table (for the main airfoil or for the flap) we refer to Fig. (6). In the figure, note that the output from the ARC2D code is an ASCII formatted file denoted by "LOADS.TBL", see Appendix 6 for a listing of a sample file. The predicted aerodynamic coefficients in this file are first cross plotted to check for any irregular points which seem to not follow any of the expected trends in the data. Once identified, these points are eliminated and interpolation (or extrapolation) is used to estimate the values at the corresponding free stream conditions. The modified LOADS.TBL file is then used by a post processing program denoted "UTIL" which, for a given flap deflection angle, performs the following functions:

- First combines two existing low resolution C81 data tables (naca00l2-1.c8l, naca00l2-2.c81) for the NACA-0012 airfoil to increase the number of free stream Mach numbers to the required number. This process yields a new file, naca00l2-3.c8l, which is a NACA-0012 airfoil CS1 data table having the proper number of Mach number entries (i.e., identical to those used in the ARC2D predictions).

- Assigns zero values to the aerodynamic coefficients in the file naca00l23.c81 for lift, drag and pitching moment only in the range of angles of attack (- 14 to + 14 degrees) and Mach numbers used in the predictions, i.e., in regions "B", "C" shown in Fig. (7).

- The code then inserts the predicted coefficients in the modified naca00l2-3.c81 table at the corresponding combinations of angle of attack and free stream Mach number, I.e., in region "C" of Fig. (7). The result from this step is a partially complete C81 data table which has the predicted values as well as zeros where predictions were not made and/or the numerical calculations did not converge. This format facilitates the visual identification of the different regions of the tables were data need be interpolated (e.g., the two regions

denoted by "B") and blended with the experimental data for the NACA-0012 airfoil (i.e., the two regions denoted by "A"), see Fig. (7).

- For a given Mach number, the UTIL code interpolates for the missing data in the two regions "B" at the various angles of attack. It then blends the predicted data in region "C", the interpolated data in regions "B" with the experimental data for the NACA-0012 airfoil in regions "A".

- For Mach numbers where all the numerical solutions failed to converge, the UTIL code inserts coefficients which are identical to those predicted at the immediate neighboring lower Mach number. For example, if the ARC2D calculations at a Mach number of 0.90 failed to converge for all angles of attack considered, then the aerodynamic coefficients inserted at 0.90 are set equal to those computed at the immediate lower Mach number which is 0.85. This practice is usually used with experimental wind tunnel data. The implications are, of course, the over simplification of the dominant compressibility effects, especially reflected in the sectional drag values, which tend to be present at these high Mach numbers. A less appealing alternative is one where the NACA-0012 experimental data is retained at such high Mach numbers. A concern then arises due to the jumps one would observe in the data at a given angle of attack when moving from Mach numbers where the coefficients were computed for the airfoil with the deflected trailing edge flap to other Mach numbers where the coefficients were obtained using wind tunnel data for the baseline NACA-0012 airfoil.

- The UTIL code also performs a special interpolation procedure for the flap sectional lift and hinge moment coefficients by gradually having the predicted coefficients go to zero at the table's minimum and maximum angles of attack, namely -180 degrees, +180 degrees. Since no experimental sectional flap data exist for the NACA-0012 airfoil, this approach then prevents the creation of two artificial jumps that would otherwise be present due to the sudden change from the predicted non-zero flap values to the zero flap values for angles of attack equal to or larger than +15 degrees and angles of attack equal to or less than -15 degrees. Similar to the airfoil data tables, at Mach numbers where converged solutions were not feasible for any of the angles of attack considered, the flap aerodynamic coefficients are set equal to the values predicted at the nearest neighboring lower Mach number.

- As mentioned earlier, zero values are assigned to the sectional drag values for the flap. Unlike the present single element airfoil, for a two-element airfoil, non—zero flap drag values can be inserted into this portion of the flap tables.

- Upon completion of execution, two C81 data tables are output; one for the main airfoil (designated main.c81) and one for the flap (designated flap.c81), see Fig. (6). Once generated, the two tables are then renamed to reflect the particular flap deflection angle at which the sectional airfoil and flap data were predicted. Appendix 7 contains all the C81 data tables created for the baseline and for the flapped NACA-001 5 airfoils.

- The UTIL code also outputs an additional file (FORTRAN logical unit 88) which is used for plotting any of the airfoil's or flap's table variables as a function of free stream angle of attack or free stream Mach number.

It should be mentioned here that with the exception of the NASA Langley provided "TSPLINE" tension and cubic spline curve fit program, all elements of the UTIL program were developed at MDHS. A listing of the UTIL code can be found in Appendix 8.

7.2. Selected Flowfield Predictions

Four cases representative of high and low Mach number flows at large flap deflection angles and moderate to large angles of attack are presented here. In all cases, the boundary layer was assumed to be turbulent at the airfoil's leading edge. The first two cases are for a free stream Mach number of 0.30, a flap deflection angle equal to +15 degrees and angles of attack equal to +5 and +12 degrees respectively. For this flap deflection, one must first consider whether the flow has separated on the flap or not? This question is readily answered by considering a number of flowfield plots of the u-component of velocity (i.e., streamwise or x-component of the velocity vector), stream function and velocity vector plots. For an angle of attack of 5 degrees, Fig. (8a) illustrates contour plots of the computed u-component of velocity. The figure indicates that a very small region having negative streamwise velocities exist on the upper surface of the flap near the airfoil's trailing edge. An expanded view of this region is clearly seen in Fig. (8b). The velocity vector and streamline plots shown in Figs. (8c, 8d) respectively also confirm the presence of this region. At an angle of attack of 12 degrees, a larger separated flow region is

now observed on the upper surface of the flap. Figures (9a, 9b) depict, respectively, the computed streamlines on the airfoil and an enlarged view of the velocity vector plots on the upper surface of the airfoil. The results of Fig. (9b) indicate that the boundary layer flow has separated at a chordwise position just downstream of the flap hinge point located at x/C = 0.75.

For transonic free stream Mach numbers, shock waves, their strength and their chordwise position become of primary importance. For strong shocks (typically identified by their upstream Mach number being larger than 1.2), an additional factor which must be taken into consideration is whether they were strong enough to induce the separation of the boundary layer. Figure (10a) depicts the predicted Mach number contours for the NACA-0015 airfoil at a free stream Mach number of 0.70, an angle of attack of 9 degrees and a flap deflection angle of -10 degrees. As seen the results clearly indicate the presence of a relatively strong shock at the 24% chord station. A weaker shock is also seen on the lower surface of the airfoil at a chord position which approximately corresponds to that of the flap's hinge point. The extent of the supersonic flow regions on the upper and lower surfaces of the airfoil are better illustrated by considering only contour lines where the local Mach numbers are equal to and higher than 1, see Fig. (10b). In Fig. (10c) illustrating the predicted stream lines, a clear indication of shock induced separation is seen near the foot of the upper surface shock at x/C = 0.24. Note that the separated flow region extends to the airfoil's trailing edge without reattachment due to the presence of an adverse pressure gradient which results as a consequence of the upward deflection of the flap. On the lower surface of the airfoil, no evidence of separated flow was seen.

The final case is that for a free stream Mach number of 0.70, an angle of attack of 5 degrees and a flap deflection angle of +5 degrees. For these conditions, Fig. (11a) illustrates the predicted Mach number contours. Again, a very strong shock wave, as compared to that shown in Fig. (10a), is seen near the 39% chord position. Unlike the previous case where the flap deflection was -10 degrees, only one supersonic flow region can now be seen on the upper surface of the airfoil, Fig. (10b). Referring to Fig. (11c) which illustrates the predicted streamlines, we can clearly see the following; the shock-induced separation near the foot of the shock at x/C = 0.39, the reattachment of the boundary layer flow at a position just upstream of the flap's hinge point and then the complete separation of the boundary layer flow over the upper surface of the

flap. Note that the reattachment of the flow for this case is predominantly due to the favorable pressure gradient which is felt up to the location of the hinge point due to the added camber caused by the flap down deflection. Downstream of the flap's hinge point, an adverse pressure gradient results in the separation of the boundary layer.

8. Conclusions

Analyses were conducted using the ARC2D Navier-Stokes code to predict the sectional aerodynamic characteristics of the flapped NACA-0015 airfoil section. In the analyses, the airfoil with the deflected trailing edge flap was treated as a single element airfoil with no allowance for a gap between the flap's leading edge and the base of the forward portion of the airfoil. A 25% integral-type trailing edge flap was assumed. Predictions were made for a wide range of Mach numbers, angles of attack and flap deflections. The predicted sectional lift, drag and pitching moment values for the airfoil were then cast in tabular format (C81) to be used in lifting-line helicopter rotor aerodynamic performance calculations. Similar tables providing the sectional lift and hinge moment values were also generated for the flap.

Mathematical expressions providing the variation of the sectional lift and pitching moment coefficients for the airfoil and for the flap as a function of flap chord length and flap deflection angle were also derived within the context of thin airfoil theory. Similar expressions for the airfoil's sectional drag coefficient were also derived using the ARC2D drag predictions for equivalent two-dimensional flow conditions which are known to exist on a flapped model helicopter rotor blade in low speed descent flight and in level cruise flight.

9. References

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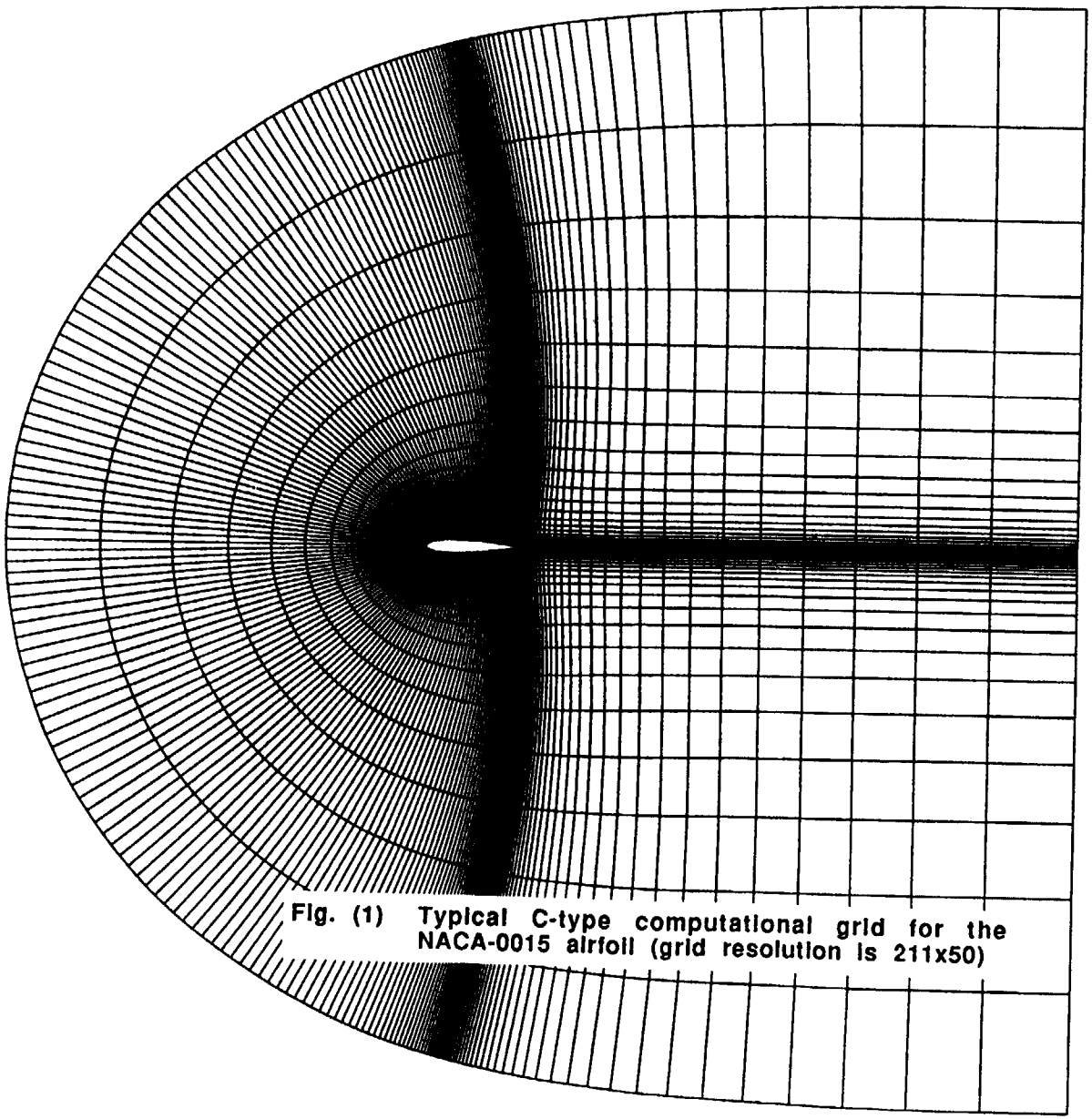
12. Pinkerton, R. M., "Analytical Determination Of The Load On A Trailing Edge Flap," NACA Technical Note No. 353, 1930.

BASELINE



211x50 GRID

Fig. (1) Typical C-type computational grid for the NACA-0015 airfoil (grid resolution is 211x50)

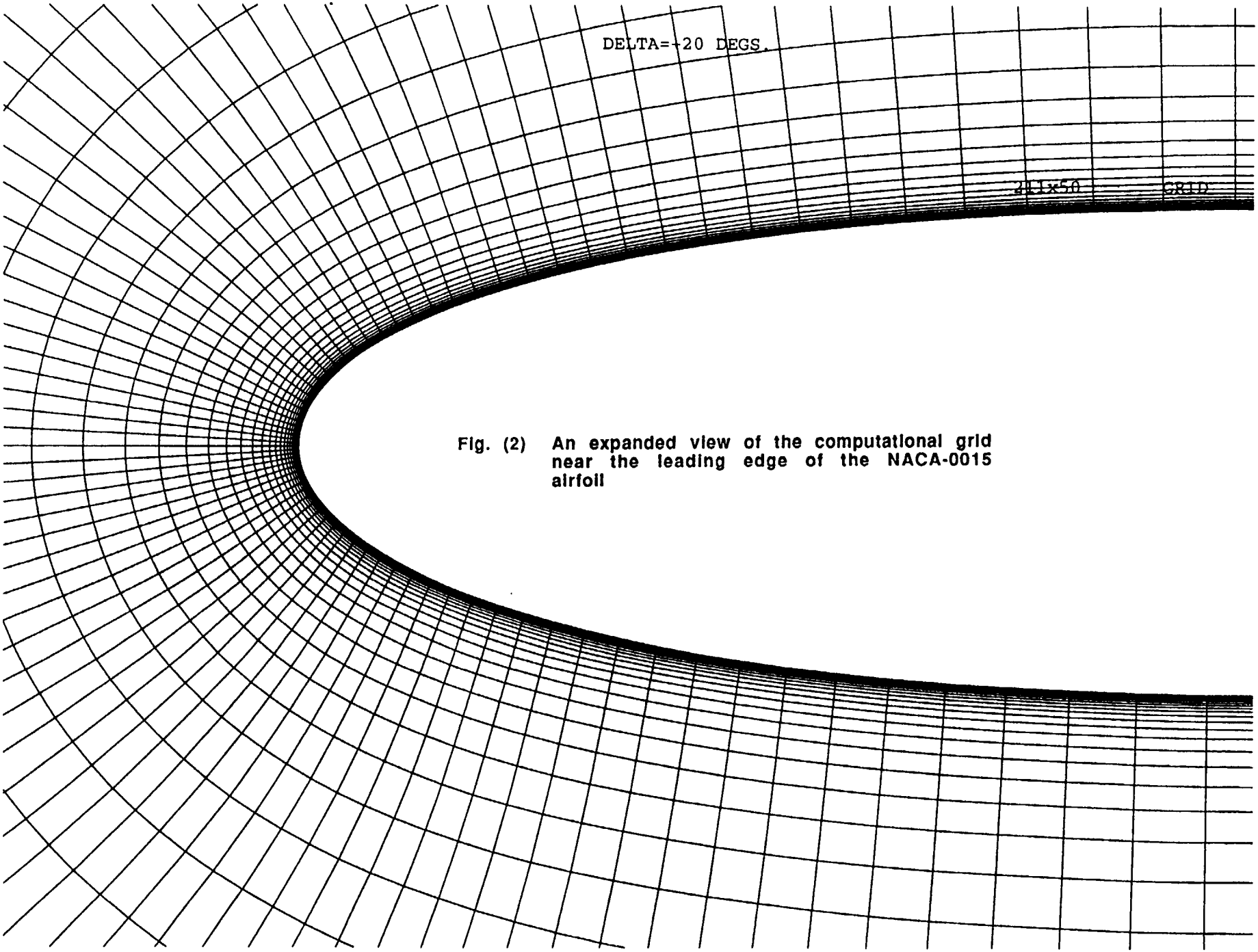


Fig. (2) An expanded view of the computational grid near the leading edge of the NACA-0015 airfoil

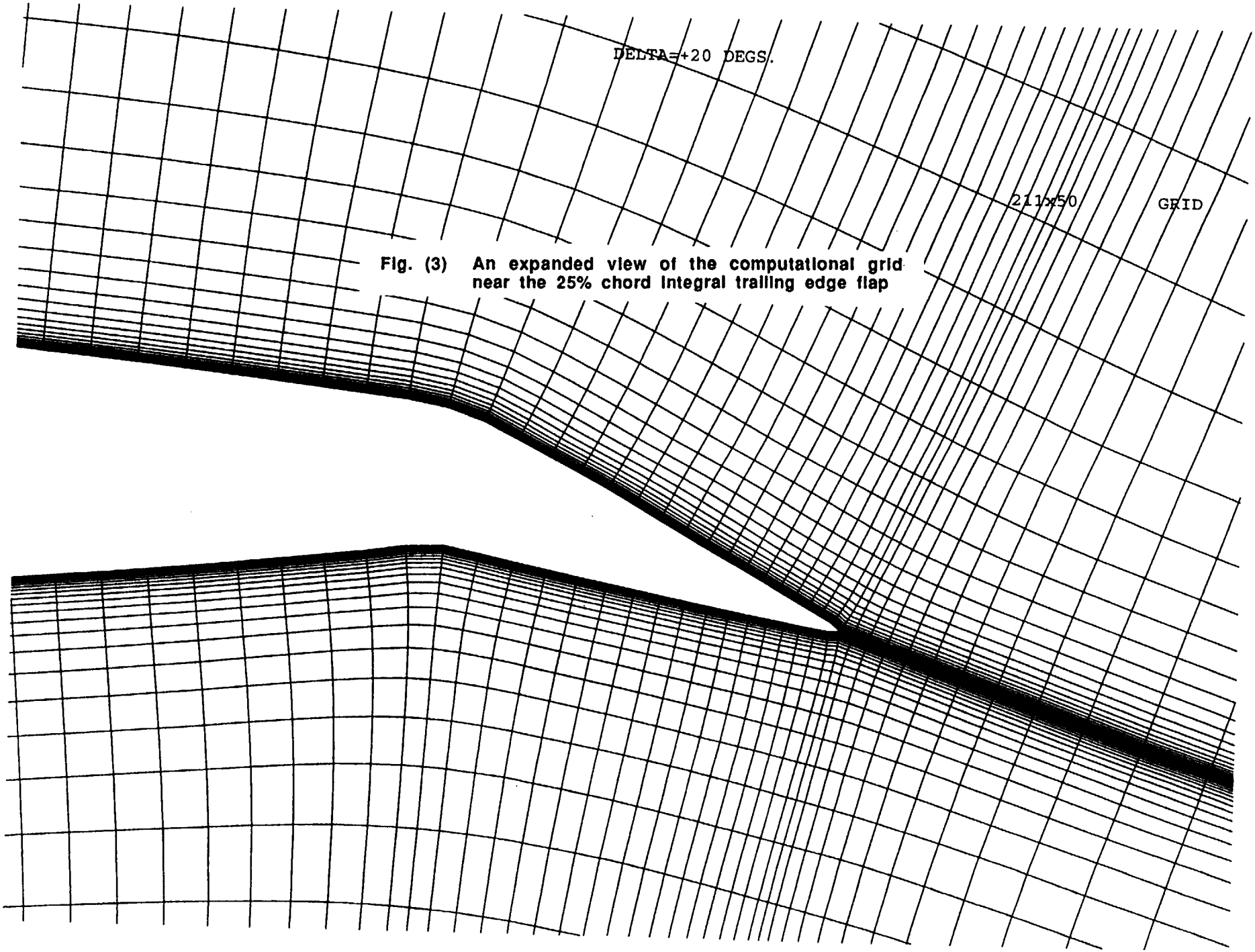


Fig. (3) An expanded view of the computational grid near the 25% chord integral trailing edge flap

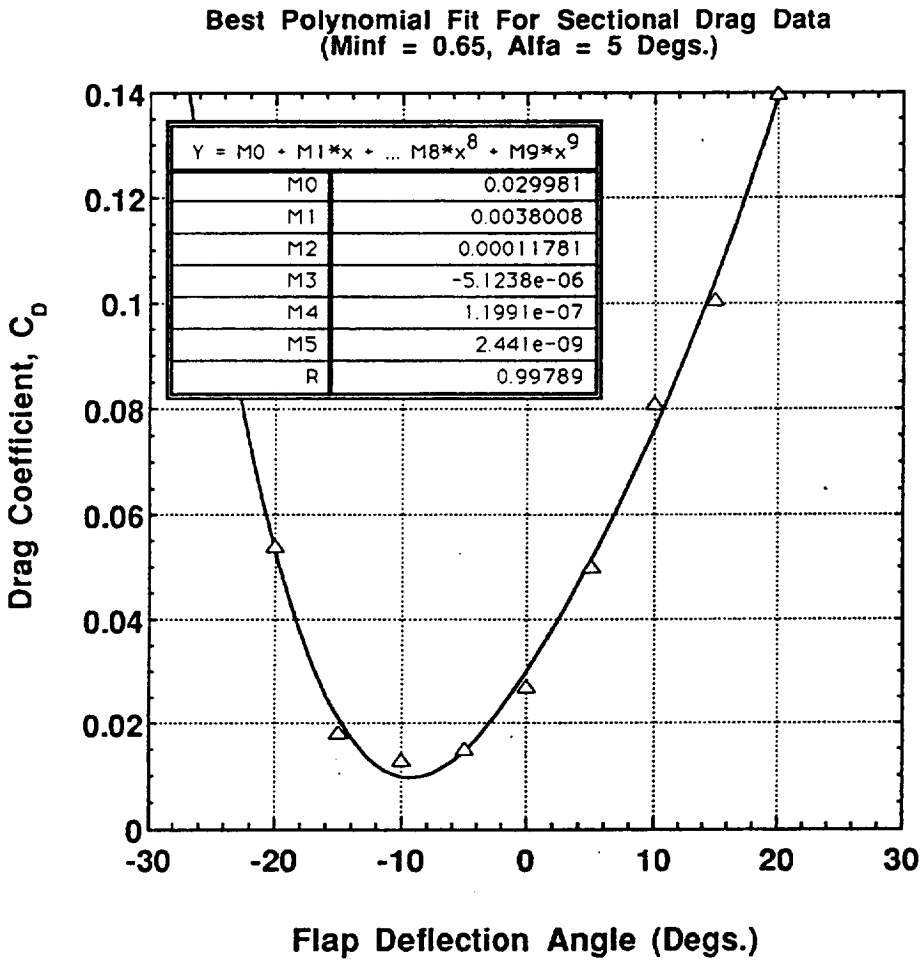


Fig. (4) ARC2D-predicted sectional drag values and the best fifth-order polynomial fit (Minf = 0.65, Alfa = 5 degrees, Re = 3 million)

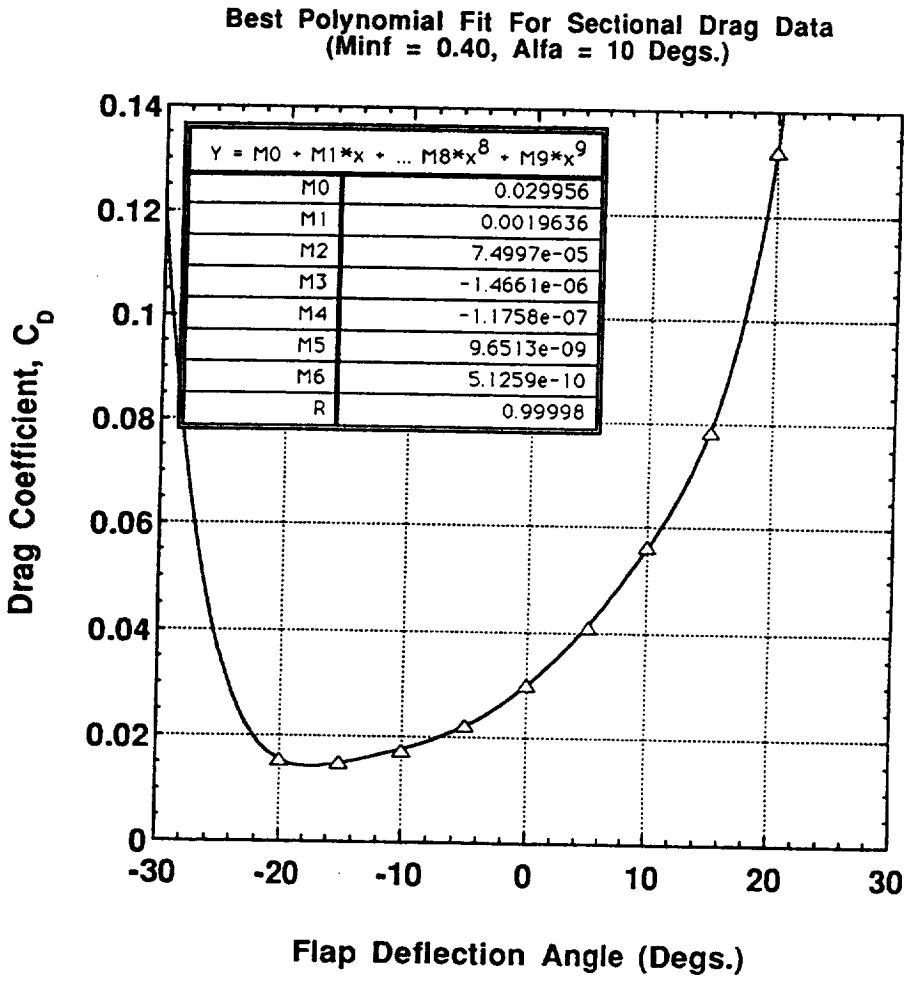


Fig. (5) ARC2D-predicted sectional drag values and the best sixth-order polynomial fit (Minf = 0.40, α = 10 degrees, Re = 3 million)

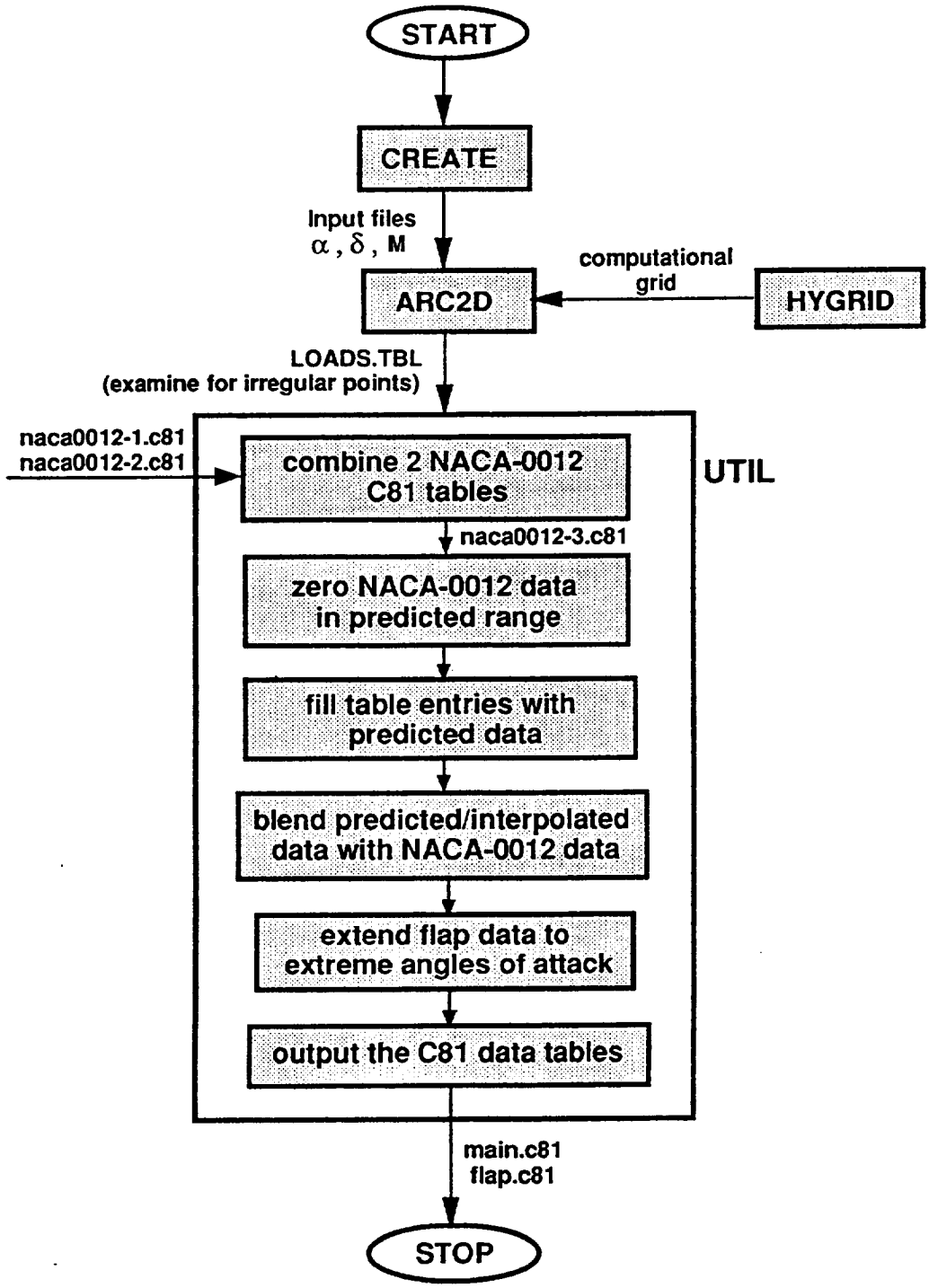


Fig. (6) Flow chart depicting the various steps in the generation of the C81 aerodynamics data tables

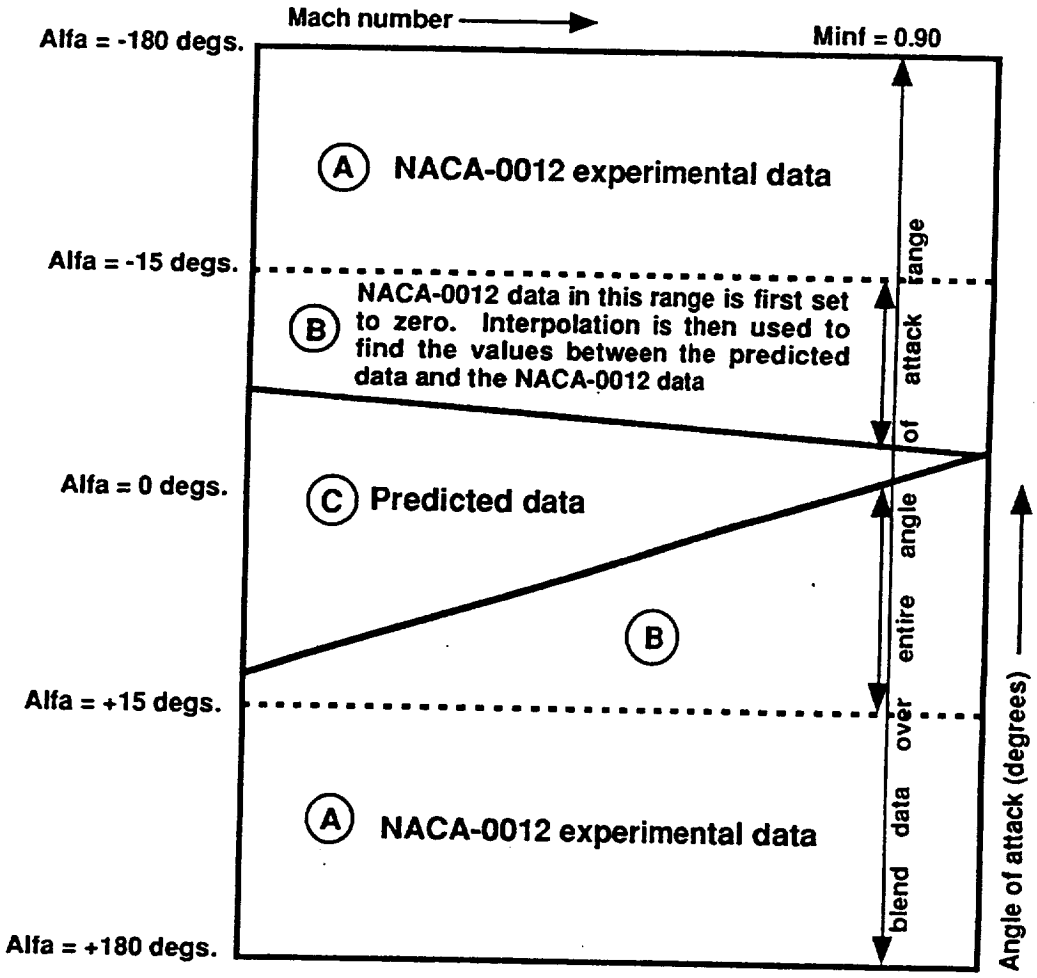


Fig. (7) Sketch illustrating the various subsections in a typical C81 aerodynamics data table

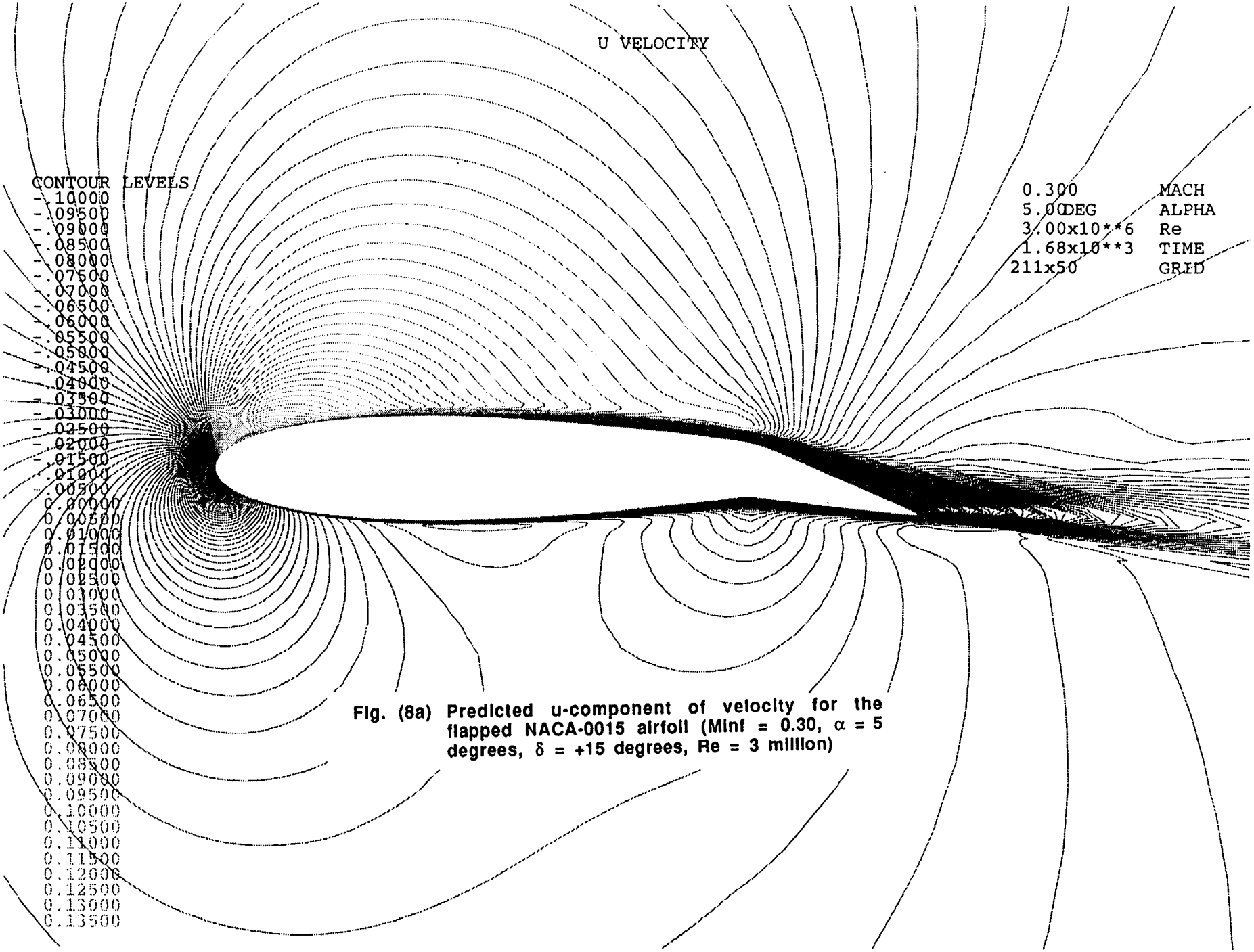


Fig. (8a) Predicted u-component of velocity for the flapped NACA-0015 airfoil (Minf = 0.30, α = 5 degrees, δ = +15 degrees, Re = 3 million)

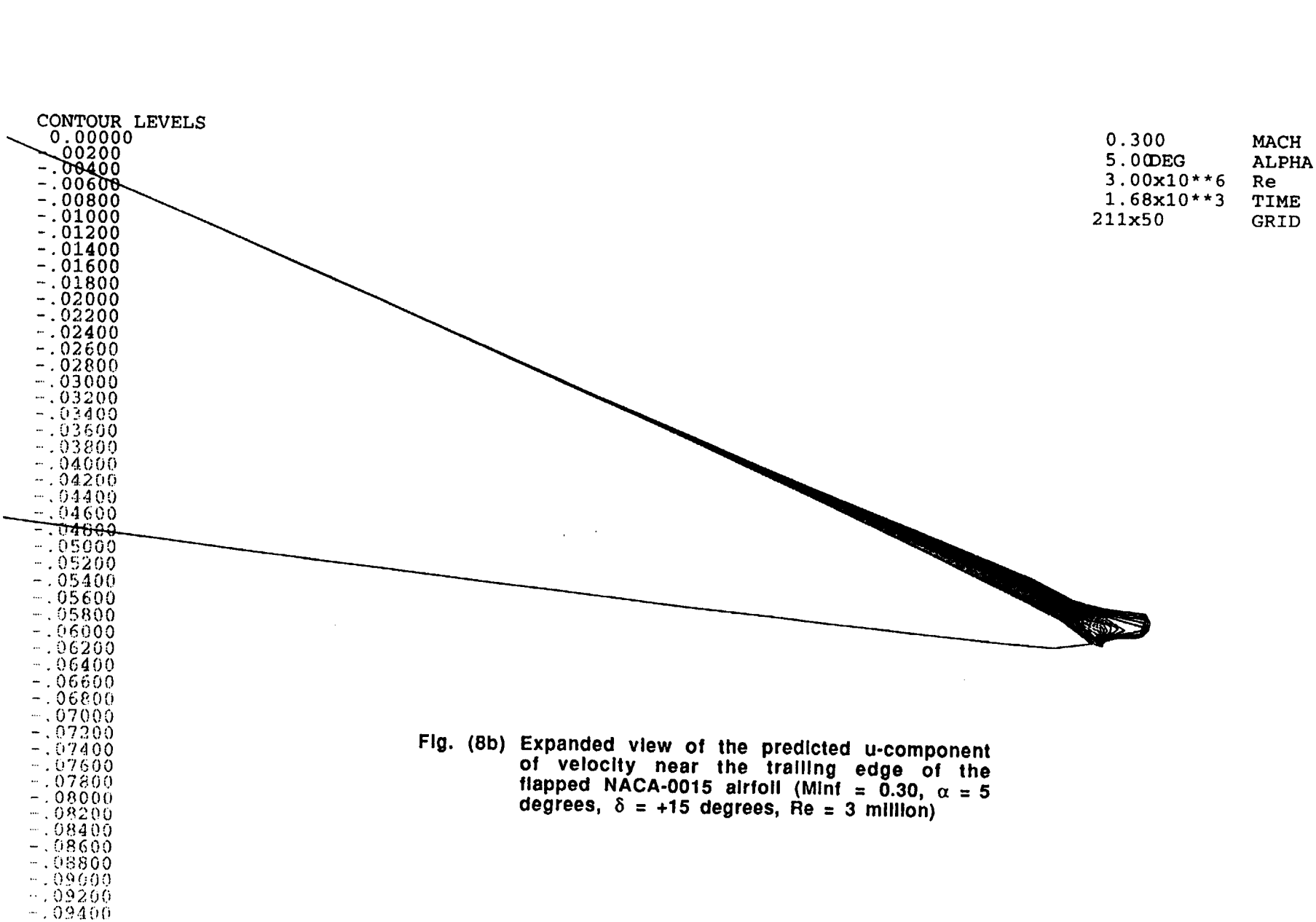


Fig. (8b) Expanded view of the predicted u-component of velocity near the trailing edge of the flapped NACA-0015 airfoil (Minf = 0.30, α = 5 degrees, δ = +15 degrees, Re = 3 million)

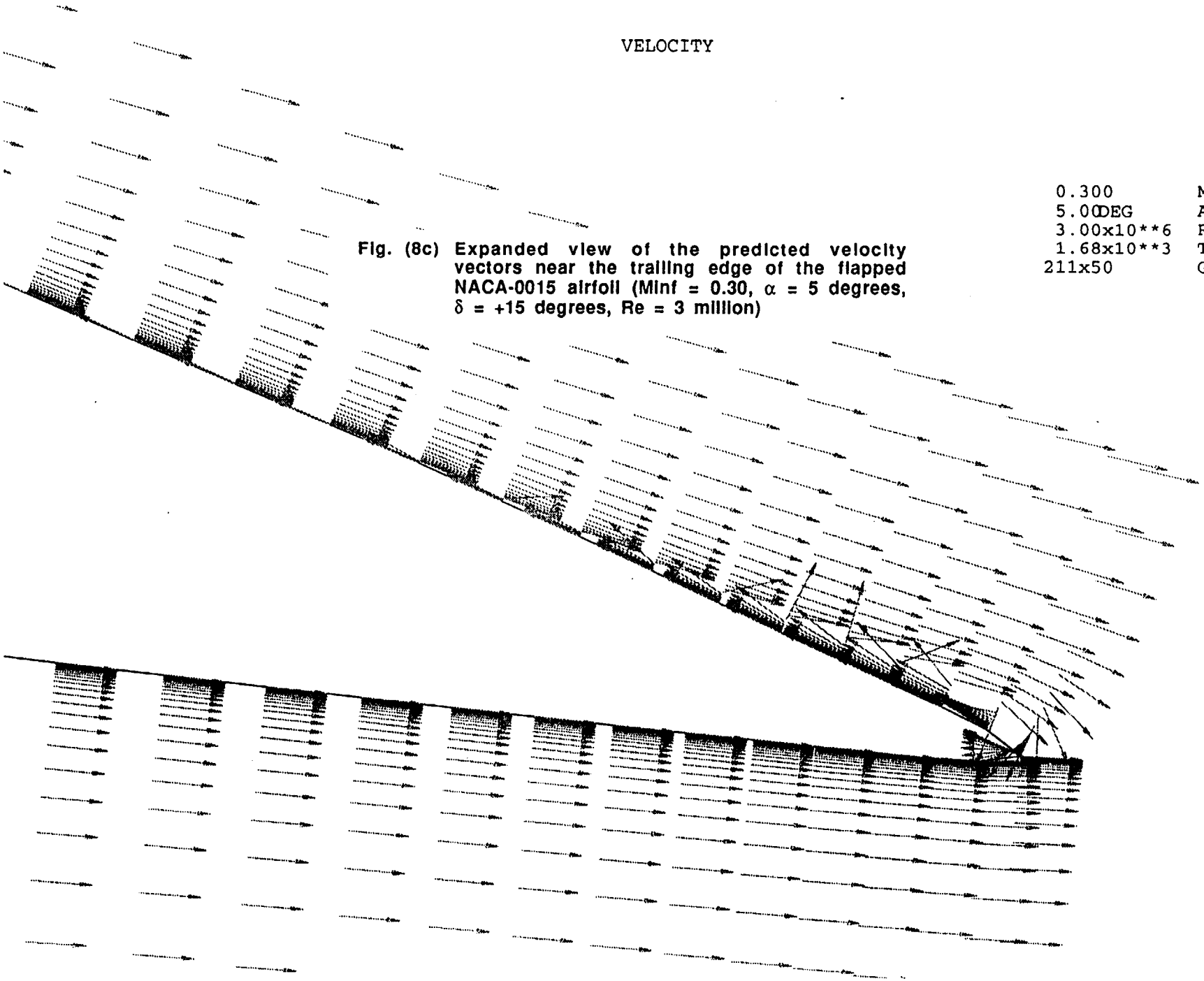


Fig. (8c) Expanded view of the predicted velocity vectors near the trailing edge of the flapped NACA-0015 airfoil (Minf = 0.30, α = 5 degrees, δ = +15 degrees, Re = 3 million)

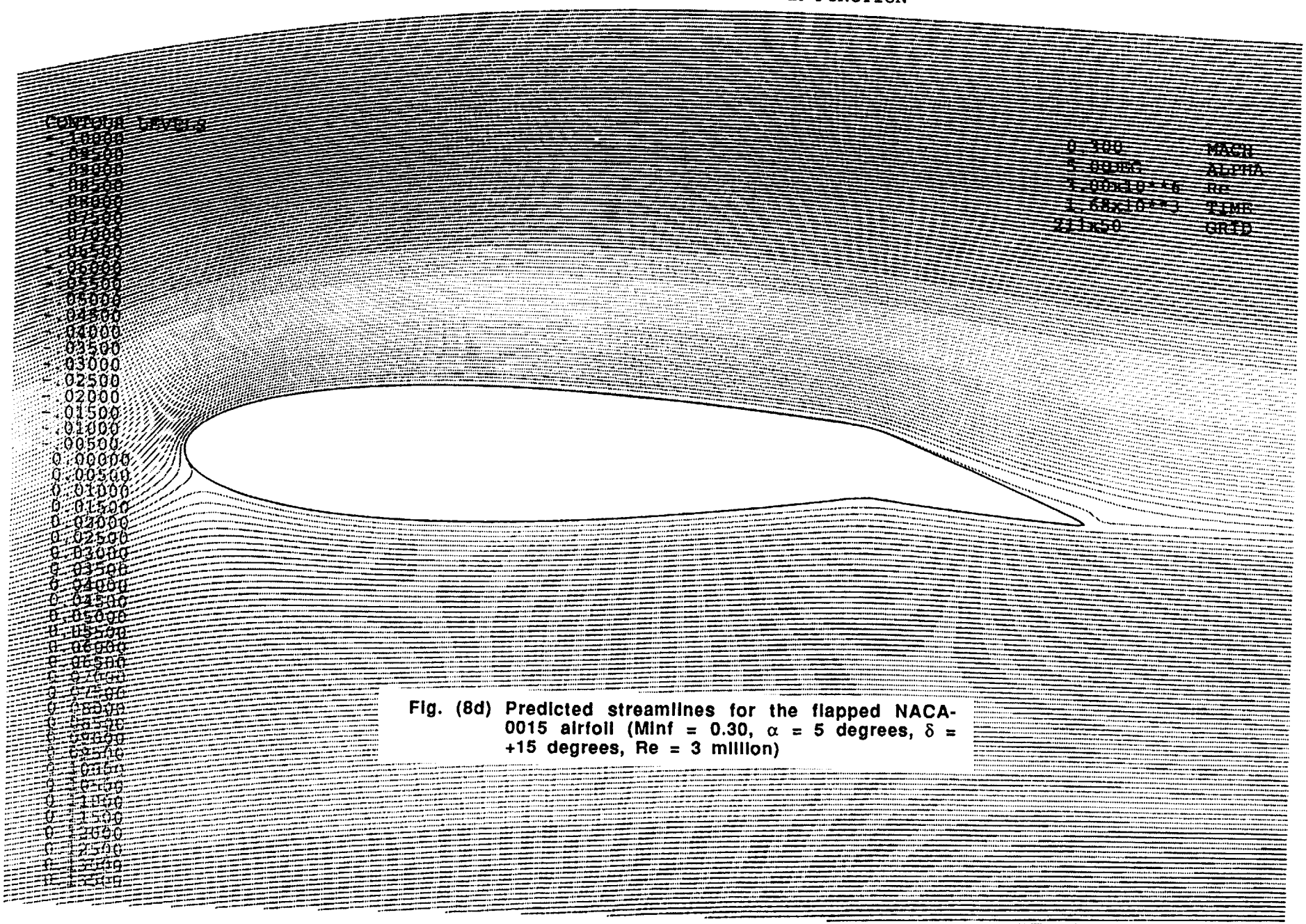


Fig. (8d) Predicted streamlines for the flapped NACA-0015 airfoil (Minf = 0.30, α = 5 degrees, δ = +15 degrees, Re = 3 million)

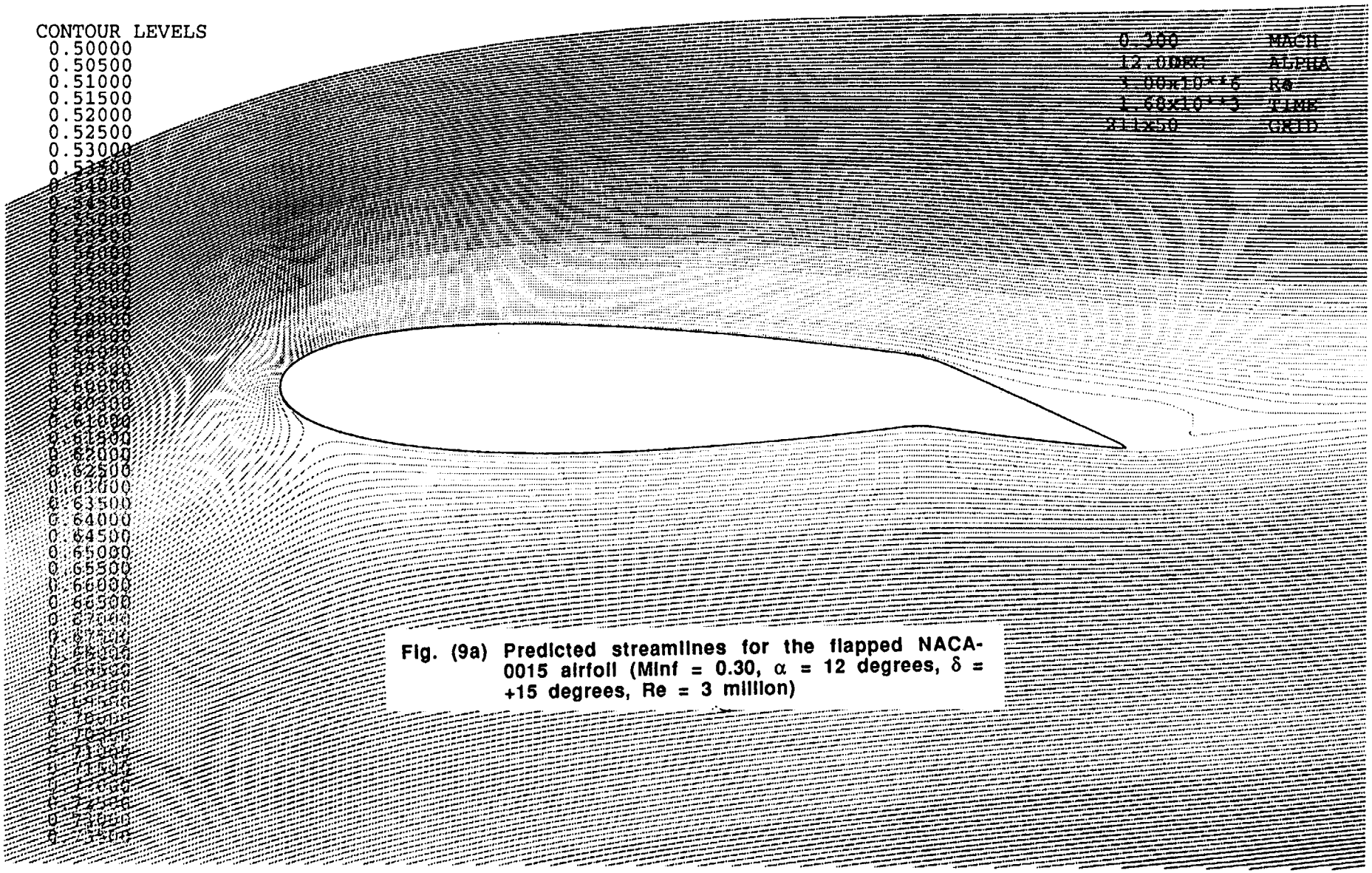


Fig. (9a) Predicted streamlines for the flapped NACA-0015 airfoil (Minf = 0.30, α = 12 degrees, δ = +15 degrees, Re = 3 million)

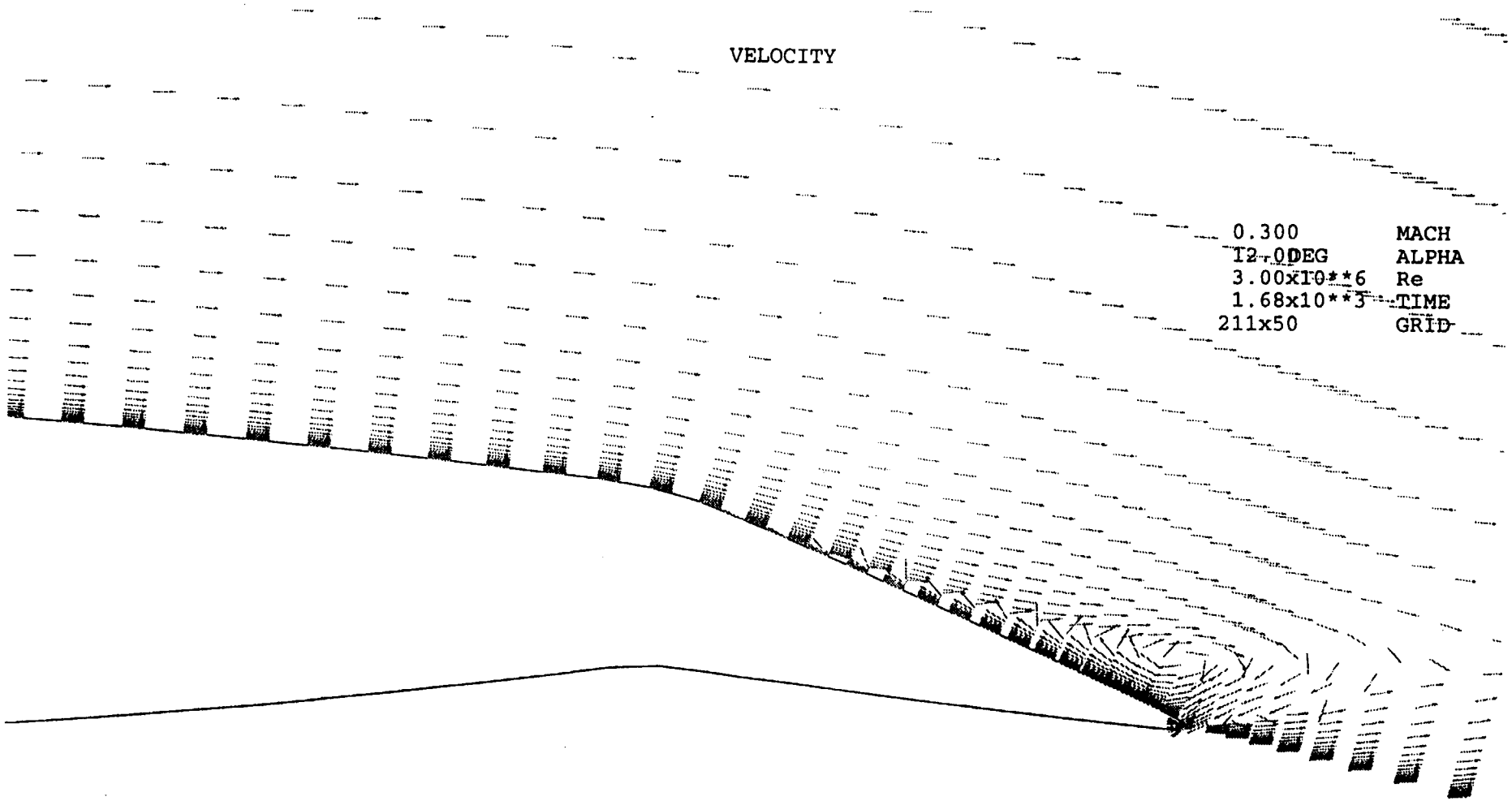


Fig. (9b) Expanded view of the predicted velocity vectors near the trailing edge of the flapped NACA-0015 airfoil (Minf = 0.30, α = 12 degrees, δ = +15 degrees, Re = 3 million)

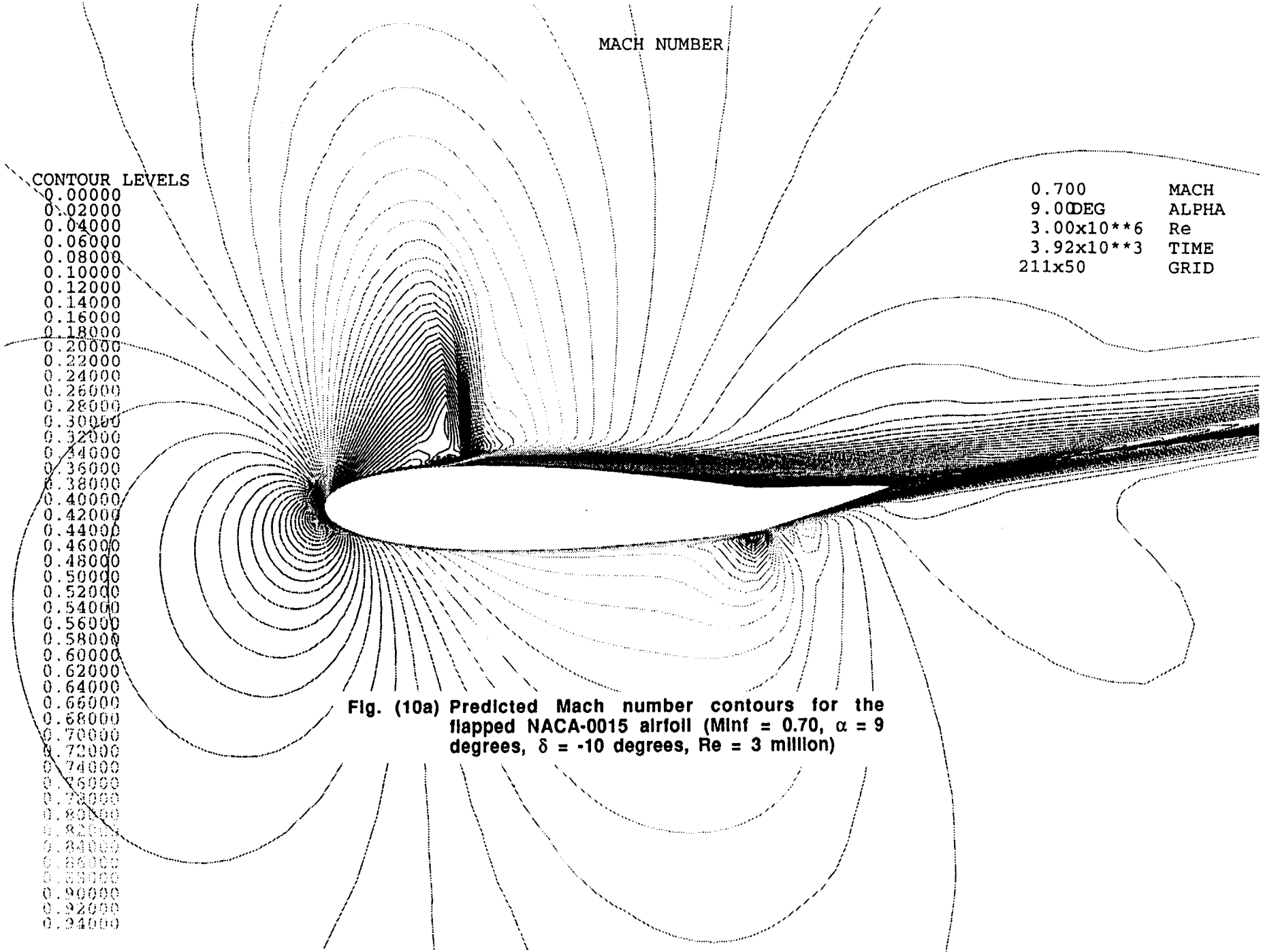


Fig. (10a) Predicted Mach number contours for the flapped NACA-0015 airfoil (Minf = 0.70, α = 9 degrees, δ = -10 degrees, Re = 3 million)

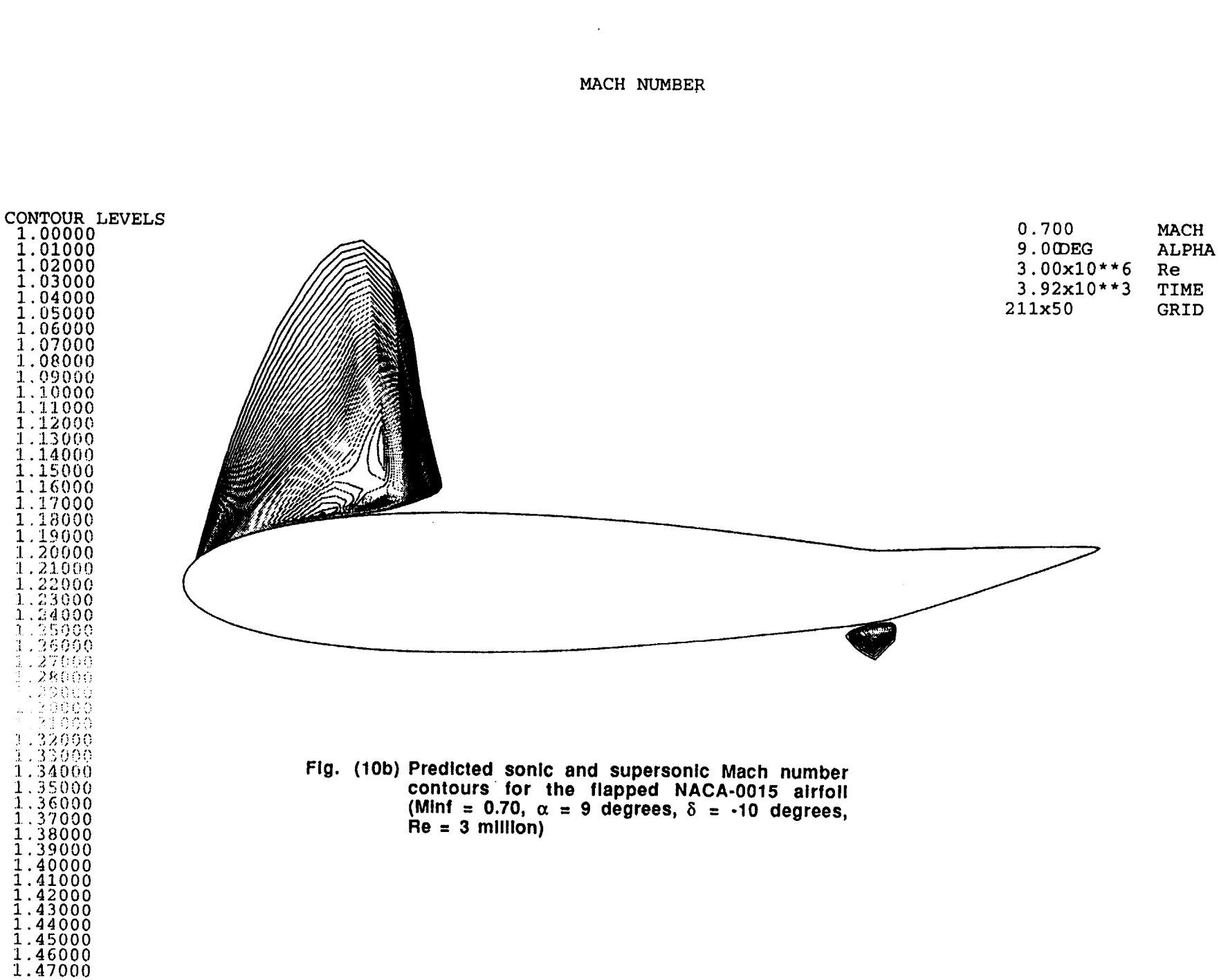


Fig. (10b) Predicted sonic and supersonic Mach number contours for the flapped NACA-0015 airfoil (Minf = 0.70, α = 9 degrees, δ = -10 degrees, Re = 3 million)

PARTICLE TRACES

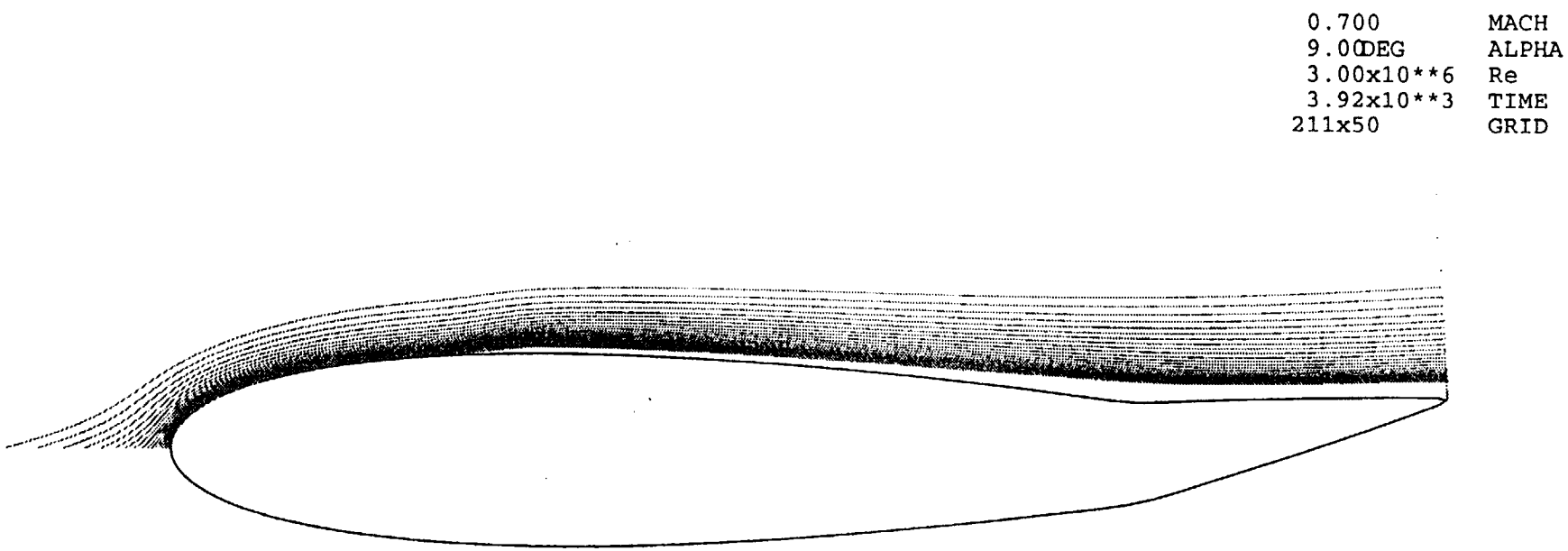


Fig. (10c) Predicted particle traces for the flapped NACA-0015 airfoil (Minf = 0.70, α = 9 degrees, δ = -10 degrees, Re = 3 million)

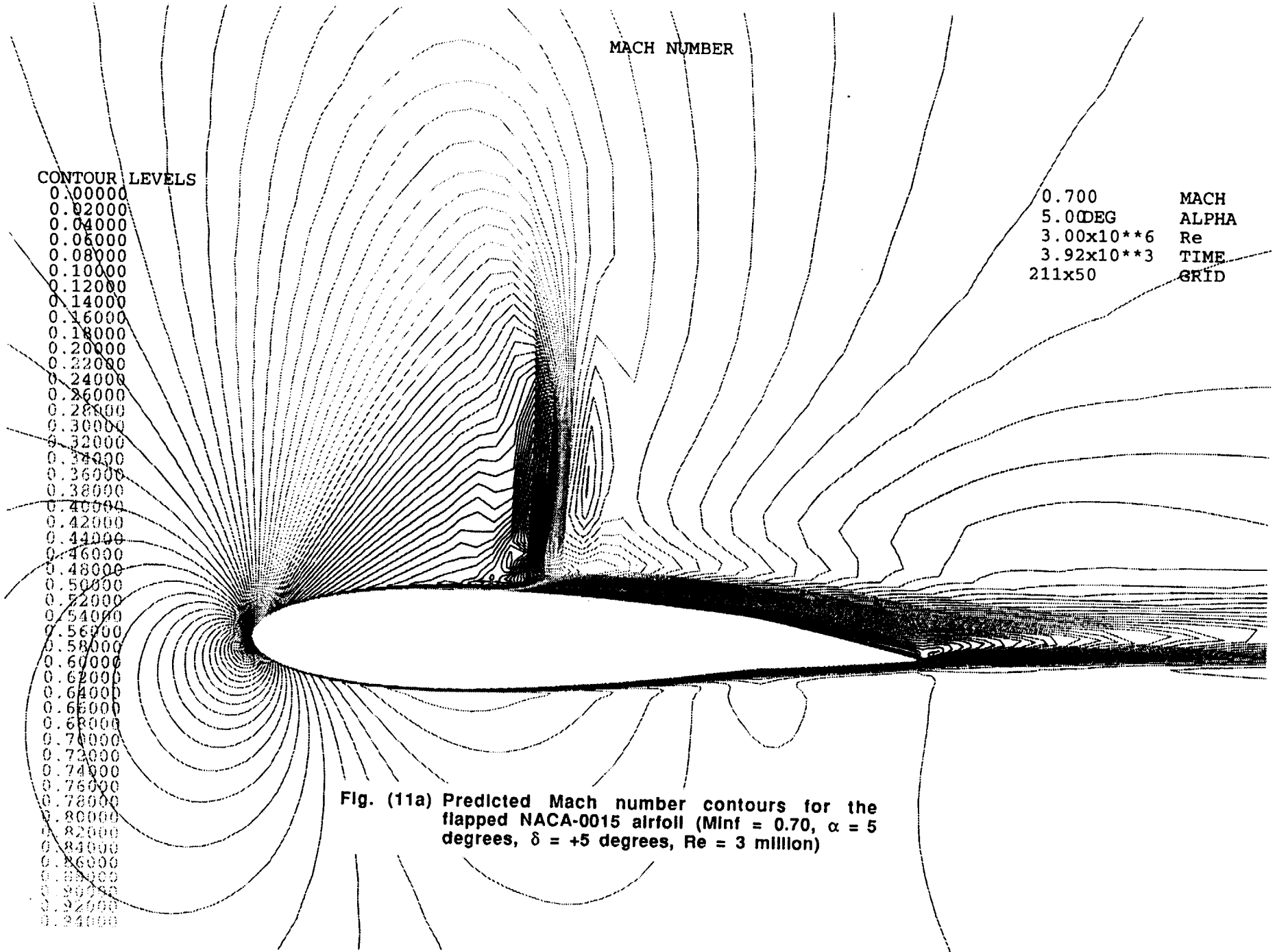
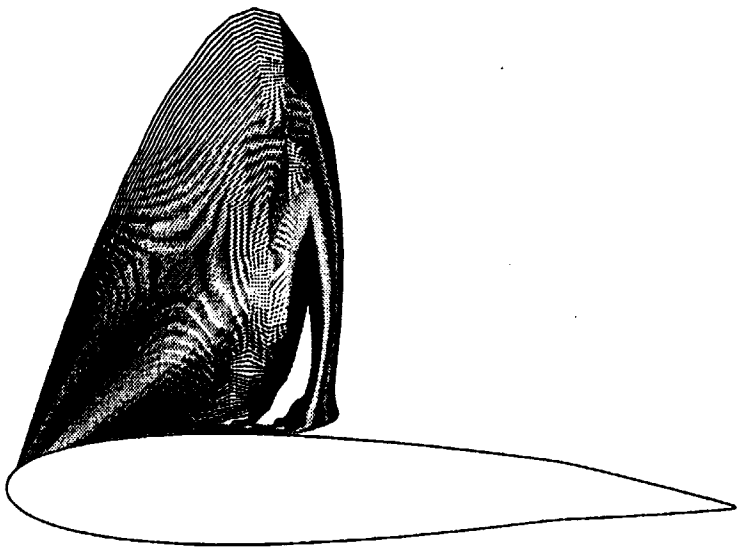


Fig. (11a) Predicted Mach number contours for the flapped NACA-0015 airfoil (Minf = 0.70, α = 5 degrees, δ = +5 degrees, Re = 3 million)

MACH NUMBER

CONTOUR LEVELS
1.00000
1.00500
1.01000
1.01500
1.02000
1.02500
1.03000
1.03500
1.04000
1.04500
1.05000
1.05500
1.06000
1.06500
1.07000
1.07500
1.08000
1.08500
1.09000
1.09500
1.10000
1.10500
1.11000
1.11500
1.12000
1.12500
1.13000
1.13500
1.14000
1.14500
1.15000
1.15500
1.16000
1.16500
1.17000
1.17500
1.18000
1.18500
1.19000
1.19500
1.20000
1.20500
1.21000
1.21500
1.22000
1.22500
1.23000
1.23500



0.700	MACH
5.00DEG	ALPHA
3.00x10**6	Re
3.92x10**3	TIME
211x50	GRID

Fig. (11b) Predicted sonic and supersonic Mach number contours for the flapped NACA-0015 airfoil (Minf = 0.70, α = 5 degrees, δ = +5 degrees, Re = 3 million)

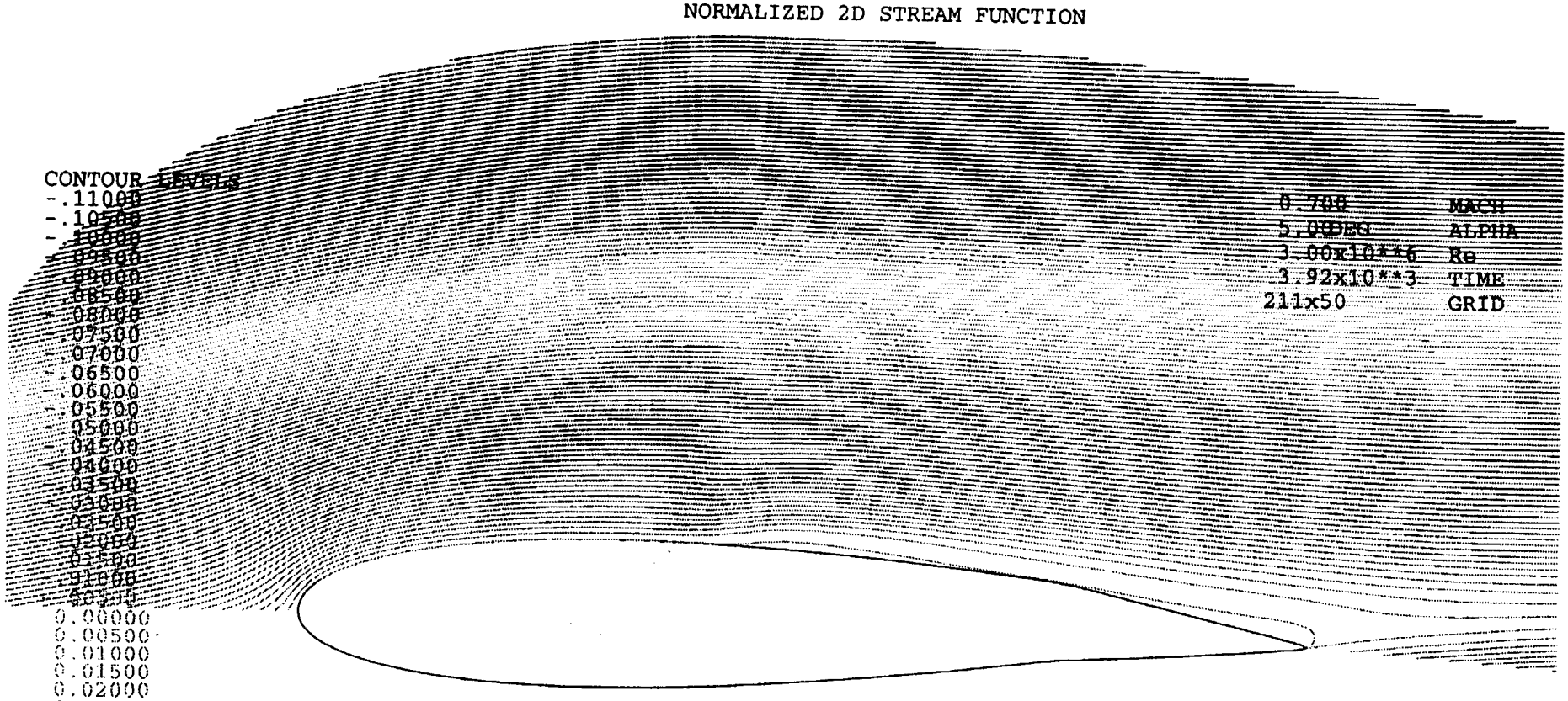


Fig. (11c) Predicted stream lines for the flapped NACA-0015 airfoil (Minf = 0.70, α = 5 degrees, δ = +5 degrees, Re = 3 million)

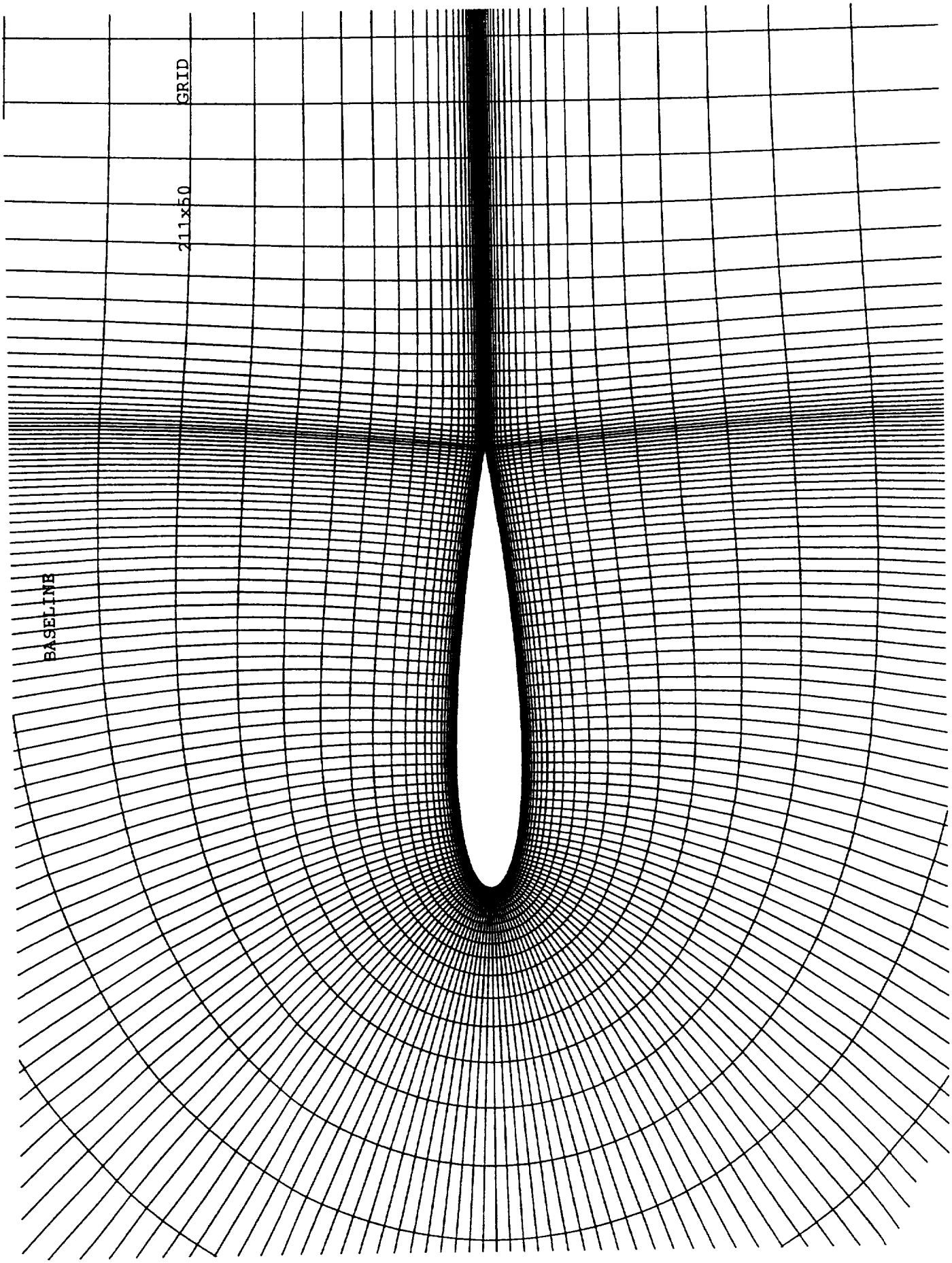
Appendix 1

Sample Output From "HYGRID"

```
body file was user input ftn66                                          with
 ******* clusterings ********
number of points for the interval x =     1.000000  to   x =     .000000
is    75 on the lower  surface
min spacing on ends are       .0075000       .0010000
number of points for the interval x =      .000000  to   x =    1.000000
is    75 on the upper  surface
min spacing on ends are       .0010000       .0075000
 distance to outer boundary =  6.0
 nwake =  31
 jmax   =  211
 jtail1 =  31
 jtail2 =  181
 kmax,normal wall spacing 50 1.000000000000000E-05
```

Appendix 2

Computational Grids


GRID
211x50
BASELINE

GRID
211x50
DELTA=-5 DEGS.

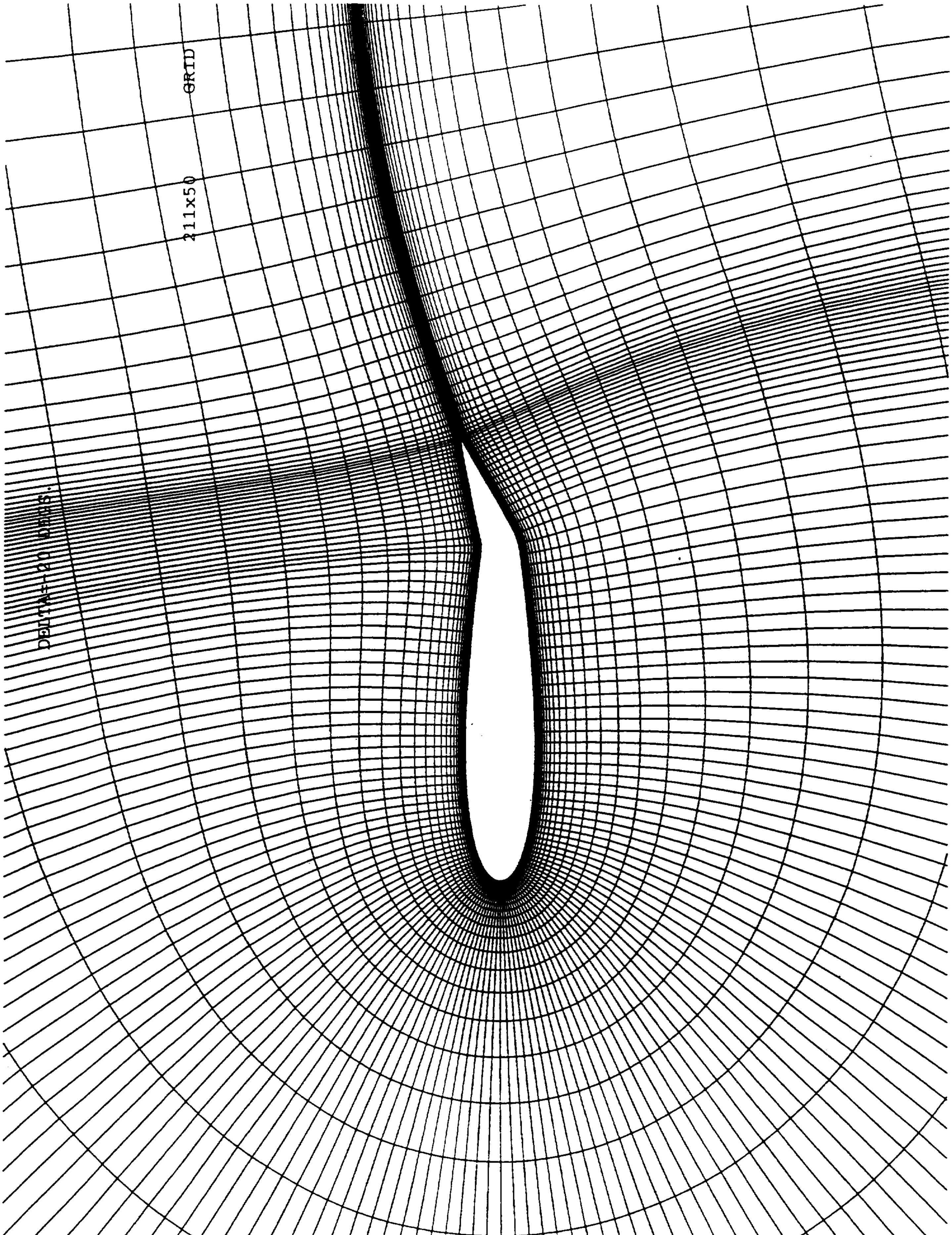
GRID
211x50
DELTA=+5 DEGS.

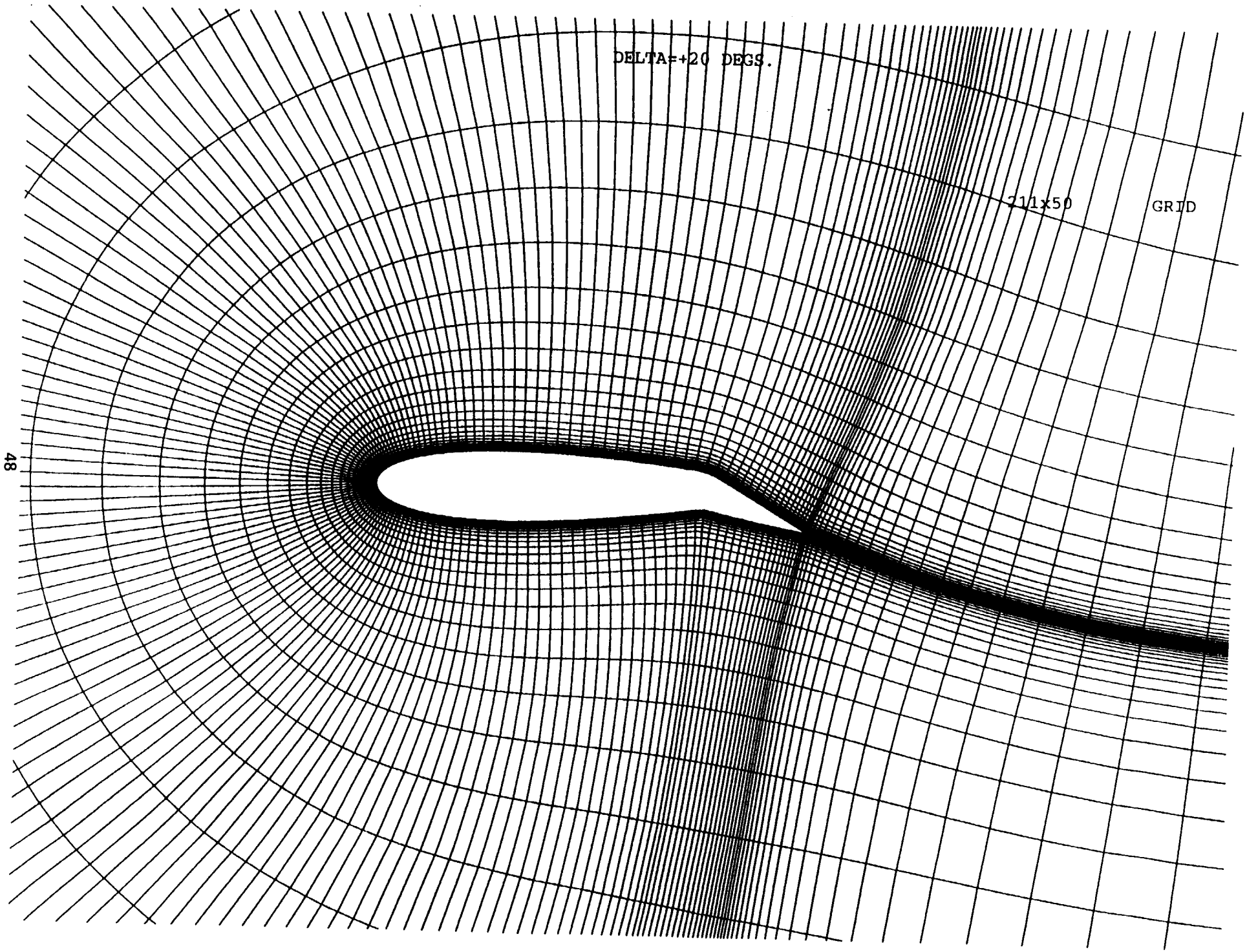
GRID
211x50
DELTA=-10 DEGS.

GRID
211x50
DELTA=+10 DEGS.

GRID
211X50
DELTA=-15 DEGS

GRID
211x50
DELTA=+15 DEGS


DELTA=-20 DEGS.
211x50
GRID


DELTA=+20 DEGS.
211x50
GRID

Appendix 3

Listing Of "ROTATE" Code

```
      PROGRAM ROTATE
      DIMENSION XU(100),YU(100),XL(100),YL(100)
      DIMENSION X1(100),Y1(100),X2(100),Y2(100)
C-------------------------------------------------------------------------------C
C                    IFLAG = 1    NACA-0015 Airfoil                             C
C-------------------------------------------------------------------------------C
      IFLAG = 1
C-------------------------------------------------------------------------------C
C                      FLAG FOR OUTPUT GEOMETRY FORMAT                          C
C               IOUT = 1 ====> OUTPUT FORMAT FOR HYGRID PROGRAM                 C
C               IOUT = 2 ====> OUTPUT FORMAT FOR FOILM PROGRAM                  C
C               IOUT = 3 ====> OUTPUT FORMAT FOR MAC PLOTTING                   C
C-------------------------------------------------------------------------------C
      WRITE (6,*) '  SELECT FLAG FOR OUTPUT FILE FORMAT:'
      WRITE (6,*) '      - FORMAT FOR HYGRID PROGRAM --> ENTER 1'
      WRITE (6,*) '      - FORMAT FOR FOILM  PROGRAM --> ENTER 2'
      WRITE (6,*) '      - FORMAT FOR MAC    PROGRAM --> ENTER 3'
      READ (5,*) IOUT

      NU = 51
      NL = 51

      XLIM  = 0.75
      XPIV  = 0.75

      PI    = 4.0 * ATAN(1.0)
C-------------------------------------------------------------------------------C
C     NOTE: NEGATIVE DELTAS IMPLY FLAP DOWN                                     C
C           POSITIVE DELTAS IMPLY FLAP UP                                       C
C-------------------------------------------------------------------------------C
      WRITE (6,*) '   ENTER THE ROTATION ANGLE IN DEGREES '
      WRITE (6,*) '       - FLAP UP DEFLECTIONS ARE POSITIVE'
      WRITE (6,*) '       - FLAP DOWN DEFLECTIONS ARE NEGATIVE'
      READ (5,*) DELTA
      DELTR = DELTA * PI/180.0
C-------------------------------------------------------------------------------C
C                       READ THE AIRFOIL COORDINATES                            C
C-------------------------------------------------------------------------------C
      IF (IFLAG.EQ.1) THEN
      OPEN (5,FILE='naca0015.in',STATUS='OLD')
      END IF

c      OPEN (6,FILE='foil.out',STATUS='UNKNOWN')
c      OPEN (7,FILE='foil.rot',STATUS='UNKNOWN')

      DO 10 I = 1 , NU
      READ (5,*) XU(I),YU(I)
      X1(I) = XU(I)
      Y1(I) = YU(I)
10    CONTINUE
      READ (5,1000)
      DO 20 I = 1 , NL
      READ (5,*) XL(I),YL(I)
      X2(I) = XL(I)
      Y2(I) = YL(I)
20    CONTINUE

C-------------------------------------------------------------------------------C
C          COMPUTE X,Y LOCATIONS OF FLAP PIVOT POINT (HINGE POINT)              C
C-------------------------------------------------------------------------------C
      CALL TAINT (XU,YU,XPIV,YPU,NU,1,NER,MON)
      CALL TAINT (XL,YL,XPIV,YPL,NL,1,NER,MON)
      YPIV = 0.5 * (YPU + YPL)

      WRITE (6,881) XPIV,YPIV
881   FORMAT (2X,'XPIV=',F8.5,10X,'YPIV=',F8.5,/)

C-------------------------------------------------------------------------------C
CAHMED          ROTATE THE AIRFOIL - UPPER SURFACE POINTS                       C
C-------------------------------------------------------------------------------C
      DO 60 I = 1 , NU
      IF (XU(I).GE.XLIM) THEN
      DX  = XU(I) - XPIV
      DY  = YU(I) - YPIV
      RAD = SQRT(DX*DX + DY*DY)
      IF (DX.EQ.0.) GO TO 57
      BETA = ATAN2(DY,DX)
      GO TO 58
   57 BETA = PI/2.0
      IF (DY.LT.0.) BETA = -BETA
58    CONTINUE

      X1(I) = XPIV + RAD * COS(BETA + DELTR)
      Y1(I) = YPIV + RAD * SIN(BETA + DELTR)
      BETAD = BETA * 180.0/PI

c      WRITE (6,300) I,DX,DY,BETAD,XU(I),YU(I),X1(I),Y1(I),RAD
c300   FORMAT(2X,'I=',I2,3X,'DX=',F8.4,3X,'DY=',F8.4,3X,'BETAD=',F8.3,
c     *          3X,'XU=',F8.5,3X,'YU=',F8.5,3x,'X1=',F8.5,3X,'Y1=',
c     *          F8.5,3x,'rad=',f8.4)
      END IF
60    CONTINUE
```

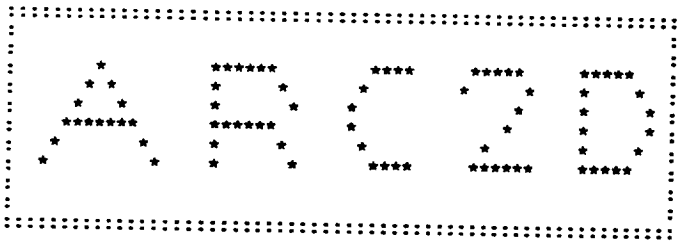
```
C-------------------------------------------------------------------------C
CAHMED          ROTATE THE AIRFOIL - LOWER SURFACE POINTS                 C
C-------------------------------------------------------------------------C
      WRITE (77,1000)
      DO 65 I = 1 , NL
      IF (XL(I).GE.XLIM) THEN
      DX  = XL(I) - XPIV
      DY  = YL(I) - YPIV
      RAD = SQRT(DX*DX + DY*DY)
      IF (DX.EQ.0.) GO TO 53
      BETA = ATAN2(DY,DX)
      GO TO 54
   53 BETA = PI/2.0
      IF (DY.LT.0.) BETA = -BETA
   54 X2(I) = XPIV + RAD * COS(BETA + DELTR)
      Y2(I) = YPIV + RAD * SIN(BETA + DELTR)
      BETAD = BETA * 180.0/PI

C     WRITE (6,301) I,DX,DY,BETAD,XL(I),YL(I),X2(I),Y2(I),RAD
C301  FORMAT(2X,'I=',I2,3X,'DX=',F8.4,3X,'DY=',F8.4,3X,'BETAD=',F8.3,
C    *       3X,'XL=',F8.5,3X,'YL=',F8.5,3x,'X2=',F8.5,3X,'Y2=',
C    *       F8.5,3x,'rad=',f8.4)
      END IF
65    CONTINUE

C-------------------------------------------------------------------------C
C                                                                         C
C-------------------------------------------------------------------------C
C                       HYGRID AND ARC2D GEOMETRY FORMAT                  C
C-------------------------------------------------------------------------C
      IF (IOUT.EQ.1) THEN
      DO 1 I = NL , 1 , -1
      WRITE (66,101) X2(I)/x2(nl),Y2(I)/x2(nl)
1     CONTINUE
      DO 2 I = 2 , NU
      WRITE (66,101) X1(I)/x1(nu),Y1(I)/x1(nu)
2     CONTINUE
      END IF
C-------------------------------------------------------------------------C
C                                                                         C
C-------------------------------------------------------------------------C
C                         MULT AND FOILM GEOMETRY FORMAT                  C
C-------------------------------------------------------------------------C
      IF (IOUT.EQ.2) THEN
      DO 222 I = 1 , NU
      WRITE (66,101) X1(I)/X1(NU),Y1(I)/X1(NU)
222   CONTINUE
      WRITE (66,1000)
      DO 111 I = 1 , NL
      WRITE (66,101) X2(I)/X2(NL),Y2(I)/X2(NL)
111   CONTINUE
      END IF
C-------------------------------------------------------------------------C
C                                                                         C
C-------------------------------------------------------------------------C
C                         MAC PLOTTING: XU,YU, XL,YL                      C
C-------------------------------------------------------------------------C
      IF (IOUT.EQ.3) THEN
      DO 223 I = 1 , NU
      WRITE (66,102) X1(I)/X1(NU),Y1(I)/X1(NU),
     *               X2(I)/X2(NL),Y2(I)/X2(NL)
223   CONTINUE
      END IF

      STOP 777
100   FORMAT (8(5X,F10.8))
105   FORMAT (2x,i3,3x,8(5x,f10.8))
101   FORMAT (2(5X,F10.8))
102   FORMAT (4(5X,F10.8))
1000  FORMAT (1X)
      STOP 999
      END

      SUBROUTINE TAINT (XTAB,FTAB,X,FX,N,K,NER,MON)
      REAL XTAB(201),FTAB(201),T(10),C(10)
C*********************************************************************
C     NASA - AMES ROUTINE FOR POLYNOMIAL INTERPOLATION
C     OF A TABULATED FUNCTION
C*********************************************************************
      IF(N-K) 1 , 1 , 2
    1 NER = 2
      RETURN
    2 IF(K-9) 3,3,1
    3 IF(MON) 4,4,5
    5 IF(MON-2) 6,7,4
    4 J = 0
      NM1 = N - 1
      DO 8 I = 1 , NM1
      IF(XTAB(I) - XTAB(I+1)) 9,11,10
   11 NER = 3
      RETURN
    9 J = J-1
      GO TO 8
   10 J = J+1
    8 CONTINUE
      MON = 1
      IF(J) 12 , 6 , 6
   12 MON = 2
    7 DO 13 I = 1 , N
      IF(X - XTAB(I)) 14,14,13
```

```
14 J = I
   GO TO 18
13 CONTINUE
   GO TO 15
 6 DO 16 I = 1 , N
   IF(X-XTAB(I)) 16,17,17
17 J = I
   GO TO 18
16 CONTINUE
15 J = N
18 J = J - (K+1) / 2
   IF(J) 19,19,20
19 J = 1
20 M = J + K
   IF(M - N) 21,21,22
22 J = J - 1
   GO TO 20
21 KP1 = K + 1
   DO 23 L = 1, KP1
   C(L) = X - XTAB(J)
   T(L) = FTAB(J)
23 J = J+1
   DO 24 J = 1,K
   I = J+1
25 T(I) = (C(J)*T(I)-C(I)*T(J))/(C(J)-C(I))
   I = I+1
   IF(I-KP1) 25,25,24
24 CONTINUE
   FX = T(KP1)
   NER = 1
   RETURN
   END
```

Appendix 4

Sample "ARC2D" Input, Output
NACA-0015 Airfoil
(Minf = 0.30, δ = +15 degs., α = 5 degs., Re = 3 million)

```
$INPUTS   FSMACH= .3,  ALPHA= 5.0,  RE= 3000000,  METH=3,
 JMAX= 211, KMAX= 50, JTAIL1= 31, JTAIL2= 181,
 TRANSLO= 0.0,   TRANSUP= 0.0,  RESTART=FALSE,
 DIS4X= 0.64, DIS4Y= 0.64, DIS2X= 0., DIS2Y= 0.,
 IPRINT=10, IREAD= 2, STORE= TRUE, ISPEC=1,
 BCAIRF= TRUE, CIRCUL= FALSE, PERIODIC= FALSE,
 VISCOUS= TRUE, TURBULNT= TRUE, VISXI= TRUE,
 NP= 100000, NPCP=100000, JACDT=1, ISAVE=10000 $
$FINFO   XLIM=0.75,  XHINGE=0.75,  IFLAG=1,
         FANG=15. $
ISEQUAL IF ISEQUAL GT 1, DTISEQ : II=1,ISEQUAL
3
JMXI,  KMXI,   IENDS,  DTISEQ,   DTMINS
211,     50,   350,     1.0,      0.0
211,     50,   500,     3.0,      0.0
211,     50,   750,     5.0,      0.0
```




```
 ARC2D : An implicit finite difference code for airfoils
  For further details see self documentation or contact
 Thomas H. Pulliam, MS 202A-1, NASA Ames Research Center
  Moffett Field, Ca., 94035,    Phone : 415 - 604 - 6417
    NOTE : NOTE : This code should not be distributed
    NOTE : NOTE : without the permission of  T. Pulliam.
    NOTE : NOTE : DO NOT distribute this code
    NOTE : NOTE : outside the United States !!!!
  Modified by Jeff Currier for the MDHC
```

```
            FLOW FIELD CONDITIONS

 FSMACH =  .3      ALPHA =  5.0
```

```
              VISCOUS PARAMETERS

   REYNOLDS NUMBER =  3000000.
   TINF            =  460.0
   TRANSLO =  .0  TRANSUP =  .0

   EXPLICIT VISCOUS TERMS IN XI USED
   EXPLICIT VISCOUS TERMS IN ETA USED

   BALDWIN-LOMAX TUBULENCE MODEL IS BEING USED
   UNMODIFIED MODEL

             IVIS =  2
    PENTA DIAG IN XI AND ETA : IMP. VIS. EIG. VAL.
```

```
            ALGORITHM PARAMETERS

 TIME ACCURACY ::

      THETADT =  1.0 PHIDT =  .0
      EULER IMPLICIT 1ST ORDER ACCURATE


 VARIABLE TIME STEP PAR  ::
                           JACDT =  1
                           DTRATE =  1.0
   <<<<<<  VARIABLE DT = 1./(1+SQRT(J)) >>>>>>>>>

 SLOW START TIME  ::       STRTIT =  12.0

      ** X-Y order of implicit integration **
```

```
              METHOD CHOICE

      PENTADIAGONAL ALGORITHM  METH = 3
```

```
EXPLICIT AND IMPLICIT 4-2 DISSIPATION ::
DISSIPATION COEFICIENTS ::
  DIS2X =  .0     DIS4X =  .6399999
  DIS2Y =  .0     DIS4Y =  .6399999

    FORM SPECTX AND SPECTY INDEPENDENTLY
        SPECTX = (ABS(UU) + CCX)/XYJ
        SPECTY = (ABS(VV) + CCY)/XYJ
```

```
                GRID SPECIFICATIONS

  UNFORMATTED GRID FILE IS BEING READ FROM UNIT 8

          THIS IS A NONPERIODIC GRID

          JMAX   =  211   KMAX   =  50
          JTAIL1 =  31    JTAIL2 =  181
```

```
              BOUNDARY CONDITION TYPE

          BOUNDARY CONDITIONS FOR AIRFOIL USED
```

```
                I/O SPECIFICATIONS

DATA SET WILL STORED ON UNIT 4 UPON COMPLETION

OUTPUT FREQUENCY PARAMETERS:
PRINTED Q DATA           :: NP      =  100000
PRINTED CONVERGENCE DATA :: IPRINT  =  10
STORED CP VRS TIME       :: NPCP    =  100000
STORED CONTOURS VRS TIME :: NPCONT  =  100000
STORED SOLUTION/RESTART  :: ISAVE   =  10000
MIN/MAX/INC FOR CONTOURS ::
                            CONMIN  =  .0
                            CONMAX  =  2.0
                            CONINC  =  5.00000E-02
```

```
              YOU ARE RUNNING ON A CRAY
```

```
RE scaled by freestream, reset to :       .100E+08
Enter ISEQUAL  the number of grid/time step sequences
Enter JMAX(i), KMAX(i), NumStep(i), DT(i), DTMIN(i)
```

```
                GRID AND TIME STEP SEQUENCING

GRID  1
    JMAX =  211   KMAX =  50
    JSKIP =  1 STEPS =  350
    DT =  1.0  DTMIN =  .0
GRID  2
    JMAX =  211   KMAX =  50
    JSKIP =  1 STEPS =  500
    DT =  3.0  DTMIN =  .0
GRID  3
    JMAX =  211   KMAX =  50
    JSKIP =  1 STEPS =  750
    DT =  5.0  DTMIN =  .0
```

```
          MESH REFINEMENT NUMBER   1

  GRID SIZES   211   50
```

```
 DT =  1.0  WITH DTMIN =  .0
 FOR   350  TIME STEPS
-----------------------------------------------------
   CPU TIME AFTER GRID REFINEMENT =  .0
-----------------------------------------------------

-----------------------------------------------------
   SCALE FOR ITERATION COUNT =  1.0
-----------------------------------------------------

-----------------------------------------------------
 max CFL =  279.9838 at j,k =  2   2
 dt used =  3.10827E-03
-----------------------------------------------------
```

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
10	.229E-04	0	1.76264	1.13269	-.73734	.98176	.43489	-.12865	.148E-03	166	26
20	.347E-04	0	1.70595	.98601	-.69343	.87144	.37739	-.11232	.258E-03	163	37
30	.384E-04	0	1.47370	.68391	-.51740	.53465	.23144	-.05081	.219E-03	197	41
40	.459E-04	0	1.23031	.33778	-.29988	.16540	.06017	.01160	.324E-03	207	47
50	.486E-04	0	1.01264	.02601	-.10358	-.11796	-.07044	.03902	.287E-03	201	44
60	.553E-04	0	.74244	-.19880	.07302	-.25660	-.11457	.03675	.393E-03	207	48
70	.597E-04	0	.43639	-.27904	.17522	-.17821	-.06611	.01470	.399E-03	209	48
80	.543E-04	0	.19870	-.19776	.13682	.04009	.01203	-.00936	.339E-03	209	48
90	.553E-04	0	.06955	-.03704	-.00733	.21177	.06467	-.01995	.377E-03	93	47
100	.538E-04	0	.11855	.10460	-.16154	.23926	.08691	-.01906	.495E-03	209	48

```
++++++++++++++++++++++++++++++++++++++++++++++++++++
 CONVERGENCE RATE AT N =  100  IS  1.001
++++++++++++++++++++++++++++++++++++++++++++++++++++

-----------------------------------------------------
 max CFL =  280.3146 at j,k =  210   2
 dt used =  3.10827E-03
-----------------------------------------------------
```

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
110	.380E-04	0	.41135	.20251	-.25563	.18136	.08717	-.01505	.400E-03	209	48
120	.281E-04	0	.89979	.27965	-.30231	.17003	.08154	-.01517	.237E-03	210	49
130	.302E-04	0	1.39394	.32819	-.32340	.23982	.08629	-.02129	.189E-03	210	45
140	.344E-04	0	1.71870	.31679	-.29875	.29379	.09040	-.02706	.301E-03	3	48
150	.303E-04	0	1.81069	.23788	-.24435	.27044	.07332	-.02476	.344E-03	3	48
160	.224E-04	0	1.63097	.12022	-.19798	.21003	.04249	-.01658	.294E-03	2	49
170	.199E-04	0	1.22593	-.00039	-.15833	.15043	.02043	-.00985	.182E-03	2	49
180	.228E-04	0	.78570	-.09511	-.10647	.09398	.01572	-.00581	.154E-03	9	46
190	.221E-04	0	.51053	-.12648	-.04980	.04951	.02220	-.00187	.240E-03	3	48
200	.172E-04	0	.47923	-.06481	-.01876	.03728	.03418	.00106	.198E-03	3	49

```
++++++++++++++++++++++++++++++++++++++++++++++++++++
 CONVERGENCE RATE AT N =  200  IS  .9886639
++++++++++++++++++++++++++++++++++++++++++++++++++++

-----------------------------------------------------
 max CFL =  279.3541 at j,k =  210   2
 dt used =  3.10827E-03
-----------------------------------------------------
```

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
210	.137E-04	0	.64895	.07782	-.04097	.07135	.05247	-.00106	.133E-03	2	49
220	.142E-04	0	.92822	.23505	-.12035	.14710	.07611	-.01002	.894E-04	2	44
230	.153E-04	0	1.23453	.32400	-.22976	.24020	.09747	-.02228	.852E-04	7	48
240	.143E-04	0	1.50194	.30462	-.31938	.31177	.10619	-.03100	.107E-03	3	48
250	.129E-04	0	1.68201	.19821	-.34087	.32158	.09437	-.03094	.981E-04	2	49
260	.135E-04	0	1.74490	.06364	-.28404	.25835	.06382	-.02211	.923E-04	2	49
270	.129E-04	0	1.67174	-.03477	-.18743	.15803	.02935	-.00984	.115E-03	209	48
280	.110E-04	0	1.46042	-.05961	-.10238	.08082	.01088	-.00133	.893E-04	209	49
290	.127E-04	0	1.15436	-.02143	-.05452	.06113	.01691	-.00050	.700E-04	210	45
300	.156E-04	0	.86110	.03704	-.04233	.08379	.03685	-.00503	.994E-04	209	48

```
++++++++++++++++++++++++++++++++++++++++++++++++++++
 CONVERGENCE RATE AT N =  300  IS  .9990499
++++++++++++++++++++++++++++++++++++++++++++++++++++

-----------------------------------------------------
|                                                   |
```

```
 max CFL =  279.0767 at j,k =  210   2
 dt used =  3.10827E-03
```

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
310	.151E-04	0	.70968	.08034	-.05681	.11280	.05339	-.00916	.143E-03	3	4
320	.119E-04	0	.77098	.10103	-.09141	.13143	.05958	-.00988	.153E-03	3	4
330	.109E-04	0	1.01605	.11048	-.14016	.14921	.06121	-.00968	.110E-03	2	4
340	.137E-04	0	1.34109	.11904	-.19501	.18016	.06576	-.01266	.735E-04	10	4
350	.150E-04	0	1.62612	.12540	-.24346	.22352	.07389	-.01901	.131E-03	3	4

```
 MESH REFINEMENT NUMBER   2

 GRID SIZES   211   50

 DT =  3.0  WITH DTMIN =  .0

 FOR   500  TIME STEPS

   CPU TIME AFTER GRID REFINEMENT =  .0

   SCALE FOR ITERATION COUNT =  1.0

 max CFL =  837.6842 at j,k =  2   2
 dt used =  9.32482E-03
```

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
360	.793E-05	0	1.63827	.06071	-.20156	.21187	.06176	-.01804	.864E-04	2	45
370	.738E-05	0	1.01927	-.00920	-.03838	.05267	.02138	.00102	.912E-04	3	48
380	.490E-05	0	1.13478	.07325	-.13139	.15838	.05863	-.01272	.502E-04	2	45
390	.430E-05	0	1.60078	.10016	-.22669	.22373	.07319	-.01911	.388E-04	2	46
400	.327E-05	0	1.44755	.03643	-.13163	.13787	.04505	-.00893	.365E-04	2	44

```
 max CFL =  838.2871 at j,k =  2   2
 dt used =  9.32482E-03
```

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
410	.315E-05	0	1.12265	.01811	-.08405	.10838	.03877	-.00620	.372E-04	210	49
420	.286E-05	0	1.30862	.05872	-.15208	.16490	.05787	-.01283	.276E-04	209	2
430	.222E-05	0	1.51113	.07806	-.17953	.18469	.06209	-.01465	.213E-04	210	49
440	.235E-05	0	1.34439	.03270	-.11908	.13031	.04274	-.00820	.174E-04	208	46
450	.140E-05	0	1.23659	.02313	-.10748	.12623	.04396	-.00826	.171E-04	210	45

```
++++++++++++++++++++++++++++++++++++++++++++++++++
 CONVERGENCE RATE AT N =  450  IS  .9915241
++++++++++++++++++++++++++++++++++++++++++++++++++
```

460	.163E-05	0	1.36053	.05886	-.15237	.16508	.05762	-.01270	.149E-04	209	47
470	.109E-05	0	1.41974	.05665	-.14732	.15497	.05179	-.01112	.108E-04	207	46
480	.115E-05	0	1.32696	.02909	-.11768	.13230	.04372	-.00872	.108E-04	209	47
490	.850E-06	0	1.29291	.03245	-.12278	.13878	.04775	-.00962	.834E-05	207	46
500	.785E-06	0	1.35616	.05148	-.13912	.15087	.05192	-.01089	.745E-05	210	49

```
 max CFL =  837.7537 at j,k =  210   2
 dt used =  9.32482E-03
```

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
510	.662E-06	0	1.37179	.04466	-.13354	.14531	.04832	-.01015	.666E-05	209	48
520	.576E-06	0	1.32500	.03045	-.12134	.13558	.04503	-.00910	.534E-05	210	49
530	.479E-06	0	1.31268	.03721	-.12450	.13888	.04737	-.00954	.478E-05	208	46
540	.407E-06	0	1.34381	.04538	-.13151	.14417	.04878	-.01006	.486E-05	210	45
550	.349E-06	0	1.35005	.03887	-.12829	.14096	.04667	-.00962	.359E-05	209	48

```
++++++++++++++++++++++++++++++++++++++++++++++++++
 CONVERGENCE RATE AT N =  550  IS  .9862235
++++++++++++++++++++++++++++++++++++++++++++++++++
```

560	.326E-06	0	1.32399	.03368	-.12252	.13633	.04539	-.00912	.244E-05	210	49
570	.227E-06	0	1.31888	.03847	-.12402	.13780	.04644	-.00928	.204E-05	208	46
580	.255E-06	0	1.33845	.04130	-.12814	.14113	.04711	-.00963	.207E-05	210	45
590	.162E-06	0	1.34036	.03764	-.12659	.13956	.04615	-.00942	.183E-05	2	45
600	.192E-06	0	1.32493	.03610	-.12319	.13679	.04552	-.00911	.150E-05	210	49

max CFL = 837.8007 at j,k = 210 2
dt used = 9.32482E-03

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
610	.121E-06	0	1.32560	.03874	-.12484	.13843	.04623	-.00930	.111E-05	2	45
620	.152E-06	0	1.33841	.03966	-.12745	.14041	.04658	-.00950	.127E-05	3	48
630	.872E-07	0	1.33725	.03777	-.12579	.13873	.04586	-.00927	.122E-05	2	45
640	.101E-06	0	1.32859	.03706	-.12388	.13719	.04548	-.00909	.968E-06	210	49
650	.830E-07	0	1.33176	.03831	-.12533	.13844	.04590	-.00922	.870E-06	6	2

CONVERGENCE RATE AT N = 650 IS .9857484

660	.792E-07	0	1.33890	.03861	-.12641	.13911	.04594	-.00926	.700E-06	210	44
670	.531E-07	0	1.33660	.03741	-.12497	.13773	.04540	-.00907	.489E-06	210	38
680	.469E-07	0	1.33278	.03702	-.12425	.13719	.04526	-.00900	.615E-06	2	46
690	.522E-07	0	1.33619	.03777	-.12534	.13808	.04553	-.00908	.578E-06	2	45
700	.406E-07	0	1.33969	.03781	-.12563	.13816	.04545	-.00906	.445E-06	210	38

max CFL = 837.7634 at j,k = 2 2
dt used = 9.32482E-03

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
710	.351E-07	0	1.33801	.03703	-.12478	.13739	.04514	-.00895	.439E-06	210	38
720	.309E-07	0	1.33700	.03693	-.12471	.13736	.04514	-.00893	.461E-06	210	38
730	.371E-07	0	1.33959	.03742	-.12536	.13787	.04529	-.00897	.476E-06	193	34
740	.261E-07	0	1.34135	.03732	-.12542	.13784	.04521	-.00894	.359E-06	193	34
750	.226E-07	0	1.34073	.03688	-.12508	.13756	.04508	-.00889	.342E-06	210	38

CONVERGENCE RATE AT N = 750 IS .987065

760	.247E-07	0	1.34099	.03696	-.12524	.13772	.04515	-.00890	.374E-06	210	39
770	.264E-07	0	1.34291	.03723	-.12565	.13806	.04523	-.00892	.335E-06	210	39
780	.207E-07	0	1.34414	.03710	-.12572	.13811	.04520	-.00891	.307E-06	210	39
790	.184E-07	0	1.34428	.03690	-.12566	.13809	.04518	-.00890	.298E-06	210	39
800	.209E-07	0	1.34503	.03701	-.12586	.13829	.04525	-.00891	.278E-06	210	38

max CFL = 837.7596 at j,k = 210 2
dt used = 9.32482E-03

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
810	.223E-07	0	1.34655	.03713	-.12615	.13855	.04532	-.00893	.253E-06	210	39
820	.192E-07	0	1.34762	.03703	-.12626	.13867	.04533	-.00893	.226E-06	210	39
830	.181E-07	0	1.34815	.03696	-.12633	.13876	.04536	-.00893	.222E-06	206	2
840	.196E-07	0	1.34908	.03703	-.12654	.13899	.04543	-.00895	.211E-06	5	2
850	.200E-07	0	1.35041	.03709	-.12679	.13924	.04550	-.00897	.182E-06	207	2

CONVERGENCE RATE AT N = 850 IS .9987747

MESH REFINEMENT NUMBER 3

GRID SIZES 211 50

DT = 5.0 WITH DTMIN = .0

FOR 750 TIME STEPS

CPU TIME AFTER GRID REFINEMENT = .0

SCALE FOR ITERATION COUNT = 1.0

max CFL = 1396.252 at j,k = 2 2
dt used = 1.55414E-02

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
860	.229E-07	0	1.35175	.03698	-.12693	.13941	.04554	-.00898	.253E-06	192	3
870	.249E-07	0	1.35328	.03702	-.12723	.13975	.04564	-.00901	.296E-06	193	3
880	.313E-07	0	1.35488	.03700	-.12748	.14002	.04573	-.00903	.691E-06	191	2
890	.272E-07	0	1.35620	.03700	-.12770	.14028	.04582	-.00905	.399E-06	194	3
900	.246E-07	0	1.35770	.03701	-.12796	.14057	.04591	-.00908	.359E-06	194	3

max CFL = 1396.231 at j,k = 210 2
dt used = 1.55414E-02

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
910	.221E-07	0	1.35900	.03700	-.12817	.14082	.04600	-.00910	.323E-06	192	3
920	.208E-07	0	1.36031	.03700	-.12839	.14107	.04608	-.00912	.280E-06	194	3
930	.197E-07	0	1.36151	.03697	-.12856	.14128	.04614	-.00914	.251E-06	194	3
940	.186E-07	0	1.36262	.03695	-.12873	.14148	.04621	-.00916	.227E-06	5	2
950	.169E-07	0	1.36373	.03694	-.12892	.14170	.04628	-.00918	.198E-06	192	3

CONVERGENCE RATE AT N = 950 IS .9962365

960	.161E-07	0	1.36477	.03693	-.12909	.14191	.04635	-.00920	.199E-06	192	33
970	.159E-07	0	1.36576	.03692	-.12925	.14210	.04641	-.00921	.204E-06	192	33
980	.153E-07	0	1.36666	.03690	-.12938	.14225	.04646	-.00923	.201E-06	192	33
990	.147E-07	0	1.36751	.03688	-.12951	.14241	.04652	-.00924	.186E-06	7	2
1000	.136E-07	0	1.36834	.03687	-.12964	.14257	.04657	-.00926	.184E-06	4	2

max CFL = 1396.197 at j,k = 2 2
dt used = 1.55414E-02

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
1010	.129E-07	0	1.36913	.03687	-.12977	.14272	.04662	-.00927	.168E-06	3	2
1020	.122E-07	0	1.36987	.03686	-.12989	.14286	.04667	-.00928	.160E-06	192	33
1030	.119E-07	0	1.37057	.03685	-.12999	.14298	.04671	-.00929	.154E-06	192	33
1040	.113E-07	0	1.37122	.03683	-.13009	.14310	.04675	-.00930	.145E-06	11	2
1050	.111E-07	0	1.37185	.03682	-.13018	.14322	.04679	-.00931	.148E-06	2	49

CONVERGENCE RATE AT N = 1050 IS .9957904

1060	.104E-07	0	1.37244	.03682	-.13028	.14333	.04683	-.00932	.129E-06	3	2
1070	.961E-08	0	1.37302	.03681	-.13037	.14344	.04687	-.00933	.162E-06	2	49
1080	.959E-08	0	1.37357	.03681	-.13046	.14355	.04690	-.00934	.122E-06	208	49
1090	.935E-08	0	1.37409	.03680	-.13054	.14365	.04693	-.00935	.124E-06	208	49
1100	.949E-08	0	1.37458	.03679	-.13061	.14373	.04696	-.00936	.213E-06	2	49

max CFL = 1396.177 at j,k = 2 2
dt used = 1.55414E-02

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
1110	.911E-08	0	1.37504	.03678	-.13068	.14381	.04699	-.00936	.141E-06	210	49
1120	.863E-08	0	1.37547	.03677	-.13075	.14389	.04702	-.00937	.148E-06	3	49
1130	.784E-08	0	1.37589	.03677	-.13081	.14396	.04704	-.00938	.925E-07	192	33
1140	.763E-08	0	1.37627	.03676	-.13086	.14403	.04706	-.00938	.133E-06	7	49
1150	.312E-07	0	1.37690	.03688	-.13111	.14436	.04722	-.00945	.832E-06	184	23

CONVERGENCE RATE AT N = 1150 IS 1.01043

1160	.255E-07	0	1.37796	.03703	-.13151	.14483	.04736	-.00951	.824E-06	28	2
1170	.270E-07	0	1.37926	.03726	-.13201	.14548	.04760	-.00960	.733E-06	27	2

1180	.554E-07	0	1.38124	.03764	-.13279	.14640	.04797	-.00974	.141E-05	186	23
1190	.736E-07	0	1.38359	.03800	-.13356	.14728	.04831	-.00985	.178E-05	27	2
1200	.909E-07	0	1.38620	.03838	-.13439	.14827	.04872	-.00998	.195E-05	26	2

max CFL = 1396.172 at j,k = 210 2
dt used = 1.55414E-02

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
1210	.903E-07	0	1.38901	.03868	-.13512	.14908	.04905	-.01007	.162E-05	25	2
1220	.845E-07	0	1.39138	.03873	-.13549	.14946	.04922	-.01009	.121E-05	190	31
1230	.753E-07	0	1.39320	.03862	-.13559	.14954	.04926	-.01007	.111E-05	190	31
1240	.640E-07	0	1.39475	.03848	-.13567	.14965	.04932	-.01008	.101E-05	187	31
1250	.545E-07	0	1.39625	.03840	-.13585	.14992	.04943	-.01011	.817E-06	5	2

CONVERGENCE RATE AT N = 1250 IS 1.00559

1260	.517E-07	0	1.39765	.03835	-.13605	.15018	.04954	-.01013	.697E-06	191	32
1270	.501E-07	0	1.39879	.03827	-.13616	.15032	.04959	-.01014	.678E-06	210	43
1280	.427E-07	0	1.39967	.03818	-.13622	.15039	.04961	-.01014	.647E-06	13	2
1290	.367E-07	0	1.40044	.03812	-.13629	.15048	.04964	-.01015	.708E-06	11	2
1300	.319E-07	0	1.40111	.03806	-.13636	.15057	.04967	-.01016	.562E-06	9	2

max CFL = 1396.112 at j,k = 2 2
dt used = 1.55414E-02

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
1310	.257E-07	0	1.40171	.03802	-.13642	.15065	.04970	-.01016	.524E-06	3	2
1320	.215E-07	0	1.40222	.03797	-.13646	.15072	.04971	-.01017	.400E-06	202	2
1330	.179E-07	0	1.40269	.03794	-.13651	.15078	.04973	-.01017	.291E-06	8	2
1340	.145E-07	0	1.40312	.03791	-.13657	.15085	.04975	-.01018	.351E-06	11	2
1350	.132E-07	0	1.40352	.03789	-.13662	.15092	.04977	-.01018	.329E-06	202	2

CONVERGENCE RATE AT N = 1350 IS .9858995

1360	.124E-07	0	1.40390	.03788	-.13667	.15098	.04979	-.01019	.267E-06	204	2
1370	.108E-07	0	1.40425	.03787	-.13672	.15104	.04981	-.01019	.193E-06	207	2
1380	.963E-08	0	1.40460	.03786	-.13677	.15110	.04983	-.01019	.167E-06	208	2
1390	.895E-08	0	1.40494	.03785	-.13682	.15116	.04985	-.01020	.155E-06	11	2
1400	.826E-08	0	1.40527	.03785	-.13686	.15122	.04987	-.01020	.145E-06	10	2

max CFL = 1396.088 at j,k = 2 2
dt used = 1.55414E-02

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
1410	.777E-08	0	1.40559	.03784	-.13691	.15128	.04989	-.01021	.131E-06	204	2
1420	.789E-08	0	1.40589	.03783	-.13696	.15133	.04990	-.01021	.142E-06	209	49
1430	.733E-08	0	1.40619	.03783	-.13700	.15138	.04992	-.01021	.111E-06	207	2
1440	.674E-08	0	1.40647	.03782	-.13704	.15142	.04993	-.01022	.110E-06	209	49
1450	.667E-08	0	1.40673	.03781	-.13708	.15147	.04995	-.01022	.145E-06	210	49

CONVERGENCE RATE AT N = 1450 IS .9932072

1460	.614E-08	0	1.40698	.03781	-.13711	.15151	.04996	-.01022	.897E-07	210	49
1470	.591E-08	0	1.40722	.03780	-.13714	.15155	.04997	-.01022	.682E-07	208	49
1480	.577E-08	0	1.40743	.03779	-.13717	.15158	.04998	-.01023	.900E-07	5	49
1490	.607E-08	0	1.40764	.03778	-.13720	.15161	.04999	-.01023	.135E-06	2	48
1500	.553E-08	0	1.40783	.03778	-.13722	.15164	.05000	-.01023	.975E-07	208	49

max CFL = 1396.079 at j,k = 210 2
dt used = 1.55414E-02

0 N	RESIDUAL	S-S PTS	CL	CD	CM	CLF	CDF	CMF	MAX RESID AT	J	K
1510	.567E-08	0	1.40801	.03777	-.13725	.15167	.05001	-.01023	.143E-06	209	49
1520	.499E-08	0	1.40818	.03776	-.13727	.15170	.05002	-.01023	.612E-07	6	49
1530	.503E-08	0	1.40834	.03776	-.13729	.15172	.05002	-.01024	.695E-07	6	49
1540	.515E-08	0	1.40849	.03775	-.13731	.15175	.05003	-.01024	.729E-07	207	49

1550	.516E-08	0	1.40863	.03775	-.13733	.15177	.05004	-.01024	.137E-06	6

CONVERGENCE RATE AT N = 1550 IS .9974426

1560	.485E-08	0	1.40876	.03775	-.13735	.15179	.05005	-.01024	.836E-07	2
1570	.492E-08	0	1.40889	.03774	-.13737	.15181	.05005	-.01024	.847E-07	209
1580	.468E-08	0	1.40900	.03774	-.13738	.15183	.05006	-.01024	.739E-07	210
1590	.530E-08	0	1.40910	.03773	-.13739	.15185	.05006	-.01024	.195E-06	210
1600	.475E-08	0	1.40921	.03773	-.13741	.15186	.05007	-.01024	.135E-06	5

COEFficient of pressure

31	1.0000000	.1976698
32	.9930729	.0225722
33	.9850137	.1595531
34	.9762082	.1144295
35	.9666984	.1687549
36	.9564199	.1663821
37	.9453421	.1936772
38	.9334201	.2016548
39	.9206188	.2223480
40	.9069042	.2366361
41	.8922454	.2571344
42	.8766187	.2782969
43	.8600070	.3005058
44	.8423987	.3302305
45	.8237941	.3598284
46	.8041884	.3925751
47	.7836373	.4765949
48	.7620977	.5205188
49	.7395216	.4705587
50	.7162625	.4155749
51	.6921651	.3788811
52	.6673404	.3391788
53	.6418810	.3109129
54	.6158789	.2863236
55	.5894457	.2661092
56	.5626972	.2486024
57	.5357551	.2340002
58	.5087454	.2212392
59	.4817948	.2107866
60	.4550291	.2025214
61	.4285712	.1964115
62	.4025388	.1921010
63	.3770421	.1901899
64	.3521819	.1905778
65	.3280495	.1932818
66	.3047241	.1987540
67	.2822732	.2066578
68	.2607519	.2172277
69	.2402028	.2305753
70	.2206565	.2467764
71	.2021326	.2664876
72	.1846395	.2891960
73	.1681751	.3145422
74	.1527298	.3428932
75	.1382864	.3745063
76	.1248212	.4093344
77	.1123040	.4466507
78	.1007013	.4867579
79	.0899777	.5301293
80	.0800938	.5757127
81	.0710071	.6230747
82	.0626777	.6721492
83	.0550648	.7226353
84	.0481294	.7738953
85	.0418311	.8249471
86	.0361316	.8742657
87	.0309914	.9204015
88	.0263783	.9615760
89	.0222581	.9951571
90	.0186007	1.0182440
91	.0153761	1.0270920
92	.0125537	1.0180302
93	.0101089	.9867784
94	.0080119	.9299932
95	.0062356	.8447264
96	.0047548	.7298673
97	.0035399	.5869638
98	.0025609	.4192306
99	.0017891	.2315082
100	.0011962	.0303605
101	.0007552	-.1762679
102	.0004397	-.3811764
103	.0002251	-.5815095
104	.0000911	-.7751365
105	.0000208	-.9605599
106	.0000000	-1.1376113
107	.0000208	-1.3068818
108	.0000912	-1.4887952
109	.0002255	-1.6933175
110	.0004408	-1.9132767

111	.0007578	-2.1464539
112	.0012013	-2.3823452
113	.0017983	-2.6085486
114	.0025762	-2.8182993
115	.0035640	-3.0056195
116	.0047909	-3.1599729
117	.0062877	-3.2708972
118	.0080845	-3.3360431
119	.0102071	-3.3622341
120	.0126837	-3.3532281
121	.0155445	-3.3109827
122	.0188150	-3.2460959
123	.0225270	-3.1638274
124	.0267111	-3.0672112
125	.0313989	-2.9637592
126	.0366252	-2.8573716
127	.0424241	-2.7528203
128	.0488364	-2.6498480
129	.0559019	-2.5463214
130	.0636625	-2.4437711
131	.0721588	-2.3442833
132	.0814332	-2.2499397
133	.0915277	-2.1616180
134	.1024867	-2.0759907
135	.1143510	-1.9910361
136	.1271574	-1.9103333
137	.1409415	-1.8336240
138	.1557347	-1.7584276
139	.1715616	-1.6852927
140	.1884401	-1.6152563
141	.2063808	-1.5486089
142	.2253858	-1.4835045
143	.2454458	-1.4194115
144	.2665406	-1.3578078
145	.2886381	-1.2984681
146	.3116934	-1.2417207
147	.3356489	-1.1872449
148	.3604338	-1.1349101
149	.3859650	-1.0852556
150	.4121469	-1.0378520
151	.4388741	-.9932848
152	.4660311	-.9524528
153	.4934950	-.9143247
154	.5211375	-.8796726
155	.5488279	-.8488069
156	.5764338	-.8234314
157	.6038248	-.8019454
158	.6308747	-.7892146
159	.6574623	-.7810572
160	.6834794	-.7922194
161	.7088125	-.8178418
162	.7334155	-.8909938
163	.7570487	-.9686529
164	.7792703	-.8885443
165	.7997717	-.6502506
166	.8191265	-.4437802
167	.8375918	-.3385127
168	.8550543	-.2532743
169	.8715389	-.1841083
170	.8870492	-.1316468
171	.9015961	-.0881486
172	.9152075	-.0530056
173	.9279145	-.0252402
174	.9397448	-.0013473
175	.9507378	.0156183
176	.9609281	.0332537
177	.9703661	.0382416
178	.9790709	.0571448
179	.9871352	.0361109
180	.9944184	.1219511
181	1.0000000	.0338233

```
PRESSURE  CL =  1.40885
          CD =  2.82631E-02
          CM =  -.137439

FRICTION  CL =  3.55404E-04
          CD =  9.46539E-03
          CM =  3.09680E-05

TOTAL     CL =  1.40921
          CD =  3.77285E-02
          CM =  -.137408
```

```
PRESSURE  CLF =  .1520771
          CDF =  4.90500E-02
          CMF =  -1.02668E-02

FRICTION  CLFV =  -2.14973E-04
          CDFV =  1.01651E-03
```

```
                CMFV =  2.20656E-05

 TOTAL          CLF =   .1518621
                CDF =  5.00665E-02
                CMF = -1.02448E-02
```

++++++++++++++++ Viscous Output ++++++++++++++

0 j	x	y	tauh	yplus(k=2)	uplus(k=2)
31	1.0000	-.0653	-.635939E-04	.776041E+00	.766687E+00
32	.9931	-.0661	-.108517E-03	.101146E+01	.100122E+01
33	.9850	-.0655	-.180186E-03	.130516E+01	.128739E+01
34	.9762	-.0647	-.162556E-03	.123986E+01	.122206E+01
35	.9667	-.0638	-.157048E-03	.122031E+01	.120282E+01
36	.9564	-.0628	-.147108E-03	.118149E+01	.116429E+01
37	.9453	-.0617	-.144293E-03	.117044E+01	.115322E+01
38	.9334	-.0605	-.139752E-03	.115217E+01	.113488E+01
39	.9206	-.0592	-.137477E-03	.114443E+01	.112713E+01
40	.9069	-.0578	-.135917E-03	.113795E+01	.112047E+01
41	.8922	-.0562	-.141409E-03	.116191E+01	.114384E+01
42	.8766	-.0545	-.156119E-03	.122071E+01	.120117E+01
43	.8600	-.0526	-.153115E-03	.121024E+01	.119058E+01
44	.8424	-.0506	-.144502E-03	.117614E+01	.115648E+01
45	.8238	-.0483	-.135222E-03	.113934E+01	.112026E+01
46	.8042	-.0460	-.125317E-03	.109887E+01	.107954E+01
47	.7836	-.0432	-.962405E-04	.963885E+00	.947115E+00
48	.7621	-.0408	-.526986E-04	.713943E+00	.706588E+00
49	.7395	-.0418	-.401502E-04	.622520E+00	.613814E+00
50	.7163	-.0450	-.620060E-04	.772466E+00	.758622E+00
51	.6922	-.0479	-.856853E-04	.907558E+00	.892519E+00
52	.6673	-.0508	-.100399E-03	.980516E+00	.964535E+00
53	.6419	-.0536	-.111528E-03	.103242E+01	.101610E+01
54	.6159	-.0564	-.120229E-03	.107179E+01	.105553E+01
55	.5894	-.0591	-.127640E-03	.110432E+01	.108825E+01
56	.5627	-.0617	-.134077E-03	.113107E+01	.111521E+01
57	.5358	-.0641	-.139933E-03	.115473E+01	.113916E+01
58	.5087	-.0664	-.145180E-03	.117613E+01	.116097E+01
59	.4818	-.0685	-.150023E-03	.119529E+01	.118054E+01
60	.4550	-.0703	-.154711E-03	.121308E+01	.119875E+01
61	.4286	-.0719	-.158908E-03	.122952E+01	.121565E+01
62	.4025	-.0732	-.162702E-03	.124452E+01	.123115E+01
63	.3770	-.0743	-.166603E-03	.125909E+01	.124603E+01
64	.3522	-.0750	-.170087E-03	.127236E+01	.125958E+01
65	.3280	-.0755	-.173275E-03	.128368E+01	.127096E+01
66	.3047	-.0757	-.176208E-03	.129460E+01	.128189E+01
67	.2823	-.0756	-.178796E-03	.130449E+01	.129159E+01
68	.2608	-.0752	-.181161E-03	.131414E+01	.130092E+01
69	.2402	-.0745	-.183147E-03	.132101E+01	.130701E+01
70	.2207	-.0736	-.184876E-03	.132808E+01	.131304E+01
71	.2021	-.0724	-.186643E-03	.133564E+01	.131921E+01
72	.1846	-.0710	-.187162E-03	.133695E+01	.131850E+01
73	.1682	-.0694	-.187352E-03	.133895E+01	.131828E+01
74	.1527	-.0676	-.187694E-03	.134226E+01	.131880E+01
75	.1383	-.0656	-.187061E-03	.134181E+01	.131498E+01
76	.1248	-.0635	-.185551E-03	.133690E+01	.130587E+01
77	.1123	-.0613	-.183639E-03	.133103E+01	.129526E+01
78	.1007	-.0590	-.181161E-03	.132386E+01	.128252E+01
79	.0900	-.0566	-.177904E-03	.131406E+01	.126633E+01
80	.0801	-.0542	-.172811E-03	.129613E+01	.124124E+01
81	.0710	-.0516	-.166656E-03	.127446E+01	.121173E+01
82	.0627	-.0491	-.160232E-03	.125163E+01	.117994E+01
83	.0551	-.0465	-.152625E-03	.122270E+01	.114095E+01
84	.0481	-.0439	-.142973E-03	.118547E+01	.109300E+01
85	.0418	-.0414	-.131401E-03	.113779E+01	.103427E+01
86	.0361	-.0388	-.117691E-03	.107866E+01	.964564E+00
87	.0310	-.0362	-.101775E-03	.100402E+01	.880424E+00
88	.0264	-.0337	-.830969E-04	.907809E+00	.777639E+00
89	.0223	-.0311	-.607348E-04	.776965E+00	.647264E+00
90	.0186	-.0287	-.340160E-04	.581885E+00	.468862E+00
91	.0154	-.0262	-.202017E-05	.141800E+00	.111429E+00
92	.0125	-.0238	.366831E-04	.603972E+00	-.444794E+00
93	.0101	-.0215	.833337E-04	.909654E+00	-.632753E+00
94	.0080	-.0192	.138326E-03	.117018E+01	-.760383E+00
95	.0062	-.0171	.201374E-03	.140872E+01	-.843897E+00
96	.0047	-.0150	.270504E-03	.162780E+01	-.885128E+00
97	.0035	-.0130	.343493E-03	.182760E+01	-.886853E+00
98	.0026	-.0111	.418601E-03	.200881E+01	-.853715E+00
99	.0018	-.0093	.493607E-03	.217066E+01	-.790004E+00
100	.0012	-.0076	.565574E-03	.231124E+01	-.700253E+00
101	.0007	-.0061	.631870E-03	.242959E+01	-.591920E+00
102	.0004	-.0046	.692161E-03	.252892E+01	-.474750E+00
103	.0002	-.0033	.747421E-03	.261356E+01	-.355163E+00
104	.0001	-.0021	.798564E-03	.268701E+01	-.236237E+00
105	.0000	-.0010	.846083E-03	.275133E+01	-.119989E+00
106	.0000	.0000	.883708E-03	.279792E+01	-.275861E-02
107	.0000	.0010	.912100E-03	.282915E+01	.117956E+00
108	.0001	.0021	.942519E-03	.286138E+01	.246295E+00
109	.0002	.0033	.975255E-03	.289387E+01	.388178E+00
110	.0004	.0046	.100833E-02	.292376E+01	.544129E+00
111	.0007	.0061	.103809E-02	.294600E+01	.713528E+00
112	.0012	.0076	.105965E-02	.295495E+01	.891830E+00
113	.0018	.0093	.107183E-02	.295061E+01	.107131E+01
114	.0026	.0111	.107457E-02	.293399E+01	.124539E+01
115	.0036	.0130	.106607E-02	.290347E+01	.140881E+01

116	.0048	.0150	.104450E-02	.285823E+01	.155544E+01
117	.0063	.0171	.101257E-02	.280215E+01	.168116E+01
118	.0081	.0193	.980055E-03	.274878E+01	.178969E+01
119	.0102	.0216	.934190E-03	.268036E+01	.186882E+01
120	.0127	.0240	.886940E-03	.261006E+01	.192765E+01
121	.0155	.0264	.842155E-03	.254559E+01	.197238E+01
122	.0188	.0288	.794697E-03	.247676E+01	.199759E+01
123	.0225	.0313	.750503E-03	.241303E+01	.201281E+01
124	.0267	.0339	.709366E-03	.235242E+01	.201794E+01
125	.0314	.0364	.670627E-03	.229446E+01	.201467E+01
126	.0366	.0390	.635945E-03	.224162E+01	.200693E+01
127	.0424	.0416	.606276E-03	.219634E+01	.199907E+01
128	.0488	.0442	.577276E-03	.215009E+01	.198474E+01
129	.0559	.0468	.550965E-03	.210721E+01	.196853E+01
130	.0637	.0494	.525754E-03	.206457E+01	.194817E+01
131	.0722	.0520	.502476E-03	.202557E+01	.192770E+01
132	.0814	.0545	.483603E-03	.199150E+01	.190868E+01
133	.0915	.0570	.464314E-03	.195823E+01	.188853E+01
134	.1025	.0594	.446319E-03	.192450E+01	.186579E+01
135	.1143	.0617	.429450E-03	.189245E+01	.184278E+01
136	.1272	.0639	.413284E-03	.186148E+01	.181931E+01
137	.1409	.0660	.398455E-03	.183192E+01	.179606E+01
138	.1557	.0680	.384091E-03	.180201E+01	.177119E+01
139	.1716	.0697	.369849E-03	.177295E+01	.174627E+01
140	.1884	.0713	.357165E-03	.174600E+01	.172263E+01
141	.2064	.0727	.345030E-03	.171966E+01	.169885E+01
142	.2254	.0738	.332698E-03	.169205E+01	.167320E+01
143	.2454	.0747	.321044E-03	.166524E+01	.164788E+01
144	.2665	.0753	.310075E-03	.164017E+01	.162377E+01
145	.2886	.0756	.299549E-03	.161422E+01	.159829E+01
146	.3117	.0757	.289610E-03	.159038E+01	.157485E+01
147	.3356	.0754	.280364E-03	.156761E+01	.155211E+01
148	.3604	.0748	.271458E-03	.154407E+01	.152828E+01
149	.3860	.0739	.262845E-03	.152247E+01	.150644E+01
150	.4121	.0728	.255027E-03	.150245E+01	.148605E+01
151	.4389	.0713	.248248E-03	.148401E+01	.146707E+01
152	.4660	.0696	.241912E-03	.146655E+01	.144900E+01
153	.4935	.0676	.236129E-03	.145022E+01	.143200E+01
154	.5211	.0654	.231278E-03	.143641E+01	.141743E+01
155	.5488	.0630	.227579E-03	.142646E+01	.140686E+01
156	.5764	.0604	.224946E-03	.141959E+01	.139932E+01
157	.6038	.0577	.223664E-03	.141723E+01	.139628E+01
158	.6309	.0548	.224094E-03	.141745E+01	.139548E+01
159	.6575	.0519	.227261E-03	.142947E+01	.140675E+01
160	.6835	.0489	.233767E-03	.144896E+01	.142491E+01
161	.7088	.0458	.251442E-03	.150141E+01	.147643E+01
162	.7334	.0430	.287176E-03	.160039E+01	.157009E+01
163	.7571	.0392	.292355E-03	.161184E+01	.156013E+01
164	.7793	.0331	.214846E-03	.138318E+01	.129898E+01
165	.7998	.0249	.929618E-04	.916899E+00	.839018E+00
166	.8191	.0166	-.112894E-05	.101792E+00	-.922492E-01
167	.8376	.0088	-.110688E-04	.318313E+00	-.289871E+00
168	.8551	.0013	-.108427E-04	.317569E+00	-.288871E+00
169	.8715	-.0058	-.125519E-04	.341559E+00	-.310265E+00
170	.8871	-.0126	-.152909E-04	.377351E+00	-.342186E+00
171	.9016	-.0190	-.186413E-04	.417490E+00	-.378111E+00
172	.9152	-.0250	-.216986E-04	.450432E+00	-.407524E+00
173	.9279	-.0307	-.244931E-04	.480001E+00	-.433956E+00
174	.9397	-.0360	-.266489E-04	.502177E+00	-.453620E+00
175	.9507	-.0409	-.289123E-04	.521884E+00	-.470800E+00
176	.9609	-.0456	-.310040E-04	.541315E+00	-.487892E+00
177	.9704	-.0499	-.369735E-04	.590858E+00	-.531918E+00
178	.9791	-.0539	-.471181E-04	.668336E+00	-.601460E+00
179	.9871	-.0575	-.785861E-04	.862953E+00	-.773126E+00
180	.9944	-.0611	-.112292E-03	.103862E+01	-.882394E+00
181	1.0000	-.0653	-.127941E-03	.110702E+01	-.991692E+00

Appendix 5

Listing of "CREATE" Code and COM File

```
      PROGRAM CREATE
      PARAMETER (NALF=20,NMCH=13)

      REAL MACH(NMCH),ALPHA(NALF)
      CHARACTER*10 FNAME
      CHARACTER*2 AM(NMCH)
      CHARACTER*3 AA(NALF)

      DATA MACH/.20, .30, .40, 0.45, .50, .55, .60, .65, .70, .75,
     &          .80, .85, .90/

      DATA AM  /'20','30','40','45', '50','55','60','65','70','75',
     &          '80','85','90'/

      DATA ALPHA/-5.,-4.,-3.,-2.,-1., 0.0, 1.,2.,3.,4.,5.,
     &           6.,7.,8.,9.,10.,11.,12.,13.,14./

      DATA AA/ 'M05','M04','M03','M02','M01','000',
     &         'P01','P02','P03','P04','P05','P06','P07','P08',
     &         'P09','P10','P11','P12','P13','P14'/

      OPEN (11,FILE='sweep.com',STATUS='UNKNOWN')

      WRITE (11,100) '#!/bin/csh'
100   format (a10)
      WRITE (11,*) 'hostname'
      WRITE (11,*) 'date'
      WRITE (11,*) 'time'
      WRITE (11,*) 'df'

      WRITE (11,*) '#-----------------------------------------------'
      WRITE (11,*) 'cp header.txt loads.tbl'
      WRITE (11,*) 'cp base-naca0015.grd grid.dat'
      WRITE (11,*) '#-----------------------------------------------'

      DO 10 IM = 1 , NMCH
      DO 10 IA = 1 , NALF

cahm          fname='base.'//AM(IM)//'-'//AA(IA)
          fname= AM(IM)//'-'//AA(IA)//'.in'

      WRITE (11,*) 'time nice +10 ',
     & '/hprs7/ts36345/MAIN/arc2d/arc2d <',fname

cahm      WRITE (11,*) 'mv arc2d_run.out out.'//am(im)//'-'//aa(ia)
      WRITE (11,*) 'mv arc2d_run.out  ',am(im)//'-'//aa(ia)//'.out'
      WRITE (11,*) 'compress *.out'
      WRITE (11,*) 'cat ftn99 >>loads.tbl'
      WRITE (11,*) 'rm clcd.dat soln.dat rest.dat ftn99'
      WRITE (11,*) '#-----------------------------------------------'


      OPEN (10,FILE=fname,STATUS='UNKNOWN')

      WRITE (10,*) '$INPUTS   FSMACH=',MACH(IM),
     &',  ALPHA=',ALPHA(IA),',   RE= 3000000,  METH=3,'
      WRITE (10,*) ' JMAX= 211, KMAX= 50, JTAIL1= 31, JTAIL2= 181,'
      WRITE (10,*) ' TRANSLO= 0.0,   TRANSUP= 0.0,  RESTART=FALSE,'
      WRITE (10,*) ' DIS4X= 0.64, DIS4Y= 0.64, DIS2X= 0., DIS2Y= 0.,'
      WRITE (10,*) ' IPRINT=10, IREAD= 2, STORE= TRUE, ISPEC=1,'
      WRITE (10,*) ' BCAIRF= TRUE, CIRCUL= FALSE, PERIODIC= FALSE,'
      WRITE (10,*) ' VISCOUS= TRUE, TURBULNT= TRUE, VISXI= TRUE,'
      WRITE (10,*) ' NP= 100000, NPCP=100000, JACDT=1, ISAVE=10000 $'
      WRITE (10,*) '$FINFO   XLIM=0.75,  XHINGE=0.75,  IFLAG=1,'
      WRITE (10,*) '         FANG=0. $'

      WRITE (10,*) 'ISEQUAL IF ISEQUAL GT 1, DTISEQ : II=1,ISEQUAL'
      WRITE (10,*) '3'
      WRITE (10,*) 'JMXI,  KMXI,   IENDS,  DTISEQ,   DTMINS'
      WRITE (10,*) '211,     50,    350,     1.0,      0.0'
      WRITE (10,*) '211,     50,    500,     3.0,      0.0'
      WRITE (10,*) '211,     50,    750,     5.0,      0.0'
      CLOSE (10)

10    CONTINUE

      WRITE (11,*) 'hostname'
      WRITE (11,*) 'date'
      WRITE (11,*) 'time'
      WRITE (11,*) 'df'
      WRITE (11,*) 'exit'

      CLOSE (11)

      STOP 888
      END
```

```
#!/bin/csh
 hostname
 date
 time
 df
 sleep 12600
 #---------------------------------------------- HPR103
 cp header.txt loads.tbl
 cp base-naca0015.grd grid.dat
 #-----------------------------------------------
 time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-M05.in
 mv arc2d_run.out  20-M05.out
 compress *.out
 cat ftn99 >>loads.tbl
 rm clcd.dat soln.dat rest.dat ftn99
 #-----------------------------------------------
 time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-M04.in
 mv arc2d_run.out  20-M04.out
 compress *.out
 cat ftn99 >>loads.tbl
 rm clcd.dat soln.dat rest.dat ftn99
 #-----------------------------------------------
 time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-M03.in
 mv arc2d_run.out  20-M03.out
 compress *.out
 cat ftn99 >>loads.tbl
 rm clcd.dat soln.dat rest.dat ftn99
 #-----------------------------------------------
 time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-M02.in
 mv arc2d_run.out  20-M02.out
 compress *.out
 cat ftn99 >>loads.tbl
 rm clcd.dat soln.dat rest.dat ftn99
 #-----------------------------------------------
 time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-M01.in
 mv arc2d_run.out  20-M01.out
 compress *.out
 cat ftn99 >>loads.tbl
 rm clcd.dat soln.dat rest.dat ftn99
 #-----------------------------------------------
 time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-000.in
 mv arc2d_run.out  20-000.out
 compress *.out
 cat ftn99 >>loads.tbl
 rm clcd.dat soln.dat rest.dat ftn99
 #-----------------------------------------------
 time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-P01.in
 mv arc2d_run.out  20-P01.out
 compress *.out
 cat ftn99 >>loads.tbl
 rm clcd.dat soln.dat rest.dat ftn99
 #-----------------------------------------------
 time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-P02.in
 mv arc2d_run.out  20-P02.out
 compress *.out
 cat ftn99 >>loads.tbl
 rm clcd.dat soln.dat rest.dat ftn99
 #-----------------------------------------------
 time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-P03.in
 mv arc2d_run.out  20-P03.out
 compress *.out
 cat ftn99 >>loads.tbl
 rm clcd.dat soln.dat rest.dat ftn99
 #-----------------------------------------------
 time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-P04.in
 mv arc2d_run.out  20-P04.out
 compress *.out
 cat ftn99 >>loads.tbl
 rm clcd.dat soln.dat rest.dat ftn99
 #-----------------------------------------------
 time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-P05.in
 mv arc2d_run.out  20-P05.out
 compress *.out
 cat ftn99 >>loads.tbl
 rm clcd.dat soln.dat rest.dat ftn99
 #-----------------------------------------------
 time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-P06.in
 mv arc2d_run.out  20-P06.out
 compress *.out
 cat ftn99 >>loads.tbl
 rm clcd.dat soln.dat rest.dat ftn99
 #-----------------------------------------------
 time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-P07.in
 mv arc2d_run.out  20-P07.out
 compress *.out
 cat ftn99 >>loads.tbl
 rm clcd.dat soln.dat rest.dat ftn99
 #-----------------------------------------------
 time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-P08.in
 mv arc2d_run.out  20-P08.out
 compress *.out
 cat ftn99 >>loads.tbl
 rm clcd.dat soln.dat rest.dat ftn99
```

```
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-P09.in
mv arc2d_run.out  20-P09.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-P10.in
mv arc2d_run.out  20-P10.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-P11.in
mv arc2d_run.out  20-P11.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-P12.in
mv arc2d_run.out  20-P12.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-P13.in
mv arc2d_run.out  20-P13.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <20-P14.in
mv arc2d_run.out  20-P14.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-M05.in
mv arc2d_run.out  30-M05.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-M04.in
mv arc2d_run.out  30-M04.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-M03.in
mv arc2d_run.out  30-M03.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-M02.in
mv arc2d_run.out  30-M02.out
compress *.out
mv arc2d_run.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-P01.in
mv arc2d_run.out  30-P01.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-P02.in
mv arc2d_run.out  30-P02.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-P03.in
mv arc2d_run.out  30-P03.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-P04.in
mv arc2d_run.out  30-P04.out
compress *.out
```

```
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-P05.in
mv arc2d_run.out  30-P05.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-P06.in
mv arc2d_run.out  30-P06.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-P07.in
mv arc2d_run.out  30-P07.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-P08.in
mv arc2d_run.out  30-P08.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-P09.in
mv arc2d_run.out  30-P09.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-P10.in
mv arc2d_run.out  30-P10.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-P11.in
mv arc2d_run.out  30-P11.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-P12.in
mv arc2d_run.out  30-P12.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-P13.in
mv arc2d_run.out  30-P13.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
time nice +10 /hprs7/ts36345/MAIN/arc2d/arc2d <30-P14.in
mv arc2d_run.out  30-P14.out
compress *.out
cat ftn99 >>loads.tbl
rm clcd.dat soln.dat rest.dat ftn99
#-----------------------------------------------
hostname
date
time
df
exit
```

Appendix 6

Sample "LOADS.TBL" File

NMACH ---------- DELTA = +10.0 DEGREES
15

MACH	ALFA	CL	CD	CM	CLF	CDF	CMF
29							
.2000	-14.0000	-.8663	.0245	-.1161	.0542	-.0065	-.0043
.2000	-13.0000	-.7661	.0221	-.1154	.0576	-.0058	-.0045
.2000	-12.0000	-.6641	.0201	-.1146	.0610	-.0050	-.0046
.2000	-11.0000	-.5615	.0183	-.1136	.0641	-.0040	-.0047
.2000	-10.0000	-.4584	.0169	-.1125	.0669	-.0028	-.0048
.2000	-9.0000	-.3535	.0157	-.1115	.0700	-.0016	-.0049
.2000	-8.0000	-.2483	.0148	-.1104	.0730	-.0003	-.0050
.2000	-7.0000	-.1411	.0142	-.1096	.0762	.0012	-.0052
.2000	-6.0000	-.0334	.0138	-.1088	.0794	.0027	-.0054
.2000	-5.0000	.0748	.0137	-.1080	.0827	.0044	-.0055
.2000	-4.0000	.1829	.0138	-.1071	.0858	.0062	-.0057
.2000	-3.0000	.2914	.0142	-.1062	.0889	.0080	-.0059
.2000	-2.0000	.3994	.0148	-.1052	.0918	.0100	-.0061
.2000	-1.0000	.5072	.0157	-.1040	.0947	.0120	-.0063
.2000	.0000	.6142	.0168	-.1027	.0973	.0140	-.0065
.2000	1.0000	.7202	.0182	-.1011	.0996	.0160	-.0067
.2000	2.0000	.8251	.0199	-.0994	.1018	.0181	-.0068
.2000	3.0000	.9288	.0217	-.0974	.1036	.0202	-.0070
.2000	4.0000	1.0310	.0239	-.0951	.1052	.0223	-.0071
.2000	5.0000	1.1316	.0263	-.0926	.1065	.0244	-.0073
.2000	6.0000	1.2301	.0290	-.0897	.1075	.0265	-.0074
.2000	7.0000	1.3262	.0319	-.0865	.1082	.0286	-.0076
.2000	8.0000	1.4199	.0351	-.0830	.1087	.0306	-.0077
.2000	9.0000	1.5108	.0387	-.0792	.1089	.0326	-.0079
.2000	10.0000	1.5974	.0426	-.0749	.1087	.0346	-.0080
.2000	11.0000	1.6806	.0468	-.0703	.1085	.0366	-.0082
.2000	12.0000	1.7577	.0514	-.0651	.1077	.0385	-.0084
.2000	13.0000	1.8273	.0563	-.0592	.1067	.0405	-.0085
.2000	14.0000	1.8872	.0617	-.0524	.1049	.0422	-.0087
29							
.3000	-14.0000	-.8855	.0259	-.1212	.0560	-.0069	-.0045
.3000	-13.0000	-.7829	.0231	-.1200	.0595	-.0062	-.0047
.3000	-12.0000	-.6778	.0206	-.1190	.0631	-.0054	-.0048
.3000	-11.0000	-.5745	.0187	-.1173	.0657	-.0043	-.0049
.3000	-10.0000	-.4712	.0170	-.1154	.0680	-.0031	-.0049
.3000	-9.0000	-.3614	.0156	-.1148	.0719	-.0019	-.0051
.3000	-8.0000	-.2550	.0146	-.1134	.0745	-.0005	-.0051
.3000	-7.0000	-.1463	.0139	-.1123	.0776	.0010	-.0053
.3000	-6.0000	-.0368	.0134	-.1114	.0808	.0026	-.0054
.3000	-5.0000	.0726	.0133	-.1103	.0838	.0042	-.0056
.3000	-4.0000	.1830	.0135	-.1095	.0870	.0060	-.0058
.3000	-3.0000	.2930	.0140	-.1084	.0900	.0079	-.0059
.3000	-2.0000	.4029	.0147	-.1073	.0929	.0098	-.0061
.3000	-1.0000	.5122	.0158	-.1060	.0956	.0118	-.0063
.3000	.0000	.6208	.0171	-.1046	.0980	.0138	-.0065
.3000	1.0000	.7285	.0188	-.1028	.1003	.0159	-.0066
.3000	2.0000	.8353	.0207	-.1009	.1023	.0179	-.0068
.3000	3.0000	.9408	.0230	-.0986	.1040	.0200	-.0069
.3000	4.0000	1.0450	.0255	-.0960	.1055	.0221	-.0071
.3000	5.0000	1.1474	.0283	-.0930	.1066	.0242	-.0072
.3000	6.0000	1.2480	.0315	-.0897	.1075	.0262	-.0073
.3000	7.0000	1.3462	.0349	-.0859	.1081	.0282	-.0075
.3000	8.0000	1.4421	.0387	-.0818	.1084	.0302	-.0076
.3000	9.0000	1.5343	.0428	-.0770	.1083	.0321	-.0077
.3000	10.0000	1.6229	.0472	-.0717	.1080	.0340	-.0079
.3000	11.0000	1.7075	.0520	-.0659	.1074	.0358	-.0080
.3000	12.0000	1.7821	.0570	-.0588	.1059	.0375	-.0081
.3000	13.0000	1.8521	.0625	-.0513	.1042	.0391	-.0083
.3000	14.0000	1.9057	.0685	-.0421	.1017	.0406	-.0083
28							
.4000	-14.0000	-.9102	.0285	-.1320	.0602	-.0072	-.0049
.4000	-13.0000	-.8111	.0247	-.1288	.0629	-.0067	-.0050
.4000	-12.0000	-.7055	.0218	-.1259	.0655	-.0058	-.0050
.4000	-11.0000	-.5962	.0194	-.1239	.0687	-.0047	-.0051
.4000	-10.0000	-.4874	.0174	-.1217	.0715	-.0035	-.0051
.4000	-9.0000	-.3776	.0158	-.1198	.0742	-.0022	-.0052
.4000	-8.0000	-.2666	.0145	-.1181	.0770	-.0007	-.0053
.4000	-7.0000	-.1549	.0137	-.1167	.0799	.0008	-.0054
.4000	-6.0000	-.0429	.0132	-.1153	.0828	.0024	-.0055
.4000	-5.0000	.0692	.0130	-.1139	.0855	.0041	-.0056
.4000	-4.0000	.1838	.0132	-.1131	.0889	.0059	-.0058
.4000	-3.0000	.2968	.0138	-.1119	.0917	.0078	-.0059
.4000	-2.0000	.4096	.0147	-.1106	.0944	.0097	-.0061
.4000	-1.0000	.5220	.0160	-.1091	.0969	.0117	-.0063
.4000	.0000	.6335	.0176	-.1073	.0992	.0137	-.0064
.4000	1.0000	.7444	.0196	-.1052	.1012	.0157	-.0066
.4000	2.0000	.8543	.0219	-.1028	.1030	.0178	-.0067
.4000	3.0000	.9631	.0246	-.1000	.1045	.0198	-.0068
.4000	4.0000	1.0704	.0276	-.0967	.1057	.0218	-.0070
.4000	5.0000	1.1763	.0310	-.0928	.1066	.0238	-.0071
.4000	6.0000	1.2799	.0347	-.0883	.1071	.0258	-.0072
.4000	7.0000	1.3815	.0388	-.0831	.1073	.0277	-.0073
.4000	8.0000	1.4794	.0434	-.0769	.1071	.0295	-.0075
.4000	9.0000	1.5628	.0487	-.0682	.1049	.0308	-.0075
.4000	10.0000	1.6044	.0563	-.0549	.0993	.0316	-.0074
.4000	11.0000	1.6055	.0655	-.0389	.0919	.0324	-.0072
.4000	12.0000	1.5755	.0757	-.0233	.0856	.0343	-.0071
.4000	13.0000	1.5397	.0932	-.0178	.0875	.0395	-.0079
26							

	.4500	-14.0000	-.8560	.0380	-.1408	.0645	-.0043	-.0055
	.4500	-13.0000	-.8050	.0283	-.1380	.0674	-.0061	-.0055
	.4500	-12.0000	-.7206	.0229	-.1328	.0684	-.0059	-.0053
	.4500	-11.0000	-.6123	.0199	-.1291	.0710	-.0049	-.0053
	.4500	-10.0000	-.5014	.0177	-.1260	.0734	-.0037	-.0053
	.4500	-9.0000	-.3889	.0159	-.1236	.0760	-.0023	-.0053
	.4500	-8.0000	-.2755	.0146	-.1215	.0787	-.0009	-.0054
	.4500	-7.0000	-.1613	.0136	-.1197	.0815	.0007	-.0054
	.4500	-6.0000	-.0465	.0131	-.1182	.0843	.0023	-.0055
	.4500	-5.0000	.0689	.0129	-.1169	.0872	.0041	-.0057
	.4500	-4.0000	.1811	.0132	-.1149	.0892	.0058	-.0057
	.4500	-3.0000	.2992	.0138	-.1141	.0927	.0077	-.0059
	.4500	-2.0000	.4121	.0148	-.1122	.0947	.0096	-.0060
	.4500	-1.0000	.5266	.0162	-.1105	.0971	.0116	-.0062
	.4500	.0000	.6402	.0180	-.1085	.0992	.0136	-.0063
	.4500	1.0000	.7556	.0202	-.1066	.1015	.0156	-.0065
	.4500	2.0000	.8678	.0227	-.1038	.1031	.0176	-.0066
	.4500	3.0000	.9789	.0256	-.1005	.1044	.0196	-.0067
	.4500	4.0000	1.0890	.0290	-.0965	.1054	.0216	-.0069
	.4500	5.0000	1.1973	.0327	-.0918	.1060	.0235	-.0070
	.4500	6.0000	1.3012	.0369	-.0858	.1061	.0253	-.0071
	.4500	7.0000	1.4007	.0417	-.0781	.1051	.0269	-.0071
	.4500	8.0000	1.4634	.0485	-.0652	.1002	.0278	-.0070
	.4500	9.0000	1.4901	.0576	-.0494	.0929	.0284	-.0068
	.4500	10.0000	1.4831	.0678	-.0327	.0859	.0296	-.0067
	.4500	11.0000	1.4522	.0790	-.0185	.0808	.0320	-.0067
20								
	.5000	-14.0000	-.7531	.0547	-.1424	.0641	.0024	-.0054
	.5000	-13.0000	-.7384	.0399	-.1471	.0721	-.0024	-.0061
	.5000	-12.0000	-.6947	.0290	-.1444	.0750	-.0046	-.0061
	.5000	-11.0000	-.6226	.0218	-.1379	.0749	-.0049	-.0057
	.5000	-10.0000	-.5194	.0182	-.1323	.0759	-.0039	-.0055
	.5000	-9.0000	-.4043	.0162	-.1285	.0781	-.0025	-.0054
	.5000	-8.0000	-.2873	.0147	-.1258	.0807	-.0010	-.0055
	.5000	-7.0000	-.1699	.0136	-.1235	.0833	.0006	-.0055
	.5000	-6.0000	-.0518	.0130	-.1217	.0860	.0022	-.0056
	.5000	-5.0000	.0649	.0128	-.1197	.0883	.0040	-.0057
	.5000	-4.0000	.1822	.0131	-.1180	.0907	.0058	-.0057
	.5000	-3.0000	.3012	.0138	-.1166	.0935	.0077	-.0059
	.5000	-2.0000	.4185	.0149	-.1149	.0958	.0096	-.0060
	.5000	-1.0000	.5384	.0165	-.1135	.0986	.0116	-.0062
	.5000	.0000	.6554	.0185	-.1112	.1005	.0136	-.0063
	.5000	1.0000	.7717	.0209	-.1085	.1022	.0155	-.0064
	.5000	2.0000	.8872	.0237	-.1052	.1035	.0175	-.0066
	.5000	3.0000	1.0019	.0270	-.1011	.1045	.0194	-.0067
	.5000	4.0000	1.1154	.0307	-.0960	.1052	.0213	-.0068
	.5000	5.0000	1.2115	.0342	-.0865	.1018	.0220	-.0064
17								
	.5500	-13.0000	-.6360	.0566	-.1484	.0727	.0044	-.0060
	.5500	-12.0000	-.6301	.0418	-.1541	.0808	-.0008	-.0067
	.5500	-11.0000	-.5868	.0301	-.1511	.0828	-.0030	-.0066
	.5500	-10.0000	-.5193	.0217	-.1438	.0819	-.0034	-.0061
	.5500	-9.0000	-.4227	.0170	-.1363	.0813	-.0027	-.0057
	.5500	-8.0000	-.3044	.0149	-.1315	.0829	-.0012	-.0056
	.5500	-7.0000	-.1814	.0137	-.1285	.0856	.0004	-.0056
	.5500	-6.0000	-.0606	.0130	-.1258	.0877	.0021	-.0056
	.5500	-5.0000	.0635	.0128	-.1242	.0907	.0039	-.0058
	.5500	-4.0000	.1859	.0131	-.1225	.0932	.0058	-.0059
	.5500	-3.0000	.3081	.0139	-.1207	.0956	.0077	-.0060
	.5500	-2.0000	.4299	.0152	-.1188	.0977	.0096	-.0061
	.5500	-1.0000	.5512	.0169	-.1166	.0996	.0115	-.0062
	.5500	.0000	.6722	.0191	-.1139	.1013	.0135	-.0063
	.5500	1.0000	.7927	.0218	-.1106	.1026	.0154	-.0064
	.5500	2.0000	.9121	.0250	-.1063	.1035	.0172	-.0065
	.5500	3.0000	1.0322	.0287	-.1008	.1042	.0191	-.0066
13								
	.6000	-11.0000	-.5173	.0449	-.1593	.0898	.0012	-.0073
	.6000	-10.0000	-.4753	.0325	-.1568	.0910	-.0010	-.0071
	.6000	-9.0000	-.4103	.0228	-.1499	.0892	-.0017	-.0065
	.6000	-8.0000	-.3199	.0165	-.1414	.0872	-.0012	-.0059
	.6000	-7.0000	-.2008	.0140	-.1350	.0877	.0002	-.0057
	.6000	-6.0000	-.0692	.0131	-.1321	.0907	.0020	-.0058
	.6000	-5.0000	.0590	.0129	-.1295	.0930	.0038	-.0058
	.6000	-4.0000	.1867	.0132	-.1274	.0952	.0057	-.0059
	.6000	-3.0000	.3140	.0141	-.1253	.0972	.0076	-.0059
	.6000	-2.0000	.4408	.0155	-.1230	.0990	.0095	-.0060
	.6000	-1.0000	.5672	.0175	-.1203	.1005	.0114	-.0061
	.6000	.0000	.6939	.0200	-.1170	.1016	.0132	-.0061
	.6000	1.0000	.8207	.0232	-.1125	.1024	.0150	-.0062
12								
	.6500	-10.0000	-.3972	.0492	-.1617	.0995	.0037	-.0078
	.6500	-9.0000	-.3649	.0366	-.1604	.0994	.0010	-.0075
	.6500	-8.0000	-.2982	.0258	-.1545	.0964	.0003	-.0069
	.6500	-7.0000	-.2055	.0178	-.1474	.0940	.0006	-.0062
	.6500	-6.0000	-.0883	.0138	-.1403	.0931	.0018	-.0058
	.6500	-5.0000	.0503	.0131	-.1366	.0955	.0037	-.0058
	.6500	-4.0000	.1861	.0135	-.1337	.0973	.0055	-.0058
	.6500	-3.0000	.3204	.0145	-.1311	.0988	.0074	-.0059
	.6500	-2.0000	.4548	.0161	-.1283	.1000	.0093	-.0059
	.6500	-1.0000	.5893	.0185	-.1248	.1008	.0110	-.0059
	.6500	.0000	.7246	.0215	-.1198	.1010	.0127	-.0059
	.6500	1.0000	.8509	.0265	-.1110	.0984	.0138	-.0058
12								
	.7000	-9.0000	-.2363	.0456	-.1354	.0786	.0006	-.0059

```
 .7000   -8.0000   -.2455   .0428   -.1602   .1077   .0036   -.0077
 .7000   -7.0000   -.1832   .0312   -.1560   .1036   .0024   -.0070
 .7000   -6.0000   -.0828   .0213   -.1522   .1010   .0027   -.0064
 .7000   -5.0000    .0389   .0154   -.1475   .0994   .0037   -.0059
 .7000   -4.0000    .1796   .0141   -.1425   .0993   .0053   -.0057
 .7000   -3.0000    .3260   .0152   -.1386   .0996   .0071   -.0057
 .7000   -2.0000    .4726   .0173   -.1346   .0995   .0087   -.0056
 .7000   -1.0000    .6148   .0213   -.1289   .0966   .0098   -.0055
 .7000     .0000    .7431   .0288   -.1232   .0892   .0099   -.0051
 .7000    1.0000    .8594   .0407   -.1204   .0811   .0098   -.0047
 .7000    2.0000    .9450   .0551   -.1153   .0730   .0102   -.0044
9

 .7500   -7.0000    .2031   .0498   -.2156   .1579   .0445   -.0114
 .7500   -6.0000   -.0943   .0426   -.1444   .1046   .0053   -.0065
 .7500   -5.0000    .0165   .0302   -.1473   .1018   .0047   -.0060
 .7500   -4.0000    .1576   .0217   -.1486   .0992   .0053   -.0056
 .7500   -3.0000    .3335   .0187   -.1517   .0945   .0054   -.0052
 .7500   -2.0000    .5047   .0240   -.1580   .0816   .0042   -.0045
 .7500   -1.0000    .6266   .0347   -.1599   .0714   .0042   -.0040
 .7500     .0000    .6949   .0461   -.1498   .0630   .0056   -.0035
 .7500    1.0000    .7334   .0574   -.1332   .0554   .0077   -.0031
9

 .8000   -7.0000    .2031   .0498   -.2156   .1579   .0445   -.0114
 .8000   -6.0000   -.0943   .0426   -.1444   .1046   .0053   -.0065
 .8000   -5.0000    .0165   .0302   -.1473   .1018   .0047   -.0060
 .8000   -4.0000    .1576   .0217   -.1486   .0992   .0053   -.0056
 .8000   -3.0000    .3335   .0187   -.1517   .0945   .0054   -.0052
 .8000   -2.0000    .5047   .0240   -.1580   .0816   .0042   -.0045
 .8000   -1.0000    .6266   .0347   -.1599   .0714   .0042   -.0040
 .8000     .0000    .6949   .0461   -.1498   .0630   .0056   -.0035
 .8000    1.0000    .7334   .0574   -.1332   .0554   .0077   -.0031
9

 .8500   -7.0000    .2031   .0498   -.2156   .1579   .0445   -.0114
 .8500   -6.0000   -.0943   .0426   -.1444   .1046   .0053   -.0065
 .8500   -5.0000    .0165   .0302   -.1473   .1018   .0047   -.0060
 .8500   -4.0000    .1576   .0217   -.1486   .0992   .0053   -.0056
 .8500   -3.0000    .3335   .0187   -.1517   .0945   .0054   -.0052
 .8500   -2.0000    .5047   .0240   -.1580   .0816   .0042   -.0045
 .8500   -1.0000    .6266   .0347   -.1599   .0714   .0042   -.0040
 .8500     .0000    .6949   .0461   -.1498   .0630   .0056   -.0035
 .8500    1.0000    .7334   .0574   -.1332   .0554   .0077   -.0031
9

 .9000   -7.0000    .2031   .0498   -.2156   .1579   .0445   -.0114
 .9000   -6.0000   -.0943   .0426   -.1444   .1046   .0053   -.0065
 .9000   -5.0000    .0165   .0302   -.1473   .1018   .0047   -.0060
 .9000   -4.0000    .1576   .0217   -.1486   .0992   .0053   -.0056
 .9000   -3.0000    .3335   .0187   -.1517   .0945   .0054   -.0052
 .9000   -2.0000    .5047   .0240   -.1580   .0816   .0042   -.0045
 .9000   -1.0000    .6266   .0347   -.1599   .0714   .0042   -.0040
 .9000     .0000    .6949   .0461   -.1498   .0630   .0056   -.0035
 .9000    1.0000    .7334   .0574   -.1332   .0554   .0077   -.0031
```

Appendix 7

C81 Tables For All Airfoils

(Flap deflections; 0.0 +/-5, +/-10, +/-15,+/-20 degrees)

AIRF INTERPOLATED DATA 156115611561 NACA-0015 BASELINE (D=0.0 DEGS.)

	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452
	.7452	.7452	.7452	.7452	.7452	.7452			
-160.00	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471
	.6471	.6471	.6471	.6471	.6471	.6471			
-140.00	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000			
-120.00	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548
	.7548	.7548	.7548	.7548	.7548	.7548			
-110.00	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823
	.4823	.4823	.4823	.4823	.4823	.4823			
-100.00	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097
	.2097	.2097	.2097	.2097	.2097	.2097			
-90.00	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627
	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627			
-80.00	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352
	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352			
-70.00	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077
	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077			
-60.00	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802
	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802			
-50.00	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528
	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528			
-30.00	-.9900	-.9900	-.9950	-1.0050	-1.0100	-1.0150	-1.0150	-1.0150	-1.0150
	-1.0150	-.9450	-.9300	-.9200	-.9100	-.9100			
-21.00	-.8000	-.8000	-.8100	-.8300	-.8400	-.8500	-.8500	-.8500	-.8500
	-.8500	-.7100	-.6800	-.6600	-.6400	-.6400			
-16.00	-1.0680	-1.0680	-.9927	-.9917	-.9825	-.9733	-.9717	-.9700	-.9700
	-.9700	-.8067	-.7700	-.7400	-.7100	-.7100			
-15.00	-1.1900	-1.1900	-1.0900	-1.0550	-1.0225	-.9900	-.9850	-.9800	-.9800
	-.9800	-.8300	-.7900	-.7600	-.7300	-.7300			
-14.00	-1.4306	-1.4306	-1.4585	-1.3301	-1.1126	-1.0174	-.9916	-.9735	-.9616
	-.9596	-.8211	-.7754	-.7370	-.7085	-.7085			
-13.00	-1.3407	-1.3407	-1.3663	-1.3213	-1.1929	-1.0494	-.9960	-.9604	-.9304
	-.9245	-.7940	-.7401	-.6881	-.6617	-.6617			
-12.00	-1.2473	-1.2473	-1.2706	-1.2828	-1.1954	-1.0787	-.9994	-.9456	-.8959
	-.8850	-.7610	-.6971	-.6296	-.6057	-.6057			
-11.00	-1.1510	-1.1510	-1.1720	-1.2054	-1.1691	-1.0913	-1.0008	-.9302	-.8607
	-.8443	-.7260	-.6514	-.5676	-.5463	-.5463			
-10.00	-1.0519	-1.0519	-1.0713	-1.1036	-1.1124	-1.0643	-.9940	-.9143	-.8260
	-.8032	-.6903	-.6047	-.5044	-.4856	-.4856			
-9.00	-.9514	-.9514	-.9682	-.9973	-1.0196	-1.0133	-.9655	-.8962	-.7942
	-.7620	-.6544	-.5575	-.4406	-.4245	-.4245			
-8.00	-.8488	-.8488	-.8634	-.8894	-.9097	-.9314	-.9137	-.8679	-.7735
	-.7209	-.6183	-.5102	-.3768	-.3632	-.3632			
-7.00	-.7449	-.7449	-.7578	-.7800	-.7975	-.8204	-.8380	-.8112	-.7641
	-.6800	-.5819	-.4627	-.3130	-.3020	-.3020			
-6.00	-.6402	-.6402	-.6509	-.6696	-.6843	-.7030	-.7297	-.7350	-.7058
	-.6400	-.5445	-.4151	-.2494	-.2410	-.2410			
-5.00	-.5343	-.5343	-.5432	-.5589	-.5708	-.5860	-.6074	-.6332	-.6224
	-.5930	-.5041	-.3668	-.1866	-.1807	-.1807			
-4.00	-.4277	-.4277	-.4347	-.4473	-.4566	-.4689	-.4851	-.5075	-.5249
	-.5064	-.4547	-.3169	-.1258	-.1224	-.1224			
-3.00	-.3198	-.3198	-.3263	-.3355	-.3423	-.3513	-.3630	-.3803	-.4008
	-.4003	-.3804	-.2625	-.0706	-.0692	-.0692			
-2.00	-.2139	-.2139	-.2172	-.2235	-.2280	-.2342	-.2435	-.2522	-.2674
	-.2827	-.2656	-.1962	-.0304	-.0304	-.0304			
-1.00	-.1066	-.1066	-.1088	-.1114	-.1143	-.1172	-.1208	-.1260	-.1333
	-.1451	-.1365	-.1065	-.0148	-.0148	-.0148			
.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
1.00	.1066	.1066	.1088	.1114	.1143	.1172	.1208	.1260	.1333
	.1451	.1365	.1065	.0148	.0148	.0148			
2.00	.2139	.2139	.2172	.2235	.2280	.2342	.2435	.2522	.2674
	.2827	.2656	.1962	.0304	.0304	.0304			
3.00	.3198	.3198	.3263	.3355	.3423	.3513	.3630	.3803	.4008
	.4003	.3804	.2625	.0706	.0692	.0692			
4.00	.4277	.4277	.4347	.4473	.4566	.4689	.4851	.5075	.5249
	.5064	.4547	.3169	.1258	.1224	.1224			
5.00	.5343	.5343	.5432	.5589	.5708	.5860	.6074	.6332	.6224
	.5930	.5041	.3668	.1866	.1807	.1807			
6.00	.6402	.6402	.6509	.6696	.6843	.7030	.7297	.7350	.7058
	.6400	.5445	.4151	.2494	.2410	.2410			
7.00	.7449	.7449	.7578	.7800	.7975	.8204	.8380	.8112	.7641
	.6800	.5819	.4627	.3130	.3020	.3020			
8.00	.8488	.8488	.8634	.8894	.9097	.9314	.9137	.8679	.7735
	.7209	.6183	.5102	.3768	.3632	.3632			
9.00	.9514	.9514	.9682	.9973	1.0196	1.0133	.9655	.8962	.7942
	.7620	.6544	.5575	.4406	.4245	.4245			
10.00	1.0519	1.0519	1.0713	1.1036	1.1124	1.0643	.9940	.9143	.8260
	.8032	.6903	.6047	.5044	.4856	.4856			
11.00	1.1510	1.1510	1.1720	1.2054	1.1691	1.0913	1.0008	.9302	.8607
	.8443	.7260	.6514	.5676	.5463	.5463			
12.00	1.2473	1.2473	1.2706	1.2828	1.1954	1.0787	.9994	.9456	.8959
	.8850	.7610	.6971	.6296	.6057	.6057			
13.00	1.3407	1.3407	1.3663	1.3213	1.1929	1.0494	.9960	.9604	.9304
	.9245	.7940	.7401	.6881	.6617	.6617			
14.00	1.4306	1.4306	1.4585	1.3301	1.1126	1.0174	.9916	.9735	.9616
	.9596	.8211	.7754	.7370	.7085	.7085			

15.00	1.1900	1.1900	1.0900	1.0550	1.0225	.9900	.9850	.9800	.9800
	.9800	.8300	.7900	.7600	.7300	.7300			
16.00	1.0680	1.0680	.9927	.9917	.9825	.9733	.9717	.9700	.9700
	.9700	.8067	.7700	.7400	.7100	.7100			
21.00	.8000	.8000	.8100	.8300	.8400	.8500	.8500	.8500	.8500
	.8500	.7100	.6800	.6600	.6400	.6400			
30.00	.9900	.9900	.9950	1.0050	1.0100	1.0150	1.0150	1.0150	1.0150
	1.0150	.9450	.9300	.9200	.9100	.9100			
50.00	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528
	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528			
60.00	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802
	.8802	.8802	.8802	.8802	.8802	.8802			
70.00	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077
	.6077	.6077	.6077	.6077	.6077	.6077			
80.00	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352
	.3352	.3352	.3352	.3352	.3352	.3352			
90.00	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627
	.0627	.0627	.0627	.0627	.0627	.0627			
100.00	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097
	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097			
110.00	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823
	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823			
120.00	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548
	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548			
140.00	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000
	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000			
160.00	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471
	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471			
170.00	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452
	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
-170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
-160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
-140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
-120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
-110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
-100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
-70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
-60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
-50.00	1.3920	1.3920	1.3920	1.3920	1.3925	1.3930	1.3955	1.3980	1.3969
	1.3934	1.3920	1.3920	1.3920	1.3920	1.3920			
-30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
-21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
-16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
-15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
-14.00	.0391	.0391	.0431	.0631	.1316	.1658	.1889	.2017	.2136
	.2258	.2423	.2565	.2651	.2672	.2672			
-13.00	.0352	.0352	.0386	.0501	.0672	.1129	.1542	.1727	.1885
	.2042	.2223	.2375	.2504	.2503	.2503			
-12.00	.0317	.0317	.0345	.0403	.0528	.0702	.1192	.1436	.1633
	.1829	.2028	.2192	.2381	.2374	.2374			
-11.00	.0286	.0286	.0309	.0342	.0413	.0549	.0855	.1146	.1382
	.1617	.1834	.2013	.2268	.2259	.2259			
-10.00	.0258	.0258	.0276	.0301	.0331	.0423	.0580	.0866	.1133
	.1405	.1640	.1835	.2159	.2150	.2150			
-9.00	.0233	.0233	.0247	.0266	.0280	.0327	.0442	.0628	.0893
	.1194	.1447	.1657	.2051	.2043	.2043			
-8.00	.0211	.0211	.0221	.0235	.0245	.0263	.0331	.0478	.0683
	.0984	.1254	.1479	.1943	.1936	.1936			
-7.00	.0191	.0191	.0198	.0208	.0215	.0225	.0251	.0350	.0535
	.0781	.1062	.1302	.1836	.1830	.1830			
-6.00	.0175	.0175	.0179	.0185	.0190	.0196	.0206	.0252	.0392
	.0598	.0871	.1125	.1729	.1725	.1725			
-5.00	.0161	.0161	.0163	.0166	.0169	.0173	.0178	.0192	.0272
	.0454	.0687	.0949	.1624	.1621	.1621			
-4.00	.0150	.0150	.0150	.0151	.0152	.0154	.0156	.0161	.0191
	.0318	.0520	.0778	.1524	.1522	.1522			
-3.00	.0141	.0141	.0140	.0139	.0138	.0139	.0140	.0142	.0148
	.0213	.0385	.0619	.1435	.1434	.1434			
-2.00	.0135	.0135	.0132	.0130	.0129	.0129	.0128	.0129	.0131
	.0148	.0261	.0490	.1378	.1378	.1378			
-1.00	.0132	.0132	.0128	.0125	.0124	.0122	.0121	.0121	.0121
	.0123	.0176	.0420	.1372	.1372	.1372			

.00	.0130	.0130	.0127	.0123	.0122	.0120	.0119	.0118	.0118
	.0119	.0143	.0395	.1366	.1366	.1366			
1.00	.0132	.0132	.0128	.0125	.0124	.0122	.0121	.0121	.0121
	.0123	.0176	.0420	.1372	.1372	.1372			
2.00	.0135	.0135	.0132	.0130	.0129	.0129	.0128	.0129	.0131
	.0148	.0261	.0490	.1378	.1378	.1378			
3.00	.0141	.0141	.0140	.0139	.0138	.0139	.0140	.0142	.0148
	.0213	.0385	.0619	.1435	.1434	.1434			
4.00	.0150	.0150	.0150	.0151	.0152	.0154	.0156	.0161	.0191
	.0318	.0520	.0778	.1524	.1522	.1522			
5.00	.0161	.0161	.0163	.0166	.0169	.0173	.0178	.0192	.0272
	.0454	.0687	.0949	.1624	.1621	.1621			
6.00	.0175	.0175	.0179	.0185	.0190	.0196	.0206	.0252	.0392
	.0598	.0871	.1125	.1729	.1725	.1725			
7.00	.0191	.0191	.0198	.0208	.0215	.0225	.0251	.0350	.0535
	.0781	.1062	.1302	.1836	.1830	.1830			
8.00	.0211	.0211	.0221	.0235	.0245	.0263	.0331	.0478	.0683
	.0984	.1254	.1479	.1943	.1936	.1936			
9.00	.0233	.0233	.0247	.0266	.0280	.0327	.0442	.0628	.0893
	.1194	.1447	.1657	.2051	.2043	.2043			
10.00	.0258	.0258	.0276	.0301	.0331	.0423	.0580	.0866	.1133
	.1405	.1640	.1835	.2159	.2150	.2150			
11.00	.0286	.0286	.0309	.0342	.0413	.0549	.0855	.1146	.1382
	.1617	.1834	.2013	.2268	.2259	.2259			
12.00	.0317	.0317	.0345	.0403	.0528	.0702	.1192	.1436	.1633
	.1829	.2028	.2192	.2381	.2374	.2374			
13.00	.0352	.0352	.0386	.0501	.0672	.1129	.1542	.1727	.1885
	.2042	.2223	.2375	.2504	.2503	.2503			
14.00	.0391	.0391	.0431	.0631	.1316	.1658	.1889	.2017	.2136
	.2258	.2423	.2565	.2651	.2672	.2672			
15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
50.00	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920
	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920			
60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000
	.4000	.4000	.4000	.4000	.4000	.4000			
-160.00	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000
	.3000	.3000	.3000	.3000	.3000	.3000			
-140.00	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600
	.4600	.4600	.4600	.4600	.4600	.4600			
-120.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-110.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-100.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-90.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-80.00	.4457	.4457	.4473	.4493	.4508	.4523	.4541	.4558	.4571
	.4583	.4607	.4628	.4646	.4663	.4663			
-70.00	.3913	.3913	.3947	.3987	.4017	.4047	.4082	.4117	.4142
	.4167	.4213	.4257	.4292	.4327	.4327			
-60.00	.3370	.3370	.3420	.3480	.3525	.3570	.3623	.3675	.3713
	.3750	.3820	.3885	.3938	.3990	.3990			
-50.00	.2827	.2827	.2893	.2973	.3033	.3093	.3163	.3233	.3283
	.3333	.3427	.3513	.3583	.3653	.3653			
-30.00	.1740	.1740	.1840	.1960	.2050	.2140	.2245	.2350	.2425
	.2500	.2640	.2770	.2875	.2980	.2980			
-21.00	.1009	.1009	.1066	.1160	.1233	.1306	.1368	.1430	.1493
	.1556	.1699	.1974	.2101	.2229	.2229			
-16.00	.0730	.0730	.0780	.0860	.0915	.0970	.1025	.1080	.1125
	.1170	.1370	.1760	.1880	.2000	.2000			

-15.00	.0540	.0540	.0650	.0730	.0785	.0840	.0905	.0970	.1040
	.1110	.1330	.1730	.1840	.1950	.1950			
-14.00	-.0241	-.0241	-.0300	-.0484	.0103	.0385	.0632	.0739	.0854
	.0979	.1230	.1642	.1705	.1805	.1805			
-13.00	-.0216	-.0216	-.0266	-.0437	-.0528	-.0171	.0292	.0454	.0619
	.0809	.1095	.1519	.1512	.1603	.1603			
-12.00	-.0193	-.0193	-.0234	-.0360	-.0493	-.0569	-.0057	.0156	.0372
	.0628	.0948	.1382	.1298	.1380	.1380			
-11.00	-.0171	-.0171	-.0205	-.0288	-.0415	-.0542	-.0380	-.0138	.0122
	.0444	.0797	.1241	.1076	.1149	.1149			
-10.00	-.0152	-.0152	-.0178	-.0240	-.0319	-.0468	-.0580	-.0407	-.0123
	.0259	.0645	.1098	.0851	.0915	.0915			
-9.00	-.0133	-.0133	-.0154	-.0202	-.0246	-.0361	-.0510	-.0573	-.0347
	.0076	.0492	.0954	.0626	.0681	.0681			
-8.00	-.0116	-.0116	-.0133	-.0169	-.0200	-.0261	-.0402	-.0519	-.0491
	-.0101	.0341	.0810	.0400	.0446	.0446			
-7.00	-.0100	-.0100	-.0113	-.0141	-.0163	-.0199	-.0285	-.0428	-.0469
	-.0258	.0191	.0666	.0175	.0213	.0213			
-6.00	-.0084	-.0084	-.0094	-.0116	-.0132	-.0157	-.0199	-.0315	-.0407
	-.0346	.0048	.0523	-.0046	-.0018	-.0018			
-5.00	-.0070	-.0070	-.0077	-.0093	-.0104	-.0122	-.0148	-.0207	-.0324
	-.0307	-.0076	.0383	-.0260	-.0240	-.0240			
-4.00	-.0056	-.0056	-.0062	-.0072	-.0081	-.0092	-.0109	-.0140	-.0221
	-.0267	-.0139	.0248	-.0452	-.0440	-.0440			
-3.00	-.0045	-.0045	-.0046	-.0054	-.0059	-.0067	-.0078	-.0093	-.0136
	-.0209	-.0108	.0131	-.0584	-.0580	-.0580			
-2.00	-.0029	-.0029	-.0031	-.0036	-.0039	-.0043	-.0046	-.0060	-.0077
	-.0127	-.0108	.0059	-.0555	-.0555	-.0555			
-1.00	-.0015	-.0015	-.0015	-.0019	-.0019	-.0021	-.0024	-.0029	-.0036
	-.0052	-.0075	.0051	-.0269	-.0269	-.0269			
.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
1.00	.0015	.0015	.0015	.0019	.0019	.0021	.0024	.0029	.0036
	.0052	.0075	-.0051	.0269	.0269	.0269			
2.00	.0029	.0029	.0031	.0036	.0039	.0043	.0046	.0060	.0077
	.0127	.0108	-.0059	.0555	.0555	.0555			
3.00	.0045	.0045	.0046	.0054	.0059	.0067	.0078	.0093	.0136
	.0209	.0108	-.0131	.0584	.0580	.0580			
4.00	.0056	.0056	.0062	.0072	.0081	.0092	.0109	.0140	.0221
	.0267	.0139	-.0248	.0452	.0440	.0440			
5.00	.0070	.0070	.0077	.0093	.0104	.0122	.0148	.0207	.0324
	.0307	.0076	-.0383	.0260	.0240	.0240			
6.00	.0084	.0084	.0094	.0116	.0132	.0157	.0199	.0315	.0407
	.0346	-.0048	-.0523	.0046	.0018	.0018			
7.00	.0100	.0100	.0113	.0141	.0163	.0199	.0285	.0428	.0469
	.0258	-.0191	-.0666	-.0175	-.0213	-.0213			
8.00	.0116	.0116	.0133	.0169	.0200	.0261	.0402	.0519	.0491
	.0101	-.0341	-.0810	-.0400	-.0446	-.0446			
9.00	.0133	.0133	.0154	.0202	.0246	.0361	.0510	.0573	.0347
	-.0076	-.0492	-.0954	-.0626	-.0681	-.0681			
10.00	.0152	.0152	.0178	.0240	.0319	.0468	.0580	.0407	.0123
	-.0259	-.0645	-.1098	-.0851	-.0915	-.0915			
11.00	.0171	.0171	.0205	.0288	.0415	.0542	.0380	.0138	-.0122
	-.0444	-.0797	-.1241	-.1076	-.1149	-.1149			
12.00	.0193	.0193	.0234	.0360	.0493	.0569	.0057	-.0156	-.0372
	-.0628	-.0948	-.1382	-.1298	-.1380	-.1380			
13.00	.0216	.0216	.0266	.0437	.0528	.0171	-.0292	-.0454	-.0619
	-.0809	-.1095	-.1519	-.1512	-.1603	-.1603			
14.00	.0241	.0241	.0300	.0484	-.0103	-.0385	-.0632	-.0739	-.0854
	-.0979	-.1230	-.1642	-.1705	-.1805	-.1805			
15.00	-.0540	-.0540	-.0650	-.0730	-.0785	-.0840	-.0905	-.0970	-.1040
	-.1110	-.1330	-.1730	-.1840	-.1950	-.1950			
16.00	-.0730	-.0730	-.0780	-.0860	-.0915	-.0970	-.1025	-.1080	-.1125
	-.1170	-.1370	-.1760	-.1880	-.2000	-.2000			
21.00	-.1009	-.1009	-.1066	-.1160	-.1233	-.1306	-.1368	-.1430	-.1493
	-.1556	-.1699	-.1974	-.2101	-.2229	-.2229			
30.00	-.1740	-.1740	-.1840	-.1960	-.2050	-.2140	-.2245	-.2350	-.2425
	-.2500	-.2640	-.2770	-.2875	-.2980	-.2980			
50.00	-.2827	-.2827	-.2893	-.2973	-.3033	-.3093	-.3163	-.3233	-.3283
	-.3333	-.3427	-.3513	-.3583	-.3653	-.3653			
60.00	-.3370	-.3370	-.3420	-.3480	-.3525	-.3570	-.3623	-.3675	-.3713
	-.3750	-.3820	-.3885	-.3938	-.3990	-.3990			
70.00	-.3913	-.3913	-.3947	-.3987	-.4017	-.4047	-.4082	-.4117	-.4142
	-.4167	-.4213	-.4257	-.4292	-.4327	-.4327			
80.00	-.4457	-.4457	-.4473	-.4493	-.4508	-.4523	-.4541	-.4558	-.4571
	-.4583	-.4607	-.4628	-.4646	-.4663	-.4663			
90.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
100.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
110.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
120.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
140.00	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600
	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600			
160.00	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000
	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000			
170.00	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000
	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

FLAP	INTERPOLATED DATA			156115611561		NACA-0015 BASELINE (D=0.0 DEGS.)			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	-.0020	-.0020	-.0020	-.0016	-.0013	-.0009	-.0003	.0000	.0003
	.0008	.0012	.0010	.0072	.0072	.0072			
-160.00	-.0041	-.0041	-.0039	-.0032	-.0025	-.0019	-.0007	.0000	.0006
	.0017	.0024	.0020	.0143	.0143	.0143			
-140.00	-.0082	-.0082	-.0079	-.0063	-.0051	-.0038	-.0014	.0000	.0012
	.0033	.0049	.0041	.0287	.0287	.0287			
-120.00	-.0123	-.0123	-.0118	-.0095	-.0076	-.0056	-.0020	.0001	.0018
	.0050	.0073	.0061	.0430	.0430	.0430			
-110.00	-.0143	-.0143	-.0138	-.0110	-.0089	-.0066	-.0024	.0001	.0022
	.0058	.0086	.0071	.0502	.0502	.0502			
-100.00	-.0163	-.0163	-.0158	-.0126	-.0102	-.0075	-.0027	.0001	.0025
	.0067	.0098	.0081	.0574	.0574	.0574			
-90.00	-.0184	-.0184	-.0177	-.0142	-.0114	-.0085	-.0031	.0001	.0028
	.0075	.0110	.0092	.0646	.0646	.0646			
-80.00	-.0204	-.0204	-.0197	-.0158	-.0127	-.0094	-.0034	.0001	.0031
	.0083	.0122	.0102	.0717	.0717	.0717			
-70.00	-.0225	-.0225	-.0217	-.0174	-.0140	-.0103	-.0038	.0001	.0034
	.0092	.0134	.0112	.0789	.0789	.0789			
-60.00	-.0245	-.0245	-.0236	-.0189	-.0152	-.0113	-.0041	.0001	.0037
	.0100	.0147	.0122	.0861	.0861	.0861			
-50.00	-.0265	-.0265	-.0256	-.0205	-.0165	-.0122	-.0044	.0002	.0040
	.0108	.0159	.0132	.0933	.0933	.0933			
-30.00	-.0306	-.0306	-.0295	-.0237	-.0190	-.0141	-.0051	.0002	.0046
	.0125	.0183	.0153	.1076	.1076	.1076			
-21.00	-.0325	-.0325	-.0313	-.0251	-.0202	-.0150	-.0054	.0002	.0049
	.0132	.0194	.0162	.1141	.1141	.1141			
-16.00	-.0335	-.0335	-.0323	-.0259	-.0208	-.0154	-.0056	.0002	.0051
	.0137	.0200	.0167	.1177	.1177	.1177			
-15.00	-.0337	-.0337	-.0325	-.0260	-.0209	-.0155	-.0056	.0002	.0051
	.0137	.0202	.0168	.1184	.1184	.1184			
-14.00	-.0339	-.0339	-.0327	-.0262	-.0211	-.0156	-.0057	.0002	.0051
	.0138	.0203	.0169	.1191	.1191	.1191			
-13.00	-.0322	-.0322	-.0309	-.0236	-.0212	-.0157	-.0057	.0002	.0051
	.0139	.0204	.0170	.1198	.1198	.1198			
-12.00	-.0304	-.0304	-.0292	-.0241	-.0177	-.0158	-.0057	.0002	.0052
	.0140	.0205	.0171	.1205	.1205	.1205			
-11.00	-.0285	-.0285	-.0274	-.0246	-.0177	-.0121	-.0058	.0002	.0052
	.0141	.0206	.0172	.1212	.1212	.1212			
-10.00	-.0264	-.0264	-.0255	-.0233	-.0199	-.0117	-.0058	.0002	.0052
	.0142	.0208	.0173	.1220	.1220	.1220			
-9.00	-.0244	-.0244	-.0235	-.0216	-.0202	-.0142	-.0057	.0002	.0053
	.0142	.0209	.0174	.1227	.1227	.1227			
-8.00	-.0221	-.0221	-.0213	-.0198	-.0187	-.0164	-.0081	.0008	.0053
	.0143	.0210	.0175	.1234	.1234	.1234			
-7.00	-.0197	-.0197	-.0192	-.0178	-.0170	-.0156	-.0117	-.0015	.0079
	.0144	.0211	.0176	.1241	.1241	.1241			
-6.00	-.0174	-.0174	-.0169	-.0157	-.0150	-.0138	-.0124	-.0054	.0058
	.0145	.0213	.0177	.1248	.1248	.1248			
-5.00	-.0149	-.0149	-.0145	-.0136	-.0130	-.0121	-.0109	-.0083	.0021
	.0139	.0214	.0178	.1255	.1255	.1255			
-4.00	-.0123	-.0123	-.0120	-.0114	-.0109	-.0102	-.0093	-.0078	-.0025
	.0101	.0215	.0179	.1263	.1263	.1263			
-3.00	-.0094	-.0094	-.0096	-.0091	-.0087	-.0082	-.0075	-.0068	-.0042
	.0052	.0183	.0180	.1270	.1270	.1270			
-2.00	-.0072	-.0072	-.0070	-.0068	-.0065	-.0063	-.0063	-.0052	-.0041
	.0000	.0132	.0181	.1277	.1277	.1277			
-1.00	-.0046	-.0046	-.0047	-.0044	-.0045	-.0044	-.0042	-.0039	-.0034
	-.0024	.0059	.0105	.0635	.0635	.0635			
.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
1.00	.0046	.0046	.0047	.0044	.0045	.0044	.0042	.0039	.0034
	.0024	-.0059	-.0105	-.0635	-.0635	-.0635			
2.00	.0072	.0072	.0070	.0068	.0065	.0063	.0063	.0052	.0041
	.0000	-.0132	-.0181	-.1277	-.1277	-.1277			
3.00	.0094	.0094	.0096	.0091	.0087	.0082	.0075	.0068	.0042
	-.0052	-.0183	-.0180	-.1270	-.1270	-.1270			
4.00	.0123	.0123	.0120	.0114	.0109	.0102	.0093	.0078	.0025
	-.0101	-.0215	-.0179	-.1263	-.1263	-.1263			
5.00	.0149	.0149	.0145	.0136	.0130	.0121	.0109	.0083	-.0021
	-.0139	-.0214	-.0178	-.1255	-.1255	-.1255			
6.00	.0174	.0174	.0169	.0157	.0150	.0138	.0124	.0054	-.0058
	-.0145	-.0213	-.0177	-.1248	-.1248	-.1248			
7.00	.0197	.0197	.0192	.0178	.0170	.0156	.0117	.0015	-.0079
	-.0144	-.0211	-.0176	-.1241	-.1241	-.1241			
8.00	.0221	.0221	.0213	.0198	.0187	.0164	.0081	-.0008	-.0053
	-.0143	-.0210	-.0175	-.1234	-.1234	-.1234			
9.00	.0244	.0244	.0235	.0216	.0202	.0142	.0057	-.0002	-.0053
	-.0143	-.0209	-.0174	-.1227	-.1227	-.1227			
10.00	.0264	.0264	.0255	.0233	.0199	.0117	.0058	-.0002	-.0052
	-.0142	-.0208	-.0173	-.1220	-.1220	-.1220			
11.00	.0285	.0285	.0274	.0246	.0177	.0121	.0058	-.0002	-.0052
	-.0141	-.0206	-.0172	-.1212	-.1212	-.1212			
12.00	.0304	.0304	.0292	.0241	.0177	.0158	.0057	-.0002	-.0052
	-.0140	-.0205	-.0171	-.1205	-.1205	-.1205			
13.00	.0322	.0322	.0309	.0236	.0212	.0157	.0057	-.0002	-.0051
	-.0139	-.0204	-.0170	-.1198	-.1198	-.1198			
14.00	.0339	.0339	.0327	.0262	.0211	.0156	.0057	-.0002	-.0051
	-.0138	-.0203	-.0169	-.1191	-.1191	-.1191			

15.00	.0337	.0337	.0325	.0260	.0209	.0155	.0056	-.0002	-.0051
	-.0137	-.0202	-.0168	-.1184	-.1184	-.1184			
16.00	.0335	.0335	.0323	.0259	.0208	.0154	.0056	-.0002	-.0051
	-.0137	-.0200	-.0167	-.1177	-.1177	-.1177			
21.00	.0325	.0325	.0313	.0251	.0202	.0150	.0054	-.0002	-.0049
	-.0132	-.0194	-.0162	-.1141	-.1141	-.1141			
30.00	.0306	.0306	.0295	.0237	.0190	.0141	.0051	-.0002	-.0046
	-.0125	-.0183	-.0153	-.1076	-.1076	-.1076			
50.00	.0265	.0265	.0256	.0205	.0165	.0122	.0044	-.0002	-.0040
	-.0108	-.0159	-.0132	-.0933	-.0933	-.0933			
60.00	.0245	.0245	.0236	.0189	.0152	.0113	.0041	-.0001	-.0037
	-.0100	-.0147	-.0122	-.0861	-.0861	-.0861			
70.00	.0225	.0225	.0217	.0174	.0140	.0103	.0038	-.0001	-.0034
	-.0092	-.0134	-.0112	-.0789	-.0789	-.0789			
80.00	.0204	.0204	.0197	.0158	.0127	.0094	.0034	-.0001	-.0031
	-.0083	-.0122	-.0102	-.0717	-.0717	-.0717			
90.00	.0184	.0184	.0177	.0142	.0114	.0085	.0031	-.0001	-.0028
	-.0075	-.0110	-.0092	-.0646	-.0646	-.0646			
100.00	.0163	.0163	.0158	.0126	.0102	.0075	.0027	-.0001	-.0025
	-.0067	-.0098	-.0081	-.0574	-.0574	-.0574			
110.00	.0143	.0143	.0138	.0110	.0089	.0066	.0024	-.0001	-.0022
	-.0058	-.0086	-.0071	-.0502	-.0502	-.0502			
120.00	.0123	.0123	.0118	.0095	.0076	.0056	.0020	-.0001	-.0018
	-.0050	-.0073	-.0061	-.0430	-.0430	-.0430			
140.00	.0082	.0082	.0079	.0063	.0051	.0038	.0014	.0000	-.0012
	-.0033	-.0049	-.0041	-.0287	-.0287	-.0287			
160.00	.0041	.0041	.0039	.0032	.0025	.0019	.0007	.0000	-.0006
	-.0017	-.0024	-.0020	-.0143	-.0143	-.0143			
170.00	.0020	.0020	.0020	.0016	.0013	.0009	.0003	.0000	-.0003
	-.0008	-.0012	-.0010	-.0072	-.0072	-.0072			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0001	.0001	.0001	.0001	.0001	.0001	.0000	-.0001	-.0001
	-.0001	-.0002	-.0001	-.0007	-.0007	-.0007			
-160.00	.0003	.0003	.0003	.0002	.0002	.0001	.0000	-.0001	-.0002
	-.0003	-.0003	-.0003	-.0015	-.0015	-.0015			
-140.00	.0006	.0006	.0005	.0005	.0003	.0002	-.0001	-.0002	-.0003
	-.0005	-.0007	-.0006	-.0030	-.0030	-.0030			
-120.00	.0008	.0008	.0008	.0007	.0005	.0003	-.0001	-.0003	-.0005
	-.0008	-.0010	-.0008	-.0045	-.0045	-.0045			
-110.00	.0010	.0010	.0009	.0008	.0006	.0004	-.0001	-.0004	-.0006
	-.0009	-.0012	-.0010	-.0052	-.0052	-.0052			
-100.00	.0011	.0011	.0010	.0009	.0007	.0004	-.0001	-.0004	-.0007
	-.0011	-.0013	-.0011	-.0060	-.0060	-.0060			
-90.00	.0012	.0012	.0011	.0010	.0008	.0005	-.0002	-.0005	-.0007
	-.0012	-.0015	-.0013	-.0067	-.0067	-.0067			
-80.00	.0014	.0014	.0013	.0011	.0008	.0005	-.0002	-.0005	-.0008
	-.0013	-.0016	-.0014	-.0075	-.0075	-.0075			
-70.00	.0015	.0015	.0014	.0013	.0009	.0006	-.0002	-.0006	-.0009
	-.0015	-.0018	-.0015	-.0082	-.0082	-.0082			
-60.00	.0017	.0017	.0015	.0014	.0010	.0006	-.0002	-.0006	-.0010
	-.0016	-.0020	-.0017	-.0090	-.0090	-.0090			
-50.00	.0018	.0018	.0016	.0015	.0011	.0007	-.0002	-.0007	-.0011
	-.0017	-.0021	-.0018	-.0097	-.0097	-.0097			
-30.00	.0021	.0021	.0019	.0017	.0013	.0008	-.0003	-.0008	-.0012
	-.0020	-.0025	-.0021	-.0112	-.0112	-.0112			
-21.00	.0022	.0022	.0020	.0018	.0013	.0009	-.0003	-.0008	-.0013
	-.0021	-.0026	-.0022	-.0119	-.0119	-.0119			
-16.00	.0023	.0023	.0021	.0019	.0014	.0009	-.0003	-.0009	-.0013
	-.0022	-.0027	-.0023	-.0123	-.0123	-.0123			

-15.00	.0023	.0023	.0021	.0019	.0014	.0009	-.0003	-.0009	-.0013
	-.0022	-.0027	-.0023	-.0123	-.0123	-.0123			
-14.00	.0023	.0023	.0021	.0019	.0014	.0009	-.0003	-.0009	-.0014
	-.0022	-.0027	-.0023	-.0124	-.0124	-.0124			
-13.00	.0021	.0021	.0019	.0014	.0014	.0009	-.0003	-.0009	-.0014
	-.0022	-.0028	-.0023	-.0125	-.0125	-.0125			
-12.00	.0019	.0019	.0017	.0012	.0009	.0009	-.0003	-.0009	-.0014
	-.0022	-.0028	-.0024	-.0126	-.0126	-.0126			
-11.00	.0017	.0017	.0015	.0012	.0006	.0003	-.0003	-.0009	-.0014
	-.0022	-.0028	-.0024	-.0126	-.0126	-.0126			
-10.00	.0015	.0015	.0014	.0011	.0008	.0001	-.0003	-.0009	-.0014
	-.0022	-.0028	-.0024	-.0127	-.0127	-.0127			
-9.00	.0013	.0013	.0012	.0010	.0008	.0002	-.0005	-.0009	-.0014
	-.0023	-.0028	-.0024	-.0128	-.0128	-.0128			
-8.00	.0012	.0012	.0011	.0009	.0007	.0005	-.0003	-.0011	-.0014
	-.0023	-.0028	-.0024	-.0129	-.0129	-.0129			
-7.00	.0010	.0010	.0009	.0007	.0006	.0005	.0000	-.0009	-.0017
	-.0023	-.0029	-.0024	-.0129	-.0129	-.0129			
-6.00	.0009	.0009	.0008	.0006	.0005	.0004	.0002	-.0005	-.0016
	-.0023	-.0029	-.0024	-.0130	-.0130	-.0130			
-5.00	.0007	.0007	.0006	.0005	.0004	.0003	.0002	-.0001	-.0012
	-.0023	-.0029	-.0025	-.0131	-.0131	-.0131			
-4.00	.0005	.0005	.0005	.0004	.0003	.0002	.0001	-.0001	-.0006
	-.0018	-.0029	-.0025	-.0132	-.0132	-.0132			
-3.00	.0004	.0004	.0004	.0003	.0002	.0001	.0001	.0000	-.0003
	-.0013	-.0025	-.0025	-.0132	-.0132	-.0132			
-2.00	.0003	.0003	.0002	.0002	.0001	.0001	.0001	-.0001	-.0002
	-.0006	-.0019	-.0025	-.0133	-.0133	-.0133			
-1.00	.0001	.0001	.0001	.0001	.0001	.0001	.0000	.0000	-.0001
	-.0002	-.0010	-.0014	-.0066	-.0066	-.0066			
.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
1.00	-.0001	-.0001	-.0001	-.0001	-.0001	-.0001	.0000	.0000	.0001
	.0002	.0010	.0014	.0066	.0066	.0066			
2.00	-.0003	-.0003	-.0002	-.0002	-.0001	-.0001	-.0001	.0001	.0002
	.0006	.0019	.0025	.0133	.0133	.0133			
3.00	-.0004	-.0004	-.0004	-.0003	-.0002	-.0001	-.0001	.0000	.0003
	.0013	.0025	.0025	.0132	.0132	.0132			
4.00	-.0005	-.0005	-.0005	-.0004	-.0003	-.0002	-.0001	.0001	.0006
	.0018	.0029	.0025	.0132	.0132	.0132			
5.00	-.0007	-.0007	-.0006	-.0005	-.0004	-.0003	-.0002	.0001	.0012
	.0023	.0029	.0025	.0131	.0131	.0131			
6.00	-.0009	-.0009	-.0008	-.0006	-.0005	-.0004	-.0002	.0005	.0016
	.0023	.0029	.0024	.0130	.0130	.0130			
7.00	-.0010	-.0010	-.0009	-.0007	-.0006	-.0005	.0000	.0009	.0017
	.0023	.0029	.0024	.0129	.0129	.0129			
8.00	-.0012	-.0012	-.0011	-.0009	-.0007	-.0005	.0003	.0011	.0014
	.0023	.0028	.0024	.0129	.0129	.0129			
9.00	-.0013	-.0013	-.0012	-.0010	-.0008	-.0002	.0005	.0009	.0014
	.0023	.0028	.0024	.0128	.0128	.0128			
10.00	-.0015	-.0015	-.0014	-.0011	-.0008	-.0001	.0003	.0009	.0014
	.0022	.0028	.0024	.0127	.0127	.0127			
11.00	-.0017	-.0017	-.0015	-.0012	-.0006	-.0003	.0003	.0009	.0014
	.0022	.0028	.0024	.0126	.0126	.0126			
12.00	-.0019	-.0019	-.0017	-.0012	-.0009	-.0009	.0003	.0009	.0014
	.0022	.0028	.0024	.0126	.0126	.0126			
13.00	-.0021	-.0021	-.0019	-.0014	-.0014	-.0009	.0003	.0009	.0014
	.0022	.0028	.0023	.0125	.0125	.0125			
14.00	-.0023	-.0023	-.0021	-.0019	-.0014	-.0009	.0003	.0009	.0014
	.0022	.0027	.0023	.0124	.0124	.0124			
15.00	-.0023	-.0023	-.0021	-.0019	-.0014	-.0009	.0003	.0009	.0013
	.0022	.0027	.0023	.0123	.0123	.0123			
16.00	-.0023	-.0023	-.0021	-.0019	-.0014	-.0009	.0003	.0009	.0013
	.0022	.0027	.0023	.0123	.0123	.0123			
21.00	-.0022	-.0022	-.0020	-.0018	-.0013	-.0009	.0003	.0008	.0013
	.0021	.0026	.0022	.0119	.0119	.0119			
30.00	-.0021	-.0021	-.0019	-.0017	-.0013	-.0008	.0003	.0008	.0012
	.0020	.0025	.0021	.0112	.0112	.0112			
50.00	-.0018	-.0018	-.0016	-.0015	-.0011	-.0007	.0002	.0007	.0011
	.0017	.0021	.0018	.0097	.0097	.0097			
60.00	-.0017	-.0017	-.0015	-.0014	-.0010	-.0006	.0002	.0006	.0010
	.0016	.0020	.0017	.0090	.0090	.0090			
70.00	-.0015	-.0015	-.0014	-.0013	-.0009	-.0006	.0002	.0006	.0009
	.0015	.0018	.0015	.0082	.0082	.0082			
80.00	-.0014	-.0014	-.0013	-.0011	-.0008	-.0005	.0002	.0005	.0008
	.0013	.0016	.0014	.0075	.0075	.0075			
90.00	-.0012	-.0012	-.0011	-.0010	-.0008	-.0005	.0002	.0005	.0007
	.0012	.0015	.0013	.0067	.0067	.0067			
100.00	-.0011	-.0011	-.0010	-.0009	-.0007	-.0004	.0001	.0004	.0007
	.0011	.0013	.0011	.0060	.0060	.0060			
110.00	-.0010	-.0010	-.0009	-.0008	-.0006	-.0004	.0001	.0004	.0006
	.0009	.0012	.0010	.0052	.0052	.0052			
120.00	-.0008	-.0008	-.0008	-.0007	-.0005	-.0003	.0001	.0003	.0005
	.0008	.0010	.0008	.0045	.0045	.0045			
140.00	-.0006	-.0006	-.0005	-.0005	-.0003	-.0002	.0001	.0002	.0003
	.0005	.0007	.0006	.0030	.0030	.0030			
160.00	-.0003	-.0003	-.0003	-.0002	-.0002	-.0001	.0000	.0001	.0002
	.0003	.0003	.0003	.0015	.0015	.0015			
170.00	-.0001	-.0001	-.0001	-.0001	-.0001	-.0001	.0000	.0001	.0001
	.0001	.0002	.0001	.0007	.0007	.0007			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

AIRF INTERPOLATED DATA 156115611561 NACA-0015 (D=+5.0 DEGS.)

	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452
	.7452	.7452	.7452	.7452	.7452	.7452			
-160.00	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471
	.6471	.6471	.6471	.6471	.6471	.6471			
-140.00	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000			
-120.00	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548
	.7548	.7548	.7548	.7548	.7548	.7548			
-110.00	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823
	.4823	.4823	.4823	.4823	.4823	.4823			
-100.00	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097
	.2097	.2097	.2097	.2097	.2097	.2097			
-90.00	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627
	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627			
-80.00	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352
	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352			
-70.00	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077
	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077			
-60.00	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802
	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802			
-50.00	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528
	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528			
-30.00	-.9900	-.9900	-.9950	-1.0050	-1.0100	-1.0150	-1.0150	-1.0150	-1.0150
	-1.0150	-.9450	-.9300	-.9200	-.9100	-.9100			
-21.00	-.8000	-.8000	-.8100	-.8300	-.8400	-.8500	-.8500	-.8500	-.8500
	-.8500	-.7100	-.6800	-.6600	-.6400	-.6400			
-16.00	-1.0680	-1.0680	-.9927	-.9917	-.9825	-.9733	-.9717	-.9700	-.9700
	-.9700	-.8067	-.7700	-.7400	-.7100	-.7100			
-15.00	-1.1900	-1.1900	-1.0900	-1.0550	-1.0225	-.9900	-.9850	-.9800	-.9800
	-.9800	-.8300	-.7900	-.7600	-.7300	-.7300			
-14.00	-1.1537	-1.1537	-1.1771	-1.1552	-1.0382	-.9567	-.9557	-.9421	-.9355
	-.9392	-.7592	-.7124	-.6844	-.6564	-.6564			
-13.00	-1.0574	-1.0574	-1.0786	-1.1015	-1.0286	-.9199	-.9079	-.8826	-.8652
	-.8729	-.6362	-.5780	-.5530	-.5279	-.5279			
-12.00	-.9585	-.9585	-.9776	-1.0090	-.9902	-.9157	-.8573	-.8184	-.7886
	-.7991	-.4966	-.4240	-.4022	-.3805	-.3805			
-11.00	-.8574	-.8574	-.8736	-.9030	-.9184	-.8810	-.8123	-.7559	-.7114
	-.7232	-.3522	-.2634	-.2450	-.2267	-.2267			
-10.00	-.7552	-.7552	-.7698	-.7952	-.8140	-.8181	-.7762	-.7048	-.6387
	-.6468	-.2077	-.1013	-.0865	-.0716	-.0716			
-9.00	-.6514	-.6514	-.6641	-.6860	-.7026	-.7235	-.7145	-.6713	-.5846
	-.5709	-.0680	.0588	.0702	.0816	.0816			
-8.00	-.5466	-.5466	-.5576	-.5761	-.5899	-.6096	-.6280	-.6073	-.5588
	-.4975	.0557	.2112	.2193	.2273	.2273			
-7.00	-.4416	-.4416	-.4505	-.4657	-.4786	-.4923	-.5127	-.5237	-.4933
	-.4324	.1286	.3411	.3458	.3505	.3505			
-6.00	-.3357	-.3357	-.3433	-.3566	-.3639	-.3757	-.3914	-.4129	-.4071
	-.3749	.0425	.4057	.4075	.4093	.4093			
-5.00	-.2306	-.2306	-.2353	-.2446	-.2508	-.2580	-.2703	-.2863	-.3039
	-.2833	-.2341	.2825	.2825	.2825	.2825			
-4.00	-.1238	-.1238	-.1277	-.1330	-.1371	-.1426	-.1491	-.1595	-.1749
	-.1779	-.1490	-.0482	-.0482	-.0482	-.0482			
-3.00	-.0166	-.0166	-.0179	-.0209	-.0228	-.0253	-.0286	-.0330	-.0396
	-.0506	-.0315	.0389	.0389	.0389	.0389			
-2.00	.0907	.0907	.0909	.0915	.0919	.0925	.0931	.0936	.0943
	.0948	.1048	.1258	.1258	.1258	.1258			
-1.00	.1988	.1988	.2006	.2041	.2069	.2099	.2150	.2210	.2293
	.2423	.2521	.2242	.2242	.2242	.2242			
.00	.3068	.3068	.3104	.3144	.3217	.3280	.3371	.3486	.3649
	.3883	.3948	.3175	.3175	.3175	.3175			
1.00	.4144	.4144	.4192	.4292	.4347	.4466	.4593	.4766	.5013
	.5205	.5193	.3748	.3748	.3748	.3748			
2.00	.5215	.5215	.5287	.5412	.5514	.5644	.5815	.6049	.6349
	.6334	.6149	.4147	.4135	.4122	.4122			
3.00	.6283	.6283	.6371	.6528	.6654	.6819	.7036	.7333	.7472
	.7354	.6584	.4490	.4458	.4426	.4426			
4.00	.7341	.7341	.7448	.7644	.7789	.7989	.8254	.8537	.8382
	.8101	.6814	.4814	.4760	.4705	.4705			
5.00	.8383	.8383	.8511	.8745	.8907	.9142	.9451	.9433	.9157
	.8325	.6994	.5132	.5054	.4976	.4976			
6.00	.9419	.9419	.9563	.9835	1.0029	1.0304	1.0412	1.0110	.9662
	.8467	.7157	.5446	.5345	.5244	.5244			
7.00	1.0440	1.0440	1.0606	1.0909	1.1132	1.1335	1.1068	1.0623	.9441
	.8625	.7314	.5760	.5635	.5510	.5510			
8.00	1.1437	1.1437	1.1628	1.1956	1.2182	1.2011	1.1496	1.0722	.9337
	.8788	.7470	.6074	.5925	.5776	.5776			
9.00	1.2413	1.2413	1.2627	1.2997	1.2962	1.2406	1.1668	1.0634	.9375
	.8953	.7625	.6387	.6215	.6042	.6042			
10.00	1.3372	1.3372	1.3602	1.3937	1.3390	1.2534	1.1490	1.0501	.9450
	.9118	.7780	.6700	.6503	.6307	.6307			
11.00	1.4293	1.4293	1.4550	1.4546	1.3534	1.2258	1.1169	1.0356	.9535
	.9283	.7933	.7010	.6790	.6570	.6570			
12.00	1.5184	1.5184	1.5458	1.4770	1.3300	1.1691	1.0816	1.0208	.9622
	.9445	.8082	.7313	.7070	.6827	.6827			
13.00	1.6040	1.6040	1.6334	1.4634	1.2363	1.1037	1.0460	1.0061	.9706
	.9602	.8220	.7598	.7332	.7066	.7066			
14.00	1.6842	1.6842	1.7139	1.4169	1.1200	1.0395	1.0118	.9920	.9777
	.9737	.8319	.7827	.7541	.7255	.7255			

15.00	1.1900	1.1900	1.0900	1.0550	1.0225	.9900	.9850	.9800	.9800
	.9800	.8300	.7900	.7600	.7300	.7300			
16.00	1.0680	1.0680	.9927	.9917	.9825	.9733	.9717	.9700	.9700
	.9700	.8067	.7700	.7400	.7100	.7100			
21.00	.8000	.8000	.8100	.8300	.8400	.8500	.8500	.8500	.8500
	.8500	.7100	.6800	.6600	.6400	.6400			
30.00	.9900	.9900	.9950	1.0050	1.0100	1.0150	1.0150	1.0150	1.0150
	1.0150	.9450	.9300	.9200	.9100	.9100			
50.00	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528
	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528			
60.00	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802
	.8802	.8802	.8802	.8802	.8802	.8802			
70.00	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077
	.6077	.6077	.6077	.6077	.6077	.6077			
80.00	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352
	.3352	.3352	.3352	.3352	.3352	.3352			
90.00	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627
	.0627	.0627	.0627	.0627	.0627	.0627			
100.00	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097
	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097			
110.00	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823
	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823			
120.00	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548
	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548			
140.00	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000
	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000			
160.00	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471
	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471			
170.00	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452
	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
-170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
-160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
-140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
-120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
-110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
-100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
-70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
-60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
-50.00	1.3920	1.3920	1.3920	1.3920	1.3925	1.3930	1.3955	1.3980	1.3969
	1.3934	1.3920	1.3920	1.3920	1.3920	1.3920			
-30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
-21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
-16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
-15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
-14.00	.0308	.0308	.0333	.0423	.0598	.1360	.1798	.1956	.2092
	.2230	.2358	.2533	.2583	.2605	.2605			
-13.00	.0276	.0276	.0297	.0336	.0448	.0628	.1321	.1576	.1775
	.1972	.2059	.2292	.2325	.2328	.2328			
-12.00	.0249	.0249	.0265	.0288	.0341	.0468	.0853	.1191	.1453
	.1712	.1753	.2052	.2077	.2073	.2073			
-11.00	.0224	.0224	.0236	.0253	.0271	.0349	.0491	.0823	.1133
	.1452	.1444	.1812	.1832	.1827	.1827			
-10.00	.0203	.0203	.0211	.0223	.0232	.0264	.0363	.0528	.0828
	.1193	.1137	.1573	.1588	.1584	.1584			
-9.00	.0185	.0185	.0190	.0198	.0204	.0214	.0264	.0390	.0576
	.0937	.0835	.1334	.1346	.1343	.1343			
-8.00	.0170	.0170	.0172	.0177	.0180	.0186	.0200	.0276	.0434
	.0693	.0550	.1099	.1108	.1105	.1105			
-7.00	.0157	.0157	.0157	.0159	.0161	.0164	.0169	.0196	.0307
	.0488	.0319	.0873	.0878	.0877	.0877			
-6.00	.0147	.0147	.0146	.0146	.0146	.0147	.0149	.0155	.0210
	.0358	.0257	.0673	.0675	.0674	.0674			
-5.00	.0140	.0140	.0137	.0135	.0135	.0135	.0135	.0137	.0151
	.0245	.0420	.0546	.0546	.0546	.0546			
-4.00	.0135	.0135	.0131	.0129	.0127	.0127	.0126	.0126	.0128
	.0166	.0303	.0525	.0525	.0525	.0525			
-3.00	.0132	.0132	.0129	.0125	.0124	.0123	.0122	.0121	.0122
	.0128	.0208	.0445	.0445	.0445	.0445			
-2.00	.0132	.0132	.0129	.0125	.0124	.0123	.0122	.0121	.0122
	.0123	.0155	.0412	.0412	.0412	.0412			
-1.00	.0135	.0135	.0132	.0129	.0128	.0127	.0127	.0127	.0128
	.0131	.0168	.0424	.0424	.0424	.0424			

.00	.0140	.0140	.0138	.0136	.0136	.0136	.0137	.0138	.0141
	.0151	.0245	.0483	.0483	.0483	.0483			
1.00	.0147	.0147	.0146	.0147	.0147	.0149	.0151	.0155	.0161
	.0203	.0365	.0587	.0587	.0587	.0587			
2.00	.0157	.0157	.0158	.0161	.0163	.0166	.0170	.0177	.0194
	.0295	.0510	.0721	.0722	.0722	.0722			
3.00	.0170	.0170	.0173	.0178	.0182	.0187	.0195	.0205	.0258
	.0427	.0643	.0868	.0871	.0870	.0870			
4.00	.0185	.0185	.0191	.0200	.0206	.0213	.0224	.0250	.0362
	.0580	.0791	.1019	.1025	.1023	.1023			
5.00	.0202	.0202	.0212	.0224	.0233	.0244	.0261	.0329	.0501
	.0720	.0950	.1172	.1180	.1178	.1178			
6.00	.0222	.0222	.0235	.0253	.0264	.0279	.0321	.0442	.0657
	.0878	.1112	.1326	.1336	.1333	.1333			
7.00	.0245	.0245	.0262	.0285	.0300	.0327	.0413	.0584	.0782
	.1047	.1276	.1479	.1492	.1488	.1488			
8.00	.0271	.0271	.0293	.0321	.0342	.0403	.0534	.0731	.0950
	.1221	.1440	.1633	.1648	.1643	.1643			
9.00	.0300	.0300	.0326	.0362	.0403	.0508	.0673	.0927	.1144
	.1395	.1604	.1787	.1804	.1799	.1799			
10.00	.0331	.0331	.0363	.0410	.0494	.0634	.0892	.1146	.1345
	.1569	.1768	.1941	.1961	.1955	.1955			
11.00	.0366	.0366	.0404	.0482	.0610	.0771	.1148	.1372	.1548
	.1744	.1933	.2095	.2118	.2112	.2112			
12.00	.0404	.0404	.0448	.0584	.0740	.1062	.1412	.1599	.1752
	.1919	.2098	.2250	.2278	.2274	.2274			
13.00	.0448	.0448	.0497	.0705	.1112	.1420	.1678	.1827	.1957
	.2096	.2265	.2409	.2444	.2446	.2446			
14.00	.0494	.0494	.0551	.0829	.1576	.1786	.1945	.2057	.2165
	.2279	.2439	.2578	.2629	.2651	.2651			
15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
50.00	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920
	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920			
60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000
	.4000	.4000	.4000	.4000	.4000	.4000			
-160.00	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000
	.3000	.3000	.3000	.3000	.3000	.3000			
-140.00	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600
	.4600	.4600	.4600	.4600	.4600	.4600			
-120.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-110.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-100.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-90.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-80.00	.4457	.4457	.4473	.4493	.4508	.4523	.4541	.4558	.4571
	.4583	.4607	.4628	.4646	.4663	.4663			
-70.00	.3913	.3913	.3947	.3987	.4017	.4047	.4082	.4117	.4142
	.4167	.4213	.4257	.4292	.4327	.4327			
-60.00	.3370	.3370	.3420	.3480	.3525	.3570	.3623	.3675	.3713
	.3750	.3820	.3885	.3938	.3990	.3990			
-50.00	.2827	.2827	.2893	.2973	.3033	.3093	.3163	.3233	.3283
	.3333	.3427	.3513	.3583	.3653	.3653			
-30.00	.1740	.1740	.1840	.1960	.2050	.2140	.2245	.2350	.2425
	.2500	.2640	.2770	.2875	.2980	.2980			
-21.00	.1009	.1009	.1066	.1160	.1233	.1306	.1368	.1430	.1493
	.1556	.1699	.1974	.2101	.2229	.2229			
-16.00	.0730	.0730	.0780	.0860	.0915	.0970	.1025	.1080	.1125
	.1170	.1370	.1760	.1880	.2000	.2000			

-15.00	.0540	.0540	.0650	.0730	.0785	.0840	.0905	.0970	.1040
	.1110	.1330	.1730	.1840	.1950	.1950			
-14.00	-.0692	-.0692	-.0746	-.0888	-.0934	-.0083	.0463	.0616	.0756
	.0908	.1065	.1371	.1469	.1568	.1568			
-13.00	-.0678	-.0678	-.0724	-.0836	-.0947	-.0975	-.0116	.0150	.0374
	.0630	.0674	.0818	.0905	.0992	.0992			
-12.00	-.0664	-.0664	-.0704	-.0788	-.0891	-.1004	-.0682	-.0334	-.0031
	.0329	.0243	.0199	.0274	.0349	.0349			
-11.00	-.0651	-.0651	-.0687	-.0754	-.0823	-.0952	-.1058	-.0786	-.0434
	.0023	-.0200	-.0442	-.0379	-.0316	-.0316			
-10.00	-.0638	-.0638	-.0667	-.0724	-.0773	-.0871	-.1009	-.1082	-.0807
	-.0283	-.0642	-.1087	-.1036	-.0985	-.0985			
-9.00	-.0625	-.0625	-.0651	-.0698	-.0736	-.0796	-.0924	-.1047	-.1055
	-.0580	-.1073	-.1722	-.1683	-.1644	-.1644			
-8.00	-.0613	-.0613	-.0634	-.0675	-.0705	-.0746	-.0828	-.0969	-.1048
	-.0846	-.1463	-.2324	-.2296	-.2269	-.2269			
-7.00	-.0599	-.0599	-.0619	-.0653	-.0675	-.0712	-.0763	-.0871	-.0994
	-.1006	-.1726	-.2824	-.2808	-.2791	-.2791			
-6.00	-.0586	-.0586	-.0602	-.0629	-.0654	-.0682	-.0720	-.0783	-.0911
	-.0969	-.1587	-.3033	-.3027	-.3020	-.3020			
-5.00	-.0571	-.0571	-.0587	-.0612	-.0631	-.0657	-.0686	-.0729	-.0812
	-.0918	-.0905	-.2405	-.2405	-.2405	-.2405			
-4.00	-.0558	-.0558	-.0571	-.0595	-.0610	-.0630	-.0658	-.0691	-.0742
	-.0841	-.0867	-.0821	-.0821	-.0821	-.0821			
-3.00	-.0545	-.0545	-.0559	-.0578	-.0592	-.0609	-.0631	-.0660	-.0700
	-.0764	-.0834	-.0948	-.0948	-.0948	-.0948			
-2.00	-.0532	-.0532	-.0544	-.0563	-.0575	-.0591	-.0609	-.0633	-.0665
	-.0710	-.0782	-.0956	-.0956	-.0956	-.0956			
-1.00	-.0521	-.0521	-.0532	-.0548	-.0559	-.0571	-.0588	-.0609	-.0635
	-.0668	-.0731	-.0991	-.0991	-.0991	-.0991			
.00	-.0509	-.0509	-.0519	-.0527	-.0541	-.0552	-.0567	-.0583	-.0603
	-.0613	-.0720	-.1004	-.1004	-.1004	-.1004			
1.00	-.0496	-.0496	-.0504	-.0516	-.0519	-.0533	-.0543	-.0554	-.0560
	-.0541	-.0738	-.0869	-.0869	-.0869	-.0869			
2.00	-.0483	-.0483	-.0490	-.0497	-.0503	-.0509	-.0514	-.0516	-.0491
	-.0474	-.0737	-.0828	-.0833	-.0837	-.0837			
3.00	-.0469	-.0469	-.0474	-.0477	-.0480	-.0481	-.0479	-.0463	-.0386
	-.0433	-.0638	-.0864	-.0876	-.0887	-.0887			
4.00	-.0453	-.0453	-.0456	-.0455	-.0452	-.0448	-.0433	-.0374	-.0279
	-.0389	-.0621	-.0927	-.0946	-.0964	-.0964			
5.00	-.0434	-.0434	-.0435	-.0429	-.0419	-.0405	-.0367	-.0244	-.0193
	-.0298	-.0663	-.0999	-.1026	-.1052	-.1052			
6.00	-.0415	-.0415	-.0411	-.0398	-.0382	-.0353	-.0253	-.0115	-.0118
	-.0308	-.0724	-.1074	-.1109	-.1144	-.1144			
7.00	-.0395	-.0395	-.0386	-.0363	-.0336	-.0269	-.0114	-.0008	-.0013
	-.0378	-.0791	-.1150	-.1193	-.1236	-.1236			
8.00	-.0371	-.0371	-.0358	-.0320	-.0275	-.0142	.0016	.0085	-.0056
	-.0466	-.0861	-.1227	-.1278	-.1329	-.1329			
9.00	-.0344	-.0344	-.0325	-.0272	-.0175	-.0009	.0120	.0015	-.0179
	-.0560	-.0931	-.1304	-.1363	-.1422	-.1422			
10.00	-.0316	-.0316	-.0289	-.0207	-.0053	.0105	.0033	-.0134	-.0323
	-.0655	-.1001	-.1380	-.1448	-.1515	-.1515			
11.00	-.0284	-.0284	-.0250	-.0109	.0060	.0192	-.0142	-.0302	-.0472
	-.0750	-.1071	-.1457	-.1532	-.1608	-.1608			
12.00	-.0250	-.0250	-.0206	.0000	.0154	.0014	-.0337	-.0475	-.0622
	-.0845	-.1141	-.1533	-.1616	-.1700	-.1700			
13.00	-.0216	-.0216	-.0160	.0103	-.0089	-.0277	-.0536	-.0649	-.0771
	-.0940	-.1209	-.1607	-.1699	-.1791	-.1791			
14.00	-.0177	-.0177	-.0107	.0191	-.0463	-.0582	-.0731	-.0818	-.0915
	-.1031	-.1275	-.1676	-.1776	-.1877	-.1877			
15.00	-.0540	-.0540	-.0650	-.0730	-.0785	-.0840	-.0905	-.0970	-.1040
	-.1110	-.1330	-.1730	-.1840	-.1950	-.1950			
16.00	-.0730	-.0730	-.0780	-.0860	-.0915	-.0970	-.1025	-.1080	-.1125
	-.1170	-.1370	-.1760	-.1880	-.2000	-.2000			
21.00	-.1009	-.1009	-.1066	-.1160	-.1233	-.1306	-.1368	-.1430	-.1493
	-.1556	-.1699	-.1974	-.2101	-.2229	-.2229			
30.00	-.1740	-.1740	-.1840	-.1960	-.2050	-.2140	-.2245	-.2350	-.2425
	-.2500	-.2640	-.2770	-.2875	-.2980	-.2980			
50.00	-.2827	-.2827	-.2893	-.2973	-.3033	-.3093	-.3163	-.3233	-.3283
	-.3333	-.3427	-.3513	-.3583	-.3653	-.3653			
60.00	-.3370	-.3370	-.3420	-.3480	-.3525	-.3570	-.3623	-.3675	-.3713
	-.3750	-.3820	-.3885	-.3938	-.3990	-.3990			
70.00	-.3913	-.3913	-.3947	-.3987	-.4017	-.4047	-.4082	-.4117	-.4142
	-.4167	-.4213	-.4257	-.4292	-.4327	-.4327			
80.00	-.4457	-.4457	-.4473	-.4493	-.4508	-.4523	-.4541	-.4558	-.4571
	-.4583	-.4607	-.4628	-.4646	-.4663	-.4663			
90.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
100.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
110.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
120.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
140.00	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600
	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600			
160.00	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000
	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000			
170.00	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000
	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

FLAP	INTERPOLATED DATA			156115611561		NACA-0015 (D=+5.0 DEGS.)			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0003	.0003	.0004	.0007	.0007	.0010	.0018	.0022	.0026
	.0031	.0049	.0108	.0108	.0108	.0108			
-160.00	.0006	.0006	.0008	.0014	.0013	.0020	.0036	.0044	.0052
	.0063	.0099	.0217	.0217	.0217	.0217			
-140.00	.0012	.0012	.0016	.0028	.0027	.0040	.0073	.0089	.0103
	.0125	.0197	.0433	.0433	.0433	.0433			
-120.00	.0018	.0018	.0024	.0042	.0040	.0059	.0109	.0133	.0155
	.0188	.0296	.0650	.0650	.0650	.0650			
-110.00	.0022	.0022	.0028	.0049	.0046	.0069	.0128	.0155	.0181
	.0219	.0345	.0758	.0758	.0758	.0758			
-100.00	.0025	.0025	.0032	.0056	.0053	.0079	.0146	.0177	.0207
	.0251	.0394	.0867	.0867	.0867	.0867			
-90.00	.0028	.0028	.0036	.0063	.0060	.0089	.0164	.0200	.0233
	.0282	.0443	.0975	.0975	.0975	.0975			
-80.00	.0031	.0031	.0040	.0070	.0066	.0099	.0182	.0222	.0258
	.0313	.0493	.1083	.1083	.1083	.1083			
-70.00	.0034	.0034	.0044	.0077	.0073	.0109	.0200	.0244	.0284
	.0345	.0542	.1192	.1192	.1192	.1192			
-60.00	.0037	.0037	.0048	.0084	.0080	.0119	.0219	.0266	.0310
	.0376	.0591	.1300	.1300	.1300	.1300			
-50.00	.0040	.0040	.0052	.0091	.0086	.0128	.0237	.0288	.0336
	.0407	.0640	.1408	.1408	.1408	.1408			
-30.00	.0046	.0046	.0060	.0105	.0099	.0148	.0273	.0333	.0388
	.0470	.0739	.1625	.1625	.1625	.1625			
-21.00	.0049	.0049	.0063	.0111	.0105	.0157	.0290	.0353	.0411
	.0498	.0783	.1723	.1723	.1723	.1723			
-16.00	.0050	.0050	.0065	.0115	.0109	.0162	.0299	.0364	.0424
	.0514	.0808	.1777	.1777	.1777	.1777			
-15.00	.0051	.0051	.0066	.0115	.0109	.0163	.0301	.0366	.0426
	.0517	.0813	.1788	.1788	.1788	.1788			
-14.00	.0051	.0051	.0066	.0116	.0110	.0164	.0303	.0368	.0429
	.0520	.0818	.1798	.1798	.1798	.1798			
-13.00	.0077	.0077	.0091	.0128	.0178	.0165	.0304	.0370	.0432
	.0523	.0823	.1809	.1809	.1809	.1809			
-12.00	.0103	.0103	.0116	.0144	.0188	.0240	.0306	.0373	.0434
	.0526	.0827	.1820	.1820	.1820	.1820			
-11.00	.0129	.0129	.0143	.0166	.0191	.0256	.0308	.0375	.0437
	.0529	.0832	.1831	.1831	.1831	.1831			
-10.00	.0154	.0154	.0166	.0189	.0206	.0250	.0323	.0377	.0439
	.0533	.0837	.1842	.1842	.1842	.1842			
-9.00	.0181	.0181	.0191	.0211	.0226	.0247	.0313	.0393	.0442
	.0536	.0842	.1853	.1853	.1853	.1853			
-8.00	.0207	.0207	.0216	.0234	.0247	.0260	.0293	.0377	.0467
	.0539	.0847	.1863	.1863	.1863	.1863			
-7.00	.0232	.0232	.0240	.0256	.0263	.0280	.0299	.0350	.0452
	.0542	.0852	.1874	.1874	.1874	.1874			
-6.00	.0257	.0257	.0263	.0273	.0287	.0299	.0314	.0337	.0418
	.0523	.0857	.1885	.1885	.1885	.1885			
-5.00	.0279	.0279	.0287	.0298	.0307	.0320	.0330	.0346	.0380
	.0483	.0586	.1896	.1896	.1896	.1896			
-4.00	.0305	.0305	.0310	.0320	.0327	.0335	.0348	.0359	.0375
	.0433	.0535	.0283	.0283	.0283	.0283			
-3.00	.0331	.0331	.0337	.0344	.0349	.0356	.0363	.0373	.0385
	.0402	.0474	.0415	.0415	.0415	.0415			
-2.00	.0357	.0357	.0361	.0368	.0372	.0377	.0383	.0389	.0395
	.0401	.0416	.0325	.0325	.0325	.0325			
-1.00	.0384	.0384	.0387	.0393	.0396	.0398	.0403	.0407	.0409
	.0407	.0352	.0256	.0256	.0256	.0256			
.00	.0411	.0411	.0414	.0411	.0419	.0421	.0424	.0424	.0422
	.0404	.0283	.0224	.0224	.0224	.0224			
1.00	.0438	.0438	.0439	.0441	.0437	.0444	.0444	.0442	.0433
	.0370	.0222	.0225	.0225	.0225	.0225			
2.00	.0464	.0464	.0466	.0465	.0465	.0465	.0463	.0457	.0433
	.0317	.0190	.0224	.0224	.0224	.0224			
3.00	.0490	.0490	.0490	.0487	.0487	.0485	.0480	.0469	.0399
	.0273	.0176	.0222	.0222	.0222	.0222			
4.00	.0515	.0515	.0514	.0510	.0507	.0503	.0495	.0464	.0354
	.0243	.0175	.0221	.0221	.0221	.0221			
5.00	.0536	.0536	.0535	.0531	.0523	.0518	.0505	.0425	.0321
	.0230	.0174	.0220	.0220	.0220	.0220			
6.00	.0558	.0558	.0555	.0549	.0542	.0533	.0484	.0385	.0300
	.0229	.0173	.0219	.0219	.0219	.0219			
7.00	.0579	.0579	.0575	.0566	.0556	.0531	.0444	.0359	.0278
	.0227	.0172	.0217	.0217	.0217	.0217			
8.00	.0596	.0596	.0592	.0580	.0565	.0497	.0413	.0344	.0276
	.0226	.0171	.0216	.0216	.0216	.0216			
9.00	.0612	.0612	.0607	.0594	.0548	.0466	.0398	.0342	.0275
	.0225	.0170	.0215	.0215	.0215	.0215			
10.00	.0628	.0628	.0621	.0598	.0519	.0452	.0396	.0340	.0273
	.0223	.0169	.0214	.0214	.0214	.0214			
11.00	.0641	.0641	.0634	.0581	.0505	.0443	.0393	.0338	.0272
	.0222	.0168	.0212	.0212	.0212	.0212			
12.00	.0654	.0654	.0647	.0564	.0493	.0440	.0391	.0336	.0270
	.0221	.0167	.0211	.0211	.0211	.0211			
13.00	.0668	.0668	.0659	.0549	.0490	.0438	.0389	.0334	.0268
	.0219	.0166	.0210	.0210	.0210	.0210			
14.00	.0680	.0680	.0672	.0527	.0487	.0435	.0386	.0332	.0267
	.0218	.0165	.0209	.0209	.0209	.0209			

15.00	.0676	.0676	.0668	.0524	.0484	.0433	.0384	.0330	.0265
	.0217	.0164	.0207	.0207	.0207	.0207			
16.00	.0672	.0672	.0664	.0521	.0481	.0430	.0382	.0328	.0264
	.0216	.0163	.0206	.0206	.0206	.0206			
21.00	.0651	.0651	.0644	.0505	.0467	.0417	.0370	.0318	.0256
	.0209	.0158	.0200	.0200	.0200	.0200			
30.00	.0614	.0614	.0607	.0476	.0440	.0393	.0349	.0300	.0241
	.0197	.0149	.0189	.0189	.0189	.0189			
50.00	.0533	.0533	.0526	.0413	.0381	.0341	.0303	.0260	.0209
	.0171	.0129	.0163	.0163	.0163	.0163			
60.00	.0492	.0492	.0486	.0381	.0352	.0315	.0279	.0240	.0193
	.0158	.0119	.0151	.0151	.0151	.0151			
70.00	.0451	.0451	.0445	.0349	.0323	.0288	.0256	.0220	.0177
	.0145	.0109	.0138	.0138	.0138	.0138			
80.00	.0410	.0410	.0405	.0317	.0293	.0262	.0233	.0200	.0161
	.0131	.0099	.0126	.0126	.0126	.0126			
90.00	.0369	.0369	.0364	.0286	.0264	.0236	.0209	.0180	.0145
	.0118	.0089	.0113	.0113	.0113	.0113			
100.00	.0328	.0328	.0324	.0254	.0235	.0210	.0186	.0160	.0129
	.0105	.0080	.0101	.0101	.0101	.0101			
110.00	.0287	.0287	.0283	.0222	.0205	.0183	.0163	.0140	.0112
	.0092	.0070	.0088	.0088	.0088	.0088			
120.00	.0246	.0246	.0243	.0190	.0176	.0157	.0140	.0120	.0096
	.0079	.0060	.0075	.0075	.0075	.0075			
140.00	.0164	.0164	.0162	.0127	.0117	.0105	.0093	.0080	.0064
	.0053	.0040	.0050	.0050	.0050	.0050			
160.00	.0082	.0082	.0081	.0063	.0059	.0052	.0047	.0040	.0032
	.0026	.0020	.0025	.0025	.0025	.0025			
170.00	.0041	.0041	.0040	.0032	.0029	.0026	.0023	.0020	.0016
	.0013	.0010	.0013	.0013	.0013	.0013			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	-.0001	-.0001	-.0001	-.0001	-.0001	-.0001	-.0002	-.0002	-.0003
	-.0003	-.0003	-.0011	-.0011	-.0011	-.0011			
-160.00	-.0001	-.0001	-.0001	-.0002	-.0002	-.0003	-.0004	-.0005	-.0006
	-.0006	-.0007	-.0023	-.0023	-.0023	-.0023			
-140.00	-.0002	-.0002	-.0003	-.0004	-.0004	-.0005	-.0008	-.0010	-.0011
	-.0013	-.0013	-.0046	-.0046	-.0046	-.0046			
-120.00	-.0004	-.0004	-.0004	-.0007	-.0006	-.0008	-.0012	-.0015	-.0017
	-.0019	-.0020	-.0069	-.0069	-.0069	-.0069			
-110.00	-.0004	-.0004	-.0005	-.0008	-.0007	-.0009	-.0014	-.0017	-.0020
	-.0022	-.0023	-.0080	-.0080	-.0080	-.0080			
-100.00	-.0005	-.0005	-.0006	-.0009	-.0008	-.0011	-.0017	-.0020	-.0022
	-.0025	-.0027	-.0091	-.0091	-.0091	-.0091			
-90.00	-.0005	-.0005	-.0007	-.0010	-.0009	-.0012	-.0019	-.0022	-.0025
	-.0029	-.0030	-.0103	-.0103	-.0103	-.0103			
-80.00	-.0006	-.0006	-.0007	-.0011	-.0010	-.0013	-.0021	-.0025	-.0028
	-.0032	-.0033	-.0114	-.0114	-.0114	-.0114			
-70.00	-.0007	-.0007	-.0008	-.0012	-.0011	-.0014	-.0023	-.0027	-.0031
	-.0035	-.0037	-.0126	-.0126	-.0126	-.0126			
-60.00	-.0007	-.0007	-.0009	-.0013	-.0012	-.0016	-.0025	-.0030	-.0034
	-.0038	-.0040	-.0137	-.0137	-.0137	-.0137			
-50.00	-.0008	-.0008	-.0009	-.0014	-.0013	-.0017	-.0027	-.0032	-.0036
	-.0041	-.0043	-.0149	-.0149	-.0149	-.0149			
-30.00	-.0009	-.0009	-.0011	-.0016	-.0014	-.0020	-.0031	-.0037	-.0042
	-.0048	-.0050	-.0171	-.0171	-.0171	-.0171			
-21.00	-.0010	-.0010	-.0011	-.0017	-.0015	-.0021	-.0033	-.0039	-.0045
	-.0051	-.0053	-.0182	-.0182	-.0182	-.0182			
-16.00	-.0010	-.0010	-.0012	-.0018	-.0016	-.0022	-.0034	-.0041	-.0046
	-.0052	-.0055	-.0187	-.0187	-.0187	-.0187			

-15.00	-.0010	-.0010	-.0012	-.0018	-.0016	-.0022	-.0034	-.0041	-.0046
	-.0052	-.0055	-.0189	-.0189	-.0189	-.0189			
-14.00	-.0010	-.0010	-.0012	-.0018	-.0016	-.0022	-.0034	-.0041	-.0047
	-.0053	-.0055	-.0190	-.0190	-.0190	-.0190			
-13.00	-.0012	-.0012	-.0014	-.0018	-.0023	-.0022	-.0035	-.0041	-.0047
	-.0053	-.0056	-.0191	-.0191	-.0191	-.0191			
-12.00	-.0014	-.0014	-.0015	-.0019	-.0024	-.0029	-.0035	-.0042	-.0047
	-.0053	-.0056	-.0192	-.0192	-.0192	-.0192			
-11.00	-.0016	-.0016	-.0017	-.0020	-.0023	-.0030	-.0035	-.0042	-.0047
	-.0054	-.0056	-.0193	-.0193	-.0193	-.0193			
-10.00	-.0017	-.0017	-.0018	-.0021	-.0023	-.0028	-.0036	-.0042	-.0048
	-.0054	-.0057	-.0194	-.0194	-.0194	-.0194			
-9.00	-.0019	-.0019	-.0020	-.0022	-.0023	-.0026	-.0033	-.0042	-.0048
	-.0054	-.0057	-.0195	-.0195	-.0195	-.0195			
-8.00	-.0020	-.0020	-.0021	-.0023	-.0024	-.0025	-.0029	-.0039	-.0049
	-.0055	-.0057	-.0197	-.0197	-.0197	-.0197			
-7.00	-.0021	-.0021	-.0022	-.0023	-.0024	-.0026	-.0028	-.0033	-.0045
	-.0055	-.0058	-.0198	-.0198	-.0198	-.0198			
-6.00	-.0022	-.0022	-.0023	-.0024	-.0025	-.0026	-.0027	-.0029	-.0039
	-.0050	-.0058	-.0199	-.0199	-.0199	-.0199			
-5.00	-.0023	-.0023	-.0024	-.0025	-.0025	-.0027	-.0027	-.0028	-.0032
	-.0043	-.0054	-.0200	-.0200	-.0200	-.0200			
-4.00	-.0024	-.0024	-.0025	-.0025	-.0026	-.0026	-.0027	-.0028	-.0029
	-.0035	-.0046	-.0032	-.0032	-.0032	-.0032			
-3.00	-.0026	-.0026	-.0026	-.0026	-.0027	-.0027	-.0027	-.0027	-.0028
	-.0029	-.0037	-.0035	-.0035	-.0035	-.0035			
-2.00	-.0027	-.0027	-.0027	-.0027	-.0027	-.0028	-.0028	-.0027	-.0027
	-.0027	-.0028	-.0022	-.0022	-.0022	-.0022			
-1.00	-.0029	-.0029	-.0029	-.0029	-.0029	-.0028	-.0028	-.0028	-.0027
	-.0026	-.0020	-.0013	-.0013	-.0013	-.0013			
.00	-.0030	-.0030	-.0030	-.0029	-.0030	-.0029	-.0029	-.0028	-.0027
	-.0024	-.0013	-.0009	-.0009	-.0009	-.0009			
1.00	-.0032	-.0032	-.0032	-.0031	-.0030	-.0031	-.0030	-.0029	-.0027
	-.0020	-.0007	-.0016	-.0016	-.0016	-.0016			
2.00	-.0034	-.0034	-.0034	-.0033	-.0032	-.0032	-.0031	-.0029	-.0026
	-.0015	-.0005	-.0016	-.0016	-.0016	-.0016			
3.00	-.0036	-.0036	-.0035	-.0034	-.0033	-.0033	-.0032	-.0030	-.0022
	-.0011	-.0004	-.0016	-.0016	-.0016	-.0016			
4.00	-.0037	-.0037	-.0037	-.0036	-.0035	-.0034	-.0032	-.0029	-.0018
	-.0010	-.0004	-.0016	-.0016	-.0016	-.0016			
5.00	-.0039	-.0039	-.0038	-.0037	-.0036	-.0035	-.0033	-.0025	-.0017
	-.0011	-.0004	-.0016	-.0016	-.0016	-.0016			
6.00	-.0041	-.0041	-.0040	-.0038	-.0037	-.0036	-.0031	-.0022	-.0017
	-.0011	-.0004	-.0016	-.0016	-.0016	-.0016			
7.00	-.0042	-.0042	-.0041	-.0040	-.0038	-.0035	-.0028	-.0022	-.0017
	-.0011	-.0004	-.0015	-.0015	-.0015	-.0015			
8.00	-.0044	-.0044	-.0043	-.0041	-.0039	-.0033	-.0027	-.0023	-.0017
	-.0011	-.0004	-.0015	-.0015	-.0015	-.0015			
9.00	-.0045	-.0045	-.0044	-.0042	-.0038	-.0033	-.0029	-.0023	-.0017
	-.0011	-.0004	-.0015	-.0015	-.0015	-.0015			
10.00	-.0047	-.0047	-.0046	-.0043	-.0038	-.0035	-.0029	-.0023	-.0017
	-.0011	-.0004	-.0015	-.0015	-.0015	-.0015			
11.00	-.0049	-.0049	-.0048	-.0043	-.0040	-.0037	-.0029	-.0023	-.0017
	-.0011	-.0004	-.0015	-.0015	-.0015	-.0015			
12.00	-.0051	-.0051	-.0049	-.0045	-.0042	-.0037	-.0028	-.0022	-.0017
	-.0011	-.0004	-.0015	-.0015	-.0015	-.0015			
13.00	-.0053	-.0053	-.0052	-.0047	-.0042	-.0037	-.0028	-.0022	-.0016
	-.0010	-.0004	-.0015	-.0015	-.0015	-.0015			
14.00	-.0056	-.0056	-.0054	-.0048	-.0041	-.0036	-.0028	-.0022	-.0016
	-.0010	-.0004	-.0015	-.0015	-.0015	-.0015			
15.00	-.0056	-.0056	-.0054	-.0048	-.0041	-.0036	-.0028	-.0022	-.0016
	-.0010	-.0004	-.0015	-.0015	-.0015	-.0015			
16.00	-.0055	-.0055	-.0053	-.0047	-.0041	-.0036	-.0028	-.0022	-.0016
	-.0010	-.0004	-.0015	-.0015	-.0015	-.0015			
21.00	-.0054	-.0054	-.0052	-.0046	-.0040	-.0035	-.0027	-.0021	-.0016
	-.0010	-.0004	-.0014	-.0014	-.0014	-.0014			
30.00	-.0051	-.0051	-.0049	-.0043	-.0037	-.0033	-.0025	-.0020	-.0015
	-.0009	-.0003	-.0013	-.0013	-.0013	-.0013			
50.00	-.0044	-.0044	-.0042	-.0038	-.0032	-.0028	-.0022	-.0017	-.0013
	-.0008	-.0003	-.0012	-.0012	-.0012	-.0012			
60.00	-.0040	-.0040	-.0039	-.0035	-.0030	-.0026	-.0020	-.0016	-.0012
	-.0008	-.0003	-.0011	-.0011	-.0011	-.0011			
70.00	-.0037	-.0037	-.0036	-.0032	-.0027	-.0024	-.0019	-.0015	-.0011
	-.0007	-.0002	-.0010	-.0010	-.0010	-.0010			
80.00	-.0034	-.0034	-.0033	-.0029	-.0025	-.0022	-.0017	-.0013	-.0010
	-.0006	-.0002	-.0009	-.0009	-.0009	-.0009			
90.00	-.0030	-.0030	-.0029	-.0026	-.0022	-.0020	-.0015	-.0012	-.0009
	-.0006	-.0002	-.0008	-.0008	-.0008	-.0008			
100.00	-.0027	-.0027	-.0026	-.0023	-.0020	-.0018	-.0014	-.0011	-.0008
	-.0005	-.0002	-.0007	-.0007	-.0007	-.0007			
110.00	-.0024	-.0024	-.0023	-.0020	-.0017	-.0015	-.0012	-.0009	-.0007
	-.0004	-.0002	-.0006	-.0006	-.0006	-.0006			
120.00	-.0020	-.0020	-.0020	-.0017	-.0015	-.0013	-.0010	-.0008	-.0006
	-.0004	-.0001	-.0005	-.0005	-.0005	-.0005			
140.00	-.0013	-.0013	-.0013	-.0012	-.0010	-.0009	-.0007	-.0005	-.0004
	-.0003	-.0001	-.0004	-.0004	-.0004	-.0004			
160.00	-.0007	-.0007	-.0007	-.0006	-.0005	-.0004	-.0003	-.0003	-.0002
	-.0001	.0000	-.0002	-.0002	-.0002	-.0002			
170.00	-.0003	-.0003	-.0003	-.0003	-.0003	-.0002	-.0002	-.0001	-.0001
	-.0001	.0000	-.0001	-.0001	-.0001	-.0001			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

AIRF	INTERPOLATED DATA				156115611561		NACA-0015 (D=-5.0 DEGS.)		
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452
	.7452	.7452	.7452	.7452	.7452	.7452			
-160.00	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471
	.6471	.6471	.6471	.6471	.6471	.6471			
-140.00	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000			
-120.00	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548
	.7548	.7548	.7548	.7548	.7548	.7548			
-110.00	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823
	.4823	.4823	.4823	.4823	.4823	.4823			
-100.00	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097
	.2097	.2097	.2097	.2097	.2097	.2097			
-90.00	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627
	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627			
-80.00	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352
	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352			
-70.00	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077
	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077			
-60.00	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802
	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802			
-50.00	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528
	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528			
-30.00	-.9900	-.9900	-.9950	-1.0050	-1.0100	-1.0150	-1.0150	-1.0150	-1.0150
	-1.0150	-.9450	-.9300	-.9200	-.9100	-.9100			
-21.00	-.8000	-.8000	-.8100	-.8300	-.8400	-.8500	-.8500	-.8500	-.8500
	-.8500	-.7100	-.6800	-.6600	-.6400	-.6400			
-16.00	-1.0680	-1.0680	-.9927	-.9917	-.9825	-.9733	-.9717	-.9700	-.9700
	-.9700	-.8067	-.7700	-.7400	-.7100	-.7100			
-15.00	-1.1900	-1.1900	-1.0900	-1.0550	-1.0225	-.9900	-.9850	-.9800	-.9800
	-.9800	-.8300	-.7900	-.7600	-.7300	-.7300			
-14.00	-1.6842	-1.6842	-1.7139	-1.4169	-1.1200	-1.0395	-1.0118	-.9920	-.9777
	-.9737	-.8319	-.7827	-.7541	-.7255	-.7255			
-13.00	-1.6040	-1.6040	-1.6334	-1.4634	-1.2363	-1.1037	-1.0460	-1.0061	-.9706
	-.9602	-.8220	-.7598	-.7332	-.7066	-.7066			
-12.00	-1.5184	-1.5184	-1.5458	-1.4770	-1.3300	-1.1691	-1.0816	-1.0208	-.9622
	-.9445	-.8082	-.7313	-.7070	-.6827	-.6827			
-11.00	-1.4293	-1.4293	-1.4550	-1.4546	-1.3534	-1.2258	-1.1169	-1.0356	-.9535
	-.9283	-.7933	-.7010	-.6790	-.6570	-.6570			
-10.00	-1.3372	-1.3372	-1.3602	-1.3937	-1.3390	-1.2534	-1.1490	-1.0501	-.9450
	-.9118	-.7780	-.6700	-.6503	-.6307	-.6307			
-9.00	-1.2413	-1.2413	-1.2627	-1.2997	-1.2962	-1.2406	-1.1668	-1.0634	-.9375
	-.8953	-.7625	-.6387	-.6215	-.6042	-.6042			
-8.00	-1.1437	-1.1437	-1.1628	-1.1956	-1.2182	-1.2011	-1.1496	-1.0722	-.9337
	-.8788	-.7470	-.6074	-.5925	-.5776	-.5776			
-7.00	-1.0440	-1.0440	-1.0606	-1.0909	-1.1132	-1.1335	-1.1068	-1.0623	-.9441
	-.8625	-.7314	-.5760	-.5635	-.5510	-.5510			
-6.00	-.9419	-.9419	-.9563	-.9835	-1.0029	-1.0304	-1.0412	-1.0110	-.9662
	-.8467	-.7157	-.5446	-.5345	-.5244	-.5244			
-5.00	-.8383	-.8383	-.8511	-.8745	-.8907	-.9142	-.9451	-.9433	-.9157
	-.8325	-.6994	-.5132	-.5054	-.4976	-.4976			
-4.00	-.7341	-.7341	-.7448	-.7644	-.7789	-.7989	-.8254	-.8537	-.8382
	-.8101	-.6814	-.4814	-.4760	-.4705	-.4705			
-3.00	-.6283	-.6283	-.6371	-.6528	-.6654	-.6819	-.7036	-.7333	-.7472
	-.7354	-.6584	-.4490	-.4458	-.4426	-.4426			
-2.00	-.5215	-.5215	-.5287	-.5412	-.5514	-.5644	-.5815	-.6049	-.6349
	-.6334	-.6149	-.4147	-.4135	-.4122	-.4122			
-1.00	-.4144	-.4144	-.4192	-.4292	-.4347	-.4466	-.4593	-.4766	-.5013
	-.5205	-.5193	-.3748	-.3748	-.3748	-.3748			
.00	-.3068	-.3068	-.3104	-.3144	-.3217	-.3280	-.3371	-.3486	-.3649
	-.3883	-.3948	-.3175	-.3175	-.3175	-.3175			
1.00	-.1988	-.1988	-.2006	-.2041	-.2069	-.2099	-.2150	-.2210	-.2293
	-.2423	-.2521	-.2242	-.2242	-.2242	-.2242			
2.00	-.0907	-.0907	-.0909	-.0915	-.0919	-.0925	-.0931	-.0936	-.0943
	-.0948	-.1048	-.1258	-.1258	-.1258	-.1258			
3.00	.0166	.0166	.0179	.0209	.0228	.0253	.0286	.0330	.0396
	.0506	.0315	-.0389	-.0389	-.0389	-.0389			
4.00	.1238	.1238	.1277	.1330	.1371	.1426	.1491	.1595	.1749
	.1779	.1490	.0482	.0482	.0482	.0482			
5.00	.2306	.2306	.2353	.2446	.2508	.2580	.2703	.2863	.3039
	.2833	.2341	-.2825	-.2825	-.2825	-.2825			
6.00	.3357	.3357	.3433	.3566	.3639	.3757	.3914	.4129	.4071
	.3749	-.0425	-.4057	-.4075	-.4093	-.4093			
7.00	.4416	.4416	.4505	.4657	.4786	.4923	.5127	.5237	.4933
	.4324	-.1286	-.3411	-.3458	-.3505	-.3505			
8.00	.5466	.5466	.5576	.5761	.5899	.6096	.6280	.6073	.5588
	.4975	-.0557	-.2112	-.2193	-.2273	-.2273			
9.00	.6514	.6514	.6641	.6860	.7026	.7235	.7145	.6713	.5846
	.5709	.0680	-.0588	-.0702	-.0816	-.0816			
10.00	.7552	.7552	.7698	.7952	.8140	.8181	.7762	.7048	.6387
	.6468	.2077	.1013	.0865	.0716	.0716			
11.00	.8574	.8574	.8736	.9030	.9184	.8810	.8123	.7559	.7114
	.7232	.3522	.2634	.2450	.2267	.2267			
12.00	.9585	.9585	.9776	1.0090	.9902	.9157	.8573	.8184	.7886
	.7991	.4966	.4240	.4022	.3805	.3805			
13.00	1.0574	1.0574	1.0786	1.1015	1.0286	.9199	.9079	.8826	.8652
	.8729	.6362	.5780	.5530	.5279	.5279			
14.00	1.1537	1.1537	1.1771	1.1552	1.0382	.9567	.9557	.9421	.9355
	.9392	.7592	.7124	.6844	.6564	.6564			

15.00	1.1900	1.1900	1.0900	1.0550	1.0225	.9900	.9850	.9800	.9800
	.9800	.8300	.7900	.7600	.7300	.7300			
16.00	1.0680	1.0680	.9927	.9917	.9825	.9733	.9717	.9700	.9700
	.9700	.8067	.7700	.7400	.7100	.7100			
21.00	.8000	.8000	.8100	.8300	.8400	.8500	.8500	.8500	.8500
	.8500	.7100	.6800	.6600	.6400	.6400			
30.00	.9900	.9900	.9950	1.0050	1.0100	1.0150	1.0150	1.0150	1.0150
	1.0150	.9450	.9300	.9200	.9100	.9100			
50.00	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528
	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528			
60.00	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802
	.8802	.8802	.8802	.8802	.8802	.8802			
70.00	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077
	.6077	.6077	.6077	.6077	.6077	.6077			
80.00	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352
	.3352	.3352	.3352	.3352	.3352	.3352			
90.00	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627
	.0627	.0627	.0627	.0627	.0627	.0627			
100.00	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097
	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097			
110.00	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823
	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823			
120.00	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548
	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548			
140.00	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000
	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000			
160.00	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471
	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471			
170.00	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452
	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
-170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
-160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
-140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
-120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
-110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
-100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
-70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
-60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
-50.00	1.3920	1.3920	1.3920	1.3920	1.3925	1.3930	1.3955	1.3980	1.3969
	1.3934	1.3920	1.3920	1.3920	1.3920	1.3920			
-30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
-21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
-16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
-15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
-14.00	.0494	.0494	.0551	.0829	.1576	.1786	.1945	.2057	.2165
	.2279	.2439	.2578	.2629	.2651	.2651			
-13.00	.0448	.0448	.0497	.0705	.1112	.1420	.1678	.1827	.1957
	.2096	.2265	.2409	.2444	.2446	.2446			
-12.00	.0404	.0404	.0448	.0584	.0740	.1062	.1412	.1599	.1752
	.1919	.2098	.2250	.2278	.2274	.2274			
-11.00	.0366	.0366	.0404	.0482	.0610	.0771	.1148	.1372	.1548
	.1744	.1933	.2095	.2118	.2112	.2112			
-10.00	.0331	.0331	.0363	.0410	.0494	.0634	.0892	.1146	.1345
	.1569	.1768	.1941	.1961	.1955	.1955			
-9.00	.0300	.0300	.0326	.0362	.0403	.0508	.0673	.0927	.1144
	.1395	.1604	.1787	.1804	.1799	.1799			
-8.00	.0271	.0271	.0293	.0321	.0342	.0403	.0534	.0731	.0950
	.1221	.1440	.1633	.1648	.1643	.1643			
-7.00	.0245	.0245	.0262	.0285	.0300	.0327	.0413	.0584	.0782
	.1047	.1276	.1479	.1492	.1488	.1488			
-6.00	.0222	.0222	.0235	.0253	.0264	.0279	.0321	.0442	.0657
	.0878	.1112	.1326	.1336	.1333	.1333			
-5.00	.0202	.0202	.0212	.0224	.0233	.0244	.0261	.0329	.0501
	.0720	.0950	.1172	.1180	.1178	.1178			
-4.00	.0185	.0185	.0191	.0200	.0206	.0213	.0224	.0250	.0362
	.0580	.0791	.1019	.1025	.1023	.1023			
-3.00	.0170	.0170	.0173	.0178	.0182	.0187	.0195	.0205	.0258
	.0427	.0643	.0868	.0871	.0870	.0870			
-2.00	.0157	.0157	.0158	.0161	.0163	.0166	.0170	.0177	.0194
	.0295	.0510	.0721	.0722	.0722	.0722			
-1.00	.0147	.0147	.0146	.0147	.0147	.0149	.0151	.0155	.0161
	.0203	.0365	.0587	.0587	.0587	.0587			

.00	.0140	.0140	.0138	.0136	.0136	.0136	.0137	.0138	.0141
	.0151	.0245	.0483	.0483	.0483	.0483			
1.00	.0135	.0135	.0132	.0129	.0128	.0127	.0127	.0127	.0128
	.0131	.0168	.0424	.0424	.0424	.0424			
2.00	.0132	.0132	.0129	.0125	.0124	.0123	.0122	.0121	.0122
	.0123	.0155	.0412	.0412	.0412	.0412			
3.00	.0132	.0132	.0129	.0125	.0124	.0123	.0122	.0121	.0122
	.0128	.0208	.0445	.0445	.0445	.0445			
4.00	.0135	.0135	.0131	.0129	.0127	.0127	.0126	.0126	.0128
	.0166	.0303	.0525	.0525	.0525	.0525			
5.00	.0140	.0140	.0137	.0135	.0135	.0135	.0135	.0137	.0151
	.0245	.0420	.0546	.0546	.0546	.0546			
6.00	.0147	.0147	.0146	.0146	.0146	.0147	.0149	.0155	.0210
	.0358	.0257	.0673	.0675	.0674	.0674			
7.00	.0157	.0157	.0157	.0159	.0161	.0164	.0169	.0196	.0307
	.0488	.0319	.0873	.0878	.0877	.0877			
8.00	.0170	.0170	.0172	.0177	.0180	.0186	.0200	.0276	.0434
	.0693	.0550	.1099	.1108	.1105	.1105			
9.00	.0185	.0185	.0190	.0198	.0204	.0214	.0264	.0390	.0576
	.0937	.0835	.1334	.1346	.1343	.1343			
10.00	.0203	.0203	.0211	.0223	.0232	.0264	.0363	.0528	.0828
	.1193	.1137	.1573	.1588	.1584	.1584			
11.00	.0224	.0224	.0236	.0253	.0271	.0349	.0491	.0823	.1133
	.1452	.1444	.1812	.1832	.1827	.1827			
12.00	.0249	.0249	.0265	.0288	.0341	.0468	.0853	.1191	.1453
	.1712	.1753	.2052	.2077	.2073	.2073			
13.00	.0276	.0276	.0297	.0336	.0448	.0628	.1321	.1576	.1775
	.1972	.2059	.2292	.2325	.2328	.2328			
14.00	.0308	.0308	.0333	.0423	.0598	.1360	.1798	.1956	.2092
	.2230	.2358	.2533	.2583	.2605	.2605			
15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
50.00	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920
	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920			
60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000
	.4000	.4000	.4000	.4000	.4000	.4000			
-160.00	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000
	.3000	.3000	.3000	.3000	.3000	.3000			
-140.00	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600
	.4600	.4600	.4600	.4600	.4600	.4600			
-120.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-110.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-100.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-90.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-80.00	.4457	.4457	.4473	.4493	.4508	.4523	.4541	.4558	.4571
	.4583	.4607	.4628	.4646	.4663	.4663			
-70.00	.3913	.3913	.3947	.3987	.4017	.4047	.4082	.4117	.4142
	.4167	.4213	.4257	.4292	.4327	.4327			
-60.00	.3370	.3370	.3420	.3480	.3525	.3570	.3623	.3675	.3713
	.3750	.3820	.3885	.3938	.3990	.3990			
-50.00	.2827	.2827	.2893	.2973	.3033	.3093	.3163	.3233	.3283
	.3333	.3427	.3513	.3583	.3653	.3653			
-30.00	.1740	.1740	.1840	.1960	.2050	.2140	.2245	.2350	.2425
	.2500	.2640	.2770	.2875	.2980	.2980			
-21.00	.1009	.1009	.1066	.1160	.1233	.1306	.1368	.1430	.1493
	.1556	.1699	.1974	.2101	.2229	.2229			
-16.00	.0730	.0730	.0780	.0860	.0915	.0970	.1025	.1080	.1125
	.1170	.1370	.1760	.1880	.2000	.2000			

-15.00	.0540	.0540	.0650	.0730	.0785	.0840	.0905	.0970	.1040
	.1110	.1330	.1730	.1840	.1950	.1950			
-14.00	.0177	.0177	.0107	-.0191	.0463	.0582	.0731	.0818	.0915
	.1031	.1275	.1676	.1776	.1877	.1877			
-13.00	.0216	.0216	.0160	-.0103	.0089	.0277	.0536	.0649	.0771
	.0940	.1209	.1607	.1699	.1791	.1791			
-12.00	.0250	.0250	.0206	.0000	-.0154	-.0014	.0337	.0475	.0622
	.0845	.1141	.1533	.1616	.1700	.1700			
-11.00	.0284	.0284	.0250	.0109	-.0060	-.0192	.0142	.0302	.0472
	.0750	.1071	.1457	.1532	.1608	.1608			
-10.00	.0316	.0316	.0289	.0207	.0053	-.0105	-.0033	.0134	.0323
	.0655	.1001	.1380	.1448	.1515	.1515			
-9.00	.0344	.0344	.0325	.0272	.0175	.0009	-.0120	-.0015	.0179
	.0560	.0931	.1304	.1363	.1422	.1422			
-8.00	.0371	.0371	.0358	.0320	.0275	.0142	-.0016	-.0085	.0056
	.0466	.0861	.1227	.1278	.1329	.1329			
-7.00	.0395	.0395	.0386	.0363	.0336	.0269	.0114	.0008	.0013
	.0378	.0791	.1150	.1193	.1236	.1236			
-6.00	.0415	.0415	.0411	.0398	.0382	.0353	.0253	.0115	.0118
	.0308	.0724	.1074	.1109	.1144	.1144			
-5.00	.0434	.0434	.0435	.0429	.0419	.0405	.0367	.0244	.0193
	.0298	.0663	.0999	.1026	.1052	.1052			
-4.00	.0453	.0453	.0456	.0455	.0452	.0448	.0433	.0374	.0279
	.0389	.0621	.0927	.0946	.0964	.0964			
-3.00	.0469	.0469	.0474	.0477	.0480	.0481	.0479	.0463	.0386
	.0433	.0638	.0864	.0876	.0887	.0887			
-2.00	.0483	.0483	.0490	.0497	.0503	.0509	.0514	.0516	.0491
	.0474	.0737	.0828	.0833	.0837	.0837			
-1.00	.0496	.0496	.0504	.0516	.0519	.0533	.0543	.0554	.0560
	.0541	.0738	.0869	.0869	.0869	.0869			
.00	.0509	.0509	.0519	.0527	.0541	.0552	.0567	.0583	.0603
	.0613	.0720	.1004	.1004	.1004	.1004			
1.00	.0521	.0521	.0532	.0548	.0559	.0571	.0588	.0609	.0635
	.0668	.0731	.0991	.0991	.0991	.0991			
2.00	.0532	.0532	.0544	.0563	.0575	.0591	.0609	.0633	.0665
	.0710	.0782	.0956	.0956	.0956	.0956			
3.00	.0545	.0545	.0559	.0578	.0592	.0609	.0631	.0660	.0700
	.0764	.0834	.0948	.0948	.0948	.0948			
4.00	.0558	.0558	.0571	.0595	.0610	.0630	.0658	.0691	.0742
	.0841	.0867	.0821	.0821	.0821	.0821			
5.00	.0571	.0571	.0587	.0612	.0631	.0657	.0686	.0729	.0812
	.0918	.0905	.2405	.2405	.2405	.2405			
6.00	.0586	.0586	.0602	.0629	.0654	.0682	.0720	.0783	.0911
	.0969	.1587	.3033	.3027	.3020	.3020			
7.00	.0599	.0599	.0619	.0653	.0675	.0712	.0763	.0871	.0994
	.1006	.1726	.2824	.2808	.2791	.2791			
8.00	.0613	.0613	.0634	.0675	.0705	.0746	.0828	.0969	.1048
	.0846	.1463	.2324	.2296	.2269	.2269			
9.00	.0625	.0625	.0651	.0698	.0736	.0796	.0924	.1047	.1055
	.0580	.1073	.1722	.1683	.1644	.1644			
10.00	.0638	.0638	.0667	.0724	.0773	.0871	.1009	.1082	.0807
	.0283	.0642	.1087	.1036	.0985	.0985			
11.00	.0651	.0651	.0687	.0754	.0823	.0952	.1058	.0786	.0434
	-.0023	.0200	.0442	.0379	.0316	.0316			
12.00	.0664	.0664	.0704	.0788	.0891	.1004	.0682	.0334	.0031
	-.0329	-.0243	-.0199	-.0274	-.0349	-.0349			
13.00	.0678	.0678	.0724	.0836	.0947	.0975	.0116	-.0150	-.0374
	-.0630	-.0674	-.0818	-.0905	-.0992	-.0992			
14.00	.0692	.0692	.0746	.0888	.0934	.0083	-.0463	-.0616	-.0756
	-.0908	-.1065	-.1371	-.1469	-.1568	-.1568			
15.00	-.0540	-.0540	-.0650	-.0730	-.0785	-.0840	-.0905	-.0970	-.1040
	-.1110	-.1330	-.1730	-.1840	-.1950	-.1950			
16.00	-.0730	-.0730	-.0780	-.0860	-.0915	-.0970	-.1025	-.1080	-.1125
	-.1170	-.1370	-.1760	-.1880	-.2000	-.2000			
21.00	-.1009	-.1009	-.1066	-.1160	-.1233	-.1306	-.1368	-.1430	-.1493
	-.1556	-.1699	-.1974	-.2101	-.2229	-.2229			
30.00	-.1740	-.1740	-.1840	-.1960	-.2050	-.2140	-.2245	-.2350	-.2425
	-.2500	-.2640	-.2770	-.2875	-.2980	-.2980			
50.00	-.2827	-.2827	-.2893	-.2973	-.3033	-.3093	-.3163	-.3233	-.3283
	-.3333	-.3427	-.3513	-.3583	-.3653	-.3653			
60.00	-.3370	-.3370	-.3420	-.3480	-.3525	-.3570	-.3623	-.3675	-.3713
	-.3750	-.3820	-.3885	-.3938	-.3990	-.3990			
70.00	-.3913	-.3913	-.3947	-.3987	-.4017	-.4047	-.4082	-.4117	-.4142
	-.4167	-.4213	-.4257	-.4292	-.4327	-.4327			
80.00	-.4457	-.4457	-.4473	-.4493	-.4508	-.4523	-.4541	-.4558	-.4571
	-.4583	-.4607	-.4628	-.4646	-.4663	-.4663			
90.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
100.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
110.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
120.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
140.00	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600
	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600			
160.00	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000
	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000			
170.00	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000
	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

FLAP	INTERPOLATED DATA 156115611561 NACA-0015 (D=-5.0 DEGS.)								
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	-.0041	-.0041	-.0040	-.0032	-.0029	-.0026	-.0023	-.0020	-.0016
	-.0013	-.0010	-.0013	-.0013	-.0013	-.0013			
-160.00	-.0082	-.0082	-.0081	-.0063	-.0059	-.0052	-.0047	-.0040	-.0032
	-.0026	-.0020	-.0025	-.0025	-.0025	-.0025			
-140.00	-.0164	-.0164	-.0162	-.0127	-.0117	-.0105	-.0093	-.0080	-.0064
	-.0053	-.0040	-.0050	-.0050	-.0050	-.0050			
-120.00	-.0246	-.0246	-.0243	-.0190	-.0176	-.0157	-.0140	-.0120	-.0096
	-.0079	-.0060	-.0075	-.0075	-.0075	-.0075			
-110.00	-.0287	-.0287	-.0283	-.0222	-.0205	-.0183	-.0163	-.0140	-.0112
	-.0092	-.0070	-.0088	-.0088	-.0088	-.0088			
-100.00	-.0328	-.0328	-.0324	-.0254	-.0235	-.0210	-.0186	-.0160	-.0129
	-.0105	-.0080	-.0101	-.0101	-.0101	-.0101			
-90.00	-.0369	-.0369	-.0364	-.0286	-.0264	-.0236	-.0209	-.0180	-.0145
	-.0118	-.0089	-.0113	-.0113	-.0113	-.0113			
-80.00	-.0410	-.0410	-.0405	-.0317	-.0293	-.0262	-.0233	-.0200	-.0161
	-.0131	-.0099	-.0126	-.0126	-.0126	-.0126			
-70.00	-.0451	-.0451	-.0445	-.0349	-.0323	-.0288	-.0256	-.0220	-.0177
	-.0145	-.0109	-.0138	-.0138	-.0138	-.0138			
-60.00	-.0492	-.0492	-.0486	-.0381	-.0352	-.0315	-.0279	-.0240	-.0193
	-.0158	-.0119	-.0151	-.0151	-.0151	-.0151			
-50.00	-.0533	-.0533	-.0526	-.0413	-.0381	-.0341	-.0303	-.0260	-.0209
	-.0171	-.0129	-.0163	-.0163	-.0163	-.0163			
-30.00	-.0614	-.0614	-.0607	-.0476	-.0440	-.0393	-.0349	-.0300	-.0241
	-.0197	-.0149	-.0189	-.0189	-.0189	-.0189			
-21.00	-.0651	-.0651	-.0644	-.0505	-.0467	-.0417	-.0370	-.0318	-.0256
	-.0209	-.0158	-.0200	-.0200	-.0200	-.0200			
-16.00	-.0672	-.0672	-.0664	-.0521	-.0481	-.0430	-.0382	-.0328	-.0264
	-.0216	-.0163	-.0206	-.0206	-.0206	-.0206			
-15.00	-.0676	-.0676	-.0668	-.0524	-.0484	-.0433	-.0384	-.0330	-.0265
	-.0217	-.0164	-.0207	-.0207	-.0207	-.0207			
-14.00	-.0680	-.0680	-.0672	-.0527	-.0487	-.0435	-.0386	-.0332	-.0267
	-.0218	-.0165	-.0209	-.0209	-.0209	-.0209			
-13.00	-.0668	-.0668	-.0659	-.0549	-.0490	-.0438	-.0389	-.0334	-.0268
	-.0219	-.0166	-.0210	-.0210	-.0210	-.0210			
-12.00	-.0654	-.0654	-.0647	-.0564	-.0493	-.0440	-.0391	-.0336	-.0270
	-.0221	-.0167	-.0211	-.0211	-.0211	-.0211			
-11.00	-.0641	-.0641	-.0634	-.0581	-.0505	-.0443	-.0393	-.0338	-.0272
	-.0222	-.0168	-.0212	-.0212	-.0212	-.0212			
-10.00	-.0628	-.0628	-.0621	-.0598	-.0519	-.0452	-.0396	-.0340	-.0273
	-.0223	-.0169	-.0214	-.0214	-.0214	-.0214			
-9.00	-.0612	-.0612	-.0607	-.0594	-.0548	-.0466	-.0398	-.0342	-.0275
	-.0225	-.0170	-.0215	-.0215	-.0215	-.0215			
-8.00	-.0596	-.0596	-.0592	-.0580	-.0565	-.0497	-.0413	-.0344	-.0276
	-.0226	-.0171	-.0216	-.0216	-.0216	-.0216			
-7.00	-.0579	-.0579	-.0575	-.0566	-.0556	-.0531	-.0444	-.0359	-.0278
	-.0227	-.0172	-.0217	-.0217	-.0217	-.0217			
-6.00	-.0558	-.0558	-.0555	-.0549	-.0542	-.0533	-.0484	-.0385	-.0300
	-.0229	-.0173	-.0219	-.0219	-.0219	-.0219			
-5.00	-.0536	-.0536	-.0535	-.0531	-.0523	-.0518	-.0505	-.0425	-.0321
	-.0230	-.0174	-.0220	-.0220	-.0220	-.0220			
-4.00	-.0515	-.0515	-.0514	-.0510	-.0507	-.0503	-.0495	-.0464	-.0354
	-.0243	-.0175	-.0221	-.0221	-.0221	-.0221			
-3.00	-.0490	-.0490	-.0490	-.0487	-.0487	-.0485	-.0480	-.0469	-.0399
	-.0273	-.0176	-.0222	-.0222	-.0222	-.0222			
-2.00	-.0464	-.0464	-.0466	-.0465	-.0465	-.0465	-.0463	-.0457	-.0433
	-.0317	-.0190	-.0224	-.0224	-.0224	-.0224			
-1.00	-.0438	-.0438	-.0439	-.0441	-.0437	-.0444	-.0444	-.0442	-.0433
	-.0370	-.0222	-.0225	-.0225	-.0225	-.0225			
.00	-.0411	-.0411	-.0414	-.0411	-.0419	-.0421	-.0424	-.0424	-.0422
	-.0404	-.0283	-.0224	-.0224	-.0224	-.0224			
1.00	-.0384	-.0384	-.0387	-.0393	-.0396	-.0398	-.0403	-.0407	-.0409
	-.0407	-.0352	-.0256	-.0256	-.0256	-.0256			
2.00	-.0357	-.0357	-.0361	-.0368	-.0372	-.0377	-.0383	-.0389	-.0395
	-.0401	-.0416	-.0325	-.0325	-.0325	-.0325			
3.00	-.0331	-.0331	-.0337	-.0344	-.0349	-.0356	-.0363	-.0373	-.0385
	-.0402	-.0474	-.0415	-.0415	-.0415	-.0415			
4.00	-.0305	-.0305	-.0310	-.0320	-.0327	-.0335	-.0348	-.0359	-.0375
	-.0433	-.0535	-.0283	-.0283	-.0283	-.0283			
5.00	-.0279	-.0279	-.0287	-.0298	-.0307	-.0320	-.0330	-.0346	-.0380
	-.0483	-.0586	-.1896	-.1896	-.1896	-.1896			
6.00	-.0257	-.0257	-.0263	-.0273	-.0287	-.0299	-.0314	-.0337	-.0418
	-.0523	-.0857	-.1885	-.1885	-.1885	-.1885			
7.00	-.0232	-.0232	-.0240	-.0256	-.0263	-.0280	-.0299	-.0350	-.0452
	-.0542	-.0852	-.1874	-.1874	-.1874	-.1874			
8.00	-.0207	-.0207	-.0216	-.0234	-.0247	-.0260	-.0293	-.0377	-.0467
	-.0539	-.0847	-.1863	-.1863	-.1863	-.1863			
9.00	-.0181	-.0181	-.0191	-.0211	-.0226	-.0247	-.0313	-.0393	-.0442
	-.0536	-.0842	-.1853	-.1853	-.1853	-.1853			
10.00	-.0154	-.0154	-.0166	-.0189	-.0206	-.0250	-.0323	-.0377	-.0439
	-.0533	-.0837	-.1842	-.1842	-.1842	-.1842			
11.00	-.0129	-.0129	-.0143	-.0166	-.0191	-.0256	-.0308	-.0375	-.0437
	-.0529	-.0832	-.1831	-.1831	-.1831	-.1831			
12.00	-.0103	-.0103	-.0116	-.0144	-.0188	-.0240	-.0306	-.0373	-.0434
	-.0526	-.0827	-.1820	-.1820	-.1820	-.1820			
13.00	-.0077	-.0077	-.0091	-.0128	-.0178	-.0165	-.0304	-.0370	-.0432
	-.0523	-.0823	-.1809	-.1809	-.1809	-.1809			
14.00	-.0051	-.0051	-.0066	-.0116	-.0110	-.0164	-.0303	-.0368	-.0429
	-.0520	-.0818	-.1798	-.1798	-.1798	-.1798			

15.00	-.0051	-.0051	-.0066	-.0115	-.0109	-.0163	-.0301	-.0366	-.0426
	-.0517	-.0813	-.1788	-.1788	-.1788	-.1788			
16.00	-.0050	-.0050	-.0065	-.0115	-.0109	-.0162	-.0299	-.0364	-.0424
	-.0514	-.0808	-.1777	-.1777	-.1777	-.1777			
21.00	-.0049	-.0049	-.0063	-.0111	-.0105	-.0157	-.0290	-.0353	-.0411
	-.0498	-.0783	-.1723	-.1723	-.1723	-.1723			
30.00	-.0046	-.0046	-.0060	-.0105	-.0099	-.0148	-.0273	-.0333	-.0388
	-.0470	-.0739	-.1625	-.1625	-.1625	-.1625			
50.00	-.0040	-.0040	-.0052	-.0091	-.0086	-.0128	-.0237	-.0288	-.0336
	-.0407	-.0640	-.1408	-.1408	-.1408	-.1408			
60.00	-.0037	-.0037	-.0048	-.0084	-.0080	-.0119	-.0219	-.0266	-.0310
	-.0376	-.0591	-.1300	-.1300	-.1300	-.1300			
70.00	-.0034	-.0034	-.0044	-.0077	-.0073	-.0109	-.0200	-.0244	-.0284
	-.0345	-.0542	-.1192	-.1192	-.1192	-.1192			
80.00	-.0031	-.0031	-.0040	-.0070	-.0066	-.0099	-.0182	-.0222	-.0258
	-.0313	-.0493	-.1083	-.1083	-.1083	-.1083			
90.00	-.0028	-.0028	-.0036	-.0063	-.0060	-.0089	-.0164	-.0200	-.0233
	-.0282	-.0443	-.0975	-.0975	-.0975	-.0975			
100.00	-.0025	-.0025	-.0032	-.0056	-.0053	-.0079	-.0146	-.0177	-.0207
	-.0251	-.0394	-.0867	-.0867	-.0867	-.0867			
110.00	-.0022	-.0022	-.0028	-.0049	-.0046	-.0069	-.0128	-.0155	-.0181
	-.0219	-.0345	-.0758	-.0758	-.0758	-.0758			
120.00	-.0018	-.0018	-.0024	-.0042	-.0040	-.0059	-.0109	-.0133	-.0155
	-.0188	-.0296	-.0650	-.0650	-.0650	-.0650			
140.00	-.0012	-.0012	-.0016	-.0028	-.0027	-.0040	-.0073	-.0089	-.0103
	-.0125	-.0197	-.0433	-.0433	-.0433	-.0433			
160.00	-.0006	-.0006	-.0008	-.0014	-.0013	-.0020	-.0036	-.0044	-.0052
	-.0063	-.0099	-.0217	-.0217	-.0217	-.0217			
170.00	-.0003	-.0003	-.0004	-.0007	-.0007	-.0010	-.0018	-.0022	-.0026
	-.0031	-.0049	-.0108	-.0108	-.0108	-.0108			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0003	.0003	.0003	.0003	.0002	.0002	.0002	.0001	.0001
	.0001	.0000	.0001	.0001	.0001	.0001			
-160.00	.0007	.0007	.0007	.0006	.0005	.0004	.0003	.0003	.0002
	.0001	.0000	.0002	.0002	.0002	.0002			
-140.00	.0013	.0013	.0013	.0012	.0010	.0009	.0007	.0005	.0004
	.0003	.0001	.0004	.0004	.0004	.0004			
-120.00	.0020	.0020	.0020	.0017	.0015	.0013	.0010	.0008	.0006
	.0004	.0001	.0005	.0005	.0005	.0005			
-110.00	.0024	.0024	.0023	.0020	.0018	.0015	.0012	.0009	.0007
	.0004	.0002	.0006	.0006	.0006	.0006			
-100.00	.0027	.0027	.0026	.0023	.0020	.0018	.0014	.0011	.0008
	.0005	.0002	.0007	.0007	.0007	.0007			
-90.00	.0030	.0030	.0029	.0026	.0022	.0020	.0015	.0012	.0009
	.0006	.0002	.0008	.0008	.0008	.0008			
-80.00	.0034	.0034	.0033	.0029	.0025	.0022	.0017	.0013	.0010
	.0006	.0002	.0009	.0009	.0009	.0009			
-70.00	.0037	.0037	.0036	.0032	.0027	.0024	.0019	.0015	.0011
	.0007	.0002	.0010	.0010	.0010	.0010			
-60.00	.0040	.0040	.0039	.0035	.0030	.0026	.0020	.0016	.0012
	.0008	.0003	.0011	.0011	.0011	.0011			
-50.00	.0044	.0044	.0042	.0038	.0033	.0028	.0022	.0017	.0013
	.0008	.0003	.0012	.0012	.0012	.0012			
-30.00	.0051	.0051	.0049	.0043	.0037	.0033	.0025	.0020	.0015
	.0009	.0003	.0013	.0013	.0013	.0013			
-21.00	.0054	.0054	.0052	.0046	.0040	.0035	.0027	.0021	.0016
	.0010	.0004	.0014	.0014	.0014	.0014			
-16.00	.0055	.0055	.0053	.0047	.0041	.0036	.0028	.0022	.0016
	.0010	.0004	.0015	.0015	.0015	.0015			

-15.00	.0056	.0056	.0054	.0048	.0041	.0036	.0028	.0022	.0016
	.0010	.0004	.0015	.0015	.0015	.0015			
-14.00	.0056	.0056	.0054	.0048	.0041	.0036	.0028	.0022	.0016
	.0010	.0004	.0015	.0015	.0015	.0015			
-13.00	.0053	.0053	.0052	.0047	.0042	.0037	.0028	.0022	.0016
	.0010	.0004	.0015	.0015	.0015	.0015			
-12.00	.0051	.0051	.0049	.0045	.0042	.0037	.0028	.0022	.0017
	.0011	.0004	.0015	.0015	.0015	.0015			
-11.00	.0049	.0049	.0048	.0043	.0040	.0037	.0029	.0023	.0017
	.0011	.0004	.0015	.0015	.0015	.0015			
-10.00	.0047	.0047	.0046	.0043	.0038	.0035	.0029	.0023	.0017
	.0011	.0004	.0015	.0015	.0015	.0015			
-9.00	.0045	.0045	.0044	.0042	.0038	.0033	.0029	.0023	.0017
	.0011	.0004	.0015	.0015	.0015	.0015			
-8.00	.0044	.0044	.0043	.0041	.0039	.0033	.0027	.0023	.0017
	.0011	.0004	.0015	.0015	.0015	.0015			
-7.00	.0042	.0042	.0041	.0040	.0038	.0035	.0028	.0022	.0017
	.0011	.0004	.0015	.0015	.0015	.0015			
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	.0011	.0004	.0016	.0016	.0016	.0016			
-5.00	.0039	.0039	.0038	.0037	.0036	.0035	.0033	.0025	.0017
	.0011	.0004	.0016	.0016	.0016	.0016			
-4.00	.0037	.0037	.0037	.0036	.0035	.0034	.0032	.0029	.0018
	.0010	.0004	.0016	.0016	.0016	.0016			
-3.00	.0036	.0036	.0035	.0034	.0033	.0033	.0032	.0030	.0022
	.0011	.0004	.0016	.0016	.0016	.0016			
-2.00	.0034	.0034	.0034	.0033	.0032	.0032	.0031	.0029	.0026
	.0015	.0005	.0016	.0016	.0016	.0016			
-1.00	.0032	.0032	.0032	.0031	.0030	.0031	.0030	.0029	.0027
	.0020	.0007	.0016	.0016	.0016	.0016			
.00	.0030	.0030	.0030	.0029	.0030	.0029	.0029	.0028	.0027
	.0024	.0013	.0009	.0009	.0009	.0009			
1.00	.0029	.0029	.0029	.0029	.0029	.0028	.0028	.0028	.0027
	.0026	.0020	.0013	.0013	.0013	.0013			
2.00	.0027	.0027	.0027	.0027	.0027	.0028	.0028	.0027	.0027
	.0027	.0028	.0022	.0022	.0022	.0022			
3.00	.0026	.0026	.0026	.0026	.0027	.0027	.0027	.0027	.0028
	.0029	.0037	.0035	.0035	.0035	.0035			
4.00	.0024	.0024	.0025	.0025	.0026	.0026	.0027	.0028	.0029
	.0035	.0046	.0032	.0032	.0032	.0032			
5.00	.0023	.0023	.0024	.0025	.0025	.0027	.0027	.0028	.0032
	.0043	.0054	.0200	.0200	.0200	.0200			
6.00	.0022	.0022	.0023	.0024	.0025	.0026	.0027	.0029	.0039
	.0050	.0058	.0199	.0199	.0199	.0199			
7.00	.0021	.0021	.0022	.0023	.0024	.0026	.0028	.0033	.0045
	.0055	.0058	.0198	.0198	.0198	.0198			
8.00	.0020	.0020	.0021	.0023	.0024	.0025	.0029	.0039	.0049
	.0055	.0057	.0197	.0197	.0197	.0197			
9.00	.0019	.0019	.0020	.0022	.0023	.0026	.0033	.0042	.0048
	.0054	.0057	.0195	.0195	.0195	.0195			
10.00	.0017	.0017	.0018	.0021	.0023	.0028	.0036	.0042	.0048
	.0054	.0057	.0194	.0194	.0194	.0194			
11.00	.0016	.0016	.0017	.0020	.0023	.0030	.0035	.0042	.0047
	.0054	.0056	.0193	.0193	.0193	.0193			
12.00	.0014	.0014	.0015	.0019	.0024	.0029	.0035	.0042	.0047
	.0053	.0056	.0192	.0192	.0192	.0192			
13.00	.0012	.0012	.0014	.0018	.0023	.0022	.0035	.0041	.0047
	.0053	.0056	.0191	.0191	.0191	.0191			
14.00	.0010	.0010	.0012	.0018	.0016	.0022	.0034	.0041	.0047
	.0053	.0055	.0190	.0190	.0190	.0190			
15.00	.0010	.0010	.0012	.0018	.0016	.0022	.0034	.0041	.0046
	.0052	.0055	.0189	.0189	.0189	.0189			
16.00	.0010	.0010	.0012	.0018	.0016	.0022	.0034	.0041	.0046
	.0052	.0055	.0187	.0187	.0187	.0187			
21.00	.0010	.0010	.0011	.0017	.0015	.0021	.0033	.0039	.0045
	.0051	.0053	.0182	.0182	.0182	.0182			
30.00	.0009	.0009	.0011	.0016	.0014	.0020	.0031	.0037	.0042
	.0048	.0050	.0171	.0171	.0171	.0171			
50.00	.0008	.0008	.0009	.0014	.0013	.0017	.0027	.0032	.0036
	.0041	.0043	.0149	.0149	.0149	.0149			
60.00	.0007	.0007	.0009	.0013	.0012	.0016	.0025	.0030	.0034
	.0038	.0040	.0137	.0137	.0137	.0137			
70.00	.0007	.0007	.0008	.0012	.0011	.0014	.0023	.0027	.0031
	.0035	.0037	.0126	.0126	.0126	.0126			
80.00	.0006	.0006	.0007	.0011	.0010	.0013	.0021	.0025	.0028
	.0032	.0033	.0114	.0114	.0114	.0114			
90.00	.0005	.0005	.0007	.0010	.0009	.0012	.0019	.0022	.0025
	.0029	.0030	.0103	.0103	.0103	.0103			
100.00	.0005	.0005	.0006	.0009	.0008	.0011	.0017	.0020	.0022
	.0025	.0027	.0091	.0091	.0091	.0091			
110.00	.0004	.0004	.0005	.0008	.0007	.0009	.0014	.0017	.0020
	.0022	.0023	.0080	.0080	.0080	.0080			
120.00	.0004	.0004	.0004	.0007	.0006	.0008	.0012	.0015	.0017
	.0019	.0020	.0069	.0069	.0069	.0069			
140.00	.0002	.0002	.0003	.0004	.0004	.0005	.0008	.0010	.0011
	.0013	.0013	.0046	.0046	.0046	.0046			
160.00	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0005	.0006
	.0006	.0007	.0023	.0023	.0023	.0023			
170.00	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003
	.0003	.0003	.0011	.0011	.0011	.0011			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

AIRF	INTERPOLATED DATA					156115611561	NACA-0015 (D=+10.0 DEGS.)		
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452
	.7452	.7452	.7452	.7452	.7452	.7452			
-160.00	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471
	.6471	.6471	.6471	.6471	.6471	.6471			
-140.00	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000			
-120.00	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548
	.7548	.7548	.7548	.7548	.7548	.7548			
-110.00	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823
	.4823	.4823	.4823	.4823	.4823	.4823			
-100.00	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097
	.2097	.2097	.2097	.2097	.2097	.2097			
-90.00	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627
	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627			
-80.00	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352
	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352			
-70.00	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077
	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077			
-60.00	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802
	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802			
-50.00	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528
	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528			
-30.00	-.9900	-.9900	-.9950	-1.0050	-1.0100	-1.0150	-1.0150	-1.0150	-1.0150
	-1.0150	-.9450	-.9300	-.9200	-.9100	-.9100			
-21.00	-.8000	-.8000	-.8100	-.8300	-.8400	-.8500	-.8500	-.8500	-.8500
	-.8500	-.7100	-.6800	-.6600	-.6400	-.6400			
-16.00	-1.0680	-1.0680	-.9927	-.9917	-.9825	-.9733	-.9717	-.9700	-.9700
	-.9700	-.8067	-.7700	-.7400	-.7100	-.7100			
-15.00	-1.1900	-1.1900	-1.0900	-1.0550	-1.0225	-.9900	-.9850	-.9800	-.9800
	-.9800	-.8300	-.7900	-.7600	-.7300	-.7300			
-14.00	-.8663	-.8663	-.8855	-.9102	-.8560	-.7531	-.8113	-.8933	-.8975
	-.8925	-.7323	-.6941	-.6667	-.6393	-.6393			
-13.00	-.7661	-.7661	-.7829	-.8111	-.8050	-.7384	-.6360	-.7597	-.7676
	-.7543	-.5664	-.5332	-.5096	-.4860	-.4860			
-12.00	-.6641	-.6641	-.6778	-.7055	-.7206	-.6947	-.6301	-.6221	-.6266
	-.6023	-.3788	-.3514	-.3321	-.3129	-.3129			
-11.00	-.5615	-.5615	-.5745	-.5962	-.6123	-.6226	-.5868	-.5173	-.4930
	-.4508	-.1859	-.1648	-.1499	-.1350	-.1350			
-10.00	-.4584	-.4584	-.4712	-.4874	-.5014	-.5194	-.5193	-.4753	-.3972
	-.3152	.0028	.0177	.0282	.0386	.0386			
-9.00	-.3535	-.3535	-.3614	-.3776	-.3889	-.4043	-.4227	-.4103	-.3649
	-.2363	.1721	.1809	.1872	.1934	.1934			
-8.00	-.2483	-.2483	-.2550	-.2666	-.2755	-.2873	-.3044	-.3199	-.2982
	-.2455	.2805	.2839	.2863	.2888	.2888			
-7.00	-.1411	-.1411	-.1463	-.1549	-.1613	-.1699	-.1814	-.2008	-.2055
	-.1832	.2031	.2031	.2031	.2031	.2031			
-6.00	-.0334	-.0334	-.0368	-.0429	-.0465	-.0518	-.0606	-.0692	-.0883
	-.0828	-.0943	-.0943	-.0943	-.0943	-.0943			
-5.00	.0748	.0748	.0726	.0692	.0689	.0649	.0635	.0590	.0503
	.0389	.0165	.0165	.0165	.0165	.0165			
-4.00	.1829	.1829	.1830	.1838	.1811	.1822	.1859	.1867	.1861
	.1796	.1576	.1576	.1576	.1576	.1576			
-3.00	.2914	.2914	.2930	.2968	.2992	.3012	.3081	.3140	.3204
	.3260	.3335	.3335	.3335	.3335	.3335			
-2.00	.3994	.3994	.4029	.4096	.4121	.4185	.4299	.4408	.4548
	.4726	.5047	.5047	.5047	.5047	.5047			
-1.00	.5072	.5072	.5122	.5220	.5266	.5384	.5512	.5672	.5893
	.6148	.6266	.6266	.6266	.6266	.6266			
.00	.6142	.6142	.6208	.6335	.6402	.6554	.6722	.6939	.7246
	.7431	.6949	.6949	.6949	.6949	.6949			
1.00	.7202	.7202	.7285	.7444	.7556	.7717	.7927	.8207	.8509
	.8594	.7334	.7334	.7334	.7334	.7334			
2.00	.8251	.8251	.8353	.8543	.8678	.8872	.9121	.8796	.9081
	.9450	.7528	.7510	.7497	.7485	.7485			
3.00	.9288	.9288	.9408	.9631	.9789	1.0019	1.0322	.9016	.9284
	.9792	.7639	.7593	.7560	.7527	.7527			
4.00	1.0310	1.0310	1.0450	1.0704	1.0890	1.1154	1.0754	.9129	.9376
	.9889	.7723	.7645	.7590	.7535	.7535			
5.00	1.1316	1.1316	1.1474	1.1763	1.1973	1.2115	1.0795	.9209	.9434
	.9913	.7798	.7687	.7608	.7530	.7530			
6.00	1.2301	1.2301	1.2480	1.2799	1.3012	1.2295	1.0733	.9280	.9481
	.9914	.7870	.7725	.7624	.7522	.7522			
7.00	1.3262	1.3262	1.3462	1.3815	1.4007	1.2119	1.0644	.9348	.9526
	.9908	.7941	.7763	.7638	.7512	.7512			
8.00	1.4199	1.4199	1.4421	1.4794	1.4634	1.1856	1.0548	.9416	.9570
	.9901	.8012	.7800	.7651	.7502	.7502			
9.00	1.5108	1.5108	1.5343	1.5628	1.4901	1.1572	1.0450	.9483	.9613
	.9892	.8082	.7837	.7664	.7492	.7492			
10.00	1.5974	1.5974	1.6229	1.6044	1.4831	1.1282	1.0351	.9550	.9656
	.9884	.8153	.7873	.7677	.7481	.7481			
11.00	1.6806	1.6806	1.7075	1.6055	1.4522	1.0992	1.0252	.9617	.9699
	.9875	.8222	.7909	.7690	.7470	.7470			
12.00	1.7577	1.7577	1.7821	1.5755	1.3581	1.0702	1.0153	.9682	.9741
	.9866	.8287	.7942	.7700	.7457	.7457			
13.00	1.8273	1.8273	1.8521	1.5397	1.2388	1.0414	1.0054	.9744	.9780
	.9854	.8343	.7968	.7702	.7437	.7437			
14.00	1.8872	1.8872	1.9057	1.3023	1.1192	1.0137	.9954	.9793	.9808
	.9837	.8368	.7970	.7684	.7398	.7398			

15.00	1.1900	1.1900	1.0900	1.0550	1.0225	.9900	.9850	.9800	.9800
	.9800	.8300	.7900	.7600	.7300	.7300			
16.00	1.0680	1.0680	.9927	.9917	.9825	.9733	.9717	.9700	.9700
	.9700	.8067	.7700	.7400	.7100	.7100			
21.00	.8000	.8000	.8100	.8300	.8400	.8500	.8500	.8500	.8500
	.8500	.7100	.6800	.6600	.6400	.6400			
30.00	.9900	.9900	.9950	1.0050	1.0100	1.0150	1.0150	1.0150	1.0150
	1.0150	.9450	.9300	.9200	.9100	.9100			
50.00	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528
	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528			
60.00	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802
	.8802	.8802	.8802	.8802	.8802	.8802			
70.00	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077
	.6077	.6077	.6077	.6077	.6077	.6077			
80.00	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352
	.3352	.3352	.3352	.3352	.3352	.3352			
90.00	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627
	.0627	.0627	.0627	.0627	.0627	.0627			
100.00	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097
	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097			
110.00	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823
	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823			
120.00	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548
	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548			
140.00	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000
	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000			
160.00	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471
	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471			
170.00	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452
	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
-170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
-160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
-140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
-120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
-110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
-100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
-70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
-60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
-50.00	1.3920	1.3920	1.3920	1.3920	1.3925	1.3930	1.3955	1.3980	1.3969
	1.3934	1.3920	1.3920	1.3920	1.3920	1.3920			
-30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
-21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
-16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
-15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
-14.00	.0245	.0245	.0259	.0285	.0380	.0547	.1369	.1860	.2030
	.2155	.2369	.2494	.2544	.2568	.2568			
-13.00	.0221	.0221	.0231	.0247	.0283	.0399	.0566	.1339	.1616
	.1782	.2086	.2191	.2224	.2230	.2230			
-12.00	.0201	.0201	.0206	.0218	.0229	.0290	.0418	.0829	.1194
	.1398	.1797	.1883	.1907	.1907	.1907			
-11.00	.0183	.0183	.0187	.0194	.0199	.0218	.0301	.0449	.0796
	.1021	.1506	.1573	.1590	.1589	.1589			
-10.00	.0169	.0169	.0170	.0174	.0177	.0182	.0217	.0325	.0492
	.0679	.1218	.1265	.1277	.1276	.1276			
-9.00	.0157	.0157	.0156	.0158	.0159	.0162	.0170	.0228	.0366
	.0456	.0938	.0965	.0973	.0972	.0972			
-8.00	.0148	.0148	.0146	.0145	.0146	.0147	.0149	.0165	.0258
	.0428	.0681	.0692	.0695	.0694	.0694			
-7.00	.0142	.0142	.0139	.0137	.0136	.0136	.0137	.0140	.0178
	.0312	.0498	.0498	.0498	.0498	.0498			
-6.00	.0138	.0138	.0134	.0132	.0131	.0130	.0130	.0131	.0138
	.0213	.0426	.0426	.0426	.0426	.0426			
-5.00	.0137	.0137	.0133	.0130	.0129	.0128	.0128	.0129	.0131
	.0154	.0302	.0302	.0302	.0302	.0302			
-4.00	.0138	.0138	.0135	.0132	.0132	.0131	.0131	.0132	.0135
	.0141	.0217	.0217	.0217	.0217	.0217			
-3.00	.0142	.0142	.0140	.0138	.0138	.0138	.0139	.0141	.0145
	.0152	.0187	.0187	.0187	.0187	.0187			
-2.00	.0148	.0148	.0147	.0147	.0148	.0149	.0152	.0155	.0161
	.0173	.0240	.0240	.0240	.0240	.0240			
-1.00	.0157	.0157	.0158	.0160	.0162	.0165	.0169	.0175	.0185
	.0213	.0347	.0347	.0347	.0347	.0347			

.00	.0168	.0168	.0171	.0176	.0180	.0185	.0191	.0200	.0215
	.0288	.0461	.0461	.0461	.0461	.0461			
1.00	.0182	.0182	.0188	.0196	.0202	.0209	.0218	.0232	.0265
	.0407	.0574	.0574	.0574	.0574	.0574			
2.00	.0199	.0199	.0207	.0219	.0227	.0237	.0250	.0330	.0374
	.0551	.0704	.0709	.0711	.0711	.0711			
3.00	.0217	.0217	.0230	.0246	.0256	.0270	.0287	.0463	.0512
	.0697	.0843	.0858	.0862	.0861	.0861			
4.00	.0239	.0239	.0255	.0276	.0290	.0307	.0398	.0607	.0660
	.0841	.0986	.1011	.1017	.1016	.1016			
5.00	.0263	.0263	.0283	.0310	.0327	.0342	.0546	.0753	.0811
	.0985	.1130	.1165	.1174	.1173	.1173			
6.00	.0290	.0290	.0315	.0347	.0369	.0466	.0704	.0900	.0962
	.1128	.1274	.1320	.1331	.1330	.1330			
7.00	.0319	.0319	.0349	.0388	.0417	.0634	.0864	.1048	.1113
	.1272	.1419	.1474	.1489	.1487	.1487			
8.00	.0351	.0351	.0387	.0434	.0485	.0812	.1025	.1196	.1265
	.1416	.1563	.1629	.1646	.1644	.1644			
9.00	.0387	.0387	.0428	.0487	.0576	.0992	.1187	.1343	.1417
	.1560	.1707	.1784	.1804	.1801	.1801			
10.00	.0426	.0426	.0472	.0563	.0678	.1173	.1348	.1491	.1568
	.1703	.1852	.1939	.1962	.1959	.1959			
11.00	.0468	.0468	.0520	.0655	.0790	.1355	.1510	.1639	.1720
	.1847	.1997	.2095	.2120	.2118	.2118			
12.00	.0514	.0514	.0570	.0757	.1045	.1537	.1672	.1788	.1873
	.1992	.2143	.2251	.2281	.2280	.2280			
13.00	.0563	.0563	.0625	.0932	.1361	.1720	.1836	.1940	.2029
	.2140	.2291	.2410	.2447	.2452	.2452			
14.00	.0617	.0617	.0685	.1388	.1686	.1909	.2008	.2102	.2193
	.2296	.2449	.2579	.2631	.2654	.2654			
15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
50.00	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920
	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920			
60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000
	.4000	.4000	.4000	.4000	.4000	.4000			
-160.00	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000
	.3000	.3000	.3000	.3000	.3000	.3000			
-140.00	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600
	.4600	.4600	.4600	.4600	.4600	.4600			
-120.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-110.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-100.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-90.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-80.00	.4457	.4457	.4473	.4493	.4508	.4523	.4541	.4558	.4571
	.4583	.4607	.4628	.4646	.4663	.4663			
-70.00	.3913	.3913	.3947	.3987	.4017	.4047	.4082	.4117	.4142
	.4167	.4213	.4257	.4292	.4327	.4327			
-60.00	.3370	.3370	.3420	.3480	.3525	.3570	.3623	.3675	.3713
	.3750	.3820	.3885	.3938	.3990	.3990			
-50.00	.2827	.2827	.2893	.2973	.3033	.3093	.3163	.3233	.3283
	.3333	.3427	.3513	.3583	.3653	.3653			
-30.00	.1740	.1740	.1840	.1960	.2050	.2140	.2245	.2350	.2425
	.2500	.2640	.2770	.2875	.2980	.2980			
-21.00	.1009	.1009	.1066	.1160	.1233	.1306	.1368	.1430	.1493
	.1556	.1699	.1974	.2101	.2229	.2229			
-16.00	.0730	.0730	.0780	.0860	.0915	.0970	.1025	.1080	.1125
	.1170	.1370	.1760	.1880	.2000	.2000			

-15.00	.0540	.0540	.0650	.0730	.0785	.0840	.0905	.0970	.1040
	.1110	.1330	.1730	.1840	.1950	.1950			
-14.00	-.1161	-.1161	-.1212	-.1320	-.1408	-.1424	-.0301	.0416	.0612
	.0820	.0979	.1350	.1446	.1543	.1543			
-13.00	-.1154	-.1154	-.1200	-.1288	-.1380	-.1471	-.1484	-.0348	.0006
	.0406	.0451	.0771	.0853	.0935	.0935			
-12.00	-.1146	-.1146	-.1190	-.1259	-.1328	-.1444	-.1541	-.1100	-.0637
	-.0045	-.0133	.0129	.0196	.0262	.0262			
-11.00	-.1136	-.1136	-.1173	-.1239	-.1291	-.1379	-.1511	-.1593	-.1232
	-.0503	-.0731	-.0529	-.0478	-.0426	-.0426			
-10.00	-.1125	-.1125	-.1154	-.1217	-.1260	-.1323	-.1438	-.1568	-.1617
	-.0951	-.1319	-.1176	-.1140	-.1104	-.1104			
-9.00	-.1115	-.1115	-.1148	-.1198	-.1236	-.1285	-.1363	-.1499	-.1604
	-.1354	-.1858	-.1773	-.1752	-.1730	-.1730			
-8.00	-.1104	-.1104	-.1134	-.1181	-.1215	-.1258	-.1315	-.1414	-.1545
	-.1602	-.2242	-.2209	-.2201	-.2193	-.2193			
-7.00	-.1096	-.1096	-.1123	-.1167	-.1197	-.1235	-.1285	-.1350	-.1474
	-.1560	-.2156	-.2156	-.2156	-.2156	-.2156			
-6.00	-.1088	-.1088	-.1114	-.1153	-.1182	-.1217	-.1258	-.1321	-.1403
	-.1522	-.1444	-.1444	-.1444	-.1444	-.1444			
-5.00	-.1080	-.1080	-.1103	-.1139	-.1169	-.1197	-.1242	-.1295	-.1366
	-.1475	-.1473	-.1473	-.1473	-.1473	-.1473			
-4.00	-.1071	-.1071	-.1095	-.1131	-.1149	-.1180	-.1225	-.1274	-.1337
	-.1425	-.1486	-.1486	-.1486	-.1486	-.1486			
-3.00	-.1062	-.1062	-.1084	-.1119	-.1141	-.1166	-.1207	-.1253	-.1311
	-.1386	-.1517	-.1517	-.1517	-.1517	-.1517			
-2.00	-.1052	-.1052	-.1073	-.1106	-.1122	-.1149	-.1188	-.1230	-.1283
	-.1346	-.1580	-.1580	-.1580	-.1580	-.1580			
-1.00	-.1040	-.1040	-.1060	-.1091	-.1105	-.1135	-.1166	-.1203	-.1248
	-.1289	-.1599	-.1599	-.1599	-.1599	-.1599			
.00	-.1027	-.1027	-.1046	-.1073	-.1085	-.1112	-.1139	-.1170	-.1198
	-.1232	-.1498	-.1498	-.1498	-.1498	-.1498			
1.00	-.1011	-.1011	-.1028	-.1052	-.1066	-.1085	-.1106	-.1125	-.1110
	-.1204	-.1332	-.1332	-.1332	-.1332	-.1332			
2.00	-.0994	-.0994	-.1009	-.1028	-.1038	-.1052	-.1063	-.1096	-.1065
	-.1153	-.1255	-.1272	-.1276	-.1281	-.1281			
3.00	-.0974	-.0974	-.0986	-.1000	-.1005	-.1011	-.1008	-.1076	-.1047
	-.1125	-.1234	-.1279	-.1290	-.1301	-.1301			
4.00	-.0951	-.0951	-.0960	-.0967	-.0965	-.0960	-.0977	-.1060	-.1039
	-.1114	-.1232	-.1307	-.1326	-.1345	-.1345			
5.00	-.0926	-.0926	-.0930	-.0928	-.0918	-.0865	-.0959	-.1044	-.1033
	-.1108	-.1237	-.1343	-.1370	-.1397	-.1397			
6.00	-.0897	-.0897	-.0897	-.0883	-.0858	-.0821	-.0945	-.1028	-.1027
	-.1104	-.1243	-.1382	-.1417	-.1452	-.1452			
7.00	-.0865	-.0865	-.0859	-.0831	-.0781	-.0807	-.0932	-.1013	-.1022
	-.1100	-.1250	-.1421	-.1464	-.1507	-.1507			
8.00	-.0830	-.0830	-.0818	-.0769	-.0652	-.0800	-.0919	-.0998	-.1017
	-.1097	-.1258	-.1460	-.1512	-.1563	-.1563			
9.00	-.0792	-.0792	-.0770	-.0682	-.0494	-.0795	-.0906	-.0982	-.1012
	-.1093	-.1265	-.1500	-.1559	-.1618	-.1618			
10.00	-.0749	-.0749	-.0717	-.0549	-.0327	-.0790	-.0893	-.0967	-.1007
	-.1090	-.1273	-.1539	-.1607	-.1674	-.1674			
11.00	-.0703	-.0703	-.0659	-.0389	-.0185	-.0786	-.0880	-.0952	-.1003
	-.1086	-.1280	-.1579	-.1654	-.1730	-.1730			
12.00	-.0651	-.0651	-.0588	-.0233	-.0260	-.0782	-.0868	-.0938	-.0999
	-.1083	-.1288	-.1618	-.1702	-.1786	-.1786			
13.00	-.0592	-.0592	-.0513	-.0178	-.0428	-.0780	-.0859	-.0928	-.0998
	-.1082	-.1297	-.1657	-.1749	-.1841	-.1841			
14.00	-.0524	-.0524	-.0421	-.0429	-.0612	-.0789	-.0861	-.0929	-.1005
	-.1087	-.1309	-.1695	-.1796	-.1896	-.1896			
15.00	-.0540	-.0540	-.0650	-.0730	-.0785	-.0840	-.0905	-.0970	-.1040
	-.1110	-.1330	-.1730	-.1840	-.1950	-.1950			
16.00	-.0730	-.0730	-.0780	-.0860	-.0915	-.0970	-.1025	-.1080	-.1125
	-.1170	-.1370	-.1760	-.1880	-.2000	-.2000			
21.00	-.1009	-.1009	-.1066	-.1160	-.1233	-.1306	-.1368	-.1430	-.1493
	-.1556	-.1699	-.1974	-.2101	-.2229	-.2229			
30.00	-.1740	-.1740	-.1840	-.1960	-.2050	-.2140	-.2245	-.2350	-.2425
	-.2500	-.2640	-.2770	-.2875	-.2980	-.2980			
50.00	-.2827	-.2827	-.2893	-.2973	-.3033	-.3093	-.3163	-.3233	-.3283
	-.3333	-.3427	-.3513	-.3583	-.3653	-.3653			
60.00	-.3370	-.3370	-.3420	-.3480	-.3525	-.3570	-.3623	-.3675	-.3713
	-.3750	-.3820	-.3885	-.3938	-.3990	-.3990			
70.00	-.3913	-.3913	-.3947	-.3987	-.4017	-.4047	-.4082	-.4117	-.4142
	-.4167	-.4213	-.4257	-.4292	-.4327	-.4327			
80.00	-.4457	-.4457	-.4473	-.4493	-.4508	-.4523	-.4541	-.4558	-.4571
	-.4583	-.4607	-.4628	-.4646	-.4663	-.4663			
90.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
100.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
110.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
120.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
140.00	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600
	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600			
160.00	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000
	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000			
170.00	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000
	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

FLAP	INTERPOLATED DATA			156115611561		NACA-0015 (D=+10.0 DEGS.)			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0033	.0033	.0034	.0036	.0039	.0039	.0044	.0053	.0059
	.0046	.0091	.0091	.0091	.0091	.0091			
-160.00	.0065	.0065	.0067	.0073	.0078	.0077	.0087	.0106	.0117
	.0092	.0183	.0183	.0183	.0183	.0183			
-140.00	.0131	.0131	.0135	.0145	.0155	.0154	.0174	.0213	.0234
	.0184	.0365	.0365	.0365	.0365	.0365			
-120.00	.0196	.0196	.0202	.0218	.0233	.0232	.0261	.0319	.0351
	.0276	.0548	.0548	.0548	.0548	.0548			
-110.00	.0229	.0229	.0236	.0254	.0272	.0270	.0305	.0372	.0410
	.0322	.0639	.0639	.0639	.0639	.0639			
-100.00	.0261	.0261	.0270	.0290	.0311	.0309	.0348	.0425	.0468
	.0368	.0730	.0730	.0730	.0730	.0730			
-90.00	.0294	.0294	.0304	.0326	.0350	.0348	.0392	.0478	.0527
	.0414	.0821	.0821	.0821	.0821	.0821			
-80.00	.0327	.0327	.0337	.0363	.0389	.0386	.0435	.0531	.0585
	.0460	.0913	.0913	.0913	.0913	.0913			
-70.00	.0359	.0359	.0371	.0399	.0427	.0425	.0479	.0584	.0644
	.0506	.1004	.1004	.1004	.1004	.1004			
-60.00	.0392	.0392	.0405	.0435	.0466	.0463	.0522	.0638	.0702
	.0552	.1095	.1095	.1095	.1095	.1095			
-50.00	.0424	.0424	.0439	.0471	.0505	.0502	.0566	.0691	.0761
	.0598	.1187	.1187	.1187	.1187	.1187			
-30.00	.0490	.0490	.0506	.0544	.0583	.0579	.0653	.0797	.0878
	.0689	.1369	.1369	.1369	.1369	.1369			
-21.00	.0519	.0519	.0536	.0577	.0618	.0614	.0692	.0845	.0931
	.0731	.1451	.1451	.1451	.1451	.1451			
-16.00	.0535	.0535	.0553	.0595	.0637	.0633	.0714	.0871	.0960
	.0754	.1497	.1497	.1497	.1497	.1497			
-15.00	.0539	.0539	.0557	.0598	.0641	.0637	.0718	.0877	.0966
	.0758	.1506	.1506	.1506	.1506	.1506			
-14.00	.0542	.0542	.0560	.0602	.0645	.0641	.0723	.0882	.0972
	.0763	.1515	.1515	.1515	.1515	.1515			
-13.00	.0576	.0576	.0595	.0629	.0674	.0721	.0727	.0887	.0977
	.0768	.1524	.1524	.1524	.1524	.1524			
-12.00	.0610	.0610	.0631	.0655	.0684	.0750	.0808	.0893	.0983
	.0772	.1533	.1533	.1533	.1533	.1533			
-11.00	.0641	.0641	.0657	.0687	.0710	.0749	.0828	.0898	.0989
	.0777	.1542	.1542	.1542	.1542	.1542			
-10.00	.0669	.0669	.0680	.0715	.0734	.0759	.0819	.0910	.0995
	.0781	.1552	.1552	.1552	.1552	.1552			
-9.00	.0700	.0700	.0719	.0742	.0760	.0781	.0813	.0892	.0994
	.0786	.1561	.1561	.1561	.1561	.1561			
-8.00	.0730	.0730	.0745	.0770	.0787	.0807	.0829	.0872	.0964
	.1077	.1570	.1570	.1570	.1570	.1570			
-7.00	.0762	.0762	.0776	.0799	.0815	.0833	.0856	.0877	.0940
	.1036	.1579	.1579	.1579	.1579	.1579			
-6.00	.0794	.0794	.0808	.0828	.0843	.0860	.0877	.0907	.0931
	.1010	.1046	.1046	.1046	.1046	.1046			
-5.00	.0827	.0827	.0838	.0855	.0872	.0883	.0907	.0930	.0955
	.0994	.1018	.1018	.1018	.1018	.1018			
-4.00	.0858	.0858	.0870	.0889	.0892	.0907	.0932	.0952	.0973
	.0993	.0992	.0992	.0992	.0992	.0992			
-3.00	.0889	.0889	.0900	.0917	.0927	.0935	.0956	.0972	.0988
	.0996	.0945	.0945	.0945	.0945	.0945			
-2.00	.0918	.0918	.0929	.0944	.0947	.0958	.0977	.0990	.1000
	.0995	.0816	.0816	.0816	.0816	.0816			
-1.00	.0947	.0947	.0956	.0969	.0971	.0986	.0996	.1005	.1008
	.0966	.0714	.0714	.0714	.0714	.0714			
.00	.0973	.0973	.0980	.0992	.0992	.1005	.1013	.1016	.1010
	.0892	.0630	.0630	.0630	.0630	.0630			
1.00	.0996	.0996	.1003	.1012	.1015	.1022	.1026	.1024	.0984
	.0811	.0554	.0554	.0554	.0554	.0554			
2.00	.1018	.1018	.1023	.1030	.1031	.1035	.1035	.1018	.0979
	.0730	.0551	.0551	.0551	.0551	.0551			
3.00	.1036	.1036	.1040	.1045	.1044	.1045	.1042	.1013	.0973
	.0726	.0548	.0548	.0548	.0548	.0548			
4.00	.1052	.1052	.1055	.1057	.1054	.1052	.1036	.1007	.0968
	.0722	.0545	.0545	.0545	.0545	.0545			
5.00	.1065	.1065	.1066	.1066	.1060	.1018	.1030	.1001	.0962
	.0718	.0542	.0542	.0542	.0542	.0542			
6.00	.1075	.1075	.1075	.1071	.1061	.1012	.1024	.0995	.0957
	.0714	.0539	.0539	.0539	.0539	.0539			
7.00	.1082	.1082	.1081	.1073	.1051	.1006	.1018	.0990	.0951
	.0709	.0535	.0535	.0535	.0535	.0535			
8.00	.1087	.1087	.1084	.1071	.1002	.1001	.1013	.0984	.0946
	.0705	.0532	.0532	.0532	.0532	.0532			
9.00	.1089	.1089	.1083	.1049	.0929	.0995	.1007	.0978	.0940
	.0701	.0529	.0529	.0529	.0529	.0529			
10.00	.1087	.1087	.1080	.0993	.0859	.0989	.1001	.0973	.0935
	.0697	.0526	.0526	.0526	.0526	.0526			
11.00	.1085	.1085	.1074	.0919	.0808	.0983	.0995	.0967	.0929
	.0693	.0523	.0523	.0523	.0523	.0523			
12.00	.1077	.1077	.1059	.0856	.0803	.0977	.0989	.0961	.0924
	.0689	.0520	.0520	.0520	.0520	.0520			
13.00	.1067	.1067	.1042	.0875	.0798	.0971	.0983	.0955	.0918
	.0685	.0517	.0517	.0517	.0517	.0517			
14.00	.1049	.1049	.1017	.0870	.0794	.0966	.0977	.0950	.0913
	.0681	.0514	.0514	.0514	.0514	.0514			

15.00	.1043	.1043	.1011	.0865	.0789	.0960	.0971	.0944	.0907
	.0677	.0511	.0511	.0511	.0511	.0511			
16.00	.1036	.1036	.1005	.0859	.0784	.0954	.0965	.0938	.0902
	.0673	.0508	.0508	.0508	.0508	.0508			
21.00	.1005	.1005	.0974	.0833	.0760	.0925	.0936	.0910	.0874
	.0652	.0492	.0492	.0492	.0492	.0492			
30.00	.0948	.0948	.0919	.0786	.0717	.0873	.0883	.0858	.0825
	.0615	.0464	.0464	.0464	.0464	.0464			
50.00	.0822	.0822	.0796	.0681	.0622	.0756	.0765	.0744	.0715
	.0533	.0402	.0402	.0402	.0402	.0402			
60.00	.0758	.0758	.0735	.0629	.0574	.0698	.0706	.0686	.0660
	.0492	.0371	.0371	.0371	.0371	.0371			
70.00	.0695	.0695	.0674	.0576	.0526	.0640	.0648	.0629	.0605
	.0451	.0340	.0340	.0340	.0340	.0340			
80.00	.0632	.0632	.0613	.0524	.0478	.0582	.0589	.0572	.0550
	.0410	.0309	.0309	.0309	.0309	.0309			
90.00	.0569	.0569	.0551	.0472	.0430	.0524	.0530	.0515	.0495
	.0369	.0279	.0279	.0279	.0279	.0279			
100.00	.0506	.0506	.0490	.0419	.0382	.0465	.0471	.0458	.0440
	.0328	.0248	.0248	.0248	.0248	.0248			
110.00	.0442	.0442	.0429	.0367	.0335	.0407	.0412	.0400	.0385
	.0287	.0217	.0217	.0217	.0217	.0217			
120.00	.0379	.0379	.0368	.0314	.0287	.0349	.0353	.0343	.0330
	.0246	.0186	.0186	.0186	.0186	.0186			
140.00	.0253	.0253	.0245	.0210	.0191	.0233	.0235	.0229	.0220
	.0164	.0124	.0124	.0124	.0124	.0124			
160.00	.0126	.0126	.0123	.0105	.0096	.0116	.0118	.0114	.0110
	.0082	.0062	.0062	.0062	.0062	.0062			
170.00	.0063	.0063	.0061	.0052	.0048	.0058	.0059	.0057	.0055
	.0041	.0031	.0031	.0031	.0031	.0031			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	-.0003	-.0003	-.0003	-.0003	-.0003	-.0003	-.0004	-.0004	-.0005
	-.0003	-.0007	-.0007	-.0007	-.0007	-.0007			
-160.00	-.0005	-.0005	-.0005	-.0006	-.0007	-.0007	-.0007	-.0009	-.0009
	-.0007	-.0013	-.0013	-.0013	-.0013	-.0013			
-140.00	-.0010	-.0010	-.0011	-.0012	-.0013	-.0013	-.0014	-.0017	-.0018
	-.0014	-.0026	-.0026	-.0026	-.0026	-.0026			
-120.00	-.0016	-.0016	-.0016	-.0018	-.0020	-.0020	-.0022	-.0026	-.0028
	-.0021	-.0040	-.0040	-.0040	-.0040	-.0040			
-110.00	-.0018	-.0018	-.0019	-.0021	-.0023	-.0023	-.0025	-.0030	-.0032
	-.0024	-.0046	-.0046	-.0046	-.0046	-.0046			
-100.00	-.0021	-.0021	-.0022	-.0024	-.0027	-.0026	-.0029	-.0035	-.0037
	-.0028	-.0053	-.0053	-.0053	-.0053	-.0053			
-90.00	-.0023	-.0023	-.0024	-.0027	-.0030	-.0029	-.0032	-.0039	-.0041
	-.0031	-.0059	-.0059	-.0059	-.0059	-.0059			
-80.00	-.0026	-.0026	-.0027	-.0030	-.0033	-.0033	-.0036	-.0043	-.0046
	-.0035	-.0066	-.0066	-.0066	-.0066	-.0066			
-70.00	-.0028	-.0028	-.0030	-.0032	-.0036	-.0036	-.0040	-.0048	-.0050
	-.0038	-.0072	-.0072	-.0072	-.0072	-.0072			
-60.00	-.0031	-.0031	-.0033	-.0035	-.0040	-.0039	-.0043	-.0052	-.0055
	-.0041	-.0079	-.0079	-.0079	-.0079	-.0079			
-50.00	-.0034	-.0034	-.0035	-.0038	-.0043	-.0042	-.0047	-.0056	-.0060
	-.0045	-.0086	-.0086	-.0086	-.0086	-.0086			
-30.00	-.0039	-.0039	-.0041	-.0044	-.0050	-.0049	-.0054	-.0065	-.0069
	-.0052	-.0099	-.0099	-.0099	-.0099	-.0099			
-21.00	-.0041	-.0041	-.0043	-.0047	-.0053	-.0052	-.0057	-.0069	-.0073
	-.0055	-.0105	-.0105	-.0105	-.0105	-.0105			
-16.00	-.0042	-.0042	-.0044	-.0048	-.0054	-.0053	-.0059	-.0071	-.0075
	-.0057	-.0108	-.0108	-.0108	-.0108	-.0108			

-15.00	-.0043	-.0043	-.0045	-.0049	-.0055	-.0054	-.0059	-.0071	-.0076
	-.0057	-.0109	-.0109	-.0109	-.0109	-.0109			
-14.00	-.0043	-.0043	-.0045	-.0049	-.0055	-.0054	-.0060	-.0072	-.0076
	-.0057	-.0109	-.0109	-.0109	-.0109	-.0109			
-13.00	-.0045	-.0045	-.0047	-.0050	-.0055	-.0061	-.0060	-.0072	-.0077
	-.0058	-.0110	-.0110	-.0110	-.0110	-.0110			
-12.00	-.0046	-.0046	-.0048	-.0050	-.0053	-.0061	-.0067	-.0073	-.0077
	-.0058	-.0111	-.0111	-.0111	-.0111	-.0111			
-11.00	-.0047	-.0047	-.0049	-.0051	-.0053	-.0057	-.0066	-.0073	-.0078
	-.0058	-.0111	-.0111	-.0111	-.0111	-.0111			
-10.00	-.0048	-.0048	-.0049	-.0051	-.0053	-.0055	-.0061	-.0071	-.0078
	-.0059	-.0112	-.0112	-.0112	-.0112	-.0112			
-9.00	-.0049	-.0049	-.0051	-.0052	-.0053	-.0054	-.0057	-.0065	-.0075
	-.0059	-.0113	-.0113	-.0113	-.0113	-.0113			
-8.00	-.0050	-.0050	-.0051	-.0053	-.0054	-.0055	-.0056	-.0059	-.0069
	-.0077	-.0113	-.0113	-.0113	-.0113	-.0113			
-7.00	-.0052	-.0052	-.0053	-.0054	-.0054	-.0055	-.0056	-.0057	-.0062
	-.0070	-.0114	-.0114	-.0114	-.0114	-.0114			
-6.00	-.0054	-.0054	-.0054	-.0055	-.0055	-.0056	-.0056	-.0058	-.0058
	-.0064	-.0065	-.0065	-.0065	-.0065	-.0065			
-5.00	-.0055	-.0055	-.0056	-.0056	-.0057	-.0057	-.0058	-.0058	-.0058
	-.0059	-.0060	-.0060	-.0060	-.0060	-.0060			
-4.00	-.0057	-.0057	-.0058	-.0058	-.0057	-.0057	-.0059	-.0059	-.0058
	-.0057	-.0056	-.0056	-.0056	-.0056	-.0056			
-3.00	-.0059	-.0059	-.0059	-.0059	-.0059	-.0059	-.0060	-.0059	-.0059
	-.0057	-.0052	-.0052	-.0052	-.0052	-.0052			
-2.00	-.0061	-.0061	-.0061	-.0061	-.0060	-.0060	-.0061	-.0060	-.0059
	-.0056	-.0045	-.0045	-.0045	-.0045	-.0045			
-1.00	-.0063	-.0063	-.0063	-.0063	-.0062	-.0062	-.0062	-.0061	-.0059
	-.0055	-.0040	-.0040	-.0040	-.0040	-.0040			
.00	-.0065	-.0065	-.0065	-.0064	-.0063	-.0063	-.0063	-.0061	-.0059
	-.0051	-.0035	-.0035	-.0035	-.0035	-.0035			
1.00	-.0067	-.0067	-.0066	-.0066	-.0065	-.0064	-.0064	-.0062	-.0058
	-.0047	-.0031	-.0031	-.0031	-.0031	-.0031			
2.00	-.0068	-.0068	-.0068	-.0067	-.0066	-.0066	-.0065	-.0062	-.0058
	-.0044	-.0031	-.0031	-.0031	-.0031	-.0031			
3.00	-.0070	-.0070	-.0069	-.0068	-.0067	-.0067	-.0066	-.0061	-.0057
	-.0044	-.0031	-.0031	-.0031	-.0031	-.0031			
4.00	-.0071	-.0071	-.0071	-.0070	-.0069	-.0068	-.0066	-.0061	-.0057
	-.0044	-.0030	-.0030	-.0030	-.0030	-.0030			
5.00	-.0073	-.0073	-.0072	-.0071	-.0070	-.0064	-.0065	-.0061	-.0057
	-.0043	-.0030	-.0030	-.0030	-.0030	-.0030			
6.00	-.0074	-.0074	-.0073	-.0072	-.0071	-.0064	-.0065	-.0060	-.0056
	-.0043	-.0030	-.0030	-.0030	-.0030	-.0030			
7.00	-.0076	-.0076	-.0075	-.0073	-.0071	-.0063	-.0065	-.0060	-.0056
	-.0043	-.0030	-.0030	-.0030	-.0030	-.0030			
8.00	-.0077	-.0077	-.0076	-.0075	-.0070	-.0063	-.0064	-.0060	-.0056
	-.0043	-.0030	-.0030	-.0030	-.0030	-.0030			
9.00	-.0079	-.0079	-.0077	-.0075	-.0068	-.0063	-.0064	-.0059	-.0055
	-.0042	-.0030	-.0030	-.0030	-.0030	-.0030			
10.00	-.0080	-.0080	-.0079	-.0074	-.0067	-.0062	-.0063	-.0059	-.0055
	-.0042	-.0029	-.0029	-.0029	-.0029	-.0029			
11.00	-.0082	-.0082	-.0080	-.0072	-.0067	-.0062	-.0063	-.0059	-.0055
	-.0042	-.0029	-.0029	-.0029	-.0029	-.0029			
12.00	-.0084	-.0084	-.0081	-.0071	-.0067	-.0061	-.0063	-.0058	-.0054
	-.0042	-.0029	-.0029	-.0029	-.0029	-.0029			
13.00	-.0085	-.0085	-.0083	-.0079	-.0066	-.0061	-.0062	-.0058	-.0054
	-.0041	-.0029	-.0029	-.0029	-.0029	-.0029			
14.00	-.0087	-.0087	-.0083	-.0079	-.0066	-.0061	-.0062	-.0057	-.0054
	-.0041	-.0029	-.0029	-.0029	-.0029	-.0029			
15.00	-.0086	-.0086	-.0082	-.0078	-.0065	-.0060	-.0062	-.0057	-.0053
	-.0041	-.0029	-.0029	-.0029	-.0029	-.0029			
16.00	-.0086	-.0086	-.0082	-.0078	-.0065	-.0060	-.0061	-.0057	-.0053
	-.0041	-.0028	-.0028	-.0028	-.0028	-.0028			
21.00	-.0083	-.0083	-.0079	-.0075	-.0063	-.0058	-.0059	-.0055	-.0052
	-.0039	-.0028	-.0028	-.0028	-.0028	-.0028			
30.00	-.0079	-.0079	-.0075	-.0071	-.0059	-.0055	-.0056	-.0052	-.0049
	-.0037	-.0026	-.0026	-.0026	-.0026	-.0026			
50.00	-.0068	-.0068	-.0065	-.0061	-.0052	-.0048	-.0048	-.0045	-.0042
	-.0032	-.0023	-.0023	-.0023	-.0023	-.0023			
60.00	-.0063	-.0063	-.0060	-.0057	-.0048	-.0044	-.0045	-.0042	-.0039
	-.0030	-.0021	-.0021	-.0021	-.0021	-.0021			
70.00	-.0058	-.0058	-.0055	-.0052	-.0044	-.0040	-.0041	-.0038	-.0036
	-.0027	-.0019	-.0019	-.0019	-.0019	-.0019			
80.00	-.0052	-.0052	-.0050	-.0047	-.0040	-.0037	-.0037	-.0035	-.0032
	-.0025	-.0017	-.0017	-.0017	-.0017	-.0017			
90.00	-.0047	-.0047	-.0045	-.0043	-.0036	-.0033	-.0034	-.0031	-.0029
	-.0022	-.0016	-.0016	-.0016	-.0016	-.0016			
100.00	-.0042	-.0042	-.0040	-.0038	-.0032	-.0029	-.0030	-.0028	-.0026
	-.0020	-.0014	-.0014	-.0014	-.0014	-.0014			
110.00	-.0037	-.0037	-.0035	-.0033	-.0028	-.0026	-.0026	-.0024	-.0023
	-.0017	-.0012	-.0012	-.0012	-.0012	-.0012			
120.00	-.0031	-.0031	-.0030	-.0028	-.0024	-.0022	-.0022	-.0021	-.0019
	-.0015	-.0010	-.0010	-.0010	-.0010	-.0010			
140.00	-.0021	-.0021	-.0020	-.0019	-.0016	-.0015	-.0015	-.0014	-.0013
	-.0010	-.0007	-.0007	-.0007	-.0007	-.0007			
160.00	-.0010	-.0010	-.0010	-.0009	-.0008	-.0007	-.0007	-.0007	-.0006
	-.0005	-.0003	-.0003	-.0003	-.0003	-.0003			
170.00	-.0005	-.0005	-.0005	-.0005	-.0004	-.0004	-.0004	-.0003	-.0003
	-.0002	-.0002	-.0002	-.0002	-.0002	-.0002			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

AIRF INTERPOLATED DATA 156115611561 NACA-0015 (D=-10.0 DEGS.)

	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452
	.7452	.7452	.7452	.7452	.7452	.7452			
-160.00	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471
	.6471	.6471	.6471	.6471	.6471	.6471			
-140.00	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000			
-120.00	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548
	.7548	.7548	.7548	.7548	.7548	.7548			
-110.00	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823
	.4823	.4823	.4823	.4823	.4823	.4823			
-100.00	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097
	.2097	.2097	.2097	.2097	.2097	.2097			
-90.00	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627
	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627			
-80.00	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352
	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352			
-70.00	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077
	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077			
-60.00	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802
	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802			
-50.00	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528
	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528			
-30.00	-.9900	-.9900	-.9950	-1.0050	-1.0100	-1.0150	-1.0150	-1.0150	-1.0150
	-1.0150	-.9450	-.9300	-.9200	-.9100	-.9100			
-21.00	-.8000	-.8000	-.8100	-.8300	-.8400	-.8500	-.8500	-.8500	-.8500
	-.8500	-.7100	-.6800	-.6600	-.6400	-.6400			
-16.00	-1.0680	-1.0680	-.9927	-.9917	-.9825	-.9733	-.9717	-.9700	-.9700
	-.9700	-.8067	-.7700	-.7400	-.7100	-.7100			
-15.00	-1.1900	-1.1900	-1.0900	-1.0550	-1.0225	-.9900	-.9850	-.9800	-.9800
	-.9800	-.8300	-.7900	-.7600	-.7300	-.7300			
-14.00	-1.8872	-1.8872	-1.9057	-1.3023	-1.1192	-1.0137	-.9954	-.9793	-.9808
	-.9837	-.8368	-.7970	-.7684	-.7398	-.7398			
-13.00	-1.8273	-1.8273	-1.8521	-1.5397	-1.2388	-1.0414	-1.0054	-.9744	-.9780
	-.9854	-.8343	-.7968	-.7702	-.7437	-.7437			
-12.00	-1.7577	-1.7577	-1.7821	-1.5755	-1.3581	-1.0702	-1.0153	-.9682	-.9741
	-.9866	-.8287	-.7942	-.7700	-.7457	-.7457			
-11.00	-1.6806	-1.6806	-1.7075	-1.6055	-1.4522	-1.0992	-1.0252	-.9617	-.9699
	-.9875	-.8222	-.7909	-.7690	-.7470	-.7470			
-10.00	-1.5974	-1.5974	-1.6229	-1.6044	-1.4831	-1.1282	-1.0351	-.9550	-.9656
	-.9884	-.8153	-.7873	-.7677	-.7481	-.7481			
-9.00	-1.5108	-1.5108	-1.5343	-1.5628	-1.4901	-1.1572	-1.0450	-.9483	-.9613
	-.9892	-.8082	-.7837	-.7664	-.7492	-.7492			
-8.00	-1.4199	-1.4199	-1.4421	-1.4794	-1.4634	-1.1856	-1.0548	-.9416	-.9570
	-.9901	-.8012	-.7800	-.7651	-.7502	-.7502			
-7.00	-1.3262	-1.3262	-1.3462	-1.3815	-1.4007	-1.2119	-1.0644	-.9348	-.9526
	-.9908	-.7941	-.7763	-.7638	-.7512	-.7512			
-6.00	-1.2301	-1.2301	-1.2480	-1.2799	-1.3012	-1.2295	-1.0733	-.9280	-.9481
	-.9914	-.7870	-.7725	-.7624	-.7522	-.7522			
-5.00	-1.1316	-1.1316	-1.1474	-1.1763	-1.1973	-1.2115	-1.0795	-.9209	-.9434
	-.9913	-.7798	-.7687	-.7608	-.7530	-.7530			
-4.00	-1.0310	-1.0310	-1.0450	-1.0704	-1.0890	-1.1154	-1.0754	-.9129	-.9376
	-.9889	-.7723	-.7645	-.7590	-.7535	-.7535			
-3.00	-.9288	-.9288	-.9408	-.9631	-.9789	-1.0019	-1.0322	-.9016	-.9284
	-.9792	-.7639	-.7593	-.7560	-.7527	-.7527			
-2.00	-.8251	-.8251	-.8353	-.8543	-.8678	-.8872	-.9121	-.8796	-.9081
	-.9450	-.7528	-.7510	-.7497	-.7485	-.7485			
-1.00	-.7202	-.7202	-.7285	-.7444	-.7556	-.7717	-.7927	-.8207	-.8509
	-.8594	-.7334	-.7334	-.7334	-.7334	-.7334			
.00	-.6142	-.6142	-.6208	-.6335	-.6402	-.6554	-.6722	-.6939	-.7246
	-.7431	-.6949	-.6949	-.6949	-.6949	-.6949			
1.00	-.5072	-.5072	-.5122	-.5220	-.5266	-.5384	-.5512	-.5672	-.5893
	-.6148	-.6266	-.6266	-.6266	-.6266	-.6266			
2.00	-.3994	-.3994	-.4029	-.4096	-.4121	-.4185	-.4299	-.4408	-.4548
	-.4726	-.5047	-.5047	-.5047	-.5047	-.5047			
3.00	-.2914	-.2914	-.2930	-.2968	-.2992	-.3012	-.3081	-.3140	-.3204
	-.3260	-.3335	-.3335	-.3335	-.3335	-.3335			
4.00	-.1829	-.1829	-.1830	-.1838	-.1811	-.1822	-.1859	-.1867	-.1861
	-.1796	-.1576	-.1576	-.1576	-.1576	-.1576			
5.00	-.0748	-.0748	-.0726	-.0692	-.0689	-.0649	-.0635	-.0590	-.0503
	-.0389	-.0165	-.0165	-.0165	-.0165	-.0165			
6.00	.0334	.0334	.0368	.0429	.0465	.0518	.0606	.0692	.0883
	.0828	.0943	.0943	.0943	.0943	.0943			
7.00	.1411	.1411	.1463	.1549	.1613	.1699	.1814	.2008	.2055
	.1832	-.2031	-.2031	-.2031	-.2031	-.2031			
8.00	.2483	.2483	.2550	.2666	.2755	.2873	.3044	.3199	.2982
	.2455	-.2805	-.2839	-.2863	-.2888	-.2888			
9.00	.3535	.3535	.3614	.3776	.3889	.4043	.4227	.4103	.3649
	.2363	-.1721	-.1809	-.1872	-.1934	-.1934			
10.00	.4584	.4584	.4712	.4874	.5014	.5194	.5193	.4753	.3972
	.3152	-.0028	-.0177	-.0282	-.0386	-.0386			
11.00	.5615	.5615	.5745	.5962	.6123	.6226	.5868	.5173	.4930
	.4508	.1859	.1648	.1499	.1350	.1350			
12.00	.6641	.6641	.6778	.7055	.7206	.6947	.6301	.6221	.6266
	.6023	.3788	.3514	.3321	.3129	.3129			
13.00	.7661	.7661	.7829	.8111	.8050	.7384	.6360	.7597	.7676
	.7543	.5664	.5332	.5096	.4860	.4860			
14.00	.8663	.8663	.8855	.9102	.8560	.7531	.8113	.8933	.8975
	.8925	.7323	.6941	.6667	.6393	.6393			

15.00	1.1900	1.1900	1.0900	1.0550	1.0225	.9900	.9850	.9800	.9800
	.9800	.8300	.7900	.7600	.7300	.7300			
16.00	1.0680	1.0680	.9927	.9917	.9825	.9733	.9717	.9700	.9700
	.9700	.8067	.7700	.7400	.7100	.7100			
21.00	.8000	.8000	.8100	.8300	.8400	.8500	.8500	.8500	.8500
	.8500	.7100	.6800	.6600	.6400	.6400			
30.00	.9900	.9900	.9950	1.0050	1.0100	1.0150	1.0150	1.0150	1.0150
	1.0150	.9450	.9300	.9200	.9100	.9100			
50.00	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528
	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528			
60.00	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802
	.8802	.8802	.8802	.8802	.8802	.8802			
70.00	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077
	.6077	.6077	.6077	.6077	.6077	.6077			
80.00	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352
	.3352	.3352	.3352	.3352	.3352	.3352			
90.00	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627
	.0627	.0627	.0627	.0627	.0627	.0627			
100.00	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097
	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097			
110.00	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823
	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823			
120.00	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548
	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548			
140.00	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000
	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000			
160.00	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471
	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471			
170.00	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452
	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
-170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
-160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
-140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
-120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
-110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
-100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
-70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
-60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
-50.00	1.3920	1.3920	1.3920	1.3920	1.3925	1.3930	1.3955	1.3980	1.3969
	1.3934	1.3920	1.3920	1.3920	1.3920	1.3920			
-30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
-21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
-16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
-15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
-14.00	.0617	.0617	.0685	.1388	.1686	.1909	.2008	.2102	.2193
	.2296	.2449	.2579	.2631	.2654	.2654			
-13.00	.0563	.0563	.0625	.0932	.1361	.1720	.1836	.1940	.2029
	.2140	.2291	.2410	.2447	.2452	.2452			
-12.00	.0514	.0514	.0570	.0757	.1045	.1537	.1672	.1788	.1873
	.1992	.2143	.2251	.2281	.2280	.2280			
-11.00	.0468	.0468	.0520	.0655	.0790	.1355	.1510	.1639	.1720
	.1847	.1997	.2095	.2120	.2118	.2118			
-10.00	.0426	.0426	.0472	.0563	.0678	.1173	.1348	.1491	.1568
	.1703	.1852	.1939	.1962	.1959	.1959			
-9.00	.0387	.0387	.0428	.0487	.0576	.0992	.1187	.1343	.1417
	.1560	.1707	.1784	.1804	.1801	.1801			
-8.00	.0351	.0351	.0387	.0434	.0485	.0812	.1025	.1196	.1265
	.1416	.1563	.1629	.1646	.1644	.1644			
-7.00	.0319	.0319	.0349	.0388	.0417	.0634	.0864	.1048	.1113
	.1272	.1419	.1474	.1489	.1487	.1487			
-6.00	.0290	.0290	.0315	.0347	.0369	.0466	.0704	.0900	.0962
	.1128	.1274	.1320	.1331	.1330	.1330			
-5.00	.0263	.0263	.0283	.0310	.0327	.0342	.0546	.0753	.0811
	.0985	.1130	.1165	.1174	.1173	.1173			
-4.00	.0239	.0239	.0255	.0276	.0290	.0307	.0398	.0607	.0660
	.0841	.0986	.1011	.1017	.1016	.1016			
-3.00	.0217	.0217	.0230	.0246	.0256	.0270	.0287	.0463	.0512
	.0697	.0843	.0858	.0862	.0861	.0861			
-2.00	.0199	.0199	.0207	.0219	.0227	.0237	.0250	.0330	.0374
	.0551	.0704	.0709	.0711	.0711	.0711			
-1.00	.0182	.0182	.0188	.0196	.0202	.0209	.0218	.0232	.0265
	.0407	.0574	.0574	.0574	.0574	.0574			

.00	.0168	.0168	.0171	.0176	.0180	.0185	.0191	.0200	.0215
	.0288	.0461	.0461	.0461	.0461	.0461			
1.00	.0157	.0157	.0158	.0160	.0162	.0165	.0169	.0175	.0185
	.0213	.0347	.0347	.0347	.0347	.0347			
2.00	.0148	.0148	.0147	.0147	.0148	.0149	.0152	.0155	.0161
	.0173	.0240	.0240	.0240	.0240	.0240			
3.00	.0142	.0142	.0140	.0138	.0138	.0138	.0139	.0141	.0145
	.0152	.0187	.0187	.0187	.0187	.0187			
4.00	.0138	.0138	.0135	.0132	.0132	.0131	.0131	.0132	.0135
	.0141	.0217	.0217	.0217	.0217	.0217			
5.00	.0137	.0137	.0133	.0130	.0129	.0128	.0128	.0129	.0131
	.0154	.0302	.0302	.0302	.0302	.0302			
6.00	.0138	.0138	.0134	.0132	.0131	.0130	.0130	.0131	.0138
	.0213	.0426	.0426	.0426	.0426	.0426			
7.00	.0142	.0142	.0139	.0137	.0136	.0136	.0137	.0140	.0178
	.0312	.0498	.0498	.0498	.0498	.0498			
8.00	.0148	.0148	.0146	.0145	.0146	.0147	.0149	.0165	.0258
	.0428	.0681	.0692	.0695	.0694	.0694			
9.00	.0157	.0157	.0156	.0158	.0159	.0162	.0170	.0228	.0366
	.0456	.0938	.0965	.0973	.0972	.0972			
10.00	.0169	.0169	.0170	.0174	.0177	.0182	.0217	.0325	.0492
	.0679	.1218	.1265	.1277	.1276	.1276			
11.00	.0183	.0183	.0187	.0194	.0199	.0218	.0301	.0449	.0796
	.1021	.1506	.1573	.1590	.1589	.1589			
12.00	.0201	.0201	.0206	.0218	.0229	.0290	.0418	.0829	.1194
	.1398	.1797	.1883	.1907	.1907	.1907			
13.00	.0221	.0221	.0231	.0247	.0283	.0399	.0566	.1339	.1616
	.1782	.2086	.2191	.2224	.2230	.2230			
14.00	.0245	.0245	.0259	.0285	.0380	.0547	.1369	.1860	.2030
	.2155	.2369	.2494	.2544	.2568	.2568			
15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
50.00	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920
	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920			
60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000
	.4000	.4000	.4000	.4000	.4000	.4000			
-160.00	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000
	.3000	.3000	.3000	.3000	.3000	.3000			
-140.00	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600
	.4600	.4600	.4600	.4600	.4600	.4600			
-120.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-110.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-100.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-90.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-80.00	.4457	.4457	.4473	.4493	.4508	.4523	.4541	.4558	.4571
	.4583	.4607	.4628	.4646	.4663	.4663			
-70.00	.3913	.3913	.3947	.3987	.4017	.4047	.4082	.4117	.4142
	.4167	.4213	.4257	.4292	.4327	.4327			
-60.00	.3370	.3370	.3420	.3480	.3525	.3570	.3623	.3675	.3713
	.3750	.3820	.3885	.3938	.3990	.3990			
-50.00	.2827	.2827	.2893	.2973	.3033	.3093	.3163	.3233	.3283
	.3333	.3427	.3513	.3583	.3653	.3653			
-30.00	.1740	.1740	.1840	.1960	.2050	.2140	.2245	.2350	.2425
	.2500	.2640	.2770	.2875	.2980	.2980			
-21.00	.1009	.1009	.1066	.1160	.1233	.1306	.1368	.1430	.1493
	.1556	.1699	.1974	.2101	.2229	.2229			
-16.00	.0730	.0730	.0780	.0860	.0915	.0970	.1025	.1080	.1125
	.1170	.1370	.1760	.1880	.2000	.2000			

-15.00	.0540	.0540	.0650	.0730	.0785	.0840	.0905	.0970	.1040
	.1110	.1330	.1730	.1840	.1950	.1950			
-14.00	.0524	.0524	.0421	.0429	.0612	.0789	.0861	.0929	.1005
	.1087	.1309	.1695	.1796	.1896	.1896			
-13.00	.0592	.0592	.0513	.0178	.0428	.0780	.0859	.0928	.0998
	.1082	.1297	.1657	.1749	.1841	.1841			
-12.00	.0651	.0651	.0588	.0233	.0260	.0782	.0868	.0938	.0999
	.1083	.1288	.1618	.1702	.1786	.1786			
-11.00	.0703	.0703	.0659	.0389	.0185	.0786	.0880	.0952	.1003
	.1086	.1280	.1579	.1654	.1730	.1730			
-10.00	.0749	.0749	.0717	.0549	.0327	.0790	.0893	.0967	.1007
	.1090	.1273	.1539	.1607	.1674	.1674			
-9.00	.0792	.0792	.0770	.0682	.0494	.0795	.0906	.0982	.1012
	.1093	.1265	.1500	.1559	.1618	.1618			
-8.00	.0830	.0830	.0818	.0769	.0652	.0800	.0919	.0998	.1017
	.1097	.1258	.1460	.1512	.1563	.1563			
-7.00	.0865	.0865	.0859	.0831	.0781	.0807	.0932	.1013	.1022
	.1100	.1250	.1421	.1464	.1507	.1507			
-6.00	.0897	.0897	.0897	.0883	.0858	.0821	.0945	.1028	.1027
	.1104	.1243	.1382	.1417	.1452	.1452			
-5.00	.0926	.0926	.0930	.0928	.0918	.0865	.0959	.1044	.1033
	.1108	.1237	.1343	.1370	.1397	.1397			
-4.00	.0951	.0951	.0960	.0967	.0965	.0960	.0977	.1060	.1039
	.1114	.1232	.1307	.1326	.1345	.1345			
-3.00	.0974	.0974	.0986	.1000	.1005	.1011	.1008	.1076	.1047
	.1125	.1234	.1279	.1290	.1301	.1301			
-2.00	.0994	.0994	.1009	.1028	.1038	.1052	.1063	.1096	.1065
	.1153	.1255	.1272	.1276	.1281	.1281			
-1.00	.1011	.1011	.1028	.1052	.1066	.1085	.1106	.1125	.1110
	.1204	.1332	.1332	.1332	.1332	.1332			
.00	.1027	.1027	.1046	.1073	.1085	.1112	.1139	.1170	.1198
	.1232	.1498	.1498	.1498	.1498	.1498			
1.00	.1040	.1040	.1060	.1091	.1105	.1135	.1166	.1203	.1248
	.1289	.1599	.1599	.1599	.1599	.1599			
2.00	.1052	.1052	.1073	.1106	.1122	.1149	.1188	.1230	.1283
	.1346	.1580	.1580	.1580	.1580	.1580			
3.00	.1062	.1062	.1084	.1119	.1141	.1166	.1207	.1253	.1311
	.1386	.1517	.1517	.1517	.1517	.1517			
4.00	.1071	.1071	.1095	.1131	.1149	.1180	.1225	.1274	.1337
	.1425	.1486	.1486	.1486	.1486	.1486			
5.00	.1080	.1080	.1103	.1139	.1169	.1197	.1242	.1295	.1366
	.1475	.1473	.1473	.1473	.1473	.1473			
6.00	.1088	.1088	.1114	.1153	.1182	.1217	.1258	.1321	.1403
	.1522	.1444	.1444	.1444	.1444	.1444			
7.00	.1096	.1096	.1123	.1167	.1197	.1235	.1285	.1350	.1474
	.1560	.2156	.2156	.2156	.2156	.2156			
8.00	.1104	.1104	.1134	.1181	.1215	.1258	.1315	.1414	.1545
	.1602	.2242	.2209	.2201	.2193	.2193			
9.00	.1115	.1115	.1148	.1198	.1236	.1285	.1363	.1499	.1604
	.1354	.1858	.1773	.1752	.1730	.1730			
10.00	.1125	.1125	.1154	.1217	.1260	.1323	.1438	.1568	.1617
	.0951	.1319	.1176	.1140	.1104	.1104			
11.00	.1136	.1136	.1173	.1239	.1291	.1379	.1511	.1593	.1232
	.0503	.0731	.0529	.0478	.0426	.0426			
12.00	.1146	.1146	.1190	.1259	.1328	.1444	.1541	.1100	.0637
	.0045	.0133	-.0129	-.0196	-.0262	-.0262			
13.00	.1154	.1154	.1200	.1288	.1380	.1471	.1484	.0348	-.0006
	-.0406	-.0451	-.0771	-.0853	-.0935	-.0935			
14.00	.1161	.1161	.1212	.1320	.1408	.1424	.0301	-.0416	-.0612
	-.0820	-.0979	-.1350	-.1446	-.1543	-.1543			
15.00	-.0540	-.0540	-.0650	-.0730	-.0785	-.0840	-.0905	-.0970	-.1040
	-.1110	-.1330	-.1730	-.1840	-.1950	-.1950			
16.00	-.0730	-.0730	-.0780	-.0860	-.0915	-.0970	-.1025	-.1080	-.1125
	-.1170	-.1370	-.1760	-.1880	-.2000	-.2000			
21.00	-.1009	-.1009	-.1066	-.1160	-.1233	-.1306	-.1368	-.1430	-.1493
	-.1556	-.1699	-.1974	-.2101	-.2229	-.2229			
30.00	-.1740	-.1740	-.1840	-.1960	-.2050	-.2140	-.2245	-.2350	-.2425
	-.2500	-.2640	-.2770	-.2875	-.2980	-.2980			
50.00	-.2827	-.2827	-.2893	-.2973	-.3033	-.3093	-.3163	-.3233	-.3283
	-.3333	-.3427	-.3513	-.3583	-.3653	-.3653			
60.00	-.3370	-.3370	-.3420	-.3480	-.3525	-.3570	-.3623	-.3675	-.3713
	-.3750	-.3820	-.3885	-.3938	-.3990	-.3990			
70.00	-.3913	-.3913	-.3947	-.3987	-.4017	-.4047	-.4082	-.4117	-.4142
	-.4167	-.4213	-.4257	-.4292	-.4327	-.4327			
80.00	-.4457	-.4457	-.4473	-.4493	-.4508	-.4523	-.4541	-.4558	-.4571
	-.4583	-.4607	-.4628	-.4646	-.4663	-.4663			
90.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
100.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
110.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
120.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
140.00	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600
	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600			
160.00	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000
	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000			
170.00	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000
	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

FLAP	INTERPOLATED DATA				156115611561		NACA-0015 (D=-10.0 DEGS.)		
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	-.0063	-.0063	-.0061	-.0052	-.0048	-.0058	-.0059	-.0057	-.0055
	-.0041	-.0031	-.0031	-.0031	-.0031	-.0031			
-160.00	-.0126	-.0126	-.0123	-.0105	-.0096	-.0116	-.0118	-.0114	-.0110
	-.0082	-.0062	-.0062	-.0062	-.0062	-.0062			
-140.00	-.0253	-.0253	-.0245	-.0210	-.0191	-.0233	-.0235	-.0229	-.0220
	-.0164	-.0124	-.0124	-.0124	-.0124	-.0124			
-120.00	-.0379	-.0379	-.0368	-.0314	-.0287	-.0349	-.0353	-.0343	-.0330
	-.0246	-.0186	-.0186	-.0186	-.0186	-.0186			
-110.00	-.0442	-.0442	-.0429	-.0367	-.0335	-.0407	-.0412	-.0400	-.0385
	-.0287	-.0217	-.0217	-.0217	-.0217	-.0217			
-100.00	-.0506	-.0506	-.0490	-.0419	-.0382	-.0465	-.0471	-.0458	-.0440
	-.0328	-.0248	-.0248	-.0248	-.0248	-.0248			
-90.00	-.0569	-.0569	-.0551	-.0472	-.0430	-.0524	-.0530	-.0515	-.0495
	-.0369	-.0279	-.0279	-.0279	-.0279	-.0279			
-80.00	-.0632	-.0632	-.0613	-.0524	-.0478	-.0582	-.0589	-.0572	-.0550
	-.0410	-.0309	-.0309	-.0309	-.0309	-.0309			
-70.00	-.0695	-.0695	-.0674	-.0576	-.0526	-.0640	-.0648	-.0629	-.0605
	-.0451	-.0340	-.0340	-.0340	-.0340	-.0340			
-60.00	-.0758	-.0758	-.0735	-.0629	-.0574	-.0698	-.0706	-.0686	-.0660
	-.0492	-.0371	-.0371	-.0371	-.0371	-.0371			
-50.00	-.0822	-.0822	-.0796	-.0681	-.0622	-.0756	-.0765	-.0744	-.0715
	-.0533	-.0402	-.0402	-.0402	-.0402	-.0402			
-30.00	-.0948	-.0948	-.0919	-.0786	-.0717	-.0873	-.0883	-.0858	-.0825
	-.0615	-.0464	-.0464	-.0464	-.0464	-.0464			
-21.00	-.1005	-.1005	-.0974	-.0833	-.0760	-.0925	-.0936	-.0910	-.0874
	-.0652	-.0492	-.0492	-.0492	-.0492	-.0492			
-16.00	-.1036	-.1036	-.1005	-.0859	-.0784	-.0954	-.0965	-.0938	-.0902
	-.0673	-.0508	-.0508	-.0508	-.0508	-.0508			
-15.00	-.1043	-.1043	-.1011	-.0865	-.0789	-.0960	-.0971	-.0944	-.0907
	-.0677	-.0511	-.0511	-.0511	-.0511	-.0511			
-14.00	-.1049	-.1049	-.1017	-.0870	-.0794	-.0966	-.0977	-.0950	-.0913
	-.0681	-.0514	-.0514	-.0514	-.0514	-.0514			
-13.00	-.1067	-.1067	-.1042	-.0875	-.0798	-.0971	-.0983	-.0955	-.0918
	-.0685	-.0517	-.0517	-.0517	-.0517	-.0517			
-12.00	-.1077	-.1077	-.1059	-.0856	-.0803	-.0977	-.0989	-.0961	-.0924
	-.0689	-.0520	-.0520	-.0520	-.0520	-.0520			
-11.00	-.1085	-.1085	-.1074	-.0919	-.0808	-.0983	-.0995	-.0967	-.0929
	-.0693	-.0523	-.0523	-.0523	-.0523	-.0523			
-10.00	-.1087	-.1087	-.1080	-.0993	-.0859	-.0989	-.1001	-.0973	-.0935
	-.0697	-.0526	-.0526	-.0526	-.0526	-.0526			
-9.00	-.1089	-.1089	-.1083	-.1049	-.0929	-.0995	-.1007	-.0978	-.0940
	-.0701	-.0529	-.0529	-.0529	-.0529	-.0529			
-8.00	-.1087	-.1087	-.1084	-.1071	-.1002	-.1001	-.1013	-.0984	-.0946
	-.0705	-.0532	-.0532	-.0532	-.0532	-.0532			
-7.00	-.1082	-.1082	-.1081	-.1073	-.1051	-.1006	-.1018	-.0990	-.0951
	-.0709	-.0535	-.0535	-.0535	-.0535	-.0535			
-6.00	-.1075	-.1075	-.1075	-.1071	-.1061	-.1012	-.1024	-.0995	-.0957
	-.0714	-.0539	-.0539	-.0539	-.0539	-.0539			
-5.00	-.1065	-.1065	-.1066	-.1066	-.1060	-.1018	-.1030	-.1001	-.0962
	-.0718	-.0542	-.0542	-.0542	-.0542	-.0542			
-4.00	-.1052	-.1052	-.1055	-.1057	-.1054	-.1052	-.1036	-.1007	-.0968
	-.0722	-.0545	-.0545	-.0545	-.0545	-.0545			
-3.00	-.1036	-.1036	-.1040	-.1045	-.1044	-.1045	-.1042	-.1013	-.0973
	-.0726	-.0548	-.0548	-.0548	-.0548	-.0548			
-2.00	-.1018	-.1018	-.1023	-.1030	-.1031	-.1035	-.1035	-.1018	-.0979
	-.0730	-.0551	-.0551	-.0551	-.0551	-.0551			
-1.00	-.0996	-.0996	-.1003	-.1012	-.1015	-.1022	-.1026	-.1024	-.0984
	-.0811	-.0554	-.0554	-.0554	-.0554	-.0554			
.00	-.0973	-.0973	-.0980	-.0992	-.0992	-.1005	-.1013	-.1016	-.1010
	-.0892	-.0630	-.0630	-.0630	-.0630	-.0630			
1.00	-.0947	-.0947	-.0956	-.0969	-.0971	-.0986	-.0996	-.1005	-.1008
	-.0966	-.0714	-.0714	-.0714	-.0714	-.0714			
2.00	-.0918	-.0918	-.0929	-.0944	-.0947	-.0958	-.0977	-.0990	-.1000
	-.0995	-.0816	-.0816	-.0816	-.0816	-.0816			
3.00	-.0889	-.0889	-.0900	-.0917	-.0927	-.0935	-.0956	-.0972	-.0988
	-.0996	-.0945	-.0945	-.0945	-.0945	-.0945			
4.00	-.0858	-.0858	-.0870	-.0889	-.0892	-.0907	-.0932	-.0952	-.0973
	-.0993	-.0992	-.0992	-.0992	-.0992	-.0992			
5.00	-.0827	-.0827	-.0838	-.0855	-.0872	-.0883	-.0907	-.0930	-.0955
	-.0994	-.1018	-.1018	-.1018	-.1018	-.1018			
6.00	-.0794	-.0794	-.0808	-.0828	-.0843	-.0860	-.0877	-.0907	-.0931
	-.1010	-.1046	-.1046	-.1046	-.1046	-.1046			
7.00	-.0762	-.0762	-.0776	-.0799	-.0815	-.0833	-.0856	-.0877	-.0940
	-.1036	-.1579	-.1579	-.1579	-.1579	-.1579			
8.00	-.0730	-.0730	-.0745	-.0770	-.0787	-.0807	-.0829	-.0872	-.0964
	-.1077	-.1570	-.1570	-.1570	-.1570	-.1570			
9.00	-.0700	-.0700	-.0719	-.0742	-.0760	-.0781	-.0813	-.0892	-.0994
	-.0786	-.1561	-.1561	-.1561	-.1561	-.1561			
10.00	-.0669	-.0669	-.0680	-.0715	-.0734	-.0759	-.0819	-.0910	-.0995
	-.0781	-.1552	-.1552	-.1552	-.1552	-.1552			
11.00	-.0641	-.0641	-.0657	-.0687	-.0710	-.0749	-.0828	-.0898	-.0989
	-.0777	-.1542	-.1542	-.1542	-.1542	-.1542			
12.00	-.0610	-.0610	-.0631	-.0655	-.0684	-.0750	-.0808	-.0893	-.0983
	-.0772	-.1533	-.1533	-.1533	-.1533	-.1533			
13.00	-.0576	-.0576	-.0595	-.0629	-.0674	-.0721	-.0727	-.0887	-.0977
	-.0768	-.1524	-.1524	-.1524	-.1524	-.1524			
14.00	-.0542	-.0542	-.0560	-.0602	-.0645	-.0641	-.0723	-.0882	-.0972
	-.0763	-.1515	-.1515	-.1515	-.1515	-.1515			

15.00	-.0539	-.0539	-.0557	-.0598	-.0641	-.0637	-.0718	-.0877	-.0966
	-.0758	-.1506	-.1506	-.1506	-.1506	-.1506			
16.00	-.0535	-.0535	-.0553	-.0595	-.0637	-.0633	-.0714	-.0871	-.0960
	-.0754	-.1497	-.1497	-.1497	-.1497	-.1497			
21.00	-.0519	-.0519	-.0536	-.0577	-.0618	-.0614	-.0692	-.0845	-.0931
	-.0731	-.1451	-.1451	-.1451	-.1451	-.1451			
30.00	-.0490	-.0490	-.0506	-.0544	-.0583	-.0579	-.0653	-.0797	-.0878
	-.0689	-.1369	-.1369	-.1369	-.1369	-.1369			
50.00	-.0424	-.0424	-.0439	-.0471	-.0505	-.0502	-.0566	-.0691	-.0761
	-.0598	-.1187	-.1187	-.1187	-.1187	-.1187			
60.00	-.0392	-.0392	-.0405	-.0435	-.0466	-.0463	-.0522	-.0638	-.0702
	-.0552	-.1095	-.1095	-.1095	-.1095	-.1095			
70.00	-.0359	-.0359	-.0371	-.0399	-.0427	-.0425	-.0479	-.0584	-.0644
	-.0506	-.1004	-.1004	-.1004	-.1004	-.1004			
80.00	-.0327	-.0327	-.0337	-.0363	-.0389	-.0386	-.0435	-.0531	-.0585
	-.0460	-.0913	-.0913	-.0913	-.0913	-.0913			
90.00	-.0294	-.0294	-.0304	-.0326	-.0350	-.0348	-.0392	-.0478	-.0527
	-.0414	-.0821	-.0821	-.0821	-.0821	-.0821			
100.00	-.0261	-.0261	-.0270	-.0290	-.0311	-.0309	-.0348	-.0425	-.0468
	-.0368	-.0730	-.0730	-.0730	-.0730	-.0730			
110.00	-.0229	-.0229	-.0236	-.0254	-.0272	-.0270	-.0305	-.0372	-.0410
	-.0322	-.0639	-.0639	-.0639	-.0639	-.0639			
120.00	-.0196	-.0196	-.0202	-.0218	-.0233	-.0232	-.0261	-.0319	-.0351
	-.0276	-.0548	-.0548	-.0548	-.0548	-.0548			
140.00	-.0131	-.0131	-.0135	-.0145	-.0155	-.0154	-.0174	-.0213	-.0234
	-.0184	-.0365	-.0365	-.0365	-.0365	-.0365			
160.00	-.0065	-.0065	-.0067	-.0073	-.0078	-.0077	-.0087	-.0106	-.0117
	-.0092	-.0183	-.0183	-.0183	-.0183	-.0183			
170.00	-.0033	-.0033	-.0034	-.0036	-.0039	-.0039	-.0044	-.0053	-.0059
	-.0046	-.0091	-.0091	-.0091	-.0091	-.0091			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
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	.0000	.0000	.0000	.0000	.0000	.0000			
80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
-170.00	.0005	.0002	.0002	.0010	.0009	.0008	.0003	.0015	.0014
	.0002	.0010	.0003	.0003	.0003	.0003	.0015		
-160.00	.0010	.0003	.0020	.0019	.0016	.0007			
	.0005	.0021	.0007	.0007	.0007	.0022	.0022	.0021	.0019
-140.00	.0021	.0007	.0030	.0028	.0024	.0010			
	.0010	.0031	.0010	.0010	.0010	.0026	.0026	.0024	.0023
-120.00	.0031	.0010	.0035	.0033	.0028	.0012			
	.0015	.0037	.0012	.0012	.0012	.0029	.0030	.0028	.0026
-110.00	.0037	.0012	.0040	.0038	.0032	.0014			
	.0017	.0042	.0014	.0014	.0014	.0033	.0034	.0031	.0029
-100.00	.0042	.0014	.0045	.0043	.0036	.0016			
	.0020	.0047	.0016	.0016	.0016	.0037	.0037	.0035	.0032
-90.00	.0047	.0016	.0050	.0047	.0040	.0017			
	.0022	.0052	.0017	.0017	.0017	.0040	.0041	.0038	.0036
-80.00	.0052	.0017	.0055	.0052	.0044	.0019			
	.0025	.0058	.0019	.0019	.0019	.0044	.0045	.0042	.0039
-70.00	.0058	.0019	.0060	.0057	.0048	.0021			
	.0027	.0063	.0021	.0021	.0021	.0048	.0048	.0045	.0042
-60.00	.0063	.0021	.0065	.0061	.0052	.0023			
	.0030	.0068	.0023	.0023	.0023	.0055	.0056	.0052	.0049
-50.00	.0068	.0023	.0075	.0071	.0059	.0026			
	.0032	.0079	.0026	.0026	.0026	.0058	.0059	.0055	.0052
-30.00	.0079	.0026	.0080	.0075	.0063	.0028			
	.0037	.0083	.0028	.0028	.0028	.0060	.0061	.0057	.0053
-21.00	.0083	.0028	.0082	.0078	.0065	.0028			
	.0039	.0086	.0028	.0028	.0028				
-16.00	.0086	.0028							
	.0041								

-15.00	.0086	.0086	.0082	.0078	.0065	.0060	.0062	.0057	.0053
	.0041	.0029	.0029	.0029	.0029	.0029			
-14.00	.0087	.0087	.0083	.0079	.0066	.0061	.0062	.0057	.0054
	.0041	.0029	.0029	.0029	.0029	.0029			
-13.00	.0085	.0085	.0083	.0079	.0066	.0061	.0062	.0058	.0054
	.0041	.0029	.0029	.0029	.0029	.0029			
-12.00	.0084	.0084	.0081	.0071	.0067	.0061	.0063	.0058	.0054
	.0042	.0029	.0029	.0029	.0029	.0029			
-11.00	.0082	.0082	.0080	.0072	.0067	.0062	.0063	.0059	.0055
	.0042	.0029	.0029	.0029	.0029	.0029			
-10.00	.0080	.0080	.0079	.0074	.0067	.0062	.0063	.0059	.0055
	.0042	.0029	.0029	.0029	.0029	.0029			
-9.00	.0079	.0079	.0077	.0075	.0068	.0063	.0064	.0059	.0055
	.0042	.0030	.0030	.0030	.0030	.0030			
-8.00	.0077	.0077	.0076	.0075	.0070	.0063	.0064	.0060	.0056
	.0043	.0030	.0030	.0030	.0030	.0030			
-7.00	.0076	.0076	.0075	.0073	.0071	.0063	.0065	.0060	.0056
	.0043	.0030	.0030	.0030	.0030	.0030			
-6.00	.0074	.0074	.0073	.0072	.0071	.0064	.0065	.0060	.0056
	.0043	.0030	.0030	.0030	.0030	.0030			
-5.00	.0073	.0073	.0072	.0071	.0070	.0064	.0065	.0061	.0057
	.0043	.0030	.0030	.0030	.0030	.0030			
-4.00	.0071	.0071	.0071	.0070	.0069	.0068	.0066	.0061	.0057
	.0044	.0030	.0030	.0030	.0030	.0030			
-3.00	.0070	.0070	.0069	.0068	.0067	.0067	.0066	.0061	.0057
	.0044	.0031	.0031	.0031	.0031	.0031			
-2.00	.0068	.0068	.0068	.0067	.0066	.0066	.0065	.0062	.0058
	.0044	.0031	.0031	.0031	.0031	.0031			
-1.00	.0067	.0067	.0066	.0066	.0065	.0064	.0064	.0062	.0058
	.0047	.0031	.0031	.0031	.0031	.0031			
.00	.0065	.0065	.0065	.0064	.0063	.0063	.0063	.0061	.0059
	.0051	.0035	.0035	.0035	.0035	.0035			
1.00	.0063	.0063	.0063	.0063	.0062	.0062	.0062	.0061	.0059
	.0055	.0040	.0040	.0040	.0040	.0040			
2.00	.0061	.0061	.0061	.0061	.0060	.0060	.0061	.0060	.0059
	.0056	.0045	.0045	.0045	.0045	.0045			
3.00	.0059	.0059	.0059	.0059	.0059	.0059	.0060	.0059	.0059
	.0057	.0052	.0052	.0052	.0052	.0052			
4.00	.0057	.0057	.0058	.0058	.0057	.0057	.0059	.0059	.0058
	.0057	.0056	.0056	.0056	.0056	.0056			
5.00	.0055	.0055	.0056	.0056	.0057	.0057	.0058	.0058	.0058
	.0059	.0060	.0060	.0060	.0060	.0060			
6.00	.0054	.0054	.0054	.0055	.0055	.0056	.0056	.0058	.0058
	.0064	.0065	.0065	.0065	.0065	.0065			
7.00	.0052	.0052	.0053	.0054	.0054	.0055	.0056	.0057	.0062
	.0070	.0114	.0114	.0114	.0114	.0114			
8.00	.0050	.0050	.0051	.0053	.0054	.0055	.0056	.0059	.0069
	.0077	.0113	.0113	.0113	.0113	.0113			
9.00	.0049	.0049	.0051	.0052	.0053	.0054	.0057	.0065	.0075
	.0059	.0113	.0113	.0113	.0113	.0113			
10.00	.0048	.0048	.0049	.0051	.0053	.0055	.0061	.0071	.0078
	.0059	.0112	.0112	.0112	.0112	.0112			
11.00	.0047	.0047	.0049	.0051	.0053	.0057	.0066	.0073	.0078
	.0058	.0111	.0111	.0111	.0111	.0111			
12.00	.0046	.0046	.0048	.0050	.0053	.0061	.0067	.0073	.0077
	.0058	.0111	.0111	.0111	.0111	.0111			
13.00	.0045	.0045	.0047	.0050	.0055	.0061	.0060	.0072	.0077
	.0058	.0110	.0110	.0110	.0110	.0110			
14.00	.0043	.0043	.0045	.0049	.0055	.0054	.0060	.0072	.0076
	.0057	.0109	.0109	.0109	.0109	.0109			
15.00	.0043	.0043	.0045	.0049	.0055	.0054	.0059	.0071	.0076
	.0057	.0109	.0109	.0109	.0109	.0109			
16.00	.0042	.0042	.0044	.0048	.0054	.0053	.0059	.0071	.0075
	.0057	.0108	.0108	.0108	.0108	.0108			
21.00	.0041	.0041	.0043	.0047	.0053	.0052	.0057	.0069	.0073
	.0055	.0105	.0105	.0105	.0105	.0105			
30.00	.0039	.0039	.0041	.0044	.0050	.0049	.0054	.0065	.0069
	.0052	.0099	.0099	.0099	.0099	.0099			
50.00	.0034	.0034	.0035	.0038	.0043	.0042	.0047	.0056	.0060
	.0045	.0086	.0086	.0086	.0086	.0086			
60.00	.0031	.0031	.0033	.0035	.0040	.0039	.0043	.0052	.0055
	.0041	.0079	.0079	.0079	.0079	.0079			
70.00	.0028	.0028	.0030	.0032	.0036	.0036	.0040	.0048	.0050
	.0038	.0072	.0072	.0072	.0072	.0072			
80.00	.0026	.0026	.0027	.0030	.0033	.0033	.0036	.0043	.0046
	.0035	.0066	.0066	.0066	.0066	.0066			
90.00	.0023	.0023	.0024	.0027	.0030	.0029	.0032	.0039	.0041
	.0031	.0059	.0059	.0059	.0059	.0059			
100.00	.0021	.0021	.0022	.0024	.0027	.0026	.0029	.0035	.0037
	.0028	.0053	.0053	.0053	.0053	.0053			
110.00	.0018	.0018	.0019	.0021	.0023	.0023	.0025	.0030	.0032
	.0024	.0046	.0046	.0046	.0046	.0046			
120.00	.0016	.0016	.0016	.0018	.0020	.0020	.0022	.0026	.0028
	.0021	.0040	.0040	.0040	.0040	.0040			
140.00	.0010	.0010	.0011	.0012	.0013	.0013	.0014	.0017	.0018
	.0014	.0026	.0026	.0026	.0026	.0026			
160.00	.0005	.0005	.0005	.0006	.0007	.0007	.0007	.0009	.0009
	.0007	.0013	.0013	.0013	.0013	.0013			
170.00	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004	.0005
	.0003	.0007	.0007	.0007	.0007	.0007			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

AIRF INTERPOLATED DATA 156115611561 NACA-0015 (D=+15.0 DEGS.)

	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452
	.7452	.7452	.7452	.7452	.7452	.7452			
-160.00	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471
	.6471	.6471	.6471	.6471	.6471	.6471			
-140.00	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000			
-120.00	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548
	.7548	.7548	.7548	.7548	.7548	.7548			
-110.00	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823
	.4823	.4823	.4823	.4823	.4823	.4823			
-100.00	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097
	.2097	.2097	.2097	.2097	.2097	.2097			
-90.00	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627
	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627			
-80.00	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352
	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352			
-70.00	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077
	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077			
-60.00	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802
	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802			
-50.00	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528
	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528			
-30.00	-.9900	-.9900	-.9950	-1.0050	-1.0100	-1.0150	-1.0150	-1.0150	-1.0150
	-1.0150	-.9450	-.9300	-.9200	-.9100	-.9100			
-21.00	-.8000	-.8000	-.8100	-.8300	-.8400	-.8500	-.8500	-.8500	-.8500
	-.8500	-.7100	-.6800	-.6600	-.6400	-.6400			
-16.00	-1.0680	-1.0680	-.9927	-.9917	-.9825	-.9733	-.9717	-.9700	-.9700
	-.9700	-.8067	-.7700	-.7400	-.7100	-.7100			
-15.00	-1.1900	-1.1900	-1.0900	-1.0550	-1.0225	-.9900	-.9850	-.9800	-.9800
	-.9800	-.8300	-.7900	-.7600	-.7300	-.7300			
-14.00	-.5800	-.5800	-.5945	-.6202	-.6254	-.5705	-.4601	-.7997	-.8384
	-.9045	-.7766	-.7391	-.7122	-.6854	-.6854			
-13.00	-.4782	-.4782	-.4910	-.5129	-.5293	-.5188	-.4596	-.5426	-.6215
	-.7758	-.6739	-.6428	-.6210	-.5992	-.5992			
-12.00	-.3736	-.3736	-.3844	-.4038	-.4189	-.4343	-.4134	-.3483	-.4024
	-.6265	-.5521	-.5290	-.5129	-.4968	-.4968			
-11.00	-.2674	-.2674	-.2794	-.2924	-.3039	-.3203	-.3325	-.3083	-.2505
	-.4720	-.4250	-.4102	-.4000	-.3898	-.3898			
-10.00	-.1603	-.1603	-.1675	-.1798	-.1894	-.2019	-.2201	-.2276	-.2193
	-.3233	-.3020	-.2954	-.2908	-.2861	-.2861			
-9.00	-.0524	-.0524	-.0579	-.0668	-.0742	-.0835	-.0973	-.1172	-.1363
	-.1963	-.1963	-.1963	-.1963	-.1963	-.1963			
-8.00	.0559	.0559	.0518	.0463	.0416	.0347	.0251	.0083	-.0265
	-.1089	-.1221	-.1263	-.1292	-.1321	-.1321			
-7.00	.1647	.1647	.1620	.1591	.1565	.1524	.1469	.1336	.1004
	-.0446	-.0663	-.0732	-.0779	-.0827	-.0827			
-6.00	.2729	.2729	.2716	.2715	.2710	.2697	.2672	.2578	.2295
	.0104	-.0180	-.0270	-.0332	-.0394	-.0394			
-5.00	.3808	.3808	.3808	.3834	.3848	.3859	.3861	.3803	.3562
	.0614	.0271	.0163	.0088	.0013	.0013			
-4.00	.4881	.4881	.4894	.4943	.4968	.5012	.5036	.5003	.4796
	.1108	.0710	.0584	.0498	.0411	.0411			
-3.00	.5950	.5950	.5970	.6045	.6111	.6150	.6197	.6248	.5974
	.1596	.1144	.1001	.0902	.0804	.0804			
-2.00	.7008	.7008	.7059	.7167	.7231	.7323	.7339	.7435	.7119
	.2081	.1576	.1416	.1305	.1195	.1195			
-1.00	.8034	.8034	.8100	.8230	.8330	.7906	.8393	.8604	.8506
	.2565	.2006	.1829	.1707	.1585	.1585			
.00	.9068	.9068	.9149	.9308	.9423	.8165	.8870	.9139	.9171
	.3049	.2437	.2243	.2109	.1976	.1976			
1.00	1.0072	1.0072	1.0182	1.0368	.9899	.8327	.9050	.9325	.9396
	.3532	.2867	.2656	.2511	.2366	.2366			
2.00	1.1087	1.1087	1.1183	1.1412	1.0053	.8462	.9145	.9405	.9485
	.4015	.3297	.3069	.2913	.2756	.2756			
3.00	1.2062	1.2062	1.2159	1.2205	1.0117	.8589	.9216	.9453	.9531
	.4498	.3727	.3483	.3314	.3146	.3146			
4.00	1.3021	1.3021	1.3157	1.2875	1.0155	.8713	.9279	.9491	.9564
	.4981	.4157	.3896	.3716	.3536	.3536			
5.00	1.3947	1.3947	1.4092	1.3515	1.0187	.8836	.9341	.9526	.9593
	.5465	.4587	.4309	.4117	.3926	.3926			
6.00	1.4868	1.4868	1.5026	1.4148	1.0217	.8959	.9402	.9561	.9621
	.5948	.5017	.4722	.4519	.4316	.4316			
7.00	1.5734	1.5734	1.5903	1.4777	1.0246	.9082	.9464	.9595	.9648
	.6431	.5447	.5135	.4920	.4705	.4705			
8.00	1.6561	1.6561	1.6607	1.5401	1.0275	.9205	.9525	.9629	.9675
	.6913	.5876	.5548	.5321	.5095	.5095			
9.00	1.7319	1.7319	1.7444	1.6006	1.0304	.9328	.9586	.9663	.9702
	.7395	.6305	.5959	.5721	.5483	.5483			
10.00	1.7966	1.7966	1.8115	1.6537	1.0333	.9450	.9647	.9697	.9729
	.7875	.6731	.6369	.6119	.5870	.5870			
11.00	1.8599	1.8599	1.8716	1.6769	1.0361	.9573	.9707	.9731	.9756
	.8350	.7151	.6773	.6512	.6251	.6251			
12.00	1.9129	1.9129	1.9189	1.6141	1.0386	.9693	.9766	.9763	.9782
	.8812	.7557	.7164	.6892	.6619	.6619			
13.00	1.9532	1.9532	1.9537	1.4378	1.0400	.9805	.9821	.9793	.9805
	.9246	.7929	.7523	.7240	.6957	.6957			
14.00	1.9931	1.9931	1.9814	1.2266	1.0379	.9894	.9862	.9813	.9818
	.9609	.8216	.7806	.7513	.7220	.7220			

15.00	1.1900	1.1900	1.0900	1.0550	1.0225	.9900	.9850	.9800	.9800
	.9800	.8300	.7900	.7600	.7300	.7300			
16.00	1.0680	1.0680	.9927	.9917	.9825	.9733	.9717	.9700	.9700
	.9700	.8067	.7700	.7400	.7100	.7100			
21.00	.8000	.8000	.8100	.8300	.8400	.8500	.8500	.8500	.8500
	.8500	.7100	.6800	.6600	.6400	.6400			
30.00	.9900	.9900	.9950	1.0050	1.0100	1.0150	1.0150	1.0150	1.0150
	1.0150	.9450	.9300	.9200	.9100	.9100			
50.00	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528
	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528			
60.00	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802
	.8802	.8802	.8802	.8802	.8802	.8802			
70.00	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077
	.6077	.6077	.6077	.6077	.6077	.6077			
80.00	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352
	.3352	.3352	.3352	.3352	.3352	.3352			
90.00	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627
	.0627	.0627	.0627	.0627	.0627	.0627			
100.00	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097
	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097			
110.00	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823
	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823			
120.00	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548
	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548			
140.00	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000
	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000			
160.00	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471
	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471			
170.00	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452
	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
-170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
-160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
-140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
-120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
-110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
-100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
-70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
-60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
-50.00	1.3920	1.3920	1.3920	1.3920	1.3925	1.3930	1.3955	1.3980	1.3969
	1.3934	1.3920	1.3920	1.3920	1.3920	1.3920			
-30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
-21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
-16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
-15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
-14.00	.0204	.0204	.0209	.0220	.0245	.0351	.0498	.1689	.1941
	.2173	.2311	.2433	.2479	.2497	.2497			
-13.00	.0187	.0187	.0189	.0196	.0203	.0253	.0374	.0956	.1400
	.1820	.1932	.2028	.2053	.2050	.2050			
-12.00	.0173	.0173	.0173	.0176	.0180	.0192	.0269	.0410	.0872
	.1454	.1536	.1604	.1618	.1611	.1611			
-11.00	.0161	.0161	.0160	.0161	.0163	.0167	.0193	.0298	.0483
	.1097	.1147	.1188	.1196	.1189	.1189			
-10.00	.0153	.0153	.0150	.0150	.0151	.0153	.0158	.0207	.0362
	.0774	.0795	.0812	.0815	.0812	.0812			
-9.00	.0148	.0148	.0144	.0143	.0143	.0144	.0147	.0158	.0255
	.0543	.0543	.0543	.0543	.0543	.0543			
-8.00	.0145	.0145	.0142	.0140	.0140	.0140	.0142	.0147	.0185
	.0472	.0466	.0460	.0459	.0460	.0460			
-7.00	.0145	.0145	.0142	.0141	.0141	.0141	.0143	.0149	.0163
	.0494	.0489	.0485	.0485	.0485	.0485			
-6.00	.0148	.0148	.0146	.0145	.0146	.0147	.0150	.0156	.0169
	.0553	.0554	.0555	.0555	.0554	.0554			
-5.00	.0153	.0153	.0152	.0153	.0155	.0157	.0161	.0169	.0183
	.0629	.0637	.0643	.0644	.0642	.0642			
-4.00	.0161	.0161	.0162	.0165	.0167	.0171	.0177	.0187	.0202
	.0710	.0726	.0738	.0740	.0736	.0736			
-3.00	.0172	.0172	.0175	.0180	.0184	.0190	.0198	.0209	.0226
	.0795	.0818	.0837	.0839	.0834	.0834			
-2.00	.0185	.0185	.0190	.0199	.0204	.0212	.0223	.0236	.0253
	.0880	.0911	.0937	.0940	.0934	.0934			
-1.00	.0200	.0200	.0208	.0220	.0228	.0284	.0246	.0268	.0287
	.0966	.1005	.1037	.1041	.1033	.1033			

.00	.0218	.0218	.0229	.0245	.0256	.0383	.0325	.0353	.0375
	.1052	.1099	.1137	.1142	.1133	.1133			
1.00	.0238	.0238	.0253	.0274	.0334	.0490	.0434	.0465	.0492
	.1138	.1193	.1238	.1244	.1233	.1233			
2.00	.0261	.0261	.0279	.0305	.0437	.0599	.0552	.0587	.0618
	.1225	.1287	.1339	.1345	.1333	.1333			
3.00	.0285	.0285	.0309	.0355	.0548	.0708	.0672	.0711	.0747
	.1311	.1381	.1439	.1447	.1433	.1433			
4.00	.0314	.0314	.0342	.0414	.0660	.0818	.0793	.0836	.0877
	.1397	.1476	.1540	.1548	.1533	.1533			
5.00	.0344	.0344	.0377	.0476	.0774	.0928	.0914	.0961	.1007
	.1483	.1570	.1641	.1650	.1634	.1634			
6.00	.0378	.0378	.0415	.0538	.0887	.1038	.1035	.1086	.1138
	.1570	.1664	.1741	.1751	.1734	.1734			
7.00	.0413	.0413	.0455	.0600	.1000	.1148	.1157	.1212	.1268
	.1656	.1758	.1842	.1853	.1834	.1834			
8.00	.0452	.0452	.0500	.0663	.1114	.1258	.1278	.1337	.1398
	.1742	.1852	.1943	.1955	.1934	.1934			
9.00	.0493	.0493	.0544	.0724	.1227	.1368	.1399	.1462	.1529
	.1829	.1947	.2044	.2057	.2035	.2035			
10.00	.0536	.0536	.0590	.0784	.1340	.1478	.1521	.1588	.1659
	.1916	.2042	.2145	.2160	.2138	.2138			
11.00	.0582	.0582	.0639	.0836	.1454	.1589	.1642	.1713	.1790
	.2005	.2138	.2248	.2265	.2243	.2243			
12.00	.0631	.0631	.0689	.0913	.1569	.1701	.1765	.1840	.1922
	.2097	.2237	.2354	.2374	.2356	.2356			
13.00	.0680	.0680	.0737	.1181	.1687	.1816	.1891	.1971	.2057
	.2196	.2344	.2468	.2496	.2487	.2487			
14.00	.0733	.0733	.0798	.1531	.1818	.1946	.2029	.2113	.2204
	.2316	.2468	.2599	.2647	.2663	.2663			
15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
50.00	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920
	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920			
60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000
	.4000	.4000	.4000	.4000	.4000	.4000			
-160.00	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000
	.3000	.3000	.3000	.3000	.3000	.3000			
-140.00	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600
	.4600	.4600	.4600	.4600	.4600	.4600			
-120.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-110.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-100.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-90.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-80.00	.4457	.4457	.4473	.4493	.4508	.4523	.4541	.4558	.4571
	.4583	.4607	.4628	.4646	.4663	.4663			
-70.00	.3913	.3913	.3947	.3987	.4017	.4047	.4082	.4117	.4142
	.4167	.4213	.4257	.4292	.4327	.4327			
-60.00	.3370	.3370	.3420	.3480	.3525	.3570	.3623	.3675	.3713
	.3750	.3820	.3885	.3938	.3990	.3990			
-50.00	.2827	.2827	.2893	.2973	.3033	.3093	.3163	.3233	.3283
	.3333	.3427	.3513	.3583	.3653	.3653			
-30.00	.1740	.1740	.1840	.1960	.2050	.2140	.2245	.2350	.2425
	.2500	.2640	.2770	.2875	.2980	.2980			
-21.00	.1009	.1009	.1066	.1160	.1233	.1306	.1368	.1430	.1493
	.1556	.1699	.1974	.2101	.2229	.2229			
-16.00	.0730	.0730	.0780	.0860	.0915	.0970	.1025	.1080	.1125
	.1170	.1370	.1760	.1880	.2000	.2000			

-15.00	.0540	.0540	.0650	.0730	.0785	.0840	.0905	.0970	.1040
	.1110	.1330	.1730	.1840	.1950	.1950			
-14.00	-.1631	-.1631	-.1684	-.1776	-.1855	-.1929	-.1940	.0042	.0394
	.0796	.1003	.1366	.1460	.1554	.1554			
-13.00	-.1627	-.1627	-.1675	-.1758	-.1823	-.1918	-.2000	-.1193	-.0530
	.0319	.0490	.0787	.0862	.0937	.0937			
-12.00	-.1625	-.1625	-.1671	-.1745	-.1798	-.1880	-.1983	-.2059	-.1444
	-.0218	-.0090	.0129	.0184	.0239	.0239			
-11.00	-.1624	-.1624	-.1658	-.1735	-.1784	-.1849	-.1945	-.2041	-.2048
	-.0762	-.0681	-.0541	-.0507	-.0472	-.0472			
-10.00	-.1623	-.1623	-.1663	-.1727	-.1771	-.1829	-.1907	-.2014	-.2050
	-.1266	-.1229	-.1166	-.1150	-.1135	-.1135			
-9.00	-.1621	-.1621	-.1659	-.1720	-.1761	-.1813	-.1879	-.1975	-.2041
	-.1650	-.1650	-.1650	-.1650	-.1650	-.1650			
-8.00	-.1619	-.1619	-.1655	-.1713	-.1752	-.1799	-.1860	-.1936	-.2020
	-.1820	-.1843	-.1882	-.1892	-.1902	-.1902			
-7.00	-.1615	-.1615	-.1650	-.1705	-.1742	-.1787	-.1843	-.1908	-.1978
	-.1865	-.1903	-.1968	-.1984	-.2000	-.2000			
-6.00	-.1610	-.1610	-.1643	-.1696	-.1732	-.1774	-.1827	-.1884	-.1937
	-.1860	-.1909	-.1994	-.2015	-.2036	-.2036			
-5.00	-.1603	-.1603	-.1634	-.1685	-.1719	-.1759	-.1808	-.1860	-.1902
	-.1833	-.1893	-.1996	-.2021	-.2046	-.2046			
-4.00	-.1594	-.1594	-.1623	-.1672	-.1702	-.1742	-.1786	-.1831	-.1861
	-.1798	-.1868	-.1987	-.2016	-.2045	-.2045			
-3.00	-.1583	-.1583	-.1610	-.1655	-.1688	-.1720	-.1759	-.1808	-.1806
	-.1760	-.1839	-.1974	-.2007	-.2040	-.2040			
-2.00	-.1569	-.1569	-.1598	-.1642	-.1668	-.1702	-.1726	-.1768	-.1735
	-.1720	-.1808	-.1959	-.1996	-.2033	-.2033			
-1.00	-.1547	-.1547	-.1574	-.1614	-.1641	-.1661	-.1665	-.1717	-.1693
	-.1679	-.1777	-.1944	-.1985	-.2026	-.2026			
.00	-.1527	-.1527	-.1552	-.1588	-.1611	-.1607	-.1605	-.1664	-.1652
	-.1638	-.1745	-.1928	-.1973	-.2018	-.2018			
1.00	-.1502	-.1502	-.1527	-.1557	-.1561	-.1550	-.1550	-.1611	-.1607
	-.1597	-.1713	-.1912	-.1961	-.2010	-.2010			
2.00	-.1479	-.1479	-.1493	-.1520	-.1501	-.1491	-.1496	-.1557	-.1561
	-.1556	-.1682	-.1896	-.1949	-.2002	-.2002			
3.00	-.1446	-.1446	-.1455	-.1442	-.1438	-.1431	-.1442	-.1504	-.1514
	-.1515	-.1650	-.1881	-.1937	-.1994	-.1994			
4.00	-.1413	-.1413	-.1420	-.1344	-.1374	-.1372	-.1388	-.1451	-.1468
	-.1474	-.1618	-.1865	-.1925	-.1986	-.1986			
5.00	-.1373	-.1373	-.1374	-.1241	-.1310	-.1313	-.1335	-.1397	-.1421
	-.1433	-.1586	-.1849	-.1913	-.1978	-.1978			
6.00	-.1334	-.1334	-.1326	-.1137	-.1245	-.1253	-.1281	-.1344	-.1374
	-.1392	-.1555	-.1833	-.1901	-.1970	-.1970			
7.00	-.1285	-.1285	-.1268	-.1033	-.1181	-.1194	-.1227	-.1291	-.1328
	-.1350	-.1523	-.1817	-.1889	-.1962	-.1962			
8.00	-.1231	-.1231	-.1184	-.0928	-.1117	-.1135	-.1173	-.1237	-.1281
	-.1309	-.1491	-.1801	-.1877	-.1954	-.1954			
9.00	-.1168	-.1168	-.1118	-.0822	-.1053	-.1075	-.1120	-.1184	-.1234
	-.1269	-.1459	-.1785	-.1866	-.1946	-.1946			
10.00	-.1088	-.1088	-.1028	-.0713	-.0989	-.1016	-.1066	-.1131	-.1188
	-.1228	-.1428	-.1770	-.1854	-.1938	-.1938			
11.00	-.1010	-.1010	-.0930	-.0589	-.0925	-.0958	-.1013	-.1078	-.1142
	-.1189	-.1397	-.1755	-.1843	-.1931	-.1931			
12.00	-.0921	-.0921	-.0817	-.0468	-.0863	-.0900	-.0961	-.1027	-.1097
	-.1151	-.1368	-.1740	-.1833	-.1925	-.1925			
13.00	-.0817	-.0817	-.0689	-.0498	-.0805	-.0848	-.0914	-.0980	-.1056
	-.1119	-.1342	-.1728	-.1825	-.1922	-.1922			
14.00	-.0720	-.0720	-.0568	-.0603	-.0764	-.0814	-.0882	-.0949	-.1027
	-.1099	-.1326	-.1722	-.1825	-.1927	-.1927			
15.00	-.0540	-.0540	-.0650	-.0730	-.0785	-.0840	-.0905	-.0970	-.1040
	-.1110	-.1330	-.1730	-.1840	-.1950	-.1950			
16.00	-.0730	-.0730	-.0780	-.0860	-.0915	-.0970	-.1025	-.1080	-.1125
	-.1170	-.1370	-.1760	-.1880	-.2000	-.2000			
21.00	-.1009	-.1009	-.1066	-.1160	-.1233	-.1306	-.1368	-.1430	-.1493
	-.1556	-.1699	-.1974	-.2101	-.2229	-.2229			
30.00	-.1740	-.1740	-.1840	-.1960	-.2050	-.2140	-.2245	-.2350	-.2425
	-.2500	-.2640	-.2770	-.2875	-.2980	-.2980			
50.00	-.2827	-.2827	-.2893	-.2973	-.3033	-.3093	-.3163	-.3233	-.3283
	-.3333	-.3427	-.3513	-.3583	-.3653	-.3653			
60.00	-.3370	-.3370	-.3420	-.3480	-.3525	-.3570	-.3623	-.3675	-.3713
	-.3750	-.3820	-.3885	-.3938	-.3990	-.3990			
70.00	-.3913	-.3913	-.3947	-.3987	-.4017	-.4047	-.4082	-.4117	-.4142
	-.4167	-.4213	-.4257	-.4292	-.4327	-.4327			
80.00	-.4457	-.4457	-.4473	-.4493	-.4508	-.4523	-.4541	-.4558	-.4571
	-.4583	-.4607	-.4628	-.4646	-.4663	-.4663			
90.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
100.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
110.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
120.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
140.00	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600
	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600			
160.00	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000
	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000			
170.00	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000
	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

FLAP	INTERPOLATED DATA				156115611561		NACA-0015 (D=+15.0 DEGS.)		
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0060	.0060	.0062	.0064	.0066	.0068	.0068	.0076	.0079
	.0058	.0058	.0058	.0058	.0058	.0058			
-160.00	.0120	.0120	.0123	.0127	.0131	.0135	.0135	.0153	.0157
	.0117	.0117	.0117	.0117	.0117	.0117			
-140.00	.0240	.0240	.0246	.0255	.0262	.0270	.0270	.0306	.0315
	.0234	.0234	.0234	.0234	.0234	.0234			
-120.00	.0361	.0361	.0369	.0382	.0393	.0406	.0406	.0459	.0472
	.0351	.0351	.0351	.0351	.0351	.0351			
-110.00	.0421	.0421	.0431	.0446	.0459	.0473	.0473	.0535	.0550
	.0409	.0409	.0409	.0409	.0409	.0409			
-100.00	.0481	.0481	.0492	.0509	.0524	.0541	.0541	.0611	.0629
	.0468	.0468	.0468	.0468	.0468	.0468			
-90.00	.0541	.0541	.0554	.0573	.0590	.0608	.0608	.0688	.0708
	.0526	.0526	.0526	.0526	.0526	.0526			
-80.00	.0601	.0601	.0615	.0637	.0655	.0676	.0676	.0764	.0786
	.0585	.0585	.0585	.0585	.0585	.0585			
-70.00	.0661	.0661	.0677	.0700	.0721	.0743	.0743	.0841	.0865
	.0643	.0643	.0643	.0643	.0643	.0643			
-60.00	.0721	.0721	.0738	.0764	.0787	.0811	.0811	.0917	.0944
	.0702	.0702	.0702	.0702	.0702	.0702			
-50.00	.0782	.0782	.0800	.0828	.0852	.0879	.0879	.0994	.1022
	.0760	.0760	.0760	.0760	.0760	.0760			
-30.00	.0902	.0902	.0923	.0955	.0983	.1014	.1014	.1146	.1180
	.0877	.0877	.0877	.0877	.0877	.0877			
-21.00	.0956	.0956	.0978	.1012	.1042	.1075	.1075	.1215	.1250
	.0930	.0930	.0930	.0930	.0930	.0930			
-16.00	.0986	.0986	.1009	.1044	.1075	.1108	.1108	.1253	.1290
	.0959	.0959	.0959	.0959	.0959	.0959			
-15.00	.0992	.0992	.1015	.1051	.1081	.1115	.1115	.1261	.1298
	.0965	.0965	.0965	.0965	.0965	.0965			
-14.00	.0998	.0998	.1021	.1057	.1088	.1122	.1122	.1269	.1305
	.0971	.0971	.0971	.0971	.0971	.0971			
-13.00	.1030	.1030	.1052	.1089	.1114	.1154	.1201	.1276	.1313
	.0977	.0977	.0977	.0977	.0977	.0977			
-12.00	.1066	.1066	.1088	.1122	.1142	.1174	.1218	.1284	.1321
	.0982	.0982	.0982	.0982	.0982	.0982			
-11.00	.1103	.1103	.1112	.1156	.1179	.1205	.1238	.1284	.1329
	.0988	.0988	.0988	.0988	.0988	.0988			
-10.00	.1139	.1139	.1159	.1191	.1211	.1237	.1267	.1304	.1318
	.0994	.0994	.0994	.0994	.0994	.0994			
-9.00	.1174	.1174	.1194	.1225	.1244	.1268	.1295	.1331	.1334
	.1000	.1000	.1000	.1000	.1000	.1000			
-8.00	.1209	.1209	.1227	.1258	.1277	.1298	.1325	.1352	.1361
	.0995	.0995	.0995	.0995	.0995	.0995			
-7.00	.1243	.1243	.1260	.1288	.1306	.1325	.1351	.1373	.1379
	.0989	.0989	.0989	.0989	.0989	.0989			
-6.00	.1274	.1274	.1289	.1316	.1332	.1350	.1373	.1390	.1387
	.0984	.0984	.0984	.0984	.0984	.0984			
-5.00	.1303	.1303	.1317	.1341	.1356	.1372	.1390	.1401	.1389
	.0979	.0979	.0979	.0979	.0979	.0979			
-4.00	.1329	.1329	.1342	.1363	.1374	.1391	.1403	.1407	.1381
	.0974	.0974	.0974	.0974	.0974	.0974			
-3.00	.1353	.1353	.1364	.1383	.1393	.1405	.1412	.1415	.1357
	.0968	.0968	.0968	.0968	.0968	.0968			
-2.00	.1374	.1374	.1385	.1402	.1409	.1420	.1416	.1410	.1321
	.0963	.0963	.0963	.0963	.0963	.0963			
-1.00	.1386	.1386	.1395	.1409	.1418	.1412	.1382	.1399	.1319
	.0958	.0958	.0958	.0958	.0958	.0958			
.00	.1401	.1401	.1408	.1420	.1426	.1404	.1374	.1391	.1312
	.0952	.0952	.0952	.0952	.0952	.0952			
1.00	.1410	.1410	.1418	.1427	.1418	.1397	.1367	.1384	.1304
	.0947	.0947	.0947	.0947	.0947	.0947			
2.00	.1421	.1421	.1421	.1429	.1410	.1389	.1359	.1376	.1297
	.0942	.0942	.0942	.0942	.0942	.0942			
3.00	.1422	.1422	.1419	.1392	.1402	.1381	.1351	.1368	.1290
	.0937	.0937	.0937	.0937	.0937	.0937			
4.00	.1424	.1424	.1421	.1355	.1394	.1373	.1344	.1360	.1283
	.0931	.0931	.0931	.0931	.0931	.0931			
5.00	.1419	.1419	.1415	.1318	.1386	.1365	.1336	.1353	.1275
	.0926	.0926	.0926	.0926	.0926	.0926			
6.00	.1417	.1417	.1407	.1281	.1378	.1358	.1329	.1345	.1268
	.0921	.0921	.0921	.0921	.0921	.0921			
7.00	.1406	.1406	.1392	.1244	.1371	.1350	.1321	.1337	.1261
	.0915	.0915	.0915	.0915	.0915	.0915			
8.00	.1390	.1390	.1358	.1207	.1363	.1342	.1313	.1329	.1253
	.0910	.0910	.0910	.0910	.0910	.0910			
9.00	.1367	.1367	.1338	.1170	.1355	.1334	.1306	.1322	.1246
	.0905	.0905	.0905	.0905	.0905	.0905			
10.00	.1334	.1334	.1300	.1133	.1347	.1326	.1298	.1314	.1239
	.0899	.0899	.0899	.0899	.0899	.0899			
11.00	.1301	.1301	.1261	.1096	.1339	.1319	.1290	.1306	.1232
	.0894	.0894	.0894	.0894	.0894	.0894			
12.00	.1262	.1262	.1212	.1119	.1331	.1311	.1283	.1299	.1224
	.0889	.0889	.0889	.0889	.0889	.0889			
13.00	.1216	.1216	.1161	.1112	.1323	.1303	.1275	.1291	.1217
	.0884	.0884	.0884	.0884	.0884	.0884			
14.00	.1185	.1185	.1120	.1106	.1315	.1295	.1267	.1283	.1210
	.0878	.0878	.0878	.0878	.0878	.0878			

15.00	.1178	.1178	.1113	.1099	.1307	.1287	.1260	.1275	.1202
	.0873	.0873	.0873	.0873	.0873	.0873			
16.00	.1171	.1171	.1107	.1092	.1299	.1280	.1252	.1268	.1195
	.0868	.0868	.0868	.0868	.0868	.0868			
21.00	.1135	.1135	.1073	.1059	.1260	.1241	.1214	.1229	.1159
	.0841	.0841	.0841	.0841	.0841	.0841			
30.00	.1071	.1071	.1012	.0999	.1188	.1170	.1145	.1159	.1093
	.0794	.0794	.0794	.0794	.0794	.0794			
50.00	.0928	.0928	.0877	.0866	.1030	.1014	.0993	.1005	.0947
	.0688	.0688	.0688	.0688	.0688	.0688			
60.00	.0857	.0857	.0810	.0799	.0951	.0936	.0916	.0928	.0874
	.0635	.0635	.0635	.0635	.0635	.0635			
70.00	.0785	.0785	.0742	.0733	.0871	.0858	.0840	.0850	.0802
	.0582	.0582	.0582	.0582	.0582	.0582			
80.00	.0714	.0714	.0675	.0666	.0792	.0780	.0764	.0773	.0729
	.0529	.0529	.0529	.0529	.0529	.0529			
90.00	.0642	.0642	.0607	.0599	.0713	.0702	.0687	.0696	.0656
	.0476	.0476	.0476	.0476	.0476	.0476			
100.00	.0571	.0571	.0540	.0533	.0634	.0624	.0611	.0618	.0583
	.0423	.0423	.0423	.0423	.0423	.0423			
110.00	.0500	.0500	.0472	.0466	.0555	.0546	.0534	.0541	.0510
	.0370	.0370	.0370	.0370	.0370	.0370			
120.00	.0428	.0428	.0405	.0400	.0475	.0468	.0458	.0464	.0437
	.0317	.0317	.0317	.0317	.0317	.0317			
140.00	.0286	.0286	.0270	.0266	.0317	.0312	.0305	.0309	.0291
	.0212	.0212	.0212	.0212	.0212	.0212			
160.00	.0143	.0143	.0135	.0133	.0158	.0156	.0153	.0155	.0146
	.0106	.0106	.0106	.0106	.0106	.0106			
170.00	.0071	.0071	.0067	.0067	.0079	.0078	.0076	.0077	.0073
	.0053	.0053	.0053	.0053	.0053	.0053			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	-.0005	-.0005	-.0005	-.0005	-.0005	-.0005	-.0005	-.0006	-.0006
	-.0004	-.0004	-.0004	-.0004	-.0004	-.0004			
-160.00	-.0009	-.0009	-.0009	-.0010	-.0010	-.0011	-.0010	-.0011	-.0011
	-.0007	-.0007	-.0007	-.0007	-.0007	-.0007			
-140.00	-.0018	-.0018	-.0019	-.0019	-.0020	-.0021	-.0021	-.0023	-.0022
	-.0015	-.0015	-.0015	-.0015	-.0015	-.0015			
-120.00	-.0027	-.0027	-.0028	-.0029	-.0030	-.0032	-.0031	-.0034	-.0033
	-.0022	-.0022	-.0022	-.0022	-.0022	-.0022			
-110.00	-.0032	-.0032	-.0032	-.0033	-.0035	-.0038	-.0037	-.0040	-.0039
	-.0026	-.0026	-.0026	-.0026	-.0026	-.0026			
-100.00	-.0036	-.0036	-.0037	-.0038	-.0040	-.0043	-.0042	-.0046	-.0044
	-.0029	-.0029	-.0029	-.0029	-.0029	-.0029			
-90.00	-.0041	-.0041	-.0042	-.0043	-.0045	-.0048	-.0047	-.0051	-.0050
	-.0033	-.0033	-.0033	-.0033	-.0033	-.0033			
-80.00	-.0045	-.0045	-.0046	-.0048	-.0050	-.0054	-.0052	-.0057	-.0055
	-.0037	-.0037	-.0037	-.0037	-.0037	-.0037			
-70.00	-.0050	-.0050	-.0051	-.0052	-.0055	-.0059	-.0058	-.0063	-.0061
	-.0041	-.0041	-.0041	-.0041	-.0041	-.0041			
-60.00	-.0054	-.0054	-.0056	-.0057	-.0060	-.0064	-.0063	-.0069	-.0066
	-.0044	-.0044	-.0044	-.0044	-.0044	-.0044			
-50.00	-.0059	-.0059	-.0060	-.0062	-.0065	-.0070	-.0068	-.0074	-.0072
	-.0048	-.0048	-.0048	-.0048	-.0048	-.0048			
-30.00	-.0068	-.0068	-.0070	-.0071	-.0075	-.0080	-.0079	-.0086	-.0083
	-.0055	-.0055	-.0055	-.0055	-.0055	-.0055			
-21.00	-.0072	-.0072	-.0074	-.0076	-.0080	-.0085	-.0083	-.0091	-.0087
	-.0059	-.0059	-.0059	-.0059	-.0059	-.0059			
-16.00	-.0074	-.0074	-.0076	-.0078	-.0082	-.0088	-.0086	-.0094	-.0090
	-.0060	-.0060	-.0060	-.0060	-.0060	-.0060			

-15.00	-.0075	-.0075	-.0077	-.0079	-.0082	-.0088	-.0086	-.0094	-.0091
	-.0061	-.0061	-.0061	-.0061	-.0061	-.0061			
-14.00	-.0075	-.0075	-.0077	-.0079	-.0083	-.0089	-.0087	-.0095	-.0091
	-.0061	-.0061	-.0061	-.0061	-.0061	-.0061			
-13.00	-.0076	-.0076	-.0077	-.0080	-.0081	-.0087	-.0093	-.0095	-.0092
	-.0062	-.0062	-.0062	-.0062	-.0062	-.0062			
-12.00	-.0077	-.0077	-.0079	-.0081	-.0082	-.0084	-.0090	-.0096	-.0092
	-.0062	-.0062	-.0062	-.0062	-.0062	-.0062			
-11.00	-.0079	-.0079	-.0079	-.0082	-.0083	-.0084	-.0087	-.0093	-.0093
	-.0062	-.0062	-.0062	-.0062	-.0062	-.0062			
-10.00	-.0081	-.0081	-.0082	-.0083	-.0084	-.0085	-.0086	-.0090	-.0090
	-.0063	-.0063	-.0063	-.0063	-.0063	-.0063			
-9.00	-.0083	-.0083	-.0084	-.0085	-.0085	-.0086	-.0087	-.0088	-.0088
	-.0063	-.0063	-.0063	-.0063	-.0063	-.0063			
-8.00	-.0085	-.0085	-.0085	-.0087	-.0087	-.0088	-.0088	-.0088	-.0087
	-.0063	-.0063	-.0063	-.0063	-.0063	-.0063			
-7.00	-.0087	-.0087	-.0087	-.0088	-.0089	-.0089	-.0089	-.0089	-.0087
	-.0062	-.0062	-.0062	-.0062	-.0062	-.0062			
-6.00	-.0089	-.0089	-.0089	-.0090	-.0090	-.0090	-.0090	-.0089	-.0087
	-.0062	-.0062	-.0062	-.0062	-.0062	-.0062			
-5.00	-.0091	-.0091	-.0091	-.0091	-.0092	-.0091	-.0091	-.0090	-.0087
	-.0062	-.0062	-.0062	-.0062	-.0062	-.0062			
-4.00	-.0093	-.0093	-.0093	-.0093	-.0093	-.0093	-.0092	-.0091	-.0087
	-.0061	-.0061	-.0061	-.0061	-.0061	-.0061			
-3.00	-.0095	-.0095	-.0094	-.0094	-.0094	-.0094	-.0093	-.0092	-.0086
	-.0061	-.0061	-.0061	-.0061	-.0061	-.0061			
-2.00	-.0097	-.0097	-.0096	-.0096	-.0095	-.0095	-.0094	-.0092	-.0083
	-.0061	-.0061	-.0061	-.0061	-.0061	-.0061			
-1.00	-.0097	-.0097	-.0097	-.0097	-.0096	-.0094	-.0090	-.0091	-.0084
	-.0060	-.0060	-.0060	-.0060	-.0060	-.0060			
.00	-.0099	-.0099	-.0098	-.0098	-.0098	-.0094	-.0090	-.0090	-.0084
	-.0060	-.0060	-.0060	-.0060	-.0060	-.0060			
1.00	-.0100	-.0100	-.0100	-.0099	-.0097	-.0093	-.0089	-.0090	-.0083
	-.0060	-.0060	-.0060	-.0060	-.0060	-.0060			
2.00	-.0102	-.0102	-.0101	-.0100	-.0097	-.0093	-.0089	-.0089	-.0083
	-.0059	-.0059	-.0059	-.0059	-.0059	-.0059			
3.00	-.0103	-.0103	-.0101	-.0100	-.0096	-.0092	-.0088	-.0089	-.0082
	-.0059	-.0059	-.0059	-.0059	-.0059	-.0059			
4.00	-.0104	-.0104	-.0103	-.0100	-.0096	-.0092	-.0088	-.0088	-.0082
	-.0059	-.0059	-.0059	-.0059	-.0059	-.0059			
5.00	-.0105	-.0105	-.0104	-.0099	-.0095	-.0091	-.0087	-.0088	-.0081
	-.0058	-.0058	-.0058	-.0058	-.0058	-.0058			
6.00	-.0106	-.0106	-.0104	-.0099	-.0095	-.0091	-.0087	-.0087	-.0081
	-.0058	-.0058	-.0058	-.0058	-.0058	-.0058			
7.00	-.0107	-.0107	-.0105	-.0099	-.0094	-.0090	-.0086	-.0087	-.0080
	-.0058	-.0058	-.0058	-.0058	-.0058	-.0058			
8.00	-.0108	-.0108	-.0105	-.0099	-.0094	-.0090	-.0086	-.0086	-.0080
	-.0057	-.0057	-.0057	-.0057	-.0057	-.0057			
9.00	-.0108	-.0108	-.0105	-.0098	-.0093	-.0089	-.0085	-.0086	-.0079
	-.0057	-.0057	-.0057	-.0057	-.0057	-.0057			
10.00	-.0108	-.0108	-.0104	-.0098	-.0093	-.0089	-.0085	-.0085	-.0079
	-.0057	-.0057	-.0057	-.0057	-.0057	-.0057			
11.00	-.0108	-.0108	-.0104	-.0098	-.0092	-.0088	-.0084	-.0085	-.0078
	-.0056	-.0056	-.0056	-.0056	-.0056	-.0056			
12.00	-.0108	-.0108	-.0103	-.0108	-.0091	-.0088	-.0084	-.0084	-.0078
	-.0056	-.0056	-.0056	-.0056	-.0056	-.0056			
13.00	-.0107	-.0107	-.0101	-.0107	-.0091	-.0087	-.0083	-.0084	-.0078
	-.0056	-.0056	-.0056	-.0056	-.0056	-.0056			
14.00	-.0108	-.0108	-.0101	-.0107	-.0090	-.0087	-.0083	-.0083	-.0077
	-.0055	-.0055	-.0055	-.0055	-.0055	-.0055			
15.00	-.0107	-.0107	-.0100	-.0106	-.0090	-.0086	-.0082	-.0083	-.0077
	-.0055	-.0055	-.0055	-.0055	-.0055	-.0055			
16.00	-.0107	-.0107	-.0100	-.0105	-.0089	-.0086	-.0082	-.0082	-.0076
	-.0055	-.0055	-.0055	-.0055	-.0055	-.0055			
21.00	-.0103	-.0103	-.0097	-.0102	-.0087	-.0083	-.0079	-.0080	-.0074
	-.0053	-.0053	-.0053	-.0053	-.0053	-.0053			
30.00	-.0098	-.0098	-.0091	-.0096	-.0082	-.0078	-.0075	-.0075	-.0070
	-.0050	-.0050	-.0050	-.0050	-.0050	-.0050			
50.00	-.0085	-.0085	-.0079	-.0084	-.0071	-.0068	-.0065	-.0065	-.0060
	-.0043	-.0043	-.0043	-.0043	-.0043	-.0043			
60.00	-.0078	-.0078	-.0073	-.0077	-.0065	-.0063	-.0060	-.0060	-.0056
	-.0040	-.0040	-.0040	-.0040	-.0040	-.0040			
70.00	-.0072	-.0072	-.0067	-.0071	-.0060	-.0057	-.0055	-.0055	-.0051
	-.0037	-.0037	-.0037	-.0037	-.0037	-.0037			
80.00	-.0065	-.0065	-.0061	-.0064	-.0054	-.0052	-.0050	-.0050	-.0046
	-.0033	-.0033	-.0033	-.0033	-.0033	-.0033			
90.00	-.0059	-.0059	-.0055	-.0058	-.0049	-.0047	-.0045	-.0045	-.0042
	-.0030	-.0030	-.0030	-.0030	-.0030	-.0030			
100.00	-.0052	-.0052	-.0049	-.0051	-.0044	-.0042	-.0040	-.0040	-.0037
	-.0027	-.0027	-.0027	-.0027	-.0027	-.0027			
110.00	-.0046	-.0046	-.0043	-.0045	-.0038	-.0037	-.0035	-.0035	-.0032
	-.0023	-.0023	-.0023	-.0023	-.0023	-.0023			
120.00	-.0039	-.0039	-.0037	-.0039	-.0033	-.0031	-.0030	-.0030	-.0028
	-.0020	-.0020	-.0020	-.0020	-.0020	-.0020			
140.00	-.0026	-.0026	-.0024	-.0026	-.0022	-.0021	-.0020	-.0020	-.0019
	-.0013	-.0013	-.0013	-.0013	-.0013	-.0013			
160.00	-.0013	-.0013	-.0012	-.0013	-.0011	-.0010	-.0010	-.0010	-.0009
	-.0007	-.0007	-.0007	-.0007	-.0007	-.0007			
170.00	-.0007	-.0007	-.0006	-.0006	-.0005	-.0005	-.0005	-.0005	-.0005
	-.0003	-.0003	-.0003	-.0003	-.0003	-.0003			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

AIRF	INTERPOLATED DATA			156115611561		NACA-0015 (D=-15.0 DEGS.)			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452
	.7452	.7452	.7452	.7452	.7452	.7452			
-160.00	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471
	.6471	.6471	.6471	.6471	.6471	.6471			
-140.00	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000			
-120.00	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548
	.7548	.7548	.7548	.7548	.7548	.7548			
-110.00	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823
	.4823	.4823	.4823	.4823	.4823	.4823			
-100.00	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097
	.2097	.2097	.2097	.2097	.2097	.2097			
-90.00	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627
	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627			
-80.00	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352
	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352			
-70.00	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077
	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077			
-60.00	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802
	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802			
-50.00	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528
	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528			
-30.00	-.9900	-.9900	-.9950	-1.0050	-1.0100	-1.0150	-1.0150	-1.0150	-1.0150
	-1.0150	-.9450	-.9300	-.9200	-.9100	-.9100			
-21.00	-.8000	-.8000	-.8100	-.8300	-.8400	-.8500	-.8500	-.8500	-.8500
	-.8500	-.7100	-.6800	-.6600	-.6400	-.6400			
-16.00	-1.0680	-1.0680	-.9927	-.9917	-.9825	-.9733	-.9717	-.9700	-.9700
	-.9700	-.8067	-.7700	-.7400	-.7100	-.7100			
-15.00	-1.1900	-1.1900	-1.0900	-1.0550	-1.0225	-.9900	-.9850	-.9800	-.9800
	-.9800	-.8300	-.7900	-.7600	-.7300	-.7300			
-14.00	-1.9931	-1.9931	-1.9814	-1.2266	-1.0379	-.9894	-.9862	-.9813	-.9818
	-.9609	-.8216	-.7806	-.7513	-.7220	-.7220			
-13.00	-1.9532	-1.9532	-1.9537	-1.4378	-1.0400	-.9805	-.9821	-.9793	-.9805
	-.9246	-.7929	-.7523	-.7240	-.6957	-.6957			
-12.00	-1.9129	-1.9129	-1.9189	-1.6141	-1.0386	-.9693	-.9766	-.9763	-.9782
	-.8812	-.7557	-.7164	-.6892	-.6619	-.6619			
-11.00	-1.8599	-1.8599	-1.8716	-1.6769	-1.0361	-.9573	-.9707	-.9731	-.9756
	-.8350	-.7151	-.6773	-.6512	-.6251	-.6251			
-10.00	-1.7966	-1.7966	-1.8115	-1.6537	-1.0333	-.9450	-.9647	-.9697	-.9729
	-.7875	-.6731	-.6369	-.6119	-.5870	-.5870			
-9.00	-1.7319	-1.7319	-1.7444	-1.6006	-1.0304	-.9328	-.9586	-.9663	-.9702
	-.7395	-.6305	-.5959	-.5721	-.5483	-.5483			
-8.00	-1.6561	-1.6561	-1.6607	-1.5401	-1.0275	-.9205	-.9525	-.9629	-.9675
	-.6913	-.5876	-.5548	-.5321	-.5095	-.5095			
-7.00	-1.5734	-1.5734	-1.5903	-1.4777	-1.0246	-.9082	-.9464	-.9595	-.9648
	-.6431	-.5447	-.5135	-.4920	-.4705	-.4705			
-6.00	-1.4868	-1.4868	-1.5026	-1.4148	-1.0217	-.8959	-.9402	-.9561	-.9621
	-.5948	-.5017	-.4722	-.4519	-.4316	-.4316			
-5.00	-1.3947	-1.3947	-1.4092	-1.3515	-1.0187	-.8836	-.9341	-.9526	-.9593
	-.5465	-.4587	-.4309	-.4117	-.3926	-.3926			
-4.00	-1.3021	-1.3021	-1.3157	-1.2875	-1.0155	-.8713	-.9279	-.9491	-.9564
	-.4981	-.4157	-.3896	-.3716	-.3536	-.3536			
-3.00	-1.2062	-1.2062	-1.2159	-1.2205	-1.0117	-.8589	-.9216	-.9453	-.9531
	-.4498	-.3727	-.3483	-.3314	-.3146	-.3146			
-2.00	-1.1087	-1.1087	-1.1183	-1.1412	-1.0053	-.8462	-.9145	-.9405	-.9485
	-.4015	-.3297	-.3069	-.2913	-.2756	-.2756			
-1.00	-1.0072	-1.0072	-1.0182	-1.0368	-.9899	-.8327	-.9050	-.9325	-.9396
	-.3532	-.2867	-.2656	-.2511	-.2366	-.2366			
.00	-.9068	-.9068	-.9149	-.9308	-.9423	-.8165	-.8870	-.9139	-.9171
	-.3049	-.2437	-.2243	-.2109	-.1976	-.1976			
1.00	-.8034	-.8034	-.8100	-.8230	-.8330	-.7906	-.8393	-.8604	-.8506
	-.2565	-.2006	-.1829	-.1707	-.1585	-.1585			
2.00	-.7008	-.7008	-.7059	-.7167	-.7231	-.7323	-.7339	-.7435	-.7119
	-.2081	-.1576	-.1416	-.1305	-.1195	-.1195			
3.00	-.5950	-.5950	-.5970	-.6045	-.6111	-.6150	-.6197	-.6248	-.5974
	-.1596	-.1144	-.1001	-.0902	-.0804	-.0804			
4.00	-.4881	-.4881	-.4894	-.4943	-.4968	-.5012	-.5036	-.5003	-.4796
	-.1108	-.0710	-.0584	-.0498	-.0411	-.0411			
5.00	-.3808	-.3808	-.3808	-.3834	-.3848	-.3859	-.3861	-.3803	-.3562
	-.0614	-.0271	-.0163	-.0088	-.0013	-.0013			
6.00	-.2729	-.2729	-.2716	-.2715	-.2710	-.2697	-.2672	-.2578	-.2295
	-.0104	.0180	.0270	.0332	.0394	.0394			
7.00	-.1647	-.1647	-.1620	-.1591	-.1565	-.1524	-.1469	-.1336	-.1004
	.0446	.0663	.0732	.0779	.0827	.0827			
8.00	-.0559	-.0559	-.0518	-.0463	-.0416	-.0347	-.0251	-.0083	.0265
	.1089	.1221	.1263	.1292	.1321	.1321			
9.00	.0524	.0524	.0579	.0668	.0742	.0835	.0973	.1172	.1363
	.1963	.1963	.1963	.1963	.1963	.1963			
10.00	.1603	.1603	.1675	.1798	.1894	.2019	.2201	.2276	.2193
	.3233	.3020	.2954	.2908	.2861	.2861			
11.00	.2674	.2674	.2794	.2924	.3039	.3203	.3325	.3083	.2505
	.4720	.4250	.4102	.4000	.3898	.3898			
12.00	.3736	.3736	.3844	.4038	.4189	.4343	.4134	.3483	.4024
	.6265	.5521	.5290	.5129	.4968	.4968			
13.00	.4782	.4782	.4910	.5129	.5293	.5188	.4596	.5426	.6215
	.7758	.6739	.6428	.6210	.5992	.5992			
14.00	.5800	.5800	.5945	.6202	.6254	.5705	.4601	.7997	.8384
	.9045	.7766	.7391	.7122	.6854	.6854			

15.00	1.1900	1.1900	1.0900	1.0550	1.0225	.9900	.9850	.9800	.9800
	.9800	.8300	.7900	.7600	.7300	.7300			
16.00	1.0680	1.0680	.9927	.9917	.9825	.9733	.9717	.9700	.9700
	.9700	.8067	.7700	.7400	.7100	.7100			
21.00	.8000	.8000	.8100	.8300	.8400	.8500	.8500	.8500	.8500
	.8500	.7100	.6800	.6600	.6400	.6400			
30.00	.9900	.9900	.9950	1.0050	1.0100	1.0150	1.0150	1.0150	1.0150
	1.0150	.9450	.9300	.9200	.9100	.9100			
50.00	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528
	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528			
60.00	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802
	.8802	.8802	.8802	.8802	.8802	.8802			
70.00	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077
	.6077	.6077	.6077	.6077	.6077	.6077			
80.00	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352
	.3352	.3352	.3352	.3352	.3352	.3352			
90.00	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627
	.0627	.0627	.0627	.0627	.0627	.0627			
100.00	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097
	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097			
110.00	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823
	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823			
120.00	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548
	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548			
140.00	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000
	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000			
160.00	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471
	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471			
170.00	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452
	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
-170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
-160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
-140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
-120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
-110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
-100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
-70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
-60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
-50.00	1.3920	1.3920	1.3920	1.3920	1.3925	1.3930	1.3955	1.3980	1.3969
	1.3934	1.3920	1.3920	1.3920	1.3920	1.3920			
-30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
-21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
-16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
-15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
-14.00	.0733	.0733	.0798	.1531	.1818	.1946	.2029	.2113	.2204
	.2316	.2468	.2599	.2647	.2663	.2663			
-13.00	.0680	.0680	.0737	.1181	.1687	.1816	.1891	.1971	.2057
	.2196	.2344	.2468	.2496	.2487	.2487			
-12.00	.0631	.0631	.0689	.0913	.1569	.1701	.1765	.1840	.1922
	.2097	.2237	.2354	.2374	.2356	.2356			
-11.00	.0582	.0582	.0639	.0836	.1454	.1589	.1642	.1713	.1790
	.2005	.2138	.2248	.2265	.2243	.2243			
-10.00	.0536	.0536	.0590	.0784	.1340	.1478	.1521	.1588	.1659
	.1916	.2042	.2145	.2160	.2138	.2138			
-9.00	.0493	.0493	.0544	.0724	.1227	.1368	.1399	.1462	.1529
	.1829	.1947	.2044	.2057	.2035	.2035			
-8.00	.0452	.0452	.0500	.0663	.1114	.1258	.1278	.1337	.1398
	.1742	.1852	.1943	.1955	.1934	.1934			
-7.00	.0413	.0413	.0455	.0600	.1000	.1148	.1157	.1212	.1268
	.1656	.1758	.1842	.1853	.1834	.1834			
-6.00	.0378	.0378	.0415	.0538	.0887	.1038	.1035	.1086	.1138
	.1570	.1664	.1741	.1751	.1734	.1734			
-5.00	.0344	.0344	.0377	.0476	.0774	.0928	.0914	.0961	.1007
	.1483	.1570	.1641	.1650	.1634	.1634			
-4.00	.0314	.0314	.0342	.0414	.0660	.0818	.0793	.0836	.0877
	.1397	.1476	.1540	.1548	.1533	.1533			
-3.00	.0285	.0285	.0309	.0355	.0548	.0708	.0672	.0711	.0747
	.1311	.1381	.1439	.1447	.1433	.1433			
-2.00	.0261	.0261	.0279	.0305	.0437	.0599	.0552	.0587	.0618
	.1225	.1287	.1339	.1345	.1333	.1333			
-1.00	.0238	.0238	.0253	.0274	.0334	.0490	.0434	.0465	.0492
	.1138	.1193	.1238	.1244	.1233	.1233			

.00	.0218	.0218	.0229	.0245	.0256	.0383	.0325	.0353	.0375
	.1052	.1099	.1137	.1142	.1133	.1133			
1.00	.0200	.0200	.0208	.0220	.0228	.0284	.0246	.0268	.0287
	.0966	.1005	.1037	.1041	.1033	.1033			
2.00	.0185	.0185	.0190	.0199	.0204	.0212	.0223	.0236	.0253
	.0880	.0911	.0937	.0940	.0934	.0934			
3.00	.0172	.0172	.0175	.0180	.0184	.0190	.0198	.0209	.0226
	.0795	.0818	.0837	.0839	.0834	.0834			
4.00	.0161	.0161	.0162	.0165	.0167	.0171	.0177	.0187	.0202
	.0710	.0726	.0738	.0740	.0736	.0736			
5.00	.0153	.0153	.0152	.0153	.0155	.0157	.0161	.0169	.0183
	.0629	.0637	.0643	.0644	.0642	.0642			
6.00	.0148	.0148	.0146	.0145	.0146	.0147	.0150	.0156	.0169
	.0553	.0554	.0555	.0555	.0554	.0554			
7.00	.0145	.0145	.0142	.0141	.0141	.0141	.0143	.0149	.0163
	.0494	.0489	.0485	.0485	.0485	.0485			
8.00	.0145	.0145	.0142	.0140	.0140	.0140	.0142	.0147	.0185
	.0472	.0466	.0460	.0459	.0460	.0460			
9.00	.0148	.0148	.0144	.0143	.0143	.0144	.0147	.0158	.0255
	.0543	.0543	.0543	.0543	.0543	.0543			
10.00	.0153	.0153	.0150	.0150	.0151	.0153	.0158	.0207	.0362
	.0774	.0795	.0812	.0815	.0812	.0812			
11.00	.0161	.0161	.0160	.0161	.0163	.0167	.0193	.0298	.0483
	.1097	.1147	.1188	.1196	.1189	.1189			
12.00	.0173	.0173	.0173	.0176	.0180	.0192	.0269	.0410	.0872
	.1454	.1536	.1604	.1618	.1611	.1611			
13.00	.0187	.0187	.0189	.0196	.0203	.0253	.0374	.0956	.1400
	.1820	.1932	.2028	.2053	.2050	.2050			
14.00	.0204	.0204	.0209	.0220	.0245	.0351	.0498	.1689	.1941
	.2173	.2311	.2433	.2479	.2497	.2497			
15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
50.00	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920
	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920			
60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000
	.4000	.4000	.4000	.4000	.4000	.4000			
-160.00	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000
	.3000	.3000	.3000	.3000	.3000	.3000			
-140.00	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600
	.4600	.4600	.4600	.4600	.4600	.4600			
-120.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-110.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-100.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-90.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-80.00	.4457	.4457	.4473	.4493	.4508	.4523	.4541	.4558	.4571
	.4583	.4607	.4628	.4646	.4663	.4663			
-70.00	.3913	.3913	.3947	.3987	.4017	.4047	.4082	.4117	.4142
	.4167	.4213	.4257	.4292	.4327	.4327			
-60.00	.3370	.3370	.3420	.3480	.3525	.3570	.3623	.3675	.3713
	.3750	.3820	.3885	.3938	.3990	.3990			
-50.00	.2827	.2827	.2893	.2973	.3033	.3093	.3163	.3233	.3283
	.3333	.3427	.3513	.3583	.3653	.3653			
-30.00	.1740	.1740	.1840	.1960	.2050	.2140	.2245	.2350	.2425
	.2500	.2640	.2770	.2875	.2980	.2980			
-21.00	.1009	.1009	.1066	.1160	.1233	.1306	.1368	.1430	.1493
	.1556	.1699	.1974	.2101	.2229	.2229			
-16.00	.0730	.0730	.0780	.0860	.0915	.0970	.1025	.1080	.1125
	.1170	.1370	.1760	.1880	.2000	.2000			

-15.00	.0540	.0540	.0650	.0730	.0785	.0840	.0905	.0970	.1040
	.1110	.1330	.1730	.1840	.1950	.1950			
-14.00	.0720	.0720	.0568	.0603	.0764	.0814	.0882	.0949	.1027
	.1099	.1326	.1722	.1825	.1927	.1927			
-13.00	.0817	.0817	.0689	.0498	.0805	.0848	.0914	.0980	.1056
	.1119	.1342	.1728	.1825	.1922	.1922			
-12.00	.0921	.0921	.0817	.0468	.0863	.0900	.0961	.1027	.1097
	.1151	.1368	.1740	.1833	.1925	.1925			
-11.00	.1010	.1010	.0930	.0589	.0925	.0958	.1013	.1078	.1142
	.1189	.1397	.1755	.1843	.1931	.1931			
-10.00	.1088	.1088	.1028	.0713	.0989	.1016	.1066	.1131	.1188
	.1228	.1428	.1770	.1854	.1938	.1938			
-9.00	.1168	.1168	.1118	.0822	.1053	.1075	.1120	.1184	.1234
	.1269	.1459	.1785	.1866	.1946	.1946			
-8.00	.1231	.1231	.1184	.0928	.1117	.1135	.1173	.1237	.1281
	.1309	.1491	.1801	.1877	.1954	.1954			
-7.00	.1285	.1285	.1268	.1033	.1181	.1194	.1227	.1291	.1328
	.1350	.1523	.1817	.1889	.1962	.1962			
-6.00	.1334	.1334	.1326	.1137	.1245	.1253	.1281	.1344	.1374
	.1392	.1555	.1833	.1901	.1970	.1970			
-5.00	.1373	.1373	.1374	.1241	.1310	.1313	.1335	.1397	.1421
	.1433	.1586	.1849	.1913	.1978	.1978			
-4.00	.1413	.1413	.1420	.1344	.1374	.1372	.1388	.1451	.1468
	.1474	.1618	.1865	.1925	.1986	.1986			
-3.00	.1446	.1446	.1455	.1442	.1438	.1431	.1442	.1504	.1514
	.1515	.1650	.1881	.1937	.1994	.1994			
-2.00	.1479	.1479	.1493	.1520	.1501	.1491	.1496	.1557	.1561
	.1556	.1682	.1896	.1949	.2002	.2002			
-1.00	.1502	.1502	.1527	.1557	.1561	.1550	.1550	.1611	.1607
	.1597	.1713	.1912	.1961	.2010	.2010			
.00	.1527	.1527	.1552	.1588	.1611	.1607	.1605	.1664	.1652
	.1638	.1745	.1928	.1973	.2018	.2018			
1.00	.1547	.1547	.1574	.1614	.1641	.1661	.1665	.1717	.1693
	.1679	.1777	.1944	.1985	.2026	.2026			
2.00	.1569	.1569	.1598	.1642	.1668	.1702	.1726	.1768	.1735
	.1720	.1808	.1959	.1996	.2033	.2033			
3.00	.1583	.1583	.1610	.1655	.1688	.1720	.1759	.1808	.1806
	.1760	.1839	.1974	.2007	.2040	.2040			
4.00	.1594	.1594	.1623	.1672	.1702	.1742	.1786	.1831	.1861
	.1798	.1868	.1987	.2016	.2045	.2045			
5.00	.1603	.1603	.1634	.1685	.1719	.1759	.1808	.1860	.1902
	.1833	.1893	.1996	.2021	.2046	.2046			
6.00	.1610	.1610	.1643	.1696	.1732	.1774	.1827	.1884	.1937
	.1860	.1909	.1994	.2015	.2036	.2036			
7.00	.1615	.1615	.1650	.1705	.1742	.1787	.1843	.1908	.1978
	.1865	.1903	.1968	.1984	.2000	.2000			
8.00	.1619	.1619	.1655	.1713	.1752	.1799	.1860	.1936	.2020
	.1820	.1843	.1882	.1892	.1902	.1902			
9.00	.1621	.1621	.1659	.1720	.1761	.1813	.1879	.1975	.2041
	.1650	.1650	.1650	.1650	.1650	.1650			
10.00	.1623	.1623	.1663	.1727	.1771	.1829	.1907	.2014	.2050
	.1266	.1229	.1166	.1150	.1135	.1135			
11.00	.1624	.1624	.1658	.1735	.1784	.1849	.1945	.2041	.2048
	.0762	.0681	.0541	.0507	.0472	.0472			
12.00	.1625	.1625	.1671	.1745	.1798	.1880	.1983	.2059	.1444
	.0218	.0090	-.0129	-.0184	-.0239	-.0239			
13.00	.1627	.1627	.1675	.1758	.1823	.1918	.2000	.1193	.0530
	-.0319	-.0490	-.0787	-.0862	-.0937	-.0937			
14.00	.1631	.1631	.1684	.1776	.1855	.1929	.1940	-.0042	-.0394
	-.0796	-.1003	-.1366	-.1460	-.1554	-.1554			
15.00	-.0540	-.0540	-.0650	-.0730	-.0785	-.0840	-.0905	-.0970	-.1040
	-.1110	-.1330	-.1730	-.1840	-.1950	-.1950			
16.00	-.0730	-.0730	-.0780	-.0860	-.0915	-.0970	-.1025	-.1080	-.1125
	-.1170	-.1370	-.1760	-.1880	-.2000	-.2000			
21.00	-.1009	-.1009	-.1066	-.1160	-.1233	-.1306	-.1368	-.1430	-.1493
	-.1556	-.1699	-.1974	-.2101	-.2229	-.2229			
30.00	-.1740	-.1740	-.1840	-.1960	-.2050	-.2140	-.2245	-.2350	-.2425
	-.2500	-.2640	-.2770	-.2875	-.2980	-.2980			
50.00	-.2827	-.2827	-.2893	-.2973	-.3033	-.3093	-.3163	-.3233	-.3283
	-.3333	-.3427	-.3513	-.3583	-.3653	-.3653			
60.00	-.3370	-.3370	-.3420	-.3480	-.3525	-.3570	-.3623	-.3675	-.3713
	-.3750	-.3820	-.3885	-.3938	-.3990	-.3990			
70.00	-.3913	-.3913	-.3947	-.3987	-.4017	-.4047	-.4082	-.4117	-.4142
	-.4167	-.4213	-.4257	-.4292	-.4327	-.4327			
80.00	-.4457	-.4457	-.4473	-.4493	-.4508	-.4523	-.4541	-.4558	-.4571
	-.4583	-.4607	-.4628	-.4646	-.4663	-.4663			
90.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
100.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
110.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
120.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
140.00	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600
	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600			
160.00	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000
	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000			
170.00	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000
	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

FLAP	INTERPOLATED DATA				156115611561		NACA-0015 (D=-15.0 DEGS.)		
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	-.0071	-.0071	-.0067	-.0067	-.0079	-.0078	-.0076	-.0077	-.0073
	-.0053	-.0053	-.0053	-.0053	-.0053	-.0053			
-160.00	-.0143	-.0143	-.0135	-.0133	-.0158	-.0156	-.0153	-.0155	-.0146
	-.0106	-.0106	-.0106	-.0106	-.0106	-.0106			
-140.00	-.0286	-.0286	-.0270	-.0266	-.0317	-.0312	-.0305	-.0309	-.0291
	-.0212	-.0212	-.0212	-.0212	-.0212	-.0212			
-120.00	-.0428	-.0428	-.0405	-.0400	-.0475	-.0468	-.0458	-.0464	-.0437
	-.0317	-.0317	-.0317	-.0317	-.0317	-.0317			
-110.00	-.0500	-.0500	-.0472	-.0466	-.0555	-.0546	-.0534	-.0541	-.0510
	-.0370	-.0370	-.0370	-.0370	-.0370	-.0370			
-100.00	-.0571	-.0571	-.0540	-.0533	-.0634	-.0624	-.0611	-.0618	-.0583
	-.0423	-.0423	-.0423	-.0423	-.0423	-.0423			
-90.00	-.0642	-.0642	-.0607	-.0599	-.0713	-.0702	-.0687	-.0696	-.0656
	-.0476	-.0476	-.0476	-.0476	-.0476	-.0476			
-80.00	-.0714	-.0714	-.0675	-.0666	-.0792	-.0780	-.0764	-.0773	-.0729
	-.0529	-.0529	-.0529	-.0529	-.0529	-.0529			
-70.00	-.0785	-.0785	-.0742	-.0733	-.0871	-.0858	-.0840	-.0850	-.0802
	-.0582	-.0582	-.0582	-.0582	-.0582	-.0582			
-60.00	-.0857	-.0857	-.0810	-.0799	-.0951	-.0936	-.0916	-.0928	-.0874
	-.0635	-.0635	-.0635	-.0635	-.0635	-.0635			
-50.00	-.0928	-.0928	-.0877	-.0866	-.1030	-.1014	-.0993	-.1005	-.0947
	-.0688	-.0688	-.0688	-.0688	-.0688	-.0688			
-30.00	-.1071	-.1071	-.1012	-.0999	-.1188	-.1170	-.1145	-.1159	-.1093
	-.0794	-.0794	-.0794	-.0794	-.0794	-.0794			
-21.00	-.1135	-.1135	-.1073	-.1059	-.1260	-.1241	-.1214	-.1229	-.1159
	-.0841	-.0841	-.0841	-.0841	-.0841	-.0841			
-16.00	-.1171	-.1171	-.1107	-.1092	-.1299	-.1280	-.1252	-.1268	-.1195
	-.0868	-.0868	-.0868	-.0868	-.0868	-.0868			
-15.00	-.1178	-.1178	-.1113	-.1099	-.1307	-.1287	-.1260	-.1275	-.1202
	-.0873	-.0873	-.0873	-.0873	-.0873	-.0873			
-14.00	-.1185	-.1185	-.1120	-.1106	-.1315	-.1295	-.1267	-.1283	-.1210
	-.0878	-.0878	-.0878	-.0878	-.0878	-.0878			
-13.00	-.1216	-.1216	-.1161	-.1112	-.1323	-.1303	-.1275	-.1291	-.1217
	-.0884	-.0884	-.0884	-.0884	-.0884	-.0884			
-12.00	-.1262	-.1262	-.1212	-.1119	-.1331	-.1311	-.1283	-.1299	-.1224
	-.0889	-.0889	-.0889	-.0889	-.0889	-.0889			
-11.00	-.1301	-.1301	-.1261	-.1096	-.1339	-.1319	-.1290	-.1306	-.1232
	-.0894	-.0894	-.0894	-.0894	-.0894	-.0894			
-10.00	-.1334	-.1334	-.1300	-.1133	-.1347	-.1326	-.1298	-.1314	-.1239
	-.0899	-.0899	-.0899	-.0899	-.0899	-.0899			
-9.00	-.1367	-.1367	-.1338	-.1170	-.1355	-.1334	-.1306	-.1322	-.1246
	-.0905	-.0905	-.0905	-.0905	-.0905	-.0905			
-8.00	-.1390	-.1390	-.1358	-.1207	-.1363	-.1342	-.1313	-.1329	-.1253
	-.0910	-.0910	-.0910	-.0910	-.0910	-.0910			
-7.00	-.1406	-.1406	-.1392	-.1244	-.1371	-.1350	-.1321	-.1337	-.1261
	-.0915	-.0915	-.0915	-.0915	-.0915	-.0915			
-6.00	-.1417	-.1417	-.1407	-.1281	-.1378	-.1358	-.1329	-.1345	-.1268
	-.0921	-.0921	-.0921	-.0921	-.0921	-.0921			
-5.00	-.1419	-.1419	-.1415	-.1318	-.1386	-.1365	-.1336	-.1353	-.1275
	-.0926	-.0926	-.0926	-.0926	-.0926	-.0926			
-4.00	-.1424	-.1424	-.1421	-.1355	-.1394	-.1373	-.1344	-.1360	-.1283
	-.0931	-.0931	-.0931	-.0931	-.0931	-.0931			
-3.00	-.1422	-.1422	-.1419	-.1392	-.1402	-.1381	-.1351	-.1368	-.1290
	-.0937	-.0937	-.0937	-.0937	-.0937	-.0937			
-2.00	-.1421	-.1421	-.1421	-.1429	-.1410	-.1389	-.1359	-.1376	-.1297
	-.0942	-.0942	-.0942	-.0942	-.0942	-.0942			
-1.00	-.1410	-.1410	-.1418	-.1427	-.1418	-.1397	-.1367	-.1384	-.1304
	-.0947	-.0947	-.0947	-.0947	-.0947	-.0947			
.00	-.1401	-.1401	-.1408	-.1420	-.1426	-.1404	-.1374	-.1391	-.1312
	-.0952	-.0952	-.0952	-.0952	-.0952	-.0952			
1.00	-.1386	-.1386	-.1395	-.1409	-.1418	-.1412	-.1382	-.1399	-.1319
	-.0958	-.0958	-.0958	-.0958	-.0958	-.0958			
2.00	-.1374	-.1374	-.1385	-.1402	-.1409	-.1420	-.1416	-.1410	-.1321
	-.0963	-.0963	-.0963	-.0963	-.0963	-.0963			
3.00	-.1353	-.1353	-.1364	-.1383	-.1393	-.1405	-.1412	-.1415	-.1357
	-.0968	-.0968	-.0968	-.0968	-.0968	-.0968			
4.00	-.1329	-.1329	-.1342	-.1363	-.1374	-.1391	-.1403	-.1407	-.1381
	-.0974	-.0974	-.0974	-.0974	-.0974	-.0974			
5.00	-.1303	-.1303	-.1317	-.1341	-.1356	-.1372	-.1390	-.1401	-.1389
	-.0979	-.0979	-.0979	-.0979	-.0979	-.0979			
6.00	-.1274	-.1274	-.1289	-.1316	-.1332	-.1350	-.1373	-.1390	-.1387
	-.0984	-.0984	-.0984	-.0984	-.0984	-.0984			
7.00	-.1243	-.1243	-.1260	-.1288	-.1306	-.1325	-.1351	-.1373	-.1379
	-.0989	-.0989	-.0989	-.0989	-.0989	-.0989			
8.00	-.1209	-.1209	-.1227	-.1258	-.1277	-.1298	-.1325	-.1352	-.1361
	-.0995	-.0995	-.0995	-.0995	-.0995	-.0995			
9.00	-.1174	-.1174	-.1194	-.1225	-.1244	-.1268	-.1295	-.1331	-.1334
	-.1000	-.1000	-.1000	-.1000	-.1000	-.1000			
10.00	-.1139	-.1139	-.1159	-.1191	-.1211	-.1237	-.1267	-.1304	-.1318
	-.0994	-.0994	-.0994	-.0994	-.0994	-.0994			
11.00	-.1103	-.1103	-.1112	-.1156	-.1179	-.1205	-.1238	-.1284	-.1329
	-.0988	-.0988	-.0988	-.0988	-.0988	-.0988			
12.00	-.1066	-.1066	-.1088	-.1122	-.1142	-.1174	-.1218	-.1284	-.1321
	-.0982	-.0982	-.0982	-.0982	-.0982	-.0982			
13.00	-.1030	-.1030	-.1052	-.1089	-.1114	-.1154	-.1201	-.1276	-.1313
	-.0977	-.0977	-.0977	-.0977	-.0977	-.0977			
14.00	-.0998	-.0998	-.1021	-.1057	-.1088	-.1122	-.1122	-.1269	-.1305
	-.0971	-.0971	-.0971	-.0971	-.0971	-.0971			

15.00	-.0992	-.0992	-.1015	-.1051	-.1081	-.1115	-.1115	-.1261	-.1298
	-.0965	-.0965	-.0965	-.0965	-.0965	-.0965			
16.00	-.0986	-.0986	-.1009	-.1044	-.1075	-.1108	-.1108	-.1253	-.1290
	-.0959	-.0959	-.0959	-.0959	-.0959	-.0959			
21.00	-.0956	-.0956	-.0978	-.1012	-.1042	-.1075	-.1075	-.1215	-.1250
	-.0930	-.0930	-.0930	-.0930	-.0930	-.0930			
30.00	-.0902	-.0902	-.0923	-.0955	-.0983	-.1014	-.1014	-.1146	-.1180
	-.0877	-.0877	-.0877	-.0877	-.0877	-.0877			
50.00	-.0782	-.0782	-.0800	-.0828	-.0852	-.0879	-.0879	-.0994	-.1022
	-.0760	-.0760	-.0760	-.0760	-.0760	-.0760			
60.00	-.0721	-.0721	-.0738	-.0764	-.0787	-.0811	-.0811	-.0917	-.0944
	-.0702	-.0702	-.0702	-.0702	-.0702	-.0702			
70.00	-.0661	-.0661	-.0677	-.0700	-.0721	-.0743	-.0743	-.0841	-.0865
	-.0643	-.0643	-.0643	-.0643	-.0643	-.0643			
80.00	-.0601	-.0601	-.0615	-.0637	-.0655	-.0676	-.0676	-.0764	-.0786
	-.0585	-.0585	-.0585	-.0585	-.0585	-.0585			
90.00	-.0541	-.0541	-.0554	-.0573	-.0590	-.0608	-.0608	-.0688	-.0708
	-.0526	-.0526	-.0526	-.0526	-.0526	-.0526			
100.00	-.0481	-.0481	-.0492	-.0509	-.0524	-.0541	-.0541	-.0611	-.0629
	-.0468	-.0468	-.0468	-.0468	-.0468	-.0468			
110.00	-.0421	-.0421	-.0431	-.0446	-.0459	-.0473	-.0473	-.0535	-.0550
	-.0409	-.0409	-.0409	-.0409	-.0409	-.0409			
120.00	-.0361	-.0361	-.0369	-.0382	-.0393	-.0406	-.0406	-.0459	-.0472
	-.0351	-.0351	-.0351	-.0351	-.0351	-.0351			
140.00	-.0240	-.0240	-.0246	-.0255	-.0262	-.0270	-.0270	-.0306	-.0315
	-.0234	-.0234	-.0234	-.0234	-.0234	-.0234			
160.00	-.0120	-.0120	-.0123	-.0127	-.0131	-.0135	-.0135	-.0153	-.0157
	-.0117	-.0117	-.0117	-.0117	-.0117	-.0117			
170.00	-.0060	-.0060	-.0062	-.0064	-.0066	-.0068	-.0068	-.0076	-.0079
	-.0058	-.0058	-.0058	-.0058	-.0058	-.0058			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0007	.0007	.0006	.0006	.0005	.0005	.0005	.0005	.0005
	.0003	.0003	.0003	.0003	.0003	.0003			
-160.00	.0013	.0013	.0012	.0013	.0011	.0010	.0010	.0010	.0009
	.0007	.0007	.0007	.0007	.0007	.0007			
-140.00	.0026	.0026	.0024	.0026	.0022	.0021	.0020	.0020	.0019
	.0013	.0013	.0013	.0013	.0013	.0013			
-120.00	.0039	.0039	.0037	.0039	.0033	.0031	.0030	.0030	.0028
	.0020	.0020	.0020	.0020	.0020	.0020			
-110.00	.0046	.0046	.0043	.0045	.0038	.0037	.0035	.0035	.0032
	.0023	.0023	.0023	.0023	.0023	.0023			
-100.00	.0052	.0052	.0049	.0051	.0044	.0042	.0040	.0040	.0037
	.0027	.0027	.0027	.0027	.0027	.0027			
-90.00	.0059	.0059	.0055	.0058	.0049	.0047	.0045	.0045	.0042
	.0030	.0030	.0030	.0030	.0030	.0030			
-80.00	.0065	.0065	.0061	.0064	.0054	.0052	.0050	.0050	.0046
	.0033	.0033	.0033	.0033	.0033	.0033			
-70.00	.0072	.0072	.0067	.0071	.0060	.0057	.0055	.0055	.0051
	.0037	.0037	.0037	.0037	.0037	.0037			
-60.00	.0078	.0078	.0073	.0077	.0065	.0063	.0060	.0060	.0056
	.0040	.0040	.0040	.0040	.0040	.0040			
-50.00	.0085	.0085	.0079	.0084	.0071	.0068	.0065	.0065	.0060
	.0043	.0043	.0043	.0043	.0043	.0043			
-30.00	.0098	.0098	.0091	.0096	.0082	.0078	.0075	.0075	.0070
	.0050	.0050	.0050	.0050	.0050	.0050			
-21.00	.0103	.0103	.0097	.0102	.0087	.0083	.0079	.0080	.0074
	.0053	.0053	.0053	.0053	.0053	.0053			
-16.00	.0107	.0107	.0100	.0105	.0089	.0086	.0082	.0082	.0076
	.0055	.0055	.0055	.0055	.0055	.0055			

-15.00	.0107	.0107	.0100	.0106	.0090	.0086	.0082	.0083	.0077
	.0055	.0055	.0055	.0055	.0055	.0055			
-14.00	.0108	.0108	.0101	.0107	.0090	.0087	.0083	.0083	.0077
	.0055	.0055	.0055	.0055	.0055	.0055			
-13.00	.0107	.0107	.0101	.0107	.0091	.0087	.0083	.0084	.0078
	.0056	.0056	.0056	.0056	.0056	.0056			
-12.00	.0108	.0108	.0103	.0108	.0091	.0088	.0084	.0084	.0078
	.0056	.0056	.0056	.0056	.0056	.0056			
-11.00	.0108	.0108	.0104	.0098	.0092	.0088	.0084	.0085	.0078
	.0056	.0056	.0056	.0056	.0056	.0056			
-10.00	.0108	.0108	.0104	.0098	.0093	.0089	.0085	.0085	.0079
	.0057	.0057	.0057	.0057	.0057	.0057			
-9.00	.0108	.0108	.0105	.0098	.0093	.0089	.0085	.0086	.0079
	.0057	.0057	.0057	.0057	.0057	.0057			
-8.00	.0108	.0108	.0105	.0099	.0094	.0090	.0086	.0086	.0080
	.0057	.0057	.0057	.0057	.0057	.0057			
-7.00	.0107	.0107	.0105	.0099	.0094	.0090	.0086	.0087	.0080
	.0058	.0058	.0058	.0058	.0058	.0058			
-6.00	.0106	.0106	.0104	.0099	.0095	.0091	.0087	.0087	.0081
	.0058	.0058	.0058	.0058	.0058	.0058			
-5.00	.0105	.0105	.0104	.0099	.0095	.0091	.0087	.0088	.0081
	.0058	.0058	.0058	.0058	.0058	.0058			
-4.00	.0104	.0104	.0103	.0100	.0096	.0092	.0088	.0088	.0082
	.0059	.0059	.0059	.0059	.0059	.0059			
-3.00	.0103	.0103	.0101	.0100	.0096	.0092	.0088	.0089	.0082
	.0059	.0059	.0059	.0059	.0059	.0059			
-2.00	.0102	.0102	.0101	.0100	.0097	.0093	.0089	.0089	.0083
	.0059	.0059	.0059	.0059	.0059	.0059			
-1.00	.0100	.0100	.0100	.0099	.0097	.0093	.0089	.0090	.0083
	.0060	.0060	.0060	.0060	.0060	.0060			
.00	.0099	.0099	.0098	.0098	.0098	.0094	.0090	.0090	.0084
	.0060	.0060	.0060	.0060	.0060	.0060			
1.00	.0097	.0097	.0097	.0097	.0096	.0094	.0090	.0091	.0084
	.0060	.0060	.0060	.0060	.0060	.0060			
2.00	.0097	.0097	.0096	.0096	.0095	.0095	.0094	.0092	.0083
	.0061	.0061	.0061	.0061	.0061	.0061			
3.00	.0095	.0095	.0094	.0094	.0094	.0094	.0093	.0092	.0086
	.0061	.0061	.0061	.0061	.0061	.0061			
4.00	.0093	.0093	.0093	.0093	.0093	.0093	.0092	.0091	.0087
	.0061	.0061	.0061	.0061	.0061	.0061			
5.00	.0091	.0091	.0091	.0091	.0092	.0091	.0091	.0090	.0087
	.0062	.0062	.0062	.0062	.0062	.0062			
6.00	.0089	.0089	.0089	.0090	.0090	.0090	.0090	.0089	.0087
	.0062	.0062	.0062	.0062	.0062	.0062			
7.00	.0087	.0087	.0087	.0088	.0089	.0089	.0089	.0089	.0087
	.0062	.0062	.0062	.0062	.0062	.0062			
8.00	.0085	.0085	.0085	.0087	.0087	.0088	.0088	.0088	.0087
	.0063	.0063	.0063	.0063	.0063	.0063			
9.00	.0083	.0083	.0084	.0085	.0085	.0086	.0087	.0088	.0088
	.0063	.0063	.0063	.0063	.0063	.0063			
10.00	.0081	.0081	.0082	.0083	.0084	.0085	.0086	.0090	.0090
	.0063	.0063	.0063	.0063	.0063	.0063			
11.00	.0079	.0079	.0079	.0082	.0083	.0084	.0087	.0093	.0093
	.0062	.0062	.0062	.0062	.0062	.0062			
12.00	.0077	.0077	.0079	.0081	.0082	.0084	.0090	.0096	.0092
	.0062	.0062	.0062	.0062	.0062	.0062			
13.00	.0076	.0076	.0077	.0080	.0081	.0087	.0093	.0095	.0092
	.0062	.0062	.0062	.0062	.0062	.0062			
14.00	.0075	.0075	.0077	.0079	.0083	.0089	.0087	.0095	.0091
	.0061	.0061	.0061	.0061	.0061	.0061			
15.00	.0075	.0075	.0077	.0079	.0082	.0088	.0086	.0094	.0091
	.0061	.0061	.0061	.0061	.0061	.0061			
16.00	.0074	.0074	.0076	.0078	.0082	.0088	.0086	.0094	.0090
	.0060	.0060	.0060	.0060	.0060	.0060			
21.00	.0072	.0072	.0074	.0076	.0079	.0085	.0083	.0091	.0087
	.0059	.0059	.0059	.0059	.0059	.0059			
30.00	.0068	.0068	.0070	.0071	.0075	.0080	.0079	.0086	.0083
	.0055	.0055	.0055	.0055	.0055	.0055			
50.00	.0059	.0059	.0060	.0062	.0065	.0070	.0068	.0074	.0072
	.0048	.0048	.0048	.0048	.0048	.0048			
60.00	.0054	.0054	.0056	.0057	.0060	.0064	.0063	.0069	.0066
	.0044	.0044	.0044	.0044	.0044	.0044			
70.00	.0050	.0050	.0051	.0052	.0055	.0059	.0058	.0063	.0061
	.0041	.0041	.0041	.0041	.0041	.0041			
80.00	.0045	.0045	.0046	.0048	.0050	.0054	.0052	.0057	.0055
	.0037	.0037	.0037	.0037	.0037	.0037			
90.00	.0041	.0041	.0042	.0043	.0045	.0048	.0047	.0051	.0050
	.0033	.0033	.0033	.0033	.0033	.0033			
100.00	.0036	.0036	.0037	.0038	.0040	.0043	.0042	.0046	.0044
	.0029	.0029	.0029	.0029	.0029	.0029			
110.00	.0032	.0032	.0032	.0033	.0035	.0038	.0037	.0040	.0039
	.0026	.0026	.0026	.0026	.0026	.0026			
120.00	.0027	.0027	.0028	.0029	.0030	.0032	.0031	.0034	.0033
	.0022	.0022	.0022	.0022	.0022	.0022			
140.00	.0018	.0018	.0019	.0019	.0020	.0021	.0021	.0023	.0022
	.0015	.0015	.0015	.0015	.0015	.0015			
160.00	.0009	.0009	.0009	.0010	.0010	.0011	.0010	.0011	.0011
	.0007	.0007	.0007	.0007	.0007	.0007			
170.00	.0005	.0005	.0005	.0005	.0005	.0005	.0005	.0006	.0006
	.0004	.0004	.0004	.0004	.0004	.0004			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

AIRF INTERPOLATED DATA 156115611561 NACA-0015 (D=+20.0 DEGS.)

	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452
	.7452	.7452	.7452	.7452	.7452	.7452			
-160.00	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471
	.6471	.6471	.6471	.6471	.6471	.6471			
-140.00	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000			
-120.00	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548
	.7548	.7548	.7548	.7548	.7548	.7548			
-110.00	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823
	.4823	.4823	.4823	.4823	.4823	.4823			
-100.00	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097
	.2097	.2097	.2097	.2097	.2097	.2097			
-90.00	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627
	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627			
-80.00	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352
	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352			
-70.00	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077
	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077			
-60.00	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802
	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802			
-50.00	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528
	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528			
-30.00	-.9900	-.9900	-.9950	-1.0050	-1.0100	-1.0150	-1.0150	-1.0150	-1.0150
	-1.0150	-.9450	-.9300	-.9200	-.9100	-.9100			
-21.00	-.8000	-.8000	-.8100	-.8300	-.8400	-.8500	-.8500	-.8500	-.8500
	-.8500	-.7100	-.6800	-.6600	-.6400	-.6400			
-16.00	-1.0680	-1.0680	-.9927	-.9917	-.9825	-.9733	-.9717	-.9700	-.9700
	-.9700	-.8067	-.7700	-.7400	-.7100	-.7100			
-15.00	-1.1900	-1.1900	-1.0900	-1.0550	-1.0225	-.9900	-.9850	-.9800	-.9800
	-.9800	-.8300	-.7900	-.7600	-.7300	-.7300			
-14.00	-.2924	-.2924	-.3034	-.3248	-.7826	-.3530	-.3206	-.6226	-.6226
	-.6226	-.5506	-.5301	-.5152	-.5004	-.5004			
-13.00	-.1846	-.1846	-.1955	-.2124	-.4160	-.2471	-.2601	-.2523	-.2523
	-.2523	-.2523	-.2523	-.2523	-.2523	-.2523			
-12.00	-.0765	-.0765	-.0839	-.0993	-.1133	-.1288	-.1589	-.2011	-.2011
	-.2011	-.2011	-.2011	-.2011	-.2011	-.2011			
-11.00	.0320	.0320	.0244	.0134	.0017	-.0137	-.0409	-.1029	-.1029
	-.1029	-.1029	-.1029	-.1029	-.1029	-.1029			
-10.00	.1404	.1404	.1358	.1258	.1165	.1024	.0748	.0138	.0138
	.0138	.0138	.0138	.0138	.0138	.0138			
-9.00	.2487	.2487	.2444	.2381	.2315	.2176	.1910	.0897	.0897
	.0897	.0873	.0865	.0860	.0855	.0855			
-8.00	.3565	.3565	.3535	.3493	.3437	.3308	.3046	.1418	.1418
	.1418	.1348	.1326	.1311	.1296	.1296			
-7.00	.4636	.4636	.4614	.4585	.4538	.4412	.4120	.1849	.1849
	.1849	.1725	.1686	.1659	.1632	.1632			
-6.00	.5696	.5696	.5683	.5637	.5588	.5476	.5141	.2246	.2246
	.2246	.2065	.2008	.1969	.1930	.1930			
-5.00	.6718	.6718	.6709	.6680	.6485	.6491	.6026	.2630	.2630
	.2630	.2390	.2316	.2264	.2212	.2212			
-4.00	.7745	.7745	.7741	.7561	.7346	.7032	.6844	.3009	.3009
	.3009	.2711	.2618	.2553	.2488	.2488			
-3.00	.8741	.8741	.8734	.8410	.7823	.7308	.7286	.3386	.3386
	.3386	.3029	.2918	.2840	.2763	.2763			
-2.00	.9721	.9721	.9710	.8853	.8078	.7500	.7523	.3763	.3763
	.3763	.3347	.3217	.3127	.3036	.3036			
-1.00	1.0683	1.0683	1.0534	.9071	.8259	.7664	.7696	.4140	.4140
	.4140	.3664	.3516	.3413	.3310	.3310			
.00	1.1687	1.1687	1.1283	.9221	.8416	.7820	.7849	.4516	.4516
	.4516	.3981	.3814	.3699	.3583	.3583			
1.00	1.2598	1.2598	1.2014	.9351	.8565	.7973	.7996	.4892	.4892
	.4892	.4298	.4113	.3985	.3856	.3856			
2.00	1.3499	1.3499	1.2739	.9474	.8712	.8126	.8141	.5269	.5269
	.5269	.4616	.4412	.4270	.4129	.4129			
3.00	1.4351	1.4351	1.3463	.9596	.8858	.8278	.8285	.5645	.5645
	.5645	.4933	.4711	.4556	.4402	.4402			
4.00	1.5157	1.5157	1.4186	.9717	.9004	.8429	.8430	.6021	.6021
	.6021	.5250	.5009	.4842	.4675	.4675			
5.00	1.5908	1.5908	1.4910	.9838	.9149	.8581	.8574	.6398	.6398
	.6398	.5567	.5308	.5128	.4948	.4948			
6.00	1.6464	1.6464	1.5633	.9958	.9294	.8733	.8718	.6774	.6774
	.6774	.5884	.5607	.5414	.5221	.5221			
7.00	1.7131	1.7131	1.6358	1.0079	.9440	.8885	.8862	.7150	.7150
	.7150	.6201	.5905	.5700	.5494	.5494			
8.00	1.7743	1.7743	1.7085	1.0199	.9585	.9037	.9006	.7526	.7526
	.7526	.6518	.6204	.5986	.5767	.5767			
9.00	1.8297	1.8297	1.7822	1.0320	.9730	.9188	.9150	.7902	.7902
	.7902	.6834	.6502	.6271	.6040	.6040			
10.00	1.8540	1.8540	1.8598	1.0440	.9875	.9340	.9293	.8276	.8276
	.8276	.7150	.6799	.6555	.6311	.6311			
11.00	1.8840	1.8840	1.9479	1.0557	1.0017	.9490	.9436	.8648	.8648
	.8648	.7461	.7092	.6836	.6579	.6579			
12.00	1.9513	1.9513	2.0280	1.0669	1.0153	.9637	.9577	.9012	.9012
	.9012	.7764	.7378	.7109	.6840	.6840			
13.00	2.0022	2.0022	2.0809	1.0758	1.0271	.9775	.9710	.9356	.9356
	.9356	.8042	.7641	.7360	.7079	.7079			
14.00	2.0655	2.0655	2.0595	1.0774	1.0333	.9884	.9819	.9648	.9648
	.9648	.8256	.7847	.7555	.7263	.7263			

15.00	1.1900	1.1900	1.0900	1.0550	1.0225	.9900	.9850	.9800	.9800
	.9800	.8300	.7900	.7600	.7300	.7300			
16.00	1.0680	1.0680	.9927	.9917	.9825	.9733	.9717	.9700	.9700
	.9700	.8067	.7700	.7400	.7100	.7100			
21.00	.8000	.8000	.8100	.8300	.8400	.8500	.8500	.8500	.8500
	.8500	.7100	.6800	.6600	.6400	.6400			
30.00	.9900	.9900	.9950	1.0050	1.0100	1.0150	1.0150	1.0150	1.0150
	1.0150	.9450	.9300	.9200	.9100	.9100			
50.00	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528
	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528			
60.00	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802
	.8802	.8802	.8802	.8802	.8802	.8802			
70.00	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077
	.6077	.6077	.6077	.6077	.6077	.6077			
80.00	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352
	.3352	.3352	.3352	.3352	.3352	.3352			
90.00	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627
	.0627	.0627	.0627	.0627	.0627	.0627			
100.00	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097
	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097			
110.00	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823
	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823			
120.00	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548
	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548			
140.00	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000
	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000			
160.00	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471
	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471			
170.00	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452
	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
-170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
-160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
-140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
-120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
-110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
-100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
-70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
-60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
-50.00	1.3920	1.3920	1.3920	1.3920	1.3925	1.3930	1.3955	1.3980	1.3969
	1.3934	1.3920	1.3920	1.3920	1.3920	1.3920			
-30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
-21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
-16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
-15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
-14.00	.0182	.0182	.0182	.0186	.1385	.0235	.0372	.1353	.1400
	.1448	.1525	.1594	.1625	.1645	.1645			
-13.00	.0171	.0171	.0169	.0172	.0661	.0185	.0263	.0459	.0459
	.0459	.0459	.0459	.0459	.0459	.0459			
-12.00	.0163	.0163	.0161	.0162	.0165	.0169	.0194	.0332	.0332
	.0332	.0332	.0332	.0332	.0332	.0332			
-11.00	.0159	.0159	.0156	.0157	.0160	.0164	.0173	.0241	.0241
	.0241	.0241	.0241	.0241	.0241	.0241			
-10.00	.0157	.0157	.0155	.0155	.0158	.0163	.0172	.0198	.0198
	.0198	.0198	.0198	.0198	.0198	.0198			
-9.00	.0159	.0159	.0157	.0158	.0161	.0167	.0177	.0228	.0230
	.0233	.0237	.0240	.0241	.0240	.0240			
-8.00	.0163	.0163	.0162	.0165	.0169	.0175	.0186	.0290	.0296
	.0302	.0311	.0319	.0321	.0320	.0320			
-7.00	.0170	.0170	.0171	.0176	.0180	.0189	.0200	.0364	.0374
	.0384	.0400	.0413	.0416	.0414	.0414			
-6.00	.0180	.0180	.0183	.0190	.0197	.0206	.0218	.0443	.0457
	.0471	.0494	.0512	.0516	.0513	.0513			
-5.00	.0192	.0192	.0198	.0208	.0212	.0226	.0237	.0523	.0541
	.0560	.0589	.0613	.0618	.0615	.0615			
-4.00	.0207	.0207	.0216	.0226	.0231	.0285	.0259	.0605	.0627
	.0650	.0686	.0715	.0721	.0717	.0717			
-3.00	.0224	.0224	.0237	.0245	.0288	.0366	.0324	.0686	.0712
	.0740	.0782	.0818	.0824	.0820	.0820			
-2.00	.0245	.0245	.0260	.0302	.0367	.0454	.0413	.0768	.0798
	.0830	.0879	.0920	.0928	.0922	.0922			
-1.00	.0267	.0267	.0291	.0379	.0452	.0545	.0510	.0850	.0884
	.0920	.0976	.1022	.1031	.1025	.1025			

.00	.0290	.0290	.0326	.0463	.0540	.0636	.0609	.0931	.0970
	.1010	.1073	.1125	.1135	.1127	.1127			
1.00	.0317	.0317	.0362	.0548	.0629	.0727	.0708	.1013	.1056
	.1100	.1170	.1227	.1238	.1230	.1230			
2.00	.0346	.0346	.0398	.0634	.0718	.0819	.0808	.1095	.1141
	.1191	.1266	.1330	.1341	.1333	.1333			
3.00	.0376	.0376	.0434	.0720	.0806	.0910	.0908	.1176	.1227
	.1281	.1363	.1432	.1445	.1435	.1435			
4.00	.0410	.0410	.0470	.0807	.0895	.1002	.1007	.1258	.1313
	.1371	.1460	.1534	.1548	.1538	.1538			
5.00	.0444	.0444	.0506	.0893	.0984	.1093	.1107	.1340	.1399
	.1461	.1557	.1637	.1652	.1641	.1641			
6.00	.0480	.0480	.0542	.0979	.1073	.1184	.1207	.1421	.1485
	.1551	.1654	.1739	.1755	.1743	.1743			
7.00	.0517	.0517	.0579	.1065	.1162	.1276	.1307	.1503	.1570
	.1641	.1751	.1842	.1859	.1846	.1846			
8.00	.0557	.0557	.0615	.1152	.1251	.1367	.1407	.1585	.1656
	.1732	.1848	.1944	.1962	.1949	.1949			
9.00	.0598	.0598	.0650	.1238	.1341	.1459	.1507	.1667	.1742
	.1822	.1945	.2047	.2066	.2052	.2052			
10.00	.0626	.0626	.0682	.1324	.1430	.1551	.1607	.1749	.1829
	.1913	.2042	.2150	.2170	.2156	.2156			
11.00	.0662	.0662	.0755	.1411	.1520	.1643	.1707	.1833	.1916
	.2004	.2140	.2254	.2276	.2262	.2262			
12.00	.0709	.0709	.0992	.1500	.1612	.1737	.1809	.1919	.2007
	.2098	.2241	.2360	.2386	.2374	.2374			
13.00	.0768	.0768	.1068	.1593	.1709	.1836	.1916	.2013	.2104
	.2199	.2347	.2473	.2505	.2502	.2502			
14.00	.0944	.0944	.1076	.1703	.1825	.1953	.2038	.2128	.2220
	.2318	.2470	.2602	.2652	.2671	.2671			
15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
50.00	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920
	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920			
60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000
	.4000	.4000	.4000	.4000	.4000	.4000			
-160.00	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000
	.3000	.3000	.3000	.3000	.3000	.3000			
-140.00	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600
	.4600	.4600	.4600	.4600	.4600	.4600			
-120.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-110.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-100.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-90.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-80.00	.4457	.4457	.4473	.4493	.4508	.4523	.4541	.4558	.4571
	.4583	.4607	.4628	.4646	.4663	.4663			
-70.00	.3913	.3913	.3947	.3987	.4017	.4047	.4082	.4117	.4142
	.4167	.4213	.4257	.4292	.4327	.4327			
-60.00	.3370	.3370	.3420	.3480	.3525	.3570	.3623	.3675	.3713
	.3750	.3820	.3885	.3938	.3990	.3990			
-50.00	.2827	.2827	.2893	.2973	.3033	.3093	.3163	.3233	.3283
	.3333	.3427	.3513	.3583	.3653	.3653			
-30.00	.1740	.1740	.1840	.1960	.2050	.2140	.2245	.2350	.2425
	.2500	.2640	.2770	.2875	.2980	.2980			
-21.00	.1009	.1009	.1066	.1160	.1233	.1306	.1368	.1430	.1493
	.1556	.1699	.1974	.2101	.2229	.2229			
-16.00	.0730	.0730	.0780	.0860	.0915	.0970	.1025	.1080	.1125
	.1170	.1370	.1760	.1880	.2000	.2000			

-15.00	.0540	.0540	.0650	.0730	.0785	.0840	.0905	.0970	.1040
	.1110	.1330	.1730	.1840	.1950	.1950			
-14.00	-.2116	-.2116	-.2173	-.2259	-.0166	-.2382	-.2376	-.0680	-.0641
	-.0601	-.0488	-.0288	-.0235	-.0182	-.0182			
-13.00	-.2127	-.2127	-.2177	-.2259	-.1428	-.2390	-.2426	-.2309	-.2309
	-.2309	-.2309	-.2309	-.2309	-.2309	-.2309			
-12.00	-.2134	-.2134	-.2187	-.2261	-.2309	-.2378	-.2446	-.2395	-.2395
	-.2395	-.2395	-.2395	-.2395	-.2395	-.2395			
-11.00	-.2140	-.2140	-.2183	-.2260	-.2305	-.2362	-.2428	-.2431	-.2431
	-.2431	-.2431	-.2431	-.2431	-.2431	-.2431			
-10.00	-.2143	-.2143	-.2190	-.2258	-.2301	-.2351	-.2399	-.2427	-.2427
	-.2427	-.2427	-.2427	-.2427	-.2427	-.2427			
-9.00	-.2144	-.2144	-.2187	-.2255	-.2297	-.2339	-.2377	-.2377	-.2379
	-.2381	-.2385	-.2392	-.2394	-.2395	-.2395			
-8.00	-.2142	-.2142	-.2184	-.2249	-.2287	-.2324	-.2353	-.2318	-.2323
	-.2328	-.2340	-.2360	-.2366	-.2371	-.2371			
-7.00	-.2138	-.2138	-.2177	-.2237	-.2273	-.2304	-.2316	-.2255	-.2264
	-.2272	-.2294	-.2330	-.2339	-.2348	-.2348			
-6.00	-.2130	-.2130	-.2167	-.2216	-.2247	-.2273	-.2268	-.2191	-.2203
	-.2216	-.2247	-.2300	-.2314	-.2327	-.2327			
-5.00	-.2112	-.2112	-.2147	-.2193	-.2185	-.2232	-.2190	-.2126	-.2143
	-.2159	-.2200	-.2271	-.2289	-.2306	-.2306			
-4.00	-.2095	-.2095	-.2127	-.2132	-.2115	-.2170	-.2098	-.2061	-.2082
	-.2102	-.2153	-.2242	-.2264	-.2285	-.2285			
-3.00	-.2071	-.2071	-.2098	-.2064	-.2041	-.2097	-.2018	-.1996	-.2021
	-.2045	-.2106	-.2212	-.2238	-.2265	-.2265			
-2.00	-.2043	-.2043	-.2065	-.1988	-.1964	-.2021	-.1946	-.1931	-.1959
	-.1988	-.2060	-.2183	-.2213	-.2244	-.2244			
-1.00	-.2012	-.2012	-.2003	-.1908	-.1886	-.1943	-.1876	-.1866	-.1898
	-.1931	-.2013	-.2153	-.2188	-.2223	-.2223			
.00	-.1987	-.1987	-.1927	-.1826	-.1808	-.1866	-.1807	-.1801	-.1837
	-.1874	-.1966	-.2124	-.2163	-.2203	-.2203			
1.00	-.1944	-.1944	-.1847	-.1744	-.1730	-.1788	-.1739	-.1736	-.1776
	-.1817	-.1919	-.2095	-.2138	-.2182	-.2182			
2.00	-.1900	-.1900	-.1766	-.1662	-.1652	-.1710	-.1670	-.1671	-.1715
	-.1760	-.1872	-.2065	-.2113	-.2161	-.2161			
3.00	-.1846	-.1846	-.1685	-.1579	-.1574	-.1632	-.1602	-.1606	-.1654
	-.1702	-.1825	-.2036	-.2088	-.2141	-.2141			
4.00	-.1784	-.1784	-.1604	-.1497	-.1496	-.1554	-.1533	-.1541	-.1593
	-.1645	-.1778	-.2006	-.2063	-.2120	-.2120			
5.00	-.1713	-.1713	-.1523	-.1414	-.1418	-.1476	-.1464	-.1476	-.1532
	-.1588	-.1731	-.1977	-.2038	-.2099	-.2099			
6.00	-.1608	-.1608	-.1442	-.1332	-.1340	-.1398	-.1396	-.1411	-.1471
	-.1531	-.1685	-.1948	-.2013	-.2079	-.2079			
7.00	-.1525	-.1525	-.1361	-.1250	-.1261	-.1320	-.1327	-.1346	-.1410
	-.1474	-.1638	-.1918	-.1988	-.2058	-.2058			
8.00	-.1436	-.1436	-.1279	-.1167	-.1183	-.1242	-.1259	-.1281	-.1349
	-.1417	-.1591	-.1889	-.1963	-.2037	-.2037			
9.00	-.1339	-.1339	-.1197	-.1085	-.1105	-.1164	-.1190	-.1216	-.1288
	-.1360	-.1544	-.1860	-.1938	-.2017	-.2017			
10.00	-.1188	-.1188	-.1110	-.1003	-.1028	-.1087	-.1122	-.1152	-.1228
	-.1304	-.1498	-.1831	-.1913	-.1996	-.1996			
11.00	-.1057	-.1057	-.1057	-.0921	-.0951	-.1010	-.1054	-.1088	-.1168
	-.1248	-.1452	-.1802	-.1889	-.1976	-.1976			
12.00	-.0992	-.0992	-.1139	-.0842	-.0876	-.0935	-.0988	-.1028	-.1111
	-.1194	-.1407	-.1774	-.1866	-.1958	-.1958			
13.00	-.0914	-.0914	-.1043	-.0768	-.0809	-.0867	-.0928	-.0976	-.1061
	-.1145	-.1366	-.1749	-.1845	-.1942	-.1942			
14.00	-.0938	-.0938	-.0868	-.0715	-.0763	-.0820	-.0887	-.0945	-.1027
	-.1110	-.1335	-.1730	-.1833	-.1935	-.1935			
15.00	-.0540	-.0540	-.0650	-.0730	-.0785	-.0840	-.0905	-.0970	-.1040
	-.1110	-.1330	-.1730	-.1840	-.1950	-.1950			
16.00	-.0730	-.0730	-.0780	-.0860	-.0915	-.0970	-.1025	-.1080	-.1125
	-.1170	-.1370	-.1760	-.1880	-.2000	-.2000			
21.00	-.1009	-.1009	-.1066	-.1160	-.1233	-.1306	-.1368	-.1430	-.1493
	-.1556	-.1699	-.1974	-.2101	-.2229	-.2229			
30.00	-.1740	-.1740	-.1840	-.1960	-.2050	-.2140	-.2245	-.2350	-.2425
	-.2500	-.2640	-.2770	-.2875	-.2980	-.2980			
50.00	-.2827	-.2827	-.2893	-.2973	-.3033	-.3093	-.3163	-.3233	-.3283
	-.3333	-.3427	-.3513	-.3583	-.3653	-.3653			
60.00	-.3370	-.3370	-.3420	-.3480	-.3525	-.3570	-.3623	-.3675	-.3713
	-.3750	-.3820	-.3885	-.3938	-.3990	-.3990			
70.00	-.3913	-.3913	-.3947	-.3987	-.4017	-.4047	-.4082	-.4117	-.4142
	-.4167	-.4213	-.4257	-.4292	-.4327	-.4327			
80.00	-.4457	-.4457	-.4473	-.4493	-.4508	-.4523	-.4541	-.4558	-.4571
	-.4583	-.4607	-.4628	-.4646	-.4663	-.4663			
90.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
100.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
110.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
120.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
140.00	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600
	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600			
160.00	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000
	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000			
170.00	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000
	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

FLAP	INTERPOLATED DATA				156115611561		NACA-0015 (D=+20.0 DEGS.)		
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0087	.0087	.0088	.0091	.0095	.0092	.0089	.0085	.0085
	.0085	.0085	.0085	.0085	.0085	.0085			
-160.00	.0174	.0174	.0177	.0181	.0191	.0183	.0178	.0169	.0169
	.0169	.0169	.0169	.0169	.0169	.0169			
-140.00	.0347	.0347	.0354	.0362	.0381	.0367	.0356	.0339	.0339
	.0339	.0339	.0339	.0339	.0339	.0339			
-120.00	.0521	.0521	.0531	.0543	.0572	.0550	.0534	.0508	.0508
	.0508	.0508	.0508	.0508	.0508	.0508			
-110.00	.0608	.0608	.0619	.0634	.0667	.0642	.0623	.0593	.0593
	.0593	.0593	.0593	.0593	.0593	.0593			
-100.00	.0694	.0694	.0707	.0724	.0762	.0733	.0712	.0677	.0677
	.0677	.0677	.0677	.0677	.0677	.0677			
-90.00	.0781	.0781	.0796	.0815	.0858	.0825	.0801	.0762	.0762
	.0762	.0762	.0762	.0762	.0762	.0762			
-80.00	.0868	.0868	.0884	.0905	.0953	.0917	.0890	.0847	.0847
	.0847	.0847	.0847	.0847	.0847	.0847			
-70.00	.0955	.0955	.0973	.0996	.1048	.1009	.0979	.0931	.0931
	.0931	.0931	.0931	.0931	.0931	.0931			
-60.00	.1042	.1042	.1061	.1087	.1144	.1100	.1068	.1016	.1016
	.1016	.1016	.1016	.1016	.1016	.1016			
-50.00	.1128	.1128	.1150	.1177	.1239	.1192	.1157	.1101	.1101
	.1101	.1101	.1101	.1101	.1101	.1101			
-30.00	.1302	.1302	.1327	.1358	.1429	.1375	.1336	.1270	.1270
	.1270	.1270	.1270	.1270	.1270	.1270			
-21.00	.1380	.1380	.1406	.1440	.1515	.1458	.1416	.1346	.1346
	.1346	.1346	.1346	.1346	.1346	.1346			
-16.00	.1424	.1424	.1450	.1485	.1563	.1504	.1460	.1389	.1389
	.1389	.1389	.1389	.1389	.1389	.1389			
-15.00	.1432	.1432	.1459	.1494	.1572	.1513	.1469	.1397	.1397
	.1397	.1397	.1397	.1397	.1397	.1397			
-14.00	.1441	.1441	.1468	.1503	.1582	.1522	.1478	.1406	.1406
	.1406	.1406	.1406	.1406	.1406	.1406			
-13.00	.1485	.1485	.1507	.1543	.1591	.1587	.1553	.1414	.1414
	.1414	.1414	.1414	.1414	.1414	.1414			
-12.00	.1525	.1525	.1552	.1583	.1601	.1629	.1628	.1507	.1507
	.1507	.1507	.1507	.1507	.1507	.1507			
-11.00	.1563	.1563	.1580	.1618	.1635	.1656	.1669	.1587	.1587
	.1587	.1587	.1587	.1587	.1587	.1587			
-10.00	.1598	.1598	.1621	.1650	.1667	.1683	.1686	.1643	.1643
	.1643	.1643	.1643	.1643	.1643	.1643			
-9.00	.1631	.1631	.1649	.1680	.1697	.1706	.1702	.1634	.1634
	.1634	.1634	.1634	.1634	.1634	.1634			
-8.00	.1660	.1660	.1677	.1705	.1718	.1723	.1711	.1626	.1626
	.1626	.1626	.1626	.1626	.1626	.1626			
-7.00	.1686	.1686	.1701	.1724	.1734	.1733	.1704	.1617	.1617
	.1617	.1617	.1617	.1617	.1617	.1617			
-6.00	.1708	.1708	.1721	.1732	.1736	.1731	.1684	.1608	.1608
	.1608	.1608	.1608	.1608	.1608	.1608			
-5.00	.1720	.1720	.1729	.1737	.1697	.1717	.1631	.1600	.1600
	.1600	.1600	.1600	.1600	.1600	.1600			
-4.00	.1732	.1732	.1739	.1700	.1654	.1708	.1567	.1591	.1591
	.1591	.1591	.1591	.1591	.1591	.1591			
-3.00	.1737	.1737	.1739	.1657	.1645	.1698	.1558	.1582	.1582
	.1582	.1582	.1582	.1582	.1582	.1582			
-2.00	.1738	.1738	.1735	.1648	.1636	.1689	.1550	.1574	.1574
	.1574	.1574	.1574	.1574	.1574	.1574			
-1.00	.1737	.1737	.1698	.1639	.1627	.1680	.1541	.1565	.1565
	.1565	.1565	.1565	.1565	.1565	.1565			
.00	.1738	.1738	.1662	.1630	.1618	.1671	.1533	.1557	.1557
	.1557	.1557	.1557	.1557	.1557	.1557			
1.00	.1726	.1726	.1625	.1621	.1609	.1661	.1524	.1548	.1548
	.1548	.1548	.1548	.1548	.1548	.1548			
2.00	.1711	.1711	.1588	.1612	.1600	.1652	.1516	.1539	.1539
	.1539	.1539	.1539	.1539	.1539	.1539			
3.00	.1688	.1688	.1552	.1603	.1591	.1643	.1507	.1531	.1531
	.1531	.1531	.1531	.1531	.1531	.1531			
4.00	.1659	.1659	.1515	.1594	.1582	.1633	.1499	.1522	.1522
	.1522	.1522	.1522	.1522	.1522	.1522			
5.00	.1621	.1621	.1478	.1585	.1573	.1624	.1490	.1513	.1513
	.1513	.1513	.1513	.1513	.1513	.1513			
6.00	.1559	.1559	.1442	.1576	.1564	.1615	.1482	.1505	.1505
	.1505	.1505	.1505	.1505	.1505	.1505			
7.00	.1516	.1516	.1405	.1566	.1555	.1606	.1473	.1496	.1496
	.1496	.1496	.1496	.1496	.1496	.1496			
8.00	.1471	.1471	.1368	.1557	.1546	.1596	.1465	.1487	.1487
	.1487	.1487	.1487	.1487	.1487	.1487			
9.00	.1425	.1425	.1332	.1548	.1537	.1587	.1456	.1479	.1479
	.1479	.1479	.1479	.1479	.1479	.1479			
10.00	.1332	.1332	.1295	.1539	.1528	.1578	.1448	.1470	.1470
	.1470	.1470	.1470	.1470	.1470	.1470			
11.00	.1274	.1274	.1295	.1530	.1519	.1569	.1439	.1461	.1461
	.1461	.1461	.1461	.1461	.1461	.1461			
12.00	.1264	.1264	.1455	.1521	.1510	.1559	.1431	.1453	.1453
	.1453	.1453	.1453	.1453	.1453	.1453			
13.00	.1250	.1250	.1435	.1512	.1501	.1550	.1422	.1444	.1444
	.1444	.1444	.1444	.1444	.1444	.1444			
14.00	.1337	.1337	.1389	.1503	.1492	.1541	.1414	.1435	.1435
	.1435	.1435	.1435	.1435	.1435	.1435			

15.00	.1329	.1329	.1381	.1494	.1483	.1531	.1405	.1427	.1427
	.1427	.1427	.1427	.1427	.1427	.1427			
16.00	.1321	.1321	.1372	.1485	.1474	.1522	.1397	.1418	.1418
	.1418	.1418	.1418	.1418	.1418	.1418			
21.00	.1281	.1281	.1330	.1440	.1429	.1476	.1354	.1375	.1375
	.1375	.1375	.1375	.1375	.1375	.1375			
30.00	.1208	.1208	.1255	.1358	.1348	.1392	.1277	.1297	.1297
	.1297	.1297	.1297	.1297	.1297	.1297			
50.00	.1047	.1047	.1088	.1177	.1169	.1207	.1107	.1124	.1124
	.1124	.1124	.1124	.1124	.1124	.1124			
60.00	.0967	.0967	.1004	.1087	.1079	.1114	.1022	.1038	.1038
	.1038	.1038	.1038	.1038	.1038	.1038			
70.00	.0886	.0886	.0920	.0996	.0989	.1021	.0937	.0951	.0951
	.0951	.0951	.0951	.0951	.0951	.0951			
80.00	.0805	.0805	.0837	.0905	.0899	.0928	.0852	.0865	.0865
	.0865	.0865	.0865	.0865	.0865	.0865			
90.00	.0725	.0725	.0753	.0815	.0809	.0835	.0766	.0778	.0778
	.0778	.0778	.0778	.0778	.0778	.0778			
100.00	.0644	.0644	.0669	.0724	.0719	.0742	.0681	.0692	.0692
	.0692	.0692	.0692	.0692	.0692	.0692			
110.00	.0564	.0564	.0586	.0634	.0629	.0650	.0596	.0605	.0605
	.0605	.0605	.0605	.0605	.0605	.0605			
120.00	.0483	.0483	.0502	.0543	.0539	.0557	.0511	.0519	.0519
	.0519	.0519	.0519	.0519	.0519	.0519			
140.00	.0322	.0322	.0335	.0362	.0360	.0371	.0341	.0346	.0346
	.0346	.0346	.0346	.0346	.0346	.0346			
160.00	.0161	.0161	.0167	.0181	.0180	.0186	.0170	.0173	.0173
	.0173	.0173	.0173	.0173	.0173	.0173			
170.00	.0081	.0081	.0084	.0091	.0090	.0093	.0085	.0086	.0086
	.0086	.0086	.0086	.0086	.0086	.0086			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	-.0007	-.0007	-.0007	-.0007	-.0007	-.0007	-.0007	-.0006	-.0006
	-.0006	-.0006	-.0006	-.0006	-.0006	-.0006			
-160.00	-.0013	-.0013	-.0013	-.0013	-.0014	-.0014	-.0013	-.0012	-.0012
	-.0012	-.0012	-.0012	-.0012	-.0012	-.0012			
-140.00	-.0026	-.0026	-.0027	-.0027	-.0028	-.0027	-.0027	-.0024	-.0024
	-.0024	-.0024	-.0024	-.0024	-.0024	-.0024			
-120.00	-.0039	-.0039	-.0040	-.0040	-.0041	-.0041	-.0040	-.0036	-.0036
	-.0036	-.0036	-.0036	-.0036	-.0036	-.0036			
-110.00	-.0046	-.0046	-.0046	-.0047	-.0048	-.0048	-.0046	-.0041	-.0041
	-.0041	-.0041	-.0041	-.0041	-.0041	-.0041			
-100.00	-.0052	-.0052	-.0053	-.0053	-.0055	-.0054	-.0053	-.0047	-.0047
	-.0047	-.0047	-.0047	-.0047	-.0047	-.0047			
-90.00	-.0059	-.0059	-.0060	-.0060	-.0062	-.0061	-.0060	-.0053	-.0053
	-.0053	-.0053	-.0053	-.0053	-.0053	-.0053			
-80.00	-.0065	-.0065	-.0066	-.0067	-.0069	-.0068	-.0066	-.0059	-.0059
	-.0059	-.0059	-.0059	-.0059	-.0059	-.0059			
-70.00	-.0072	-.0072	-.0073	-.0074	-.0076	-.0075	-.0073	-.0065	-.0065
	-.0065	-.0065	-.0065	-.0065	-.0065	-.0065			
-60.00	-.0078	-.0078	-.0080	-.0080	-.0083	-.0082	-.0080	-.0071	-.0071
	-.0071	-.0071	-.0071	-.0071	-.0071	-.0071			
-50.00	-.0085	-.0085	-.0086	-.0087	-.0090	-.0088	-.0086	-.0077	-.0077
	-.0077	-.0077	-.0077	-.0077	-.0077	-.0077			
-30.00	-.0098	-.0098	-.0099	-.0100	-.0104	-.0102	-.0099	-.0089	-.0089
	-.0089	-.0089	-.0089	-.0089	-.0089	-.0089			
-21.00	-.0103	-.0103	-.0105	-.0106	-.0110	-.0108	-.0105	-.0094	-.0094
	-.0094	-.0094	-.0094	-.0094	-.0094	-.0094			
-16.00	-.0107	-.0107	-.0109	-.0110	-.0113	-.0112	-.0109	-.0097	-.0097
	-.0097	-.0097	-.0097	-.0097	-.0097	-.0097			

-15.00	-.0107	-.0107	-.0109	-.0110	-.0114	-.0112	-.0109	-.0098	-.0098
	-.0098	-.0098	-.0098	-.0098	-.0098	-.0098			
-14.00	-.0108	-.0108	-.0110	-.0111	-.0115	-.0113	-.0110	-.0098	-.0098
	-.0098	-.0098	-.0098	-.0098	-.0098	-.0098			
-13.00	-.0110	-.0110	-.0112	-.0113	-.0115	-.0115	-.0113	-.0099	-.0099
	-.0099	-.0099	-.0099	-.0099	-.0099	-.0099			
-12.00	-.0113	-.0113	-.0115	-.0115	-.0116	-.0117	-.0115	-.0106	-.0106
	-.0106	-.0106	-.0106	-.0106	-.0106	-.0106			
-11.00	-.0115	-.0115	-.0115	-.0117	-.0117	-.0118	-.0117	-.0110	-.0110
	-.0110	-.0110	-.0110	-.0110	-.0110	-.0110			
-10.00	-.0118	-.0118	-.0119	-.0119	-.0119	-.0119	-.0117	-.0112	-.0112
	-.0112	-.0112	-.0112	-.0112	-.0112	-.0112			
-9.00	-.0120	-.0120	-.0120	-.0121	-.0121	-.0120	-.0118	-.0111	-.0111
	-.0111	-.0111	-.0111	-.0111	-.0111	-.0111			
-8.00	-.0122	-.0122	-.0122	-.0123	-.0123	-.0121	-.0119	-.0111	-.0111
	-.0111	-.0111	-.0111	-.0111	-.0111	-.0111			
-7.00	-.0124	-.0124	-.0124	-.0124	-.0124	-.0122	-.0118	-.0110	-.0110
	-.0110	-.0110	-.0110	-.0110	-.0110	-.0110			
-6.00	-.0126	-.0126	-.0126	-.0125	-.0124	-.0122	-.0117	-.0110	-.0110
	-.0110	-.0110	-.0110	-.0110	-.0110	-.0110			
-5.00	-.0127	-.0127	-.0127	-.0126	-.0120	-.0122	-.0113	-.0109	-.0109
	-.0109	-.0109	-.0109	-.0109	-.0109	-.0109			
-4.00	-.0129	-.0129	-.0128	-.0121	-.0116	-.0121	-.0108	-.0108	-.0108
	-.0108	-.0108	-.0108	-.0108	-.0108	-.0108			
-3.00	-.0129	-.0129	-.0128	-.0117	-.0115	-.0121	-.0107	-.0108	-.0108
	-.0108	-.0108	-.0108	-.0108	-.0108	-.0108			
-2.00	-.0130	-.0130	-.0129	-.0116	-.0115	-.0120	-.0107	-.0107	-.0107
	-.0107	-.0107	-.0107	-.0107	-.0107	-.0107			
-1.00	-.0131	-.0131	-.0128	-.0116	-.0114	-.0119	-.0106	-.0107	-.0107
	-.0107	-.0107	-.0107	-.0107	-.0107	-.0107			
.00	-.0132	-.0132	-.0126	-.0115	-.0113	-.0119	-.0106	-.0106	-.0106
	-.0106	-.0106	-.0106	-.0106	-.0106	-.0106			
1.00	-.0133	-.0133	-.0125	-.0114	-.0113	-.0118	-.0105	-.0106	-.0106
	-.0106	-.0106	-.0106	-.0106	-.0106	-.0106			
2.00	-.0133	-.0133	-.0124	-.0114	-.0112	-.0117	-.0104	-.0105	-.0105
	-.0105	-.0105	-.0105	-.0105	-.0105	-.0105			
3.00	-.0133	-.0133	-.0123	-.0113	-.0112	-.0117	-.0104	-.0104	-.0104
	-.0104	-.0104	-.0104	-.0104	-.0104	-.0104			
4.00	-.0132	-.0132	-.0122	-.0113	-.0111	-.0116	-.0103	-.0104	-.0104
	-.0104	-.0104	-.0104	-.0104	-.0104	-.0104			
5.00	-.0131	-.0131	-.0120	-.0112	-.0110	-.0115	-.0103	-.0103	-.0103
	-.0103	-.0103	-.0103	-.0103	-.0103	-.0103			
6.00	-.0128	-.0128	-.0119	-.0111	-.0110	-.0115	-.0102	-.0103	-.0103
	-.0103	-.0103	-.0103	-.0103	-.0103	-.0103			
7.00	-.0127	-.0127	-.0118	-.0111	-.0109	-.0114	-.0102	-.0102	-.0102
	-.0102	-.0102	-.0102	-.0102	-.0102	-.0102			
8.00	-.0126	-.0126	-.0116	-.0110	-.0108	-.0113	-.0101	-.0101	-.0101
	-.0101	-.0101	-.0101	-.0101	-.0101	-.0101			
9.00	-.0125	-.0125	-.0115	-.0109	-.0108	-.0113	-.0100	-.0101	-.0101
	-.0101	-.0101	-.0101	-.0101	-.0101	-.0101			
10.00	-.0119	-.0119	-.0114	-.0109	-.0107	-.0112	-.0100	-.0100	-.0100
	-.0100	-.0100	-.0100	-.0100	-.0100	-.0100			
11.00	-.0117	-.0117	-.0117	-.0108	-.0107	-.0111	-.0099	-.0100	-.0100
	-.0100	-.0100	-.0100	-.0100	-.0100	-.0100			
12.00	-.0119	-.0119	-.0149	-.0107	-.0106	-.0111	-.0099	-.0099	-.0099
	-.0099	-.0099	-.0099	-.0099	-.0099	-.0099			
13.00	-.0121	-.0121	-.0151	-.0107	-.0105	-.0110	-.0098	-.0098	-.0098
	-.0098	-.0098	-.0098	-.0098	-.0098	-.0098			
14.00	-.0140	-.0140	-.0149	-.0106	-.0105	-.0109	-.0097	-.0098	-.0098
	-.0098	-.0098	-.0098	-.0098	-.0098	-.0098			
15.00	-.0139	-.0139	-.0148	-.0105	-.0104	-.0109	-.0097	-.0097	-.0097
	-.0097	-.0097	-.0097	-.0097	-.0097	-.0097			
16.00	-.0138	-.0138	-.0147	-.0105	-.0103	-.0108	-.0096	-.0097	-.0097
	-.0097	-.0097	-.0097	-.0097	-.0097	-.0097			
21.00	-.0134	-.0134	-.0143	-.0102	-.0100	-.0105	-.0093	-.0094	-.0094
	-.0094	-.0094	-.0094	-.0094	-.0094	-.0094			
30.00	-.0127	-.0127	-.0135	-.0096	-.0095	-.0099	-.0088	-.0088	-.0088
	-.0088	-.0088	-.0088	-.0088	-.0088	-.0088			
50.00	-.0110	-.0110	-.0117	-.0083	-.0082	-.0086	-.0076	-.0077	-.0077
	-.0077	-.0077	-.0077	-.0077	-.0077	-.0077			
60.00	-.0101	-.0101	-.0108	-.0077	-.0076	-.0079	-.0070	-.0071	-.0071
	-.0071	-.0071	-.0071	-.0071	-.0071	-.0071			
70.00	-.0093	-.0093	-.0099	-.0070	-.0069	-.0073	-.0065	-.0065	-.0065
	-.0065	-.0065	-.0065	-.0065	-.0065	-.0065			
80.00	-.0084	-.0084	-.0090	-.0064	-.0063	-.0066	-.0059	-.0059	-.0059
	-.0059	-.0059	-.0059	-.0059	-.0059	-.0059			
90.00	-.0076	-.0076	-.0081	-.0058	-.0057	-.0059	-.0053	-.0053	-.0053
	-.0053	-.0053	-.0053	-.0053	-.0053	-.0053			
100.00	-.0067	-.0067	-.0072	-.0051	-.0050	-.0053	-.0047	-.0047	-.0047
	-.0047	-.0047	-.0047	-.0047	-.0047	-.0047			
110.00	-.0059	-.0059	-.0063	-.0045	-.0044	-.0046	-.0041	-.0041	-.0041
	-.0041	-.0041	-.0041	-.0041	-.0041	-.0041			
120.00	-.0051	-.0051	-.0054	-.0038	-.0038	-.0040	-.0035	-.0035	-.0035
	-.0035	-.0035	-.0035	-.0035	-.0035	-.0035			
140.00	-.0034	-.0034	-.0036	-.0026	-.0025	-.0026	-.0023	-.0024	-.0024
	-.0024	-.0024	-.0024	-.0024	-.0024	-.0024			
160.00	-.0017	-.0017	-.0018	-.0013	-.0013	-.0013	-.0012	-.0012	-.0012
	-.0012	-.0012	-.0012	-.0012	-.0012	-.0012			
170.00	-.0008	-.0008	-.0009	-.0006	-.0006	-.0007	-.0006	-.0006	-.0006
	-.0006	-.0006	-.0006	-.0006	-.0006	-.0006			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

AIRF	INTERPOLATED DATA			156115611561		NACA-0015 (D=-20.0 DEGS.)			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452	.7452
	.7452	.7452	.7452	.7452	.7452	.7452			
-160.00	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471	.6471
	.6471	.6471	.6471	.6471	.6471	.6471			
-140.00	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000			
-120.00	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548	.7548
	.7548	.7548	.7548	.7548	.7548	.7548			
-110.00	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823	.4823
	.4823	.4823	.4823	.4823	.4823	.4823			
-100.00	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097	.2097
	.2097	.2097	.2097	.2097	.2097	.2097			
-90.00	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627
	-.0627	-.0627	-.0627	-.0627	-.0627	-.0627			
-80.00	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352
	-.3352	-.3352	-.3352	-.3352	-.3352	-.3352			
-70.00	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077
	-.6077	-.6077	-.6077	-.6077	-.6077	-.6077			
-60.00	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802
	-.8802	-.8802	-.8802	-.8802	-.8802	-.8802			
-50.00	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528
	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528	-1.1528			
-30.00	-.9900	-.9900	-.9950	-1.0050	-1.0100	-1.0150	-1.0150	-1.0150	-1.0150
	-1.0150	-.9450	-.9300	-.9200	-.9100	-.9100			
-21.00	-.8000	-.8000	-.8100	-.8300	-.8400	-.8500	-.8500	-.8500	-.8500
	-.8500	-.7100	-.6800	-.6600	-.6400	-.6400			
-16.00	-1.0680	-1.0680	-.9927	-.9917	-.9825	-.9733	-.9717	-.9700	-.9700
	-.9700	-.8067	-.7700	-.7400	-.7100	-.7100			
-15.00	-1.1900	-1.1900	-1.0900	-1.0550	-1.0225	-.9900	-.9850	-.9800	-.9800
	-.9800	-.8300	-.7900	-.7600	-.7300	-.7300			
-14.00	-2.0655	-2.0655	-2.0595	-1.0774	-1.0333	-.9884	-.9819	-.9648	-.9648
	-.9648	-.8256	-.7847	-.7555	-.7263	-.7263			
-13.00	-2.0022	-2.0022	-2.0809	-1.0758	-1.0271	-.9775	-.9710	-.9356	-.9356
	-.9356	-.8042	-.7641	-.7360	-.7079	-.7079			
-12.00	-1.9513	-1.9513	-2.0280	-1.0669	-1.0153	-.9637	-.9577	-.9012	-.9012
	-.9012	-.7764	-.7378	-.7109	-.6840	-.6840			
-11.00	-1.8840	-1.8840	-1.9479	-1.0557	-1.0017	-.9490	-.9436	-.8648	-.8648
	-.8648	-.7461	-.7092	-.6836	-.6579	-.6579			
-10.00	-1.8540	-1.8540	-1.8598	-1.0440	-.9875	-.9340	-.9293	-.8276	-.8276
	-.8276	-.7150	-.6799	-.6555	-.6311	-.6311			
-9.00	-1.8297	-1.8297	-1.7822	-1.0320	-.9730	-.9188	-.9150	-.7902	-.7902
	-.7902	-.6834	-.6502	-.6271	-.6040	-.6040			
-8.00	-1.7743	-1.7743	-1.7085	-1.0199	-.9585	-.9037	-.9006	-.7526	-.7526
	-.7526	-.6518	-.6204	-.5986	-.5767	-.5767			
-7.00	-1.7131	-1.7131	-1.6358	-1.0079	-.9440	-.8885	-.8862	-.7150	-.7150
	-.7150	-.6201	-.5905	-.5700	-.5494	-.5494			
-6.00	-1.6464	-1.6464	-1.5633	-.9958	-.9294	-.8733	-.8718	-.6774	-.6774
	-.6774	-.5884	-.5607	-.5414	-.5221	-.5221			
-5.00	-1.5908	-1.5908	-1.4910	-.9838	-.9149	-.8581	-.8574	-.6398	-.6398
	-.6398	-.5567	-.5308	-.5128	-.4948	-.4948			
-4.00	-1.5157	-1.5157	-1.4186	-.9717	-.9004	-.8429	-.8430	-.6021	-.6021
	-.6021	-.5250	-.5009	-.4842	-.4675	-.4675			
-3.00	-1.4351	-1.4351	-1.3463	-.9596	-.8858	-.8278	-.8285	-.5645	-.5645
	-.5645	-.4933	-.4711	-.4556	-.4402	-.4402			
-2.00	-1.3499	-1.3499	-1.2739	-.9474	-.8712	-.8126	-.8141	-.5269	-.5269
	-.5269	-.4616	-.4412	-.4270	-.4129	-.4129			
-1.00	-1.2598	-1.2598	-1.2014	-.9351	-.8565	-.7973	-.7996	-.4892	-.4892
	-.4892	-.4298	-.4113	-.3985	-.3856	-.3856			
.00	-1.1687	-1.1687	-1.1283	-.9221	-.8416	-.7820	-.7849	-.4516	-.4516
	-.4516	-.3981	-.3814	-.3699	-.3583	-.3583			
1.00	-1.0683	-1.0683	-1.0534	-.9071	-.8259	-.7664	-.7696	-.4140	-.4140
	-.4140	-.3664	-.3516	-.3413	-.3310	-.3310			
2.00	-.9721	-.9721	-.9710	-.8853	-.8078	-.7500	-.7523	-.3763	-.3763
	-.3763	-.3347	-.3217	-.3127	-.3036	-.3036			
3.00	-.8741	-.8741	-.8734	-.8410	-.7823	-.7308	-.7286	-.3386	-.3386
	-.3386	-.3029	-.2918	-.2840	-.2763	-.2763			
4.00	-.7745	-.7745	-.7741	-.7561	-.7346	-.7032	-.6844	-.3009	-.3009
	-.3009	-.2711	-.2618	-.2553	-.2488	-.2488			
5.00	-.6718	-.6718	-.6709	-.6680	-.6485	-.6491	-.6026	-.2630	-.2630
	-.2630	-.2390	-.2316	-.2264	-.2212	-.2212			
6.00	-.5696	-.5696	-.5683	-.5637	-.5588	-.5476	-.5141	-.2246	-.2246
	-.2246	-.2065	-.2008	-.1969	-.1930	-.1930			
7.00	-.4636	-.4636	-.4614	-.4585	-.4538	-.4412	-.4120	-.1849	-.1849
	-.1849	-.1725	-.1686	-.1659	-.1632	-.1632			
8.00	-.3565	-.3565	-.3535	-.3493	-.3437	-.3308	-.3046	-.1418	-.1418
	-.1418	-.1348	-.1326	-.1311	-.1296	-.1296			
9.00	-.2487	-.2487	-.2444	-.2381	-.2315	-.2176	-.1910	-.0897	-.0897
	-.0897	-.0873	-.0865	-.0860	-.0855	-.0855			
10.00	-.1404	-.1404	-.1358	-.1258	-.1165	-.1024	-.0748	-.0138	-.0138
	-.0138	-.0138	-.0138	-.0138	-.0138	-.0138			
11.00	-.0320	-.0320	-.0244	-.0134	-.0017	.0137	.0409	.1029	.1029
	.1029	.1029	.1029	.1029	.1029	.1029			
12.00	.0765	.0765	.0839	.0993	.1133	.1288	.1589	.2011	.2011
	.2011	.2011	.2011	.2011	.2011	.2011			
13.00	.1846	.1846	.1955	.2124	.4160	.2471	.2601	.2523	.2523
	.2523	.2523	.2523	.2523	.2523	.2523			
14.00	.2924	.2924	.3034	.3248	.7826	.3530	.3206	.6226	.6226
	.6226	.5506	.5301	.5152	.5004	.5004			

15.00	1.1900	1.1900	1.0900	1.0550	1.0225	.9900	.9850	.9800	.9800
	.9800	.8300	.7900	.7600	.7300	.7300			
16.00	1.0680	1.0680	.9927	.9917	.9825	.9733	.9717	.9700	.9700
	.9700	.8067	.7700	.7400	.7100	.7100			
21.00	.8000	.8000	.8100	.8300	.8400	.8500	.8500	.8500	.8500
	.8500	.7100	.6800	.6600	.6400	.6400			
30.00	.9900	.9900	.9950	1.0050	1.0100	1.0150	1.0150	1.0150	1.0150
	1.0150	.9450	.9300	.9200	.9100	.9100			
50.00	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528
	1.1528	1.1528	1.1528	1.1528	1.1528	1.1528			
60.00	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802	.8802
	.8802	.8802	.8802	.8802	.8802	.8802			
70.00	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077	.6077
	.6077	.6077	.6077	.6077	.6077	.6077			
80.00	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352	.3352
	.3352	.3352	.3352	.3352	.3352	.3352			
90.00	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627	.0627
	.0627	.0627	.0627	.0627	.0627	.0627			
100.00	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097
	-.2097	-.2097	-.2097	-.2097	-.2097	-.2097			
110.00	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823
	-.4823	-.4823	-.4823	-.4823	-.4823	-.4823			
120.00	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548
	-.7548	-.7548	-.7548	-.7548	-.7548	-.7548			
140.00	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000
	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000			
160.00	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471
	-.6471	-.6471	-.6471	-.6471	-.6471	-.6471			
170.00	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452
	-.7452	-.7452	-.7452	-.7452	-.7452	-.7452			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
-170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
-160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
-140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
-120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
-110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
-100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
-80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
-70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
-60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
-50.00	1.3920	1.3920	1.3920	1.3920	1.3925	1.3930	1.3955	1.3980	1.3969
	1.3934	1.3920	1.3920	1.3920	1.3920	1.3920			
-30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
-21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
-16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
-15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
-14.00	.0944	.0944	.1076	.1703	.1825	.1953	.2038	.2128	.2220
	.2318	.2470	.2602	.2652	.2671	.2671			
-13.00	.0768	.0768	.1068	.1593	.1709	.1836	.1916	.2013	.2104
	.2199	.2347	.2473	.2505	.2502	.2502			
-12.00	.0709	.0709	.0992	.1500	.1612	.1737	.1809	.1919	.2007
	.2098	.2241	.2360	.2386	.2374	.2374			
-11.00	.0662	.0662	.0755	.1411	.1520	.1643	.1707	.1833	.1916
	.2004	.2140	.2254	.2276	.2262	.2262			
-10.00	.0626	.0626	.0682	.1324	.1430	.1551	.1607	.1749	.1829
	.1913	.2042	.2150	.2170	.2156	.2156			
-9.00	.0598	.0598	.0650	.1238	.1341	.1459	.1507	.1667	.1742
	.1822	.1945	.2047	.2066	.2052	.2052			
-8.00	.0557	.0557	.0615	.1152	.1251	.1367	.1407	.1585	.1656
	.1732	.1848	.1944	.1962	.1949	.1949			
-7.00	.0517	.0517	.0579	.1065	.1162	.1276	.1307	.1503	.1570
	.1641	.1751	.1842	.1859	.1846	.1846			
-6.00	.0480	.0480	.0542	.0979	.1073	.1184	.1207	.1421	.1485
	.1551	.1654	.1739	.1755	.1743	.1743			
-5.00	.0444	.0444	.0506	.0893	.0984	.1093	.1107	.1340	.1399
	.1461	.1557	.1637	.1652	.1641	.1641			
-4.00	.0410	.0410	.0470	.0807	.0895	.1002	.1007	.1258	.1313
	.1371	.1460	.1534	.1548	.1538	.1538			
-3.00	.0376	.0376	.0434	.0720	.0806	.0910	.0908	.1176	.1227
	.1281	.1363	.1432	.1445	.1435	.1435			
-2.00	.0346	.0346	.0398	.0634	.0718	.0819	.0808	.1095	.1141
	.1191	.1266	.1330	.1341	.1333	.1333			
-1.00	.0317	.0317	.0362	.0548	.0629	.0727	.0708	.1013	.1056
	.1100	.1170	.1227	.1238	.1230	.1230			

.00	.0290	.0290	.0326	.0463	.0540	.0636	.0609	.0931	.0970
	.1010	.1073	.1125	.1135	.1127	.1127			
1.00	.0267	.0267	.0291	.0379	.0452	.0545	.0510	.0850	.0884
	.0920	.0976	.1022	.1031	.1025	.1025			
2.00	.0245	.0245	.0260	.0302	.0367	.0454	.0413	.0768	.0798
	.0830	.0879	.0920	.0928	.0922	.0922			
3.00	.0224	.0224	.0237	.0245	.0288	.0366	.0324	.0686	.0712
	.0740	.0782	.0818	.0824	.0820	.0820			
4.00	.0207	.0207	.0216	.0226	.0231	.0285	.0259	.0605	.0627
	.0650	.0686	.0715	.0721	.0717	.0717			
5.00	.0192	.0192	.0198	.0208	.0212	.0226	.0237	.0523	.0541
	.0560	.0589	.0613	.0618	.0615	.0615			
6.00	.0180	.0180	.0183	.0190	.0197	.0206	.0218	.0443	.0457
	.0471	.0494	.0512	.0516	.0513	.0513			
7.00	.0170	.0170	.0171	.0176	.0180	.0189	.0200	.0364	.0374
	.0384	.0400	.0413	.0416	.0414	.0414			
8.00	.0163	.0163	.0162	.0165	.0169	.0175	.0186	.0290	.0296
	.0302	.0311	.0319	.0321	.0320	.0320			
9.00	.0159	.0159	.0157	.0158	.0161	.0167	.0177	.0228	.0230
	.0233	.0237	.0240	.0241	.0240	.0240			
10.00	.0157	.0157	.0155	.0155	.0158	.0163	.0172	.0198	.0198
	.0198	.0198	.0198	.0198	.0198	.0198			
11.00	.0159	.0159	.0156	.0157	.0160	.0164	.0173	.0241	.0241
	.0241	.0241	.0241	.0241	.0241	.0241			
12.00	.0163	.0163	.0161	.0162	.0165	.0169	.0194	.0332	.0332
	.0332	.0332	.0332	.0332	.0332	.0332			
13.00	.0171	.0171	.0169	.0172	.0661	.0185	.0263	.0459	.0459
	.0459	.0459	.0459	.0459	.0459	.0459			
14.00	.0182	.0182	.0182	.0186	.1385	.0235	.0372	.1353	.1400
	.1448	.1525	.1594	.1625	.1645	.1645			
15.00	.1112	.1112	.1546	.1866	.1995	.2124	.2210	.2296	.2387
	.2482	.2634	.2776	.2868	.2948	.2948			
16.00	.1602	.1602	.1862	.2126	.2254	.2381	.2460	.2539	.2621
	.2706	.2848	.2998	.3161	.3346	.3346			
21.00	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320	.3320
	.3320	.3320	.3320	.3350	.3400	.3400			
30.00	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620	.5620
	.5620	.5620	.5620	.5620	.5620	.5620			
50.00	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920
	1.3920	1.3920	1.3920	1.3920	1.3920	1.3920			
60.00	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620
	1.6620	1.6620	1.6620	1.6620	1.6620	1.6620			
70.00	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420
	1.8420	1.8420	1.8420	1.8420	1.8420	1.8420			
80.00	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620
	1.9620	1.9620	1.9620	1.9620	1.9620	1.9620			
90.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
100.00	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220
	2.0220	2.0220	2.0220	2.0220	2.0220	2.0220			
110.00	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520
	1.8520	1.8520	1.8520	1.8520	1.8520	1.8520			
120.00	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520
	1.6520	1.6520	1.6520	1.6520	1.6520	1.6520			
140.00	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420
	1.0420	1.0420	1.0420	1.0420	1.0420	1.0420			
160.00	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020	.3020
	.3020	.3020	.3020	.3020	.3020	.3020			
170.00	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320	.1320
	.1320	.1320	.1320	.1320	.1320	.1320			
180.00	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220	.0220
	.0220	.0220	.0220	.0220	.0220	.0220			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000	.4000
	.4000	.4000	.4000	.4000	.4000	.4000			
-160.00	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000	.3000
	.3000	.3000	.3000	.3000	.3000	.3000			
-140.00	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600	.4600
	.4600	.4600	.4600	.4600	.4600	.4600			
-120.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-110.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-100.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-90.00	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
	.5000	.5000	.5000	.5000	.5000	.5000			
-80.00	.4457	.4457	.4473	.4493	.4508	.4523	.4541	.4558	.4571
	.4583	.4607	.4628	.4646	.4663	.4663			
-70.00	.3913	.3913	.3947	.3987	.4017	.4047	.4082	.4117	.4142
	.4167	.4213	.4257	.4292	.4327	.4327			
-60.00	.3370	.3370	.3420	.3480	.3525	.3570	.3623	.3675	.3713
	.3750	.3820	.3885	.3938	.3990	.3990			
-50.00	.2827	.2827	.2893	.2973	.3033	.3093	.3163	.3233	.3283
	.3333	.3427	.3513	.3583	.3653	.3653			
-30.00	.1740	.1740	.1840	.1960	.2050	.2140	.2245	.2350	.2425
	.2500	.2640	.2770	.2875	.2980	.2980			
-21.00	.1009	.1009	.1066	.1160	.1233	.1306	.1368	.1430	.1493
	.1556	.1699	.1974	.2101	.2229	.2229			
-16.00	.0730	.0730	.0780	.0860	.0915	.0970	.1025	.1080	.1125
	.1170	.1370	.1760	.1880	.2000	.2000			

-15.00	.0540	.0540	.0650	.0730	.0785	.0840	.0905	.0970	.1040
	.1110	.1330	.1730	.1840	.1950	.1950			
-14.00	.0938	.0938	.0868	.0715	.0763	.0820	.0887	.0945	.1027
	.1110	.1335	.1730	.1833	.1935	.1935			
-13.00	.0914	.0914	.1043	.0768	.0809	.0867	.0928	.0976	.1061
	.1145	.1366	.1749	.1845	.1942	.1942			
-12.00	.0992	.0992	.1139	.0842	.0876	.0935	.0988	.1028	.1111
	.1194	.1407	.1774	.1866	.1958	.1958			
-11.00	.1057	.1057	.1057	.0921	.0951	.1010	.1054	.1088	.1168
	.1248	.1452	.1802	.1889	.1976	.1976			
-10.00	.1188	.1188	.1110	.1003	.1028	.1087	.1122	.1152	.1228
	.1304	.1498	.1831	.1913	.1996	.1996			
-9.00	.1339	.1339	.1197	.1085	.1105	.1164	.1190	.1216	.1288
	.1360	.1544	.1860	.1938	.2017	.2017			
-8.00	.1436	.1436	.1279	.1167	.1183	.1242	.1259	.1281	.1349
	.1417	.1591	.1889	.1963	.2037	.2037			
-7.00	.1525	.1525	.1361	.1250	.1261	.1320	.1327	.1346	.1410
	.1474	.1638	.1918	.1988	.2058	.2058			
-6.00	.1608	.1608	.1442	.1332	.1340	.1398	.1396	.1411	.1471
	.1531	.1685	.1948	.2013	.2079	.2079			
-5.00	.1713	.1713	.1523	.1414	.1418	.1476	.1464	.1476	.1532
	.1588	.1731	.1977	.2038	.2099	.2099			
-4.00	.1784	.1784	.1604	.1497	.1496	.1554	.1533	.1541	.1593
	.1645	.1778	.2006	.2063	.2120	.2120			
-3.00	.1846	.1846	.1685	.1579	.1574	.1632	.1602	.1606	.1654
	.1702	.1825	.2036	.2088	.2141	.2141			
-2.00	.1900	.1900	.1766	.1662	.1652	.1710	.1670	.1671	.1715
	.1760	.1872	.2065	.2113	.2161	.2161			
-1.00	.1944	.1944	.1847	.1744	.1730	.1788	.1739	.1736	.1776
	.1817	.1919	.2095	.2138	.2182	.2182			
.00	.1987	.1987	.1927	.1826	.1808	.1866	.1807	.1801	.1837
	.1874	.1966	.2124	.2163	.2203	.2203			
1.00	.2012	.2012	.2003	.1908	.1886	.1943	.1876	.1866	.1898
	.1931	.2013	.2153	.2188	.2223	.2223			
2.00	.2043	.2043	.2065	.1988	.1964	.2021	.1946	.1931	.1959
	.1988	.2060	.2183	.2213	.2244	.2244			
3.00	.2071	.2071	.2098	.2064	.2041	.2097	.2018	.1996	.2021
	.2045	.2106	.2212	.2238	.2265	.2265			
4.00	.2095	.2095	.2127	.2132	.2115	.2170	.2098	.2061	.2082
	.2102	.2153	.2242	.2264	.2285	.2285			
5.00	.2112	.2112	.2147	.2193	.2185	.2232	.2190	.2126	.2143
	.2159	.2200	.2271	.2289	.2306	.2306			
6.00	.2130	.2130	.2167	.2216	.2247	.2273	.2268	.2191	.2203
	.2216	.2247	.2300	.2314	.2327	.2327			
7.00	.2138	.2138	.2177	.2237	.2273	.2304	.2316	.2255	.2264
	.2272	.2294	.2330	.2339	.2348	.2348			
8.00	.2142	.2142	.2184	.2249	.2287	.2324	.2353	.2318	.2323
	.2328	.2340	.2360	.2366	.2371	.2371			
9.00	.2144	.2144	.2187	.2255	.2297	.2339	.2377	.2377	.2379
	.2381	.2385	.2392	.2394	.2395	.2395			
10.00	.2143	.2143	.2190	.2258	.2301	.2351	.2399	.2427	.2427
	.2427	.2427	.2427	.2427	.2427	.2427			
11.00	.2140	.2140	.2183	.2260	.2305	.2362	.2428	.2431	.2431
	.2431	.2431	.2431	.2431	.2431	.2431			
12.00	.2134	.2134	.2187	.2261	.2309	.2378	.2446	.2395	.2395
	.2395	.2395	.2395	.2395	.2395	.2395			
13.00	.2127	.2127	.2177	.2259	.1428	.2390	.2426	.2309	.2309
	.2309	.2309	.2309	.2309	.2309	.2309			
14.00	.2116	.2116	.2173	.2259	.0166	.2382	.2376	.0680	.0641
	.0601	.0488	.0288	.0235	.0182	.0182			
15.00	-.0540	-.0540	-.0650	-.0730	-.0785	-.0840	-.0905	-.0970	-.1040
	-.1110	-.1330	-.1730	-.1840	-.1950	-.1950			
16.00	-.0730	-.0730	-.0780	-.0860	-.0915	-.0970	-.1025	-.1080	-.1125
	-.1170	-.1370	-.1760	-.1880	-.2000	-.2000			
21.00	-.1009	-.1009	-.1066	-.1160	-.1233	-.1306	-.1368	-.1430	-.1493
	-.1556	-.1699	-.1974	-.2101	-.2229	-.2229			
30.00	-.1740	-.1740	-.1840	-.1960	-.2050	-.2140	-.2245	-.2350	-.2425
	-.2500	-.2640	-.2770	-.2875	-.2980	-.2980			
50.00	-.2827	-.2827	-.2893	-.2973	-.3033	-.3093	-.3163	-.3233	-.3283
	-.3333	-.3427	-.3513	-.3583	-.3653	-.3653			
60.00	-.3370	-.3370	-.3420	-.3480	-.3525	-.3570	-.3623	-.3675	-.3713
	-.3750	-.3820	-.3885	-.3938	-.3990	-.3990			
70.00	-.3913	-.3913	-.3947	-.3987	-.4017	-.4047	-.4082	-.4117	-.4142
	-.4167	-.4213	-.4257	-.4292	-.4327	-.4327			
80.00	-.4457	-.4457	-.4473	-.4493	-.4508	-.4523	-.4541	-.4558	-.4571
	-.4583	-.4607	-.4628	-.4646	-.4663	-.4663			
90.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
100.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
110.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
120.00	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000
	-.5000	-.5000	-.5000	-.5000	-.5000	-.5000			
140.00	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600
	-.4600	-.4600	-.4600	-.4600	-.4600	-.4600			
160.00	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000
	-.3000	-.3000	-.3000	-.3000	-.3000	-.3000			
170.00	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000
	-.4000	-.4000	-.4000	-.4000	-.4000	-.4000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

FLAP	INTERPOLATED DATA 156115611561 NACA-0015 (D=-20.0 DEGS.)								
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	-.0081	-.0081	-.0084	-.0091	-.0090	-.0093	-.0085	-.0086	-.0086
	-.0086	-.0086	-.0086	-.0086	-.0086	-.0086			
-160.00	-.0161	-.0161	-.0167	-.0181	-.0180	-.0186	-.0170	-.0173	-.0173
	-.0173	-.0173	-.0173	-.0173	-.0173	-.0173			
-140.00	-.0322	-.0322	-.0335	-.0362	-.0360	-.0371	-.0341	-.0346	-.0346
	-.0346	-.0346	-.0346	-.0346	-.0346	-.0346			
-120.00	-.0483	-.0483	-.0502	-.0543	-.0539	-.0557	-.0511	-.0519	-.0519
	-.0519	-.0519	-.0519	-.0519	-.0519	-.0519			
-110.00	-.0564	-.0564	-.0586	-.0634	-.0629	-.0650	-.0596	-.0605	-.0605
	-.0605	-.0605	-.0605	-.0605	-.0605	-.0605			
-100.00	-.0644	-.0644	-.0669	-.0724	-.0719	-.0742	-.0681	-.0692	-.0692
	-.0692	-.0692	-.0692	-.0692	-.0692	-.0692			
-90.00	-.0725	-.0725	-.0753	-.0815	-.0809	-.0835	-.0766	-.0778	-.0778
	-.0778	-.0778	-.0778	-.0778	-.0778	-.0778			
-80.00	-.0805	-.0805	-.0837	-.0905	-.0899	-.0928	-.0852	-.0865	-.0865
	-.0865	-.0865	-.0865	-.0865	-.0865	-.0865			
-70.00	-.0886	-.0886	-.0920	-.0996	-.0989	-.1021	-.0937	-.0951	-.0951
	-.0951	-.0951	-.0951	-.0951	-.0951	-.0951			
-60.00	-.0967	-.0967	-.1004	-.1087	-.1079	-.1114	-.1022	-.1038	-.1038
	-.1038	-.1038	-.1038	-.1038	-.1038	-.1038			
-50.00	-.1047	-.1047	-.1088	-.1177	-.1169	-.1207	-.1107	-.1124	-.1124
	-.1124	-.1124	-.1124	-.1124	-.1124	-.1124			
-30.00	-.1208	-.1208	-.1255	-.1358	-.1348	-.1392	-.1277	-.1297	-.1297
	-.1297	-.1297	-.1297	-.1297	-.1297	-.1297			
-21.00	-.1281	-.1281	-.1330	-.1440	-.1429	-.1476	-.1354	-.1375	-.1375
	-.1375	-.1375	-.1375	-.1375	-.1375	-.1375			
-16.00	-.1321	-.1321	-.1372	-.1485	-.1474	-.1522	-.1397	-.1418	-.1418
	-.1418	-.1418	-.1418	-.1418	-.1418	-.1418			
-15.00	-.1329	-.1329	-.1381	-.1494	-.1483	-.1531	-.1405	-.1427	-.1427
	-.1427	-.1427	-.1427	-.1427	-.1427	-.1427			
-14.00	-.1337	-.1337	-.1389	-.1503	-.1492	-.1541	-.1414	-.1435	-.1435
	-.1435	-.1435	-.1435	-.1435	-.1435	-.1435			
-13.00	-.1250	-.1250	-.1435	-.1512	-.1501	-.1550	-.1422	-.1444	-.1444
	-.1444	-.1444	-.1444	-.1444	-.1444	-.1444			
-12.00	-.1264	-.1264	-.1455	-.1521	-.1510	-.1559	-.1431	-.1453	-.1453
	-.1453	-.1453	-.1453	-.1453	-.1453	-.1453			
-11.00	-.1274	-.1274	-.1295	-.1530	-.1519	-.1569	-.1439	-.1461	-.1461
	-.1461	-.1461	-.1461	-.1461	-.1461	-.1461			
-10.00	-.1332	-.1332	-.1295	-.1539	-.1528	-.1578	-.1448	-.1470	-.1470
	-.1470	-.1470	-.1470	-.1470	-.1470	-.1470			
-9.00	-.1425	-.1425	-.1332	-.1548	-.1537	-.1587	-.1456	-.1479	-.1479
	-.1479	-.1479	-.1479	-.1479	-.1479	-.1479			
-8.00	-.1471	-.1471	-.1368	-.1557	-.1546	-.1596	-.1465	-.1487	-.1487
	-.1487	-.1487	-.1487	-.1487	-.1487	-.1487			
-7.00	-.1516	-.1516	-.1405	-.1566	-.1555	-.1606	-.1473	-.1496	-.1496
	-.1496	-.1496	-.1496	-.1496	-.1496	-.1496			
-6.00	-.1559	-.1559	-.1442	-.1576	-.1564	-.1615	-.1482	-.1505	-.1505
	-.1505	-.1505	-.1505	-.1505	-.1505	-.1505			
-5.00	-.1621	-.1621	-.1478	-.1585	-.1573	-.1624	-.1490	-.1513	-.1513
	-.1513	-.1513	-.1513	-.1513	-.1513	-.1513			
-4.00	-.1659	-.1659	-.1515	-.1594	-.1582	-.1633	-.1499	-.1522	-.1522
	-.1522	-.1522	-.1522	-.1522	-.1522	-.1522			
-3.00	-.1688	-.1688	-.1552	-.1603	-.1591	-.1643	-.1507	-.1531	-.1531
	-.1531	-.1531	-.1531	-.1531	-.1531	-.1531			
-2.00	-.1711	-.1711	-.1588	-.1612	-.1600	-.1652	-.1516	-.1539	-.1539
	-.1539	-.1539	-.1539	-.1539	-.1539	-.1539			
-1.00	-.1726	-.1726	-.1625	-.1621	-.1609	-.1661	-.1524	-.1548	-.1548
	-.1548	-.1548	-.1548	-.1548	-.1548	-.1548			
.00	-.1738	-.1738	-.1662	-.1630	-.1618	-.1671	-.1533	-.1557	-.1557
	-.1557	-.1557	-.1557	-.1557	-.1557	-.1557			
1.00	-.1737	-.1737	-.1698	-.1639	-.1627	-.1680	-.1541	-.1565	-.1565
	-.1565	-.1565	-.1565	-.1565	-.1565	-.1565			
2.00	-.1738	-.1738	-.1735	-.1648	-.1636	-.1689	-.1550	-.1574	-.1574
	-.1574	-.1574	-.1574	-.1574	-.1574	-.1574			
3.00	-.1737	-.1737	-.1739	-.1657	-.1645	-.1698	-.1558	-.1582	-.1582
	-.1582	-.1582	-.1582	-.1582	-.1582	-.1582			
4.00	-.1732	-.1732	-.1739	-.1700	-.1654	-.1708	-.1567	-.1591	-.1591
	-.1591	-.1591	-.1591	-.1591	-.1591	-.1591			
5.00	-.1720	-.1720	-.1729	-.1737	-.1697	-.1717	-.1631	-.1600	-.1600
	-.1600	-.1600	-.1600	-.1600	-.1600	-.1600			
6.00	-.1708	-.1708	-.1721	-.1732	-.1736	-.1731	-.1684	-.1608	-.1608
	-.1608	-.1608	-.1608	-.1608	-.1608	-.1608			
7.00	-.1686	-.1686	-.1701	-.1724	-.1734	-.1733	-.1704	-.1617	-.1617
	-.1617	-.1617	-.1617	-.1617	-.1617	-.1617			
8.00	-.1660	-.1660	-.1677	-.1705	-.1718	-.1723	-.1711	-.1626	-.1626
	-.1626	-.1626	-.1626	-.1626	-.1626	-.1626			
9.00	-.1631	-.1631	-.1649	-.1680	-.1697	-.1706	-.1702	-.1634	-.1634
	-.1634	-.1634	-.1634	-.1634	-.1634	-.1634			
10.00	-.1598	-.1598	-.1621	-.1650	-.1667	-.1683	-.1686	-.1643	-.1643
	-.1643	-.1643	-.1643	-.1643	-.1643	-.1643			
11.00	-.1563	-.1563	-.1580	-.1618	-.1635	-.1656	-.1669	-.1587	-.1587
	-.1587	-.1587	-.1587	-.1587	-.1587	-.1587			
12.00	-.1525	-.1525	-.1552	-.1583	-.1601	-.1629	-.1628	-.1507	-.1507
	-.1507	-.1507	-.1507	-.1507	-.1507	-.1507			
13.00	-.1485	-.1485	-.1507	-.1543	-.1591	-.1587	-.1553	-.1414	-.1414
	-.1414	-.1414	-.1414	-.1414	-.1414	-.1414			
14.00	-.1441	-.1441	-.1468	-.1503	-.1582	-.1522	-.1478	-.1406	-.1406
	-.1406	-.1406	-.1406	-.1406	-.1406	-.1406			

15.00	-.1432	-.1432	-.1459	-.1494	-.1572	-.1513	-.1469	-.1397	-.1397
	-.1397	-.1397	-.1397	-.1397	-.1397	-.1397			
16.00	-.1424	-.1424	-.1450	-.1485	-.1563	-.1504	-.1460	-.1389	-.1389
	-.1389	-.1389	-.1389	-.1389	-.1389	-.1389			
21.00	-.1380	-.1380	-.1406	-.1440	-.1515	-.1458	-.1416	-.1346	-.1346
	-.1346	-.1346	-.1346	-.1346	-.1346	-.1346			
30.00	-.1302	-.1302	-.1327	-.1358	-.1429	-.1375	-.1336	-.1270	-.1270
	-.1270	-.1270	-.1270	-.1270	-.1270	-.1270			
50.00	-.1128	-.1128	-.1150	-.1177	-.1239	-.1192	-.1157	-.1101	-.1101
	-.1101	-.1101	-.1101	-.1101	-.1101	-.1101			
60.00	-.1042	-.1042	-.1061	-.1087	-.1144	-.1100	-.1068	-.1016	-.1016
	-.1016	-.1016	-.1016	-.1016	-.1016	-.1016			
70.00	-.0955	-.0955	-.0973	-.0996	-.1048	-.1009	-.0979	-.0931	-.0931
	-.0931	-.0931	-.0931	-.0931	-.0931	-.0931			
80.00	-.0868	-.0868	-.0884	-.0905	-.0953	-.0917	-.0890	-.0847	-.0847
	-.0847	-.0847	-.0847	-.0847	-.0847	-.0847			
90.00	-.0781	-.0781	-.0796	-.0815	-.0858	-.0825	-.0801	-.0762	-.0762
	-.0762	-.0762	-.0762	-.0762	-.0762	-.0762			
100.00	-.0694	-.0694	-.0707	-.0724	-.0762	-.0733	-.0712	-.0677	-.0677
	-.0677	-.0677	-.0677	-.0677	-.0677	-.0677			
110.00	-.0608	-.0608	-.0619	-.0634	-.0667	-.0642	-.0623	-.0593	-.0593
	-.0593	-.0593	-.0593	-.0593	-.0593	-.0593			
120.00	-.0521	-.0521	-.0531	-.0543	-.0572	-.0550	-.0534	-.0508	-.0508
	-.0508	-.0508	-.0508	-.0508	-.0508	-.0508			
140.00	-.0347	-.0347	-.0354	-.0362	-.0381	-.0367	-.0356	-.0339	-.0339
	-.0339	-.0339	-.0339	-.0339	-.0339	-.0339			
160.00	-.0174	-.0174	-.0177	-.0181	-.0191	-.0183	-.0178	-.0169	-.0169
	-.0169	-.0169	-.0169	-.0169	-.0169	-.0169			
170.00	-.0087	-.0087	-.0088	-.0091	-.0095	-.0092	-.0089	-.0085	-.0085
	-.0085	-.0085	-.0085	-.0085	-.0085	-.0085			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
1.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
2.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
3.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
4.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
5.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
6.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
7.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
8.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
9.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
10.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
11.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
12.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
13.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
14.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
15.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
16.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
21.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
30.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
50.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
60.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
70.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
80.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
90.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
100.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
110.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
120.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
140.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
160.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
170.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
	.0000	.2000	.3000	.4000	.4500	.5000	.5500	.6000	.6500
	.7000	.7500	.8000	.8500	.9000	1.0000			
-180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			
-170.00	.0008	.0008	.0009	.0006	.0006	.0007	.0006	.0006	.0006
	.0006	.0006	.0006	.0006	.0006	.0006			
-160.00	.0017	.0017	.0018	.0013	.0013	.0013	.0012	.0012	.0012
	.0012	.0012	.0012	.0012	.0012	.0012			
-140.00	.0034	.0034	.0036	.0026	.0025	.0026	.0023	.0024	.0024
	.0024	.0024	.0024	.0024	.0024	.0024			
-120.00	.0051	.0051	.0054	.0038	.0038	.0040	.0035	.0035	.0035
	.0035	.0035	.0035	.0035	.0035	.0035			
-110.00	.0059	.0059	.0063	.0045	.0044	.0046	.0041	.0041	.0041
	.0041	.0041	.0041	.0041	.0041	.0041			
-100.00	.0067	.0067	.0072	.0051	.0050	.0053	.0047	.0047	.0047
	.0047	.0047	.0047	.0047	.0047	.0047			
-90.00	.0076	.0076	.0081	.0058	.0057	.0059	.0053	.0053	.0053
	.0053	.0053	.0053	.0053	.0053	.0053			
-80.00	.0084	.0084	.0090	.0064	.0063	.0066	.0059	.0059	.0059
	.0059	.0059	.0059	.0059	.0059	.0059			
-70.00	.0093	.0093	.0099	.0070	.0069	.0073	.0065	.0065	.0065
	.0065	.0065	.0065	.0065	.0065	.0065			
-60.00	.0101	.0101	.0108	.0077	.0076	.0079	.0070	.0071	.0071
	.0071	.0071	.0071	.0071	.0071	.0071			
-50.00	.0110	.0110	.0117	.0083	.0082	.0086	.0076	.0077	.0077
	.0077	.0077	.0077	.0077	.0077	.0077			
-30.00	.0127	.0127	.0135	.0096	.0095	.0099	.0088	.0088	.0088
	.0088	.0088	.0088	.0088	.0088	.0088			
-21.00	.0134	.0134	.0143	.0102	.0100	.0105	.0093	.0094	.0094
	.0094	.0094	.0094	.0094	.0094	.0094			
-16.00	.0138	.0138	.0147	.0105	.0103	.0108	.0096	.0097	.0097
	.0097	.0097	.0097	.0097	.0097	.0097			

-15.00	.0139	.0139	.0148	.0105	.0104	.0109	.0097	.0097	.0097
	.0097	.0097	.0097	.0097	.0097	.0097			
-14.00	.0140	.0140	.0149	.0106	.0105	.0109	.0097	.0098	.0098
	.0098	.0098	.0098	.0098	.0098	.0098			
-13.00	.0121	.0121	.0151	.0107	.0105	.0110	.0098	.0098	.0098
	.0098	.0098	.0098	.0098	.0098	.0098			
-12.00	.0119	.0119	.0149	.0107	.0106	.0111	.0099	.0099	.0099
	.0099	.0099	.0099	.0099	.0099	.0099			
-11.00	.0117	.0117	.0117	.0108	.0107	.0111	.0099	.0100	.0100
	.0100	.0100	.0100	.0100	.0100	.0100			
-10.00	.0119	.0119	.0114	.0109	.0107	.0112	.0100	.0100	.0100
	.0100	.0100	.0100	.0100	.0100	.0100			
-9.00	.0125	.0125	.0115	.0109	.0108	.0113	.0100	.0101	.0101
	.0101	.0101	.0101	.0101	.0101	.0101			
-8.00	.0126	.0126	.0116	.0110	.0108	.0113	.0101	.0101	.0101
	.0101	.0101	.0101	.0101	.0101	.0101			
-7.00	.0127	.0127	.0118	.0111	.0109	.0114	.0102	.0102	.0102
	.0102	.0102	.0102	.0102	.0102	.0102			
-6.00	.0128	.0128	.0119	.0111	.0110	.0115	.0102	.0103	.0103
	.0103	.0103	.0103	.0103	.0103	.0103			
-5.00	.0131	.0131	.0120	.0112	.0110	.0115	.0103	.0103	.0103
	.0103	.0103	.0103	.0103	.0103	.0103			
-4.00	.0132	.0132	.0122	.0113	.0111	.0116	.0103	.0104	.0104
	.0104	.0104	.0104	.0104	.0104	.0104			
-3.00	.0133	.0133	.0123	.0113	.0112	.0117	.0104	.0104	.0104
	.0104	.0104	.0104	.0104	.0104	.0104			
-2.00	.0133	.0133	.0124	.0114	.0112	.0117	.0104	.0105	.0105
	.0105	.0105	.0105	.0105	.0105	.0105			
-1.00	.0133	.0133	.0125	.0114	.0113	.0118	.0105	.0106	.0106
	.0106	.0106	.0106	.0106	.0106	.0106			
.00	.0132	.0132	.0126	.0115	.0113	.0119	.0106	.0106	.0106
	.0106	.0106	.0106	.0106	.0106	.0106			
1.00	.0131	.0131	.0128	.0116	.0114	.0119	.0106	.0107	.0107
	.0107	.0107	.0107	.0107	.0107	.0107			
2.00	.0130	.0130	.0129	.0116	.0115	.0120	.0107	.0107	.0107
	.0107	.0107	.0107	.0107	.0107	.0107			
3.00	.0129	.0129	.0128	.0117	.0115	.0121	.0107	.0108	.0108
	.0108	.0108	.0108	.0108	.0108	.0108			
4.00	.0129	.0129	.0128	.0121	.0116	.0121	.0108	.0108	.0108
	.0108	.0108	.0108	.0108	.0108	.0108			
5.00	.0127	.0127	.0127	.0126	.0120	.0122	.0113	.0109	.0109
	.0109	.0109	.0109	.0109	.0109	.0109			
6.00	.0126	.0126	.0126	.0125	.0124	.0122	.0117	.0110	.0110
	.0110	.0110	.0110	.0110	.0110	.0110			
7.00	.0124	.0124	.0124	.0124	.0124	.0122	.0118	.0110	.0110
	.0110	.0110	.0110	.0110	.0110	.0110			
8.00	.0122	.0122	.0122	.0123	.0123	.0121	.0119	.0111	.0111
	.0111	.0111	.0111	.0111	.0111	.0111			
9.00	.0120	.0120	.0120	.0121	.0121	.0120	.0118	.0111	.0111
	.0111	.0111	.0111	.0111	.0111	.0111			
10.00	.0118	.0118	.0119	.0119	.0119	.0119	.0117	.0112	.0112
	.0112	.0112	.0112	.0112	.0112	.0112			
11.00	.0115	.0115	.0115	.0117	.0117	.0118	.0117	.0110	.0110
	.0110	.0110	.0110	.0110	.0110	.0110			
12.00	.0113	.0113	.0115	.0115	.0116	.0117	.0115	.0106	.0106
	.0106	.0106	.0106	.0106	.0106	.0106			
13.00	.0110	.0110	.0112	.0113	.0115	.0115	.0113	.0099	.0099
	.0099	.0099	.0099	.0099	.0099	.0099			
14.00	.0108	.0108	.0110	.0111	.0115	.0113	.0110	.0098	.0098
	.0098	.0098	.0098	.0098	.0098	.0098			
15.00	.0107	.0107	.0109	.0110	.0114	.0112	.0109	.0098	.0098
	.0098	.0098	.0098	.0098	.0098	.0098			
16.00	.0107	.0107	.0109	.0110	.0113	.0112	.0109	.0097	.0097
	.0097	.0097	.0097	.0097	.0097	.0097			
21.00	.0103	.0103	.0105	.0106	.0110	.0108	.0105	.0094	.0094
	.0094	.0094	.0094	.0094	.0094	.0094			
30.00	.0098	.0098	.0099	.0100	.0104	.0102	.0099	.0089	.0089
	.0089	.0089	.0089	.0089	.0089	.0089			
50.00	.0085	.0085	.0086	.0087	.0090	.0088	.0086	.0077	.0077
	.0077	.0077	.0077	.0077	.0077	.0077			
60.00	.0078	.0078	.0080	.0080	.0083	.0082	.0080	.0071	.0071
	.0071	.0071	.0071	.0071	.0071	.0071			
70.00	.0072	.0072	.0073	.0074	.0076	.0075	.0073	.0065	.0065
	.0065	.0065	.0065	.0065	.0065	.0065			
80.00	.0065	.0065	.0066	.0067	.0069	.0068	.0066	.0059	.0059
	.0059	.0059	.0059	.0059	.0059	.0059			
90.00	.0059	.0059	.0060	.0060	.0062	.0061	.0060	.0053	.0053
	.0053	.0053	.0053	.0053	.0053	.0053			
100.00	.0052	.0052	.0053	.0053	.0055	.0054	.0053	.0047	.0047
	.0047	.0047	.0047	.0047	.0047	.0047			
110.00	.0046	.0046	.0046	.0047	.0048	.0048	.0046	.0041	.0041
	.0041	.0041	.0041	.0041	.0041	.0041			
120.00	.0039	.0039	.0040	.0040	.0041	.0041	.0040	.0036	.0036
	.0036	.0036	.0036	.0036	.0036	.0036			
140.00	.0026	.0026	.0027	.0027	.0028	.0027	.0027	.0024	.0024
	.0024	.0024	.0024	.0024	.0024	.0024			
160.00	.0013	.0013	.0013	.0013	.0014	.0014	.0013	.0012	.0012
	.0012	.0012	.0012	.0012	.0012	.0012			
170.00	.0007	.0007	.0007	.0007	.0007	.0007	.0007	.0006	.0006
	.0006	.0006	.0006	.0006	.0006	.0006			
180.00	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
	.0000	.0000	.0000	.0000	.0000	.0000			

Appendix 8

Listing of "UTIL" Code

```
      PROGRAM UTIL
C-----------------------------------------------------------------------C
C     THIS PROGRAM CONTAINS A NUMBER OF UTILITIES WHICH FACILITATE THE  C
C     GENERATION OF 2-D AIRFOIL AERODYNAMICS DATA TABLES IN C-81 FORMAT  C
C-----------------------------------------------------------------------C
C                                                                       C
C                            WRITTEN BY                                 C
C                       DR. AHMED A. HASSAN                             C
C                  MCDONNELL DOUGLAS HELICOPTER SYSTEMS                 C
C                         MESA, ARIZONA 85205                           C
C                           (602) 891-6069                              C
C-----------------------------------------------------------------------C
      PARAMETER (IM=15,IA=100)
      COMMON /AHM4/BASE,MULT,ALFMAX,ALFMIN
      LOGICAL BASE,MULT

      BASE   = .FALSE.
      MULT   = .FALSE.
      ALFMAX =  15.0
      ALFMIN = -15.0

      IWRT = 1

      CALL COMBINE (IWRT)

      CALL PCLCDCM

      CALL FILL1

      CALL BLEND

      CALL OUTC81

      STOP 777
      END

      SUBROUTINE COMBINE (IWRT)
      PARAMETER (IM=15,IA=100)

      COMMON /AHM1/ MCL(IM),ANGCL(IA),CL(IM,IA),NMCL,NANGCL,CLF(IM,IA),
     *              MCD(IM),ANGCD(IA),CD(IM,IA),NMCD,NANGCD,CDF(IM,IA),
     *              MCM(IM),ANGCM(IA),CM(IM,IA),NMCM,NANGCM,CHF(IM,IA)
      COMMON /AHM3/ IDENT,IDENT2,IDUMA(IM)
      REAL          MCL,MCD,MCM
      CHARACTER*30  IDENT,IDENT2
C-----------------------------------------------------------------------C
C                 BEGIN SEGMENT TO READ IN C81 TABLES                   C
C-----------------------------------------------------------------------C
      OPEN (12,FILE='naca0012-1.c81', FORM='FORMATTED',STATUS='UNKNOWN')
      OPEN (13,FILE='naca0012-2.c81', FORM='FORMATTED',STATUS='UNKNOWN')
      OPEN (14,FILE='naca0012-3.c81', FORM='FORMATTED',STATUS='UNKNOWN')

      READ (13,101) IDENT,NMCL,NANGCL,NMCD,NANGCD,NMCM,NANGCM,IDENT2
      READ (12,101) IDENT,NMCL,NANGCL,NMCD,NANGCD,NMCM,NANGCM,IDENT2

      NMCL = NMCL + 5
      NMCD = NMCD + 5
      NMCM = NMCM + 5

      IF (IWRT.EQ.1) THEN
        WRITE(14,101) IDENT,NMCL,NANGCL,NMCD,NANGCD,NMCM,NANGCM,IDENT2
      ENDIF
C-----------------------------------------------------------------------C
C                            READ CL VALUES                             C
C-----------------------------------------------------------------------C
      READ (12,102) (MCL(I),I=1,10)
      READ (13,102) (MCL(I),I=11,NMCL)

      IF (IWRT.EQ.1) THEN
        WRITE (14,102) (MCL(I),I=1,NMCL)
      ENDIF

      DO 200 IANG=1,NANGCL
      DO 199 IM0=1,NMCL,9
           IMI=IM0
           IMF=MIN(IM0+8,NMCL)
           IF (IM0 .EQ. 1) THEN
              READ (12,103)  ANGCL(IANG),(CL(IM1,IANG),IM1=IMI,IMF)
              IF (IWRT.EQ.1) THEN
              WRITE (14,103) ANGCL(IANG),(CL(IM1,IANG),IM1=IMI,IMF)
              ENDIF
           ELSE
              READ (12,102)              (CL(IM1,IANG),IM1=10,10)
              READ (13,103) ANGCL(IANG),(CL(IM1,IANG),IM1=11,IMF)
              IF (IWRT.EQ.1) THEN
              WRITE (14,102) (CL(IM1,IANG),IM1=IMI,IMF)
              ENDIF
           ENDIF
 199  CONTINUE
 200  CONTINUE
C-----------------------------------------------------------------------C
C                            READ CD VALUES                             C
C-----------------------------------------------------------------------C
      READ (12,102) (MCD(I),I=1,10)
```

```
      READ (13,102) (MCD(I),I=11,NMCD)

      IF (IWRT.EQ.1) THEN
        WRITE (14,102) (MCD(I),I=1,NMCD)
      ENDIF

      DO 300 IANG=1,NANGCD
      DO 299 IM0=1,NMCD,9
           IM1=IM0
           IMF=MIN(IM0+8,NMCD)
           IF (IM0 .EQ. 1) THEN
              READ  (12,103) ANGCD(IANG),(CD(IM1,IANG),IM1=IMI,IMF)
              IF (IWRT.EQ.1) THEN
              WRITE (14,103) ANGCD(IANG),(CD(IM1,IANG),IM1=IMI,IMF)
              ENDIF
           ELSE
              READ (12,102)              (CD(IM1,IANG),IM1=10,10)
              READ (13,103) ANGCD(IANG),(CD(IM1,IANG),IM1=11,IMF)
              IF (IWRT.EQ.1) THEN
              WRITE (14,102) (CD(IM1,IANG),IM1=IMI,IMF)
              ENDIF
           ENDIF
  299 CONTINUE
  300 CONTINUE
C-------------------------------------------------------------------------------C
C                              READ CM VALUES                                   C
C-------------------------------------------------------------------------------C
      READ (12,102) (MCM(I),I=1,10)
      READ (13,102) (MCM(I),I=11,NMCM)

      IF (IWRT.EQ.1) THEN
        WRITE(14,102) (MCM(I),I=1,NMCM)
      ENDIF

      DO 400 IANG = 1,NANGCM
      DO 399 IM0=1,NMCM,9
           IM1=IM0
           IMF=MIN(IM0+8,NMCM)
           IF (IM0 .EQ. 1) THEN
              READ (12,103)  ANGCM(IANG),(CM(IM1,IANG),IM1=IMI,IMF)
              IF (IWRT.EQ.1) THEN
              WRITE (14,103) ANGCM(IANG),(CM(IM1,IANG),IM1=IMI,IMF)
              ENDIF
           ELSE
              READ (12,102)              (CM(IM1,IANG),IM1=10,10)
              READ (13,103) ANGCM(IANG),(CM(IM1,IANG),IM1=11,IMF)
              IF (IWRT.EQ.1) THEN
              WRITE (14,102) (CM(IM1,IANG),IM1=IMI,IMF)
              ENDIF
           ENDIF
  399 CONTINUE
  400 CONTINUE

      CLOSE (12)
      CLOSE (13)
      CLOSE (14)

c        WRITE (66,500) ((CL(I,J),J=1,NANGCL),I=1,NMCL)
c        WRITE (66,*)
c        WRITE (66,500) ((CD(I,J),J=1,NANGCD),I=1,NMCD)
c        WRITE (66,*)
c        WRITE (66,500) ((CM(I,J),J=1,NANGCM),I=1,NMCM)
c        WRITE (66,*)

  101   FORMAT(A30,612,A30)
  102   FORMAT(7X,9F7.4)
  103   FORMAT(F7.2,9F7.4)
  500   FORMAT ((5X,'* ',8(F7.4,1H,)))

      RETURN
      END

      SUBROUTINE PCLCDCM
C-------------------------------------------------------------------------------C
C       THIS SUBROUTINE HANDLES THE PREDICTED AERODYNAMIC COEFFICIENTS          C
C-------------------------------------------------------------------------------C
      PARAMETER (IM=15,IA=100)

      COMMON /AHM2/ PCL(IM,IA), PCD(IM,IA), PCM(IM,IA),
     *              PCLF(IM,IA),PCDF(IM,IA),PCMF(IM,IA),
     *              AOA(IA),MACH(IM)
      REAL          MACH
      COMMON /AHM4/ BASE,MULT,ALFMAX,ALFMIN
      LOGICAL       BASE,MULT

      OPEN (15,FILE='LOADS.TBL',FORM='FORMATTED',STATUS='OLD')
      OPEN (16,FILE='LOADS.OUT',FORM='FORMATTED',STATUS='UNKNOWN')
C-------------------------------------------------------------------------------C
C              READ THE PREDICTED VALUES FOR EACH MACH NUMBER                   C
C-------------------------------------------------------------------------------C
      READ (15,*)
      READ (15,*) NMACH
      READ (15,*)
```

```
      DO 20 M = 2 , NMACH - 1

      READ (15,*) NAOA

      DO 21 N = 1 , NAOA
      READ (15,*) MACH(M),AOA(N),PCL(M,N),PCD(M,N),PCM(M,N),
     *                           PCLF(M,N),PCDF(M,N),PCHF(M,N)
21    CONTINUE
C-----------------------------------------------------------------------------C
C       THE FOLLOWING STATEMENTS ARE ONLY APPLICABLE TO THE SYMMETRIC         C
C              BASELINE (I.E., UNFLAPPED) NACA-0015 AIRFOIL                   C
C-----------------------------------------------------------------------------C
      IF (BASE) THEN
          NALFA = 2 * NAOA - 1
      ELSE
          NALFA = NAOA
      END IF

      WRITE (16,600) NALFA

      IF (BASE) THEN
      DO 22 N = NAOA , 2 , -1
        WRITE (16,601) MACH(M),-AOA(N),-PCL(M,N),PCD(M,N),-PCM(M,N),
     *                           -PCLF(M,N),PCDF(M,N),-PCHF(M,N)
22    CONTINUE
      END IF

      DO 23 N = 1 , NAOA
        WRITE (16,601) MACH(M),AOA(N),PCL(M,N),PCD(M,N),PCM(M,N),
     *                           PCLF(M,N),PCDF(M,N),PCHF(M,N)
23    CONTINUE

20    CONTINUE

      CLOSE (15)
      CLOSE (16)

600   FORMAT (5X,I3)
601   FORMAT (F7.4,2X,F6.2,6(2X,F7.4))
      RETURN
      END

      SUBROUTINE FILL1
      PARAMETER (IM=15,IA=100)
C-----------------------------------------------------------------------------C
C      THIS SUBROUTINE REPLACES THE NACA-0012 AERODYNAMICS COEFFICIENTS       C
C      WITH THE PREDICTED VALUES IN THE ANGLE OF ATTACK AND MACH NUMBER       C
C      RANGES FOR THE PREDICTIONS                                             C
C-----------------------------------------------------------------------------C
      COMMON /AHM1/ MCL(IM),ANGCL(IA),CL(IM,IA),NMCL,NANGCL,CLF(IM,IA),
     *              MCD(IM),ANGCD(IA),CD(IM,IA),NMCD,NANGCD,CDF(IM,IA),
     *              MCM(IM),ANGCM(IA),CM(IM,IA),NMCM,NANGCM,CHF(IM,IA)
      COMMON /AHM2/ PCL(IM,IA), PCD(IM,IA), PCM(IM,IA),
     *              PCLF(IM,IA),PCDF(IM,IA),PCHF(IM,IA),
     *              AOA(IA),MACH(IM)
      COMMON /AHM3/ IDENT,IDENT2,IDUMA(IM)
      COMMON /AHM4/ BASE,MULT,ALFMAX,ALFMIN
      LOGICAL       BASE,MULT

      CHARACTER*30  IDENT,IDENT2
      REAL          MCL,MCD,MCM,MACH

      OPEN (16,FILE='LOADS.OUT',FORM='FORMATTED',STATUS='UNKNOWN')
C-----------------------------------------------------------------------------C
C                        FOR THE AIRFOIL COEFFICIENTS                         C
C-----------------------------------------------------------------------------C
C      FIRST ZERO OUT ALL VALUES IN THE ANGLE OF ATTACK AND MACH NUMBER       C
C      RANGES FOR THE PREDICTED DATA. THIS ENABLES SEEING MORE CLEARLY        C
C      THE VALUES TO BE OBTAINED THROUGH INTERPOLATION                        C
C-----------------------------------------------------------------------------C
C                        FOR THE FLAP COEFFICIENTS                            C
C-----------------------------------------------------------------------------C
C      ZERO OUT ALL TABLE VALUES SINCE NO VALUES FOR THE NACA-0012 AIRFOIL    C
C      ARE KNOWN                                                              C
C-----------------------------------------------------------------------------C
      DO 29 M = 1 , NMCL

      DO 29 I = 1 , NANGCL
           CLF(M,I) = 0.0
           CDF(M,I) = 0.0
           CHF(M,I) = 0.0
      IF (ANGCL(I).GT.ALFMIN.AND.ANGCL(I).LT.ALFMAX) THEN
           CL(M,I) = 0.0
           CD(M,I) = 0.0
           CM(M,I) = 0.0
      END IF
29    CONTINUE
C-----------------------------------------------------------------------------C
C     START REPLACING THE NACA-0012 AIRFOIL DATA WITH THE PREDICTED VALUES    C
C-----------------------------------------------------------------------------C
C     NOTE:                                                                   C
C     THE PREDICTED DRAG VALUES FOR THE INTEGRAL FLAP ARE NOT ACCURATE SINCE  C
C     THEY DO NOT TAKE INTO ACCOUNT THE CONTRIBUTION OF THE FLAP'S LEADING    C
C     EDGE WHICH IS BURIED INTO THE AIRFOIL SECTION. THIS APPROXIMATION IS     C
```

```
C     MADE TO ALLOW FOR MODELING OF THE FLAPPED AIRFOIL AS A SINGLE ELEMENT    C
C     AIRFOIL. FOR A TWO-ELEMENT AIRFOIL, THE PREDICTED DRAG VALUES FOR THE    C
C     FLAP ELEMENT SHOULD BE USED SINCE THEY ARE RELATIVELY ACCURATE.          C
C-------------------------------------------------------------------------------C
      DO 27 M = 2 , NMCL - 1

      READ (16,*) NALFA
      IDUMA(M) = NALFA

      DO 26 J = 1 , NALFA
      READ (16,*) DUM,AOA(J),PCL(M,J),PCD(M,J),PCM(M,J),
     *                       PCLF(M,J),PCDF(M,J),PCHF(M,J)
      DO 25 I = 1 , NANGCL

      IF ( ANGCL(I).EQ.AOA(J) ) THEN
           CL(M,I) =  PCL(M,J)
           CD(M,I) =  PCD(M,J)
           CM(M,I) =  PCM(M,J)
          CLF(M,I) = PCLF(M,J)
          CHF(M,I) = PCHF(M,J)
             IF (MULT) THEN
                CDF(M,I) = PCDF(M,J)
             END IF
      END IF
25    CONTINUE

26    CONTINUE

27    CONTINUE

      IDUMA(1)    = IDUMA(2)
      IDUMA(NMCL) = IDUMA(NMCL-1)
C-------------------------------------------------------------------------------C
C                FILL ARRAY VALUES FOR MINF=0 AND MINF=1.0                      C
C-------------------------------------------------------------------------------C
      DO 28 I = 1 , NANGCL
           CL(1,I)    =  CL(2,I)
           CD(1,I)    =  CD(2,I)
           CM(1,I)    =  CM(2,I)
          CLF(1,I)    = CLF(2,I)
          CDF(1,I)    = CDF(2,I)
          CHF(1,I)    = CHF(2,I)

          CL(NMCL,I)  =  CL(NMCL-1,I)
          CD(NMCL,I)  =  CD(NMCL-1,I)
          CM(NMCL,I)  =  CM(NMCL-1,I)
         CLF(NMCL,I)  = CLF(NMCL-1,I)
         CDF(NMCL,I)  = CDF(NMCL-1,I)
         CHF(NMCL,I)  = CHF(NMCL-1,I)
28    CONTINUE
C-------------------------------------------------------------------------------C
C                 PRINT FOR CHECKOUT PRIOR TO INTERPOLATION                     C
C-------------------------------------------------------------------------------C
       WRITE (77,*) ' SECTIONAL LIFT VALUES     '
       WRITE (77,110) (MCL(M),M=1,NMCL)
       DO 31 I = 1 , NANGCL
       WRITE (77,100) ANGCL(I),(CL(M,I),M=1,NMCL)
31     CONTINUE
       WRITE (77,*)

       WRITE (77,*) ' SECTIONAL DRAG VALUES     '
       WRITE (77,110) (MCL(M),M=1,NMCL)
       DO 32 I = 1 , NANGCL
       WRITE (77,100) ANGCL(I),(CD(M,I),M=1,NMCL)
32     CONTINUE
       WRITE (77,*)

       WRITE (77,*) ' SECTIONAL MOMENT VALUES   '
       WRITE (77,110) (MCL(M),M=1,NMCL)
       DO 33 I = 1 , NANGCL
       WRITE (77,100) ANGCL(I),(CM(M,I),M=1,NMCL)
33     CONTINUE
       WRITE (77,*)

       WRITE (77,*) ' FLAP LIFT VALUES          '
       WRITE (77,110) (MCL(M),M=1,NMCL)
       DO 34 I = 1 , NANGCL
       WRITE (77,100) ANGCL(I),(CLF(M,I),M=1,NMCL)
34     CONTINUE
       WRITE (77,*)

       WRITE (77,*) ' FLAP DRAG VALUES          '
       WRITE (77,110) (MCL(M),M=1,NMCL)
       DO 35 I = 1 , NANGCL
       WRITE (77,100) ANGCL(I),(CDF(M,I),M=1,NMCL)
35     CONTINUE
       WRITE (77,*)

       WRITE (77,*) ' FLAP HINGE VALUES         '
       WRITE (77,110) (MCL(M),M=1,NMCL)
       DO 36 I = 1 , NANGCL
       WRITE (77,100) ANGCL(I),(CHF(M,I),M=1,NMCL)
36     CONTINUE
```

```
  100    FORMAT (F6.1,15(1X,F7.4))
  110    FORMAT   (6X,15(1X,F7.4))
  101    FORMAT(A30,612,A30)
  102    FORMAT(7X,9F7.4)
  103    FORMAT(F7.2,9F7.4)
  500    FORMAT ((5X,'* ',8(F7.4,1H,)))

       CLOSE (16)

       RETURN
       END

       SUBROUTINE OUTC81
       PARAMETER (IM=15,IA=100)
C-------------------------------------------------------------------------------C
C      THIS SUBROUTINE WRITES THE FINAL C81 DATA TABLES WITH THE FITTED         C
C      DATA FOR THE MAIN AIRFOIL SECTION AND FOR THE FLAP                       C
C      THIS SUBROUTINE ALSO GENERATES A DATA FILE SUITABLE FOR PLOTTING         C
C      ON A MACTINTOSH                                                          C
C-------------------------------------------------------------------------------C
       COMMON /AHM1/ MCL(IM),ANGCL(IA),CL(IM,IA),NMCL,NANGCL,CLF(IM,IA),
      *              MCD(IM),ANGCD(IA),CD(IM,IA),NMCD,NANGCD,CDF(IM,IA),
      *              MCM(IM),ANGCM(IA),CM(IM,IA),NMCM,NANGCM,CHF(IM,IA)
       COMMON /AHM2/ PCL(IM,IA), PCD(IM,IA), PCM(IM,IA),
      *              PCLF(IM,IA),PCDF(IM,IA),PCHF(IM,IA),
      *              AOA(IA),MACH(IM)
       COMMON /AHM3/ IDENT,IDENT2,IDUMA(IM)

       CHARACTER*30  IDENT,IDENT2
       REAL          MCL,MCD,MCM,MACH

       OPEN (19,FILE='main.c81',FORM='FORMATTED',STATUS='UNKNOWN')
       OPEN (20,FILE='flap.c81',FORM='FORMATTED',STATUS='UNKNOWN')
C-------------------------------------------------------------------------------C
C                            FILL IN CL VALUES                                  C
C-------------------------------------------------------------------------------C
       WRITE (19,101) IDENT,NMCL,NANGCL,NMCD,NANGCD,NMCM,NANGCM,IDENT2
       WRITE (19,102) (MCL(I),I=1,NMCL)
       WRITE (20,101) IDENT,NMCL,NANGCL,NMCD,NANGCD,NMCM,NANGCM,IDENT2
       WRITE (20,102) (MCL(I),I=1,NMCL)

       DO 200 IANG=1,NANGCL
       DO 199 IMO=1,NMCL,9
          IMI=IMO
          IMF=MIN(IMO+8,NMCL)
          IF (IMO .EQ. 1) THEN
             WRITE(19,103) ANGCL(IANG),( CL(IM1,IANG),IM1=IMI,IMF)
             WRITE(20,103) ANGCL(IANG),(CLF(IM1,IANG),IM1=IMI,IMF)
          ELSE
             WRITE(19,102) ( CL(IM1,IANG),IM1=IMI,IMF)
             WRITE(20,102) (CLF(IM1,IANG),IM1=IMI,IMF)
          ENDIF
  199  CONTINUE
  200  CONTINUE
C-------------------------------------------------------------------------------C
C                            FILL IN CD VALUES                                  C
C-------------------------------------------------------------------------------C
       WRITE (19,102) (MCD(I),I=1,NMCD)
       WRITE (20,102) (MCD(I),I=1,NMCD)

       DO 300 IANG=1,NANGCD
       DO 299 IMO=1,NMCD,9
          IMI=IMO
          IMF=MIN(IMO+8,NMCD)
          IF (IMO .EQ. 1) THEN
             WRITE(19,103) ANGCD(IANG),( CD(IM1,IANG),IM1=IMI,IMF)
             WRITE(20,103) ANGCD(IANG),(CDF(IM1,IANG),IM1=IMI,IMF)
          ELSE
             WRITE(19,102) ( CD(IM1,IANG),IM1=IMI,IMF)
             WRITE(20,102) (CDF(IM1,IANG),IM1=IMI,IMF)
          ENDIF
  299  CONTINUE
  300  CONTINUE
C-------------------------------------------------------------------------------C
C                            FILL IN CM VALUES                                  C
C-------------------------------------------------------------------------------C
       WRITE(19,102) (MCM(I),I=1,NMCM)
       WRITE(20,102) (MCM(I),I=1,NMCM)

       DO 400 IANG = 1,NANGCM
       DO 399 IMO=1,NMCM,9
          IMI=IMO
          IMF=MIN(IMO+8,NMCM)
          IF (IMO .EQ. 1) THEN
             WRITE(19,103) ANGCM(IANG),( CM(IM1,IANG),IM1=IMI,IMF)
             WRITE(20,103) ANGCM(IANG),(CHF(IM1,IANG),IM1=IMI,IMF)
          ELSE
             WRITE(19,102) ( CM(IM1,IANG),IM1=IMI,IMF)
             WRITE(20,102) (CHF(IM1,IANG),IM1=IMI,IMF)
          ENDIF
  399  CONTINUE
  400  CONTINUE

C-------------------------------------------------------------------------------C
```

```
C                       PRINT TABLES FOR MAC PLOTTING                          C
C-----------------------------------------------------------------------------C
        DO 31 I = 1 , NANGCL
        WRITE (88,100) ANGCL(I),(CL(M,I),M=1,NMCL)
31      CONTINUE
        WRITE (88,*)

        DO 32 I = 1 , NANGCL
        WRITE (88,100) ANGCL(I),(CD(M,I),M=1,NMCL)
32      CONTINUE
        WRITE (88,*)

        DO 33 I = 1 , NANGCL
        WRITE (88,100) ANGCL(I),(CM(M,I),M=1,NMCL)
33      CONTINUE
        WRITE (88,*)

        DO 34 I = 1 , NANGCL
        WRITE (88,100) ANGCL(I),(CLF(M,I),M=1,NMCL)
34      CONTINUE
        WRITE (88,*)

        DO 35 I = 1 , NANGCL
        WRITE (88,100) ANGCL(I),(CDF(M,I),M=1,NMCL)
35      CONTINUE
        WRITE (88,*)

        DO 36 I = 1 , NANGCL
        WRITE (88,100) ANGCL(I),(CHF(M,I),M=1,NMCL)
36      CONTINUE

 100    FORMAT (1X,F7.1,15(1X,F7.4))
 101    FORMAT(A30,6I2,A30)
 102    FORMAT(7X,9F7.4)
 103    FORMAT(F7.2,9F7.4)
 500    FORMAT ((5X,'* ',8(F7.4,1H,)))

      CLOSE (19)
      CLOSE (20)
      RETURN
      END

      SUBROUTINE BLEND
      PARAMETER (IM=15,IA=100)
C-----------------------------------------------------------------------------C
C      THIS SUBROUTINE BLENDS IN THE NACA-0012 EXPERIMENTAL VALUES WITH       C
C      THE PREDICTED VALUES. IT ALSO INTERPOLATES FOR THE UNKNOWN AERO        C
C      COEFFICIENTS FOR A GIVEN MACH NUMBER AT ALL THE USER DEFINED ANGLES    C
C      OF ATTACK                                                              C
C-----------------------------------------------------------------------------C
      COMMON /AHM1/ MCL(IM),ANGCL(IA),CL(IM,IA),NMCL,NANGCL,CLF(IM,IA),
     *              MCD(IM),ANGCD(IA),CD(IM,IA),NMCD,NANGCD,CDF(IM,IA),
     *              MCM(IM),ANGCM(IA),CM(IM,IA),NMCM,NANGCM,CHF(IM,IA)
      COMMON /AHM3/ IDENT,IDENT2,IDUMA(IM)
      DIMENSION     DUM(100),DUMCL(100),DUMCD(100),DUMCM(100)
      DIMENSION     DMCLF(100),DMCDF(100),DMCHF(100)
      DIMENSION     BB(100),YI(100),YP(100),YPP(100)
      DIMENSION     ANG(100)

      CHARACTER*30  IDENT,IDENT2
      REAL          MCL,MCD,MCM

      DEBUG =  1.0
C-----------------------------------------------------------------------------C
C       DEBUG IS A FLAG USED TO OUTPUT A FILE TO UNIT 44 TO CHECK THE         C
C       ORDERING OF THE COMBINED EXPERIMENTAL-PREDICTED DATA PRIOR TO         C
C       THE INTERPOLATION PROCESS FOR A GIVEN MACH NUMBER AND ANGLE OF        C
C       ATTACK                                                                C
C-----------------------------------------------------------------------------C
      IF (DEBUG.EQ.0.0) THEN
          MSTART = 9
          MEND   = 9
      ELSE
          MSTART = 1
          MEND   = NMCL
      END IF

      DO 10 M = MSTART , MEND

      NPNTS = 16 + IDUMA(M) + 16

      DO 11 I = 1 , 16
          DUM(I)   = ANGCL(I)
          DUMCL(I) =  CL(M,I)
          DUMCD(I) =  CD(M,I)
          DUMCM(I) =  CM(M,I)
        IF (MULT) THEN
            DMCLF(I) = CLF(M,I)
            DMCDF(I) = CDF(M,I)
            DMCHF(I) = CHF(M,I)
        ELSE
            ANG(1)   = ANGCL(1)
            DMCLF(1) = CLF(M,1)
            DMCDF(1) = CDF(M,1)
```

```
            DMCHF(1)  = CHF(M,1)
          END IF
 11     CONTINUE

        K  = 16
        L  = 1

        DO 12 I = 17 , 45
 C       IF (CL(M,I).EQ.0.0.AND.ANGCL(I).NE.0.0) GO TO 12  For baseline only
        IF (CL(M,I).EQ.0.0) GO TO 12
            K = K + 1
            DUM(K)    = ANGCL(I)
            DUMCL(K)  =  CL(M,I)
            DUMCD(K)  =  CD(M,I)
            DUMCM(K)  =  CM(M,I)
          IF (MULT) THEN
            DMCLF(K)  = CLF(M,I)
            DMCDF(K)  = CDF(M,I)
            DMCHF(K)  = CHF(M,I)
          ELSE
            L = L + 1
            ANG(L)    = ANGCL(I)
            DMCLF(L)  = CLF(M,I)
            DMCDF(L)  = CDF(M,I)
            DMCHF(L)  = CHF(M,I)
          END IF
 12     CONTINUE

        DO 13 I = 46 , NANGCL
            DUM(K+1)    = ANGCL(I)
            DUMCL(K+1)  =  CL(M,I)
            DUMCD(K+1)  =  CD(M,I)
            DUMCM(K+1)  =  CM(M,I)
          IF (MULT) THEN
            DMCLF(K+1)  = CLF(M,I)
            DMCDF(K+1)  = CDF(M,I)
            DMCHF(K+1)  = CHF(M,I)
          ELSE
            ANG(L+1)    = ANGCL(NANGCL)
            DMCLF(L+1)  = CLF(M,NANGCL)
            DMCDF(L+1)  = CDF(M,NANGCL)
            DMCHF(L+1)  = CHF(M,NANGCL)
          END IF
        K = K + 1
 13     CONTINUE

        LP1 = L + 1

        IF (DEBUG.EQ.1.0) THEN
 C       WRITE (44,*) NPNTS
 C       DO 150 I = 1 , NPNTS
 C       WRITE (44,120) I,DUM(I),DUMCL(I)
 C150    CONTINUE
 C       WRITE (44,*)

 c       WRITE (44,*) LP1
 c       DO 150 I = 1 , LP1
 c       WRITE (44,120) I,ANG(I),DMCLF(I)
 c150    CONTINUE
 c       WRITE (44,*)

 120    FORMAT (5X,'I=',I3,5X,'AOA=',F6.1,5X,'CLF=',F7.4)
        END IF

        KKK = NANGCL
        ST  = 10.0
C-------------------------------------------------------------------------------C
C                INTERPOLATE FOR AIRFOIL SECTIONAL LIFT VALUES                  C
C-------------------------------------------------------------------------------C
        CALL TSPLINE (DUM,DUMCL,NPNTS,BB,ST,1,KKK,ANGCL,YI,YP,YPP,XINT)
        DO 15 N = 1 , KKK
        CL(M,N) = YI(N)
 15     CONTINUE
C-------------------------------------------------------------------------------C
C                INTERPOLATE FOR AIRFOIL SECTIONAL DRAG VALUES                  C
C-------------------------------------------------------------------------------C
        CALL TSPLINE (DUM,DUMCD,NPNTS,BB,ST,1,KKK,ANGCL,YI,YP,YPP,XINT)
        DO 16 N = 1 , KKK
        CD(M,N) = YI(N)
 16     CONTINUE
C-------------------------------------------------------------------------------C
C                INTERPOLATE FOR AIRFOIL PITCHING MOMENT VALUES                 C
C-------------------------------------------------------------------------------C
        CALL TSPLINE (DUM,DUMCM,NPNTS,BB,ST,1,KKK,ANGCL,YI,YP,YPP,XINT)
        DO 17 N = 1 , KKK
        CM(M,N) = YI(N)
 17     CONTINUE

C-------------------------------------------------------------------------------C
C                           FLAP CHARACTERISTICS                                C
C-------------------------------------------------------------------------------C
        IF (MULT) THEN
C-------------------------------------------------------------------------------C
C       ***************   FOR A MULTI-ELEMENT AIRFOIL  ******************       C
```

```
C-------------------------------------------------------------------------C
C               INTERPOLATE FOR FLAP SECTIONAL LIFT VALUES                C
C     NOTE: FLAP SECTIONAL LIFT IS NORMALIZED BY THE AIRFOIL'S (I.E., NOT C
C           THE FLAP'S) CHORD LENGTH.                                     C
C-------------------------------------------------------------------------C
      CALL TSPLINE (DUM,DMCLF,NPNTS,BB,ST,1,KKK,ANGCL,YI,YP,YPP,XINT)
      DO 18 N = 1 , KKK
      CLF(M,N) = YI(N)
18    CONTINUE
C-------------------------------------------------------------------------C
C               INTERPOLATE FOR FLAP SECTIONAL DRAG VALUES                C
C     NOTE: FLAP SECTIONAL DRAG IS NORMALIZED BY THE AIRFOIL'S (I.E., NOT C
C           THE FLAP'S) CHORD LENGTH.                                     C
C-------------------------------------------------------------------------C
      CALL TSPLINE (DUM,DMCDF,NPNTS,BB,ST,1,KKK,ANGCL,YI,YP,YPP,XINT)
      DO 19 N = 1 , KKK
      CDF(M,N) = YI(N)
19    CONTINUE
C-------------------------------------------------------------------------C
C               INTERPOLATE FOR FLAP HINGE MOMENT VALUES                  C
C       NOTE: FLAP HINGE MOMENT IS NORMALIZED BY THE AIRFOIL'S (I.E., NOT C
C             THE FLAP'S) CHORD LENGTH.                                   C
C-------------------------------------------------------------------------C
      CALL TSPLINE (DUM,DMCHF,NPNTS,BB,ST,1,KKK,ANGCL,YI,YP,YPP,XINT)
      DO 20 N = 1 , KKK
      CHF(M,N) = YI(N)
20    CONTINUE

      ELSE

      WRITE (44,*)
      WRITE (44,*) LP1
      DO 111 L = 1 , LP1
      WRITE (44,112) L,ANG(L),DMCLF(L),DMCHF(L)
111   CONTINUE
      WRITE (44,*)
112   FORMAT (5X,'L=',I3,5X,'ANG=',F6.1,5X,'CLF=',F7.4,5X,'CHF=',F7.4)

C-------------------------------------------------------------------------C
C      ************  FOR A SINGLE ELEMENT FLAPPED AIRFOIL ***************  C
C                           SPECIAL TREATMENT                             C
C-------------------------------------------------------------------------C
C               INTERPOLATE FOR FLAP SECTIONAL LIFT VALUES                C
C     HAD TO ADJUST TENSION PARAMETER FOR SPLINE FITTING TO WORK PROPERLY  C
C-------------------------------------------------------------------------C
C      ST = 1.0

C      CALL TSPLINE (ANG,DMCLF,LP1,BB,ST,1,KKK,ANGCL,YI,YP,YPP,XINT)
C      DO 21 N = 1 , KKK
C      CLF(M,N) = YI(N)
C21    CONTINUE

      DO 21 N = 1 , KKK

      DO 23 L = 1 , LP1-1

      IF ( ANGCL(N).GE.ANG(L).AND.ANGCL(N).LE.ANG(L+1)) THEN
      A1 = ABS( ANGCL(N) - ANG(L) )
      B1 = ABS( ANG(L+1) - ANG(L) )
      CLF(M,N) =  DMCLF(L) + ( DMCLF(L+1) - DMCLF(L) ) * A1/B1
      CHF(M,N) =  DMCHF(L) + ( DMCHF(L+1) - DMCHF(L) ) * A1/B1
      END IF

23    CONTINUE
21    CONTINUE

C-------------------------------------------------------------------------C
C               INTERPOLATE FOR FLAP HINGE MOMENT VALUES                  C
C       NOTE: FLAP HINGE MOMENT IS NORMALIZED BY THE AIRFOIL'S (I.E., NOT C
C             THE FLAP'S) CHORD LENGTH.                                   C
C-------------------------------------------------------------------------C
C      CALL TSPLINE (ANG,DMCHF,LP1,BB,ST,1,KKK,ANGCL,YI,YP,YPP,XINT)
C      DO 22 N = 1 , KKK
C      CHF(M,N) = YI(N)
C22    CONTINUE

      END IF

C-------------------------------------------------------------------------C
C                       END MACH NUMBER DO LOOP                           C
C-------------------------------------------------------------------------C
10    CONTINUE

100   FORMAT (5X,'N=',I3,5X,'AOA=',F6.1,5X,'CL=',F7.4)
      RETURN
      END

      SUBROUTINE TSPLINE (X,Y,N,B,ST,IOP,NP,XI,YI,YP,YPP,XINT)
C-------------------------------------------------------------------------C
C               TENSION AND CUBIC SPLINE CURVE FIT PROGRAM                C
C-------------------------------------------------------------------------C
C     SOURCE FOR THE SUBROUTINE WAS TAKEN FROM A FORTRAN CODE BY TEX JONES  C
C     OF THE NASA LANGLEY RESEARCH CENTER                                   C
C-------------------------------------------------------------------------C
```

```
C     X AND Y - INPUT TABLE.                                                    C
C     N       - NUMBER OF INPUT VALUES OF X AND Y.                              C
C     B       - SOLUTION VECTOR (SECOND DERIVATIVE AT INPUT VALUES OF X AND Y.  C
C     ST      - TENSION PARAMETER.                                              C
C     IOP     - COMPUTING OPTION.                                               C
C                 =0  COMPUTE YI,YP,AND YPP AT NP EQUALLY SPACED VALUES         C
C                     OF XI BETWEEN X(1) AND X(N)                               C
C                 =1  COMPUTE YI,YP,AND YPP AT NP INPUT VALUES OF XI            C
C     NP      - NUMBER OF INPUT VALUES OF XI.                                   C
C     XI      - INPUT TABLE OF INTERPOLATION VALUES OF X BETWEEN X(1)           C
C               AND X(N).                                                       C
C     YI      - INTERPOLATED TABLE OF Y VALUES.                                 C
C     YP      - INTERPOLATED TABLE OF FIRST DERIVATIVE VALUES.                  C
C     YPP     - INTERPOLATED TABLE OF SECOND DERIVATIVE VALUES.                 C
C     XINT    - VALUE OF INTEGRAL OF Y BETWEEN X(1) AND X(N).                   C
C-------------------------------------------------------------------------------C
      DIMENSION X(N),Y(N),B(65),XI(65),YI(65),YP(65),YPP(65)
C       A IS DUMMY STORAGE VECTOR. DIMENSION A(10*N).
      DIMENSION A(650)

      M =N-1
      N1=N+1
      N2=N1+N
      N3=N2+N
      N4=N3+N
      N5=N4+N
      N6=N5+N
      N7=N6+N
      N8=N7+N
      N9=N8+N
      T=ST*FLOAT(N-1)/(X(N)-X(1))
C-------------------------------------------------------------------------------C
C                        LOAD MATRIX ROWS 2 THRU N-1                            C
C-------------------------------------------------------------------------------C
      DO 1 I=1,M
      H2=X(I+1)-X(I)
      IF(ST.EQ.0.0) A(I)=H2/6.
      IF(ST.NE.0.0) A(I)=(1./H2-T/SINH(T*H2))/(T*T)
      K=2*N+I
      A(K)=A(I)
      IF(I.EQ.1) GO TO 1
      K=K+N
      H1=X(I)-X(I-1)
      IF(ST.EQ.0.0) A(K)=(H2+H1)/3.
      IF(ST.NE.0.0) A(K)=(T*COSH(T*H1)/SINH(T*H1)-1./H1+T*COSH(T*H2)/SIN
     1H(T*H2)-1./H2)/(T*T)
      K=K+N
      A(K)=(Y(I+1)-Y(I))/H2-(Y(I)-Y(I-1))/H1
1     CONTINUE
C-------------------------------------------------------------------------------C
C                           LOAD MATRIX ROWS 1 AND N                            C
C-------------------------------------------------------------------------------C
      A(M)=-.5
      A(N2)=-.5
      A(N3)=1.0
      A(N4-1)=1.0
      A(N4)=0.0
      A(N5-1)=0.0
C-------------------------------------------------------------------------------C
C                           SOLVE TRIDIAGONAL MATRIX                            C
C-------------------------------------------------------------------------------C
      A(N7)=A(N3)
      A(N8)=A(N4)/A(N3)
      A(N9)=A(N2)/A(N3)
      DO 4 I=2,N
      I1=I-1
      I2=I-2
      A(N7+I1)=A(N3+I1)-A(I1)*A(N9+I2)
      IF(I.EQ.N) GO TO 4
      A(N9+I1)=A(N2+I1)/A(N7+I1)
4     A(N8+I1)=(A(N4+I1)-A(I1)*A(N8+I2))/A(N7+I1)
      A(N6-1)=A(N9-1)
      DO 5 I=1,M
      I1=N6-1-I
      I2=N-I
      I3=I2-1
5     A(I1)=A(N8+I3)-A(N9+I3)*A(I1+1)
      K=0
      DO 6 I=1,N
      I1=I-1
      A(N6+K)=A(N5+I1)
6     K=K+1
      A(M)=A(N3-2)
C-------------------------------------------------------------------------------C
C                        LOAD SOLUTION INTO VECTOR B                            C
C-------------------------------------------------------------------------------C
      DO 7 I=1,N
      I1=N6+I-1
7     B(I)=A(I1)
C-------------------------------------------------------------------------------C
C                    COMPUTE  Y,YP,YPP AT DESIRED X VALUES                      C
C-------------------------------------------------------------------------------C
      IF (NP.LE.0) RETURN
      IF (IOP.EQ.0) GO TO 13
```

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 07704-0188

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	May 1999	Contractor Report

4. TITLE AND SUBTITLE
Predicted Aerodynamic Characteristics of a NACA 0015 Airfoil Having a 25% Integral-Type Trailing Edge Flap

5. FUNDING NUMBERS
NAS1-20096 Task 6

WU 538-07-14-10

6. AUTHOR(S)
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7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
The Boeing Company
Mesa, Arizona

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
National Aeronautics and Space Administration
Langley Research Center
Hampton, VA 23681-2199

10. SPONSORING/MONITORING AGENCY REPORT NUMBER
NASA/CR-1999-209328

11. SUPPLEMENTARY NOTES
Langley Technical Monitor: Henry E. Jones

12a. DISTRIBUTION/AVAILABILITY STATEMENT
Unclassified–Unlimited
Subject Category 01 Distribution: Nonstandard
Availability: NASA CASI (301) 621-0390

12b. DISTRIBUTION CODE

13. ABSTRACT ***(Maximum 200 words)***

Using the two-dimensional ARC2D Navier-Stokes flow solver analyses were conducted to predict the sectional aerodynamic characteristics of the flapped NACA-001 5 airfoil section. To facilitate the analyses and the generation of the computational grids, the airfoil with the deflected trailing edge flap was treated as a single element airfoil with no allowance for a gap between the flap's leading edge and the base of the forward portion of the airfoil. Generation of the 0-type computational grids was accomplished using the HYGRID hyperbolic grid generation program. Results were obtained for a wide range of Mach numbers, angles of attack and flap deflections. The predicted sectional lift, drag and pitching moment values for the airfoil were then cast in tabular format (C81) to be used in lifting-line helicopter rotor aerodynamic performance calculations. Similar were also generated for the flap. Mathematical expressions providing the variation of the sectional lift and pitching moment coefficients for the airfoil and for the flap as a function of flap chord length and flap deflection angle were derived within the context of thin airfoil theory. The airfoil's sectional drag coefficient were derived using the ARC2D drag predictions for equivalent two dimensional flow conditions.

14. SUBJECT TERMS	15. NUMBER OF PAGES
Noise Reduction, Airfoils, Blade-Vortex Interaction	167
	16. PRICE CODE: A08

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	UL

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. Z39-18
298-102

```
      GO TO 14
13    DELTAX=(X(N)-X(1))/FLOAT(NP-1)
      XI(1)=X(1)
      DO 15 I=2,NP
15    XI(I)=XI(I-1)+DELTAX
14    CONTINUE
      DO 8 I=1,NP
      P=XI(I)
      DO 9 K=2,N
      K1=K-1
      IF((P.GE.X(K1)).AND.(P.LE.X(K))) GO TO 10
      GO TO 9
10    J1=K1
      J2=K
9     CONTINUE
      H=X(J2)-X(J1)
      IF(ST.EQ.0.0) GO TO 11
      SINHT=SINH(T*H)
      YI(I)=B(J1)*(SINH(T*(X(J2)-P))/(T*T*SINHT)-(X(J2)-P)/(H*T*T))+B(J2
     1)*(SINH(T*(P-X(J1)))/(T*T*SINHT)-(P-X(J1))/(H*T*T))+(Y(J1)*(X(J2)-
     2P)+Y(J2)*(P-X(J1)))/H
      YP(I)=B(J1)*(1./(H*T*T)-COSH(T*(X(J2)-P))/(T*SINHT))+B(J2)*(COSH(T
     1*(P-X(J1)))/(T*SINHT)-1./(H*T*T))+(Y(J2)-Y(J1))/H
      YPP(I)=B(J1)+SINH(T*(X(J2)-P))/SINHT+B(J2)*SINH(T*(P-X(J1)))/SINHT
      GO TO 8
11    YI(I)=B(J1)*((X(J2)-P)**3/(6.*H)-(X(J2)-P)*H/6.)+B(J2)*((P-X(J1))*
     1*3/(6.*H)-(P-X(J1))*H/6.)+(Y(J1)*(X(J2)-P)+Y(J2)*(P-X(J1)))/H
      YP(I)=B(J1)*(H/6.-(X(J2)-P)**2/(2.*H))+B(J2)*((P-X(J1))**2/(2.*H)-
     1H/6.)+(Y(J2)-Y(J1))/H
      YPP(I)=B(J1)*(X(J2)-P)/H+B(J2)*(P-X(J1))/H
8     CONTINUE
C-------------------------------------------------------------------------------C
C               COMPUTE INTEGRAL OF Y BETWEEN X(1) AND X(N)                     C
C-------------------------------------------------------------------------------C
      XINT=0.0
      DO 12 I=2,N
      H=X(I)-X(I-1)
      XINT=XINT+(Y(I)+Y(I-1))*H/2.
      IF(ST.EQ.0.0)XINT=XINT-(B(I)+B(I-1))*H**3/24.
      IF(ST.NE.0.0)XINT=XINT-(B(I)+B(I-1))*((1.-COSH(T*H))/(T**3*SINH(T*
     1H))+H/(2.*T*T))
12    CONTINUE

      RETURN
      END
```